USAP Field Season

PROJECT INDEXES

GO

Find information about current USAP projects using the principal investigator, event number station, and other indexes.

PROJECT WEB SITES

GO

Link to project web sites and find information about the research and people involved.

2010-2011 FIELD SEASON

more information:

- Technical Events
- Station Schedules
- Air Operations
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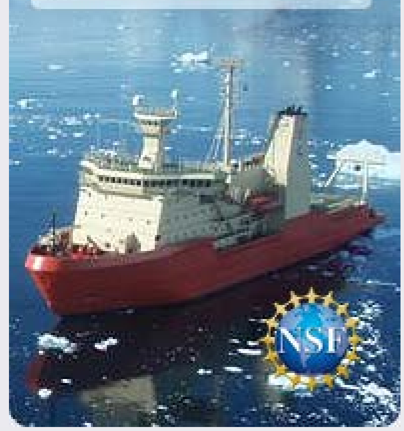

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    Dr. Vladimir Papitashvili, program manager
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    Dr. Roberta Marinelli, program manager
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    Dr. Alexandra Isern, program manager
  - Glaciology
    Dr. Julie Palais, program manager
  - Ocean and Atmospheric Sciences
    Dr. Peter Milne, program manager
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    Peter West, program manager
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Amsler, Charles	B-022-P	Collaborative Research: The chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula
Anandakrishnan, Sridhar	C-520-M	WISSARD surface geophysics
Ashworth, Allan	G-502-M	Neogene paleoecology of the Beardmore Glacier region
Ashworth, Allan	G-294-M	Collaborative Research: Integrating geomorphological and paleoecological studies to reconstruct Neogene environments of the Transantarctic Mountains
Avallone, Linnea	O-324-M	In situ measurements of stratospheric ozone from long-duration balloons during Concordiasi
Barrett, John	B-023-M	Collaborative Research: The role of snow patches on the spatial distribution of soil microbial communities and biogeochemical cycling in the Antarctic Dry Valleys
Beebe, Morton	W-222-M	Return to Antarctica
Besson, Dave	A-123-S	Neutrino Array Radio Calibration
Bieber, John	A-120-M	Cosmic ray observations at McMurdo Station
Blankenship, Donald	G-098-M	IPY Research: Investigating the cryospheric evolution of the central Antarctic plate (ICECAP)
Bockheim, James	G-239-E	Impact of recent climate warming on active-layer dynamics, permafrost, and soil properties

		on the western Antarctic Peninsula
Bowser, Samuel	G-093-M	Collaborative Research: Linking modern benthic communities and taphonomic processes to the stratigraphic record of Antarctic cores
Bristow, William	A-369-M	McMurdo and South Pole SuperDARN: Investigation of the ionospheric dynamics and magnetosphere-ionosphere coupling in Antarctica
Butler, James	O-257-S	South Pole monitoring for climatic change
Carlstrom, John	A-379-S	Cosmological Research with the 10-meter South Pole Telescope
Carlstrom, John	A-370-S	Science Coordination Office for Astrophysical Research in Antarctica (SCOARA-II)
Chereskin, Teresa	O-313-N	Collaborative research: Dynamics and transport of the Antarctic Circumpolar Current in the Drake Passage
Chu, Xinzhao	A-130-M	Lidar Investigation of middle and upper atmosphere temperature, composition, chemistry, and dynamics at McMurdo, Antarctica
Coles, Katharine	W-485-P	Natural Curiosities: Poems of exploration, Antarctica
Comes, Laura R	T-998-P	Operation and maintenance of a CTBT radionuclide monitoring station at Palmer Station
Conway, Howard	I-157-M	IPY collaborative research: Constraining the mass balance deficit of the Amundsen Coast's glaciers
Conway, Howard	I-209-M	Deglaciation of the Ross Sea Embayment - constraints from Roosevelt Island
Deshler, Terry	O-131-M	Measurements of Antarctic ozone and polar stratospheric cloud profiles in a time of decreasing atmospheric chlorine, climate

		change, and fluctuations in polar vortex strength
Deshler, Terry	**O-361-M**	Quasi-Lagrangian measurements of polar stratospheric cloud particle development from long-duration balloon platforms
Devlin, Mark	**A-147-M**	Balloon-borne Large Aperture Sub-millimeter Telescope (BLAST-POL)
Doran, Peter	**B-426-M**	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program
Emslie, Steven D	**B-034-E/M**	Stable isotope analyses of pygoscelid penguin remains from active and abandoned colonies in Antarctica
Engebretson, Mark J	**A-102-M/S**	Studies of solar wind - Magnetosphere interactions using observations of ULF waves at an extensive ground array at high latitudes
Evenson, Paul	**A-120-M**	Cosmic ray observations at McMurdo Station
Foreman, Christine	**B-046-M**	The biogeochemical evolution of dissolved organic matter in a fluvial system on the Cotton Glacier, Antarctica
Fountain, Andrew	**B-425-M**	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valleys LTER program
Fraser, Bill	**B-013-L/P**	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, apex predator component
Garrott, Robert	**B-009-M**	The demographic consequences of environmental variability and individual heterogeneity in life-history tactics of a long-lived

		Antarctic marine predator
Halzen, Francis	A-333-S	IceCube operations and maintenance
Hammer, William	G-495-M	New research on the Mesozoic vertebrate faunas of the Beardmore Glacier Region, Antarctica
Hernandez, Gonzalo	A-110-M/S	Austral high-latitude atmospheric dynamics
Hofmann, Gretchen	B-134-M	Ocean acidification: Integrated approaches to understanding effects on antarctic sea urchins, Sterechinus neumayeri
Inan, Umran	A-336-P	ELF/VLF observation of whistler-mode waves, lightning discharge, and gamma-ray events from Palmer Station
Inan, Umran	A-327-N	ELF/VLF observation in the southern Pacific Ocean
Inan, Umran	A-108-M/S	A VLF beacon transmitter at South Pole
Johns, Bjorn	T-295-M	UNAVCO GPS survey support
Joughin, Ian	I-157-M	IPY collaborative research: Constraining the mass balance deficit of the Amundsen Coast's glaciers
Karle, Albrecht	A-107-S	Collaborative Research: MRI-R2 instrument development of the Askaryan Radio Array, a large-scale radio Cherenkov neutrino detector at the South Pole
Kemerait, Robert	G-078-M	Dry Valley seismic project
Kennicutt, Mahlon	B-518-M	Temporal variability in natural and anthropogenic disturbance of McMurdo Station
Kulesa, Craig	A-364-S	High Elevation Antarctic Terahertz (HEAT) telescopes for Dome A and Ridge A
Kurbatov, Andrei	I-349-M	Collaborative Research: Exploring a 2 million-year-plus ice climate archive-Allan Hills blue ice area (2MBIA)

Kyle, Phillip	G-081-M	Mount Erebus Volcano Observatory III (MEVO III): Conduit processes and surveillance
LaBelle, James	A-128-S	Collaborative Research: Multi-instrument studies of auroral plasma radiation
Lee, Richard	B-256-P	Role of dehydration and photoperiodism in preparing an Antarctic insect for the polar night
Lewis, Adam	G-502-M	Neogene paleoecology of the Beardmore Glacier region
Lewis, Adam	G-294-M	Collaborative Research: Integrating geomorphological and paleoecological studies to reconstruct Neogene environments of the Transantarctic Mountains
Lyons, W. Berry	B-420-M	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valleys LTER program
Martinson, Doug	B-021-L	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, physical oceanography component
McCarthy, Kevin	T-927-M	NASA/McMurdo Ground Station (MG1)
Mende, Stephen	A-104-S	Antarctic auroral imaging
Miller, Molly	G-093-M	Collaborative Research: Linking modern benthic communities and taphonomic processes to the stratigraphic record of Antarctic cores
Moore, Robert C	A-109-M/P/S	Collaborative Research: Antarctic ELF/VLF observations of lightning and lightning-induced electron precipitation
Neill, Christopher	Y-609-P	IPY: Improving the public's understanding of polar research

		through hands-on fellowships for science journalists in the Arctic and Antarctic
Parker, Timothy	T-299-M	IRIS/PASSCAL seismic support
Priscu, John	B-422-M	The Role of Resource Legacy on Contemporary Linkages Between Biodiversity and Ecosystem Processes in a Cold Desert Ecosystem: The McMurdo Dry Valley LTER Program
Pryke, Clement	A-149-S	Collaborative Research: BICEP2 and SPUD - A search for inflation with degree-scale polarimetry from the South Pole
Putkonen, Jaakko	G-501-M	Systematic analysis of the stability and ages of soil surfaces in Transantarctic Mountains
Rabier, Florence	O-360-M	Strateole-Vorcore
Rack, Frank	G-049-M	ANDRILL Coulman High project: Investigating Antarctica's role in Cenozoic global environmental change: Phase 1 site survey
Scambos, Theodore	C-514-E	Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multi-disciplinary Approach -- Cryosphere and Oceans (LARISSA)
Seo, Eun-Suk	A-137-M	Cosmic Ray Energetics And Mass (CREAM)
Sivjee, Gulamabas	A-129-S	Observation of upper-atmospheric energetics, dynamics, and long-term variations over South Pole Station
Sletten, Ronald	G-121-M	Ground ice dynamics in hyperarid soils of the McMurdo Dry Valleys, Antarctica
Staudigel, Hubert	G-439-M	Collaborative research: Microbially mediated alteration of volcanic glass using McMurdo extreme environments as natural laboratories

Steffen, Konrad	I-077-E	IPY: Stability of Larsen C Ice Shelf in a warming climate
Steinberg, Deborah	B-020-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, zooplankton component
Stepp, Bill	A-145-M	NASA Long Duration Balloon (LDB) support program
Szuberla, Curt	T-396-M	Operation and maintenance of a CTBT class infrasound array at Windless Bight
Taylor, Kendrick	I-477-M	WAIS Divide Science Coordination Office (SCO)
Taylor, Michael	A-119-S	Investigating wave-driven mesospheric dynamics over South Pole using an advanced mesospheric temperature mapper
Virginia, Ross	B-423-M	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program
Wall, Diana	B-424-M	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program
Wilson, Terry	G-049-M	ANDRILL Coulman High project: Investigating Antarctica's role in Cenozoic global environmental change: Phase 1 site survey
Wu, Qian	A-132-P	Thermospheric neutral wind observation in the Antarctica Peninsula

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Comberiate, Mike	T-966-M	TDRSS and NAILS
Comes, Laura	T-998-P	Operation and maintenance of a CTBT radionuclide monitoring station at Palmer Station
Johns, Bjorn	T-295-M	UNAVCO GPS survey support
McCarthy, Kevin	T-927-M	NASA/McMurdo Ground Station (MG1)
Mercer, Jennifer	T-940-M	CRREL 09-10 activities
Parker, Timothy	T-299-M	IRIS/PASSCAL seismic support
Szuberla, Curt	T-396-M	Operation and maintenance of a CTBT class infrasound array at Windless Bight

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Station Schedules: 2010-2011

The United States Antarctic Program operates three permanent research stations on the continent and two research vessels.

Austral Summer Season Openings			Austral Winter Season Openings
Station	Operational	Science	
McMurdo	13 Aug 2010 (WinFly*)	28 Sept 2010 (Mainbody)	25 Feb 2011
South Pole	15 Oct 2010	1 Nov 2010	14 Feb 2011
Palmer	17 Sept 2010*	12 Oct 2010	05 June 2011
Research Vessels	Year-round operations Vessel schedules on the Internet: **http://www.usap.gov/vesselScienceAndOperations/**		

*A limited number of science projects deploy at Winfly

Estimated Population		
	Summer	Winter
McMurdo	950 (weekly average) 2,200 (total)	160 (winter total)
South Pole	250 (weekly average) 820 (total)	50 (winter total)
Palmer	36-44 (weekly average) 159 (total)	20 (winter total)
RV/IB NBP*	39 science and staff / 25 crew	
ARSV LMG**	38 science and staff / 25 crew	

*RV/IB, Research Vessel/Icebreaker

**ARSV, Antarctic Research Support Vessel

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Air Operations: 2010-2011

McMurdo Station

McMurdo-based aircraft (Helicopters, Twin Otter, Basler and LC-130 fixed-wing aircraft) will continue to support USAP researchers and program logistical functions.

PHI

PHI will provide helicopter support with five helicopters (two AS-350-B2 "A-Stars" and three Bell 212s) based out of McMurdo Station and Central Trans Antarctic Mountain (CTAM) camp. From the beginning of October to the end of November the five helicopters will support research in the McMurdo Dry Valleys, Royal Society Range and on Ross Island. From the beginning of December through the end of January two Bell 212’s will be stationed at CTAM; leaving the 2 “A-Stars” and 1 Bell 212 in McMurdo to support the local region. In addition, Antarctic New Zealand will be providing a Eurocopter - EC130 from approximately the beginning of November through the end of January.
http://www.phihelico.com/

New York Air National Guard (ANG)

The New York Air National Guard will provide re-supply and research support to South Pole Station. They will support research activities at deep field locations including Siple Dome, WAIS Divide, Byrd Station and AGAP South.
http://www-105aw.ang.af.mil/

Kenn Borek Air

Twin Otter and Basler aircraft, operated by Kenn Borek Air, will be used by a number of projects throughout the USAP area of operations.
http://www.borekair.com/

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Staffed Field Camps: 2010-2011

Eight field camps will have resident staff to provide logistic and operational assistance to McMurdo-based researchers.

Dry Valleys	77°30 S, 162° E 50 nautical miles from McMurdo Station

Each year numerous groups conduct research throughout the Dry Valleys. Two resident staff will operate the main base camp at Lake Hoare and the other semi-permanent camps at Lake Fryxell, F-6, and Lake Bonney. The Dry Valleys are predominately occupied by the Long Term Ecological Research grantees. Several other groups will operate from small tent camps throughout the region, including project in the Garwood, Meirs, and McKelvey, Wright, and University Valleys and at Lake Joyce and Lake Vanda. B-208 (Doran) will conduct a large scale lake water sampling project on Lake Vida.

Marble Point	77°41 S, 163°67 E 46 nautical miles from McMurdo Station

Two resident staff and a fuels operator maintain the Marble Point Field camp. The main focus of the camp is to support refueling operations for helicopters working in the Dry Valleys and local sea ice. Three traverses from McMurdo will deliver fuel and equipment to Marble Point early in the season.

Siple Dome	81°39 S, 149°04 W 507 nautical miles from McMurdo Station

Siple Dome will have three resident field camp staff. They will provide daily weather observations for planes operating in West Antarctica. Three science groups will base operations from Siple Dome this season: Brown (G-097), Winberry (I-181) and IceCap (Blankenship, C-520) They will also house and feed Kenn Borek Air pilots that may remain overnight at the camp.

WAIS Divide Field Camp	79°46 S, 112°08 W 924 nautical miles from McMurdo Station

The West Antarctic Ice Sheet (WAIS) Divide Field Camp with eleven resident staff will support nine projects: Kendrick Taylor (I-477-M) will continue collecting a 3,400 m deep ice core in West Antarctica. The National Ice Core Laboratory (I-478-M) will provide quality assurance and oversight for ice coring operations. Charles Bentley-Ice Core Drilling Services (T-350-M) will complete the setup and operate the DISC Drill System at WAIS Divide. Two traverses, Rupper (I-158) and Joughin (I-157), will traverse from WAIS on snow machines, collecting ice core samples. O-283 (Lazarra) will visit nearby AWS's.

Byrd Field Camp	80° S by 120° W 803 nm from McMurdo Station, and 97 nm from WAIS Divide

The Byrd field camp will have fourteen resident staff and expect a peak camp population of 45 people. The camp will support three projects: POLENET (G-

079, Wilson) will complete installing a GPS and seismic array throughout West Antarctica and service the existing equipment deployed in previous seasons; Lazzara (O-283-M) will service the automatic weather station (AWS) at Byrd Camp and other similar units in the vicinity; and Bindschadler (C-407) will service three AWS located in the vicinity of Pine Island Glacier.

CTAM Field Camp	84° S by 165° W 371 nm from McMurdo Station, and 361 nm from the Amundsen-Scott South Pole Station

The science events include mostly Earth Sciences (G) events, and one each Biology (B), Glaciology (I), and Oceans and Atmospheric sciences (O). Science events include Allan Ashworth (G-502-M), Jeb Barrett (B-462-M), David Elliot (G-497-M), John Goodge (G-503-M), Bill Hammer (G-495-M), Ralph Harvey (G-058-M), Steve Hasiotis (G-498-M), Matthew Lazzara (O-283-M), Kathy Licht (G-499-M), Jaakko Putkonen (G-501-M), John Stone (I-414-M), Edith Taylor (G-496-M), Phil Wannamaker (G-494-M), ANZ groups Megan Balks (X-594-M/K123), Craig Cary/Ian Hogg (X-593-M/K020), Andrew Mackintosh/Nick Golledge (X-595-M/K001BIce), and Andrew Mackintosh/Tim Naish (X-596-M/K001BRock).

Pine Island Glacier (PIG) Traverse	320 miles W from Byrd Surface Camp

Six staff will traverse three CAT 55 Challengers, a Tucker Sno-Cat, and snow machine to stage equipment and fuel from Byrd Camp to Pine Island Glacier. Items will be delivered in advance of a helicopter and fixed wing camp in FY12. The tractors will conduct two round trip traverses to reposition the equipment and fuel during the current season, and a similar number of trips in FY12 to support sustaining operations. The traverse will pass though WAIS Divide camp on each trip. PIG camp will support science conducted by Bindschadler (C-407).

ANDRILL Site Survey at Coulman High	-77.47° S by 171.58° W 69 nm from McMurdo Station, and 754 nm from the Amundsen-Scott South Pole Station

ANDRILL (ANtarctic geological DRILLing) is an international program designed to investigate Antarctica's role in Cenozoic global environmental change. This site survey is a collaborative effort between the USAP and Antarctica New Zealand and will access and characterize two Coulman High drill sites for future sediment core extraction. This season's activities include deploying oceanographic instrumentation, testing the SCINI ROV, obtaining short gravity cores, conducting a gravity survey, and performing a seismic experiment to better characterize sub-seafloor geology in this area. The ANDRILL camp will have two resident staff, one provided by USAP and one provided by Antarctica New Zealand.

Event Numbering System: 2010-2011

Every project is assigned a unique event number.
The first letter indicates the USAP program funding a project:

Prefix	USAP Program
A	Aeronomy and Astrophysics
B	Organisms and Ecosystems
C	Integrated System Science
G	Earth Sciences
I	Glaciology
O	Oceans and Atmospheric Sciences
W	Artists and Writers
Y	Education and Outreach
T	Technical Event

The suffix represents the supporting station. If field work takes place at more than one location the event number carries more than one suffix separated by a slash.

Suffix	Supporting Station (link to index)
M	McMurdo Station
P	Palmer Station
S	South Pole Station
L	ARSV Laurence M. Gould
N	RV/IB Nathaniel B. Palmer
E	Special projects supported by the USAP. Examples include investigators working with other national Antarctic programs.
O	ODEN Icebreaker

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Ackley, Stephen	O-269-O	Collaborative Research: The sea ice system in Antarctic summer, Oden Southern Ocean expeditions (OSO 2009-10, OSO 2010-11, OSO 2011-12)
Ainley, David	B-031-M	Adelie Penguin response to climate change at the individual, colony and metapopulation levels
Alderkamp, Anne-Carlijn	B-198-N	ASPIRE: Amundsen Sea Polynya International Research Expedition
Amsler, Charles	B-022-P	Collaborative Research: The chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula
Anandakrishnan, Sridhar	C-520-M	WISSARD surface geophysics
Andersen, Dale	G-441-M	Lake Joyce microbialites resubmittal
Aronson, Richard	B-002-O	Collaborative Research: Climate change and predatory invasion of the Antarctic marine environment
Arrigo, Kevin	B-244-O	Sea ice ecology in the Amundsen and Eastern Ross Sea
Ashworth, Allan	G-502-M	Neogene paleoecology of the Beardmore Glacier region
Ashworth, Allan	G-294-M	Collaborative Research: Integrating geomorphological and paleoecological studies to reconstruct Neogene environments of the Transantarctic Mountains
Avallone, Linnea	O-324-M	In situ measurements of stratospheric ozone from long-duration balloons during Concordiasi
Balco, Gregory	I-156-M	Collaborative Research: Last glacial maximum and deglaciation

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		chronology for the Foundation Ice Stream and southeast Weddell Sea Embayment
Barrett, John	B-462-M	Collaborative Research: Controls over the spatial distribution and activity of microbial communities in Antarctic soils
Barrett, John	B-023-M	Collaborative Research: The role of snow patches on the spatial distribution of soil microbial communities and biogeochemical cycling in the Antarctic Dry Valleys
Barwick, Steven	A-127-M	Development of station technology for the ARIANNA ultra-high energy neutrino detector
Beebe, Morton	W-222-M	Return to Antarctica
Besson, Dave	A-123-S	Neutrino Array Radio Calibration
Bieber, John	A-120-M	Cosmic ray observations at McMurdo Station
Blankenship, Donald	G-098-M	IPY Research: Investigating the cryospheric evolution of the central Antarctic plate (ICECAP)
Bockheim, James	G-239-E	Impact of recent climate warming on active-layer dynamics, permafrost, and soil properties on the western Antarctic Peninsula
Bowser, Samuel	G-093-M	Collaborative Research: Linking modern benthic communities and taphonomic processes to the stratigraphic record of Antarctic cores
Bristow, William	A-369-M	McMurdo and South Pole SuperDARN: Investigation of the ionospheric dynamics and magnetosphere-ionosphere coupling in Antarctica
Brown, Michael	G-097-M	Collaborative research: Polyphase orogenesis and crustal differentiation in West Antarctica
Brum, Jennifer	B-319-P	Post-doctoral research fellowship
Buckley, Bradley	B-308-M	The cellular stress response in cold-adapted organisms: Building novel mechanistic links between

		heat stress, cell cycle arrest and apoptosis in Antarctic fishes.
Butler, James	O-257-S	South Pole monitoring for climatic change
Carlstrom, John	A-379-S	Cosmological Research with the 10-meter South Pole Telescope
Carlstrom, John	A-370-S	Science Coordination Office for Astrophysical Research in Antarctica (SCOARA-II)
Chereskin, Teresa	O-313-N	Collaborative research: Dynamics and transport of the Antarctic Circumpolar Current in the Drake Passage
Chu, Xinzhao	A-130-M	Lidar Investigation of middle and upper atmosphere temperature, composition, chemistry, and dynamics at McMurdo, Antarctica
Cohn, Stephen	O-363-M	IPY: NCAR facility support, scientific contributions and collaborative research to understand environmental change in Antarctica through participation in the international CONCORDIASI project
Coles, Katharine	W-485-P	Natural Curiosities: Poems of exploration, Antarctica
Comberiate, Mike	T-966-M	TDRSS and NAILS
Comes, Laura R	T-998-P	Operation and maintenance of a CTBT radionuclide monitoring station at Palmer Station
Conway, Howard	I-157-M	IPY collaborative research: Constraining the mass balance deficit of the Amundsen Coast's glaciers
Conway, Howard	I-414-M	Collaborative Research: Constraints on the last Ross Sea Ice Sheet from glacial deposits in the Southern Transantarctic Mountains
Conway, Howard	I-209-M	Deglaciation of the Ross Sea Embayment - constraints from Roosevelt Island
Costa, Daniel	B-232-M	Collaborative Research: Weddell seals as autonomous sensors of

		the winter oceanography of the Ross Sea
Cottrell, Matthew	B-026-P	Photoheterotrophic microbes in the West Antarctic Peninsula marine ecosystem
Davis, Randall	B-017-M	Collaborative Research: Hunting in darkness: Behavioral and energetic strategies of Weddell seals in winter
Deshler, Terry	O-131-M	Measurements of Antarctic ozone and polar stratospheric cloud profiles in a time of decreasing atmospheric chlorine, climate change, and fluctuations in polar vortex strength
Deshler, Terry	O-361-M	Quasi-Lagrangian measurements of polar stratospheric cloud particle development from long-duration balloon platforms
Devlin, Mark	A-147-M	Balloon-borne Large Aperture Sub-millimeter Telescope (BLAST-POL)
Dickhut, Rebecca	B-389-O/P	Collaborative Research: Persistent organic pollutants in the Antarctic marine food web: impact of climate change and insights into the feeding ecology of apex predators
Doran, Peter	B-208-M	Collaborative Research: Geochemistry and microbiology of the extreme aquatic enviornment in Lake Vida, East Antarctica
Doran, Peter	B-426-M	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program
Elliot, David	G-497-M	Collaborative Research: Application of detrital zircon isotope characteristics and sandstone analysis of Beacon strata to the tectonic evolution of the Antarctic sector of Gondwana
Emslie, Steven D	B-034-E/M	Stable isotope analyses of pygoscelid penguin remains from

		active and abandoned colonies in Antarctica
Engebretson, Mark J	**A-102-M/S**	Studies of solar wind - Magnetosphere interactions using observations of ULF waves at an extensive ground array at high latitudes
Evenson, Paul	**A-120-M**	Cosmic ray observations at McMurdo Station
Foreman, Christine	**B-046-M**	The biogeochemical evolution of dissolved organic matter in a fluvial system on the Cotton Glacier, Antarctica
Fountain, Andrew	**B-425-M**	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valleys LTER program
Fraser, Bill	**B-013-L/P**	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, apex predator component
Fritts, David	**A-113-E**	Radar measurements of large- and small-scale dynamics of the MLT on the Antarctic Peninsula with an existing MF radar and a new generation meteor radar at British and Brazilian bases
Garrott, Robert	**B-009-M**	The demographic consequences of environmental variability and individual heterogeneity in life-history tactics of a long-lived Antarctic marine predator
Goodge, John	**G-503-M**	Age and composition of the East Antarctic Shield by granite and glacial proxy
Hall, Brenda	**I-414-M**	Collaborative Research: Constraints on the last Ross Sea Ice Sheet from glacial deposits in the Southern Transantarctic Mountains
Hall, Brenda	**I-196-M**	Sensitivity of the Antarctic Ice Sheet to global climate change over the last two glacial/interglacial cycles

Halzen, Francis	A-333-S	IceCube operations and maintenance
Hammer, William	G-495-M	New research on the Mesozoic vertebrate faunas of the Beardmore Glacier Region, Antarctica
Hargreaves, Geoffrey	I-478-M	National Ice Core Laboratory (NICL) core-handling and data recording
Hasiotis, Stephen	G-498-M	Paleoenvironmental and paleoclimatic analysis of the Beacon Supergroup, Beardmore Glacier area, Central Transantarctic Mountains, Antarctica
Hernandez, Gonzalo	A-110-M/S	Austral high-latitude atmospheric dynamics
Hofmann, Gretchen	B-134-M	Ocean acidification: Integrated approaches to understanding effects on antarctic sea urchins, Sterechinus neumayeri
Hollibaugh, James	B-114-L	Ammonia oxidation versus heterotrophy in crenarchaeota populations from marine environments west of the Antarctic Peninsula
Hood, Charles	W-223-M	Flying to Pellucidar: Antarctic aviation
Huber, Bruce	O-399-N	Cape Adare Long-term Mooring (CALM)
Inan, Umran	A-336-P	ELF/VLF observation of whistler-mode waves, lightning discharge, and gamma-ray events from Palmer Station
Inan, Umran	A-327-N	ELF/VLF observation in the southern Pacific Ocean
Inan, Umran	A-108-M/S	A VLF beacon transmitter at South Pole
Jacobs, Stanley S	O-274-N	IPY/ASEP - Collaborative international research: Amundsen Sea Influence on West Antarctic Ice Sheet stability and sea level rise
Johns, Bjorn	T-295-M	UNAVCO GPS survey support
Joughin, Ian	I-157-M	IPY collaborative research:

		Constraining the mass balance deficit of the Amundsen Coast's glaciers
Karle, Albrecht	A-107-S	Collaborative Research: MRI-R2 instrument development of the Askaryan Radio Array, a large-scale radio Cherenkov neutrino detector at the South Pole
Kemerait, Robert	G-078-M	Dry Valley seismic project
Kennicutt, Mahlon	B-518-M	Temporal variability in natural and anthropogenic disturbance of McMurdo Station
Kirschvink, Joseph	G-436-E	Collaborative Research: Upper Cretaceous-lower Paleocene strata from the James Ross Island region: Chemo-, Magneto-, and biomarker tests of intercontinental correlation and extinction hypotheses
Kohut, Josh	O-216-M/N	Collaborative Research: Modified circumpolar deep water intrusions as an iron source to the summer Ross Sea ecosystem
Kulesa, Craig	A-364-S	High Elevation Antarctic Terahertz (HEAT) telescopes for Dome A and Ridge A
Kurbatov, Andrei	I-349-M	Collaborative Research: Exploring a 2 million-year-plus ice climate archive-Allan Hills blue ice area (2MBIA)
Kyle, Phillip	G-081-M	Mount Erebus Volcano Observatory III (MEVO III): Conduit processes and surveillance
LaBelle, James	A-128-S	Collaborative Research: Multi-instrument studies of auroral plasma radiation
Lee, Richard	B-256-P	Role of dehydration and photoperiodism in preparing an Antarctic insect for the polar night
Lewis, Adam	G-502-M	Neogene paleoecology of the Beardmore Glacier region
Lewis, Adam	G-294-M	Collaborative Research: Integrating geomorphological and paleoecological studies to

		reconstruct Neogene environments of the Transantarctic Mountains
Licht, Kathy	G-499-M	Pleistocene East Antarctic ice sheet history as recorded in sediment provenance and chronology of high-elevation TAM moraines
Lyons, W. Berry	B-420-M	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valleys LTER program
MacPhee, Ross	G-170-E	Vertebrate paleontology of Livingston Island, South Shetlands, Antarctica
Major, John	W-224-M	Condition One: A film about extremes and the human spirit
Martinson, Doug	B-021-L	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, physical oceanography component
Maruyama, Reina Heeger	A-334-S	Feasibility study for a dark matter search co-located with the IceCube detector in the Antarctic ice
McCarthy, Kevin	T-927-M	NASA/McMurdo Ground Station (MG1)
McKay, Christopher	B-302-M	IceBite: An auger and sampling systems for ground ice on Mars
Mende, Stephen	A-104-S	Antarctic auroral imaging
Mercer, Jennifer	T-940-M	CRREL 09-10 activities
Miller, Molly	G-093-M	Collaborative Research: Linking modern benthic communities and taphonomic processes to the stratigraphic record of Antarctic cores
Moline, Mark Alan	B-391-P	Real-Time characterization of Adélie penguin-foraging environment using an autonomous underwater vehicle
Moore, Anna	A-356-S	Analysis of the data from the Gattini Antarctic camera network

Moore, Robert C	A-109-M/P/S	Collaborative Research: Antarctic ELF/VLF observations of lightning and lightning-induced electron precipitation
Neill, Christopher	Y-609-P	IPY: Improving the public's understanding of polar research through hands-on fellowships for science journalists in the Arctic and Antarctic
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Palo, Scott	A-284-S	Collaborative study of the Antarctic mesosphere and lower thermosphere
Parker, Timothy	T-299-M	IRIS/PASSCAL seismic support
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Priscu, John	B-422-M	The Role of Resource Legacy on Contemporary Linkages Between Biodiversity and Ecosystem Processes in a Cold Desert Ecosystem: The McMurdo Dry Valley LTER Program
Pryke, Clement	A-149-S	Collaborative Research: BICEP2 and SPUD - A search for inflation with degree-scale polarimetry from the South Pole
Putkonen, Jaakko	G-501-M	Systematic analysis of the stability and ages of soil surfaces in Transantarctic Mountains
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Rupper, Summer	I-158-M	Collaborative Research: Annual satellite era accumulation patterns over WAIS Divide: A study using shallow ice cores, near-surface radar and satellites
Sanders, Robert	B-303-N	Collaborative Research: Alternative

		nutritional strategies in Antarctic protists
Scambos, Theodore	C-514-E	Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multi-disciplinary Approach -- Cryosphere and Oceans (LARISSA)
Seo, Eun-Suk	A-137-M	Cosmic Ray Energetics And Mass (CREAM)
Shore, Patrick	G-089-M/S	Polenet East: An international seismological network for East Antarctica
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Sletten, Ronald	G-121-M	Ground ice dynamics in hyperarid soils of the McMurdo Dry Valleys, Antarctica
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Spain, Sharon (Rae)	B-429-M	Field sampling coordination and mathematical modelling of a hydrocarbon spill on the ice cover of Lake Fryxell, Antarctica
Staudigel, Hubert	G-439-M	Collaborative research: Microbially mediated alteration of volcanic glass using McMurdo extreme environments as natural laboratories
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Steinberg, Deborah	B-020-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, zooplankton component
Stepp, Bill	A-145-M	NASA Long Duration Balloon (LDB) support program
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Taylor, Kendrick	I-477-M	WAIS Divide Science Coordination Office (SCO)
Taylor, Michael	A-119-S	Investigating wave-driven mesospheric dynamics over South Pole using an advanced mesospheric temperature mapper
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Adams, Heather	B-422-M	John Priscu
Aird, Ken	A-379-S	John Carlstrom
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Alger, Russ	T-940-M	Jennifer Mercer
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Allen, Ann		Douglas P Nowacek
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Altrichter, Adam	B-023-M	John Barrett
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Baird, William	G-098-M	Donald Blankenship
Baker, Bill	B-022-P	Charles Amsler
Baker, Michael	A-333-S	Francis Halzen
Ball, Rebecca	B-423-M	Ross Virginia
Ballou, Stephen	G-058-M	
Banks, Forest	A-333-S	Francis Halzen
Barber, Julie	B-200-M	John Oliver
Barden, Allison	B-308-M	Bradley Buckley
Barlow, Stephen	A-110-M/S	Gonzalo Hernandez
Barna, Lynette	T-940-M	Jennifer Mercer
Bats, Melanie	O-360-M	Florence Rabier
Bauska, Thomas	I-169-M	
Bay, Ryan	A-333-S	Francis Halzen
Beange, Alexander	A-145-M	Bill Stepp
Beardsley, Robert	G-049-M	Frank Rack
Beilke, Adam	G-239-E	James Bockheim
Bej, Asim	G-441-M	Dale Andersen
Bencivengo, Brian	I-478-M	Geoffrey Hargreaves
Benham, Michael	A-145-M	Bill Stepp
Benischek, Benjamin	A-333-S	Francis Halzen
Benson, Terry	A-333-S	Francis Halzen
Benton, Steven	A-147-M	Mark Devlin
Bergos, Pierre	O-360-M	Florence Rabier
Bernard, Kim	B-020-L/P	Deborah Steinberg
Bernzott, Emily	B-421-M	

Bertrand, Edward	G-494-M	
Betteley, Patty Ann	B-256-P	Richard Lee
Bibby, Theodore	G-501-M	Jaakko Putkonen
Bischoff, Collin	A-149-S	Clement Pryke
Blaes, Patrick	A-108-M/S	Umran Inan
Blajszczak, Eric	B-421-M	
Blaufuss, Erik	A-333-S	Francis Halzen
Blomstrom, Hanna	A-333-S	Francis Halzen
Blum, Jennifer	B-013-L/P	Bill Fraser
Blythe, Daren	G-049-M	Frank Rack
Boesenberg, Joseph	G-058-M	
Boeser, Sebastian	A-333-S	Francis Halzen
Bogo, Jennifer	Y-609-P	Christopher Neill
Bohlander, Jennifer	C-514-E	Theodore Scambos
Bordereau, Jerome	O-360-M	Florence Rabier
Boris, Mark	G-078-M	Robert Kemerait
Bower, Chuck		
Bowker, Nathan	A-333-S	Francis Halzen
Braddock, Peter	G-495-M	William Hammer
Bradford, Charles	T-927-M	Kevin McCarthy
Brandt, Richard	C-516-M	Stephen Warren
Brasso, Rebecka	B-034-E/M	Steven D Emslie
Brault, Emily	B-389-O/P	Rebecca Dickhut
Brem, Christoph	A-379-S	John Carlstrom
Brennan, Sean	G-058-M	
Brisbourne, Alexander	T-299-M	Timothy Parker
Broach, Kyle	G-093-M	Samuel Bowser
Bromley, Gordon	I-414-M	Brenda Hall
Brunk, Michael	G-078-M	Robert Kemerait
Buchanan, David	G-496-M	Edith Taylor
Buchinger, Nicholas	A-333-S	Francis Halzen

Buckelew, Stacey	B-044-E	
Buffen, Aron	I-477-M	Kendrick Taylor
Buitendyk, Willem	B-017-M	Randall Davis
Buitink, Stijn	A-333-S	Francis Halzen
Burgener, Landon	I-158-M	Summer Rupper
Burnett, David	B-200-M	John Oliver
Burns, Jennifer	B-232-M	Daniel Costa
Burton, Timothy	G-097-M	Michael Brown
Byrd, Don	T-396-M	Curt Szuberla
Caldwell, T. Grant	G-494-M	
Cameron, Raymond	G-098-M	Donald Blankenship
Cameron, Richard	G-098-M	Donald Blankenship
Campbell, Patrick	O-131-M	Terry Deshler
Campbell, Sara	G-499-M	Kathy Licht
Campbell, Seth	I-156-M	Gregory Balco
Cardman, Zena	B-045-L/P	
Cardonne, Alain	O-360-M	Florence Rabier
Carlson, John	B-044-E	
Carns, Regina	C-516-M	Stephen Warren
Carpenter, Chad	A-333-S	Francis Halzen
Carroll, Dustin	G-049-M	Frank Rack
Cary, Craig	B-462-M	John Barrett
Cassidy, Patrick	T-350-M	
Cathey, Henry	A-145-M	Bill Stepp
Cazalet, Mathieu	O-360-M	Florence Rabier
Challener, Roberta	B-002-O	Richard Aronson
Chambert, Thierry	B-009-M	Robert Garrott
Chaplin, Gerard	O-313-N	Teresa Chereskin
Chin, Yu-Ping	B-046-M	Christine Foreman
Chiuchiolo, Amy	B-422-M	John Priscu

Christianson, Knut	C-520-M	Sridhar Anandakrishnan
Christy, Brian	A-333-S	Francis Halzen
Chu, Xinzhao	A-130-M	Xinzhao Chu
Clabuesch, Stephen	G-093-M	Samuel Bowser
Clarke, Andrew	O-257-S	James Butler
Clarke, Julia	G-170-E	Ross MacPhee
Coats, Larry	B-034-E/M	Steven D Emslie
Cocquerez, Philippe	O-360-M	Florence Rabier
Coleman, Kaycee	B-019-L/P	
Coles, Katharine	W-485-P	Katharine Coles
Connell, Laurie	G-439-M	Hubert Staudigel
Connelly, Tara	B-388-N	Patricia Yager
Conway, Maurice	I-414-M	Brenda Hall
Cope, Joseph	B-020-L/P	Deborah Steinberg
Cotten, Rex	T-927-M	Kevin McCarthy
Courville, Zoe	T-940-M	Jennifer Mercer
Cox, Thomas	I-477-M	Kendrick Taylor
Criscitiello, Alison	I-157-M	Ian Joughin
Crisp, Steven	B-421-M	
Culley, Alexander	B-239-P	Grieg Steward
Cullis, James	B-421-M	
Currie, Philip	G-495-M	William Hammer
Curtis, Aaron	G-081-M	Phillip Kyle
Dadic, Ruzica	C-516-M	Stephen Warren
Dagit, Rosemary	B-044-E	
Dahnert, Kristina	T-350-M	
Daniels, William	B-045-L/P	
Danis, Francois	O-360-M	Florence Rabier
Danninger, Matthias	A-333-S	Francis Halzen
Das, Sarah	I-157-M	Ian Joughin
Davidson, Seth	B-421-M	

Davila, Alfonso	B-302-M	Christopher McKay
Davis, Georgina	B-017-M	Randall Davis
Davis, Ian	B-017-M	Randall Davis
Davis, Richard	G-439-M	Hubert Staudigel
Dayton, Paul	B-200-M	John Oliver
de Haan, Tijmen	A-379-S	John Carlstrom
Decombeix, Anne-Laure	G-496-M	Edith Taylor
Descamps, Freija	A-333-S	Francis Halzen
Deshpande, Kshitija	A-106-M	
DeVoe, Jesse	B-009-M	Robert Garrott
Di Liberto, Luca	O-131-M	Terry Deshler
DiazVelez, Juan Carlos	A-333-S	Francis Halzen
Dickson, Jay	G-294-M	Allan Ashworth
Dierckxsens, Mark	A-333-S	Francis Halzen
Dinniman, Michael	B-047-M/N	Walker Smith
Disterhoft, Patrick	O-257-S	James Butler
Donohue, Kathleen	O-313-N	Teresa Chereskin
Dowell, Charles	A-149-S	Clement Pryke
Dreyer, Jens	A-333-S	Francis Halzen
Dreyer, Tanya	G-503-M	John Goodge
Ducklow, Kelsey	B-013-L/P	Bill Fraser
Dugan, Hilary	B-208-M	Peter Doran
Dugger, Katie	B-031-M	David Ainley
Duling, Dennis	A-333-S	Francis Halzen
Dunbar, Nelia	G-081-M	Phillip Kyle
Dunphy-Daly, Meagan		Douglas P Nowacek
DuVernois, Michael	A-107-S	Albrecht Karle
Ebihara, Yusuke	A-111-M/S	
Elcheikh, Alan	A-333-S	Francis Halzen
Elhady, Yosef	G-098-M	Donald Blankenship
Elliott, Christopher	A-333-S	Francis Halzen

Ellis, Clayton	T-927-M	Kevin McCarthy
Emberly, Dean	G-098-M	Donald Blankenship
Emery, Kevin	G-097-M	Michael Brown
Emmons, Stephen	B-302-M	Christopher McKay
Eraud, Ludovic	A-137-M	Eun-Suk Seo
Escapa, Ignacio	G-496-M	Edith Taylor
Escher, Sharon	O-313-N	Teresa Chereskin
Esswein, Katherine	B-388-N	Patricia Yager
Eveland, Jeffery	B-023-M	John Barrett
Evgeny, Danilevich	A-137-M	Eun-Suk Seo
Fagan, William	B-044-E	
Fairbrother, Debora	A-145-M	Bill Stepp
Fanning, Christopher	G-503-M	John Goodge
Farrell, Edward	B-017-M	Randall Davis
Farrer, Jessica	B-009-M	Robert Garrott
Farry, Shawn	B-009-M	Robert Garrott
Farry, Shawn	B-013-L/P	Bill Fraser
Fay, Scott	B-303-N	Robert Sanders
Fegyveresi, John	I-477-M	Kendrick Taylor
Ferris, David	T-350-M	
Feucht, Daniel	G-494-M	
Field, Christopher	A-145-M	Bill Stepp
Filimonov, Kirill	A-333-S	Francis Halzen
Finley, Chad	A-333-S	Francis Halzen
Firing, Eric	O-317-L/N	
Firing, Yvonne	O-313-N	Teresa Chereskin
Fisher, Jennifer	B-200-M	John Oliver
Fissel, Laura	A-147-M	Mark Devlin
Fitzpatrick, Melanie	C-516-M	Stephen Warren
Flood, Timothy	G-499-M	Kathy Licht

Foley, Daniel	G-415-M	Edmund Stump
Fong, Weichun	A-130-M	Xinzhao Chu
Fox, Brendan	A-107-S	Albrecht Karle
Franke, Robert	A-333-S	Francis Halzen
Frazier, Curtis	A-145-M	Bill Stepp
Frechette, Jedediah	G-081-M	Phillip Kyle
Frederick, Bruce	G-098-M	Donald Blankenship
Freeburg, Eric Wilcox		Douglas P Nowacek
Friedlaender, Ari		Douglas P Nowacek
Fritsen, Christian	B-208-M	Peter Doran
Fudge, Tyler	I-477-M	Kendrick Taylor
Fuiman, Lee	B-017-M	Randall Davis
Funkey, Carolina	B-020-L/P	Deborah Steinberg
Gaisser, Thomas	A-333-S	Francis Halzen
Gandilo, Natalie	A-147-M	Mark Devlin
Gardner, Chester	A-130-M	Xinzhao Chu
Garzio, Michael	B-019-L/P	
Gast, Rebecca	B-303-N	Robert Sanders
Gebhard, Mark		
Gelot, Philippe	O-360-M	Florence Rabier
Gennaro, Joseph		
Geske, Matt		
Gibson, Christopher	T-350-M	
Gibson, Dar	A-333-S	Francis Halzen
Giusti, Collin	G-501-M	Jaakko Putkonen
Gladish, Carl	C-407-M	
Glazer, Brian	B-208-M	Peter Doran
Glenday, Peter	B-208-M	Peter Doran
Goetz, Kim	B-232-M	Daniel Costa
Goldbogen, Jeremy	B-197-M	
Gooseff, Michael	B-023-M	John Barrett

Gorham, Peter	A-107-S	Albrecht Karle
Graf, Kevin	A-112-M	
Grant, Evan	B-044-E	
Green, A. Marie	G-494-M	
Greenbaum, Jamin	G-098-M	Donald Blankenship
Gregg, Gerald	A-145-M	Bill Stepp
Guerrero, Raul	O-274-N	Stanley S Jacobs
Guida, Stephanie	B-383-M	
Gulbranson, Erik	G-496-M	Edith Taylor
Gusmeroli, Alessio	I-166-M	Erin Pettit
Hagedorn, Birgit	G-121-M	Ronald Sletten
Hagstrom, Emil	A-333-S	Francis Halzen
Haldeman, Clinton	O-216-M/N	Josh Kohut
Halliday, Elizabeth	B-303-N	Robert Sanders
Halpin, Patrick		Douglas P Nowacek
Ham, Tom	A-333-S	Francis Halzen
Hamilton, Gordon	I-351-M	Leigh Stearns
Han, Ji Hye	A-137-M	Eun-Suk Seo
Hannaford, Terry	A-333-S	Francis Halzen
Hanson, Kael	A-107-S	Albrecht Karle
Harmon, Russell	B-420-M	W. Berry Lyons
Harper, Shawn	G-093-M	Samuel Bowser
Haskins, Tina	B-388-N	Patricia Yager
Haugen, James	A-333-S	Francis Halzen
Hawes, Ian	G-441-M	Dale Andersen
Head, James	G-294-M	Allan Ashworth
Heckler, Greg	T-966-M	Mike Comberiate
Heldmann, Jennifer	B-302-M	Christopher McKay
Helmericks, Jay	T-396-M	Curt Szuberla
Hernandez, Gonzalo	A-110-M/S	Gonzalo Hernandez
Herried, Bradley	T-434-M	

Higgins, John	I-349-M	Andrei Kurbatov
Hill, Gary	A-333-S	Francis Halzen
Hillbun, Kelly	G-436-E	Joseph Kirschvink
Hoffman, Kara	A-333-S	Francis Halzen
Hollibaugh-Baker, David	G-440-M	Michael Wyatt
Holt, John	G-098-M	Donald Blankenship
Hood, Charles	W-223-M	Charles Hood
Horgan, Huw	C-520-M	Sridhar Anandakrishnan
Hosticka, Bouvard	T-998-P	Laura R Comes
Hrubes, James	A-379-S	John Carlstrom
Huang, Kuan	B-045-L/P	
Huckstadt, Luis	B-232-M	Daniel Costa
Hudek, Joseph	B-426-M	Peter Doran
Hulett, Samuel	G-497-M	David Elliot
Hulett, Samuel	G-497-M	David Elliot
Hultqvist, Klas	A-333-S	Francis Halzen
Hummon, Julia	O-317-L/N	
Humphrey, Jim	A-145-M	Bill Stepp
Huntley, Peter	A-379-S	John Carlstrom
Hutchings, Thomas	A-333-S	Francis Halzen
Hutchinson, Jason	G-078-M	Robert Kemerait
Huttenlocker, Adam	G-495-M	William Hammer
Huybers, Kathleen	I-156-M	Gregory Balco
Iacovino, Kayla	G-081-M	Phillip Kyle
Iglesias-Rodriguez, Debora	B-019-L/P	
Ilanko, Tehnuka	G-081-M	Phillip Kyle
Isbell, John	G-497-M	David Elliot
Isbell, John	G-497-M	David Elliot
Jacobel, Robert	C-520-M	Sridhar Anandakrishnan
Jacobsen, John	A-333-S	Francis Halzen

Janches, Diego	A-113-E	David Fritts
Jayred, Michael	T-350-M	
Jellison, Robert	B-114-L	James Hollibaugh
Jin, George	A-336-P	Umran Inan
Jiracek, George	G-494-M	
Johnson, Bradley	A-149-S	Clement Pryke
Johnson, Jay	T-350-M	
Jones, Laura	G-081-M	Phillip Kyle
José Luis, Rodríguez	I-077-E	Konrad Steffen
Juneau, Jill	A-145-M	Bill Stepp
Jungblut, Anne	G-441-M	Dale Andersen
Kaeli, Jeffrey	B-002-O	Richard Aronson
Kaiser, Henry	B-043-M	
Kalin, Jonas	A-333-S	Francis Halzen
Kalnajs, Lars	O-324-M	Linnea Avallone
Kambarn, William	T-927-M	Kevin McCarthy
Kampuis, Benjamin	B-208-M	Peter Doran
Kaplan, Michael	G-499-M	Kathy Licht
Kapsenberg, Lydia	B-134-M	Gretchen Hofmann
Karle, Albrecht	A-333-S	Francis Halzen
Karner, James	G-058-M	
Kawarasaki, Yuta	B-256-P	Richard Lee
Kay, Stephanie	I-181-M	Jeremy Winberry
Kelley, Amanda	B-308-M	Bradley Buckley
Kempf, Scott	G-098-M	Donald Blankenship
Kendall, Christopher	A-379-S	John Carlstrom
Kenig, Fabien	B-208-M	Peter Doran
Kennedy, Joseph	I-166-M	Erin Pettit
Ketchum, Nicholas	B-422-M	John Priscu
Kim, Ki Chun	A-137-M	Eun-Suk Seo
Kim, Stacy	B-200-M	John Oliver

King, Joseph	G-078-M	Robert Kemerait
Klein, Andrew	B-518-M	Mahlon Kennicutt
Klein, Erich	A-145-M	Bill Stepp
Klein, Jeffery	A-147-M	Mark Devlin
Klein, Spencer	A-127-M	Steven Barwick
Knuth, Margaret	T-940-M	Jennifer Mercer
Kobelkova, Alena	B-256-P	Richard Lee
Koch, Franklin	G-089-M/S	Patrick Shore
Koch, Zelinda	G-497-M	David Elliot
Koch, Zelinda	G-497-M	David Elliot
Koehler, James	T-350-M	
Koenig, Lora	I-158-M	Summer Rupper
Koffman, Toby	I-196-M	Brenda Hall
Kooyman, Gerald	B-197-M	
Koppelhus, Eva	G-495-M	William Hammer
Korhonen, Fawna	G-097-M	Michael Brown
Koutnik, Michelle	I-158-M	Summer Rupper
Kovac, John	A-149-S	Clement Pryke
Kovilakam, Mahesh	O-131-M	Terry Deshler
Krasberg, Mark	A-333-S	Francis Halzen
Kuhn, Ema	B-208-M	Peter Doran
Kulin, Robb	I-169-M	
Kuo, Chao-Lin	A-149-S	Clement Pryke
Laird, Claude	G-049-M	Frank Rack
Laitsch, Denise	A-333-S	Francis Halzen
Lamanna, Matthew	G-170-E	Ross MacPhee
Lamp, Jennifer	G-054-M	
Lampkin, Derrick	B-023-M	John Barrett
Lane, Melissa	G-057-M	
LaRue, Michelle	T-434-M	
Laundrie, Andrew	A-333-S	Francis Halzen

Lawson, Brian	T-396-M	Curt Szuberla
Lawson, Kathleen	T-396-M	Curt Szuberla
Lebar, Don	T-350-M	
Lee, Craig	B-047-M/N	Walker Smith
Lee, Moo Hyun	A-137-M	Eun-Suk Seo
Lee, Sang Eun	A-137-M	Eun-Suk Seo
Lee-Martin, Goeffrey	W-222-M	Morton Beebe
Lefebvre, Eric	I-166-M	Erin Pettit
Legg, Kenneth	B-045-L/P	
Leitch, Erik	A-379-S	John Carlstrom
Lescroel, Amelie	B-031-M	David Ainley
Leslie, Deb	B-420-M	W. Berry Lyons
Levy, Joseph	B-425-M	Andrew Fountain
Lidstrom, Sven	A-333-S	Francis Halzen
Limeburner, Richard	G-049-M	Frank Rack
Linnehan, Michael		Douglas P Nowacek
Linnehan, Michael		Douglas P Nowacek
Liu, Alan Z	A-129-S	Gulamabas Sivjee
Liu, Lu	G-121-M	Ronald Sletten
Liu, Xiao	B-047-M/N	Walker Smith
Lloyd, Andrew	G-079-M	
Lopez, Jean-Marc	O-360-M	Florence Rabier
Lowry, Kate	B-198-N	Anne-Carlijn Alderkamp
Lubchenco, Peggy	B-134-M	Gretchen Hofmann
Luek, Jenna	B-389-O/P	Rebecca Dickhut
Lueker, Martin	A-149-S	Clement Pryke
Luyendyk, Bruce	G-049-M	Frank Rack
Lynch, Heather	B-044-E	
Mackay, Sean	G-054-M	
Mackey, Tyler	G-441-M	Dale Andersen

Macon, Joseph	A-106-M	
Magee, William	G-079-M	
Mahacek, Paul	G-049-M	Frank Rack
Makovicky, Peter	G-495-M	William Hammer
Malinine, Alexandre	A-137-M	Eun-Suk Seo
Maresh, Jennifer	B-232-M	Daniel Costa
Marinova, Margarita	B-302-M	Christopher McKay
Maris, Virginie	G-494-M	
Marsh, Justin	A-145-M	Bill Stepp
Marshall, Greg	B-197-M	
Marshall, Greg		Douglas P Nowacek
Martin Jr, Joseph	O-399-N	Bruce Huber
Martin, Charles Lewis	O-363-M	Stephen Cohn
Martin, Christopher	A-356-S	Anna Moore
Maruyama, Reina	A-333-S	Francis Halzen
Massaro, Melanie	B-031-M	David Ainley
Masters, Otto	A-145-M	Bill Stepp
Mathews, Joshua	G-495-M	William Hammer
Matson, Paul	B-134-M	Gretchen Hofmann
Matt, Terry	A-333-S	Francis Halzen
Matthews, Tristan	A-147-M	Mark Devlin
Maxfield, Bonita	A-145-M	Bill Stepp
Mayne, Rhiannon	G-058-M	
Mazzocco, Melissa	B-393-L	
McBrearty, Rob	G-079-M	
McBrearty, Rob	G-079-M	
McCarthy, Michael	A-110-M/S	Gonzalo Hernandez
McCormick, William	A-333-S	Francis Halzen
McDonald, Birgitte	B-197-M	
McDowell, Ruth	B-022-P	Charles Amsler
McEwen, Donald	A-129-S	Gulamabas Sivjee

McEwen, Donald	A-129-S	Gulamabas Sivjee
McGrath, Daniel	I-077-E	Konrad Steffen
McIntosh, William	G-081-M	Phillip Kyle
McKenney, Glenn	I-196-M	Brenda Hall
McPhee, Miles	C-525-M	
Meade, Patrick	A-333-S	Francis Halzen
Medley, Brooke	I-157-M	Ian Joughin
Meekins, Daniel	T-966-M	Mike Comberiate
Mehl, Jared	A-379-S	John Carlstrom
Melville, Bob	A-111-M/S	
Melville, Bob	A-112-M	
Meng, Jin	G-170-E	Ross MacPhee
Merck, Martin	A-333-S	Francis Halzen
Meyer, Stephan	A-379-S	John Carlstrom
Middell, Eike	A-333-S	Francis Halzen
Miege, Clement	I-158-M	Summer Rupper
Miki, Christian	A-107-S	Albrecht Karle
Miles, Travis	B-019-L/P	
Millan, Robyn	A-145-M	Bill Stepp
Mills, Matthew	B-244-O	Kevin Arrigo
Minois, Marc	O-360-M	Florence Rabier
Moline, Mark Alan	B-391-P	Mark Alan Moline
Moncelsi, Lorenzo	A-147-M	Mark Devlin
Moore, Curtis	A-333-S	Francis Halzen
Moran, Susan	Y-609-P	Christopher Neill
Morgan, Daniel	G-501-M	Jaakko Putkonen
Morgan, Nicholas	O-257-S	James Butler
Morgan-Kiss, Rachael	B-422-M	John Priscu
Mortensen, Nicolai	T-350-M	
Morton, Elizabeth	T-350-M	
Moussalam, Yves	G-081-M	Phillip Kyle

Mueller, Jaclyn	B-239-P	Grieg Steward
Mueller, Thomas	B-044-E	
Murray, Alison	B-208-M	Peter Doran
Murray, Katherine	G-093-M	Samuel Bowser
Murray, Timothy	A-333-S	Francis Halzen
Musser, Jim		
Musser, Jim		
Mustard, John	G-440-M	Michael Wyatt
Na, Gowoon	A-137-M	Eun-Suk Seo
Nam, Koo Hyun	A-137-M	Eun-Suk Seo
Neill, Richard	W-222-M	Morton Beebe
Neilsen, Uffe	B-424-M	Diana Wall
Netterfield, Barth	A-147-M	Mark Devlin
Newcomb, Matthew	A-333-S	Francis Halzen
Ng, Gregory	G-098-M	Donald Blankenship
Nguyen, Hien	A-149-S	Clement Pryke
Nichols, Erik	A-379-S	John Carlstrom
Niebuhr, Spencer	T-434-M	
Nikrad, Mrinalini	B-026-P	Matthew Cottrell
Norman, Shaun	G-058-M	
Novak, Giles	A-147-M	Mark Devlin
Nowacek, Doug		Douglas P Nowacek
Nunn, Richard	I-478-M	Geoffrey Hargreaves
Nutter, Scott		
Nylen, Thomas	B-425-M	Andrew Fountain
O'Connor, James	B-425-M	Andrew Fountain
O'Connor, Kevin	B-200-M	John Oliver
O'Connor, Patrick	G-170-E	Ross MacPhee
Obryk, Maciej	B-426-M	Peter Doran
Okal, Marianne	T-295-M	Bjorn Johns

Oliver, Mathew	B-019-L/P	
Oppenheimer, Clive	G-081-M	Phillip Kyle
Orr, Gerald	A-145-M	Bill Stepp
Osborne, Denver	B-200-M	John Oliver
Ostrom, William	G-049-M	Frank Rack
Palmer, Terence	B-518-M	Mahlon Kennicutt
Parris, Richard	A-369-M	William Bristow
Pascale, Enzo	A-147-M	Mark Devlin
Pasqualone, Annamarie	B-383-M	
Patterson, Michael	A-333-S	Francis Halzen
Patterson-Fraser, Donna	B-013-L/P	Bill Fraser
Paulsen, Gale	B-302-M	Christopher McKay
Pautet, Pierre-Dominique	A-119-S	Michael Taylor
Pearson, Linnea	B-232-M	Daniel Costa
Peavey, Lindsey		Douglas P Nowacek
Peecook, Brandon	G-495-M	William Hammer
Pennycook, Jean	B-031-M	David Ainley
Pepper, James	A-333-S	Francis Halzen
Perez Lara, Juan	A-145-M	Bill Stepp
Petrenko, Vasilii	I-169-M	
Pettit, Joe	T-295-M	Bjorn Johns
Pflueger, Jeff	W-222-M	Morton Beebe
Pierce, David	A-145-M	Bill Stepp
Piqueux, Sylvain	G-440-M	Michael Wyatt
Piwowarski, Thomas	A-333-S	Francis Halzen
Piwowarski, Thomas	A-333-S	Francis Halzen
Poage, Michael	B-423-M	Ross Virginia
Polishinski, Steven	T-350-M	
Polito, Michael	B-034-E/M	Steven D Emslie
Polk, Jeremy	I-477-M	Kendrick Taylor
Pollard, Anne	B-031-M	David Ainley

Pollard, Wayne	B-302-M	Christopher McKay
Ponganis, Katherine	B-197-M	
Porter, Claire	T-434-M	
Porzig, Elizabeth	B-031-M	David Ainley
Post, Anton	B-388-N	Patricia Yager
Potts, Nicholas	O-363-M	Stephen Cohn
Prado, David	O-269-O	Stephen Ackley
Price, Lori	B-020-L/P	Deborah Steinberg
Price, Mary Lynn	B-009-M	Robert Garrott
Qiu, Jin Qiu	Y-609-P	Christopher Neill
Queste, Bastien	B-047-M/N	Walker Smith
Rand, John	T-940-M	Jennifer Mercer
Randall-Goodwin, Evan	B-388-N	Patricia Yager
Ratzlaff, Ken	A-107-S	Albrecht Karle
Read, Andrew		Douglas P Nowacek
Reguero, Marcelo	G-170-E	Ross MacPhee
Ribordy, Mathieu	A-333-S	Francis Halzen
Riccardo, Geletti	C-520-M	Sridhar Anandakrishnan
Richards, John	A-333-S	Francis Halzen
Richards, Melissa	O-283-M/S	
Richter, Thomas	G-098-M	Donald Blankenship
Riehl, Kevin	G-098-M	Donald Blankenship
Ritz, Catherine	I-166-M	Erin Pettit
Rivest, Emily	B-134-M	Gretchen Hofmann
Robbins, Ian C.	B-391-P	Mark Alan Moline
Roberts, Graham	G-049-M	Frank Rack
Roberts, J.R.	G-079-M	
Roberts, Jason	G-098-M	Donald Blankenship
Roberts, Michael	G-499-M	Kathy Licht
Robinson, John	T-350-M	
Robinson, Patrick	B-232-M	Daniel Costa

Roderick, Brian	O-313-N	Teresa Chereskin
Rogalsky, Emily	B-388-N	Patricia Yager
Rohde, Melissa	I-349-M	Andrei Kurbatov
Roop, Heidi	I-477-M	Kendrick Taylor
Rose, Paul	I-169-M	
Ross, Ronald	B-031-M	David Ainley
Rotella, Jay	B-009-M	Robert Garrott
Roth, James	A-333-S	Francis Halzen
Ruck, Kate	B-020-L/P	Deborah Steinberg
Rush, Kurt	T-966-M	Mike Comberiate
Ruzybayev, Bakhtiyar	A-333-S	Francis Halzen
Ryberg, Patricia	G-496-M	Edith Taylor
Saba, Grace	B-019-L/P	
Saenz, Benjamin	B-244-O	Kevin Arrigo
Salvatore, Mark	G-440-M	Michael Wyatt
San Clements, Michael	B-046-M	Christine Foreman
Sander, Bettina	B-200-M	John Oliver
Sandstrom, Perry	A-333-S	Francis Halzen
Satterwhite, William	G-057-M	
Saxer, Iris	B-044-E	
Scambos, Ted	C-514-E	Theodore Scambos
Schaefer, Hinrich	I-169-M	
Schatto, Kai	A-333-S	Francis Halzen
Schmidt, Britney	G-098-M	Donald Blankenship
Schmitt, William	T-966-M	Mike Comberiate
Schoenrock, Kathryn	B-022-P	Charles Amsler
Schram, Julie	B-022-P	Charles Amsler
Schroeder, Dustin	G-098-M	Donald Blankenship
Schroeder, Walter Scott	G-090-S	
Schubnell, Michael		

Schukraft, Anne	A-333-S	Francis Halzen
Schultz, Christine	O-257-S	James Butler
Schutt, John	G-058-M	
Schvarcz, Christopher	B-239-P	Grieg Steward
Schwarz, Robert	A-149-S	Clement Pryke
Schwendemann, Andrew	G-496-M	Edith Taylor
Seguret, Marie	B-019-L/P	
Serbet, Rudolph	G-496-M	Edith Taylor
Severmann, Silke	B-388-N	Patricia Yager
Sewell, Mary	B-134-M	Gretchen Hofmann
Shaevitz, Michael	A-333-S	Francis Halzen
Sheehy, Chris	A-149-S	Clement Pryke
Shero, Michelle	B-232-M	Daniel Costa
Sherrell, Robert	B-388-N	Patricia Yager
Shin, Cecilia	G-093-M	Samuel Bowser
Shirey, Katherine	A-333-S	Francis Halzen
Shoop, Sally	T-940-M	Jennifer Mercer
Shore, Patrick	G-079-M	
Siddoway, Christine	G-097-M	Michael Brown
Sidor, Christian	G-495-M	William Hammer
Sieger, Danielle	G-496-M	Edith Taylor
Simmons, Christopher	I-156-M	Gregory Balco
Sines, Karie	B-388-N	Patricia Yager
Sinkola, Nickolas	T-927-M	Kevin McCarthy
Sipler, Rachel	B-388-N	Patricia Yager
Skok, John	G-440-M	Michael Wyatt
Sleadd, Isaac	B-308-M	Bradley Buckley
Slotznick, Sarah	G-436-E	Joseph Kirschvink
Smalley, Bob	G-079-M	
Smith, Alexander	G-294-M	Allan Ashworth
Smith, Alexander	G-502-M	Allan Ashworth

Smith, Casey		
Smith, Heidi	B-046-M	Christine Foreman
Smith, John	A-130-M	Xinzhao Chu
Smith, Joy		Douglas P Nowacek
Smith, Nathan	G-495-M	William Hammer
Smith, Roger	G-495-M	William Hammer
Smith, Stanley	O-361-M	Terry Deshler
Smith, Stanley	O-131-M	Terry Deshler
Smoot, Caitlin	B-020-L/P	Deborah Steinberg
Soderstrom, Wilhelm	A-333-S	Francis Halzen
Sokol, Eric	B-462-M	John Barrett
Soler Pulido, Juan	A-147-M	Mark Devlin
Sosa Sesma, Sergio	O-360-M	Florence Rabier
Soundarapandian, Karthik	A-333-S	Francis Halzen
Souney Jr., Joseph	I-477-M	Kendrick Taylor
Sousa, James	O-313-N	Teresa Chereskin
Spaleta, Jeff	A-369-M	William Bristow
Spaulding, Nicole	I-349-M	Andrei Kurbatov
Spector, Perry	I-414-M	Brenda Hall
Stadnik, Svetlana	G-098-M	Donald Blankenship
Stamieszkin, Karen	B-393-L	
Stammerjohn, Sharon	B-388-N	Patricia Yager
Stan, Matthew	I-477-M	Kendrick Taylor
Staniszewski, Zachary	A-149-S	Clement Pryke
Stanton, Timothy	C-525-M	
Stauffer, Glenn	B-009-M	Robert Garrott
Stefano, Picotti	C-520-M	Sridhar Anandakrishnan
Stewart, Brent	O-269-O	Stephen Ackley
Stewart, Sebastian	O-257-S	James Butler
Stezelberger, Thorsten	A-127-M	Steven Barwick
Stillinger, Andrew	A-112-M	

Stimpert, Alison		Douglas P Nowacek
Stock, Benjamin	A-333-S	Francis Halzen
Stockel, James	C-525-M	
Stodt, John	G-494-M	
Stokes, Sarah	A-149-S	Clement Pryke
Story, Kyle	A-379-S	John Carlstrom
Stracener, Bill	A-145-M	Bill Stepp
Stubbs, Christopher	G-049-M	Frank Rack
Stump, Edmund	G-415-M	Edmund Stump
Stutz, James	G-079-M	
Sullivan, Greg	A-333-S	Francis Halzen
Sumner, Dawn	G-441-M	Dale Andersen
Sun, Jessica	A-118-S	
Sweet, Stephen	B-518-M	Mahlon Kennicutt
Tarle, Greg		
Taylor, Dylan	G-503-M	John Goodge
Taylor, Michael	A-119-S	Michael Taylor
Taylor, Thomas	G-496-M	Edith Taylor
Tebo, Bradley	G-439-M	Hubert Staudigel
Teets, Nicholas	B-256-P	Richard Lee
Ten Kate, Inge	G-058-M	
Thom, Jonathan	O-283-M/S	
Thoma, Mark	A-333-S	Francis Halzen
Thomas, Nick	A-147-M	Mark Devlin
Thomas, Thomas	A-145-M	Bill Stepp
Thometz, Nicole	B-017-M	Randall Davis
Tilav, Serap	A-333-S	Francis Halzen
Tilbury, Graham	A-333-S	Francis Halzen
Tobin, Thomas	G-436-E	Joseph Kirschvink
Todd, Claire	I-156-M	Gregory Balco

Tolan, James	A-149-S	Clement Pryke
Tolar, Bradley	B-114-L	James Hollibaugh
Tortell, Philippe	B-244-O	Kevin Arrigo
Tracey, Karen	O-313-N	Teresa Chereskin
Trautmann, Eric	T-940-M	Jennifer Mercer
Travers, Marc	B-013-L/P	Bill Fraser
Truch, Matt	A-147-M	Mark Devlin
Truffer, Martin	C-514-E	Theodore Scambos
Trusel, Luke	I-157-M	Ian Joughin
Tsanev, Vitchko	G-081-M	Phillip Kyle
Tyson, Reny		Douglas P Nowacek
Tytgat, Guy	G-089-M/S	Patrick Shore
Urasky, Lesley	I-414-M	Brenda Hall
Vaage, Selina		Douglas P Nowacek
Valdivia, Jean	O-360-M	Florence Rabier
Van Dijken, Gerrit	B-198-N	Anne-Carlijn Alderkamp
Van Horn, David	B-023-M	John Barrett
Vanderlinde, Keith	A-379-S	John Carlstrom
VanTreese, Jerry	B-428-M	
Vaudrin, Cody	A-284-S	Scott Palo
Venema, Bryan	A-110-M/S	Gonzalo Hernandez
Verhulst, Kristal	I-477-M	Kendrick Taylor
Vermeulen, Michael	I-156-M	Gregory Balco
Vervoort, Jeffrey	G-503-M	John Goodge
Vinbladh, Jimmy	A-333-S	Francis Halzen
Voigt, Don	I-477-M	Kendrick Taylor
Vos, Stephanie	B-002-O	Richard Aronson
Waara, Frida	W-224-M	John Major
Wagner, Bernd	B-208-M	Peter Doran
Wakely, Scott		
Waldher, Kara	A-333-S	Francis Halzen

Walker, Beverly	G-093-M	Samuel Bowser
Walker, Christopher	A-364-S	Craig Kulesa
Walker, Kenneth	A-333-S	Francis Halzen
Walker, Sally	G-093-M	Samuel Bowser
Walter, Jake	C-520-M	Sridhar Anandakrishnan
Waples, Danielle		Douglas P Nowacek
Ward, Peter	G-436-E	Joseph Kirschvink
Ware, Colin		Douglas P Nowacek
Warren, Stephen	C-516-M	Stephen Warren
Waszkiewicz, Michael	I-349-M	Andrei Kurbatov
Watt, Andrew	A-132-P	Qian Wu
Watts, Randolph	O-313-N	Teresa Chereskin
Weaver, Mitch	B-421-M	
Wei-Haas, Maya	B-046-M	Christine Foreman
Weissling, Blake	O-269-O	Stephen Ackley
Welch, Kathy	B-420-M	W. Berry Lyons
Wendell, Edward	T-927-M	Kevin McCarthy
Wendorff, Andrew	A-107-S	Albrecht Karle
Westad, Holly	G-501-M	Jaakko Putkonen
Westgate, Andrew		Douglas P Nowacek
Weyer, Frank	B-002-O	Richard Aronson
Whelan, Sean	G-049-M	Frank Rack
White, Seth	G-079-M	
Whiteside, Robin	A-145-M	Bill Stepp
Wiebe, Klaus	A-333-S	Francis Halzen
Wilhelm, Kelly	G-239-E	James Bockheim
Williams, Bifford	A-284-S	Scott Palo
Williams, Jason	B-518-M	Mahlon Kennicutt
Williams, Terrie	B-017-M	Randall Davis
Williamson, Ross	A-379-S	John Carlstrom
Wilson, Douglas	G-049-M	Frank Rack

Wilson, Philip	A-149-S	Clement Pryke
Wilson, Stephanie	B-388-N	Patricia Yager
Winski, Dominic	I-477-M	Kendrick Taylor
Wipperfurth, Richard	A-333-S	Francis Halzen
Wisniewski, Paul	A-333-S	Francis Halzen
Wissink, Gregg	G-054-M	
Withoff, David	T-396-M	Curt Szuberla
Wong, Chin-Lin	A-149-S	Clement Pryke
Wong, Gifford	I-477-M	Kendrick Taylor
Woschnagg, Kurt	A-333-S	Francis Halzen
Wotkyns, Anne-Marie	B-244-O	Kevin Arrigo
Woznica, Edgar	B-045-L/P	
Wray, Donald	A-333-S	Francis Halzen
Wright, Andrew	G-098-M	Donald Blankenship
Wurtzell, Katharine	B-393-L	
Xu, Chen	A-333-S	Francis Halzen
Xu, Donglian	A-333-S	Francis Halzen
Yakymchuk, Chris	G-097-M	Michael Brown
Yau, Audrey	G-054-M	
Young, Duncan	G-098-M	Donald Blankenship
Young, Seth	B-208-M	Peter Doran
Yu, Pauline	B-134-M	Gretchen Hofmann
Zacny, Kris	B-302-M	Christopher McKay
Zarzhitsky, Pavel	A-333-S	Francis Halzen
Zavanelli, Mary	B-232-M	Daniel Costa
Zeigler, Ryan	G-058-M	
Zernick, Michael	A-333-S	Francis Halzen
Zhou, Meng		Douglas P Nowacek
Zimmerman, Melany	A-333-S	Francis Halzen
Zipkin, Elise	B-044-E	

Zook, Bob	G-049-M	Frank Rack

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Principal Investigator	Event No.	Project Title
Barwick, Steven	A-127-M	Development of station technology for the ARIANNA ultra-high energy neutrino detector
Besson, Dave	A-123-S	Neutrino Array Radio Calibration
Bieber, John	A-120-M	Cosmic ray observations at McMurdo Station
Bristow, William	A-369-M	McMurdo and South Pole SuperDARN: Investigation of the ionospheric dynamics and magnetosphere-ionosphere coupling in Antarctica
Carlstrom, John	A-379-S	Cosmological Research with the 10-meter South Pole Telescope
Carlstrom, John	A-370-S	Science Coordination Office for Astrophysical Research in Antarctica (SCOARA-II)
Chu, Xinzhao	A-130-M	Lidar Investigation of middle and upper atmosphere temperature, composition, chemistry, and dynamics at McMurdo, Antarctica
Devlin, Mark	A-147-M	Balloon-borne Large Aperture Sub-millimeter Telescope (BLAST-POL)
Engebretson, Mark	A-102-M/S	Studies of solar wind - Magnetosphere interactions using observations of ULF waves at an extensive ground array at high latitudes
Evenson, Paul	A-120-M	Cosmic ray observations at McMurdo Station
Fritts, David	A-113-E	Radar measurements of large- and small-scale dynamics of the MLT on the Antarctic Peninsula with an existing MF radar and a new generation meteor radar at British and Brazilian bases

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Halzen, Francis	A-333-S	IceCube operations and maintenance
Hernandez, Gonzalo	A-110-M/S	Austral high-latitude atmospheric dynamics
Inan, Umran	A-336-P	ELF/VLF observation of whistler-mode waves, lightning discharge, and gamma-ray events from Palmer Station
Inan, Umran	A-327-N	ELF/VLF observation in the southern Pacific Ocean
Inan, Umran	A-108-M/S	A VLF beacon transmitter at South Pole
Karle, Albrecht	A-107-S	Collaborative Research: MRI-R2 instrument development of the Askaryan Radio Array, a large-scale radio Cherenkov neutrino detector at the South Pole
Kulesa, Craig	A-364-S	High Elevation Antarctic Terahertz (HEAT) telescopes for Dome A and Ridge A
LaBelle, James	A-128-S	Collaborative Research: Multi-instrument studies of auroral plasma radiation
Maruyama, Reina	A-334-S	Feasibility study for a dark matter search co-located with the IceCube detector in the Antarctic ice
Mende, Stephen	A-104-S	Antarctic auroral imaging
Moore, Anna	A-356-S	Analysis of the data from the Gattini Antarctic camera network
Moore, Robert	A-109-M/P/S	Collaborative Research: Antarctic ELF/VLF observations of lightning and lightning-induced electron precipitation
Palo, Scott	A-284-S	Collaborative study of the Antarctic mesosphere and lower thermosphere
Pryke, Clement	A-149-S	Collaborative Research: BICEP2 and SPUD - A search for inflation with degree-scale polarimetry from the South Pole
Seo, Eun-Suk	A-137-M	Cosmic Ray Energetics And Mass (CREAM)

Sivjee, Gulamabas	A-129-S	Observation of upper-atmospheric energetics, dynamics, and long-term variations over South Pole Station
Stepp, Bill	A-145-M	NASA Long Duration Balloon (LDB) support program
Taylor, Michael	A-119-S	Investigating wave-driven mesospheric dynamics over South Pole using an advanced mesospheric temperature mapper
Wu, Qian	A-132-P	Thermospheric neutral wind observation in the Antarctica Peninsula

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Ainley, David	B-031-M	Adelie Penguin response to climate change at the individual, colony and metapopulation levels
Alderkamp, Anne-Carlijn	B-198-N	ASPIRE: Amundsen Sea Polynya International Research Expedition
Amsler, Charles	B-022-P	Collaborative Research: The chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula
Aronson, Richard	B-002-O	Collaborative Research: Climate change and predatory invasion of the Antarctic marine environment
Arrigo, Kevin	B-244-O	Sea ice ecology in the Amundsen and Eastern Ross Sea
Barrett, John	B-462-M	Collaborative Research: Controls over the spatial distribution and activity of microbial communities in Antarctic soils
Barrett, John	B-023-M	Collaborative Research: The role of snow patches on the spatial distribution of soil microbial communities and biogeochemical cycling in the Antarctic Dry Valleys
Brum, Jennifer	B-319-P	Post-doctoral research fellowship
Buckley, Bradley	B-308-M	The cellular stress response in cold-adapted organisms: Building novel mechanistic links between heat stress, cell cycle arrest and apoptosis in Antarctic fishes.
Costa, Daniel	B-232-M	Collaborative Research: Weddell seals as autonomous sensors of the winter oceanography of the Ross Sea
Cottrell, Matthew	B-026-P	Photoheterotrophic microbes in the West Antarctic Peninsula marine

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		ecosystem
Davis, Randall	**B-017-M**	Collaborative Research: Hunting in darkness: Behavioral and energetic strategies of Weddell seals in winter
Dickhut, Rebecca	**B-389-O/P**	Collaborative Research: Persistent organic pollutants in the Antarctic marine food web: impact of climate change and insights into the feeding ecology of apex predators
Doran, Peter	**B-208-M**	Collaborative Research: Geochemistry and microbiology of the extreme aquatic enviornment in Lake Vida, East Antarctica
Doran, Peter	**B-426-M**	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program
Emslie, Steven	**B-034-E/M**	Stable isotope analyses of pygoscelid penguin remains from active and abandoned colonies in Antarctica
Foreman, Christine	**B-046-M**	The biogeochemical evolution of dissolved organic matter in a fluvial system on the Cotton Glacier, Antarctica
Fountain, Andrew	**B-425-M**	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valleys LTER program
Fraser, Bill	**B-013-L/P**	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, apex predator component
Garrott, Robert	**B-009-M**	The demographic consequences of environmental variability and individual heterogeneity in life-history tactics of a long-lived Antarctic marine predator
Hofmann, Gretchen	**B-134-M**	Ocean acidification: Integrated approaches to understanding effects on antarctic sea urchins, Sterechinus

		neumayeri
Hollibaugh, James	B-114-L	Ammonia oxidation versus heterotrophy in crenarchaeota populations from marine environments west of the Antarctic Peninsula
Kennicutt, Mahlon	B-518-M	Temporal variability in natural and anthropogenic disturbance of McMurdo Station
Lee, Richard	B-256-P	Role of dehydration and photoperiodism in preparing an Antarctic insect for the polar night
Lyons, W. Berry	B-420-M	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valleys LTER program
Martinson, Doug	B-021-L	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, physical oceanography component
McKay, Christopher	B-302-M	IceBite: An auger and sampling systems for ground ice on Mars
Moline, Mark	B-391-P	Real-Time characterization of Adélie penguin-foraging environment using an autonomous underwater vehicle
Oliver, John	B-200-M	LTREB: Decadal changes in Antarctic marine benthic ecosystems
Priscu, John	B-422-M	The Role of Resource Legacy on Contemporary Linkages Between Biodiversity and Ecosystem Processes in a Cold Desert Ecosystem: The McMurdo Dry Valley LTER Program
Sanders, Robert	B-303-N	Collaborative Research: Alternative nutritional strategies in Antarctic protists
Smith, Walker	B-047-M/N	Collaborative Research: Seasonal evolution of chemical and biological variability in the Ross Sea
Spain, Sharon (Rae)	B-429-M	Field sampling coordination and

		mathematical modelling of a hydrocarbon spill on the ice cover of Lake Fryxell, Antarctica
Steinberg, Deborah	**B-020-L/P**	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, zooplankton component
Steward, Grieg	**B-239-P**	Viral contributions to spring bloom dynamics in the Western Antarctic Peninsula
Virginia, Ross	**B-423-M**	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program
Wall, Diana	**B-424-M**	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program
Yager, Patricia	**B-388-N**	Collaborative Research: ASPIRE (Amundsen Sea polynya international research expedition)

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Andersen, Dale	G-441-M	Lake Joyce microbialites resubmittal
Ashworth, Allan	G-502-M	Neogene paleoecology of the Beardmore Glacier region
Ashworth, Allan	G-294-M	Collaborative Research: Integrating geomorphological and paleoecological studies to reconstruct Neogene environments of the Transantarctic Mountains
Blankenship, Donald	G-098-M	IPY Research: Investigating the cryospheric evolution of the central Antarctic plate (ICECAP)
Bockheim, James	G-239-E	Impact of recent climate warming on active-layer dynamics, permafrost, and soil properties on the western Antarctic Peninsula
Bowser, Samuel	G-093-M	Collaborative Research: Linking modern benthic communities and taphonomic processes to the stratigraphic record of Antarctic cores
Brown, Michael	G-097-M	Collaborative research: Polyphase orogenesis and crustal differentiation in West Antarctica
Elliot, David	G-497-M	Collaborative Research: Application of detrital zircon isotope characteristics and sandstone analysis of Beacon strata to the tectonic evolution of the Antarctic sector of Gondwana
Goodge, John	G-503-M	Age and composition of the East Antarctic Shield by granite and glacial proxy
Hammer, William	G-495-M	New research on the Mesozoic vertebrate faunas of the Beardmore Glacier Region, Antarctica

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Hasiotis, Stephen	G-498-M	Paleoenvironmental and paleoclimatic analysis of the Beacon Supergroup, Beardmore Glacier area, Central Transantarctic Mountains, Antarctica
Kemerait, Robert	G-078-M	Dry Valley seismic project
Kirschvink, Joseph	G-436-E	Collaborative Research: Upper Cretaceous-lower Paleocene strata from the James Ross Island region: Chemo-, Magneto-, and biomarker tests of intercontinental correlation and extinction hypotheses
Kyle, Phillip	G-081-M	Mount Erebus Volcano Observatory III (MEVO III): Conduit processes and surveillance
Lewis, Adam	G-502-M	Neogene paleoecology of the Beardmore Glacier region
Lewis, Adam	G-294-M	Collaborative Research: Integrating geomorphological and paleoecological studies to reconstruct Neogene environments of the Transantarctic Mountains
Licht, Kathy	G-499-M	Pleistocene East Antarctic ice sheet history as recorded in sediment provenance and chronology of high-elevation TAM moraines
MacPhee, Ross	G-170-E	Vertebrate paleontology of Livingston Island, South Shetlands, Antarctica
Miller, Molly	G-093-M	Collaborative Research: Linking modern benthic communities and taphonomic processes to the stratigraphic record of Antarctic cores
Putkonen, Jaakko	G-501-M	Systematic analysis of the stability and ages of soil surfaces in Transantarctic Mountains
Rack, Frank	G-049-M	ANDRILL Coulman High project: Investigating Antarctica's role in Cenozoic global environmental change: Phase 1 site survey
Shore, Patrick	G-089-M/S	Polenet East: An international seismological network for East Antarctica

Sletten, Ronald	G-121-M	Ground ice dynamics in hyperarid soils of the McMurdo Dry Valleys, Antarctica
Staudigel, Hubert	G-439-M	Collaborative research: Microbially mediated alteration of volcanic glass using McMurdo extreme environments as natural laboratories
Stump, Edmund	G-415-M	CTAM Chief Scientist
Taylor, Edith	G-496-M	Collaborative Research: Antarctic ecosystems across the Permian-Triassic boundary: Integrating paleobotany, sedimentology, and paleoecology
Wilson, Terry	G-049-M	ANDRILL Coulman High project: Investigating Antarctica's role in Cenozoic global environmental change: Phase 1 site survey
Wyatt, Michael	G-440-M	Orbital spectral mapping of surface compositions in the Antarctic Dry Valleys: regional distributions of secondary mineral-phases as climate indicators

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Principal Investigator ▼	Event No.	Project Title
Balco, Gregory	I-156-M	Collaborative Research: Last glacial maximum and deglaciation chronology for the Foundation Ice Stream and southeast Weddell Sea Embayment
Conway, Howard	I-157-M	IPY collaborative research: Constraining the mass balance deficit of the Amundsen Coast's glaciers
Conway, Howard	I-414-M	Collaborative Research: Constraints on the last Ross Sea Ice Sheet from glacial deposits in the Southern Transantarctic Mountains
Conway, Howard	I-209-M	Deglaciation of the Ross Sea Embayment - constraints from Roosevelt Island
Hall, Brenda	I-414-M	Collaborative Research: Constraints on the last Ross Sea Ice Sheet from glacial deposits in the Southern Transantarctic Mountains
Hall, Brenda	I-196-M	Sensitivity of the Antarctic Ice Sheet to global climate change over the last two glacial/interglacial cycles
Hargreaves, Geoffrey	I-478-M	National Ice Core Laboratory (NICL) core-handling and data recording
Joughin, Ian	I-157-M	IPY collaborative research: Constraining the mass balance deficit of the Amundsen Coast's glaciers
Kurbatov, Andrei	I-349-M	Collaborative Research: Exploring a 2 million-year-plus ice climate archive-Allan Hills blue ice area (2MBIA)
Pettit, Erin	I-166-M	The relationship between climate and ice rheology at Dome C, East Antarctica

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Rupper, Summer	I-158-M	Collaborative Research: Annual satellite era accumulation patterns over WAIS Divide: A study using shallow ice cores, near-surface radar and satellites
Stearns, Leigh	I-351-M	Collaborative Research: Byrd Glacier flow dynamics
Steffen, Konrad	I-077-E	IPY: Stability of Larsen C Ice Shelf in a warming climate
Taylor, Kendrick	I-477-M	WAIS Divide Science Coordination Office (SCO)
Winberry, Jeremy	I-181-M	Collaborative Research: Geophysical study of ice stream stick-slip dynamics

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Science Program Indexes: 2010-2011

USAP Program Index:
Ocean and Atmospheric Sciences

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Principal Investigator ▼	Event No.	Project Title
Ackley, Stephen	O-269-O	Collaborative Research: The sea ice system in Antarctic summer, Oden Southern Ocean expeditions (OSO 2009-10, OSO 2010-11, OSO 2011-12)
Avallone, Linnea	O-324-M	In situ measurements of stratospheric ozone from long-duration balloons during Concordiasi
Butler, James	O-257-S	South Pole monitoring for climatic change
Chereskin, Teresa	O-313-N	Collaborative research: Dynamics and transport of the Antarctic Circumpolar Current in the Drake Passage
Cohn, Stephen	O-363-M	IPY: NCAR facility support, scientific contributions and collaborative research to understand environmental change in Antarctica through participation in the international CONCORDIASI project
Deshler, Terry	O-131-M	Measurements of Antarctic ozone and polar stratospheric cloud profiles in a time of decreasing atmospheric chlorine, climate change, and fluctuations in polar vortex strength
Deshler, Terry	O-361-M	Quasi-Lagrangian measurements of polar stratospheric cloud particle development from long-duration balloon platforms
Huber, Bruce	O-399-N	Cape Adare Long-term Mooring (CALM)
Jacobs, Stanley	O-274-N	IPY/ASEP - Collaborative international research: Amundsen Sea Influence on West Antarctic Ice Sheet stability and sea level rise
Kohut, Josh	O-216-M/N	Collaborative Research: Modified

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		circumpolar deep water intrusions as an iron source to the summer Ross Sea ecosystem
Rabier, Florence	O-360-M	Strateole-Vorcore

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Principal Investigator ▼	Event No.	Project Title
Beebe, Morton	W-222-M	Return to Antarctica
Coles, Katharine	W-485-P	Natural Curiosities: Poems of exploration, Antarctica
Hood, Charles	W-223-M	Flying to Pellucidar: Antarctic aviation
Major, John	W-224-M	Condition One: A film about extremes and the human spirit

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Principal Investigator ▼	Event No.	Project Title
Neill, Christopher	Y-609-P	IPY: Improving the public's understanding of polar research through hands-on fellowships for science journalists in the Arctic and Antarctic

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USAP Program Index:

Integrated System Science

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Principal Investigator ▼	Event No.	Project Title
Anandakrishnan, Sridhar	C-520-M	WISSARD surface geophysics
Scambos, Theodore	C-514-E	Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multi-disciplinary Approach -- Cryosphere and Oceans (LARISSA)
Warren, Stephen	C-516-M	Ocean surfaces on snowball Earth

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USAP Station Index:

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Principal Investigator ▼	Event No.	Project Title
Besson, Dave	A-123-S	Neutrino Array Radio Calibration
Butler, James	O-257-S	South Pole monitoring for climatic change
Carlstrom, John	A-379-S	Cosmological Research with the 10-meter South Pole Telescope
Carlstrom, John	A-370-S	Science Coordination Office for Astrophysical Research in Antarctica (SCOARA-II)
Engebretson, Mark	A-102-M/S	Studies of solar wind - Magnetosphere interactions using observations of ULF waves at an extensive ground array at high latitudes
Halzen, Francis	A-333-S	IceCube operations and maintenance
Hernandez, Gonzalo	A-110-M/S	Austral high-latitude atmospheric dynamics
Inan, Umran	A-108-M/S	A VLF beacon transmitter at South Pole
Karle, Albrecht	A-107-S	Collaborative Research: MRI-R2 instrument development of the Askaryan Radio Array, a large-scale radio Cherenkov neutrino detector at the South Pole
Kulesa, Craig	A-364-S	High Elevation Antarctic Terahertz (HEAT) telescopes for Dome A and Ridge A
LaBelle, James	A-128-S	Collaborative Research: Multi-instrument studies of auroral plasma radiation
Maruyama, Reina	A-334-S	Feasibility study for a dark matter search co-located with the IceCube detector in the Antarctic ice
Mende, Stephen	A-104-S	Antarctic auroral imaging

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Moore, Anna	A-356-S	Analysis of the data from the Gattini Antarctic camera network
Moore, Robert	A-109-M/P/S	Collaborative Research: Antarctic ELF/VLF observations of lightning and lightning-induced electron precipitation
Palo, Scott	A-284-S	Collaborative study of the Antarctic mesosphere and lower thermosphere
Pryke, Clement	A-149-S	Collaborative Research: BICEP2 and SPUD - A search for inflation with degree-scale polarimetry from the South Pole
Shore, Patrick	G-089-M/S	Polenet East: An international seismological network for East Antarctica
Sivjee, Gulamabas	A-129-S	Observation of upper-atmospheric energetics, dynamics, and long-term variations over South Pole Station
Taylor, Michael	A-119-S	Investigating wave-driven mesospheric dynamics over South Pole using an advanced mesospheric temperature mapper

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Principal Investigator ▼	Event No.	Project Title
Ainley, David	B-031-M	Adelie Penguin response to climate change at the individual, colony and metapopulation levels
Anandakrishnan, Sridhar	C-520-M	WISSARD surface geophysics
Andersen, Dale	G-441-M	Lake Joyce microbialites resubmittal
Ashworth, Allan	G-502-M	Neogene paleoecology of the Beardmore Glacier region
Ashworth, Allan	G-294-M	Collaborative Research: Integrating geomorphological and paleoecological studies to reconstruct Neogene environments of the Transantarctic Mountains
Avallone, Linnea	O-324-M	In situ measurements of stratospheric ozone from long-duration balloons during Concordiasi
Balco, Gregory	I-156-M	Collaborative Research: Last glacial maximum and deglaciation chronology for the Foundation Ice Stream and southeast Weddell Sea Embayment
Barrett, John	B-462-M	Collaborative Research: Controls over the spatial distribution and activity of microbial communities in Antarctic soils
Barrett, John	B-023-M	Collaborative Research: The role of snow patches on the spatial distribution of soil microbial communities and biogeochemical cycling in the Antarctic Dry Valleys
Barwick, Steven	A-127-M	Development of station technology for the ARIANNA ultra-high energy neutrino detector
Beebe, Morton	W-222-M	Return to Antarctica
Bieber, John	A-120-M	Cosmic ray observations at McMurdo

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Blankenship, Donald	G-098-M	IPY Research: Investigating the cryospheric evolution of the central Antarctic plate (ICECAP)
Bowser, Samuel	G-093-M	Collaborative Research: Linking modern benthic communities and taphonomic processes to the stratigraphic record of Antarctic cores
Bristow, William	A-369-M	McMurdo and South Pole SuperDARN: Investigation of the ionospheric dynamics and magnetosphere-ionosphere coupling in Antarctica
Brown, Michael	G-097-M	Collaborative research: Polyphase orogenesis and crustal differentiation in West Antarctica
Buckley, Bradley	B-308-M	The cellular stress response in cold-adapted organisms: Building novel mechanistic links between heat stress, cell cycle arrest and apoptosis in Antarctic fishes.
Chu, Xinzhao	A-130-M	Lidar Investigation of middle and upper atmosphere temperature, composition, chemistry, and dynamics at McMurdo, Antarctica
Cohn, Stephen	O-363-M	IPY: NCAR facility support, scientific contributions and collaborative research to understand environmental change in Antarctica through participation in the international CONCORDIASI project
Comberiate, Mike	T-966-M	TDRSS and NAILS
Conway, Howard	I-157-M	IPY collaborative research: Constraining the mass balance deficit of the Amundsen Coast's glaciers
Conway, Howard	I-414-M	Collaborative Research: Constraints on the last Ross Sea Ice Sheet from glacial deposits in the Southern Transantarctic Mountains
Conway, Howard	I-209-M	Deglaciation of the Ross Sea Embayment - constraints from Roosevelt Island
Costa, Daniel	B-232-M	Collaborative Research: Weddell

		seals as autonomous sensors of the winter oceanography of the Ross Sea
Davis, Randall	B-017-M	Collaborative Research: Hunting in darkness: Behavioral and energetic strategies of Weddell seals in winter
Deshler, Terry	O-131-M	Measurements of Antarctic ozone and polar stratospheric cloud profiles in a time of decreasing atmospheric chlorine, climate change, and fluctuations in polar vortex strength
Deshler, Terry	O-361-M	Quasi-Lagrangian measurements of polar stratospheric cloud particle development from long-duration balloon platforms
Devlin, Mark	A-147-M	Balloon-borne Large Aperture Sub-millimeter Telescope (BLAST-POL)
Doran, Peter	B-208-M	Collaborative Research: Geochemistry and microbiology of the extreme aquatic enviornment in Lake Vida, East Antarctica
Doran, Peter	B-426-M	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program
Elliot, David	G-497-M	Collaborative Research: Application of detrital zircon isotope characteristics and sandstone analysis of Beacon strata to the tectonic evolution of the Antarctic sector of Gondwana
Emslie, Steven	B-034-E/M	Stable isotope analyses of pygoscelid penguin remains from active and abandoned colonies in Antarctica
Engebretson, Mark	A-102-M/S	Studies of solar wind - Magnetosphere interactions using observations of ULF waves at an extensive ground array at high latitudes
Evenson, Paul	A-120-M	Cosmic ray observations at McMurdo Station
Foreman, Christine	B-046-M	The biogeochemical evolution of dissolved organic matter in a fluvial system on the Cotton Glacier, Antarctica

Fountain, Andrew	B-425-M	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valleys LTER program
Garrott, Robert	B-009-M	The demographic consequences of environmental variability and individual heterogeneity in life-history tactics of a long-lived Antarctic marine predator
Goodge, John	G-503-M	Age and composition of the East Antarctic Shield by granite and glacial proxy
Hall, Brenda	I-414-M	Collaborative Research: Constraints on the last Ross Sea Ice Sheet from glacial deposits in the Southern Transantarctic Mountains
Hall, Brenda	I-196-M	Sensitivity of the Antarctic Ice Sheet to global climate change over the last two glacial/interglacial cycles
Hammer, William	G-495-M	New research on the Mesozoic vertebrate faunas of the Beardmore Glacier Region, Antarctica
Hargreaves, Geoffrey	I-478-M	National Ice Core Laboratory (NICL) core-handling and data recording
Hasiotis, Stephen	G-498-M	Paleoenvironmental and paleoclimatic analysis of the Beacon Supergroup, Beardmore Glacier area, Central Transantarctic Mountains, Antarctica
Hernandez, Gonzalo	A-110-M/S	Austral high-latitude atmospheric dynamics
Hofmann, Gretchen	B-134-M	Ocean acidification: Integrated approaches to understanding effects on antarctic sea urchins, Sterechinus neumayeri
Hood, Charles	W-223-M	Flying to Pellucidar: Antarctic aviation
Inan, Umran	A-108-M/S	A VLF beacon transmitter at South Pole
Johns, Bjorn	T-295-M	UNAVCO GPS survey support
Joughin, Ian	I-157-M	IPY collaborative research: Constraining the mass balance deficit of the Amundsen Coast's glaciers

Kemerait, Robert	G-078-M	Dry Valley seismic project
Kennicutt, Mahlon	B-518-M	Temporal variability in natural and anthropogenic disturbance of McMurdo Station
Kohut, Josh	O-216-M/N	Collaborative Research: Modified circumpolar deep water intrusions as an iron source to the summer Ross Sea ecosystem
Kurbatov, Andrei	I-349-M	Collaborative Research: Exploring a 2 million-year-plus ice climate archive-Allan Hills blue ice area (2MBIA)
Kyle, Phillip	G-081-M	Mount Erebus Volcano Observatory III (MEVO III): Conduit processes and surveillance
Lewis, Adam	G-502-M	Neogene paleoecology of the Beardmore Glacier region
Lewis, Adam	G-294-M	Collaborative Research: Integrating geomorphological and paleoecological studies to reconstruct Neogene environments of the Transantarctic Mountains
Licht, Kathy	G-499-M	Pleistocene East Antarctic ice sheet history as recorded in sediment provenance and chronology of high-elevation TAM moraines
Lyons, W. Berry	B-420-M	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valleys LTER program
Major, John	W-224-M	Condition One: A film about extremes and the human spirit
McCarthy, Kevin	T-927-M	NASA/McMurdo Ground Station (MG1)
McKay, Christopher	B-302-M	IceBite: An auger and sampling systems for ground ice on Mars
Mercer, Jennifer	T-940-M	CRREL 09-10 activities
Miller, Molly	G-093-M	Collaborative Research: Linking modern benthic communities and taphonomic processes to the stratigraphic record of Antarctic cores
Moore, Robert	A-109-	Collaborative Research: Antarctic

	M/P/S	ELF/VLF observations of lightning and lightning-induced electron precipitation
Oliver, John	B-200-M	LTREB: Decadal changes in Antarctic marine benthic ecosystems
Parker, Timothy	T-299-M	IRIS/PASSCAL seismic support
Pettit, Erin	I-166-M	The relationship between climate and ice rheology at Dome C, East Antarctica
Priscu, John	B-422-M	The Role of Resource Legacy on Contemporary Linkages Between Biodiversity and Ecosystem Processes in a Cold Desert Ecosystem: The McMurdo Dry Valley LTER Program
Putkonen, Jaakko	G-501-M	Systematic analysis of the stability and ages of soil surfaces in Transantarctic Mountains
Rabier, Florence	O-360-M	Strateole-Vorcore
Rack, Frank	G-049-M	ANDRILL Coulman High project: Investigating Antarctica's role in Cenozoic global environmental change: Phase 1 site survey
Rupper, Summer	I-158-M	Collaborative Research: Annual satellite era accumulation patterns over WAIS Divide: A study using shallow ice cores, near-surface radar and satellites
Seo, Eun-Suk	A-137-M	Cosmic Ray Energetics And Mass (CREAM)
Shore, Patrick	G-089-M/S	Polenet East: An international seismological network for East Antarctica
Sletten, Ronald	G-121-M	Ground ice dynamics in hyperarid soils of the McMurdo Dry Valleys, Antarctica
Smith, Walker	B-047-M/N	Collaborative Research: Seasonal evolution of chemical and biological variability in the Ross Sea
Spain, Sharon (Rae)	B-429-M	Field sampling coordination and mathematical modelling of a hydrocarbon spill on the ice cover of Lake Fryxell, Antarctica

Staudigel, Hubert	G-439-M	Collaborative research: Microbially mediated alteration of volcanic glass using McMurdo extreme environments as natural laboratories
Stearns, Leigh	I-351-M	Collaborative Research: Byrd Glacier flow dynamics
Stepp, Bill	A-145-M	NASA Long Duration Balloon (LDB) support program
Stump, Edmund	G-415-M	CTAM Chief Scientist
Szuberla, Curt	T-396-M	Operation and maintenance of a CTBT class infrasound array at Windless Bight
Taylor, Edith	G-496-M	Collaborative Research: Antarctic ecosystems across the Permian-Triassic boundary: Integrating paleobotany, sedimentology, and paleoecology
Taylor, Kendrick	I-477-M	WAIS Divide Science Coordination Office (SCO)
Virginia, Ross	B-423-M	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program
Wall, Diana	B-424-M	Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program
Warren, Stephen	C-516-M	Ocean surfaces on snowball Earth
Wilson, Terry	G-049-M	ANDRILL Coulman High project: Investigating Antarctica's role in Cenozoic global environmental change: Phase 1 site survey
Winberry, Jeremy	I-181-M	Collaborative Research: Geophysical study of ice stream stick-slip dynamics
Wyatt, Michael	G-440-M	Orbital spectral mapping of surface compositions in the Antarctic Dry Valleys: regional distributions of secondary mineral-phases as climate indicators

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Principal Investigator ▼	Event No.	Project Title
Amsler, Charles	B-022-P	Collaborative Research: The chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula
Brum, Jennifer	B-319-P	Post-doctoral research fellowship
Coles, Katharine	W-485-P	Natural Curiosities: Poems of exploration, Antarctica
Comes, Laura	T-998-P	Operation and maintenance of a CTBT radionuclide monitoring station at Palmer Station
Cottrell, Matthew	B-026-P	Photoheterotrophic microbes in the West Antarctic Peninsula marine ecosystem
Dickhut, Rebecca	B-389-O/P	Collaborative Research: Persistent organic pollutants in the Antarctic marine food web: impact of climate change and insights into the feeding ecology of apex predators
Fraser, Bill	B-013-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, apex predator component
Inan, Umran	A-336-P	ELF/VLF observation of whistler-mode waves, lightning discharge, and gamma-ray events from Palmer Station
Lee, Richard	B-256-P	Role of dehydration and photoperiodism in preparing an Antarctic insect for the polar night
Moline, Mark	B-391-P	Real-Time characterization of Adélie penguin-foraging environment using an autonomous underwater vehicle
Moore, Robert	A-109-M/P/S	Collaborative Research: Antarctic ELF/VLF observations of lightning and lightning-induced electron precipitation

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Neill, Christopher	Y-609-P	IPY: Improving the public's understanding of polar research through hands-on fellowships for science journalists in the Arctic and Antarctic
Steinberg, Deborah	B-020-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, zooplankton component
Steward, Grieg	B-239-P	Viral contributions to spring bloom dynamics in the Western Antarctic Peninsula
Wu, Qian	A-132-P	Thermospheric neutral wind observation in the Antarctica Peninsula

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Alderkamp, Anne-Carlijn	B-198-N	ASPIRE: Amundsen Sea Polynya International Research Expedition
Chereskin, Teresa	O-313-N	Collaborative research: Dynamics and transport of the Antarctic Circumpolar Current in the Drake Passage
Huber, Bruce	O-399-N	Cape Adare Long-term Mooring (CALM)
Inan, Umran	A-327-N	ELF/VLF observation in the southern Pacific Ocean
Jacobs, Stanley	O-274-N	IPY/ASEP - Collaborative international research: Amundsen Sea Influence on West Antarctic Ice Sheet stability and sea level rise
Kohut, Josh	O-216-M/N	Collaborative Research: Modified circumpolar deep water intrusions as an iron source to the summer Ross Sea ecosystem
Sanders, Robert	B-303-N	Collaborative Research: Alternative nutritional strategies in Antarctic protists
Smith, Walker	B-047-M/N	Collaborative Research: Seasonal evolution of chemical and biological variability in the Ross Sea
Yager, Patricia	B-388-N	Collaborative Research: ASPIRE (Amundsen Sea polynya international research expedition)

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ARSV Laurence M. Gould

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Fraser, Bill	B-013-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, apex predator component
Hollibaugh, James	B-114-L	Ammonia oxidation versus heterotrophy in crenarchaeota populations from marine environments west of the Antarctic Peninsula
Martinson, Doug	B-021-L	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, physical oceanography component
Steinberg, Deborah	B-020-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, zooplankton component

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Bockheim, James	G-239-E	Impact of recent climate warming on active-layer dynamics, permafrost, and soil properties on the western Antarctic Peninsula
Emslie, Steven	B-034-E/M	Stable isotope analyses of pygoscelid penguin remains from active and abandoned colonies in Antarctica
Fritts, David	A-113-E	Radar measurements of large- and small-scale dynamics of the MLT on the Antarctic Peninsula with an existing MF radar and a new generation meteor radar at British and Brazilian bases
Kirschvink, Joseph	G-436-E	Collaborative Research: Upper Cretaceous-lower Paleocene strata from the James Ross Island region: Chemo-, Magneto-, and biomarker tests of intercontinental correlation and extinction hypotheses
MacPhee, Ross	G-170-E	Vertebrate paleontology of Livingston Island, South Shetlands, Antarctica
Scambos, Theodore	C-514-E	Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multi-disciplinary Approach -- Cryosphere and Oceans (LARISSA)
Steffen, Konrad	I-077-E	IPY: Stability of Larsen C Ice Shelf in a warming climate

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ODEN Icebreaker

Principal Investigator	Event No.	Project Title
Ackley, Stephen	O-269-O	Collaborative Research: The sea ice system in Antarctic summer, Oden Southern Ocean expeditions (OSO 2009-10, OSO 2010-11, OSO 2011-12)
Aronson, Richard	B-002-O	Collaborative Research: Climate change and predatory invasion of the Antarctic marine environment
Arrigo, Kevin	B-244-O	Sea ice ecology in the Amundsen and Eastern Ross Sea
Dickhut, Rebecca	B-389-O/P	Collaborative Research: Persistent organic pollutants in the Antarctic marine food web: impact of climate change and insights into the feeding ecology of apex predators

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Science Project Details: 2010-2011

Adelie Penguin Response To Climate Change At The Individual, Colony And Metapopulation Levels

Program Manager:
Dr. Charles Amsler

Event Number: B-031-M
NSF/PLR Award 0944411

ASC POC/Implementer:
Elizabeth Watson

Dr. David Ainley (Principal Investigator)
dainley@penguinscience.com
http://www.penguinscience.com

H.T. Harvey & Associates
Los Gatos, California

Supporting Stations: McMurdo Station
Research Locations: Beaufort and Franklin Islands, Capes Bird, Crozier, and Royds

Project Description:
Since 1996, this study has involved novel technology and experimentation including natural experiments and long hours finding banded birds at three colonies of widely disparate sizes occurring in a metapopulation. While changes in populations typically are tracked to gauge response to climate or habitat change, the process actually involves the response of individuals as each copes with an altered environment. During this study spanning 15 breeding seasons, researchers have found that 20 percent of individuals within a colony successfully raise offspring, and that they do so because of exemplary foraging proficiency. Moreover, foraging requires more effort at the largest colony, where intra-specific competition is higher than at small colonies, and requires more proficiency during periods of environmental stress (e.g., anomalous sea-ice conditions). Not only is breeding success and eventual recruitment involved in this species' response to environmental change, but, when conditions are particularly daunting, so is emigration as it dramatically increases, countering the long-standing assumption that Adélie penguins are highly philopatric. This project is a collaboration of six co-PIs from the US, New Zealand and France and will continue the outreach and education program, including webisodes and PenguinScience.com.

Field Season Overview:
Researchers for this project, begun in 1996, will deploy this season to Capes

Crozier and Royds field camps and will make a few day trips to Beaufort Island in late January via the icebreaker. The project will be conducted in collaboration with biologists from New Zealand who will be at Cape Bird. Researchers will primarily be looking for penguins previously banded as chicks and logging their breeding status. To investigate foraging effort as it affects breeding effort, the group will also deploy time-depth-recorders from each site. They will continue operating computerized weighbridges to log trip duration and food loads. Since this species of penguin does not mature until 3-8 years of age, researchers are just beginning to see breeders among the birds banded each year as chicks. The researchers also plan to make weekly helicopter flights in order to census cetaceans (and penguins) along the fast-ice edge and in the channel.

Researchers will continue work on the educational Penguin Science web videos (webisodes) and web site. Researchers may also want to deploy a remote camera at Cape Royds just before the first penguins arrive, so students can follow a complete breeding effort. Researchers also plan to revamp and relocate the “PenguinCam” at Cape Royds early in November 2010.

Deploying Team Members:

- Katie Dugger (Co-PI)
- Amelie Lescroel (Team Leader)
- Melanie Massaro
- Jean Pennycook
- Anne Pollard
- Elizabeth Porzig
- Ronald Ross

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Science Project Details: 2010-2011

Collaborative Research: The Chemical Ecology Of Shallow-Water Marine Macroalgae And Invertebrates On The Antarctic Peninsula

Program Manager:
Dr. Roberta Marinelli

Event Number: B-022-P

ASC POC/Implementer:
Eric Pohlman

Dr. Charles Amsler (Principal Investigator)
camsler@nsf.gov
http://www.uab.edu/uabbio/s022/

University of Alabama Birmingham
Department of Biology
Birmingham, Alabama

Supporting Stations: Palmer Station
Research Locations: On station, Palmer Station local boating area and surrounding islands

Project Description:
This project conducts chemical studies to gain a more thorough understanding of the chemical defenses that Antarctic Peninsula sponges direct toward crustacean mesograzers. Researchers will test the hypothesis that mesoherbivores are particularly heavy in western Antarctic Peninsula marine communities and have an important influence on algal community structure. The research team will examine the broad hypothesis that mesograzers in general, and amphipods in particular, interact with, and prey upon, sponges to a greater extent than previously recognized in Antarctic communities. They will test the hypotheses that: 1) Antarctic algae and invertebrates biosynthesize secondary metabolites that deter feeding by amphipod predators; and 2) pigments found in three Antarctic sponges are tryptophan catabolites produced as defenses against crustacean predators.

Field Season Overview:
Researchers will collect macroalgae, amphipods, sponges, tunicates, and other invertebrates from a variety of sites within small-boat range of Palmer Station. After collection, organisms will either be used immediately for experiments or frozen. Researchers will also extract macroalgae and invertebrates in organic solvents for bioassays at Palmer Station and

subsequent structural determinations at the researchers' home institution. In addition to laboratory- and aquarium-based experiments at Palmer Station, researchers will be recovering transplanted invertebrates and their concrete substrates deployed in the subtidal zone during the 2010 field season. The project team will also be transplanting intertidal green algae to small plastic substrates anchored to the bottom and suspended several meters above the bottom. As in previous seasons, researchers will collect specimens in the Laggard Island intertidal area as early in their field season as weather and tides permit. Likewise, the group may also collect subtidal algae in the southeastern portion of Kristie Cove.

Deploying Team Members:

- Margaret Amsler
- Bill Baker (Co-PI)
- Ruth McDowell
- Kathryn Schoenrock
- Julie Schram

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Science Project Details: 2010-2011

WISSARD Surface Geophysics

Program Manager:
Dr. Lisa Clough

Event Number: C-520-M
NSF/PLR Award 0838763, 0838764

ASC POC/Implementer:
Chad Naughton

Dr. Sridhar Anandakrishnan (Principal Investigator)
sak@essc.psu.edu
http://www.wissard.org

Pennsylvania State University
Department of Geosciences and Environment Instit
University Park, Pennsylvania

Supporting Stations: McMurdo Station
Research Locations: Subglacial Lake Whillans, Grounding Zone

Project Description:
This research project represents the surface geophysics component of Whillans Ice Stream Subglacial Access Research Drilling (WISSARD). WISSARD is a collaborative, multi-disciplinary research project aimed at answering key questions directly relevant to: 1. Marine ice sheet stability; and 2. Biotic ecosystems in Antarctic subglacial environments

Researchers will perform the proposed geophysical surveys on the lower portion of the Whillans Ice Stream, where three critical subglacial environments can be investigated within a relatively small area: 1. Sub-ice-shelf cavity; 2. grounding-zone wedge; and 3. subglacial (ice-stream environment) drainage system including several lakes.

Surface geophysics is intended to enable site-selection and the extrapolation of borehole and observations into a regional framework..

Field Season Overview:
Surface geophysics consists of three main components: Radio echosounding, active source seismology, and GPS surveying. This austral summer the team will deploy to Subglacial Lake Whillans (SLW) where they will service an existing GPS network, deploy a seismometer network, and undertake a comprehensive geophysical survey of the lake. Researchers will conduct radio echosounding along regional profiles and in a high-resolution

Project Indexes
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Project Web Sites
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grid totaling about 500 line kilometers. Researchers will also conduct active-source seismology along profiles totaling about 60 line kilometers, sampling the lake and grounded potential drill sites. At the end of the season, a route will be proved from SLW to the Grounding Zone (GZ) and a GPS grid installed at the Grounding Zone.

Deploying Team Members:

- Knut Christianson
- Huw Horgan
- Robert Jacobel (Co-PI)
- Geletti Riccardo
- Picotti Stefano
- Jake Walter

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Science Project Details: 2010-2011

Neogene Paleoecology Of The Beardmore Glacier Region

Program Manager:
Dr. Alexandra Isern

Event Number: G-502-M

ASC POC/Implementer:
Chad Naughton

Dr. Allan Ashworth (Principal Investigator)
allan.ashworth@ndsu.edu
http://www.ndsu.edu/pubweb/~ashworth/mdf_images%20_for_web/index.htm

Geosciences, Stevens Hall
Fargo, North Dakota

Supporting Stations: McMurdo Station
Research Locations: CTAM, Oliver Bluffs

Project Description:
Researchers on this project will target fossiliferous horizons at the Oliver Bluffs, Beardmore Glacier for sampling. Previous studies have demonstrated that these particular horizons contain unique fossil assemblages that are providing information used to reconstruct paleoenvironments and paleoclimate. The fossils represent organisms previously unknown to occur in Antarctica and consequently their study will lead to the development of new hypotheses concerning southern hemisphere biogeography.

Field Season Overview:
This year's field season is to last two weeks, starting in early December, and operating from a tent camp at the Oliver Bluffs on the Beardmore Glacier. The camp will be put in using either Twin Otter or helicopters operating out of the CTAM Camp. The research will be assisted for about a week by a mountaineer and an explosives expert. Researchers will use a small amount of dynamite to crack rocks containing the fossiliferous horizons. Researchers expect to return with about 750 pounds of samples in mid- to late December. This research team will also be involved in a project in the McMurdo Dry Valleys from mid-October to early December (G-294-M). Deployment to the Beardmore Glacier camp will follow the completion of the Dry Valleys' field season.

Deploying Team Members:

- Alexander Smith

Project Indexes
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Science Project Details: 2010-2011

Collaborative Research: Integrating Geomorphological And Paleoecological Studies To Reconstruct Neogene Environments Of The Transantarctic Mountains

Program Manager:
Dr. Alexandra Isern

Event Number: G-294-M

ASC POC/Implementer:
Chad Naughton

Dr. Allan Ashworth (Principal Investigator)
allan.ashworth@ndsu.edu
http://people.bu.edu/marchant/research/lacdeposits.html

Geosciences, Stevens Hall
Fargo, North Dakota

Supporting Stations: McMurdo Station
Research Locations: McMurdo Dry Valleys

Project Description:
Ancient lake sediments deposited on the margins of former outlet and alpine glaciers in the Dry Valleys region are proving to be an invaluable archive for studies of past climatic and ecological changes. Using a numerical chronology based on analyses of interbedded volcanic ashfall, lake sediments greater than 13 million years ago contain fossils of exceptionally well-preserved mosses, diatoms, ostracods, Nothofagus leaves, wood, and insect remains. Lake sediments from less than 13 million years ago appear to lack all such organic matter. Researcher objectives include: 1. Developing a better characterization of the areal distribution of ancient lakes; 2. Securing a more refined lake chronology; 3. Developing a better characterization of the flora and fauna within each lake system; 4. Producing a geochemical signature for tephra within ice-marginal lakes; and 5. Providing a comparison for terrestrial vegetation mapped previously in the central Transantarctic Mountains.

Field Season Overview:
This project will deploy a five-person field team in Friis Hills during the 2010-2011 season. The target date to be in the field is late October and the camp will be on the east-facing promontory overlooking Taylor Valley. Researchers will conduct one to two helicopter flights each week to allow new fossil-rich sites to be located and assessed. Depending on the discovery of new fossil

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sites, the camp could be relocated once during the season. Researchers expect to sample 100 to 300 pounds of delicate fossil-rich material that will require frozen northward shipment, and a further 600 to 1,000 pounds of sediment/rock for northward shipment. The McMurdo Dry Valleys season will end in late November, after which the G-294-M team will redeploy to the Central Transantarctic Mountain (CTAM) camp as G-502-M. The researchers will continue to use all issued equipment as part of the G-502-M camp through mid-December. Samples for both events will be grouped and shipped northward together. Two researchers will remain in the Dry Valleys after the G-294-M group deploys to CTAM, and both will be part of the G-054-M research project during that portion of the deployment.

Deploying Team Members:

- Jay Dickson
- James Head
- Alexander Smith

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Science Project Details: 2010-2011

In Situ Measurements Of Stratospheric Ozone From Long-Duration Balloons During Concordiasi

Program Manager:
Dr. Peter Milne

Event Number: O-324-M

ASC POC/Implementer:
John Rand

Dr. Linnea Avallone (Principal Investigator)
linnea.avallone@lasp.colorado.edu
http://www.cnrm.meteo.fr/concordiasi/

University of Colorado Boulder
Laboratory for Atmospheric and Space Physics
Boulder, Colorado

Supporting Stations: McMurdo Station
Research Locations: McMurdo Station sea ice

Project Description:
Researchers will make the first quasi-Lagrangian measurements of stratospheric ozone from Concordiasi long-duration stratospheric balloons, deployed from McMurdo Station by the French space agency during a field campaign commencing in September 2010. Several specially designed ultraviolet photometers will be built for this purpose to meet the requirements of long life (operations can last 50 to 100 days) and low power consumption. These instruments will fly on two to four Concordiasi balloons launched between September and November 2010 within the developing Antarctic “ozone hole.” Because the balloon trajectories are nearly Lagrangian (air-mass-following), the observations will provide a detailed picture of ozone loss in individual air masses over extended periods of time. Data obtained from these balloon flights will be compared with calculations of photochemical ozone loss from a sophisticated trajectory model, initialized with observed temperature, pressure and location. The in-situ data and comparison to photochemical models will address long-standing questions about the chemical processes that cause stratospheric ozone depletion.

Field Season Overview:
The research team will deploy on the first flight of WinFly. All laboratory and payload preparation and launch support will be provided within logistic support to the Concordiasi project.

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Deploying Team Members:

- Lars Kalnajs

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Science Project Details: 2010-2011

Collaborative Research: The Role Of Snow Patches On The Spatial Distribution Of Soil Microbial Communities And Biogeochemical Cycling In The Antarctic Dry Valleys

Program Manager:
Dr. Roberta Marinelli

Event Number: B-023-M

ASC POC/Implementer:
Eric Pohlman

Dr. John Barrett (Principal Investigator)
jebarre@vt.edu
http://water.engr.psu.edu/antsnow/

Virginia Tech
Department of Biological Science
Blacksburg, Virginia

Supporting Stations: McMurdo Station
Research Locations: Garwood and Miers Valleys, Labyrinth, Lakes Bonney, Brownworth, Fryxell, Hoare, and Vanda

Project Description:
Researchers will investigate the influence of snow on the composition and spatial distribution of soil microbial communities and linked biogeochemical cycling. They will conduct repeated remote-sensing datasets during the summer to characterize snow distribution at the landscape scale and perform plot scales to quantify snow patch ablation and microbial communities and soil processes at the patch scale.

Field Season Overview:
Researchers plan to continue investigations of snow patches in Taylor and Wright Valley, with the field work supported from Lake Fryxell Camp in Taylor Valley (and from Lake Hoare, as necessary) using helicopter support to access sites in upper Taylor Valley (in the vicinity of Lake Bonney) and in the Wright Valley at locations near the Labyrinth, Lake Vanda and Lake Brownworth. Researchers will be surveying and collecting snow and soil samples from snowpack in Taylor and Wright Valleys. They will also check on instrumented snow packs and time-lapse cameras in this area.

Deploying Team Members:

Project Indexes
Find information about current USAP projects using the principal investigator, event number station, and other indexes.

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- Adam Altrichter
- Jeffery Eveland
- Michael Gooseff (Co-PI)
- Derrick Lampkin
- David Van Horn (Team Leader)

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Science Project Details: 2010-2011

Return To Antarctica

Program Manager:
Ms. Winnie Reuning

Event Number: W-222-M

ASC POC/Implementer:
Patricia Jackson

Undefined Morton Beebe (Principal Investigator)
mbeebe@mortonbeebe.com
http://www.jerney.org/antarctical/

San Francisco, California

Supporting Stations: McMurdo Station
Research Locations: On station, Taylor Valley, Polar Plateau

Project Description:
Morton Beebe and Geoffrey Lee-Martin first deployed to Antarctica in the 1950's during the International Geophysical Year (IGY). Beebe was the Operation Deep Freeze press officer, and Lee-Martin was a journalist for the London Daily Telegraph and the New Zealand Herald. Both accompanied Admiral George Dufek and Sir Edmund Hillary to the South Pole in January 1958 to meet Sir Vivian Fuchs during his first overland crossing of Antarctica. In 2010-11, Beebe and Lee-Martin, accompanied by a videographer and sound technician, will return to Antarctica for the final stage of filming a documentary that will show Antarctica then and now from the unique perspectives offered by Beebe and Lee-Martin.

Field Season Overview:
The field party will spend time at McMurdo Station and research sites in the vicinity. The mid-point of the trip will find them visiting Amundsen-Scott South Pole Station. They will meet with scientists and support staff to film people and their activities within the context of the changes to human habitation and advances of science during the last fifty years.

Deploying Team Members:

- Goeffrey Lee-Martin
- Richard Neill
- Jeff Pflueger

Project Indexes
Find information about current USAP projects using the principal investigator, event number station, and other indexes.

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Science Project Details: 2010-2011

Neutrino Array Radio Calibration

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-123-S

ASC POC/Implementer:
Julie Bonneau

Mr. Dave Besson (Principal Investigator)
dzbesson@gmail.com
http://heplx3.phsx.ku.edu/~riceuser

University of Kansas Lawrence
Physics (RICE)
Lawrence, Kansas

Supporting Stations: South Pole Station
Research Locations:

Project Description:
This project is studying the propagation of electromagnetic waves along the surface of a dielectric medium (ice), as predicted in some models. During previous field seasons, researchers have deployed prototypes of RICE-II modules, either in dedicated dry boreholes or in hot-water-drilled holes. The team also has deployed optical fiber in a drill hole to observe the effects of freeze-in on optical fiber performance. Optical fiber attached to a radio-frequency transmitter was also used to test and compare received signals relative to other RICE channels. Researchers have also lowered a passive aluminum reflector into an ice hole to measure transmission through firn ice and as preparation for the possible deployment of surface antennas in conjunction with the buried RICE array.

Field Season Overview:
This field season's activities consist of retrograde shipment of RICE equipment.

Science Project Details: 2010-2011

Cosmic Ray Observations At McMurdo Station

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-120-M

ASC POC/Implementer:
Leslie Blank

Dr. John Bieber (Principal Investigator)
jwbieber@bartol.udel.edu
http://neutronm.bartol.udel.edu

University of Delaware
Bartol Research Institute
Newark, Delaware

Supporting Stations: McMurdo Station
Research Locations: Building 84 (CosRay)

Project Description:
Installed during the 1959-60 field season, the Cosray lab is the longest continuous-running experiment in the US Antarctic Program. This 52-year data set plays a crucial role in understanding the nature and cause of cosmic ray and solar terrestrial variations occurring over the 11-year sunspot cycle, 22-year Hale cycle, and longer time scales. Neutron-monitoring provides a three-dimensional perspective of the anisotropic flux of cosmic rays that continuously bombard Earth. The data acquired by this research project will advance the understanding of fundamental plasma processes that occur on the Sun and in interplanetary space. Researchers will analyze data acquired on station in concert with data from the "Spaceship Earth" neutron monitor network to understand variations associated with solar energetic particles that occur on time scales of minutes to hours. In a new application made possible by real-time data availability, the observations will also assist space weather forecasting and specification.

Field Season Overview:
This year, research team members will complete the program begun in the previous season, which was to separately insulate and heat the active components of the CosRay experiment located in Building 84. This will allow the building to go unheated, thereby reducing McMurdo Station energy consumption. The PI will deploy to McMurdo Station to supervise the construction effort required to insulate and heat the two neutron monitor

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detector sectors and to make corresponding modifications to the data acquisition system.

Following the completion of the construction effort, research associate support will be required for maintaining the equipment throughout the rest of the year and for implementing a maintenance plan that specifically addresses inspection and remediation of snow infiltration in the unheated building. The dates for the A-120-M deployment and related construction intentionally coincide with the deployment of another research team member with the CosRay experiment at South Pole Station so that the McMurdo PI is available for on-Ice consultation if needed.

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Science Project Details: 2010-2011

IPY Research: Investigating The Cryospheric Evolution Of The Central Antarctic Plate (ICECAP)

Program Manager:
Dr. Alexandra Isern

Event Number: G-098-M

ASC POC/Implementer:
Leslie Blank

Dr. Donald Blankenship (Principal Investigator)
blank@ig.utexas.edu
http://www.ig.utexas.edu/research/projects/icecap

University of Texas Austin
Institute for Geophysics
Austin, Texas

Supporting Stations: McMurdo Station
Research Locations: Central and East Antarctica

Project Description:
The goal of this collaborative International Polar Year (IPY) project is to improve the fundamental understanding of the major subglacial basins of east Antarctica and the boundary conditions of the ice stream catchments that overlie these basins. To that end, researchers will modify and instrument a long range Basler BT-67 aircraft to conduct aerogeophysical surveys over the Wilkes Subglacial Basin and the Aurora Subglacial Basin with the goal of acquiring coherent gravity, magnetic, laser altimetry, and ice-penetrating radar data.

Field Season Overview:
Researchers will again be bringing a Basler aircraft to Antarctica, under contract from Kenn Borek Air, for aerogeophysical surveys based at the following Antarctic bases: McMurdo Station, Casey Station (Australia), and Dumont D'Urville (France). Researchers plan to operate from McMurdo Station early in the season. In order to fit the required number of flights into the time available, researchers plan to conduct flight operations around the clock from early November to early December.

Researchers will then depart McMurdo Station in early December for operations at Dumont D'Urville Station (synchronized with the French overland traverse schedule) and Casey Station. An additional collaboration with the USAP-sponsored WISSARD project will be conducted from Siple Dome before flight operations conclude in late January and the research team returns to McMurdo Station to remove science gear from the aircraft, stage cargo, and redeploy personnel.

Deploying Team Members:

- William Baird
- Raymond Cameron
- Richard Cameron
- Yosef Elhady
- Dean Emberly
- Bruce Frederick
- Jamin Greenbaum
- John Holt (Co-PI)
- Scott Kempf
- Gregory Ng
- Thomas Richter
- Kevin Riehl
- Jason Roberts
- Britney Schmidt
- Dustin Schroeder
- Svetlana Stadnik
- Andrew Wright
- Duncan Young (Co-PI)

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Science Project Details: 2010-2011

Impact Of Recent Climate Warming On Active-Layer Dynamics, Permafrost, And Soil Properties On The Western Antarctic Peninsula

Program Manager:
Dr. Alexandra Isern

Event Number: G-239-E

ASC POC/Implementer:
John Evans

Dr. James Bockheim (Principal Investigator)
bockheim@wisc.edu
https://mywebspace.wisc.edu/krwilhelm/web/Antarctica%20Website/peninsula.html

University of Wisconsin Madison
Department of Soil Science
Madison , Wisconsin

Supporting Stations: Special Project
Research Locations: Deception and Livingston Islands, Palmer Station area

Project Description:

This is a three-year collaborative project with CALM (Circumpolar Active Layer Monitoring, funded in part by a grant from the NSF's Arctic Research and Logistics program) and PERMANTAR (Permafrost and Active Layer Monitoring in the Maritime Antarctic, funded by Portuguese and Spanish programs). Researchers will establish permafrost and soil monitoring stations on Livingston and Deception Islands, at Palmer Station, and on an island site (to be selected) between Palmer Station and Livingston Island. Soil and permafrost are sensitive indicators of climate change and these new sites are particularly significant because recent climate change is exceptionally evident here. Each soil-climate/active-layer monitoring station comprises an array of shallow boreholes with sensors that record soil temperatures year-round. Permafrost is monitored through a 10-15-meter-deep borehole.

Field Season Overview:

In this initial field season, soil and permafrost monitoring stations will be established in the vicinity of Palmer Station and at Brabant Island or a nearby island site as part of the Southern Hemisphere CALM grid. The PI will travel via PERMANTAR logistics to assist at the PERMANTAR sites on Deception and Livingston Islands, and then return to South America. Following this deployment, the PI and two students will deploy to Palmer Station on cruise LMG11-03 to establish soil-climate and active-layer monitoring stations in the proximity of the station. The active-layer monitoring station

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will involve the drilling of an array of shallow boreholes to deploy sensors that will record soil temperatures on a regular basis. The three-person team will return to Punta Arenas on cruise LMG11-04.

Deploying Team Members:

- Adam Beilke
- Kelly Wilhelm

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Science Project Details: 2010-2011

Collaborative Research: Linking Modern Benthic Communities And Taphonomic Processes To The Stratigraphic Record Of Antarctic Cores

Looking up the slope of the submarine portion of the Wales delta toward the shoreline anchor ice in Explorers Cove. The dark dots are living scallops that are wedged between ice crystals, feeding on ice algae. Note the blades of anchor ice in the foreground, ophiuroids (brittle stars) embedded in the sediment,and a few scallops. G-093 is investigating how sediment is delivered to the sea floor and how the skeletons of animals are preserved or not preserved, and characterizing the sedimentary record of sediments deposited beneath semi-permanent sea ice. Photo by Shawn Harper

Program Manager:
Dr. Alexandra Isern

Event Number: G-093-M

ASC POC/Implementer:
Addie Coyac

Dr. Samuel Bowser (Principal Investigator)
bowser@wadsworth.org
http://www.bowserlab.org

New York State Department of Health
Wadsworth Center
Albany, New York

Supporting Stations: McMurdo Station
Research Locations: Explorers Cove

Project Description:
This research project centers on characterizing taphonomic (fossilization) processes, contrasting various high-sedimentation subhabitats in Explorers Cove with ice-covered and presumably low sedimentation (Bay of

Sails/Spike Cape; Butter Point/Herbertson Glacier) near-shore settings on the western side of McMurdo Sound. As part of this work, researchers will document the mode and tempo of physical and biological disturbance events. The research team will use this information to help interpret sediment profiles obtained from drilling operations in McMurdo Sound and thus help distinguish ice-free from ice-covered intervals in the geological past.

Field Season Overview:

This season researchers will be retrieving experimental arrays and following up on studies conducted during their first field season in 2008. A field team of seven at Explorers Cove will include three SCUBA divers and four other research-team members. Most of the work will be based from Explorers Cove field camp, with access to nearby locations (including Butter Point/Herbertson Glacier and Double Curtain Glacier dive sites) using snowmobile and all-terrain vehicles. Trips to the more remote location (Bay of Sails) will be by helicopter.

Two student team members will deploy later in the season to conduct lab-based studies at Crary Lab. An overnight excursion to Explorers Cove will introduce these students to the study site and permit them to place their experimental outcomes in context with the environmental setting.

Deploying Team Members:

- Kyle Broach
- Stephen Clabuesch
- Shawn Harper
- Katherine Murray
- Cecilia Shin
- Beverly Walker
- Sally Walker (Co-PI)

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Science Project Details: 2010-2011

McMurdo And South Pole SuperDARN: Investigation Of The Ionospheric Dynamics And Magnetosphere-Ionosphere Coupling In Antarctica

Program Manager:
Dr. Alexandra Isern

Event Number: A-369-M
NSF/PLR Award 0944270

ASC POC/Implementer:
Julie Bonneau

Dr. William Bristow (Principal Investigator)
bill.bristow@gi.alaska.edu
http://SuperDARN.jhuapl.edu

University of Alaska Fairbanks
Geophysical Institute
Fairbanks, Alaska

Supporting Stations: McMurdo Station
Research Locations: On station

Project Description:
The Super Dual Auroral Radar Network (SuperDARN) is a global international radar network of 22 installations observing high frequency (HF) bands between 8 and 22 MHz. Radar systems have been installed at McMurdo Station (2009-10) and South Pole Station (2011-12), extending the global-scale coverage in the southern hemisphere and helping answer questions about geomagnetic conjugacy of global magnetic storms and substorms and differences in the ionospheric plasma convection caused by the asymmetry of solar illumination in both hemispheres. The SuperDARN network, with its ability to observe global-scale convection with excellent temporal and spatial resolution, has proven to be the most powerful tool available for the ground-based research, allowing scientists to address the most fundamental and important questions of space physics. These data are also relevant to important societal issues such as space weather studies, and they enhance the usefulness of data from other instruments.

Field Season Overview:
This field season, research team members plan to conduct maintenance of the McMurdo SuperDARN radar and a site visit to South Pole for preliminary work on the new South Pole SuperDARN.

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Deploying Team Members:

- Richard Parris
- Jeff Spaleta

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South Pole Monitoring For Climatic Change

Program Manager:
Dr. Peter Milne

Event Number: O-257-S
NOAA/NSF Agreement

ASC POC/Implementer:
Chad Naughton

Mr. James Butler (Principal Investigator)
john.booth@noaa.gov
http://www.esrl.noaa.gov/gmd/

National Oceanic and Atmospheric Administration
Global Monitoring Division (GMD)
Boulder, Colorado

Supporting Stations: South Pole Station
Research Locations: Atmospheric Research Observatory (ARO)

Project Description:
At the South Pole, NOAA's Global Monitoring Division (GMD) collects year-round long-term measurements of trace atmospheric constituents that influence climate change. These measurements are part of NOAA's effort to determine and assess the long-term build-up of global pollutants in the atmosphere. The measurements are used for time-series analysis of multi-year data records that focus on stratospheric ozone depletion, trans-Antarctic transport and deposition, interplay of the trace gases and aerosols with solar and terrestrial radiation fluxes on the polar plateau, the magnitude of seasonal and temporal variations in greenhouse gases and the development of polar stratospheric clouds over Antarctica. Other objectives of the research are to determine the rate at which concentrations of these atmospheric constituents change and to examine the sources, sinks, distributions, budgets and trends. The data help climate modelers and diagnosticians determine how the rate of change of these parameters affect climate, particularly when the data are included in climate-model studies.

Field Season Overview:
Operational requirements will continue as in previous years, with the use of the Atmospheric Research Observatory (ARO), the Balloon Inflation Facility (BIF), and the management of the Clean Air Sector. Team members will record meteorological variables and measure carbon dioxide, water vapor, surface and stratospheric ozone, solar and terrestrial radiation, and ozone-

depleting compounds and other trace constituents in the atmosphere over South Pole. A minimum of two support personnel will staff the observatory during the austral summer season. Scientists will deploy for shorter periods throughout the austral summer, performing upgrades and routine maintenance on the instruments, and will also be working at the ARO. Data will be returned to the home institution for analysis.

Deploying Team Members:

- Andrew Clarke
- Patrick Disterhoft
- Nicholas Morgan
- Christine Schultz
- Sebastian Stewart

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Science Project Details: 2010-2011

Cosmological Research With The 10-Meter South Pole Telescope

The South Pole Telescope (SPT) illuminated by a strong aurora and the late twilight sky. The distinctive star-field will be visible for the duration of the winter. Photo by Daniel M. Luong-Van

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-379-S
NSF/PLR Award 1248097

ASC POC/Implementer:
Julie Bonneau

Dr. John Carlstrom (Principal Investigator)
jc@kicp.uchicago.edu
http://pole.uchicago.edu

University of Chicago
Astronomy and Astrophysics
Chicago, Illinois

Supporting Stations: South Pole Station
Research Locations: Dark Sector Lab

Project Description:
The South Pole Telescope (SPT) project conducts cosmological research by measuring the intensity and polarization anisotropy of the Cosmic Microwave Background (CMB). By surveying 4,000 square degrees of the sky with high sensitivity in three wavelength bands, the telescope can detect galaxy clusters through the spectral distortion they impart on the CMB. Researchers will use the resulting catalog of galaxy clusters to set constraints on the mysterious dark energy that dominates the mass-energy density of the universe and is causing the expansion of the universe to accelerate.

Field Season Overview:
The major goal for the 2010-2011 austral summer season at South Pole is replacing the azimuth bearing of the SPT. This is a major operation requiring the careful coordination of the SPT team, support personnel, and the NSF. Researchers also plan to work with support personnel and the NSF on the specifications and placement of the SPT polarization calibration tower to be deployed in austral summer 2011-2012.

Project Indexes

Find information about current USAP projects using the principal investigator, event number station, and other indexes.

Project Web Sites

Find more information about USAP projects by viewing individual project web sites.

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The research team also plans to conduct routine SPT maintenance tasks, including: Inspection of the telescope backing structure, cover-plates, and improve insulation - especially the yoke cabins and elevation gear interface regions; service and maintain the telescope components and computer systems; service the optical pointing telescopes; upgrade and testing of the telescope, receiver, and observing software.

Deploying Team Members:

- Ken Aird
- Christoph Brem
- Tijmen de Haan
- James Hrubes
- Peter Huntley
- Christopher Kendall
- Erik Leitch
- Jared Mehl
- Stephan Meyer (Co-PI)
- Erik Nichols
- Kyle Story
- Keith Vanderlinde
- Ross Williamson

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Science Project Details: 2010-2011

Science Coordination Office For Astrophysical Research In Antarctica (SCOARA-II)

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-370-S
NSF/PLR Award 0750083

ASC POC/Implementer:
Julie Bonneau

Dr. John Carlstrom (Principal Investigator)
jc@kicp.uchicago.edu
http://astro.uchicago.edu/scoara/

University of Chicago
Astronomy and Astrophysics
Chicago, Illinois

Supporting Stations: South Pole Station
Research Locations: Dark Sector

Project Description:
Antarctica's tremendous potential for cosmology and astrophysics can be realized best if the scientists involved understand and participate in the management, planning and oversight of the shared resources and logistical support necessary to conduct research. The Science Coordination Office for Astrophysical Research in Antarctica (SCOARA) is an intellectual partnership composed of and directed by these scientists to ensure that the highest quality astrophysical research is conducted at the South Pole.

Field Season Overview:
Project team members will continue their operational support of astrophysical research at South Pole Station. This will include technical support for the following projects: IceCube, SPT, BiCEP-2, SPUD-Keck, the AMANDA decommission, and general Martin A. Pomerantz Observatory (MAPO) shop and DSL spares resupply. SCOARA also provides general machine shop support for South Pole Station and performs oversight of test and measurement equipment for astrophysical research, including vacuum pumps, leak checkers, thermal imagers, and other supplies.

Science Project Details: 2010-2011

Collaborative Research: Dynamics And Transport Of The Antarctic Circumpolar Current In The Drake Passage

Program Manager:
Dr. Peter Milne

Event Number: O-313-N

ASC POC/Implementer:
Patricia Jackson

Dr. Teresa Chereskin (Principal Investigator)
tchereskin@ucsd.edu
http://cdrake.org

University of California San Diego
Scripps Institution of Oceanography
La Jolla, California

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: Drake Passage (LMG)

Project Description:

The Southern Ocean is especially sensitive to climate change, responding to winds that have increased over the past 30 years and warming significantly more than the global ocean over the past 50 years. The Antarctic Circumpolar Current (ACC) is the pulse of the Southern Ocean, and the Drake Passage chokepoint is well-suited geographically for measuring its time-varying transport. Observations and computer models also suggest that the dynamic balances that control ACC transport are particularly effective through the Drake Passage. Researchers seek to quantify the transport and dynamics of the ACC by means of a 30-mooring array in the Drake Passage over five years. Each year, data from the CPIES (Current-and-Pressure-recording, Inverted Echo Sounders) will be collected via acoustic telemetry, leaving the instruments undisturbed until recovered.

Field Season Overview:

Researchers on NBP10-04 will collect one year of daily-averaged data by acoustic telemetry from 39 CPIES (Pressure and Current Equipped Inverted Echo Sounder) at 37 sites in the Drake Passage. As time permits, the research team will make a full-ocean-depth conductivity-temperature-depth/lowered Acoustic Doppler Current Profiler (CTD/LADCP) cast at each instrument site. They will also recover their calibration current-meter

Project Indexes
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mooring, M04, located between sites E01 and F01. The group will attempt to recover the original C02 instrument they were unable to communicate with last year.

Deploying Team Members:

- Gerard Chaplin
- Kathleen Donohue (Co-PI)
- Sharon Escher
- Yvonne Firing
- Brian Roderick
- James Sousa
- Karen Tracey
- Randolph Watts (Co-PI)

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Science Project Details: 2010-2011

Lidar Investigation Of Middle And Upper Atmosphere Temperature, Composition, Chemistry, And Dynamics At McMurdo, Antarctica

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-130-M

ASC POC/Implementer:
John Rand

Dr. Xinzhao Chu (Principal Investigator)
xinzhao.chu@colorado.edu
http://cires.colorado.edu/science/groups/chu/projects/mcmurdo.html

University of Colorado Boulder
CIRES
Boulder, Colorado

Supporting Stations: McMurdo Station
Research Locations: Arrival Heights

Project Description:

This project continues the operation of the Fe Boltzmann lidar installed in the Antarctica New Zealand (ANZ) lab at Arrival Heights near McMurdo Station. The initial instrument installation took place during the 2010-11 summer season. Science objectives include: (1) Exploring the recently discovered thermosphere Fe layers to at least 155 kilometers, deriving neutral temperatures from these layers, and developing a model to quantitatively explain the observations; (2) Developing the climatology of gravity wave potential energy from the lower atmosphere to the middle atmosphere and lower thermosphere, investigating wave dissipation, and characterizing high frequency and inertial gravity waves by combining lidar, radar and imager data with modeling; (3) Studying the mechanisms behind the inter-hemispheric difference and latitudinal dependence of PMC characteristics, exploring the summer-time extreme Fe events and their possible link to polar mesospheric clouds (PMCs), aurora particle precipitation and meteor smoke particles; (4) Developing the climatology of temperature from the surface to 110 kilometers, characterizing its diurnal, seasonal and inter-annual variations, and exploring various mechanisms that affect the thermal balance of the polar atmosphere on both long and short time scales; and (5) Developing the climatology of the mesospheric Fe layers, including their chemical vertical flux, characterize the diurnal, seasonal, inter-annual and

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solar cycle variations of the Fe layers, and developing a comprehensive model that accurately reproduces the observations.

Field Season Overview:

This is the first deployment of the Fe Boltzmann LiDAR to McMurdo Station (specifically, Antarctica New Zealand's (ANZ) Arrival Heights laboratory). As a result, there will be considerable cargo shipment and research-team deployment for installing, testing, and conducting of extensive LiDAR observations. The research team will deploy five people to McMurdo Station during 2010-2011, with the highest population of four people during the summer season and, because of the complexity of the LiDAR system and the demanding atmospheric observations, one winter-over scientist through the winter season.

Once the LiDAR is installed successfully, roof/hatch construction is done, and the electrical utilities are ready, the research team will propagate the laser beam into the sky and conduct initial tests to obtain LiDAR return signals from the atmosphere. Once the sky tests are successful, researchers will begin data collection for the summer season. The project’s scientific goals require long-period continuous operations (more than 10 hours) of the LiDAR during both light and dark periods through the entire year.

Deploying Team Members:

- Weichun Fong
- Chester Gardner (Co-PI)
- John Smith

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Science Project Details: 2010-2011

Natural Curiosities: Poems Of Exploration, Antarctica

Program Manager:
Ms. Winnie Reuning

Event Number: W-485-P

ASC POC/Implementer:
Patricia Jackson

Dr. Katharine Coles (Principal Investigator)
k.coles@english.utah.edu
http://www.scienceandliterature.org/antarctica

University of Utah
Salt Lake City, Utah

Supporting Stations: Palmer Station
Research Locations: Palmer Station and local boating area

Project Description:
Ms. Coles' will produce a group of poems which will consider the Antarctic landscape in its own stark and present reality as well as how humans use stories, images, and theories to represent newly encountered landscapes and their features and inhabitants in ways that render them apprehensible, or exotic, or, perhaps, both.

Field Season Overview:
Traveling to Palmer Station onboard the research/resupply vessel Laurence M. Gould, Ms Coles will encounter experiences along the way, as well as at Palmer Station. As much as possible, she plans to be out in the field with the scientists and support staff, eliciting stories about their experiences on the continent.

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Science Project Details: 2010-2011

Operation And Maintenance Of A CTBT Radionuclide Monitoring Station At Palmer Station

Program Manager:
Mr. Pat Smith

Event Number: T-998-P
NSF/OPP CTBTo MOA

ASC POC/Implementer:
Eric Pohlman

Undefined Laura R Comes (Principal Investigator)
Laura.Comes@gd-ais.com
http://www.ctbto.org

Fairfax, Virginia

Supporting Stations: Palmer Station
Research Locations: Terra Lab

Project Description:
This project services and calibrates the automated radionuclide air-particulate monitoring system in the International Monitoring Station (IMS) building (Terra Lab) at Palmer station.

Field Season Overview:
The service and maintenence work will occur entirely in the Terra Lab and will require no field work.

Deploying Team Members:

- Bouvard Hosticka

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Science Project Details: 2010-2011

IPY Collaborative Research: Constraining The Mass Balance Deficit Of The Amundsen Coast's Glaciers

Grad students Brooke Medley (UW) and Ali Criscitiello (WHOI) drill the first meter of a 12-m core. The isotopic chemistry of this core will be used to determine the depth of each year's snowfall. The second field season will involve a larger drill to drill down to 150 meters to date the layers observed with the University of Kansas airborne accumulation radar. Photo by Ian Joughin

Program Manager:
Dr. Julie Palais

Event Number: I-157-M

ASC POC/Implementer:
Leslie Blank

Dr. Howard Conway (Principal Investigator)
conway@ess.washington.edu
http://bigice.apl.washington.edu/projects_amundsencoast.html

University of Washington
Earth and Space Sciences
Seattle, Washington

Supporting Stations: McMurdo Station
Research Locations: WAIS Divide

Project Description:
Researchers on this project will: 1) Produce accumulation estimates for Pine Island, Thwaites, Smith, Pope, and Kohler catchments that provide basin-wide multi-decadal estimates of total accumulation; 2) reconcile the previously published, widely varying flux gate and altimetry mass balance estimates for this rapidly thinning region; 3) characterize changes in mass balance over the last three decades to determine how rapidly it is changing and why; 4) analyze these results in conjunction with ice-sheet models to understand how present thinning trends may behave into the future.

Field Season Overview:
The primary objective of this season will be to collect ice-core data to date

layers in data collected using the Center for Remote Sensing of Ice Sheets (CRESIS) airborne radar in the 2009-2010 season. Researchers will collect cores 100 to 150 meters in length at three remote camps, with a shorter shakedown core, if needed, at the camp from which the research team will deploy (WAIS Camp). All cores will be returned to the United States for analysis. Researchers will use the Ice Coring and Drilling Services (ICDS) Eclipse drill, with operations coordinated by an experienced on-site driller.

Deploying Team Members:

- Lou Albershardt
- Alison Criscitiello
- Sarah Das (Co-PI)
- Brooke Medley
- Luke Trusel

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Science Project Details: 2010-2011

Deglaciation Of The Ross Sea Embayment - Constraints From Roosevelt Island

Program Manager:
Dr. Julie Palais

Event Number: I-209-M
NSF/PLR Award 0944307

ASC POC/Implementer:
Chad Naughton

Dr. Howard Conway (Principal Investigator)
conway@ess.washington.edu
http://www.ess.washington.edu/Surface/Glaciology/projects/ross_sea_history/

University of Washington
Earth and Space Sciences
Seattle, Washington

Supporting Stations: McMurdo Station
Research Locations: Roosevelt Island

Project Description:
This international ice core drilling project on Roosevelt Island is a partnership with New Zealand, UK, Denmark, Germany and China. Researchers seek to understand past, present and future environmental changes in the Ross Sea sector of West Antarctica. The scientific objectives are to determine histories of climate and ice thickness for Roosevelt Island, and to develop an updated model of the configuration and thickness of the ice in the Ross Sea Embayment during the last glacial maximum. The project's New Zealand partners have started drilling a 750-meter ice core using their new intermediate-depth drill. They expect to complete the drilling in early January 2013. After drilling is complete, researchers will conduct borehole logging measurements and geophysical measurements to characterize spatial variations in ice thickness and surface velocities across the island.

Field Season Overview:
In this first year of the project, researchers will install and survey a network of poles set across Roosevelt Island (poles will be resurveyed the following season to calculate surface motion). Researchers also plan to complete radar surveys across the island to characterize 1) the spatial pattern of accumulation; 2) spatial pattern of ice thickness and internal stratigraphy; and 3) ice-sheet thinning.

Research team members will also assist the project's Danish and New Zealand

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partners with the setting up and commencement of drilling an ice core on the island. The drilling equipment will remain on site through the winter, with the drilling completed next austral summer. I-209 researchers will also log the borehole (profiles of temperature, sonic velocity, and optical stratigraphy) in years two and three.

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Science Project Details: 2010-2011

Measurements Of Antarctic Ozone And Polar Stratospheric Cloud Profiles In A Time Of Decreasing Atmospheric Chlorine, Climate Change, And Fluctuations In Polar Vortex Strength

Program Manager:
Dr. Peter Milne

Event Number: O-131-M

ASC POC/Implementer:
John Rand

Dr. Terry Deshler (Principal Investigator)
deshler@uwyo.edu
http://www-das.uwyo.edu/~deshler/

University of Wyoming
Department of Atmospheric Science
Laramie, Wyoming

Supporting Stations: McMurdo Station
Research Locations: McMurdo Station sea ice

Project Description:
In recent years, stratospheric dynamics have caused the ozone hole to sway between large and stable, to small and unstable. This has caused wide variations in Antarctic ozone loss from year to year, with ozone depletion expected to gradually slow between 2001 and 2017. This project focuses on the development of the Antarctic ozone hole and the characteristics of polar stratospheric clouds (PSCs) by making vertical profile measurements of ozone and PSCs. Researchers will make ozone measurements with balloon-borne in situ instruments; and will make PSC measurements with balloon-borne in situ instruments and with light detection and ranging (LiDAR).

Field Season Overview:
To ensure the researchers obtain a pre-ozone-loss ozone profile and investigation of the beginning stages of the condensation (CN) layer, the research team and most cargo will arrive on the first flight into McMurdo Station in August. Additionally, a member of the team (from Italy) will deploy in late January 2011 to do a LiDAR system check and upgrade and to train the winter-over science technician on LiDAR use.

For the August to October measurements, approximately 6,500 cubic feet of helium (500 pounds) will be used for balloon launches. Snow removal and grading may be necessary for helium placement and to provide a large launch area. In October, researchers will use helicopter support for instrument recovery over the Ross Ice Shelf.

Deploying Team Members:

- Patrick Campbell
- Luca Di Liberto
- Mahesh Kovilakam
- Stanley Smith

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Science Project Details: 2010-2011

Quasi-Lagrangian Measurements Of Polar Stratospheric Cloud Particle Development From Long-Duration Balloon Platforms

Polar stratospheric clouds above McMurdo in September 2009. These naturally occurring clouds play a pivotal role in the processes of polar ozone loss. Photo By Leslie Baran, a graduate student with me in McMurdo in 2009

Program Manager:
Dr. Peter Milne

Event Number: O-361-M

ASC POC/Implementer:
John Rand

Dr. Terry Deshler (Principal Investigator)
deshler@uwyo.edu
http://www-das.uwyo.edu/~deshler/

University of Wyoming
Department of Atmospheric Science
Laramie, Wyoming

Supporting Stations: McMurdo Station
Research Locations: McMurdo Station sea ice

Project Description:
This project will focus on measuring the development of polar stratospheric cloud (PSC) particles using in-situ size distribution measurements from instruments deployed on long-duration-balloon platforms.

PSC's play a pivotal role in polar ozone depletion. Heterogeneous chemistry occurs on the surface of the particles in these clouds, converting chlorine from an inactive to an active phase that destroys ozone. The major remaining question concerning the formation of PSC particles has to do with the temperatures at which nitric acid trihydrate (NAT) particles nucleate. There are significant differences between laboratory and field data; however, there have been no field measurements which could follow an air parcel as it cooled to PSC temperatures. With the newly available long-duration-balloon platforms, researchers hope to make the first in-situ Lagrangian measurements of the development of NAT in a PSC.

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Field Season Overview:

The research team will deploy on the first flight of WinFly. All laboratory and payload preparation and launch support will be provided within logistic support to the Concordiasi project. The researchers will also need helicopter support and the assistance of a mountaineer for instrument recoveries if there is a failure on launch and the gondola lands within 150 kilometers of McMurdo Station or if one of the balloons return over McMurdo Station near the end of its mission and can be cut down in a recoverable location.

Deploying Team Members:

- Stanley Smith

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Science Project Details: 2010-2011

Balloon-Borne Large Aperture Sub-Millimeter Telescope (BLAST-POL)

The Balloon-borne Large Aperture Submillimeter Telescope (BLAST) just before launch in December of 2006. BLAST has been re-built and converted to BLAST-pol. BLAST-pol will be measuring the magnetic fields in star forming regions. These fields are thought to be instrumental in supporting the clouds of gas that eventually collapse to become young starts. Photo by Mark Halpern

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-147-M

ASC POC/Implementer:
Addie Coyac

Dr. Mark Devlin (Principal Investigator)
devlin@physics.upenn.edu
http://blastexperiment.info/

University of Pennsylvania
Department of Physics and Astronomy
Philadelphia, Pennsylvania

Supporting Stations: McMurdo Station
Research Locations: Columbia Scientific Balloon Facility/Williams Field

Project Description:
BLAST (Balloon-borne Large-Aperture Submillimeter Telescope) is a comprehensive program to study the link between Galactic magnetic fields and star formation. BLASTPol is the first instrument to combine the sensitivity and mapping speed necessary to trace magnetic fields across entire clouds with the resolution to trace fields down into dense substructures, including cores and laments. BLASTPol therefore provides the critical link between the PLANCK all-sky polarization maps with 5' resolution and ALMA's ultra-high resolution, but with only a 20" field of view. BLASTPol will use the PLANCK data to refine its target selection, then ALMA will utilize BLASTPol maps to "zero in" on areas of particular interest. Together, these

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three instruments will probe the inner workings of star formation with previously unreachable resolution, sensitivity and scope.

Field Season Overview:

This season, the project team will have a rotating crew of scientists operating at the Columbia Scientific Balloon Facility (CSBF) launch facility near McMurdo Station. The number of deployed personnel will peak at 13.

Deploying Team Members:

- Francesco Angile
- Steven Benton
- Laura Fissel
- Natalie Gandilo
- Jeffery Klein (Co-PI)
- Tristan Matthews
- Lorenzo Moncelsi
- Barth Netterfield (Co-PI)
- Giles Novak (Co-PI)
- Enzo Pascale (Co-PI)
- Juan Soler Pulido
- Nick Thomas
- Matt Truch

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Science Project Details: 2010-2011

Role Of Resource Legacy On Contemporary Linkages Between Biodiversity And Ecosystem Processes In A Cold Desert Ecosystem: The McMurdo Dry Valley LTER Program

Lake level survey at Lake Hoare.
Photo by Maciej Obryk

Program Manager:
Dr. Roberta Marinelli

Event Number: B-426-M

ASC POC/Implementer:
Eric Pohlman

Dr. Peter Doran (Principal Investigator)
pdoran@uic.edu
http://tigger.uic.edu/~pdoran/home.htm

University of Illinois Chicago
Dept of Earth and Environmental Sciences
Chicago, Illinois

Supporting Stations: McMurdo Station
Research Locations: McMurdo Dry Valleys

Project Description:
This project addresses the central hypothesis that biodiversity and ecosystem structure and function in the McMurdo Dry Valleys are dictated by the interactions of climatic legacies with contemporary biotic and physical processes. Researchers will upgrade and maintain long-term, automated, lake-monitoring equipment in the Dry Valleys; carry out manual hydrologic balance measurements; collect data from a number of long-term environmental sensors in and on the lakes; measure lake-ice movements; collect sediment samples; and survey the bed contact between Lake Hoare and the Canada Glacier to determine the role of glacier movement in Lake Hoare lake-level history.

Field Season Overview:
This year's field season work requires operational support including helicopter, cargo support, and allocation of space in Crary Lab. The researchers will be working out of established field camps, at Lakes Fryxell, Bonney, and Hoare, with planned day trips by means of helicopter support to Wright and Victoria Valleys. They will also be surveying ablation stakes on the ice surface at Lakes Hoare, Fryxell, and Bonney, which entails the

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assistance of UNAVCO. Researchers will also be working with UNAVCO to establish data telemetry in the Dry Valleys. As in the past, we will be SCUBA diving in Lake Hoare in order to complete our benthic studies in collaboration with New Zealand colleagues.

Deploying Team Members:

- Joseph Hudek
- Maciej Obryk (Team Leader)

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Science Project Details: 2010-2011

Stable Isotope Analyses Of Pygoscelid Penguin Remains From Active And Abandoned Colonies In Antarctica

Program Manager:
Dr. Peter Milne (acting)

Event Number: B-034-E/M

ASC POC/Implementer:
John Evans

Dr. Steven D Emslie (Principal Investigator)
emslies@uncw.edu
http://www.uncw.edu/penguins

Department of Biological Sciences
Wilmington, North Carolina

Supporting Stations: Special Project, McMurdo Station
Research Locations: Antarctic Peninsula, Beaufort Island, Ross Sea

Project Description:
This project involves an international collaboration with Chinese, Spanish, and Polish scientists to investigate the stable isotope record of abandoned and active penguin colonies in Antarctica. The researchers will be working in two major regions of the Antarctic: The Antarctic Peninsula and the Ross Sea. During four field seasons, researchers will collect samples of penguin tissue, e.g., bone, eggshell, feathers; guano from sediments; and prey remains for radiocarbon and stable-isotope analyses. Researchers will use the data to test hypotheses on occupation history, population movements, and diet of Adélie Penguins in relation to climate change over the past 45,000 years in Antarctica.

Field Season Overview:
This field season will be similar to the last in that researchers will deploy at separate times to separate locations. One member of the research team will deploy to the Antarctic Peninsula, in conjunction with research conducted by other USAP grantees with B-044-E. Researchers also will deploy to the Ross Sea area in order to visit Beaufort Island to sample an important fossil penguin site on the north end of the island. This deployment may take place early in the season, while ice may still surround Beaufort Island. One or two days of work at the north end will be needed with close support by helicopter. If ice does not form around Beaufort Island, then deployment

could occur in late January if the I/B Oden visits the island with researchers from B-031-M, and if the Oden also has a helicopter on board to provide transport to the north end while the other group works on the south end of the island.

Deploying Team Members:

- Larry Coats

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Science Project Details: 2010-2011

Studies Of Solar Wind - Magnetosphere Interactions Using Observations Of ULF Waves At An Extensive Ground Array At High Latitudes

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-102-M/S

ASC POC/Implementer:
Elizabeth Watson

Dr. Mark J Engebretson (Principal Investigator)
engebret@augsburg.edu
http://space.augsburg.edu

Augsburg College
Department of Physics
Minneapolis, Minnesota

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: Arrival Heights and South Pole science labs

Project Description:
This project is a continuation of current studies using search coil magnetometers already installed and operating at South Pole Station's Cusp Lab and Arrival Heights at McMurdo Station, as well as at Halley (a UK base in Antarctica) and two sites in the Arctic. Researchers use time-series data from magnetometers at these and other Antarctic sites (including the PENGUIn Automated Geophysical Observatories), often in conjunction with data from other Arrival Heights instruments, to study the dynamics of the Earth's ionosphere and magnetosphere.

Field Season Overview:
The Arrival Heights science technician will conduct routine maintenance, changing of data media, and occasional troubleshooting on an ongoing basis.

As in previous years, data from the research group's South Pole instrument are recorded by a computer supplied by the University of Maryland and Siena College. During the coming year only routine monitoring will be needed that can be provided, as in the past, by a research associate.

Science Project Details: 2010-2011

The Biogeochemical Evolution Of Dissolved Organic Matter In A Fluvial System On The Cotton Glacier, Antarctica

Program Manager:
Dr. Peter Milne (acting)

Event Number: B-046-M

ASC POC/Implementer:
Eric Pohlman

Dr. Christine Foreman (Principal Investigator)
cforeman@montana.edu
http://www.montana.edu/cforeman

Montana State University Bozeman
Land Resources and Environmental Sciences
Bozeman, Montana

Supporting Stations: McMurdo Station
Research Locations: Crary Lab, Cotton Glacier, Lake Fryxell

Project Description:

Dissolved organic matter (DOM) is an important component of the global carbon cycle and provides a carbon source for microbial activity. Much of this carbon pool is composed of predominantly recalcitrant organic matter derived from microorganisms (most global DOM is of marine origin) that has been extensively worked over by microbial activity and/or humification. A recent sample of a supraglacial stream formed on the Cotton Glacier in the Transantarctic Mountains indicated the presence of DOM that more closely resembles an assemblage of characterizable precursor organic compounds. Based on the changing spectrum of the samples, researchers hypothesize that the DOM from this water evolved to resemble materials present in marine and many inland surface waters. The interdisciplinary team will study the biogeochemistry of the Cotton Glacier and this progenitor DOM. They will isolate the DOM by reverse-osmosis for purposes of studying its chemical composition. Water samples will also be aged and the DOM isolated over time to determine how the material changes structurally.

Field Season Overview:

Researchers will establish a working base camp at Lake Fryxell during the month of December to study the streams in the Fryxell basin, specifically Canada Stream and Aiken Creek, in comparison to the Cotton Glacier

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supraglacial stream. Researchers plan to make day trips to the Cotton Glacier from Lake Fryxell, collecting water into 20-liter carboys and returning these to Lake Fryxell and Crary Lab. On the last sampling trip of the season, they will collect two sling loads of water, each comprised of three 55-gallon barrels, from the Cotton Glacier and return this directly to McMurdo Station for analysis.

Deploying Team Members:

- Yu-Ping Chin (Co-PI)
- Michael San Clements
- Heidi Smith
- Maya Wei-Haas

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Science Project Details: 2010-2011

Role Of Resource Legacy On Contemporary Linkages Between Biodiversity And Ecosystem Processes In A Cold Desert Ecosystem: The McMurdo Dry Valleys LTER Program

Program Manager:
Dr. Roberta Marinelli

Event Number: B-425-M

ASC POC/Implementer:
Eric Pohlman

Dr. Andrew Fountain (Principal Investigator)
andrew@pdx.edu
http://www.mcmlter.org/

Portland State University
Geology
Portland, Oregon

Supporting Stations: McMurdo Station
Research Locations: McMurdo Dry Valleys

Project Description:
The McMurdo Long Term Ecological Research (LTER) projects will continue to investigate the McMurdo Dry Valleys as an end-member ecosystem and focus on the relative roles of legacy and extant processes on current biodiversity and ecosystem structure and function. This project measures Dry Valley meteorological parameters and the physical properties of Dry Valley glaciers, with special emphasis on LTER core research areas.

Field Season Overview:
This austral summer, researchers will work from the Lake Hoare camp in late October and will make day trips to the Commonwealth, Howard, Canada, and Taylor Glaciers to conduct mass balance measurements. The research team will also make day trips to various meteorological stations in Taylor, Beacon, Wright, Victoria, and Garwood Valleys. Several sensors and dataloggers on the meteorological stations will be swapped out and sent back to the manufacturer for recalibration.

Researchers also plan to add telemetry equipment to half of the LTER meteorological, stream gauge, and lake stations in Taylor Valley this season. A repeater with a wide field of view antenna will be installed on the 1882

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peak in Taylor Valley to relay the data back to McMurdo Station. The data from the station will be stored on a computer at McMurdo Station and transferred electronically to an off-site location. During the summer season, the radios will run continuously. During the winter, the radios will turn on for 30 minutes a day. With real- or near-real-time access, researchers will be able to re-program the dataloggers and download data remotely, which will save a trip, or multiple trips, to the stations each season.

Researchers will also conduct a two-week field campaign in Garwood Valley to begin the quantitative monitoring of an exposed glacial ice face and the surrounding permafrost. Planned activities include installation of a rover meteorological station, collecting LiDAR of the ice face (early season and late season, if possible), shallow coring of permafrost and glacier ice, and the collection of rock and ice samples. Researchers will also continue their cryo-lake experiments that include the collection of ice, water, and sediment samples from Canada Glacier.

Deploying Team Members:

- Alexandre Anesio
- Joseph Levy
- Thomas Nylen (Team Leader)
- James O'Connor

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Science Project Details: 2010-2011

Palmer Long Term Ecological Research (LTER): Looking Back In Time Through Marine Ecosystem Space, Apex Predator Component

Program Manager:
Dr. Lisa Clough

Event Number: B-013-L/P
NSF/PLR Award 0823101

ASC POC/Implementer:
Eric Pohlman

Dr. Bill Fraser (Principal Investigator)
bfraser@3rivers.net
http://pal.lternet.edu/

Polar Oceans Research Group
Sheridan, Montana

Supporting Stations: ARSV Laurence M. Gould, Palmer Station
Research Locations: West Antarctic Peninsula

Project Description:
The core, long-term data associated with these Long Term Ecological Research (LTER) studies are derived primarily from local populations distributed over approximately 50 square kilometers near Palmer Station. At-sea surveys of abundance and distribution of seabirds over an area of approximately 80,000 square kilometers provide a larger-scale context for these studies. Spanning three decades, this data collection allows researchers to address a broad suite of ecological issues, including interactions between climate migration and community structure, the effects of landscape geomorphology on biological populations, the mechanics of source-sink population dynamics and the establishing of basic conceptual and empirical links between marine and terrestrial ecology.

Field Season Overview:
Palmer Station LTER will deploy members of the LTER group in and out of Palmer Station beginning in early October, and some team members will stay until April. Researchers will conduct Zodiac boat operations to the local islands. Researchers on the ARSV Laurence M. Gould (LMG) will conduct the 28-day summer cruise between early January and mid-February. During the 2011 cruise, a sediment trap mooring will be recovered and re-deployed near Hugo Island; five physical oceanographic moorings will be serviced; and several three-to-five-day field camps on Avian and Charcot Islands will be

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established to census and map Adélie penguin colonies, obtain diet samples, and instrument birds with satellite transmitters and dive-depth recorders. The research team also plans stops between Anvers Island and Marguerite Bay (including, Renaud Island, Armstrong Reef, Fish Islands, Avian Island, Charcot Islands) to complete satellite PTT deployment and penguin diet sampling. The focus of the station-based research will be on the larger seabird community, especially the three breeding species of Pygoscelid penguins, and is timed to coincide with the October to March breeding season. Although most work will be accomplished using Zodiac boats for daily travel to nearby seabird colonies, research personnel will also establish multi-day field camps at more remote locations to meet some program objectives. Team members will concentrate on census and mapping seabird colonies, obtaining indices of reproductive success, determining diets and foraging ranges, and examining chick growth and energetics. Palmer Station's laboratory facilities will be used to house and process satellite imagery and telemetry data, and to analyze penguin diet samples.

Deploying Team Members:

- Jennifer Blum
- Kelsey Ducklow
- Shawn Farry
- Donna Patterson-Fraser
- Marc Travers

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Science Project Details: 2010-2011

The Demographic Consequences Of Environmental Variability And Individual Heterogeneity In Life-History Tactics Of A Long-Lived Antarctic Marine Predator

Program Manager:
Dr. Diana Nemergut

Event Number: B-009-M

ASC POC/Implementer:
Addie Coyac

Dr. Robert Garrott (Principal Investigator)
rgarrott@montana.edu
http://www.montana.edu/rgarrott/antarctica/index.htm

Montana State University Bozeman
Ecology
Bozeman, Montana

Supporting Stations: McMurdo Station
Research Locations: Big Razorback Island field camp

Project Description:
Since 1968 this group of researchers has studied a breeding population of Weddell seals (a prominent Antarctic apex predator associated with fast ice) in Erebus Bay. Using data synthesis and modeling techniques researchers can evaluate a variety of hypotheses regarding effects of environmental variation on life-history evolution and population dynamics. Researchers are also interested in the influence of physical drivers on ecosystem dynamics from the bottom-up, so their field studies include collecting data on seal body mass – a surrogate for annual variation in marine food resources. The study's broad objective is to evaluate how temporal variation in the marine environment affects a long-lived mammal's population dynamics.

Field Season Overview:
Researchers will again occupy a field camp on Big Razorback Island as has been provided during recent field seasons. To conduct reconnaissance over the study area and to look for tagged seals outside the study area, the team will receive helicopter support for aerial surveys.

During October and November, researchers will tag all pups born in the eight colonies that make up the population. Research team members will also tag untagged adults as they are encountered. After the pupping season, the

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project will conduct seven to eight censuses of the entire population. A large number of pups and adult females will be photographed to document body-mass dynamics, and a small sample of these seals will be weighed.

If support diving personnel are working in the vicinity of the Erebus Bay seal colonies, the group would also like to collect one to three hours of underwater high-definition video of seals in the vicinity of the pupping colonies, with an emphasis of mother-pup interactions, pup behavior in the vicinity of haul-out holes, and diving behavior. This footage will be used as part of an educational video series they are developing on their long-term Weddell seal ecology studies.

Deploying Team Members:

- Thierry Chambert
- Jesse DeVoe
- Jessica Farrer
- Shawn Farry
- Mary Lynn Price (Team Leader)
- Jay Rotella (Co-PI)
- Glenn Stauffer (Co-PI)

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Science Project Details: 2010-2011

IceCube Operations And Maintenance

IceCube team members prepare to thread data cables into one of the two towers of the IceCube Lab. The IceCube Lab houses the data acquisition and computers processing the IceCube data. The instrument transforms 1 cubic kilometer of Antarctic ice into a neutrino detector. The detector modules are located up to 2.5 meters below the surface. Photo by Jim Haugen

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-333-S
NSF/PLR Award 0937462

ASC POC/Implementer:
Julie Bonneau

Dr. Francis Halzen (Principal Investigator)
halzen@icecube.wisc.edu
http://icecube.wisc.edu

University of Wisconsin Madison
Physics Department
Madison, Wisconsin

Supporting Stations: South Pole Station
Research Locations: Dark Sector, IceCube Lab

Project Description:
The IceCube neutrino telescope transforms a cubic kilometer of ice into a Cherenkov detector. This long-term project is an international collaboration and the University of Wisconsin-Madison serves as the host institution, providing oversight and staffing. IceCube opens unexplored wavelength bands for astronomy using neutrinos as cosmic messengers.

Field Season Overview:
This season, the research team plans to install seven strings and trench and install eight IceTop stations. The group also plans to continue inspections and modifications of the mobile drill structures (MDS) from last season, and to continue to perform sub-system tests on electrical and plumbing systems.

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On-Ice activities for the 2010-2011 season also include retrograde preparations for the enhanced hot water drill (EHWD).

Deploying Team Members:

- Andrew Arbuckle
- Misty Attwood
- Michael Baker
- Forest Banks
- Ryan Bay
- Benjamin Benischek
- Terry Benson
- Erik Blaufuss
- Hanna Blomstrom
- Sebastian Boeser
- Nathan Bowker
- Nicholas Buchinger
- Stijn Buitink
- Chad Carpenter
- Brian Christy
- Matthias Danninger
- Freija Descamps
- Juan Carlos DiazVelez
- Mark Dierckxsens
- Jens Dreyer
- Dennis Duling
- Alan Elcheikh
- Christopher Elliott
- Kirill Filimonov
- Chad Finley
- Robert Franke
- Thomas Gaisser (Co-PI)
- Dar Gibson
- Emil Hagstrom
- Tom Ham
- Terry Hannaford
- James Haugen
- Gary Hill
- Kara Hoffman

- Klas Hultqvist
- Thomas Hutchings
- John Jacobsen
- Jonas Kalin
- Albrecht Karle
- Mark Krasberg
- Denise Laitsch
- Andrew Laundrie
- Sven Lidstrom
- Reina Maruyama
- Terry Matt

- William McCormick
- Patrick Meade
- Martin Merck
- Eike Middell
- Curtis Moore
- Timothy Murray
- Matthew Newcomb
- Michael Patterson
- James Pepper
- Thomas Piwowarski
- Thomas Piwowarski
- Mathieu Ribordy
- John Richards
- James Roth
- Bakhtiyar Ruzybayev
- Perry Sandstrom
- Kai Schatto
- Anne Schukraft
- Michael Shaevitz
- Katherine Shirey
- Wilhelm Soderstrom
- Karthik Soundarapandian
- Benjamin Stock
- Greg Sullivan
- Mark Thoma
- Serap Tilav

- Graham Tilbury
- Jimmy Vinbladh
- Kara Waldher
- Kenneth Walker
- Klaus Wiebe
- Richard Wipperfurth
- Paul Wisniewski
- Kurt Woschnagg
- Donald Wray
- Chen Xu
- Donglian Xu
- Pavel Zarzhitsky
- Michael Zernick
- Melany Zimmerman

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Science Project Details: 2010-2011

New Research On The Mesozoic Vertebrate Faunas Of The Beardmore Glacier Region, Antarctica

Program Manager:
Dr. Alexandra Isern

Event Number: G-495-M

ASC POC/Implementer:
Chad Naughton

Dr. William Hammer (Principal Investigator)
glhammer@augustana.edu
http://www.antarcticvp.com

Augustana College
Department of Geology
Rock Island, Illinois

Supporting Stations: McMurdo Station
Research Locations: CTAM, Mounts Falla and Kirkpatrick, various other sites

Project Description:
The modern pattern relating increasing latitude with decreasing biodiversity is most clearly manifest in Antarctica. However, the fossil record suggests that this pattern may not have prevailed in the distant past. Antarctic fossils unearthed in the early 1970s led to the recognition of a high paleo-latitude Early Triassic vertebrate fauna similar to those on other continents. These findings supported the emerging plate tectonics theory, with the dicynodont Lystrosaurus standing out as a cosmopolitan taxon with records in Antarctica, India, Russia, South Africa, and perhaps Australia. More recent discoveries revealed a previously unrecognized bio-geographic pattern: Triassic-to-Jurassic vertebrate faunas from Antarctica become progressively more dissimilar to others worldwide.

The understanding of diversity dynamics and rebound across Pangaea are based on a geographically limited sampling that extrapolate global patterns from a few well-studied areas. Researchers plan to study these poorly understood, yet critically important, faunas from Antarctica that explicitly test prevailing interpretations of Mesozoic terrestrial vertebrate evolution and biogeography.

Field Season Overview:

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Because a 1990-1991 season ended before collecting was finished at the Mount Kirkpatrick site, a field team of six returned to that locality in December of 2003. During the 2003 season, researchers collected a considerable amount of new material. Furthermore, they discovered and quarried a second vertebrate site about 30 meters higher in the section on Mount Kirkpatrick. Because of adverse weather that cut short the 2003 field season, more material remains uncollected at Mt. Kirkpatrick, and none of the other exposures of similar age in the area were searched. Given the extent of the sedimentary exposures there is excellent potential for finding new Late Triassic-Early Jurassic vertebrate localities in the Beardmore Glacier region. Having a large group with multiple experienced people, including five veterans from past expeditions, will allow researchers to break up into smaller groups that can function independently. One of the groups will return to Mount Kirkpatrick to finish excavations. A second group will measure stratigraphic sections, collect sedimentological samples for analysis, and search the numerous other localities identified in the Falla and Hanson Formations. During the aerial reconnaissance done in the 2003-2004 season along the Queen Alexandra Range from Mount Kirkpatrick and Mount Falla toward the polar plateau, researchers mapped 23 additional areas of extensive exposure of units in the upper part of the stratigraphic section with GPS, including the Falla and Hanson formations. One of the reasons for the much larger field party is to allow the group to continue simultaneous excavations at Mount Kirkpatrick and investigate other possible bone-bearing areas in the Central Transantarctic Mountains. If this part of the research team discovered a new locality, the group would be large enough to begin excavation without needing help from the Mount Kirkpatrick group. A third group will also return to Early-to-Middle Triassic localities in the Beardmore and Shackleton Glacier regions.

Deploying Team Members:

- Peter Braddock
- Philip Currie
- Adam Huttenlocker
- Eva Koppelhus
- Peter Makovicky (Co-PI)
- Joshua Mathews
- Brandon Peecook
- Christian Sidor (Co-PI)
- Nathan Smith (Co-PI)
- Roger Smith

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Science Project Details: 2010-2011

Austral High-Latitude Atmospheric Dynamics

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-110-M/S

ASC POC/Implementer:
Elizabeth Watson

Dr. Gonzalo Hernandez (Principal Investigator)
hernandez@uw.edu
http://cedarweb.hao.ucar.edu/

University of Washington
Earth and Space Sciences
Seattle, Washington

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: Arrival Heights, Atmospheric Research Observatory

Project Description:

This project continues long-term observation, characterization, and understanding of high-latitude atmospheric motions, in particular mesospheric motions and thermospheric persistent vertical winds near Arrival Heights and simultaneously with those at South Pole and Mount John, NZ. Wintertime mesospheric kinetic temperature observations have shown the presence of dynamical coupling between the stratosphere and the upper regions of the atmosphere in the Southern Hemisphere. Results indicate that the dynamical processes leading to the stratospheric warming or cooling are already in place during the austral winter and the early mesospheric signals lead to the potential capability to estimate the springtime ozone hole.

Field Season Overview:

The major activities at both Arrival Heights at McMurdo Station and the Atmospheric Research Observatory (ARO) at South Pole Station are the observational phase during the austral winter and the calibration phase during the rest of the year. This austral summer, the researchers will again deploy to perform maintenance, repair, and calibrations at both McMurdo and South Pole stations.

Since the same research team calibrates and maintains the experiments at

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both Arrival Heights and the South Pole, visits to the two sites are done both serially and in parallel, starting at Arrival Heights, then proceeding to the South Pole ARO. Upon return to McMurdo Station, the research team will conduct any further maintenance at Arrival Heights, if needed. Otherwise, the team will leave the Ice shortly upon returning to McMurdo Station. The field-season dates are estimates only and will likely to change as the observing season comes to a close in late October. Annually, the research team will require year-round technical support of about one hour per day on site at Arrival Heights and about two hours per day for the ARO installation.

Deploying Team Members:

- Stephen Barlow
- Michael McCarthy (Co-PI)
- Bryan Venema

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Science Project Details: 2010-2011

Ocean Acidification: Integrated Approaches To Understanding Effects On Antarctic Sea Urchins, Sterechinus Neumayeri

Program Manager:
Dr. Diana Nemergut

Event Number: B-134-M

ASC POC/Implementer:
John Rand

Dr. Gretchen Hofmann (Principal Investigator)
hofmann@lifesci.ucsb.edu
http://hofmannlab.msi.ucsb.edu/

University of California Santa Barbara
Department of Ecology, Evolution, Marine Biology
Santa Barbara, California

Supporting Stations: McMurdo Station
Research Locations: Crary Lab, Erebus Bay sea ice

Project Description:

This project studies the effects of ocean acidification on embryos and larvae of the Antarctic sea urchin, Sterechinus neumayeri. One group of larvae will be raised under high carbon dioxide (CO_2) conditions to mimic the high CO_2/low pH ocean expected in the future. Another group will be raised under present-day ambient conditions. The physiology and response of two groups will be compared with the aim of understanding how the larvae are able to calcify and make their calcium carbonate skeletons at low pH. In the lab researchers will prepare samples to assess changes in protein content of the larval skeleton. RNA samples will enable them to use a DNA microarray during subsequent work at their home institution to assess patterns of gene expression for genes involved in biomineralization or in other important biochemical pathways. Other research in the lab includes measuring oxygen consumption with a micro-respirometry unit, and testing thermotolerance of the embryos and larvae.

Field Season Overview:

This season, the research team will: 1) collect adult sea urchins using SCUBA from various locations within Erebus Bay; 2) deploy a pH logger - the Durafet logger - in various locations in McMurdo Sound; 3) sample water from one or two locations in McMurdo Sound on a daily basis; and 4) culture larval sea urchins in the Crary Lab under controlled pH/carbon dioxide conditions. The logger will be deployed to about 50-meter depth, then left in place for about a week at the location where the initial batch of urchins are collected (preferably Cape Evans). Subsequent deployments will be for longer periods of time. Researchers will use the first set of data to help determine the pH of the seawater over the urchin beds, something that is unknown at this point. Project team members will process the water in the lab for carbonate chemistry. Sea urchins cultured in the Crary aquarium will be tested for growth responses and to prepare samples for microarray analysis using a variety of laboratory techniques, including radioisotope tagging.

Deploying Team Members:

- Lydia Kapsenberg
- Peggy Lubchenco
- Paul Matson
- Emily Rivest
- Mary Sewell
- Pauline Yu

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Science Project Details: 2010-2011

ELF/VLF Observation Of Whistler-Mode Waves, Lightning Discharge, And Gamma-Ray Events From Palmer Station

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-336-P

ASC POC/Implementer:
Julie Bonneau

Dr. Umran Inan (Principal Investigator)
inan@nova.stanford.edu
http://vlf.stanford.edu/research/whistler-mode-wave-studies-palmer-station-antarctica

Stanford University
Department of Electrical Engineering
Stanford, California

Supporting Stations: Palmer Station
Research Locations: Terra Lab/Glacier Antenna

Project Description:
Whistler-mode waves play a major role in controlling the dynamic evolution of relativistic electron populations in the Earth's radiation belts. They regularly penetrate the ionosphere and can be detected at ground-based stations. Because of its remoteness from anthropogenic electromagnetic noise sources, Palmer Station remains one of the most electromagnetically quiet ELF/VLF receiving sites in the world, allowing researchers to take full advantage of this extremely sensitive receiver system. The system records broadband data (full waveform data sampled at 100 kHz) as well as narrowband data (the demodulated amplitude and phase of narrowband VLF transmitter signals) 24 hours a day, 365 days a year. The scientific investigations involving these data are focused on magnetospherically generated whistler-mode waves; global lightning and thunderstorm activity; the characteristics of lightning discharges associated with terrestrial gamma ray flashes; and the ionospheric effects of gamma ray

Field Season Overview:
The research team’s experiment requires keeping the VLF antenna and receiver in good working condition. This season, the research team will deploy to perform yearly maintenance, calibration, and inspections on the

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system to ensure the antenna has not succumbed to the forces of nature. Additionally, the science technician at Palmer Station will perform ongoing maintenance on the International Monitoring Station (IMS) electronics located in the Terra Lab.

Deploying Team Members:

- George Jin

Science Project Details: 2010-2011

ELF/VLF Observation In The Southern Pacific Ocean

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-327-N

ASC POC/Implementer:
Patricia Jackson

Dr. Umran Inan (Principal Investigator)
inan@nova.stanford.edu
http://www-star.stanford.edu/~vlf/pars/pars.htm

Stanford University
Department of Electrical Engineering
Stanford, California

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: Southern Ocean

Project Description:
This research program addresses the need for very-low frequency (VLF) measurements at the geomagnetic conjugate point of the High-Frequency Active Auroral Research Program (HAARP) HF heating facility in Gakona, AK. Observations on the NBP contribute to current on-going studies of magnetospheric wave-injection, wave growth and amplification, and particle-loss mechanisms in the Earth's radiation belts. More specifically, the VLF receiver allows researchers to observe conjugate, ducted, whistler mode signals excited by HAARP and related triggered emissions and particle precipitation. In addition, the regularly scheduled cruises of the NBP provide access to the geomagnetic conjugate point for the central United States, a region of intense lightning activity and lightning-related phenomena.

Field Season Overview:
For the 2010-2011 season, this project will continue to collect science data from the NBP’s ELV/VLF system. The receiver system will need the part-time attention of an operator for scheduling data acquisitions and archiving data onto external hard drives. NBP technicians will send these hard drive(s) to Stanford University at the end of each cruise for data retrieval. Once received, the researchers will copy the data from the hard drives and return ship them to the NBP for use on future cruises.

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Science Project Details: 2010-2011

A VLF Beacon Transmitter At South Pole

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-108-M/S

ASC POC/Implementer:
Julie Bonneau

Dr. Umran Inan (Principal Investigator)
inan@nova.stanford.edu
http://vlf.stanford.edu/research/autonomous-ultra-low-power-receiver-design

Stanford University
Department of Electrical Engineering
Stanford, California

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: South Pole science lab (B2)

Project Description:
This project addresses questions concerning upper atmospheric effects of solar proton pvents and magnetosphere/ionosphere coupling. Researchers plan to continue their measurements of both steady and burst precipitation of relativistic (greater than 300 Kiloelectronvolts (KeV)) electrons from Earth's magnetosphere using a very-low-frequency (VLF) beacon transmitter. In addition, the research team will measure the extent of relativistic electron precipitation by means of associated amplitude and phase variations on various Antarctic stations. The availability of the South Pole VLF beacon transmitter will synergistically enhance other Antarctic Upper Atmospheric research efforts, such as the Automatic Geophysical Observatory (AGO) program.

Field Season Overview:
This researcher project will send one team member to South Pole Station for two weeks to pack up the VLF beacon amplifiers and instrumentation to put into storage. The research team plans on redeploying their Low-Power Autonomous VLF system for another year.

Deploying Team Members:

- Patrick Blaes

Science Project Details: 2010-2011

UNAVCO GPS Survey Support

Program Manager:
Dr. Alexandra Isern

Event Number: T-295-M
NSF/EAR Award 1261833

ASC POC/Implementer:
Chad Naughton

Mr. Bjorn Johns (Principal Investigator)
johns@unavco.org
http://facility.unavco.org/project_support/polar/

UNAVCO
Wellington, Undefined

Supporting Stations: McMurdo Station
Research Locations: McMurdo, Transantarctic locations

Project Description:
UNAVCO provides technical support and equipment for precision geodetic observations using GPS and terrestrial LiDAR technologies. Survey grade GPS receivers, terrestrial laser scanners and supporting power and communications systems for both high-precision campaign surveying and continuous data collection are available to project researchers. Infrastructure for this support includes a Real Time Kinematic (RTK) differential GPS broadcasting station covering McMurdo Sound, a repeater on Mt Erebus for GPS data retrieval from the Transantarctic Mountains and an Iridium satellite communications hub in Colorado. Technical support is provided for the Palmer Station GPS surveying system. Operation and maintenance is provided as needed for the NASA IGS stations MCM4 and PALM, the POLENET (ANET) remote GPS stations and GPS reference stations at WAIS Divide and South Pole Station.

Field Season Overview:
The field team will work out of the Crary Lab to provide sub-centimeter GPS support to science projects. Field team members will occasionally travel to field locations as support requirements dictate. They are also planning a brief visit to the Major Research Infrastructure (MRI) site at South Pole Station to perform maintenance on the Continuous GPS (CGPS) testbed site. In addition, UNAVCO will work closely with POLENET (G-079-M) at Byrd Field Camp this season for the GPS portion of the POLENET network sites.

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Deploying Team Members:

- Marianne Okal
- Joe Pettit (Team Leader)

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Science Project Details: 2010-2011

Collaborative Research: MRI-R2 Instrument Development Of The Askaryan Radio Array, A Large-Scale Radio Cherenkov Neutrino Detector At The South Pole

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-107-S
NSF/PLR Award 1002485

ASC POC/Implementer:
Julie Bonneau

Dr. Albrecht Karle (Principal Investigator)
Karle@icecube.wisc.edu
http://ara.physics.wisc.edu

University of Wisconsin Madison
Department of Physics
Madison, Wisconsin

Supporting Stations: South Pole Station
Research Locations: South Pole Station Dark Sector

Project Description:
Dr. Karle and his international collaborators will probe the nature and cosmic evolution of the accelerators of the highest-energy cosmic rays by observing ultra-high-energy neutrinos produced when cosmic rays interact with the microwave background. At these very high energies, neutrinos can be detected in dense, radio-frequency-transparent media, such as ice, by the Askaryan effect. Its origin is an excess negative charge that builds up when electrons are swept out along a shower front advancing relativistically through the ice. The thickness (estimated to be almost two miles) and exceptional radio-frequency clarity makes the south polar ice cap an ideal place to study ultra high energy neutrinos. This project will develop and deploy a limited number of radio detector stations which will provide the basis for development of a much larger array. The work builds upon past and current neutrino observations including the IceCube and AMANDA Cherenkov observatories and the RICE and ANITA radio Askaryan telescopes in Antarctica as well as the Pierre Auger cosmic ray observatory in western Argentina.

Field Season Overview:
During the 2010-2011 season, the research team will place one radio test

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bed system, consisting of an antenna system deployed on the snow surface about one kilometer grid-west from the IceCube Lab (ICL). A cable will connect this system to the South Pole Station infrastructure. The researchers also plan to install related computer equipment in the ICL for data collection, conduct drill testing, and erect three wind turbines for testing purposes.

Deploying Team Members:

- Michael DuVernois
- Brendan Fox
- Peter Gorham (Co-PI)
- Kael Hanson
- Christian Miki
- Ken Ratzlaff
- Andrew Wendorff

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Science Project Details: 2010-2011

Dry Valley Seismic Project

Program Manager:
Dr. Mark Kurz

Event Number: G-078-M
NSF/PLR-DoD MOA

ASC POC/Implementer:
John Rand

Dr. Robert Kemerait (Principal Investigator)
kemerait@tt.aftac.gov
http://www.afisr.af.mil/units/aftac/index.asp

United States Air Force
AFTAC
Patrick AFB, Florida

Supporting Stations: McMurdo Station
Research Locations: Bull Pass, Mount Newell

Project Description:
The Dry Valleys seismic project monitors regional and global seismicity. The Dry Valleys stations are part of the Air Force Technical Applications Center's (AFTAC) southern network, which accumulates near-real-time data from nine locations in the southern hemisphere. The data is telemetered to the National Data Center in Florida and made available to the international scientific community.

Field Season Overview:
The team will be traveling to Bull Pass and Mount Newell to refuel the diesel generators and perform annual engine, electrical, and technical maintenance and inspections. The team will also replace the two solar panels at the Mount Newell repeater site.

Deploying Team Members:

- Mark Boris
- Michael Brunk (Team Leader)
- Jason Hutchinson
- Joseph King

Project Indexes
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Science Project Details: 2010-2011

Temporal Variability In Natural And Anthropogenic Disturbance Of McMurdo Station

Program Manager:
Dr. Polly Penhale

Event Number: B-518-M

ASC POC/Implementer:
Addie Coyac

Dr. Mahlon Kennicutt (Principal Investigator)
m-kennicutt@tamu.edu
http://antarctica.geog.tamu.edu

Texas A & M University
Oceanography
College Station, Texas

Supporting Stations: McMurdo Station
Research Locations: On station

Project Description:

Antarctica represents perhaps one of the most carefully tended and strictly monitored habitats on Earth. Aside from the manifest desire to protect the flora, fauna and the atmosphere of a relatively pristine environment, there is the value the extreme southern latitudes provide as a virtual baseline barometer of global pollution. The Antarctic Treaty's Protocol on Environmental Protection, supplemented by the policies and practices of the nations who work and do science there, have combined to focus scrutiny on any anthropogenic impacts that can be foreseen or detected. This project collects a system of observations that should enable scientists to be more aware of any such impacts on both marine and terrestrial habitats in and around McMurdo Station. The observations are located precisely and tracked over time. Researchers use geographic information systems (GIS) techniques and geostatistical methods to organize these diverse data sets into a coherent, coordinated framework. The results should provide additional fundamental scientific information for developing a long-term strategy to document and minimize the impacts of future science and support operations on Antarctic resources and values.

Field Season Overview:

Researchers will need the same GPS support as they had last season, with dedicated use of a backpack GPS unit. The marine portion of the project will

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require diving support, the services of the Reed Drill, a dive hut, and use of a Pisten Bully. The terrestrial portion of the project will require a few days of pick-up truck use for sample collection. Researcher team members will also need laboratory space for performing toxicity tests.

Deploying Team Members:

- Andrew Klein (Co-PI)
- Terence Palmer
- Stephen Sweet
- Jason Williams

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Science Project Details: 2010-2011

High Elevation Antarctic Terahertz (HEAT) Telescopes For Dome A And Ridge A

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-364-S
NSF/PLR Award 0944335

ASC POC/Implementer:
Julie Bonneau

Dr. Craig Kulesa (Principal Investigator)
ckulesa@email.arizona.edu
http://soral.as.arizona.edu/heat/

University of Arizona Tucson
Steward Observatory
Tucson, Arizona

Supporting Stations: South Pole Station
Research Locations: Dark Sector

Project Description:

This project is a joint US/Australian venture to build and deploy a fully automated, 0.6-meter terahertz astronomical observatory for remote operation at Ridge A – the highest elevation on the Antarctic Plateau. High Elevation Antarctic Terahertz (HEAT) will observe in the 350 micron (0.8 THz) through 150 micron (2 THz) atmospheric windows, the latter of which is unique to Ridge A. HEAT will initiate a Galactic Plane survey of atomic carbon, ionized carbon and carbon monoxide to explore the Galaxy-wide evolution of gas and stars, the formation and destruction of interstellar clouds and the dynamics of star-forming regions. This will be the largest survey of its kind and will serve as a pathfinder for future astronomical observatories on the Plateau. The telescope will be mounted on top of the Australian University of New South Wales' PLATeau Observatory (PLATO) module that provide housing for the instrument's electronics and diesel engines used to generate electrical power during winter observations. PLATO and the telescope will operate autonomously for over a year at a time, with commands and data being transmitted from and to the home institutions via Iridium satellites daily.

Field Season Overview:

Deployment of the HEAT telescope, in the absence of the PLATeau Observatory (PLATO) support structure, will require space on a roof in the

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South Pole Dark Sector, power, and network connectivity. Researchers will operate the control computer remotely and will be downloading about one Megabyte of data to their home institution per day.

The research team plans a three-week deployment in mid-January. After team redeployment, a research assistant will monitor the telescope operation (maximum one hour a week), particularly after storms, to document the appearance of the instrument and to clean the instrument window of snow or frost, if necessary.

Deploying Team Members:

- Christopher Walker (Co-PI)

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Science Project Details: 2010-2011

Collaborative Research: Exploring A 2 Million-Year-Plus Ice Climate Archive-Allan Hills Blue Ice Area (2MBIA)

Program Manager:
Dr. Julie Palais

Event Number: I-349-M

ASC POC/Implementer:
John Rand

Dr. Andrei Kurbatov (Principal Investigator)
akurbatov@maine.edu
http://cci.um.maine.edu/2MBIA/

The University of Maine
Orono, Maine

Supporting Stations: McMurdo Station
Research Locations: Allan Hills ice field

Project Description:
Using a multidisciplinary team, researchers propose to develop new methods that will allow them to sample the record of polar climate change and greenhouse gas concentrations back to 2.5 million years ago, +/- 500,000 years, at the Allan Hills blue ice area. The objective is to extend the record of Antarctic climate and atmospheric greenhouse gas concentrations to include two important climate periods predating the deep ice-core records. Ideally, researchers hope to obtain detailed climate records for three time intervals: 1) The Termination 2 that occurred at the beginning of the Eemian period, i.e., marine isotope stage 5, ranging from 110 - 140 thousand years ago, in order to match the authoritative deep ice-core records from Antarctica; 2) approximately 100,000 year interval which covers the glacial – interglacial cycle within ice dated with flow models about one million years ago; and 3) the oldest known ice in the Allan Hills field, dated back about 2.5 million years ago.

Field Season Overview:
This field season, researchers will collect cores with the support of an Ice-Core Drilling Services (ICDS) driller and the Eclipse mechanical system that recovers 3-inch-diameter samples. Researchers will focus on the collection of two greater than 100-meter cores and sampling of ice along several horizontal trenches that provide surface expression of the core material. Researchers will also re-survey GPS stakes from the 2004 season. The ice

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cores will be shipped to the United States at the end of the season. The field site will be supported by Twin Otter, with travel between the camp and research sites accomplished by snowmobile.

Deploying Team Members:

- Peter Acton
- John Higgins
- Melissa Rohde
- Nicole Spaulding
- Michael Waszkiewicz

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Science Project Details: 2010-2011

Mount Erebus Volcano Observatory III (MEVO III): Conduit Processes And Surveillance

Scientist from New Mexico Tech working in ice caves melted by warm volcanic gases around the summit area of the active Erebus volcano. For more info see erebuscaves.com. Photo by Bill McIntosh, NM Tech

Program Manager:
Dr. Alexandra Isern

Event Number: G-081-M

ASC POC/Implementer:
John Rand

Dr. Phillip Kyle (Principal Investigator)
kyle@nmt.edu
http://erebus.nmt.edu

New Mexico Institute of Mining and Technology
Department of Earth & Environmental Science
Socorro, New Mexico

Supporting Stations: McMurdo Station
Research Locations: Mount Erebus

Project Description:
Mount Erebus—the southernmost active volcano in the world—has been the subject of NSF-sponsored research since the early 1970s. It is one of only a handful of volcanoes worldwide with a long-lived convecting lava lake. Access to this remote site made possible by McMurdo Station-based resources and the nature of the small Strombolian eruptions has made Mount. Erebus a model for volcanologists and their students. This project continues long-term surveillance using geophysical, geodetic and geochemical observatories to measure the seismicity, infrasound, gas emissions and deformation of the volcano. Researchers also continue investigations of the origin and nature of the ice cave systems on Mount. Erebus as an analog for possible cave systems on Mars. Ground-based LIDAR observations have recently been added to the project's suite of tools and techniques, enabling three-dimensional mapping of the crater, ice caves, and ice towers.

Field Season Overview:

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In late November, researchers will service an array of five seismometers installed around the flanks of Mount Erebus. Researchers will occupy the lower Erebus hut (LEH) for four-to-six weeks starting in late-November and use this as a base of operation for work on the mountain and the surrounding area. A tent camp to accommodate six people for acclimatization will also be established at Fang Glacier. Snowmobiles will be used for travel in the summit area of Mount Erebus and will need to be flown into either the LEH or Fang Glacier.

Researchers also will use telephone (both Iridium satellite and radio-telephone) for communications at the LEH and a year-round high-speed data connection to McMurdo Station for data transfer and email communications. Such a data link is critical to ensure the permanent seismic array is functioning correctly. The research project will require year-round maintenance of video and seismic data acquisition systems at McMurdo Station by the Crary Lab science technician. There will be continued interaction with UNAVCO and the Incorporated Research Institutions for Seismology's Program for Array Seismic Studies of the Continental Lithosphere (IRIS/PASSCAL) personnel and they will provide support to the project, including maintenance of GPS stations at MACZ and Cones (CON) and a seismic station at ICEZ.

Deploying Team Members:

- Aaron Curtis
- Nelia Dunbar
- Jedediah Frechette
- Kayla Iacovino
- Tehnuka Ilanko
- Laura Jones
- William McIntosh
- Yves Moussalam
- Clive Oppenheimer
- Vitchko Tsanev

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Science Project Details: 2010-2011

Collaborative Research: Multi-Instrument Studies Of Auroral Plasma Radiation

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-128-S

ASC POC/Implementer:
Julie Bonneau

Dr. James LaBelle (Principal Investigator)
jlabelle@einstein.dartmouth.edu
http://www.dartmouth.edu/~spacephy/

Dartmouth College
Department of Physics & Astronomy
Hanover, New Hampshire

Supporting Stations: South Pole Station
Research Locations: South Pole science lab (B2) and the V8 Vault

Project Description:
The low-, mid-, and high-frequency (LF, MF, and HF) receiver installed at South Pole measures radio emissions of auroral origin in the frequency range of 50 to 5000 kHz. This includes the upper part of the whistler mode range and several critical ionospheric frequencies such as the plasma frequency, upper-hybrid frequency, electron gyrofrequency, and harmonics. Several types of natural auroral radio emissions occur in this range. For many of these auroral emissions, the generation mechanism and the cause of the observed wave structure remain mysteries. The South Pole is an ideal location for observing these signals because of the low level of man-made background noise.

Field Season Overview:
The primary focus of the 2010-2011 season will be on data collection and analysis. Data taking occurs during austral winter (about March 21-Sept 21) for the direction-finding receiver and year round for the swept-frequency receiver. The direction-finding receiver system is controlled remotely from Dartmouth and Siena colleges over the Internet. The swept-frequency receiver automatically transfers its data to the central server at South Pole for transfer to the researchers' home institution using FTP. Since FTP may not be supported in 2010-11, the research team is working with the South Pole science technician and IT personnel to get an alternative automatic

data transfer mechanism in place. If an automatic system is in place, technical support should be limited to a few hours per month for such things as changing cable arrangements in the V8 Vault (the V8 vault supports all cusp-related antenna field gear and cabling) to accommodate different experiments, or changing disk drives in a computer to allow for data backup. The level of support required during the austral winter is unchanged from previous years.

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Science Project Details: 2010-2011

Role Of Dehydration And Photoperiodism In Preparing An Antarctic Insect For The Polar Night

Wingless male of the Antarctic midge (Belgica antarctica) - southernmost insect. Photo by Rick Lee

Program Manager:
Dr. Peter Milne (acting)

Event Number: B-256-P

ASC POC/Implementer:
Eric Pohlman

Dr. Richard Lee (Principal Investigator)
leere@muohio.edu
http://www.units.muohio.edu/cryolab/education/antarctic.htm

Miami University
Oxford, Ohio

Supporting Stations: Palmer Station
Research Locations: Palmer Station local islands

Project Description:
On the Antarctic Peninsula, climatic warming and glacial retreat have exacerbated both thermal and hydric stresses for terrestrial communities of plants and microarthropods. Winter survival for many polar organisms depends on a coordinated transition from feeding, growth, and reproduction during short summers, to an energy-conserving dormancy coupled with enhanced resistance to environmental extremes during winter. Many temperate species rely on photoperiodic cues to trigger physiologic retooling in advance of winter. However, few studies specifically address the role of photoperiodic timers in polar animals.

The midge, Belgica antarctica, is the southernmost free-living terrestrial insect. This extremophilic species and its location on the Antarctic Peninsula provide an excellent model system for investigating mechanisms of stress tolerance and the role of extreme photoperiodic changes in coordinating these seasonal adaptations. Researchers will use genomic and proteomic approaches to investigate the seasonal role of dehydration and photoperiodic cues in preparing a polar insect for winter survival. Specifically, they will study: 1. The role of aquaporins, dehydrins and cryoprotective dehydration in seasonal survival; and 2. the role of photoperiodism in preparing for winter.

Field Season Overview:

Researchers plan to deploy four-to-five people for about four weeks to collect larvae of this locally abundant species of midge and begin experimentation. Those larvae returned to researchers' home institution had excellent survival rates in the previous season, allowing researchers to continue experiments for more than 12 months. This year researchers also plan to deploy two field team members later in the season, i.e., March through April. A major component of this project is to engage K-12 educators and their students in polar discovery. Three teachers will join the deploying field teams and will fully participate in the research. They will also collaborate with the science party in providing outreach to other teachers and their students.

Deploying Team Members:

- Patty Betteley
- Yuta Kawarasaki
- Alena Kobelkova
- Nicholas Teets

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Science Project Details: 2010-2011

Role Of Resource Legacy On Contemporary Linkages Between Biodiversity And Ecosystem Processes In A Cold Desert Ecosystem: The McMurdo Dry Valleys LTER Program

Program Manager:
Dr. Roberta Marinelli

Event Number: B-420-M

ASC POC/Implementer:
Eric Pohlman

Dr. W. Berry Lyons (Principal Investigator)
lyons.142@osu.edu
http://www.mcmlter.org

Ohio State University
Byrd Polar Research Center
Columbus, Ohio

Supporting Stations: McMurdo Station
Research Locations: McMurdo Dry Valleys, Crary Lab

Project Description:

The McMurdo Long Term Ecological Research (LTER) project will continue to investigate the McMurdo Dry Valleys as an end-member ecosystem and focus on the relative roles of legacy and extant processes on current biodiversity and ecosystem structure and function. Researchers from this project will monitor the inorganic geochemistry of waters collected from the glaciers, streams, ponds, and lakes of the Dry Valleys; study upland seeps and ponds to gain a better understanding of their hydrologic and geochemical controls; and continue to work with co-PIs conducting lake, stream, and glacier sampling programs.

Field Season Overview:

During the upcoming Dry Valleys LTER field season, researchers plan to travel to various sites within the McMurdo Dry Valleys to collect water, snow, and sediment samples. The sampling can be achieved on foot or by taking day trips by helicopter from McMurdo Station or Lake Hoare to the sampling sites. Researchers will also be moving to Lakes Hoare, Bonney, Fryxell, and F6 to work with the limnology and stream teams. Researchers will travel to upland pond sites within the Dry Valleys to collect additional water samples. The chemical analysis of lake, stream, glacier, and other samples will be done at the Crary Lab using freezer and environmental room space for storing the samples so they can be processed, analyzed, and stored until either disposed of or returned to home institutions in the U.S.

Deploying Team Members:

- Russell Harmon
- Deb Leslie
- Kathy Welch (Team Leader)

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Science Project Details: 2010-2011

Palmer Long Term Ecological Research (LTER): Looking Back In Time Through Marine Ecosystem Space, Physical Oceanography Component

Photo of thermistor mooring string laid out on back deck of Gould waiting deployment. Mooring is seated on the ocean floor by 2 concrete anchors (upper left of photo, not yet attached to mooring base). Floats (orange and white balls) hold the string vertical, so that thermistors (electronic thermometers - white cylindrical tubes) are positioned at predefined depths in the water, providing us measurements of the temperature as a function of depth every half hour for one year. This allows us to monitor how the ocean warms and cools, essentially supplying heat to the region, which escapes to the atmosphere, helping to warm it in winter, and to the underside of glacial ice which is melted, contributing to the rise of global sea level. In one year, when we return to the location of this mooring, we will contact it through radio signals and release it (the large yellow cylinder at left near 3 small orange floats). That release, situated just above the anchors on the sea floor, turns a lock s

Program Manager:
Dr. Lisa Clough

Event Number: B-021-L
NSF/PLR Award 0823101

ASC POC/Implementer:
Eric Pohlman

Dr. Doug Martinson (Principal Investigator)
dgm@ldeo.columbia.edu
http://www.lternet.edu/sites/pal/

Project Indexes

Find information about current USAP projects using the principal investigator, event number station, and other indexes.

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Columbia University
Lamont-Doherty Earth Observatory
Palisades, New York

Supporting Stations: ARSV Laurence M. Gould
Research Locations: West Antarctic Peninsula, Adelaide Island

Project Description:

This LTER component takes responsibility for processing and analyzing hydrographic data. The data are used to describe the hydrography and circulation in the Palmer area in particular, and the western Antarctic Peninsula region in general, with a focus on developing circulation and coupled physical-biological models. The Antarctic shelf regions are influenced by circumpolar deep waters and the circulation pattern in the region shows large-scale flows influenced by topography.

Field Season Overview:

Researchers will recover and redeploy a sediment trap mooring deployed at the LTER site near Hugo Island. Physical oceanographic moorings will also be serviced on the cruise - three are planned for redeployment. This field team will also participate in the short-term LTER field camps on Avian and Charcot Islands. Zodiac boat support is required for deploying to these field sites, and also Renaud Island, as time and ice conditions permit. Standard net, trawl, MOCNESS, acoustic sampling gear, and full access to the bridge for seabird and marine mammal surveys and other related shipboard support are required. The research team will also collect data from expendable bathythermographs (XBT) and extensible conductivity-temperature-depth (XCTD) probes, current drifters, and mooring operations. The research team also plans to drag for moorings that could not be recovered during the previous LMG10-01 LTER cruise.

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Science Project Details: 2010-2011

NASA/McMurdo Ground Station (MG1)

Program Manager:
Mr. Pat Smith

Event Number: T-927-M
NASA/NSF Agreement

ASC POC/Implementer:
Julie Bonneau

Mr. Kevin McCarthy (Principal Investigator)
Kevin.P.McCarthy@nasa.gov
http://scp.gsfc.nasa.gov/gn/

National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland

Supporting Stations: McMurdo Station
Research Locations: On station

Project Description:
NASA's McMurdo Ground Station (MG1) is a 10-meter antenna housed in a white radome visible on the hill above McMurdo Station. It is used primarily for data recovery from polar orbiting science satellites, both of NASA and of foreign entities (esp. where NASA has a hosted instrument on-board a foreign satellite). MG1 provides launch and early operations phase (LEOP) support for launches from Vandenberg AFB for satellite missions that require downrange telemetry support from McMurdo. MG1 also provides telemetry and command for satellite housekeeping and recovery from satellite operational emergencies. MG1 provides data recovery for the EUMETSAT MetOp polar weather satellite constellation, in collaboration with NOAA National Environmental Satellite and Data Information Service, which reduces by a factor of 2 the time latency for data ingest into U.S. and European weather forecasting models, improving forecasting accuracies.

Field Season Overview:
Members of the field team will begin deploying to McMurdo Station in early October with additional members arriving in January and February. Technicians will track a variety of satellites, monitor launches, and collect and forward data. Two members of the team will work at McMurdo Station through the austral winter. Data will be recorded on site and shipped to NASA facilities for processing. Some data will be transmitted to NASA facilities over dedicated Internet links.

Project Indexes

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During critical launch support activities, e.g., countdown, liftoff, and the first several orbits of new spacecraft, the researchers will need voice and network communications with support personnel ready for quick response.

Deploying Team Members:

- Charles Bradford
- Rex Cotten (Co-PI)
- Clayton Ellis
- William Kambarn
- Nickolas Sinkola (Co-PI)
- Edward Wendell

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Science Project Details: 2010-2011

Antarctic Auroral Imaging

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-104-S

ASC POC/Implementer:
Chad Naughton

Dr. Stephen Mende (Principal Investigator)
mende@ssl.berkeley.edu
http://sprg.ssl.berkeley.edu:80/atmos/

University of California Berkeley
Space Sciences Laboratory
Berkeley, California

Supporting Stations: South Pole Station
Research Locations: South Pole Station

Project Description:
More information about the electrodynamics of the polar cap region and the region's role in coupling the solar wind with the Earth's magnetosphere, ionosphere, and thermosphere is necessary to understand the Sun's influence on the structure and dynamics of Earth's upper atmosphere. The following measurements are central to this understanding: electric field convection pattern across the polar cap; and knowledge of the atmospheric response to high-latitude wave and particle energy inputs during both geomagnetically quiet and disturbed situations. To study the coupling of the solar wind to ionospheric and magnetospheric processes, the Automatic Geophysical Observatory (AGO) network uses instruments at six polar-plateau locations as well as optical and radio-wave auroral imagers, magnetometers, and narrow- and wide-band radio receivers.

Field Season Overview:
During the first summer season, researchers changed the filters in the instrument and replaced the associated data processing system. This season, the research teams are not anticipating any changes to the instrument. During the Antarctic winter dark period, winter-over personnel will monitor the auroral imaging camera located at South Pole Station's Atmospheric Research Observatory (ARO).

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Science Project Details: 2010-2011

Collaborative Research: Antarctic ELF/VLF Observations Of Lightning And Lightning-Induced Electron Precipitation

The VLF receiving antenna loops located at Second Crater at Arrival Heights. Photo taken 28 January 2010. Photo by Robert Moore

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-109-M/P/S

ASC POC/Implementer:
Julie Bonneau

Dr. Robert C Moore (Principal Investigator)
moore@ece.ufl.edu
http://www.vlf.ece.ufl.edu/Antarctica/

University of Florida
Gainesville, Florida

Supporting Stations: McMurdo Station, Palmer Station, South Pole Station

Research Locations: Arrival Heights, CUSP Lab, and Terra Lab

Project Description:
ELF/VLF observations at McMurdo, South Pole, and Palmer Stations provide a deeper understanding of lightning and its effects on the Earth's inner radiation belt. Lightning source currents are estimated or directly measured by experimental observations of individual natural and rocket-triggered lightning flashes in North America. Together, the North American and Antarctic datasets are used to experimentally identify and analyze the components of lightning and the effects of lightning that are observed in the Antarctic, more than 10,000 kilometers distant. This project directly supports the continued operation of the ELF/VLF radiometers at all three US Antarctic research stations. At Arrival Heights, the radiometer has operated continuously for nearly 25 years, providing a unique resource for long-baseline ELF/VLF noise measurements, Schumann resonance observations, and global climate change parameterization via global lightning detection. The recently-upgraded data acquisition system continuously records ELF and the VLF data streams and provides real-time data processing and access via the Internet. Researchers in north-central Florida use the data for coordinated lightning-related experiments.

Field Season Overview:

The ELF/VLF data recording system at Palmer and South Pole stations will continue, each supplemented with a system that continuously records the ELF/VLF data streams and provides real-time data processing and access via the Internet, when available, in support of coordinated lightning-related experiments performed in North-Central Florida.

In addition to the research at Palmer and South Pole stations, this project directly supports the continued operation of the ELF/VLF radiometer at Arrival Heights (McMurdo Station), which has operated continuously for nearly 25 years, providing a unique resource for long-baseline ELF/VLF noise measurements, Schumann resonance observations, and global climate change parameterization via global lightning detection. This season, the research project will provide cabling and antenna replacements for the McMurdo Station ELF/VLF system to ensure the integrity of the ELF and VLF signals for future years. The recently-upgraded data acquisition system that continuously records both the ELF and the VLF data streams will continue to provide real-time data processing and access via the Internet, when available, as at Palmer and South Pole stations. Researchers will also perform annual maintenance and calibration at Arrival Heights and prepare the system for winter operation.

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Science Project Details: 2010-2011

IPY: Improving The Public's Understanding Of Polar Research Through Hands-On Fellowships For Science Journalists In The Arctic And Antarctic

Program Manager:
Ms. Valentine Kass

Event Number: Y-609-P

ASC POC/Implementer:
Eric Pohlman

Dr. Christopher Neill (Principal Investigator)
cneill@mbl.edu
http://www.mbl.edu/sjp

Marine Biological Laboratory (MBL)
The Ecosystems Center
Woods Hole, Massachusetts

Supporting Stations: Palmer Station
Research Locations: Palmer Station boating area

Project Description:
Each year, three science-journalism fellows from the Marine Biological Laboratory (MBL) in Woods Hole, Mass. are selected to travel to the Palmer Station Long-Term Ecological Research (LTER) site in Antarctica to spend two-to-four weeks participating in Antarctic research. This effort provides a small but highly selective and skilled group of journalists an unmatched opportunity to experience, compare, contrast, and ultimately report on the research conducted at both poles.

Field Season Overview:
Three journalists and a principal investigator will be deploying to Palmer Station for up to a month in November or December. They will accompany station scientists on field trips within the Palmer Station boating area.

Deploying Team Members:

- Jennifer Bogo
- Susan Moran
- Jin Qiu Qiu

Project Indexes
Find information about current USAP projects using the principal investigator, event number station, and other indexes.

Project Web Sites
Find more information about USAP projects by viewing individual project web sites.

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Science Project Details: 2010-2011

IRIS/PASSCAL Seismic Support

Program Manager:
Dr. Alexandra Isern

Event Number: T-299-M
NSF/EAR Award 1261681

ASC POC/Implementer:
Chad Naughton

Undefined Timothy Parker (Principal Investigator)
tparker@passcal.nmt.edu
http://www.passcal.nmt.edu/content/polar

Socorro, New Mexico

Supporting Stations: McMurdo Station
Research Locations: McMurdo, Transantarctic locations

Project Description:
The IRIS Program for Array Seismic Studies of the Continental Lithosphere (PASSCAL) Instrument Center and EarthScope USArray Array Operations Facility (AOF) at New Mexico Institute of Mining and Technology support cutting-edge seismological research into Earth's fundamental geological structure and processes. The facility provides instrumentation to NSF-funded seismological projects in Antarctica and elsewhere. Antarctic and arctic projects comprise five to ten percent of all the projects PASSCAL supports worldwide.

Field Season Overview:
This year, PASSCAL field team members will support WISSARD surface geophysics (C-520-M), ANDRILL Coulman High project (G-049-M), Marchant (G-054-M), POLENET (G-079-M), MEVO III (G-081-M), POLENET East (G-089-M/S), I-181-M, and other events that request support.

Deploying Team Members:

- Alexander Brisbourne

Project Indexes
Find information about current USAP projects using the principal investigator, event number station, and other indexes.

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Science Project Details: 2010-2011

The Role Of Resource Legacy On Contemporary Linkages Between Biodiversity And Ecosystem Processes In A Cold Desert Ecosystem: The McMurdo Dry Valley LTER Program

Program Manager:
Dr. Peter Milne (acting)

Event Number: B-422-M

ASC POC/Implementer:
Eric Pohlman

Dr. John Priscu (Principal Investigator)
jpriscu@montana.edu
http://www.homepage.montana.edu/~lkbonney/

Montana State University Bozeman
Land Resources and Environmental Sciences
Bozeman, Montana

Supporting Stations: McMurdo Station
Research Locations: McMurdo Dry Valleys

Project Description:

The McMurdo Long Term Ecological Research (LTER) projects will continue to investigate the McMurdo Dry Valleys as an end-member ecosystem and focus on the relative roles of legacy and extant processes on current biodiversity and ecosystem structure and function. This project will continue long-term measurements of the biological, chemical, and physical properties of McMurdo Dry Valley lakes and lake ice, with special emphasis on LTER core-research areas.

Field Season Overview:

LTER researchers will make routine lake measurements from October through early January and will use Crary Lab space for about 10 days before field deployment in late October and/or early November, for another 10 days during late November and/or early December, and for about 15 days for project close-out during late December and/or early January. Researchers will periodically occupy the field camps at Lakes Bonney, Hoare, and Fryxell from early November to early January.

At least one field-team member will spend up to a month at Lake Bonney camp between mid-November and mid-December for sampling in east and

Project Indexes

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west Lake Bonney. Sediment traps will be retrieved and re-deployed in east and west Lake Bonney as well. Researchers will also visit Lake Vanda, Lake Miers, the Marr Ponds, possibly Don Juan Pond and Blood Falls during the season to collect water samples, and to the ice edge or an ice hole in McMurdo Sound to calibrate their Seabird CTD (conductivity-temperature-depth) instrument. Researchers will require helicopter support between McMurdo Station and the Dry Valleys from early November through early January for camp put-ins, camp moves, close support for research, transportation of scientific samples back to McMurdo Station, and camp close-out.

Deploying Team Members:

- Heather Adams
- Amy Chiuchiolo (Team Leader)
- Nicholas Ketchum
- Rachael Morgan-Kiss
- John Priscu (PI)

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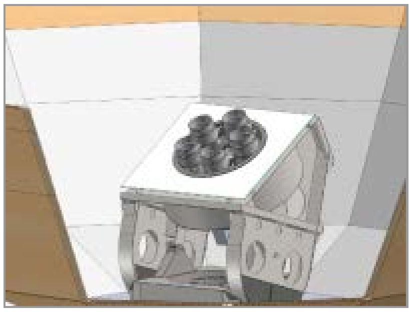
Science Project Details: 2010-2011

Collaborative Research: BICEP2 And SPUD - A Search For Inflation With Degree-Scale Polarimetry From The South Pole



Caption: A rendering of the new telescope array to be installed on the DASI mount at MAPO this season. Photo by Chris Sheehy

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-149-S

ASC POC/Implementer:
Julie Bonneau

Dr. Clement Pryke (Principal Investigator)
pryke@physics.umn.edu
http://www.astro.caltech.edu/~lgg/keck/keck_front

University of Chicago
Astronomy & Astrophysics
Chicago, Illinois

Supporting Stations: South Pole Station
Research Locations: Martin A. Pomerantz Observatory (MAPO)

Project Description:
The Cosmic Gravitational-wave Background (CGB) imprints a signature in the polarization of the Cosmic Microwave Background (CMB). Detecting that signature is arguably the most important goal in cosmology today. BICEP is the first CMB polarimeter specifically designed to search for the signature of the CGB. Since 2006, BICEP has mapped about 2% of the sky that is uniquely free of galactic confusion. SPUD (Pryke A-149-S, aka "The Keck Array") is an array of receivers similar to BICEP2 and together they provide a further increase in mapping speed and the possibility of multiple frequencies. These receivers are more compact, use pulse tube cryogenic refrigerators rather than liquid helium, and share the former DASI mount near MAPO. This work comprises two projects: Clem Pryke's SPUD/Keck Array component (A-149), and John Kovac's BICEP2 component (A-039).

Field Season Overview:
Early in the season, researchers will arrive at South Pole Station to work on the mount drive system and prepare for installing the new pulse-tube compressors in the DASI compressor room. Meanwhile, work will begin

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Find information about current USAP projects using the principal investigator, event number station, and other indexes.

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preparing the lab for installation of the new receivers.

As soon as the crane is operational in late November, the existing "theta drum" of the telescope mount will be replaced by a new one suited to the new receivers.

In December and early January, three receivers will arrive, along with additional team members who will integrate, test, and install the receivers and the associated read-out electronics and computers. Also during January and into February, researchers will conduct testing using calibration sources mounted on a tower on the Dark Sector Lab (DSL). By station closing the new array will be operational and collecting data.

Deploying Team Members:

- Collin Bischoff
- Charles Dowell
- Bradley Johnson
- John Kovac (Co-PI)
- Chao-Lin Kuo
- Martin Lueker
- Hien Nguyen
- Robert Schwarz
- Chris Sheehy
- Zachary Staniszewski
- Sarah Stokes
- James Tolan
- Philip Wilson
- Chin-Lin Wong

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Science Project Details: 2010-2011

Systematic Analysis Of The Stability And Ages Of Soil Surfaces In Transantarctic Mountains

Students analyzing the hillslope erosion in the McMurdo Dry Valleys, Antarctica. Photo by Jaakko Putkonen

Program Manager:
Dr. Alexandra Isern

Event Number: G-501-M

ASC POC/Implementer:
John Rand

Dr. Jaakko Putkonen (Principal Investigator)
jaakko.putkonen@und.edu
http://www.geology.und.edu/cosmo

Grand Forks, North Dakota

Supporting Stations: McMurdo Station
Research Locations: Transantarctic Mountains, Ong and Moraine Valleys

Project Description:
The researchers will seek to determine the landscape evolution in the Transantarctic Mountains in time scales from years to millions of years.

Field Season Overview:
This austral summer, researchers will perform field observations and sampling from two remote field camps, spending about three weeks at each site.

Deploying Team Members:

- Theodore Bibby
- Collin Giusti
- Daniel Morgan
- Holly Westad

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Science Project Details: 2010-2011

Strateole-Vorcore

Program Manager:
Dr. Peter Milne

Event Number: O-360-M

ASC POC/Implementer:
John Rand

Dr. Florence Rabier (Principal Investigator)
florence.rabier@meteo.fr
http://www.cnrm.meteo.fr/concordiasi/

Toulouse, Undefined

Supporting Stations: McMurdo Station
Research Locations: McMurdo Station sea ice

Project Description:
Researchers with this project will launch a series of long-duration balloons. The primary objective of this project is to provide documentation of wind and temperature horizontal fields inside the vortex core. This will enable the study of the dynamical structure of the polar vortex and its evolution up to its final breakdown; the influence of tropospheric forcing on the stratospheric circulation at high latitudes; the role of small-scale movements (gravity waves and turbulence) on the horizontal diffusion processes; the different regimes of horizontal transport around the 400K isentropic layer; and the temperature history of air masses that is a key parameter to understanding the formation of polar stratospheric clouds. CONCORDIASI is part of the International Polar Year/The Observing System Research and Predictability Experiment (IPY/THORPEX) cluster of research activities composed of ten projects with researchers from several Treaty nations. Researchers within CONCORDIASI are from the National Center for Atmospheric Research (NCAR), the university community in the U.S., France, Italy, Australia, and international organizations such as the European Center for Medium-Range Weather Forecasting (ECMWF). The goals of this project include: 1) Documenting the state of the present climate system and the nature and extent of climate changes; and 2) contributing to the understanding and improved simulations of the forcing mechanisms, thresholds, and feedback that control the climate system.

Field Season Overview:
The primary field activity of CONCORDIASI will be the deployment of a

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constellation of up to twenty long-duration stratospheric balloons deployed from McMurdo Station by the French space agency (CNES). The main operational support needs are for a temporary launch facility for super-pressure balloons on the sea ice in the immediate vicinity of McMurdo Station, and laboratory space in the Crary lab. The launch facility will include workshop space, helium supplies, and an approximately 100-meter-diameter groomed surface for balloon inflation and launching. Balloon payloads will be prepared and tested in Crary lab and team members will conduct balloon control, tracking, and related data-acquisition operations from a command-and-control center located within the lab. Numerous antennae installations are required on the Crary Lab roof.

The measurement capability of these balloon systems have been upgraded extensively to meet the multi-disciplinary goals of IPY, with the payloads to include flight-level observations of ozone; meteorological parameters at one minute intervals; microphysical observations of stratospheric clouds; GPS occultation providing vertical profiles of refractivity related to temperature, humidity, and pressure; a micro-pulse LIDAR to map clouds in the lower stratosphere and upper troposphere; driftsonde gondolas each capable of carrying up to 60 GPS dropsondes to be launched on demand, producing a high-resolution vertical profile of temperature, humidity, winds, and pressure from the flight level to the surface. The researchers aim at a launch window opening no later than the 11th of September and closing by early November. The launch site will be at the same location as the Vorcore project: a few hundred meters after the transition, in front of McMurdo Station.

Deploying Team Members:

- Melanie Bats
- Pierre Bergos
- Jerome Bordereau
- Alain Cardonne
- Mathieu Cazalet
- Philippe Cocquerez
- Francois Danis
- Philippe Gelot
- Jean-Marc Lopez
- Marc Minois
- Sergio Sosa Sesma
- Jean Valdivia

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Science Project Details: 2010-2011

ANDRILL Coulman High Project: Investigating Antarctica's Role In Cenozoic Global Environmental Change: Phase 1 Site Survey

ANDRILL hot water drill system.
Photo by Tamsin Falconer (VUW)

Program Manager:
Dr. Alexandra Isern

Event Number: G-049-M

ASC POC/Implementer:
Julie Bonneau

Dr. Frank Rack (Principal Investigator)
frack2@unl.edu
http://www.andrill.org

University of Nebraska Lincoln
Department of Geosciences
Lincoln, Nebraska

Supporting Stations: McMurdo Station
Research Locations: Coulman High, Ross Ice Shelf

Project Description:

This year, ANDRILL (ANtarctic geological DRILLing) begins drilling at Coulman High to obtain records of two stratigraphic intervals: The early Miocene and Oligocene; and the Eocene to the Cretaceous. ANDRILL focuses on four themes using geophysical and site surveys, core analysis, and numerical modeling. The themes are: Antarctic climate and ice sheet history; polar-biota evolution; Antarctic tectonism; and Antarctica's role in Earth's ocean-climate system. The overall drilling project will lead to insights into the: 1) Development of the Antarctic cryospheric system; 2) magnitude and frequency of cryospheric changes on centennial to millennial timescales; 3) influence of Antarctic ice sheets on Eocene to Miocene climate and modulation of thermohaline ocean circulation, and eustatic change; and 4) evolution and timing of major Antarctic tectonic episodes and the stratigraphic development of sedimentary basins.

Field Season Overview:

Researchers plan to access and characterize the two Coulman High drill sites for future sediment-core extraction. This will involve the use of ground-penetrating radar (GPR) to safely gain access to the drill sites and for assessment of the drill sites themselves; traversing the components of the

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ANDRILL hot-water drill system to the site, berthing modules, scientific instruments and their housing, and personnel involved in operation of both drilling and science equipment; deploying oceanographic instrumentation beneath the Ross Ice Shelf (RIS); testing the submersible capable of under-ice navigation and imaging (SCINI) ROV below the RIS; obtaining short gravity cores from the seabed beneath the RIS; conducting both a gravity survey and a seismic experiment to better characterize sub-seafloor geology in this area; and withdrawal of equipment and personnel to Scott Base/McMurdo Station. Activity at the site will include a crew of New Zealand and U.S. personnel deploying to the field site through Scott Base and McMurdo Station, respectively.

Deploying Team Members:

- Robert Beardsley (Team Leader)
- Daren Blythe
- Dustin Carroll
- Claude Laird
- Richard Limeburner (Team Leader)
- Bruce Luyendyk (Co-PI)
- Paul Mahacek
- William Ostrom
- Graham Roberts
- Christopher Stubbs
- Sean Whelan
- Douglas Wilson
- Bob Zook (Team Leader)

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Science Project Details: 2010-2011

Collaborative Research In IPY: Abrupt Environmental Change In The Larsen Ice Shelf System, A Multi-Disciplinary Approach -- Cryosphere And Oceans (LARISSA)

Program Manager:
Dr. Sonia Esperanca

Event Number: C-514-E

ASC POC/Implementer:
Adam Jenkins

Dr. Theodore Scambos (Principal Investigator)
teds@nsidc.org
http://iceshelf.wordpress.com/

University of Colorado Boulder
National Snow & Ice Data Center
Boulder, Colorado

Supporting Stations: Special Project
Research Locations: Weddell Sea (NBP)

Project Description:
The LARsen Ice Shelf System, Antarctica (LARISSA) project will bring an international, interdisciplinary team together to address a significant regional problem with global change implications, the abrupt environmental change in Antarctica's Larsen Ice Shelf System. The goals of the Cryosphere and Oceans project under the LARISSA multi-disciplinary effort are: 1) the understanding of glacier response after ice shelf loss; 2) ice-ocean interaction in a warming climate system; and 3) long-term climate history from the ice core record in the northern Peninsula region. The study region, the Larsen B Ice Shelf embayment, has seen dramatic changes in the past decade, including the loss of much of the ice shelf in early 2002. Since then, glaciers in the area of shelf-ice loss have accelerated significantly, and lost part of their mass to the ocean. However, a section of the ice shelf remains in the south; and glaciers in this area have shown almost no changes as yet. Researchers on the field camp segment of the LARISSA project will conduct an ice-penetrating radar and GPS survey of a potential deep ice core site on the Antarctic Peninsula in order to measure ice thickness, topography, and accumulation variations across a ~8 km x 8 km site. The data acquired will provide information to the ice core researchers on the best sites to drill for high-quality ice core.

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Field Season Overview:

A team of three grantees (Ted Scambos, Martin Truffer, Jennifer Bohlander) will, if approved, fly to Punta Arenas from their U.S. locations (Boulder Colorado and Fairbanks Alaska) on or about October 29, 2010. We would review camping gear and repair plans together in PA, and then are tentatively scheduled for a flight south to the U.K. Rothera Base aboard the BAS Dash-7 on November 2. In Rothera we will request a brief shakedown of radar and metal detecting protocols (an afternoon in the snowfield), time permitting. With the first available weather window (estimate November 5th), we will deploy via U.S. Twin Otter to Cape Framnes with UNAVCO-supplied replacement parts, and then to SCAR Inlet AMIGOS site, with replacement dual-frequency GPS boards. We request that the T/O remain on-site for ~90 minutes at these sites while repairs are effected: however, we will bring camping gear, and if needed, will camp at either of the two sites. We will request other short stops as required to maintain the observation network (iceGPS and other AMIGOS), should minor issues arise with other stations. It is important to have the network in good working order as the season progresses into summer 2010-2011. The last deployment will be to the Bruce Plateau Site Beta, where we expect to camp for at least 3 days. We will use 800 and 250 MHz radar, hand-held metal detector, and pole probing to locate the buried tower. If it is wiithin a few meters of the surface, we will excavate it with shovels, snow saws, a plastic sled (to haul off snow), and a HermanNelson (or similar) forced-air heater. We expect it will require 3 to 4 working days to excavate the station. At the next available weather window, we will request pull-out via Twin Otter -- US T/O, or BAS T/O if we are delayed. It is our hope to return to Rothera by November 12-14. We would be prepared to return north (presumably on the Dash-7) within a day following pull-out. I estimate a return flight from Punta Arenas northward to the U.S. to be November 18-20.

Deploying Team Members:

- Jennifer Bohlander
- Martin Truffer

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Science Project Details: 2010-2011

Cosmic Ray Energetics And Mass (CREAM)

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-137-M

ASC POC/Implementer:
Addie Coyac

Dr. Eun-Suk Seo (Principal Investigator)
seo@umd.edu
http://cosmicray.umd.edu/cream/

University of Maryland
Institute for Physical Science and Technology
College Park, Maryland

Supporting Stations: McMurdo Station
Research Locations: Williams Field

Project Description:
CREAM (Cosmic Ray Energetics and Mass) is a balloon-borne science payload designed to study the origins of cosmic rays. The instrument is configured with state-of-the-art particle detectors to measure cosmic-ray composition from protons to iron nuclei over the energy range of approximately 10 Teraelectronvolts (TeV) to 10 Petaelectronvolts (PeV). The goal is to observe cosmic-ray spectral features and/or abundance changes as a function of energy that might signify a limit to supernova acceleration. A command data module developed by the NASA/Wallops Flight Facility accompanies the science payload.

Field Season Overview:
The operational support necessary for the CREAM project includes transportation to and from Williams Field daily and on an as-needed basis. Following a successful flight, complete recovery of the ballooncraft is highly desirable. If the recovery window becomes short, researchers will identify priority components for partial recovery.

Deploying Team Members:

- Ludovic Eraud
- Danilevich Evgeny
-

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- Ji Hye Han
- Ki Chun Kim
- Moo Hyun Lee
- Sang Eun Lee
- Alexandre Malinine
- Gowoon Na
- Koo Hyun Nam

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Science Project Details: 2010-2011

Observation Of Upper-Atmospheric Energetics, Dynamics, And Long-Term Variations Over South Pole Station

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-129-S

ASC POC/Implementer:
Chad Naughton

Dr. Gulamabas Sivjee (Principal Investigator)
sivjee@erau.edu
http://www.sprl.db.erau.edu/

Embry Riddle Aeronautical University
Space Physics Research Laboratory
Daytona Beach, Florida

Supporting Stations: South Pole Station
Research Locations: Atmospheric Research Observatory

Project Description:
This project investigates solar-terrestrial interactions involving atomic, molecular, and plasma processes in the upper atmosphere over South Pole Station. The work involves measuring the effects of solar disturbances on the composition, dynamics, and thermodynamics of the Antarctic thermosphere, mesosphere, and stratosphere. In particular, the researchers seek to understand these five processes: 1) The source(s) and propagation of Antarctic F-region patches; 2) Variations in the Antarctic E-region O/N2 ratio; 3) Antarctic middle-atmosphere disturbances generated by stratospheric warming events (SWE); 4) Antarctic thermospheric response to Solar Magnetic Cloud/Coronal Mass Ejection (SMC/CME) events; and 5) Antarctic upper-atmosphere response to solar variability.

Field Season Overview:
For the upcoming field season, the research team requires 24 hour a day operation of all the team's research instruments at South Pole Station (from April to September of each Austral winter), supported by an on-site science technician. In addition, the team will need support for routine data transfer to their home institution via the South Pole network.

Deploying Team Members:

- Alan Liu
- Donald McEwen
- Donald McEwen

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Science Project Details: 2010-2011

Ground Ice Dynamics In Hyperarid Soils Of The McMurdo Dry Valleys, Antarctica

Program Manager:
Dr. Alexandra Isern

Event Number: G-121-M

ASC POC/Implementer:
Chad Naughton

Dr. Ronald Sletten (Principal Investigator)
sletten@uw.edu
http://depts.washington.edu/icylands/

University of Washington
Department of Earth and Space Sciences
Seattle, Washington

Supporting Stations: McMurdo Station
Research Locations: McMurdo Dry Valleys

Project Description:

This project seeks to elucidate the formation, stability, and evolution of ground ice in the hyper-arid climate of the McMurdo Dry Valleys by integrating automated microclimate measurements of air and soil parameters, collection and analysis of ground ice samples, and numerical modeling of ground ice stability and formation. Researchers will focus on the condensation, sublimation, and transport of water. These processes are influenced greatly by salts, which are abundant in Antarctic soils and which influence ionic diffusion and weathering processes by lowering the melting point of ice and increasing the amount of unfrozen water at subzero temperatures. Thus, the study will also investigate the dynamics of salts and subsurface ice and their interactions at sites of varying age, ice content, and microclimate.

Field Season Overview:

Upon arrival at McMurdo Station for the third and final field season for this project, the researchers will be establishing field camps at New Harbor, Taylor Valley; Upper Lake Victoria, Victoria Valley; Beacon Valley (two camp sites), and Mount Fleming (contingent on weather). Researchers will also make several day/night trips to sample in the Asgard Range. In the field, the research team will examine and collect soils and subsurface ice that will be analyzed for mineralogy, chemistry, and water isotopes. They will sample ground ice that will require shipping from the field to McMurdo Station until shipment to the researcher's home institutions. Field sampling will be conducted by using a rock corer in hand-dug pits.

The research team will also service existing data logger stations and will need UNAVCO support in the Beacon Valley using the new LiDAR system to image active patterned ground and to GPS receivers for monitoring existing stations. In mid-January, researchers will return to McMurdo Station to process and pack soil and ice samples before shipping to their home institutions.

Deploying Team Members:

- Birgit Hagedorn (Co-PI)
- Lu Liu

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Science Project Details: 2010-2011

Collaborative Research: Microbially Mediated Alteration Of Volcanic Glass Using McMurdo Extreme Environments As Natural Laboratories

Laurie Connell and Hubert Staudigel deploy microbial traps in the Tramway hydrothermal field near the summit of Mount Erebus. The view shows McMurdo Sound and the Transantarctic Mountains in the distance. More Pictures can be downloaded from http://earthref.org/ERESE/projects/GOLF439/index.html Photo by Nick Giguere

Program Manager: Dr. Alexandra Isern

Event Number: G-439-M

ASC POC/Implementer: John Rand

Dr. Hubert Staudigel (Principal Investigator)
hstaudigel@ucsd.edu
http://earthref.org/ERESE/projects/GOLF439/2010/

Scripps Institution of Oceanography
Institute for Geophysics and Planetary Physics
La Jolla, California

Supporting Stations: McMurdo Station
Research Locations: Mount Erebus, Pyramid Trough, Taylor Valley, Erebus Bay sea ice

Project Description:
Antarctica is a very harsh continent with very little life. Food webs have to be very “creative” to adjust to conditions that have been compared to life on other planets or during the early Earth. This project will use these special conditions to explore which microbes are the most successful at using nutrients and energy from volcanic rocks. The goal is to improve understanding of microbes at the bottom of the food chain: How can microbes make organic carbon by using inorganic components? Which microbes are the main players in utilizing chemical energy and nutrients from rocks and soils that are very poor in organic matter? Experiments will focus on the Extreme Environments of the McMurdo area around Ross Island, Antarctica. These will include some (ancient) lava flows and lakes in the Dry Valleys, the Royal Society Range, and on Mount Erebus.

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Field Season Overview:

This is the second of three field seasons devoted to this project over a period of five years. The first season was devoted to the deployment of experiments that researchers would retrieve two and four years later. The upcoming season will be devoted to collecting these earlier experiments, local samples, and deploying additional experiments. This season will also involve critical laboratory tasks, including incubations, the preparation of enrichment cultures, and the extraction of DNA.

The research team's field-exposure experiments focus on four main locations: Mount Erebus summit (Tramway geothermal area and ice caves); the termination of Walcott Glacier in the Royal Society Range; several locations in Taylor Valley, including creeks and volcanic exposures south and southeast of Lakes Hoare and Bonney and in Lake Fryxell. Researchers have also deployed experiments in the Ross Sea at Cape Evans (by SCUBA) and are planning to deploy a deep mooring near Turtle Rock.

Deploying Team Members:

- Roberto Anitori
- Laurie Connell (Co-PI)
- Richard Davis
- Bradley Tebo (Co-PI)

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Science Project Details: 2010-2011

IPY: Stability Of Larsen C Ice Shelf In A Warming Climate

Antarctic Peninsula west of BAS station Rothera with tide-water glacier on Pourquoi Pas Island, lying between Bigourdan Fjord and Bourgeois Fjord off the west coast of Graham Land. Photo by Konrad Steffen

Program Manager:
Dr. Julie Palais

Event Number: I-077-E

ASC POC/Implementer:
John Evans

Dr. Konrad Steffen (Principal Investigator)
konrad.steffen@colorado.edu
http://cires.colorado.edu/science/groups/steffen/larsenC/index.html

University of Colorado Boulder
CIRES
Boulder, Colorado

Supporting Stations: Special Project
Research Locations:

Project Description:
Following the collapse of the Larsen A ice shelf in 1995 and the Larsen B ice shelf in 2002, it has been demonstrated that the much larger Larsen C ice shelf is thinning, and various data suggest that it will break up as well. The goal of this project is to determine the state and stability of the Larsen C shelf. To that end, the researchers will combine existing data with new measurements to assess what physical processes are controlling the weakening of the ice shelf and whether a break up is likely. This work will provide baseline data to quantify the consequences of a breakup.

Field Season Overview:
Researchers will visit the three automated weather stations (AWS) sites on Larsen C ice shelf, which are about 190-250 kilometers from Rothera Research Station. At each site, the GPS and climate instruments installed by British Antarctic Survey (BAS) field assistants will be serviced (data download, replacement of any broken sensors).

Project Indexes
Find information about current USAP projects using the principal investigator, event number station, and other indexes.

Project Web Sites
Find more information about USAP projects by viewing individual project web sites.

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The main objectives for this field season will be a repeat of several of the ground-penetrating radar (GPR) profiles collected during the 2009 field season. At each site, researchers will collect several shallow firn cores (10-15 meters) and test the GPR profiles (25-50 kilometers) in north, south, east, and west directions. Researchers will analyze the 10-meter firn cores to determine the density and precipitation rate on site. No cores will be flown out. The group will do the same measurements at all three AWS sites and plans to spend about one week at each location.

Deploying Team Members:

- Rodríguez José Luis
- Daniel McGrath (Co-PI)

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Science Project Details: 2010-2011

Palmer Long Term Ecological Research (LTER): Looking Back In Time Through Marine Ecosystem Space, Zooplankton Component

Zodiac and penguin survey operations near Charcot Island, 25 January, 2009. Palmer LTER Photo by Mirko Lunau

Program Manager:
Dr. Lisa Clough

Event Number: B-020-L/P
NSF/PLR Award 0823101

ASC POC/Implementer:
Eric Pohlman

Dr. Deborah Steinberg (Principal Investigator)
debbies@vims.edu
http://pal.lternet.edu/

Virginia Institute of Marine Sciences
Department of Biological Sciences
Gloucester Point, Virginia

Supporting Stations: ARSV Laurence M. Gould, Palmer Station
Research Locations: West Antarctic Peninsula, Charcot Island

Project Description:
Zooplankton and micro-nekton provides the main trophic link between primary producers and apex predators in the Southern Ocean. Researchers will focus on: (1) Trophic cascading and food selectivity experiments; (2) Determining the target strength and backscattering cross section of krill in response to the Acoustic Doppler Current Profiler (ADCP) that will be used on the bio-acoustic Slocum Webb Glider; (3) Characterizing the microzooplankton community present in local waters to better understand their grazing impact on primary producers; and (4) Characterizing the quality and quantity of total lipids and fatty acids in zooplankton in the region.

Field Season Overview:
At Palmer Station, researchers will set up two Acoustic Doppler Current Profiler (ADCP) transducers facing upwards in a single, large, circular aquarium tank. One will act as the transmitter and the other the receiver. These transducers will then be used to measure the target strength of a single live krill tethered to a very fine line and suspended above the transducers. In addition, field team members will use Zodiac inflatable boats

Project Indexes
Find information about current USAP projects using the principal investigator, event number station, and other indexes.

Project Web Sites
Find more information about USAP projects by viewing individual project web sites.

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to collect water samples and transport them to station for further experimentation in the Aquarium Room. They will also collect animals for lipid analysis by towing zooplankton nets behind Zodiac boats. These samples will be stored for further analysis at the researchers' home institution.

Deploying Team Members:

- Kim Bernard
- Joseph Cope
- Carolina Funkey
- Lori Price
- Kate Ruck
- Caitlin Smoot

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Science Project Details: 2010-2011

NASA Long Duration Balloon (LDB) Support Program

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-145-M
NSF/NASA Agreement

ASC POC/Implementer:
Addie Coyac

Mr. Bill Stepp (Principal Investigator)
Bill.Stepp@csbf.nasa.gov
http://www.csbf.nasa.gov

Columbia Scientific Balloon Facility
Palestine, Texas

Supporting Stations: McMurdo Station
Research Locations: Williams Field

Project Description:
This austral summer, the Columbia Scientific Balloon Facility (CSBF) will launch three stratospheric balloons as part of NASA's Long Duration Balloon (LDB) program. The balloons measure 400 feet in diameter, expand to a volume of 40 million cubic feet, and ascend at a rate of about 900 feet per minute to a float altitude of 125,000 feet. The payloads are composed of scientific instruments, command and control systems, and solar and/or battery-powered units. The bulk of the data collected is stored on onboard hard drives, with a small amount sent by radio telemetry to the United States. Because of the Antarctic wind pattern that starts in early December, the balloons will circumnavigate Antarctica between 70 and 80 degrees south latitude.

Field Season Overview:
CSBF will launch three stratospheric balloons, including the Balloon-borne Large Aperture Telescope (BLAST/A-147-M), Cosmic Ray Energetics and Mass (CREAM/A-137), and an A-145-M Super-Pressure Balloon (SPB). All the launches will take place at the LDB site near Williams Field between December 10th and January 10th. The flights will be terminated and recovered on the Ross Ice Shelf or on the Polar Plateau. During the termination of the flight an aircraft will fly within line of sight and a command will be sent to the payload via radio from an onboard communication system. Upon termination of the flight, recovery teams will use fixed-wing and/or helicopter support to retrieve the instrument and its parachute.

Project Indexes
Find information about current USAP projects using the principal investigator, event number station, and other indexes.

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Deploying Team Members:

- Brett Anderson
- Alexander Beange
- Michael Benham
- Henry Cathey
- Debora Fairbrother
- Christopher Field
- Curtis Frazier
- Gerald Gregg
- Jim Humphrey
- Jill Juneau
- Erich Klein
- Justin Marsh
- Otto Masters
- Bonita Maxfield
- Robyn Millan
- Gerald Orr
- Juan Perez Lara
- David Pierce
- Bill Stracener
- Thomas Thomas
- Robin Whiteside

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Science Project Details: 2010-2011

Operation And Maintenance Of A CTBT Class Infrasound Array At Windless Bight

Program Manager:
Mr. Pat Smith

Event Number: T-396-M
NSF/CTBT MOA

ASC POC/Implementer:
John Rand

Dr. Curt Szuberla (Principal Investigator)
cas@gi.alaska.edu
http://www.gi.alaska.edu/infrasound/

University of Alaska Fairbanks
Geophysical Institute
Fairbanks, Alaska

Supporting Stations: McMurdo Station
Research Locations: Windless Bight

Project Description:
This project operates, maintains, upgrades, calibrates, and services the joint U.S. Comprehensive Nuclear Test Ban Treaty (CTBT) station at Windless Bight. Windless Bight's location on the Ross Ice Shelf is unique for its very low wind levels, which makes infrasound detection possible. Infrasound can detect volcano eruptions, winds over distant mountain ranges, large storms at sea, auroral and meteor events, earthquakes, avalanches, and human-caused events, such as very large explosions.

Field Season Overview:
Field team members will travel by Pisten Bully and Mattrack vehicles to the location of their equipment at Windless Bight. There they will establish a small field camp. The team will not remain continuously in the field, and one or two members may stay at McMurdo Station to coordinate data acquisition in the CTBT Hub room. A support contractor research associate will monitor the equipment during the winter months.

Deploying Team Members:

- Don Byrd
- Jay Helmericks (Co-PI)
-

Project Indexes
Find information about current USAP projects using the principal investigator, event number station, and other indexes.

Project Web Sites
Find more information about USAP projects by viewing individual project web sites.

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- Brian Lawson
- Kathleen Lawson
- David Withoff

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Science Project Details: 2010-2011

WAIS Divide Science Coordination Office (SCO)

Program Manager:
Dr. Julie Palais

Event Number: I-477-M

ASC POC/Implementer:
Matthew Kippenhan

Dr. Kendrick Taylor (Principal Investigator)
kendrick@dri.edu
http://waisdivide.unh.edu/

Desert Research Institute
Division of Hydrological Science
Reno, Nevada

Supporting Stations: McMurdo Station
Research Locations: WAIS Divide

Project Description:
WAIS Divide is a collaboration of about 40 separate but synergistic projects funded by NSF to collect deep ice cores from the West Antarctic Ice Sheet (WAIS).Work began with construction of a field camp in 2005-06 and the first cores were recovered in 2006-07. On December 31, 2011 drillers reached the final depth goal of 3,405 meters, and recovered the longest U.S. ice core to date from the polar regions.

This project represents the Science Coordination Office (SCO) for WAIS Divide, providing scientific and field oversight. An SCO representative and science technicians will deploy to the field camp. Other deploying projects this year are the drilling contractor, IDDO T-350, and Jeff Severinghaus I-476-M.

Field Season Overview:
"Researchers will resume drilling with the deep ice sheet coring (DISC) drill at 2,560 meters depth. The goal for this season is to get within about 70 meters of the bed at 3,350 meters, which means drilling 790 meters of ice. With the exception of Sunday, researchers will conduct drilling operations around the clock. This is the fourth season of deep drilling with the DISC drill.

While the research team drilled more than 790 meters of ice last season it may be a greater challenge to drill 790 meters this season for two reasons:

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1) For the first time, drilling will be done in warm ice with the DISC drill, which typically is a very slow process; 2) the deeper the borehole, the longer the drill run takes because of the greater distance the drill has to travel.

Additionally, four U.S. Air Force pallets containing about 540 meters of ice cores, stored in the basement of the arch, will be retrograded back to McMurdo Station at the beginning of the season using two cold-deck LC-130 flights. All ice drilled this season, plus the four pallets of ice that wintered at camp, will be stored in the South Pole Decoupling Freezer Vans at McMurdo Station and then transferred to the SafeCore containers in late January or early February for subsequent transport to the United States by the cargo vessel."

Deploying Team Members:

- Aron Buffen
- Thomas Cox
- John Fegyveresi
- Tyler Fudge
- Jeremy Polk
- Heidi Roop
- Joseph Souney Jr.
- Matthew Stan
- Kristal Verhulst
- Don Voigt (Team Leader)
- Dominic Winski
- Gifford Wong (Team Leader)

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Science Project Details: 2010-2011

Investigating Wave-Driven Mesospheric Dynamics Over South Pole Using An Advanced Mesospheric Temperature Mapper

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-119-S

ASC POC/Implementer:
Chad Naughton

Dr. Michael Taylor (Principal Investigator)
mike.taylor@usu.edu
http://ail.usu.edu/Data/Data.html

Utah State University
Center for Atmospheric and Space Sciences
Logan, Utah

Supporting Stations: South Pole Station
Research Locations: South Pole science lab (B2)

Project Description:
The novel infrared Advanced Mesospheric Temperature Mapper (AMTM), operated at the South Pole Station over last few years, has advanced scientific exploration capabilities by enabling scientists to measure gravity waves in the high-latitude Antarctic Mesosphere and Lower Thermosphere (MLT, ~80-100 km altitude) region in a new spectral range that is not dominated by aurora, and with a much higher temporal resolution than was previously possible. This research will contribute to a greater understanding of the diversity and variability of gravity waves over the Antarctic continent and their associated momentum transport in the MLT region, and acquire new knowledge of the gravity waves most copious sources at the high-latitudes. These data will contribute significantly to the ANtarctic Gravity Wave Imaging Network (ANGWIN) program that brings together multi-instrument measurements from eight key sites around the Antarctic continent, including South Pole.

Field Season Overview:
During the austral winter 2011, the researchers will continue conducting optical observations using the AMTM deployed at South Pole in January 2010 for its first winter-season measurements. This system measures mesospheric temperature as well as infrared gravity wave signatures and is

located in the B2 science lab alongside the all-sky test camera. The camera operates automatically during the austral winter and data are stored on a computer and transmitted back to the project team's home institution. Measurements will again initiate in mid-April and continue until the end of August 2011. As this will only be the second full season of operation for the AMTM, the research team will be closely monitoring icing problems that impeded the test observations with the all-sky camera used during the 2009 season. Based on experience gained during the first winter operations, these new measurements will be used to investigate the dynamics of the mesopause region in coordination with other on-site instrumentation (optical and radar).

Deploying Team Members:

- Pierre-Dominique Pautet

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Science Project Details: 2010-2011

Role Of Resource Legacy On Contemporary Linkages Between Biodiversity And Ecosystem Processes In A Cold Desert Ecosystem: The McMurdo Dry Valley LTER Program

Program Manager:
Dr. Roberta Marinelli

Event Number: B-423-M

ASC POC/Implementer:
Eric Pohlman

Dr. Ross Virginia (Principal Investigator)
ross.a.virginia@dartmouth.edu
http://mcmlter.org

Dartmouth College
Environmental Studies Program
Hanover, New Hampshire

Supporting Stations: McMurdo Station
Research Locations: McMurdo Dry Valleys, Crary Lab

Project Description:

The McMurdo Long Term Ecological Research (LTER) projects will continue to investigate the McMurdo Dry Valleys as an end-member ecosystem and focus on the relative roles of legacy and extant processes on current biodiversity and ecosystem structure and function. This project samples and maintains core LTER soil experiments, in conjunction with the B-424-M group, that measure the response of soil biota to substrate additions and climate change. Researchers will study relationships between soil biodiversity and ecosystem function by measuring in-situ carbon dioxide, nitrogen, and phosphorus flux through a combination of gas-flux, buried-bag, and resin-exchange-membrane techniques.

Field Season Overview:

The research team's field season will consist of brief trips to the Dry Valleys for monitoring, maintenance, and sampling of long-term experiments, and sampling of soil to support developing work on the Nitrogen and Phosphate cycles, turnover of organic matter, and moss-soil interactions in the field. Researchers will return to the Crary Lab at McMurdo Station for sample processing and initial analysis, as well as to perform incubation assays on selected soils.

Project Indexes

Find information about current USAP projects using the principal investigator, event number station, and other indexes.

Project Web Sites

Find more information about USAP projects by viewing individual project web sites.

2010-2011 Field Season

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Deploying Team Members:

- Jennifer Bailard (Team Leader)
- Rebecca Ball (Team Leader)
- Michael Poage

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Science Project Details: 2010-2011

Role Of Resource Legacy On Contemporary Linkages Between Biodiversity And Ecosystem Processes In A Cold Desert Ecosystem: The McMurdo Dry Valley LTER Program

Program Manager:
Dr. Roberta Marinelli

Event Number: B-424-M

ASC POC/Implementer:
Eric Pohlman

Dr. Diana Wall (Principal Investigator)
diana.wall@colostate.edu
http://www.nrel.colostate.edu/projects/soil/MCM/index.html

Colorado State University
Natural Resource Ecology Laboratory
Fort Collins, Colorado

Supporting Stations: McMurdo Station
Research Locations: McMurdo Dry Valleys, Crary Lab

Project Description:
The McMurdo Long Term Ecological Research (LTER) projects will continue to investigate the McMurdo Dry Valleys as an end-member ecosystem and focus on the relative roles of legacy and extant processes on current biodiversity and ecosystem structure and function. This project continues a long-term study of the impact of climate and other global changes on the abundance, distribution, and diversity of soil biota in the McMurdo Dry Valleys. Researchers maintain, monitor, and sample soils in various long-term experimental plots throughout Taylor Valley, in collaboration with the B-423-M research group. These experiments reveal relationships between biodiversity and Dry Valley carbon, nitrogen, and hydrologic cycles.

Field Season Overview:
Researchers will be conducting experiments in the Dry Valleys, which will require helicopter transport for people, field equipment, and samples (soil, water, sucrose solutions). Most of these trips are day trips of four to eight hours ground time. Biological activity in soil is at a peak in December and January, so research-team deployment during this period is essential. Researchers will also be working in the Crary Lab for processing and sampling of soils and sediments collected in the Dry Valleys.

Project Indexes
Find information about current USAP projects using the principal investigator, event number station, and other indexes.

Project Web Sites
Find more information about USAP projects by viewing individual project web sites.

2010-2011 Field Season
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Deploying Team Members:

- Byron Adams
- Uffe Neilsen

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Science Project Details: 2010-2011

Thermospheric Neutral Wind Observation In The Antarctica Peninsula

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-132-P
NSF/PLR Award 0839119

ASC POC/Implementer:
Eric Pohlman

Dr. Qian Wu (Principal Investigator)
qwu@ucar.edu
http://fpi.hao.ucar.edu

University Corporation for Atmospheric Research, UCAR/NCAR
Boulder, Colorado

Supporting Stations: Palmer Station
Research Locations:

Project Description:
This Palmer Station research project is a collaboration with Australian scientists who have Fabry-Perot interferometer (FPI) instruments at the Australian Mawson and Davis Stations to jointly analyze the neutral wind and temperature data to address the following issues: (1) Thermospheric neutral wind effect on the Weddell Sea Anomaly; (2) Lower thermosphere wind effect on shuttle plume drift; (3) Non-migrating tides in the mesosphere and lower thermosphere; and (4) Geomagnetic effect on the thermospheric wind.

Field Season Overview:
During the 2010-11 field season, two researchers will travel to Palmer Station to install the instrument.

Deploying Team Members:

- Andrew Watt

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Project Indexes
Find information about current USAP projects using the principal investigator, event number station, and other indexes.

Project Web Sites
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Science Project Details: 2010-2011

TDRSS And NAILS

Program Manager:
Mr. Pat Smith

Event Number: T-966-M

ASC POC/Implementer:
Julie Bonneau

Mr. Mike Comberiate (Principal Investigator)
michael.a.comberiate@nasa.gov

National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland

Supporting Stations: McMurdo Station
Research Locations: on Station

Project Description:
Black Island hosts an uplink station to the Tracking and Data Relay Satellite System (TDRSS). TDRSS is a communication signal relay system that provides tracking and data acquisition services between low-earth orbiting spacecraft and the stateside control and data processing facilities of NASA and NOAA. The orange-and-white radome at T-Site above McMurdo hosts the NASA Antarctic Interactive Launch Support (NAILS) two-meter satellite tracking station. This technical project maintains and upgrades these systems.

Field Season Overview:
This austral summer team members will install new software to enable control of the NAILS system from the NOAA Satellite Operations Facility (NSOF) in Suitland, Maryland. The current software installed in the 2009-2010 season enabled the NSOF to monitor but not control the system remotely. A new antenna controller unit will also be installed and tested with actual satellite passes. The system will be configured for autonomous operations and operationally tested with the NSOF for several days to ensure remote operation and control of the system is functioning and reliable. Team members will also implement a new operational plan for using this antenna controller unit as prime, but defaulting to the existing redundant systems. Technicians will also remove the pedestal azimuth and elevation motors and lubricate the system with special grease received after the previous field-maintenance efforts. Motors, temperature sensors, and

Project Indexes

Find information about current USAP projects using the principal investigator, event number station, and other indexes.

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heaters will be removed or replaced, as necessary, and their parts will be retrograded for refurbishing.

Deploying Team Members:

- Greg Heckler
- Daniel Meekins
- Kurt Rush
- William Schmitt

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Science Project Details: 2010-2011

CRREL 09-10 Activities

Members of T-940 take manual and robotic GPR surveys in the White Island Shear Zone to detect crevasses as part of support to the South Pole Traverse. Photo by Dr. Jim Lever

Program Manager:
Mr. George Blaisdell

Event Number: T-940-M
NSF Agreement

ASC POC/Implementer:
John Rand

Dr. Jennifer Mercer (Principal Investigator)
Jennifer.L.Mercer@usace.army.mil

US Army Cold Regions Research & Engineering Lab
Hanover, New Hampshire

Supporting Stations: McMurdo Station
Research Locations: McMurdo Station sea ice

Project Description:
There are several objectives expected for the T-940 activities during the 2013-14 Antarctic Field Season. We expect to be advised which projects will be funded in mid to late-August. The potential projects include engineering and basic research in support of the following: South Pole Traverse (SPoT); Support to McMurdo Airfields Improvements (SMAI); Under-Ice Exploration of SBT (SBT); South Pole Station Operations (SPSO); Sea-Ice Thickness Survey (SITS); Snow Road GPR Robotic Survey (GPR); Albedo Surveys on Pegasus Runway Using a Robot (ASPRR); Development of Fleet Management Plan (DFMP); Drainage Solutions Implementation (DSI); South Pole Utility Tunnel Maintenance (SPUTM); and McMurdo Master Planning - Drainage Study (MCMMP-DS)

More specific objectives for these projects are:

South Pole Traverse (SPoT): CRREL POC: James Lever 1) Assess route safety in areas where crevasses may be present by GPR and physical characterization. 2) Continued tests of a prototype cargo sled 3) Continued tests for sled performance and mobility improvements. 4) Experiments for Autonomous Guided Traverse Vehicles.

Project Indexes

Find information about current USAP projects using the principal investigator, event number station, and other indexes.

Project Web Sites

Find more information about USAP projects by viewing individual project web sites.

2010-2011 Field Season

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Support to McM Airfield CRREL POC: Chris Hiemstra & TJ Melendy 1) Ice/snow core surveys betweeen Pegasus and Mile Post 7 on Pegasus road

Fleet Management CRREL POC: TJ Melendy 1) Heavy equipment analysis

South Pole Station Operations (SPSO): CRREL POC: Lynette Barna 1) Work with NSF's Dick Armstrong and CRREL contractor John Rand on specified South Pole operations issues.

Field Season Overview:

Team members will deploy on a staggered schedule to perform various engineering analyses and data collection. A full-time research associate will support the CRREL team throughout the summer season.

Deploying Team Members:

- Russ Alger
- Lynette Barna
- Zoe Courville
- Margaret Knuth (Co-PI)
- John Rand
- Sally Shoop (Co-PI)
- Eric Trautmann

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USAP Program Index:
Ocean and Atmospheric Sciences

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Principal Investigator ▼	Event No.	Project Title
Ackley, Stephen	O-269-O	Collaborative Research: The sea ice system in Antarctic summer, Oden Southern Ocean expeditions (OSO 2009-10, OSO 2010-11, OSO 2011-12)
Avallone, Linnea	O-324-M	In situ measurements of stratospheric ozone from long-duration balloons during Concordiasi
Butler, James	O-257-S	South Pole monitoring for climatic change
Chereskin, Teresa	O-313-N	Collaborative research: Dynamics and transport of the Antarctic Circumpolar Current in the Drake Passage
Cohn, Stephen	O-363-M	IPY: NCAR facility support, scientific contributions and collaborative research to understand environmental change in Antarctica through participation in the international CONCORDIASI project
Deshler, Terry	O-131-M	Measurements of Antarctic ozone and polar stratospheric cloud profiles in a time of decreasing atmospheric chlorine, climate change, and fluctuations in polar vortex strength
Deshler, Terry	O-361-M	Quasi-Lagrangian measurements of polar stratospheric cloud particle development from long-duration balloon platforms
Huber, Bruce	O-399-N	Cape Adare Long-term Mooring (CALM)
Jacobs, Stanley	O-274-N	IPY/ASEP - Collaborative international research: Amundsen Sea Influence on West Antarctic Ice Sheet stability and sea level rise
Kohut, Josh	O-216-M/N	Collaborative Research: Modified

Project Indexes

Find information about current USAP projects using the principal investigator, event number station, and other indexes.

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		circumpolar deep water intrusions as an iron source to the summer Ross Sea ecosystem
Rabier, Florence	**O-360-M**	Strateole-Vorcore

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Technical Event

Principal Investigator	Event No.	Project Title
Comberiate, Mike	T-966-M	TDRSS and NAILS
Comes, Laura	T-998-P	Operation and maintenance of a CTBT radionuclide monitoring station at Palmer Station
Johns, Bjorn	T-295-M	UNAVCO GPS survey support
McCarthy, Kevin	T-927-M	NASA/McMurdo Ground Station (MG1)
Mercer, Jennifer	T-940-M	CRREL 09-10 activities
Parker, Timothy	T-299-M	IRIS/PASSCAL seismic support
Szuberla, Curt	T-396-M	Operation and maintenance of a CTBT class infrasound array at Windless Bight

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Science Project Details: 2010-2011

Collaborative Research: The Sea Ice System In Antarctic Summer, Oden Southern Ocean Expeditions (OSO 2009-10, OSO 2010-11, OSO 2011-12)

Program Manager:
Dr. Peter Milne

Event Number: O-269-O

ASC POC/Implementer:
Addie Coyac

Dr. Stephen Ackley (Principal Investigator)
stephen.ackley@utsa.edu

University of Texas
San Antonio, Texas

Supporting Stations: Icebreaker Oden
Research Locations: Amundsen Sea

Project Description:
This research project's objectives are to determine the properties and processes governing the sea-ice cover in the Amundsen Sea during Antarctic summer, through the fall freeze up and the winter. Researchers will take measurements of the sea ice and snow cover properties and use these measurements to develop process models of the evolution of the ice cover. Specifically they seek to determine the ice cover's response under present and future climate, provide validation for airborne and satellite remote sensing, and as both input and validation for numerical models of the coupled air-ice-ocean-biological system.

Field Season Overview:
This research team will participate in the 2010 Swedish icebreaker Oden cruise through the Amundsen Sea, embarking the vessel in Punta Arenas, Chile and departing the ship at McMurdo Station. Researchers will conduct sea-ice coring, thickness measurements, electro-magnetic induction (EMI) measurements of ice thickness, and surface surveying for snow depth and surface elevation. Buoys will be installed in the sea-ice cover to measure properties of the atmosphere, snow, ice and ocean, and transmit the data remotely via Iridium satellite phone. Underway measurements will include digital photography, EMI, and visual ice observations made from the ship. Helicopters will also be used for down-looking digital photography.

Deploying Team Members:

- David Prado
- Brent Stewart
- Blake Weissling

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Science Project Details: 2010-2011

ASPIRE: Amundsen Sea Polynya International Research Expedition

Program Manager:
Dr. Roberta Marinelli

Event Number: B-198-N

ASC POC/Implementer:
Adam Jenkins

Dr. Anne-Carlijn Alderkamp (Principal Investigator)
alderkamp@stanford.edu

Stanford University
Environmental Earth System Science
Stanford, California

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: Amundsen Sea

Project Description:
This research project is part of ASPIRE, an NSF-funded project that will be studying the Amundsen Sea ecology during the upcoming Austral summer. ASPIRE includes an international team of trace-metal and carbon chemists, phytoplankton physiologists, microbial and zooplankton ecologists, and physical oceanographers that will investigate why and how the Amundsen Sea Polynya is so much more productive than other polynyas and whether inter-annual variability can provide insight to climate-sensitive mechanisms driving carbon fluxes. Researchers will add the following two components to the field portion of ASPIRE: 1) Experimental manipulations to understand photoacclimation of the dominant phytoplankton taxa under conditions of varying light and trace metal abundance; and 2) nutrient addition bioassays to determine the importance of trace metal versus nitrogen limitation of phytoplankton growth.

Field Season Overview:
The research team will be sailing as part of the ASPIRE cruise on the RVIB Nathaniel B. Palmer (NBP) in the Amundsen Sea. Special requirements include several deck incubators, a radioisotope van, trace metal clean lab space, cold room, and some standard lab space.

Deploying Team Members:

- Kate Lowry
- Gerrit Van Dijken (Team Leader)

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Science Project Details: 2010-2011

Lake Joyce Microbialites Resubmittal

Program Manager:
Dr. Vladimir Papitashvili

Event Number: G-441-M

ASC POC/Implementer:
Addie Coyac

Dr. Dale Andersen (Principal Investigator)
dandersen@seti.org

SETI Institute, Center for the Study of Life in the Universe
Lake Placid, New York

Supporting Stations: McMurdo Station
Research Locations: Lakes Vanda and Joyce

Project Description:
This project, part of NASA's Exobiology Program, will support a robust, interdisciplinary scientific effort that will investigate the benthic microbial ecosystem in Lake Joyce, a perennially ice-covered lake in the McMurdo Dry Valleys. In 1997, while conducting exploratory dives in Lake Joyce, researchers discovered carbonate structures (microbialites) forming at the 20-meter depth contour of the lake. Researchers' main objective is to understand why those structures are forming so deep, and to determine the mechanism of their formation. The microbialites resemble communities of microorganisms that were abundant between 2.5 and three billion years ago. Researchers will compare modern communities with what is contained in the fossil record. They will measure basic limnetic properties of the lake, map the locations and sample the benthic mats and sediments, and take light measurements under the ice. In addition, they will collect extensive in situ (by SCUBA diving) measurements of the primary production of these mats in Lake Joyce. The results will be extended to investigating the roles of microbial behaviors in shaping mat morphology in quiet-water, low-sedimentation environments with low grazing pressure. They will also provide new insights into interpreting microbial community processes from ancient microbialites.

Field Season Overview:
This year, like last year, the main focus of the research work will take place at Lake Joyce in the McMurdo Dry Valleys (Pearse Valley). Researchers plan to be working at Lake Joyce from mid-October to mid-November, and

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then move to a smaller camp on the ice at Lake Vanda for two weeks, with a return to McMurdo Station in early December. Both camps will be diving in the lakes to take samples and conduct in-situ measurements. The group's diving needs will be identical to last season, requiring support for three divers using surface supplied air.

Deploying Team Members:

- Asim Bej
- Ian Hawes (Co-PI)
- Anne Jungblut (Co-PI)
- Tyler Mackey
- Dawn Sumner (Co-PI)

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Science Project Details: 2010-2011

Collaborative Research: Climate Change And Predatory Invasion Of The Antarctic Marine Environment

Frontal view of a predatory king crab from the Southern Hemisphere. Photo by Sven Thatje

Program Manager:
Dr. Roberta Marinelli

Event Number: B-002-O

ASC POC/Implementer:
Addie Coyac

Dr. Richard Aronson (Principal Investigator)
raronson@fit.edu

Florida Institute of Technology
Melbourne, Florida

Supporting Stations: Icebreaker Oden
Research Locations: Bellingshausen and Amundsen Seas

Project Description:
Global climate change is altering polar marine ecosystems through rising temperatures and ocean acidification. Antarctic marine communities face an additional threat: Climatically driven biological invasions from temperate and subpolar latitudes. Durophagous crabs from warmer environments are on the verge of invading shallow benthic habitats. However, the extent of established crab populations is unknown. This study will assess the status of western Antarctica crab populations and their potential to disrupt benthic communities.

Since sea temperatures are now rising and the physiological barriers to predatory reinvasion are coming down, king crabs have been discovered on the Antarctic Peninsula's continental slope, where the water is warmer than on the shelf. In addition, crab larvae are entering Antarctic waters entrained in warm-core rings from the Antarctic Circumpolar Current. If crabs invade the Antarctic shelf, they could "re-modernize" the benthic fauna and homogenize it with marine faunas elsewhere. Researchers will assess the invasion's extent and consequences by sampling the water column for larvae and surveying the benthos for juveniles and adults and for localized changes in community structure.

Field Season Overview:

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The research team's opportunity to conduct science aboard the Swedish icebreaker Oden provides the ideal opportunity to sample areas of the Bellingshausen and Amundsen Seas rarely visited by marine scientists. This study takes a three-pronged approach. First, crab larvae and larvae of other invading taxa, and the holoplankton associated with them, will be sampled by net tows at discrete depths in the water column. Researchers will use the holoplankton in combination with remote-sensing altimetry data to identify the eddy structures that brought the invasive larvae into Antarctic waters. Second, an epibenthic sledge and a small dredge will be used to sample demersal plankton, specifically targeting the demersal larvae of king crabs. Third, an autonomous underwater vehicle (AUV) will be used to image the bottom fauna, providing density estimates of crabs on the slope and, perhaps, on the shelf. A five-day RVIB Nathaniel B. Palmer sampling protocol will occur at the beginning of the NBP10-05 cruise.

Deploying Team Members:

- Margaret Amsler
- John Bailey
- Roberta Challener
- Jeffrey Kaeli
- Stephanie Vos
- Frank Weyer

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Science Project Details: 2010-2011

Sea Ice Ecology In The Amundsen And Eastern Ross Sea

Program Manager:
Dr. Roberta Marinelli

Event Number: B-244-O

ASC POC/Implementer:
Addie Coyac

Dr. Kevin Arrigo (Principal Investigator)
arrigo@stanford.edu

Stanford University
Geophysics
Stanford, California

Supporting Stations: Icebreaker Oden
Research Locations: Amundsen Sea

Project Description:
The primary objective of this research project will be to sample extensively the microbial community throughout the large expanse of sea ice that is located between the Bellingshausen Sea and the Ross Sea, Antarctica. During this transit, researchers will: 1) characterize the spatial variability in the sea-ice microbial community composition; 2) measure the biomass, photophysiology and metabolic rates of the ice-algal community; 3) use underway sampling to make continuous measurements of climatically important gases such as carbon dioxide and dimethyl sulfide (DMS) to identify and discretely sample “hot spots” within the pack ice; and 4) use molecular tools to determine phytoplankton responsible for carbon dioxide uptake and dimethylsulfoniopropionate (DMSP) production and to what extent physical and chemical factors control these processes. Ideally, researchers will sample along an east-west transect between the Antarctic Peninsula and the Ross Sea, and along one or more north-south transects, one of which should be associated with the Amundsen Sea polynya.

Field Season Overview:
Researchers will be collecting ice cores from two stations per day off the Swedish icebreaker Oden. They will be using onboard ice-coring equipment and a temperature-controlled container for processing the cores. Once cores are collected they will be laid out underneath a tarp and initially processed, which will consist of core measurements such as temperature measurements

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and core sectioning. Once back on the ship, cores will be melted and diluted in filtered seawater. Samples will then be taken for nutrients, particulate carbon, nitrogen, phosphorus, chlorophyll-a measurements, active-fluorescence analysis, probability versus mean measurements, and carbon uptake experiments. Researchers will also take particulate samples from the cores to send home for molecular analysis. The researchers will also make continuous measurements of climatically important gases such as carbon dioxide and dimethyl sulfide to identify and discretely sample “hot spots” within the pack ice. This will require a connection to the underway water line, gas bottles, and to the ship’s GPS.

Deploying Team Members:

- Elizabeth Asher
- Matthew Mills
- Benjamin Saenz
- Philippe Tortell
- Anne-Marie Wotkyns

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Science Project Details: 2010-2011

Collaborative Research: Last Glacial Maximum And Deglaciation Chronology For The Foundation Ice Stream And Southeast Weddell Sea Embayment

Claire Todd collecting exposure-dating samples at Reedy Glacier, Transantarctic Mountains. Photo by John Stone

Program Manager:
Dr. Julie Palais

Event Number: I-156-M

ASC POC/Implementer:
Adam Jenkins

Dr. Gregory Balco (Principal Investigator)
balcs@bgc.org

Berkeley, California

Supporting Stations: McMurdo Station
Research Locations: Schmidt and Williams Hills

Project Description:
This project aims to reconstruct ice-surface elevation change between the last glacial maximum (about 15,000 years ago) and the present at the Foundation Ice Stream in the Pensacola Mountains. Researchers with this project will visit nunataks adjacent to the ice stream, mapping the glacial geology of these nunataks to find deposits that record past ice marginal positions, and then dating these ice marginal positions using cosmogenic-nuclide exposure dating. By dating ice-marginal deposits at different elevations, researchers can build up a picture of how the ice-surface elevation has changed over thousands to tens of thousands of years. The research team will also make glaciological observations on the Foundation Ice Stream, Academy Glacier, and smaller glaciers and icefields in the area in an effort to understand the present glacier dynamics. They will then use all this information in glaciological models to determine what past ice sheet configurations are most consistent with these observations.

Field Season Overview:
The geological fieldwork is straightforward and simply involves visiting as many nunataks in the field area as possible, making geological observations, and collecting small (one kilogram) rock samples. The glaciological fieldwork will involve ice-penetrating radar traverses, installation and surveying of

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stakes and markers, digging snow pits, and collecting shallow snow and ice cores.

In the first field season, researchers will visit the Schmidt Hills (near the grounding line of the Foundation Ice Stream) and the Williams Hills (40 kilometers upstream from the Schmidt Hills). It appears from maps and airborne photo reconnaissance that it is possible to travel safely between the Schmidt Hills and the Williams Hills by snowmobile, so the plan for this field season involves a single put-in and pull-out using fixed-wing aircraft, with a sufficient number of snowmobiles to transport our camp between the landing site and the two fieldwork sites. Researchers will also use the snowmobiles to travel from the camp to different nunataks on a daily basis. Many previous LC-130 landings were made at a nearby site, Camp Neptune, in the 1960's, and map and airborne photo reconnaissance indicates that this landing site appears to give safe snowmobile access to the proposed field areas.

Thus, researchers plan to 1) land in the area of Camp Neptune; 2) move camp to the Williams Hills by snowmobile; 3) work in the area of the Williams Hills for approximately two-to-three weeks; 4) move camp to the Schmidt Hills; 5) work in the area of the Schmidt Hills for about two-to-three weeks; 6) move camp back to the landing site; and 7) if time allows, carry out additional field work at higher-elevation sites to the north and east of the landing site.

Deploying Team Members:

- Seth Campbell
- Kathleen Huybers
- Christopher Simmons
- Claire Todd (Co-PI)
- Michael Vermeulen

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Science Project Details: 2010-2011

Collaborative Research: Controls Over The Spatial Distribution And Activity Of Microbial Communities In Antarctic Soils

Program Manager:
Dr. Roberta Marinelli

Event Number: B-462-M

ASC POC/Implementer:
Chad Naughton

Dr. John Barrett (Principal Investigator)
jebarre@vt.edu

Virginia Tech
Department of Biological Science
Blacksburg, Virginia

Supporting Stations: McMurdo Station
Research Locations: Battleship Promontory, Beacon Valley, CTAM, Beardmore Glacier, Lakes Bonney and Fryxell, Miers Valley, The Cloudmaker, CTAM

Project Description:
Our objective is to investigate the composition and activity of microbial communities across a range of soil conditions, e.g., where water, organic matter, and geochemistry vary over local to regional scales in the Transantarctic Mountains, in order to assess controls over microbial biogeography. The proposed research targets two areas in the Transantarctic Mountains, the McMurdo Dry Valleys and the Central Transantarctic region further south, which represents a novel and extreme-soil environment relative to current understanding of the ecology of extreme terrestrial ecosystems. Researchers will exercise an integrated approach to investigate relationships between variation in soil habitats (i.e., climate and geochemistry) and biodiversity using a combination of molecular techniques and in situ assessment of biological activity in a quantitative biogeographical framework that will enable them to distinguish fine versus broad scale controls over microbial communities.

Field Season Overview:
Researchers plan to address their objective at two general locations in the Transantarctic Mountains of East Antarctica: McMurdo Dry Valleys and the Central Transantarctic Region. These two regions provide the spatial breadth

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necessary to evaluate dispersal limitations and test biogeographical models. Researchers will work for 10 days to two weeks in the CTAM region where they will conduct day trips by helicopter to sites within 45 nautical miles of the Central Transantarctic Mountain (CTAM) camp, e.g., Mt. Kyffin, and the Cloudmaker. They will also request support at an ancillary field camp in or near the Meyer Desert. Researchers also plan to conduct field research in multiple locations of the McMurdo Dry Valleys, using existing infrastructure and field support. The researchers will be based out of either Lake Fryxell or Lake Hoare camps to support one week of intensive field work in Taylor Valley and day trips to Beacon, Miers and Alatna Valleys.

Deploying Team Members:

- Craig Cary (Co-PI)
- Eric Sokol

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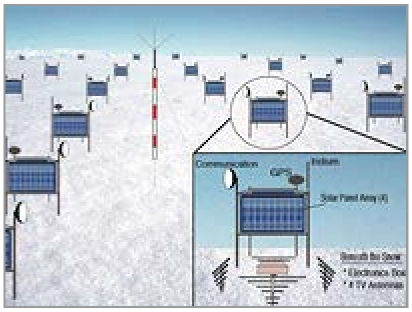
Science Project Details: 2010-2011

Development Of Station Technology For The ARIANNA Ultra-High Energy Neutrino Detector



Concept sketch of the ARIANNA (Antarctic Ross Iceshelf ANtenna Neutrino Array) high energy neutrino telescope, which will be located on the Ross Ice Shelf, about 70 miles from McMurdo Station. Each station, schematically represented by the solar panel tower, autonomously collects radio signals from high energy neutrino interactions in the Antarctic ice. The stations are separated from each other by 0.5 miles. The striped pole in the center collects data from a local wireless cloud network and transmits the data to McMurdo. ARIANNA will eventually extend over an area of 30 kilometers by 30 kilometers.

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-127-M

ASC POC/Implementer:
Elizabeth Watson

Dr. Steven Barwick (Principal Investigator)

barwick@cosmic.ps.uci.edu

University of California Irvine

Department of Physics and Astronomy

Irvine, California

Supporting Stations: McMurdo Station

Research Locations: ARIANNA Site at Moore's Bay

Project Description:
The Antarctic Ross Ice shelf Antenna Neutrino Array (ARIANNA) concept uses the Ross Ice Shelf to increase the sensitivity to ultra-high energy cosmogenic neutrinos by roughly an order of magnitude when compared to the sensitivity of existing detectors and those under construction. Therefore, ARIANNA can test a wide variety of scenarios for neutrino production and

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probe for physics beyond the standard model by measuring the neutrino cross-section at center of mass energies near 100 Teraelectronvolts (TeV). ARIANNA capitalizes on several properties of the Ross Ice Shelf: Shelf ice is relatively transparent to electromagnetic radiation at the radio frequencies of interest, and the water-ice boundary below the shelf behaves like a mirror that reflects radio signals from downgoing neutrinos back up. The baseline concept for ARIANNA consists of moderately high-gain antenna stations arranged on a 100 kilometer x 100 kilometer grid; a station consists of log-periodic dipole antennae (LPDA) to detect the radio signals generated by the neutrino interactions. The specific goals of the research are: 1) Evaluate the reliability and cost effectiveness of technical components of station design; 2) develop remote monitoring and control tools; 3) develop efficient and reliable calibration, simulation, and analysis tools; and 4) study impulsive and sporadic ambient noise environment at frequencies between 100 MHz and 1 GHz during extended period of time.

Field Season Overview:

During a two-week window between November 2010 and January 2011, the researchers plan to send two team members to the ARIANNA camp site located at Moore's Bay.

The researchers anticipate spending one month in Antarctica to allow one week to prepare for work in the field, two weeks in the field, and one week at McMurdo Station analyzing data, packing, and performing close-out tests. During the week prior to deploying to the field camp, the research team plans to prepare and test the equipment in a heated Jamesway or tent.

The research team expects to complete the following tasks in the field: 1) Improve operational control of ARIANNA station; 2) Perform timing calibrations, establish 0.1 nanosecond resolution; 3) Perform noise and gain calibrations to establish system sensitivity; 4) Improve system monitoring and data archiving software; 5) Analyze and interpret transient events.

Deploying Team Members:

- Spencer Klein (Team Leader)
- Thorsten Stezelberger

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Science Project Details: 2010-2011

Collaborative Research: Polyphase Orogenesis And Crustal Differentiation In West Antarctica

Program Manager:
Dr. Alexandra Isern

Event Number: G-097-M

ASC POC/Implementer:
Leslie Blank

Dr. Michael Brown (Principal Investigator)
mbrown@geol.umd.edu

University of Maryland
College Park, Maryland

Supporting Stations: McMurdo Station
Research Locations: Fosdick Mountains, Siple Dome

Project Description:
Recent research in the Fosdick Mountains in west Antarctica shows that it is an exceptional place to study the process of crustal differentiation and the linkage from partial melting of existing rock (migmatization) to granite formation. This process promoted growth and stabilization of new continental crust upon the Gondwana margin. This research project examines the migmatite source rocks, granite melt products, and the vein networks that acted as conduits to move granite melt. Researchers will sample the rocks in a detailed and comprehensive fashion to acquire materials for study to investigate details of high-temperature metamorphism, melt mobilization and coalescence that led to crustal differentiation during the two major cycles in the Devonian–Carboniferous and Jurassic–Cretaceous periods. Researchers will use the samples for major, trace, and isotope chemistry; precise metamorphic petrology and microstructural analysis; and geochronology. The results will advance understanding of the chemical differentiation process of the Earth's crust, as a part of the physical evolution of the planet, specifically regarding melt production and movement mechanisms critical to understanding the physical behavior of the melt-bearing horizons associated with active mountain belts and orogenic plateaus.

Field Season Overview:
Field research this austral summer will focus on detailed outcrop study of the distribution and amount of metamorphic rocks that have undergone melting to produce granite. Detailed sampling from four transects will help

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researchers address the question of where melt formed and how far it traveled; laboratory analyses will help determine the timing and duration of these melting events and will provide a genetic fingerprint that proves the connection between parent rock (protolith) and melt product (granite). The four proposed transects have been carefully selected based on the researchers' knowledge of which of the two melting events is preserved in each locality, as well as the diversity of rock types and the development of the dike-vein networks that become conduits to move melted rock.

To allow sufficient time for sample collection, detailed field observations and measurements, researchers will complete the transect work during two sequential field seasons. The field work will be carried out from minimal self-supported camps situated on or near rock exposures from which the field party can traverse on foot over rock or snow. Time on the ground is an absolute necessity because of the extensive rock exposure along the transects that range in length from three to 10 kilometers in length, offer vertical relief of 300 to 800 meters, and may have widths exceeding a kilometer. The field party put-in, with camp move and resupply after two weeks, will be done by Twin Otter operating out of Siple Dome. Twin Otter close support for landings in neighboring ranges to collect plutonic rocks in "sinks" will coincide with camp deployments.

The field party in Year 1 will focus effort on transects 1, 2, and 4, plus use of close support for sampling outside the Fosdick Mountains. One PI will arrive part way into the season during a camp move. In the second year, a four-person field party is planned to complete transects 3 and 4.

Deploying Team Members:

- Timothy Burton
- Kevin Emery
- Fawna Korhonen (Co-PI)
- Christine Siddoway (Co-PI)
- Chris Yakymchuk

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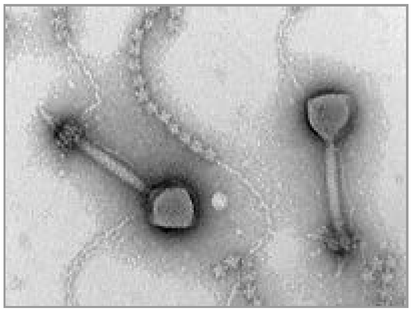
Science Project Details: 2010-2011

Post-Doctoral Research Fellowship



Marine viruses isolated from the cyanobacterium Synechococcus. Image by Jennifer Brum, Tucson Marine Phage Lab

Program Manager:
Dr. Roberta Marinelli

Event Number: B-319-P

ASC POC/Implementer:
Eric Pohlman

Dr. Jennifer Brum (Principal Investigator)
jbrum@email.arizona.edu

University of Arizona Tucson
Tucson, Arizona

Supporting Stations: Palmer Station
Research Locations: Palmer Station local boating area

Project Description:
The objectives of this research are to investigate the ecology and genomic content of marine viruses in the ocean near Palmer Station in the western Antarctic Peninsula. Researchers will be collecting samples to investigate the replication strategies of marine viruses under varying environmental conditions and to investigate the genomic content of viruses with these differing replication strategies. This project also seeks to identify viruses containing specific genes of interest to understand how viruses use these genes in the Southern Ocean.

Field Season Overview:
The PI will collect small-volume surface water samples from Palmer LTER Station B twice weekly between November and December. Additional samples will be collected in January 2011 through a collaboration with another team of researchers deployed to Palmer Station. Samples will be collected using Zodiac boats to access Station B. Large-volume surface water samples of 240 liters each will also be collected once in November and again in January, using 50-liter carboys and a submersible pump deployed from a Zodiac boat. The PI will be processing the samples in the Palmer Station lab and storing the samples in either a 4º C refrigerator or -80º C freezer as needed.

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Science Project Details: 2010-2011

The Cellular Stress Response In Cold-Adapted Organisms: Building Novel Mechanistic Links Between Heat Stress, Cell Cycle Arrest And Apoptosis In Antarctic Fishes.

"The emerald notothen, Trematomus bernacchii, collected from McMurdo Sound, Antarctica". Photo by Brad Buckley

Program Manager:
Dr. Diana Nemergut

Event Number: B-308-M

ASC POC/Implementer:
Elizabeth Watson

Dr. Bradley Buckley (Principal Investigator)
bbuckley@pdx.edu

Portland State University
Department of Biology
Portland, Oregon

Supporting Stations: McMurdo Station
Research Locations: Sea ice at Cape Evans, Inaccessible Island, McMurdo Sound

Project Description:
The primary goals of this project concern the biology of the cold-adapted fishes of Antarctica, specifically those that inhabit the waters of McMurdo Sound. The specific research objectives are to determine the impact that elevated (but not lethal) temperatures have on the cellular biology and physiology of common McMurdo Sound fish species. The goal is to determine the impact that rising seawater temperatures may have on the ecology of these important and environmentally sensitive species.

Field Season Overview:
The field work associated with this project depends upon extensive work and travel on the sea ice. Therefore, researchers will deploy as early in the season as possible when the ice is thick from the winter, safe, and easy to travel over. During this time, researchers will be placing fish huts on the sea ice for use in collecting local fish species by hook and line through holes drilled through the ice.

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The primary collection sites are: The McMurdo Jetty, Cape Evans, and the north side of Inaccessible Island. If sea-ice conditions permit, researchers will also fish through a hole drilled in the ice covering the previous season's shipping channel. This site has proven to be a superb collection site for a species, Pagothenia borckgrevinki, that is rarely seen at the other three fishing locations.

Fish will be brought back to McMurdo Station and maintained alive in running seawater tanks until used in experiments. For specific experiments, we will transfer individual fish into smaller heat exposure tanks that will be ramped up to elevated but sub-lethal temperatures. Following these exposures, researchers will euthanize the fish and collect tissue samples, including both protein and nucleic acids (RNA and DNA). These will be either stored frozen at -80° C or at room temperature in liquid ethanol until shipped back to the researchers' home institution.

By early to mid-December, fishing operations will end and the fish huts removed from the sea ice. Lab operations will be shut down as well and samples prepared for shipment to the researchers home institution by mid- to late December.

Deploying Team Members:

- Allison Barden
- Amanda Kelley
- Isaac Sleadd

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Science Project Details: 2010-2011

IPY: NCAR Facility Support, Scientific Contributions And Collaborative Research To Understand Environmental Change In Antarctica Through Participation In The International CONCORDIASI Project

Program Manager:
Dr. Peter Milne

Event Number: O-363-M

ASC POC/Implementer:
John Rand

Dr. Stephen Cohn (Principal Investigator)
cohn@ucar.edu

University Corporation for Atmospheric Research, UCAR/NCAR
Boulder, Colorado

Supporting Stations: McMurdo Station
Research Locations: McMurdo Station sea ice

Project Description:
This project will provide driftsonde gondolas, each capable of carrying up to 60 GPS dropsondes, to be launched on demand from the Concordiasi balloons. These driftsondes produce a high-resolution vertical profile of temperature, humidity, winds, and pressure from the flight level to the surface.

Field Season Overview:
The research team will deploy on the first flight of WinFly. All laboratory and payload preparation and launch support will be provided within logistic support to the Concordiasi project.

Deploying Team Members:

- Charles Martin
- Nicholas Potts

Science Project Details: 2010-2011

Collaborative Research: Constraints On The Last Ross Sea Ice Sheet From Glacial Deposits In The Southern Transantarctic Mountains

Program Manager:
Dr. Julie Palais

Event Number: I-414-M

ASC POC/Implementer:
Chad Naughton

Dr. Howard Conway (Principal Investigator)
conway@ess.washington.edu

University of Washington
Earth and Space Sciences
Seattle, Washington

Supporting Stations: McMurdo Station
Research Locations: CTAM, Mounts Kyffin, Hope, and Patrick (Wedge Face), Shackleton Glacier, The Cloudmaker

Project Description:
This project's goal is to determine the thickness and retreat history of Shackleton and Beardmore Glaciers during and since the last glaciation of the southern Ross Sea. Researchers will map and date lateral moraine deposits along the lower reaches of these glaciers, determining the age of the last glaciation and the thickness of ice where it flowed into the Ross Sea. The researchers will date erratics and recessional moraines below the level of the last glaciation to establish the timing of ice thinning. Coherence between the record from these glaciers in the southern Ross Sea, and behavior at the grounding line far to the north, will show whether the ice sheet was lightly grounded in the Ross Sea and able to transmit longitudinal stresses over long distances upstream. By extending the age transects down to the floating ice at the mouth of each glacier, scientists will date the migration of the grounding line into the southern Ross Sea. These dates will allow researchers to distinguish between ice-retreat models, which have implications for past ice configuration and dynamics, and constrain the contribution of Ross Sea deglaciation to sea levels over the last 10,000 years.

Field Season Overview:
The research team plans to work at three primary sites this austral summer:

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The Cloudmaker, Mount Kyffin, and Mount Hope. These locations are within 45-50 nautical miles of the central Transantarctic Mountain (CTAM) Field Camp. Researchers plan to work from camps set up close to the outcrops they are sampling. A research team of five will work at the Cloudmaker camp while two researchers remain at CTAM Camp to conduct airborne radar surveying of Beardmore and Shackleton Glaciers. All seven researchers will work at the Mount Kyffin site. Two researchers will then return to McMurdo Station for other projects while the remaining five researchers work at the Mount Hope site. The research team also plans to take helicopter-supported day trips to Wedge Face (Mount Patrick) and Twin-Otter-supported day trips for reconnaissance to Shackleton Glacier. Estimated rock sample weight from CTAM Camp to McMurdo Station is 1,000 pounds, but it will be transported in stages throughout the summer season.

Deploying Team Members:

- Gordon Bromley
- Maurice Conway
- Perry Spector
- Lesley Urasky

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Science Project Details: 2010-2011

Collaborative Research: Weddell Seals As Autonomous Sensors Of The Winter Oceanography Of The Ross Sea

a Weddell seal with a tag that is linked via satellite that will provide data on the winter foraging behavior of the seal. In addition the tag will send salinity and temperature profiles of the water column where the animals has been foraging. Photo by Dan Costa

Program Manager:
Dr. Diana Nemergut

Event Number: B-232-M

ASC POC/Implementer:
Leslie Blank

Dr. Daniel Costa (Principal Investigator)
costa@biology.ucsc.edu

University of California Santa Cruz
Long Marine Lab
Santa Cruz, California

Supporting Stations: McMurdo Station
Research Locations: Sea Ice at McMurdo Station, Terra Nova Bay

Project Description:

Recent advances in satellite-linked data logging have made it possible to correlate foraging behavior with environmental variables. These technological advances also enable marine mammals to be used as cost-effective platforms from which to collect detailed oceanographic data on a scale not possible with conventional methods. This project will address two complementary themes: (1) The winter foraging behavior and habitat utilization of the Weddell seal, and (2) the use of oceanographic data collected by the seals to better understand the dynamics of the upper water column of Ross Sea. Using these technologies over two years, researchers will measure animal physiological condition in the austral spring and fall. They can then correlate diving patterns with aerobic capacity and patterns of mass and body condition change.

Field Season Overview:

In the second year of this project, researchers will again deploy a field team

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to McMurdo Station in late October to recover instruments deployed in January 2010, and to measure the physiological status of seals in spring (for comparative purposes). During October and November, researchers will search for seals carrying tags deployed in 2010. Researchers will then deploy a second field team in late January to deploy the second batch of tags on molted adult Weddell seals. Researchers hope to spread out deployments geographically, with some at the ice shelf near Scott Base, in Erebus Bay, along the Victoria Land Coast, in Granite Harbor, and points to the north. This late deployment of the second team of researchers will improve the prospects of finding suitably molted animals and also increase tag retention.

Deploying Team Members:

- Jennifer Burns (Co-PI)
- Kim Goetz
- Luis Huckstadt
- Jennifer Maresh
- Linnea Pearson
- Patrick Robinson
- Michelle Shero
- Mary Zavanelli

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Science Project Details: 2010-2011

Photoheterotrophic Microbes In The West Antarctic Peninsula Marine Ecosystem

Program Manager:
Dr. Peter Milne (acting)

Event Number: B-026-P

ASC POC/Implementer:
Eric Pohlman

Dr. Matthew Cottrell (Principal Investigator)
mattcott@udel.edu

University of Delaware
College of Marine Studies
Lewes, Delaware

Supporting Stations: Palmer Station
Research Locations: On station

Project Description:
This research project seeks to examine the relationship of microbes to light (summer) and dark (winter) conditions in the coastal waters of the western Antarctic Peninsula. The work will target microbes that have the ability to use organic substrates and to harvest light energy for growth. Researchers will determine if these photoheterotrophic microbes are present and active both in winter and in summer and will compare the abundance and diversity of photoheterotrophs in the winter and summer. The metabolic activity of photoheterotrophs will be assessed to determine if they are more active in assimilating organic compounds in the light or in the dark. Finally, researchers will determine if these microbes maintain their photoheterotrophic metabolism and are immediately able to respond to light during the winter.

Field Season Overview:
Over the next two years, researchers plan four sampling trips to Palmer Station, including two during the summer season and two during the winter season. For the winter sampling, researchers will drill a hole in the ice for seawater sampling and collect four 20-liter containers of seawater back to the station for study. For the summer sampling, researchers will need boat support to sample seawater from the coastal zone in the same region sampled during the winter. They will also be collecting four 20-liter containers of seawater. In the lab, researchers will need bench space to perform

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seawater filtration. They will also conduct experiments using beta emitting radioisotopes, a circulating water bath for temperature control, and an artificial light source to simulate sunlight.

Deploying Team Members:

- Mrinalini Nikrad

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Science Project Details: 2010-2011

Collaborative Research: Hunting In Darkness: Behavioral And Energetic Strategies Of Weddell Seals In Winter

Program Manager:
Dr. Roberta Marinelli

Event Number: B-017-M

ASC POC/Implementer:
John Rand

Dr. Randall Davis (Principal Investigator)
davisr@tamug.edu

Texas A & M University
Dept. of Marine Biology
Galveston, Texas

Supporting Stations: McMurdo Station
Research Locations: Erebus Bay sea ice

Project Description:

Weddell seals locate and capture sparsely distributed and mobile prey under shore-fast ice throughout the year. They accomplish this under the physiological constraints associated with holding their breath and intermittent oxygen loading due to limited access to breathing holes. Consequently, this is one of the most challenging environments occupied by an aquatic mammalian predator, and it presents unique opportunities to test hypotheses concerning behavioral strategies and physiological adaptations for foraging; sensory modalities used for prey capture; and the distribution of prey under permanent ice. Researcher's primary objectives include: 1) Determining how Weddell seals locate and capture prey and then relocate breathing holes in the ice under low, ambient-light levels; and 2) determining how behavioral and physiological metabolic responses to minimal low ambient-light level and seasonality influence energetic costs, benefits, and efficiency of foraging.

Field Season Overview:

Since team deployment will occur in mid-August, and this project is a winter study, deploying researchers will be racing to get seals instrumented while there are still periods of darkness. The intent is to gain access to limited areas of McMurdo Sound as early as reasonably possible. While researchers will base their operations out of Crary Lab, they will also need a five-section Jamesway tent on the sea ice (with a hole nearby) in front of McMurdo

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Station for weighing, sedating, and instrumenting seals.

Adult male and female seals weighing 350-450 kilograms will be captured with a purse-string net both in McMurdo Sound and along the shore of Ross Island and transported to the Jamesway tent site. Following sedation and weighing, seals will be moved indoors for morphological and resting metabolic measurements and attaching the video and data recorder. Once researchers complete measurements and attach the video and data recorders, the seals are released for about two weeks. The researchers will use satellite and VHF radio transmitters glued to the seal's fur to track animals at the surface. When an instrumented seal hauls out on the ice, the research team will receive a position (latitude and longitude), accurate to one kilometer, by email from Service Argos. Researchers will then use the signal from the VHF transmitter to pinpoint the seal's location. Researchers will recapture the seals to recover the video and data recorder or to exchange it for one with fresh batteries and full memory capacity. When finished working with a seal, the animal will be recaptured and all of the equipment and the attachment system removed.

Deploying Team Members:

- Willem Buitendyk
- Georgina Davis
- Edward Farrell
- Lee Fuiman (Co-PI)
- Nicole Thometz
- Terrie Williams (Co-PI)

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Science Project Details: 2010-2011

Collaborative Research: Persistent Organic Pollutants In The Antarctic Marine Food Web: Impact Of Climate Change And Insights Into The Feeding Ecology Of Apex Predators

Program Manager:
Dr. Roberta Marinelli

Event Number: B-389-O/P

ASC POC/Implementer:
Addie Coyac

Undefined Rebecca Dickhut (Principal Investigator)
rdickhut@vims.edu

College of William and Mary
School of Marine Sciences
Gloucester Point, Virginia

Supporting Stations: Icebreaker Oden, Palmer Station
Research Locations:

Project Description:
The aim of this project is to use chemical signals in Antarctic marine organisms to: 1) Trace the movement of persistent organic pollutants stored in glacier ice into the Antarctic marine food web; and 2) provide insight into the dietary preferences and feeding ecology of Antarctic sea birds and marine mammals.

Field Season Overview:
Research team members will collect air, water, snow, phytoplankton and zooplankton samples along the Western Antarctic Peninsula, Amundsen Sea, and the Ross Sea using both the RVIB Nathaniel B. Palmer and the Swedish icebreaker Oden.

Deploying Team Members:

- Emily Brault
- Jenna Luek

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Science Project Details: 2010-2011

Collaborative Research: Geochemistry And Microbiology Of The Extreme Aquatic Enviornment In Lake Vida, East Antarctica

Drilling in the Lake Vida ice cover during our previous expedition there. Drilling is done inside a clean room. The drill is meticulously cleaned prior to arrival at Lake Vida (and sealed in foil and bags). When drilling is the dry hole is complete, several days are spent recleaning the room and the hole before proceeding into the brine below. Photo by Fabien Kenig

Program Manager:
Dr. Roberta Marinelli

Event Number: B-208-M

ASC POC/Implementer:
Eric Pohlman

Dr. Peter Doran (Principal Investigator)
pdoran@uic.edu

University of Illinois Chicago
Dept of Earth and Environmental Sciences
Chicago, Illinois

Supporting Stations: McMurdo Station
Research Locations: Lake Vida

Project Description:
Lake Vida remains one of the least studied lakes in the McMurdo Dry Valleys. Researchers know that the lake has about 20 meters of ice cover over a brine that is at least seven times the salinity of seawater and below -10º C year-round. Thick sediment layers in the ice cover fully block light penetration, ensuring that any ecosystem in the brine is not photosynthetic. Samples of brine collected in 2005 from 16.5-meters down in the ice cover contain: 1) The highest nitrous-oxide levels of any natural water body; 2) anomalously high ammonia and iron; 3) high microbial counts; 4) active bacteria (indicates protein production); 5) a microbe population including an unusual proportion of ultramicrobacteria; and 6) a microbial community unique even compared to other Dry Valleys' lakes. In this study, researchers

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plan to enter, for the first time, the lake's main brine body and perform in-situ measurements, collect brine samples, and take sediment cores from the lake bottom for geochemical and microbiological analyses. The results will allow the characterization of present and past life in the lake, assessment of modern and past sedimentary processes, and determination of the lake's history.

Field Season Overview:

There will be three phases to operational support: 1) In McMurdo Station preparing for the field; 2) at Lake Vida, drilling and sampling; and 3) in McMurdo Station analyzing samples. Phases 2 and 3 will overlap as the researchers will want to analyze samples quickly after they are collected, so a part of the team will be back in the lab while the remaining team members are at the field site. Researchers will be establishing a field camp in the center of Lake Vida. Besides living and working shelter, researchers will also need a dedicated ""clean room"" situated over the borehole.

The deployment dates are relatively inflexible because the researchers need to be on and off the ice before the lake surface gets flooded by the summer melt. Researchers are planning the bulk of the field work to occur in late October and early November for this reason. Parts of the team will remain in McMurdo Station working on time-sensitive lab work into the first week of January.

Deploying Team Members:

- Hilary Dugan
- Christian Fritsen (Co-PI)
- Brian Glazer
- Peter Glenday
- Benjamin Kampuis
- Fabien Kenig (Co-PI)
- Ema Kuhn
- Alison Murray (Co-PI)
- Bernd Wagner
- Seth Young

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Science Project Details: 2010-2011

Collaborative Research: Application Of Detrital Zircon Isotope Characteristics And Sandstone Analysis Of Beacon Strata To The Tectonic Evolution Of The Antarctic Sector Of Gondwana

Mt. Falla, central Transantarctic Mountains, with the Beardmore Glacier in the middle ground. The rock outcrops along the flanks of the Beardmore Glacier and the adjacent high peaks expose the most complete Permian-Triassic Gondwana sequence in Antarctica. These outcrops will be studied and sampled in the course of this project. Photo by David Elliot

Program Manager:
Dr. Alexandra Isern

Event Number: G-497-M

ASC POC/Implementer:
Chad Naughton

Dr. David Elliot (Principal Investigator)
delliot@geology.ohio-state.edu

Ohio State University
Department of Geological Sciences
Columbus, Ohio

Supporting Stations: McMurdo Station
Research Locations: Bowden Névé , Buckley Island, Clarkson Peak, Dominion Range, Mounts Falla, Kirkpatrick, Marshall, and Miller

Project Description:
The overall goals are to establish the tectonic evolution of the Beacon sedimentary basins and to investigate sub-glacial terrains of west and east Antarctica exposed to erosion in Permian-Triassic times. Thus, the study will resolve questions about the evolution of Gondwana's Panthalassan margin. The principal objective is examining tectonic evolution of the Antarctic sector of the Gondwana margin and associated sedimentary basins using the application of sequence stratigraphy and detrital zircon isotope studies to the Devonian to Triassic Beacon sedimentary sequence. Studies on the Beacon sandstones will document changing sediment sources for Devonian passive

margin/successor basin strata and Permian-Triassic strata that accumulated under back-arc/extensional to foreland basin settings. Sandstone data will be interpreted in the context of sequence stratigraphy, paleocurrent/dispersal patterns, and petrology. Zircon geochronology will establish source terrain provinces and hafnium- and oxygen-isotope data will differentiate terrains of similar U/Pb age.

Field Season Overview:

This four-person field team will require LC-130 put-in and pull-out from the Bowden Névé (Beardmore) camp site used in 1985-1986, 1990-1991, and 2002-2003. Researchers will also need helicopter support for access to most of the field sites. Additionally, self-sufficient satellite camps will be occupied for five to seven days each during the summer season. Fieldwork at all sites will be conducted on rock outcrops with the standard geological fieldwork of mapping, measuring sections, and collecting samples. A limited amount of fieldwork will be done by snowmobile travel to rock outcrops in the vicinity of the proposed helicopter-supported work areas.

Deploying Team Members:

- Samuel Hulett
- John Isbell (Co-PI)
- Zelinda Koch

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Science Project Details: 2010-2011

Radar Measurements Of Large- And Small-Scale Dynamics Of The MLT On The Antarctic Peninsula With An Existing MF Radar And A New Generation Meteor Radar At British And Brazilian Bases

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-113-E

ASC POC/Implementer:
John Evans

Dr. David Fritts (Principal Investigator)
dave@cora.nwra.com

Northwest Research Associates, Inc.
Boulder, Colorado

Supporting Stations: Special Project
Research Locations: Ferraz Base, King George Island

Project Description:
This project addresses the large? and small?scale dynamics of the Antarctic and Arctic mesosphere and lower thermosphere (MLT) through three correlative measurement and analysis programs, employing a new state-of-the art meteor radar system installed in March, 2010 at the Brazilian Base Ferraz on King George Island.. The three research components are: 1) Correlative studies using the medium _frequency (MF) radar, the Fe temperature lidar, and the OH airglow imager at Ferraz addressing tidal and planetary wave (PW) structure and variability and their correlations with gravity wave activity at higher frequencies and smaller scales, 2) Correlative studies employing the longitude chain of MF radars at Ferraz, Syowa, and Davis, the Digisonde at Halley, and the meteor radar at South Pole that address the character, zonal structure, and variability of the tidal and PW activity in the Antarctic MLT and the seasonal and interannual variability of the large?scale circulation, and 3) Correlative studies employing the Antarctic MF radar chain and additional radars at conjugate northern latitudes (Poker Flat and ALOMAR at 65 and 69 degrees N) to address inter?hemispheric variability of the MLT.

Field Season Overview:
A two-person team will return to Ferraz to conduct post-winter testing and maintenance, and make any needed software servicing, upgrades, and

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repairs to the radar system. As before, they will deploy to Ferraz via Brazilian aircraft from Punta Arenas, Chile.

Deploying Team Members:

- Diego Janches (Co-PI)

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Science Project Details: 2010-2011

Age And Composition Of The East Antarctic Shield By Granite And Glacial Proxy

Field team collecting glacial clasts near the Miller Range in the Nimrod Glacier area of the central Transantarctic Mountains in 2005-06. Photo by John Goodge

Program Manager:
Dr. Alexandra Isern

Event Number: G-503-M

ASC POC/Implementer:
Chad Naughton

Dr. John Goodge (Principal Investigator)
jgoodge@d.umn.edu

University of Minnesota
Department of Geological Sciences
Duluth, Minnesota

Supporting Stations: McMurdo Station
Research Locations: CTAM, Dominion Range, Lonewolf Nunatak, Miller Range, Mount Howe, Nimrod Glacier, Warren Range, Reedy Glacier

Project Description:
The main goal of this new project is to understand better the age and composition of ice-covered crust of the east Antarctic shield in the region adjacent to the Transantarctic Mountains (TAM), mainly by proxy geochemical, age and isotopic analysis of TAM granites and clasts from glacial moraines. This study will build on successful prior studies of the TAM Precambrian basement, aeromagnetics, and glacial proxies that together provide a rough outline of the hidden parts of the east Antarctic shield. Understanding the nature of the east Antarctic shield is important to the understanding of early global supercontinent evolution, e.g., Rodinia to Gondwana, early Phanerozoic sediment dispersal patterns, inter-cratonic correlations, and relationship of lithosphere to development of the East Antarctic Ice Sheet since the Oligocene. The value of the approach of using glacial moraines and granites as proxies of the ice-covered shield is highlighted in a recent paper published in the journal Science and new preliminary isotopic data from TAM granites that demonstrate what can be learned about the crust they have traversed.

Field Season Overview:

This project involves remote field sampling of glacial moraines at nine locations along the ice-cap side of the central and southern Transantarctic Mountains (TAM) during the 2010-2011 season, from the vicinity of the Skelton-Mulock Glaciers in the north to the Scott-Leverett Glaciers in the south. The field team will work in the Skelton-Mulock Glaciers area by helicopter close support from McMurdo Station. Following this, researchers will establish two satellite tent camps, using CTAM Camp as a base of operation, in the Miller and Dominion Ranges. Researchers will be at the two satellite camps for about two-to-three weeks each.

The researchers’ objective is to sample glacial moraines at the head of Skelton-Mulock, Byrd, Nimrod, Beardmore and Scott-Leverett outlet glaciers, which flow through the TAM to drain ice from the polar ice cap to the Ross Sea. Moraines at the upstream end of the outlet glaciers provide the richest samples of glacially-eroded material from the inland ice-covered shield. Principal sample sites include, from north to south: (1 and 2) Warren and Convoy ranges, head of Skelton-Mulock glaciers; (3) Lonewolf Nunataks area, head of Byrd Glacier; (4) Turret Nunatak, head of Nimrod Glacier; (5-6) Argo Glacier and Milan Ridge areas, west of Miller Range; (7) western Dominion Range, head of Beardmore Glacier; (8) Mount Howe area, head of Scott Glacier; and (9) Hatcher Bluff area, head of Leverett Glacier. Researchers have visited most of these sites as part of previous field work, and so these sites are known to have a high proportion of basement clasts in addition to locally derived material.

Deploying Team Members:

- Tanya Dreyer
- Christopher Fanning
- Dylan Taylor
- Jeffrey Vervoort

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Science Project Details: 2010-2011

Sensitivity Of The Antarctic Ice Sheet To Global Climate Change Over The Last Two Glacial/Interglacial Cycles

Program Manager:
Dr. Julie Palais

Event Number: I-196-M

ASC POC/Implementer:
Eric Pohlman

Dr. Brenda Hall (Principal Investigator)
brendah@maine.edu

The University of Maine
Inst for Quat./Climate Stud. and Dept of Geol Sci
Orono, Maine

Supporting Stations: McMurdo Station
Research Locations: Blue and Hobbs Glacier, Britina Island, Garwood, Hidden, Marshall, Miers, and Salmon Valleys, Hjorth Hill

Project Description:
The research team's goal is to document the glacial history of the valleys fronting the Royal Society Range and, by doing so, constrain the history of the Ross Sea ice sheets over the last two glacial/interglacial cycles. This knowledge is key for assessing the relationship between the Antarctic ice sheets and global climate and sea-level changes. To reach this goal, researchers will produce a detailed chronology from radiocarbon and uranium-thorium dating of the last two advances of Ross Sea ice lobes into valleys adjacent to the Royal Society Range.

Field Season Overview:
The research team will be operating out of a small, independent tent camp in the Royal Society Range. They will need helicopter supporter twice for camp moves, but will carry out most work on foot. Researchers also will take several day trips (morning drop off, evening pick up) by helicopter to locations too far from camp to reach on foot.

Deploying Team Members:

- Stephanie Allard
- Robin Arnold
-

- Toby Koffman
- Glenn McKenney

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Science Project Details: 2010-2011

National Ice Core Laboratory (NICL) Core-Handling And Data Recording

Program Manager:
Dr. Julie Palais

Event Number: I-478-M

ASC POC/Implementer:
Matthew Kippenhan

Mr. Geoffrey Hargreaves (Principal Investigator)
hargreavesmg@gmail.com

United States Geological Survey
National Ice Core Laboratory
Denver, Colorado

Supporting Stations: McMurdo Station
Research Locations: WAIS Divide

Project Description:
Project personnel from the US National Ice Core Laboratory (NICL) will deploy to Antarctica in collaboration with the WAIS Divide drilling program. The overall program objective is to reconstruct a paleoclimate record from a deep ice core recovered from this site. NICL personnel will provide a core-handling and data-recording system, quality assurance and oversight, assistance with core-processing operations and will ensure safe transit for the core from Antarctica to the NICL laboratory in Denver, Colorado.

Field Season Overview:
This field season, NICL personnel will reinstall the components of the ice core processing equipment removed for winter, test all the systems in collaboration with Ice Core Drilling Services (ICDS), provide training and quality assurance for the core-handling team, and assist with core processing operations. The goal for this season is to get within about 70 meters of the bed at 3,350 meters, which means drilling 790 meters of ice that will be processed on site.

Upon arrival of the retrograde cores to McMurdo Station, the cores will require -22º C freezer storage in freezer vans, or space in the Ice Core Transit Facility (ICTF), until retrograded on the cargo vessel at the end of the January 2011. Cores retrograded to the United States will be shipped in 40-foot SafeCore freezer containers with redundant cooling unit capability. NICL personnel will return to McMurdo Station at the end of the drilling season in late January to oversee the loading of SafeCore.

Deploying Team Members:

- Brian Bencivengo (Co-PI)
- Richard Nunn

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Science Project Details: 2010-2011

Paleoenvironmental And Paleoclimatic Analysis Of The Beacon Supergroup, Beardmore Glacier Area, Central Transantarctic Mountains, Antarctica

Program Manager:
Dr. Alexandra Isern

Event Number: G-498-M

ASC POC/Implementer:
Chad Naughton

Dr. Stephen Hasiotis (Principal Investigator)
hasiotis@ku.edu

University of Kansas Lawrence
Department of Geology
Lawrence, Kansas

Supporting Stations: McMurdo Station
Research Locations: CTAM, Beardmore and Wahl Glaciers, Coalsack Bluff, Collinson Ridge, Fremouw Pk, Gordon Valley, Graphite Peak, Miller Range, Mounts Falla and Kirkpatrick

Project Description:
This research project's objectives are to collect trace fossils and associated fossil material for ichnologic and paleontologic analyses, as well as detailed data on sedimentologic, paleopedologic, and stratigraphic characteristics to interpret the paleoenvironmental, paleoecologic, and paleoclimatic settings of Beacon Supergroup deposits of the Central Transantarctic Mountains. Researchers will use trace fossils to: 1) Reconstruct terrestrial and aquatic communities and environments; 2) address two major questions concerning the evolution of burrowing behavior in high-versus-low paleolatitude environments and climates; and 3) to understand how they responded to major glaciations and mass extinctions in high paleolatitude settings.

Field Season Overview:
This field season, researchers intend to make detailed stratigraphic sections, trace fossil collections, and burrow and rhizolith size measurements from as many sites as possible around the proposed CTAM camp at Beardmore Glacier, Kitching and Collinson Ridges, and Shenk Peak.

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Science Project Details: 2010-2011

Ammonia Oxidation Versus Heterotrophy In Crenarchaeota Populations From Marine Environments West Of The Antarctic Peninsula

Program Manager:
Dr. Roberta Marinelli

Event Number: B-114-L

ASC POC/Implementer:
Eric Pohlman

Dr. James Hollibaugh (Principal Investigator)
aquadoc@uga.edu

University of Georgia
Marine Sciences
Athens, Georgia

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Western Antarctic Peninsula

Project Description:

Researchers on this project will seek to: 1) Establish the initial conditions of abundance and species composition of the Crenarchaeota population that develops in the Winter Water off the western Antarctic Peninsula (WAP); 2) assess the sensitivity of WAP winter Crenarchaeota populations to reactive oxygen stress; 3) determine whether Crenarchaeota found in the winter water off the WAP are autotrophic or heterotrophic; 4) determine ammonia oxidation rates in situ; 5) determine whether reactive oxygen stress excludes Crenarchaeota from the surface layer off the WAP during summer; and 6) determine if Crenarchaeota off the WAP are influenced by particle distributions, especially sinking diatom blooms.

Field Season Overview:

Researchers on both the early season cruise (LMG10-06) and the mid-summer cruise (LMG11-01) will test the hypothesis that the winter water (WW) population of crenarchaeotes “grows in” to that water mass once the water column has stabilized and stratified in spring. Researchers will collect water samples on these cruises for subsequent analysis. If possible, researchers will also use microautoradiography, combined with fluorescence in-situ hybridization, (MAR-FISH) to examine community activity. These samples will be filtered on board and frozen for subsequent analysis.

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Samples will be collected along a transect across the shelf off-shore from Palmer Station. Researchers plan to collect three samples at each station, one from each water mass – SSW (~10 m), WW (~75 m) and CDW (~250 m) using CTD casts.

Deploying Team Members:

- Robert Jellison
- Bradley Tolar

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Science Project Details: 2010-2011

Flying To Pellucidar: Antarctic Aviation

"Aviation versus tourism, King George Island." Photo by Charles Hood

Program Manager:
Ms. Winnie Reuning

Event Number: W-223-M

ASC POC/Implementer:
Patricia Jackson

Undefined Charles Hood (Principal Investigator)
hoodcw@gmail.com

Artists & Writers
Palmdale, California

Supporting Stations: McMurdo Station
Research Locations: McMurdo and South Pole Stations

Project Description:
The history of science in Antarctica is the history of flight, especially American flight. While many nations contribute to work done in Antarctica, the fact remains that from Byrd's 1929 overflight to 1956's South Pole landing by Que Sera Sera to the multiple ferry runs scheduled presently, American aviation remains an essential part of the international science carried out in Antarctica. This is a project to research and write a book on Antarctic aviation, with a special emphasis on little-known or small early expeditions and on the role of US aviation in supporting international science.

Field Season Overview:
Mr. Hood will interview support staff, pilots, ground crews, and scientists. He will take photographs and flights of opportunity on fixed-wing assets and helicopters. Antarctic aviation is an important component of South Pole station support and as such, Mr. Hood's research will include a day-trip or overnight to South Pole as space is available.

Science Project Details: 2010-2011

Cape Adare Long-Term Mooring (CALM)

Program Manager:
Dr. Peter Milne

Event Number: O-399-N

ASC POC/Implementer:
Patricia Jackson

Mr. Bruce Huber (Principal Investigator)
bhuber@ldeo.columbia.edu

Columbia University
Lamont-Doherty Earth Observatory
Palisades, New York

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: Cape Adare

Project Description:
Antarctic Bottom Water (AABW) is the densest of the major water masses filling the deepest parts of the world's oceans. Because it obtains many of its characteristics during its contact with other seawater, glacial ice, and atmosphere along the continental margins of Antarctica, researchers expect that changes in newly formed AABW may represent an effective indicator for abrupt climate change. The two most important source regions for AABW are within the Weddell and the Ross Seas, with the Ross Sea arguably the second largest source. However, no systematic effort has been undertaken to make long-term measurements of its outflow. To fill this data gap, this project deployed and maintained an array of moorings east of Cape Adare to observe the properties of AABW exiting the northwest corner of the Ross Sea.

Field Season Overview:
The two moorings will be recovered for the final time during cruise NBP11-01. Successful recovery will result in the securing of a three-year-long time series at two sites (four years at one of the sites), positioned in the outflow of deep and bottom water from the northwestern Ross Sea. CTD profiles of the water column will be conducted at and near the mooring sites to provide end-of-series calibration data for the moored sensors.

Deploying Team Members:

Project Indexes
Find information about current USAP projects using the principal investigator, event number station, and other indexes.

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- Joseph Martin Jr

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Science Project Details: 2010-2011

IPY/ASEP - Collaborative International Research: Amundsen Sea Influence On West Antarctic Ice Sheet Stability And Sea Level Rise

Program Manager:
Dr. Peter Milne

Event Number: O-274-N

ASC POC/Implementer:
Patricia Jackson

Dr. Stanley S Jacobs (Principal Investigator)
sjacobs@ldeo.columbia.edu

Columbia University
Lamont-Doherty Earth Observatory
Palisades, New York

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: Amundsen Sea

Project Description:

West Antarctic Ice Sheet (WAIS) stability in a changing climate hinges on the balance between surface accumulation, iceberg calving, and in-situ basal melting of fringe ice shelves. In Pine Island Bay, shelf ice is melting orders of magnitude faster than elsewhere around Antarctica, fueled by intrusions of relatively warm deep water onto the continental shelf. Remote sensing has correlated that melting, with thinning ice shelves, increases the ice streams' velocity and drawdown of adjacent ice sheets. The objectives of this project are to extend past summer ocean measurements to clarify the Amundsen Sea's influence on the regional ice shelves, and in turn the effects of ice sheet change on the ocean. Researchers seek multi-year time-series records to facilitate understanding of seasonal and inter-annual variability of deep water access to the continental shelf, its melting of regional ice shelves, and its role in sea ice formation and decay. Sea-ice observations will focus on the role of snow, ice, and ocean-heat transport in its mass balance. Swath mapping will concentrate on deep troughs and outer shelf depressions that funnel warm, salty deep water to vulnerable ice-shelf grounding zones. Researchers will use the measurements to model ocean properties, their interactions with ice cover, and impacts on WAIS ice shelves.

Field Season Overview:

During cruises NBP10-05 and NBP11-02 researchers will attempt to recover up to 14 bottom-anchored instrument arrays moored in the Amundsen Sea in early 2009 during NBP09-01. Each mooring is equipped with an acoustic release and anchor at depths ranging from 520 to 1340 meters, and topped by a radio beacon and flasher 335 to 495 meters below the sea surface. Researchers will conduct a CTD cast to within 10 meters of the sea floor at each site. Moorings that do not release acoustically may be dragged for if time and circumstances allow. After removal of data and batteries, some instruments will be redeployed as part of a British Antarctic Survey collaboration. The other moorings will be stowed in the mooring van for return to the United States.

Deploying Team Members:

- Povl Abrahamsen
- Raul Guerrero

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Science Project Details: 2010-2011

Collaborative Research: Upper Cretaceous-Lower Paleocene Strata From The James Ross Island Region: Chemo-, Magneto-, And Biomarker Tests Of Intercontinental Correlation And Extinction Hypotheses

Program Manager:
Dr. Vladimir Papitashvili (acting)

Event Number: G-436-E

ASC POC/Implementer:
John Evans

Dr. Joseph Kirschvink (Principal Investigator)
kirschvink@caltech.edu

California Institute of Technology
Geological and Planetary Sciences
Pasadena, California

Supporting Stations: Special Project
Research Locations:

Project Description:
Researchers will address the causes of mass extinction based on evidence from stratigraphic sections of late Cretaceous age in Antarctica. While it is known that a sudden extinction occurred at the end of the Cretaceous, it has become increasingly clear that pre-Cretaceous Tertiary (KT) diversity decrease had already occurred in Antarctica. This indicates that significant cooling may have occurred in the Southern Hemisphere high latitudes during this period of time. However, at the same time flood basalts in India were exhaling large amounts of carbon dioxide into the atmosphere, a process that is also associated with mass extinction, and one that might provide an alternate explanation. Tests of these hypotheses on mass extinction have been conducted at sites in the Northern Hemisphere, but understanding of these events must also take into account effects in the Southern Hemisphere.

Researchers will seek to answer the questions of what biotic, climatic and tectonic events and trends occurred in the Southern Hemisphere during the late Cretaceous. They hope to determine if these events and trends can be matched to those already known to have occurred in the Northern Hemisphere.

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Field Season Overview:

The field team will fly to Punta Arenas, Chile for a couple days of packing and organizing, then board cruise LMG11-02 of the ARSV Laurence M. Gould (LMG), scheduled to depart on February 12, 2011. This cruise will support two other geoscience projects as well as personnel rotations and other support for Palmer Station. The various geoscience projects will entail both day trips and multi-day field camps ashore.

Deploying Team Members:

- Kelly Hillbun
- Sarah Slotznick
- Thomas Tobin
- Peter Ward (Co-PI)

Science Project Details: 2010-2011

Collaborative Research: Modified Circumpolar Deep Water Intrusions As An Iron Source To The Summer Ross Sea Ecosystem

Program Manager:
Dr. Peter Milne

Event Number: O-216-M/N

ASC POC/Implementer:
Patricia Jackson

Dr. Josh Kohut (Principal Investigator)
kohut@marine.rutgers.edu

Rutgers University
Institute for Marine & Coastal Sciences
New Brunswick, New Jersey

Supporting Stations: McMurdo Station, RV/IB Nathaniel B. Palmer
Research Locations: Ross Sea

Project Description:
This project will investigate the impact of deep-water intrusions on ecosystem structure and function in the Ross Sea. Along a transect at 76.5º south latitude, researchers have observed a cluster of stations with twice the photosynthetic quantum yield and chlorophyll a levels than neighboring stations 60 kilometers away. The strongest increases in quantum yield were observed at stations with the most intense MCDW shoaling close to the mixed layer, while modest increases were observed at stations where MCDW was deeper than 250 meters. Stations lacking MCDW had low quantum yield, chlorophyll a, and few diatoms.

From this, researchers hypothesize that: 1) This MCDW intrusion is an iron source to surface waters of the Ross Sea; and 2) that MCDW-derived iron drives ecosystem structure and function by increasing quantum yield, photosynthetic rates, chlorophyll a, and blooms of large diatoms. Until recently, the spatial and temporal variability of MCDW intrusion and difficulty of making numerous high-quality, real-time iron measurements made testing these hypotheses impractical. The advent of deep gliders and accurate shipboard iron measurements now make it possible to locate and map MCDW and test these hypotheses.

Field Season Overview:

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In order to test these hypotheses, researchers propose to integrate electric gliders as a key component for successfully locating and mapping MCDW. Specific Researchers will prepare and deploy a deep (1000 meter) glider off the edge of the sea ice. This glider will provide full water-column profiles before and during the research cruise NBP11-01. In order to complete this longer mission, the glider will be optimized with lithium battery packs and carbon-fiber hull sections. With this configuration in the cold polar waters of the Ross Sea, a conservative estimate of 50 days endurance is sufficient to cover the planned six-week pre-cruise scouting mission and three-week intra-cruise mapping mission. The lithium batteries will also provide the necessary flexibility in the weather- and ice-dependent deployment location and time.

The glider will be equipped with a conductivity, temperature, and depth sensor suite. Dissolved oxygen sensors will measure concentrations and percent saturation in the water column. Finally, researchers will configure a single fluorometer to measure backscatter of light at 470 and 532 nanometers as well as chlorophyll a fluorescence. The resolution of the data will be approximately 0.25 meters in the vertical, with a profile about every kilometer along the glider's track line.

Deploying Team Members:

- Clinton Haldeman

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Science Project Details: 2010-2011

Pleistocene East Antarctic Ice Sheet History As Recorded In Sediment Provenance And Chronology Of High-Elevation TAM Moraines

Glacial till is collected from moraines at the head of glaciers on the polar plateau. Photo by Peter Braddock

Program Manager:
Dr. Alexandra Isern

Event Number: G-499-M

ASC POC/Implementer:
Chad Naughton

Dr. Kathy Licht (Principal Investigator)
klicht@iupui.edu

Department of Earth Sciences
Indianapolis, Indiana

Supporting Stations: McMurdo Station
Research Locations: CTAM, Mounts Achernar and Howe

Project Description:
This research project will study the compositional variation of tills across two concentric sequences of Pleistocene moraines located adjacent to the heads of east Antarctic outlet glaciers in the Transantarctic Mountains. The proposed work will allow researchers to assess till composition changes through time, set in a chronologic framework generated from exposure ages of boulders on prominent morainal ridges. Variations in till composition may indicate a change in ice-flow direction or a change in the original source area’s composition, while the ages of the moraines provide a long-term terrestrial perspective on ice-sheet dynamics. Both are vital for modeling experiments that aim to reconstruct the East Antarctic Ice Sheet and assess its role in the global climate system. As such, the scientific objectives of this research dovetail with an international effort strongly focused on studying and modeling Antarctic ice-sheet history, in part because of its potential impact on global sea level rise.

Field Season Overview:
During this field season, researchers will collect new till samples from two well-preserved sequences of moraine crests at Mount Howe (head of Scott Glacier) and Achernar (between Beardmore and Nimrod Glaciers). Researchers will use the CTAM Camp for staging small deep-field camps at

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both locations. Upon return to CTAM Camp following the six-to-seven-day deep-field camp operations near Mount Howe, Mount Achernar camp put-in will be conducted by helicopter or a combination of helicopter and overland traverse with heavy-duty snowmobiles. Researchers plan to spend about 10 work days at this site. Retrograde cargo needing transport back to McMurdo Station will be up to 60 rock boxes with a weight of up to 3,600 pounds.

Deploying Team Members:

- Sara Campbell
- Timothy Flood
- Michael Kaplan (Co-PI)
- Michael Roberts

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Science Project Details: 2010-2011

Vertebrate Paleontology Of Livingston Island, South Shetlands, Antarctica

Program Manager:
Dr. Vladimir Papitashvili (acting)

Event Number: G-170-E

ASC POC/Implementer:
John Evans

Dr. Ross MacPhee (Principal Investigator)
macphee@amnh.org

American Museum of Natural History
New York, New York

Supporting Stations: Special Project
Research Locations: Seymour Island

Project Description:

The Antarctic Peninsula and islands in the Scotia Arc are tectonically related. Until about 40 million years ago (Ma), these terranes formed a closely-packed array, joining West Antarctica with southernmost South America. An intriguing possibility is that this array of terranes may have acted as a land bridge over which land vertebrates dispersed. If so, one would expect to see their fossils in appropriately aged deposits on the islands. Project researchers will search for late Mesozoic vertebrate fossils on Livingston Island in the South Shetland group, in deposits ranging in age from 112 Ma to about 84 Ma. Anticipated discoveries include reptiles (dinosaurs, mosasaurs, plesiosaurs), birds, and possibly mammals. The team will collect rock samples to analyze for stable isotopes of oxygen, carbon, and hydrogen to shed light on late Mesozoic climatic conditions in the South Shetlands area and to improve correlations with other areas.

Field Season Overview:

This project will require a temporary field camp, supported by cruise LMG11-02 of the ARSV Laurence M. Gould. This cruise is scheduled to depart Punta Arenas, Chile in mid-February and to return mid-March. This cruise will support two other geoscience projects as well as personnel rotations and other support for Palmer Station. The geoscience projects--including this one--will entail both day trips and multi-day field camps ashore.

Deploying Team Members:

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- Julia Clarke
- Matthew Lamanna
- Jin Meng
- Patrick O'Connor
- Marcelo Reguero

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Science Project Details: 2010-2011

Condition One: A Film About Extremes And The Human Spirit

Program Manager:
Ms. Winnie Reuning

Event Number: W-224-M

ASC POC/Implementer:
Patricia Jackson

Mr. John Major (Principal Investigator)
john@themediabox.com

Marquette, Michigan

Supporting Stations: McMurdo Station
Research Locations: McMurdo area

Project Description:
Videographers Frida Waara and John Major will produce a film that reveals the challenges and obstacles of the extremes created by cold, darkness, ice, and weather patterns at Antarctica's McMurdo Station and Amundsen-Scott South Pole Station. Condition One, the most extreme weather condition in Antarctica, will be used as a metaphor for facing dangerous and inhospitable landscapes. Interviews with support staff will reveal the common threads that will become the story of Condition One, and interwoven will be the stark contrasts of inner city urban landscapes and the stories of the young people who live there. Waara and Major will use their experiences in Antarctica to draw out students in interviews at schools in Detroit and Los Angeles, to talk about and contrast their fears, the hazards, and challenges in their urban surroundings, uncovering, in effect, their own Condition One while revealing the universality of the human spirit. An exhibition of photographs will also augment the film, capturing candid portraits of the film's subjects.

Field Season Overview:
Field team members will interview and photograph USAP participants they meet and experience Antarctica's extremes for themselves. Their field plan will take them to McMurdo Station, South Pole Station, and a remote field camp.

Deploying Team Members:

- Frida Waara (Co-PI)

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Science Project Details: 2010-2011

Feasibility Study For A Dark Matter Search Co-Located With The IceCube Detector In The Antarctic Ice

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-334-S

ASC POC/Implementer:
Deborah Roth

Dr. Reina Heeger Maruyama (Principal Investigator)
rmaruyama@icecube.wisc.edu

University of Wisconsin Madison
Dept of Physics
Madison, Wisconsin

Supporting Stations: South Pole Station
Research Locations: IceCube Project

Project Description:
This study will assess the feasibility and challenges associated with deploying and operating NaI (crystalline sodium iodide) detectors deep in the Antarctic ice to establish the ideal location for low-background experiments using the IceCube detector. It also aims to verify the level of purity of the Antarctic ice established by deep ice cores combined with impurities that may be introduced by the IceCube enhanced hot water drill and explore the capability of IceCube to veto muons and their spallation products for any possible future ultra-low background experiments. The detector for the feasibility study will consist of two 8.5 kilogram NaI(Tl) crystals each equipped with two photomultiplier tubes. The crystals and photomultiplier tubes will be housed in metal pressure vessels along with accompanying electronics, and each detector will be suspended off the bottom of an IceCube string at the depth of 2,450 meters. The data taking will start in January after the ice in the hole has frozen and will run for five months.

Field Season Overview:
The PI plans to install the two 8.5 Kilogram NaI (Tl) detectors at the bottom of two IceCube strings near the center of the IceCube/DeepCore installation during this austral summer. The data from these “special devices” will be sent up through the standard special-device breakout connectors already existing on every IceCube cable. The installation of the instruments will be handled as part of a regular IceCube string installation, with IceCube personnel

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installing and ensuring that safety protocols are followed so that no risk arises to personnel or the safe deployment of the Digital Optical Module (DOM)/ice instrument and the IceCube string.

The instruments will be installed in mid-December at the bottom end of two IceCube strings. The PI, deployed with the A-333-S project, will perform testing prior to deployment as well as the commissioning of the instruments after the installation.

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Science Project Details: 2010-2011

IceBite: An Auger And Sampling Systems For Ground Ice On Mars

Denis Lacelle (left) and Alfonso Davila drill into ice-cemented ground in University Valley. This site is at high elevation (1700 m) and air temperatures do not rise above freezing in the summer. This results in dry permafrost layers and ice-cemented layers that exchange water with the atmosphere through vapor diffusion. Photo by Chris McKay

Program Manager:
Dr. Diana Nemergut

Event Number: B-302-M

ASC POC/Implementer:
Addie Coyac

Mr. Christopher McKay (Principal Investigator)
cmckay@mail.arc.nasa.gov

National Aeronautics and Space Administration
Space Science Division
Moffett Field, California

Supporting Stations: McMurdo Station
Research Locations: University Valley, Lakes Bonney and Joyce

Project Description:
This project is funded by NASA ASTEP (Astrobiology Science & Technology for Exploring Planets). Researchers will develop an ice auger and sampling bit for sampling subsurface ice-cemented ground on Mars. Ice on Mars is an important target for astrobiology because ice-rich locations could have been sites of liquid water activity during periods of high obliquity and because ice may preserve organics. The IceBite drill will penetrate several meters into the ground ice to collect deeper, older ice and search for signs of organics and life. Dry permafrost in the McMurdo Dry Valleys offers Mars-like conditions in which to test the auger and sampling system. Researchers will also investigate the physics and microbiology of the samples they recover as an analog for Mars. The IceBite team includes experts from the Honeybee Robotics, McGill University, and the Canadian Space Agency.

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Field Season Overview:

Researchers will focus their work at two sites this austral summer: Lake Joyce Camp, Pearse Valley, and the area around University Valley. They will begin at Lake Joyce with G-431-M, working on ground ice and data stations. Then the researchers will move to University Valley. Researchers will conduct day trips from Joyce and University Valley to nearby areas of ground ice and will test the Mars drill in University Valley. In this field season, researchers will focus on physical measurements of the ground ice, samples for microbiology, and testing of the Mars drill.

Deploying Team Members:

- Alfonso Davila
- Stephen Emmons (Co-PI)
- Jennifer Heldmann
- Margarita Marinova
- Gale Paulsen
- Wayne Pollard
- Kris Zacny

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Science Project Details: 2010-2011

Real-Time Characterization Of Adélie Penguin-Foraging Environment Using An Autonomous Underwater Vehicle

Program Manager:
Dr. Roberta Marinelli

Event Number: B-391-P

ASC POC/Implementer:
Eric Pohlman

Dr. Mark Alan Moline (Principal Investigator)
mmoline@calpoly.edu

California Poly State University
Biological Sciences
San Luis Obispo, California

Supporting Stations: Palmer Station
Research Locations: Palmer Station

Project Description:
Researchers plan to combine the real-time site and diving information from the Adélie penguin satellite tags with the full characterization of the oceanography and the penguins prey field using an autonomous underwater vehicle (AUV). While some of these changes have been documented over large spatial scales of the western Antarctic Peninsula (WAP), it is now thought that the causal mechanisms that favor one life-history strategy over another may actually operate over much smaller scales than previously thought, specifically on the scale of local breeding sites and over-wintering areas. Characterization of prey fields on these local scales has yet to be done and is one for which the AUV is ideally suited. Researchers will conduct repeat daily surveys, responding to the penguin foraging locations, to characterize the three-dimensional foraging environment and to relate these observations to the diving behaviors and ultimately the breeding success of the birds.

Field Season Overview:
The plan this austral summer is to deploy the AUV from a small boat from Palmer Station every one to two days to the areas frequented by the satellite tagged birds. Missions will be planned to characterize the volumes both inside and outside these areas to evaluate any differences in oceanography, phytoplankton distribution, and prey abundance. By repeating these efforts

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over six to eight weeks, researchers will also be able to link changes in the environment/ecosystem of the foraging area with the energetics and breeding success of the birds.

Deploying Team Members:

- Ian Robbins

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Science Project Details: 2010-2011

Analysis Of The Data From The Gattini Antarctic Camera Network

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-356-S
NSF/PLR Award 0839136

ASC POC/Implementer:
Julie Bonneau

Dr. Anna Moore (Principal Investigator)
amoore@astro.caltech.edu

California Institute of Technology
Astronomy
Pasadena, California

Supporting Stations: South Pole Station
Research Locations: Martin A. Pomerantz Observatory (MAPO)

Project Description:

The Gattini network consists of three cameras located at the high-altitude Antarctic sites Dome C, Dome A, and South Pole. These star transit cameras monitor wide areas of the southern sky, taking an image every five to 15 minutes throughout the entire Antarctic winter season. The network has been in operation since the 2006 austral winter season, collecting data sets totalling in excess of three Terabytes. The project's data reduction and analysis effort will focus on two distinct areas: (1) Obtaining photometric light curves of the brightest and most interesting long-period variable stars in the southern sky, which have known parallaxes and other parameters and are unique stars with no counterparts in the Kepler spacecraft field; and (2) Producing astronomical site testing results that are critical for validating high-altitude Antarctic sites to allow planning of future large astronomical facilities.

Field Season Overview:

In January, two team members will deploy to the South Pole for camera installation and testing on a building in the South Pole’s Dark Sector. The researchers will install a Teflon-coated cable to connect the camera enclosure to a control computer to be located inside a heated room or laboratory with minimum temperature of greater than -10º C. Data collection will be done via satellite link, with one, 1 Megabyte, image per hour downloaded to the researchers’ home institution. The research team will also be downloading system status data, such as internal camera temperatures, during the course of the camera's operation. Day-to-day camera operations will be automated and require little support from winter-over science personnel, estimated at no more than two hours per week. The Gattini-UV South Pole camera will operate from late summer 2011 for a minimum duration of two years.

Deploying Team Members:

- Christopher Martin (Co-PI)

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Science Project Details: 2010-2011

LTREB: Decadal Changes In Antarctic Marine Benthic Ecosystems

Program Manager:
Dr. Roberta Marinelli

Event Number: B-200-M

ASC POC/Implementer:
Addie Coyac

Dr. John Oliver (Principal Investigator)
oliver@mlml.calstate.edu

San Jose State University
Moss Landing Marine Laboratories
Moss Landing, California

Supporting Stations: McMurdo Station
Research Locations: Crary Lab, Hut Point, McMurdo Sound, New Harbor, Sea Ice at McMurdo Station, Turtle Rock, Capes Chocolate, Evans, Royds

Project Description:
A major objective of this proposal is to document changes in benthic ecosystems in McMurdo Sound over the last four decades, since the beginning of quantitative studies of population and community organization. Because of the value of time-series information, researchers plan to recover and work on several time-series projects begun in the mid-1960s and early 1970s. In addition to describing community and population patterns within natural habitats, researchers will also document the succession of marine invertebrate communities that have settled and survived on a variety of artificial substrates placed on the sea floor from the late 1960s to 1989. These substrates harbor several decades of information on patterns of settlement, growth, survival, age and longevity, overgrowth, and other biological interactions. The successional work adds to the understanding of natural communities and the processes that drive benthic ecosystems over decades. The most important scientific contributions are recovering and compiling historical data, updating data with new sampling, and placing all data and meta-data in a database open to the international science community.

Field Season Overview:
While the team members will be based out of McMurdo Station and Crary

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Lab for most of the group's field season (October to mid-December), most of the team will spend two weeks in a field camp at New Harbor in early November. While at New Harbor, the researchers will receive gear/fuel transport by the Marble Point Traverse, if possible, helicopter transport of gear and personnel, and one helicopter resupply. Additional helicopter support will be needed for three trips to Salmon Bay. Researchers plan to conduct SCUBA and surface-supply diving and use a remotely operated vehicle for data collection. The research team of eight will also be joined by one PolarTREC (Teachers and Researchers Exploring and Collaborating) teacher and will be coordinating with one member of the Coulman High project this season.

Deploying Team Members:

- Julie Barber
- David Burnett
- Paul Dayton (Co-PI)
- Jennifer Fisher
- Stacy Kim (Team Leader)
- Kevin O'Connor
- Denver Osborne
- Bettina Sander

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Science Project Details: 2010-2011

Collaborative Study Of The Antarctic Mesosphere And Lower Thermosphere

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-284-S

ASC POC/Implementer:
Julie Bonneau

Dr. Scott Palo (Principal Investigator)
scott.palo@colorado.edu

University of Colorado Boulder
Department of Aerospace Engineering Sciences
Boulder, Colorado

Supporting Stations: South Pole Station
Research Locations: Meteor Radio Shack

Project Description:

Using a meteor radar (a very-high frequency VHF system capable of measuring the spatial structure and temporal evolution of the horizontal wind field), researchers will measure winds in the mesosphere and lower thermosphere (MLT) atmospheric region to understand the processes controlling the neutral dynamics and chemistry of the Antarctic MLT. They specifically seek to understand: 1. The space-time decomposition of wave motions; 2. Delineation of the spatial climatology over Antarctica with emphasis on the structure of the polar vortex; 3. Dynamical response to energetic events; and 4. Inter-annual variability.

Field Season Overview:

The research team plans to complete the following activities during the 2010-2011 season: 1) Annual all-sky camera maintenance; 2) annual meteor radar system maintenance; 3) annual meteor radar-system calibration; 4) transmit and receive antenna experiments; 5) system calibration by tracking Twin Otter aircraft flying above the antennas.

Deploying Team Members:

- Cody Vaudrin
- Bifford Williams

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Science Project Details: 2010-2011

The Relationship Between Climate And Ice Rheology At Dome C, East Antarctica

Program Manager:
Dr. Julie Palais

Event Number: I-166-M

ASC POC/Implementer:
Eric Pohlman

Dr. Erin Pettit (Principal Investigator)
pettit@gi.alaska.edu

University of Alaska Fairbanks
Fairbanks, Alaska

Supporting Stations: McMurdo Station
Research Locations: Concordia Research Station, Dome C

Project Description:
The science project goal is to enhance the understanding of how crystal fabric records climate information and the feedback mechanism between ice flow and fabric development.

Field Season Overview:
Researchers will visit the French and Italian research station, Concordia, to lower an instrument that measures sonic velocity in ice into the Dome C borehole and to make direct measurements on ice from the Dome C ice core.

Deploying Team Members:

- Alessio Gusmeroli
- Joseph Kennedy
- Eric Lefebvre
- Catherine Ritz

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Science Project Details: 2010-2011

Collaborative Research: Annual Satellite Era Accumulation Patterns Over WAIS Divide: A Study Using Shallow Ice Cores, Near-Surface Radar And Satellites

Program Manager:
Dr. Julie Palais

Event Number: I-158-M

ASC POC/Implementer:
John Rand

Dr. Summer Rupper (Principal Investigator)
summer_rupper@byu.edu

Brigham Young University
Provo, Utah

Supporting Stations: McMurdo Station
Research Locations: WAIS Divide

Project Description:
The main research objective of this project is to characterize annual to near-annual accumulation patterns and trends across the West Antarctic Ice Sheet (WAIS) Divide over the past 50 years using shallow ice cores, near-surface radar and satellite data. Researchers will ask the following questions: 1. Does stratigraphy information collected by UHF radars correspond to annual cycles as determined by visual, chemical, and isotopic analysis from shallow ice cores or can the high-resolution UHF radars image additional sub-annual layers that need to be considered when converting layers into annual accumulation rates? 2. Do annual to near-annual accumulation rates derived from the existing and proposed near-surface radars and shallow ice cores correlate with temporal variations in the passive microwave time series? 3. Have accumulation rates or patterns changed over the past 50 years with the warming temperatures over Antarctica? 4. Do modeled precipitation fields over WAIS Divide mimic the proposed accumulation measurements?

Field Season Overview:
Researchers will deploy to the WAIS divide camp and conduct a 350-kilometer radar traverse using three snowmobiles and sleds. This traverse should take about three weeks and researchers will collect six to eight 15-meter ice cores. To speed the science traverse, fuel and ice core boxes will

be cached before the traverse, and recovered after the traverse, by Twin Otter. In this first season, the traverse stays within 100 kilometers of the WAIS divide camp. A longer, further ranging, traverse is planned for the following year.

Deploying Team Members:

- Michael Atkinson
- Landon Burgener
- Lora Koenig (Co-PI)
- Michelle Koutnik
- Clement Miege

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Science Project Details: 2010-2011

Collaborative Research: Alternative Nutritional Strategies In Antarctic Protists

Program Manager:
Dr. Roberta Marinelli

Event Number: B-303-N

ASC POC/Implementer:
Patricia Jackson

Dr. Robert Sanders (Principal Investigator)
robert.sanders@temple.edu

Central Michigan University
Biology Department
Philadelphia, Pennsylvania

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: Southern Ocean

Project Description:
This research project will involve laboratory and field experiments that seek to describe trophic activities of mixotrophic and kleptoplastidic protists from Southern Ocean plankton. The work will examine distribution and trophic interactions of these organisms during the austral summer and address questions concerning phototrophic versus heterotrophic contributions to the nutrition of collected species. The fieldwork does not require a specific location except that it needs to be in regions where Phaeocystis occurs.

Field Season Overview:
Researchers will sail on the RVIB Nathaniel B. Palmer during austral spring/summer cruise NBP11-01. Researchers will collect samples for analysis and experimentation, requiring water and plankton sampling via CTD (conductivity, temperature, depth) casts and plankton net tows, general laboratory and cold room space, and microscopy facilities. The research team will also be working on the sea ice to collect cores at several sites. They will also use Zodiac inflatable boats to collect samples from the edges of ice.

Deploying Team Members:

- Scott Fay
- Rebecca Gast (Co-PI)

- Elizabeth Halliday

Science Project Details: 2010-2011

Polenet East: An International Seismological Network For East Antarctica

Program Manager:
Dr. Alexandra Isern

Event Number: G-089-M/S

ASC POC/Implementer:
Leslie Blank

Dr. Patrick Shore (Principal Investigator)
patrick@seismo.wustl.edu

Washington University
Earth and Planetary Sciences
St. Louis, Missouri

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: Gamburtsev Mountains, East Antarctica

Project Description:
This is a continuation of the passive seismic study of the Gamburtsev Mountains which collects data contemporaneously with other Antarctic programs seismic arrays. The research addresses the following questions: (1) How have the Gamburtsev Mountains formed? (2) What is the role of topography and heat flow in the formation of continental ice sheets in East Antarctica? (3) What is the geologic and tectonic history of the East Antarctic craton? (4) How do tectonics and regional heat flow control the formation, distribution and stability of subgalcial lakes in East Antarctica?

Up to this point the data return has been excellent. This analysis is providing the first detailed seismic constraints on crustal and upper mantle structure beneath and surrounding the Gamburtsev Mountains, on the processes which support the high elevation of this region, on the regional distribution of heat flow, and on the tectonic framework of the interior of the East Antarctic shield.

Field Season Overview:
The POLENET East (previously AGAP) seismic array consists of eight broadband seismic stations. These were serviced with new batteries and dataloggers during the 2008-2009 summer season. This season, researchers wish to visit each of the sites to collect the data acquired over the past year. (Data are not transmitted from these stations, so each station must be visited

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to collect data). Researchers will be working from South Pole Station via fixed-wing aircraft. During the past two seasons, researchers serviced these stations by swapping the existing instrument box with a refurbished one carried out to the field site. This year, the research team will service the stations in the field, without returning the old instrument box to South Pole and bringing a replacement to the field. Should this be successful, servicing in the future will be more efficient.

Deploying Team Members:

- Franklin Koch
- Guy Tytgat

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Science Project Details: 2010-2011

Collaborative Research: Seasonal Evolution Of Chemical And Biological Variability In The Ross Sea

Program Manager:
Dr. Roberta Marinelli

Event Number: B-047-M/N

ASC POC/Implementer:
Addie Coyac

Dr. Walker Smith (Principal Investigator)
wos@vims.edu

Virginia Institute of Marine Sciences
Biological Sciences
Gloucester Pt., Virginia

Supporting Stations: McMurdo Station, RV/IB Nathaniel B. Palmer
Research Locations: Ross Sea

Project Description:

The research team will deploy a number of gliders - autonomous, ocean-going, sampling platforms - in the southern Ross Sea and collect oceanographic data continuously to assess variability on a variety of time and space scales, as well as to calculate productivity and phytoplankton biomass in the region.

Field Season Overview:

Researchers will deploy two or three gliders from the ice edge near Ross Island no later than mid-November, and recover them during the RVIB Nathaniel B. Palmer cruise in February. A single member of the field team will remain at McMurdo Station throughout the gliders' deployment to monitor conditions on site as well as to send the gliders changes in trajectories via satellite when they surfaces periodically.

Deploying Team Members:

- Vernon Asper
- Michael Dinniman
- Craig Lee (Co-PI)
- Xiao Liu
- Bastien Queste

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Science Project Details: 2010-2011

Field Sampling Coordination And Mathematical Modelling Of A Hydrocarbon Spill On The Ice Cover Of Lake Fryxell, Antarctica

Program Manager:
Dr. Roberta Marinelli

Event Number: B-429-M

ASC POC/Implementer:
Elizabeth Kauffman

Ms. Sharon (Rae) Spain (Principal Investigator)
sharon.spain.contractor@usap.gov

Antarctic Support Contract
Centennial, Colorado

Supporting Stations: McMurdo Station
Research Locations: McMurdo Dry Valleys

Project Description:
This project will provide camp support for the Long Term Ecological Research (LTER) groups working in the McMurdo Dry Valleys.

Field Season Overview:
This group will again provide field camp support this austral summer.

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Science Project Details: 2010-2011

Collaborative Research: Byrd Glacier Flow Dynamics

Gordon Hamilton (University of Maine) and Leigh Stearns (University of Kansas) installing a GPS unit on the surface of Nioghalvfjerdsfjorden Glacier in North-East Greenland (August 2009). Similar units will be deployed on the surface of Byrd Glacier during the 2010/11, and 2011/12 seasons, to measure variations in flow speed throughout the season and year. Photo By Nick Cobbing/Greenpeace

Program Manager:
Dr. Julie Palais

Event Number: I-351-M

ASC POC/Implementer:
Leslie Blank

Dr. Leigh Stearns (Principal Investigator)
stearns@ku.edu

University of Kansas Lawrence
Department of Geology
Lawrence, Kansas

Supporting Stations: McMurdo Station
Research Locations: Byrd Glacier

Project Description:
The overall aim of this project is to improve our understanding of outlet glacier dynamics in East Antarctica through an in-depth field study of Byrd Glacier. Project researchers will test several hypotheses: (1) Byrd Glacier experiences variability in flow speed at a variety of timescales (daily to seasonal to annual) as a response to tidal and hydrological forcings; (2) the configuration of Byrd Glacier's grounding line makes it susceptible to rapid retreat up the fjord; and (3) subglacial lakes in the catchment fill and drain on a regular basis and provide periodic forcing of a glacier flow response. This multi-disciplinary project will install a dense network of GPS receivers on the grounded glacier and floating ice shelf. The GPS observations will be merged with remote sensing datasets to examine spatial and temporal variability in glacier flow, and constrain a numerical model of the glacier's dynamics. This

work will provide new insights into the basal boundary conditions of "isbrae"-type outlet glaciers, and the e ffect of transient perturbations (e.g., ocean tides, subglacial floods) on their flow regime.

Field Season Overview:

The work will be carried out by a multi-disciplinary team comprised of observational glaciologists, a geodesist, and a numerical modeler. Much of the group's data collection strategy is based on their previous work on a fast-flowing outlet glacier in Greenland. Researchers will test their hypotheses using data collected by a dense network of GPS receivers deployed on the grounded glacier and floating ice shelf. They will deploy this network of GPS receivers along the trunk of Byrd Glacier in November 2010. Two modes of data collection are planned: 1) Summer-only measurements will be collected by the full array of 31 GPS receivers during the 2010-2011 and 2011-2012 seasons; and 2) continuous measurements will be collected by a subset of eight receivers for 26 continuous months.

The technical challenge and logistics expense of powering GPS receivers during periods of polar darkness necessitate the reduced network density during the winter months. Researchers plan to make two field visits in the upcoming season: one visit in mid-November to establish the full network, and a second visit in early February 2011 to recover most of the network and service the receivers that will remain over the winter. A similar procedure will be repeated in the 2011-2012 season. The entire network will be recovered during a single field visit in the 2012-2013 season.

Since Byrd Glacier is an intensely crevassed, fast-flowing outlet glacier (speeds of 500-850 meters/year), the only practical way to access the glacier surface is with close helicopter support. Therefore, the GPS network deployment will be conducted by helicopter-supported day trips from McMurdo Station. During similar work in Greenland, researchers have been able to deploy 15-20 GPS glacier sites per day. Based on this experience and the plan to deploy 30 GPS sites as part of this project, researchers will need 3-5 days of helicopter support for the early-season deployment and 1-2 days of helicopter support for the late-season recovery.

Deploying Team Members:

- Gordon Hamilton (Co-PI)

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Science Project Details: 2010-2011

Viral Contributions To Spring Bloom Dynamics In The Western Antarctic Peninsula

Program Manager:
Dr. Roberta Marinelli

Event Number: B-239-P

ASC POC/Implementer:
Eric Pohlman

Dr. Grieg Steward (Principal Investigator)
grieg@hawaii.edu

University of Hawaii Manoa
Department of Oceanography
Honolulu, Hawaii

Supporting Stations: Palmer Station
Research Locations: Palmer Boating Area

Project Description:

The coastal waters in the vicinity of Palmer Station lie within the study area of a Long-Term Ecological Research (LTER) program. Plankton ecology is a major component of this program but the rates and sources of microbial mortality are not being routinely investigated. The importance of mortality due to viral infections, in particular, remains very poorly constrained in Antarctic waters. An accounting of mortality is needed to better understand the ecology in this region and the controls on carbon fluxes through the food web. Project objectives are to describe viral dynamics and diversity and estimate the contribution of viruses to the mortality of bacteria and phytoplankton before, during, and after the summer bloom in the vicinity of Palmer Station.

Field Season Overview:

Researchers will sail on the ARSV Laurence M. Gould from Punta Arenas, Chile to Palmer Station. There, they will begin lab set-up and initial sampling. Personnel on station will conduct profiling with a Conductivity Temperature Depth (CTD) sensor and will regularly collect water samples by Zodiac boat at Stations B and E. Sampling will consist of collecting small (0.5 liter) to large (200 liters) of water from varying depths, depending on the analyses planned for the day. Samples will be collected by Niskin bottle or pump. Water will be transported to the Palmer Station lab for experimentation, processing and analysis.

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Deploying Team Members:

- Alexander Culley
- Jaclyn Mueller
- Christopher Schvarcz

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Science Project Details: 2010-2011

CTAM Chief Scientist

Program Manager:
Dr. Alexandra Isern

Event Number: G-415-M

ASC POC/Implementer:
Chad Naughton

Dr. Edmund Stump (Principal Investigator)
ed.stump@asu.edu

Arizona State University Tempe
School of Earth and Space Exploration
Tempe, Arizona

Supporting Stations: McMurdo Station
Research Locations: McMurdo/CTAM

Project Description:
The assignment of the Principal Investigator by the Office of Polar Programs, NSF, to serve as Chief Scientist for the upcoming Central Transantarctic Mountains (CTAM) Project offers a special opportunity to re-examine a unique geological locality at the head of Nimrod Glacier. During the 1985-86 field season, the Principal Investigator discovered a diamictite interpreted to be of glacial origin on Cotton Plateau. The Principal Investigator also discovered a volcanic rhyolite at Cotton Plateau, interbedded with the sedimentary sequence containing the diamictite, about 25 meters down section. Collection of this rhyolite during the upcoming field season and subsequent dating by the U-Pb zircon method will provide an accurate age determination for the diamictite and the ability to correlate this deposit with the global Neoproterozoic glacial subdivision. Detailed examination of rocks in the vicinity of the diamictite will also be undertaken in order to look for additional localities with glacial affinity, thus promoting our understanding of Antarctica's role during this critical interval of Earth history.

Field Season Overview:
The P. I. will be on site at the CTAM field camp for most of the field season serving in the capacity of Chief Scientist. In addition he will undertake field research for three days requiring helicopter or Twin Otter split between two localities: 1) Cotton Plateau (82 50 S, 159 20 E) and 2) Cobham Range (82 25 S, 159 20 E).

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Deploying Team Members:

- Daniel Foley

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Science Project Details: 2010-2011

Collaborative Research: Antarctic Ecosystems Across The Permian-Triassic Boundary: Integrating Paleobotany, Sedimentology, And Paleoecology

Program Manager:
Dr. Alexandra Isern

Event Number: G-496-M

ASC POC/Implementer:
Chad Naughton

Dr. Edith Taylor (Principal Investigator)
etaylor@ku.edu

University of Kansas Lawrence
Department of Ecology and Evolutionary Biology
Lawrence, Kansas

Supporting Stations: McMurdo Station
Research Locations: CTAM, Queen Alexandra Range, Queen Maud Mountains, and the Supporters Range

Project Description:
Researchers plan to collect fossil plants, silicified wood, and palynology samples, along with detailed data on the stratigraphy, sedimentology, and paleoecology of environments of deposition from Permian-Triassic rocks of the central Transantarctic Mountains (Beardmore and Shackleton Glacier areas). Researchers will use these data to reconstruct the paleoclimate and plant communities of the region from the mid-Permian to the Middle Triassic, including the Permian-Triassic boundary.

Field Season Overview:
The research team will operate out of the Central Transantarctic Mountain (CTAM) camp on the Bowden Névé using helicopter and Twin Otter support to reach collecting sites. The most important objectives are sites where the Permian-Triassic boundary is exposed: Collinson Ridge (CR), Graphite Peak (GP), Coalsack Bluff (CB), Wahl Glacier, and possibly Shenk Peak. Researchers will conduct reconnaissance flights to CR, GP, and Shenk Peak to determine whether half of the field party would camp nearby for three to four days or whether collecting would be more efficient using helicopters.

The field party will also split into two or three groups to conduct day trips to numerous sites within a 45-minute helicopter flight of CTAM. The collected specimens, which may be of substantial weight, will need to be retrograded from field sites. Most of this work will be done with helicopter day trips, as the sites are not accessible by snowmobile and are high above ice level. Additionally, the amount and weight of fossil material to be collected precludes transport via climbing and backpacks.

Deploying Team Members:

- David Buchanan
- Anne-Laure Decombeix
- Ignacio Escapa
- Erik Gulbranson (Team Leader)
- Patricia Ryberg
- Andrew Schwendemann
- Rudolph Serbet
- Danielle Sieger
- Thomas Taylor (Co-PI)

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Science Project Details: 2010-2011

Ocean Surfaces On Snowball Earth

Program Manager:
Dr. Lisa Clough

Event Number: C-516-M

ASC POC/Implementer:
John Rand

Dr. Stephen Warren (Principal Investigator)
sgw@atmos.washington.edu

University of Washington
Atmospheric Sciences Dept.
Seattle, Washington

Supporting Stations: McMurdo Station
Research Locations: Allan Hills Far Western Icefield, Allen Hills Northern Ice Patch, Garwood Valley, Erebus Bay sea ice

Project Description:
According to the "snowball Earth" hypothesis, climatic changes of the Neoproterozoic time, 600-800 million years ago, included episodes of extreme glaciation, during which ice may have covered nearly the entire ocean for several million years. In tropical regions of net sublimation, ice surfaces may have included: 1) Bare, cold sea ice (perhaps cold enough that sodium chloride precipitated); 2) sea ice with a salt crust formed as a lag deposit; and 3) cold glacier ice exposed by sublimation of "sea-glaciers" (self-sustaining ice shelves) flowing from polar seas into the dry tropics. These ice types would have been widespread on the tropical ocean of "snowball earth" but they now exist only in Antarctica. Researchers will study processes that would have been important on an ice-covered ocean during such an event. Their albedos and surface properties will be investigated on naturally-occurring modern analogues: 1) Bare cold sea ice near the coast of Antarctica in early spring; 2) a salt-encrusted lake in the McMurdo Dry Valleys; 3) "blue-ice" areas of the Transantarctic Mountains that have not experienced melting.

Field Season Overview:
This austral summer, the research team will make two helicopter-supported day-trips during November and early December to Garwood Valley to measure the optical properties and collect samples of a mirabilite salt crust on a small pond. Researchers also plan to make two day-trips to Tent Island

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via snowmobile to measure the optical properties of bare sea ice. If time is limited, the Tent Island site will take priority over the Garwood Valley site.

From early December through the end of the group’s deployment, the field team plans to occupy two sites in the Allan Hills’ blue ice areas, supported by Twin Otter. At the first site a field camp will be established for a three-week stay, followed by two weeks at McMurdo Station to analyze samples at Crary Lab. Following this first camp, researchers will occupy a second field camp in the Allan Hills near Elephant Moraine for three weeks, followed by a final two-week Crary Lab period prior to redeployment.

Deploying Team Members:

- Richard Brandt (Team Leader)
- Regina Carns
- Ruzica Dadic
- Melanie Fitzpatrick

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Science Project Details: 2010-2011

Collaborative Research: Geophysical Study Of Ice Stream Stick-Slip Dynamics

Program Manager:
Dr. Julie Palais

Event Number: I-181-M

ASC POC/Implementer:
Leslie Blank

Mr. Jeremy Winberry (Principal Investigator)
winberry@geology.cwu.edu

Central Washington University
Ellensburg, Washington

Supporting Stations: McMurdo Station
Research Locations: Whillans Ice Stream (Ice Stream B)

Project Description:

Researchers on this project will study the ongoing deceleration and stick-slip motion of Whillans Ice Stream (WIS) in West Antarctica. Understanding the dynamic behavior of ice streams is essential for predicting the future of the West Antarctic Ice Sheet (WAIS). Despite being one of the best-studied ice streams in Antarctica, the surprising flow characteristics of WIS continue to demand interdisciplinary research. Recent estimates indicate that the WIS may stagnate within 50 years, resulting in a significant change to the mass balance of the Siple Coast sector of West Antarctica. The reasons for the ongoing stagnation are not well known and are possibly linked (causally or coincidentally) to the stick-slip behavior. The research team's recent work on WIS stick-slip motion suggest that all slip events nucleate from a common location on the ice stream and that a relatively small region exerts fundamental control over the flow of this large ice stream. Researchers will deploy a series of GPS receivers and seismometers on the ice stream to locate the nucleation region so that a comprehensive ground-based geophysical survey can be conducted to determine the physical properties of the bed at the nucleation point. The ground-based geophysical work will consist of reflection seismic and ice-penetrating radar studies that will better constrain the properties of both the hypothesized higher-friction nucleation zone and the surrounding regions.

Field Season Overview:

Researchers will deploy a series of GPS receivers and seismometers on the ice stream to accurately locate the nucleation region so that a comprehensive ground-based geophysical survey can be conducted to determine the physical properties of the bed at the nucleation point of Whillans Ice Stream stick-slip events. Team members will deploy instruments in mid-November to early December via a combination of fixed-wing support and from a small camp on the ice stream. The instruments will be removed in mid-January.

Deploying Team Members:

- Stephanie Kay

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Science Project Details: 2010-2011

Orbital Spectral Mapping Of Surface Compositions In The Antarctic Dry Valleys: Regional Distributions Of Secondary Mineral-Phases As Climate Indicators

Program Manager:
Dr. Vladimir Papitashvili

Event Number: G-440-M

ASC POC/Implementer:
Elizabeth Watson

Dr. Michael Wyatt (Principal Investigator)
michael_wyatt@brown.edu

Brown University
Department of Geological Sciences
Providence, Rhode Island

Supporting Stations: McMurdo Station
Research Locations: Beacon, Taylor, Victoria, and Wright Valleys

Project Description:
This research project has three main objectives: 1) Establish key thermal infrared (TIR) and visible-near infrared (VNIR) spectral indices for identification of surface compositions in the Dry Valleys; 2) map distributions of primary lithologies and secondary mineral-phases over the entire Dry Valleys region using multispectral TIR data from the Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) and hyperspectral VNIR data from Hyperion; 3) determine if regional distributions of secondary mineral phases are linked to current climate variables as measured by Long Term Ecological Research (LTER) Automatic Weather Network (LAWN) stations, or instead provide insight to past environmental conditions and chemical alteration processes.

Field Season Overview:
Several remote camps, supported by helicopters, will be established in the McMurdo Dry Valleys regions to provide access to LAWN sites and surrounding regions. The camps will be in the Taylor, Wright, and Victoria Valleys. These are small camps that consist of three Scott tents and an Endurance tent with minimal equipment.

There will also be short day trips and a small camp put-in for a subset of the team to collect rock samples in regions outside the Dry Valleys. These

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regions include Brimstone Peak (supported by helicopter) and the Mesa Range (supported by fixed-wing aircraft). At each site, researchers will examine rock samples in situ with a portable visible and near-infrared spectrometer that is backpack mounted and easily operated by one to two people. Each field site location will be analyzed using similar methods that include non-invasive field spectroscopy, GPS data collection, radiometric (temperature) analyses, digital photography for land-cover analysis, and hand-sample documentation. Researchers will also collect samples for further analyses at McMurdo Station.

The research group is also coordinating with G-058-M and G-294-M. As research time permits, some personnel will work between groups. Specifically, the G-440-M project will join the group for about one week in early December; G-294-M team members will camp at locations physically shared with the G-440-M team.

Deploying Team Members:

- David Hollibaugh-Baker
- John Mustard
- Sylvain Piqueux
- Mark Salvatore
- John Skok

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Science Project Details: 2010-2011

Collaborative Research: ASPIRE (Amundsen Sea Polynya International Research Expedition)

Program Manager:
Dr. Roberta Marinelli

Event Number: B-388-N

ASC POC/Implementer:
Adam Jenkins

Dr. Patricia Yager (Principal Investigator)
pyager@uga.edu

University of Georgia
Athens, Georgia

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: Amundsen Sea

Project Description:
This project focuses on a unique but poorly understood coastal polynya in the southeast Pacific Ocean sector of the Antarctic. The major scientific objectives researchers will address in this project are to find out why and how the Amundsen Sea Polynya is so much more productive than other polynyas and to determine how climate-sensitive mechanisms drive carbon fluxes there. Specifically researchers will ask how future climate change in the Antarctic will affect the light and iron availability in the coastal Southern Ocean and how this will affect phytoplankton species assemblages and production, remineralization, and export processes.

Field Season Overview:
Researchers on this cruise will spend some time in the western Antarctic Peninsula (WAP) area collaborating with another project before moving west to the Amundsen Sea study area. The primary goal of this cruise is to get to the polynya area as quickly as possible and spend at least 20 days sampling there. After the WAP science is completed, the NBP will rendezvous with the Swedish Icebreaker Oden (en route to McMurdo Station) to transfer WAP project scientists and gear to the Oden. Once in the Amundsen Sea open polynya region, researchers will deploy a moored sediment trap (to be recovered in 2012) and a Slocum Webb glider to provide mesoscale surveys of currents, temperature, salinity, and phytoplankton and particle concentrations. The glider will focus on surveying the open-water regions with higher spatial resolution than can be accomplished from aboard ship.

Project Indexes
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Ocean color maps obtained by remote (satellite) sensing will complement these mesoscale surveys. Researchers will use both data sets to select vessel-based sampling stations. Once the sediment trap and the glider are deployed, researchers will then sample the water column along three cross-polynya gradients, across the continental shelf and up to ice-shelf front, using conventional and trace-metal-clean CTD rosettes, in-situ pumps, and plankton nets. Researchers also plan to deploy a drifting sediment trap twice for 36-60 hours, following nearby with the ship and sampling with the CTDs and pumps during what is called a "drift station."

Deploying Team Members:

- Tara Connelly
- Katherine Esswein
- Tina Haskins
- Anton Post
- Evan Randall-Goodwin
- Emily Rogalsky
- Silke Severmann
- Robert Sherrell (Co-PI)
- Karie Sines
- Rachel Sipler
- Sharon Stammerjohn (Co-PI)
- Stephanie Wilson

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