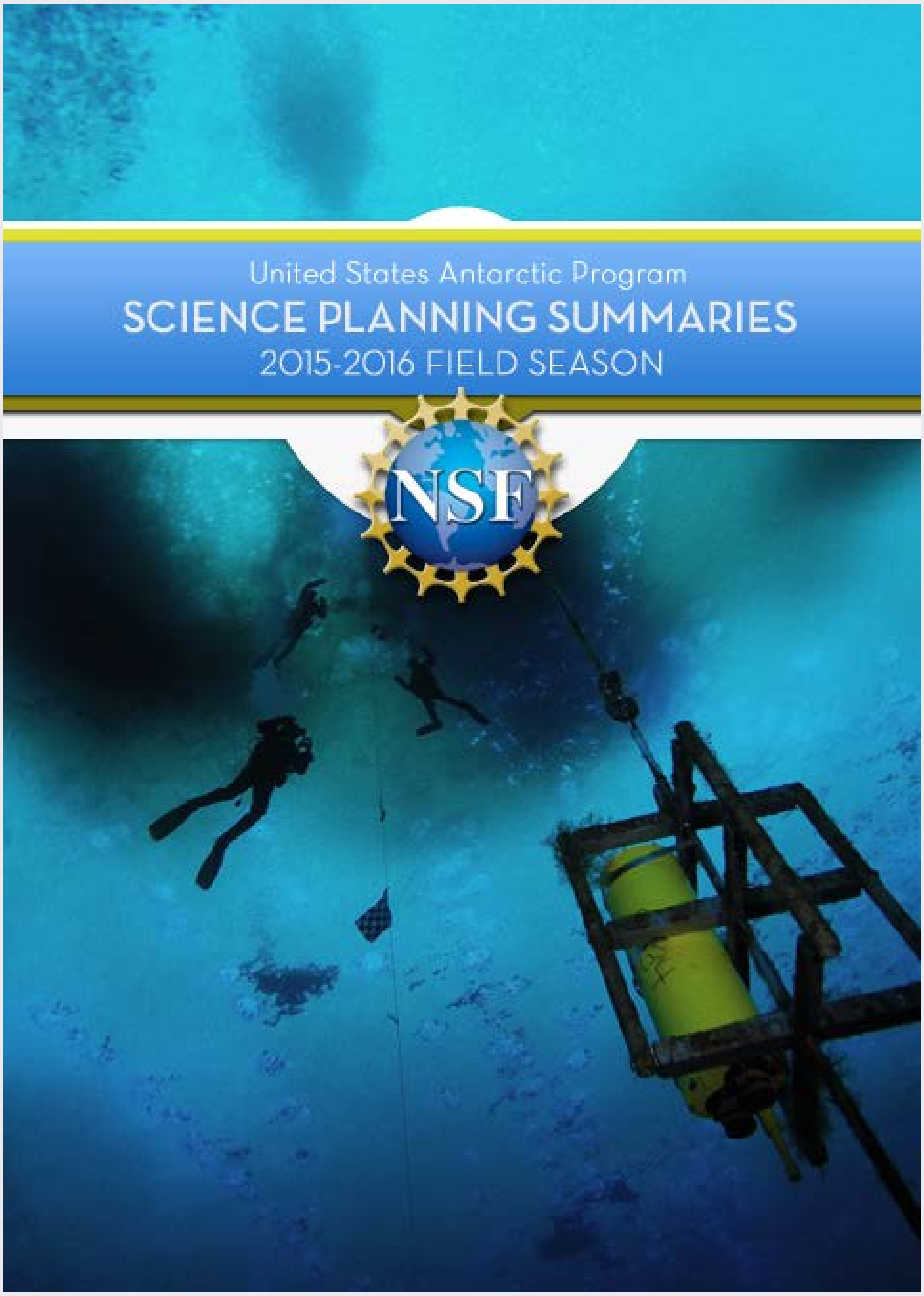

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  - **Astrophysics and Geospace Sciences**
    Dr. Vladimir Papitashvili, Program Manager
  - **Organisms and Ecosystems**
    Dr. Chris Fritsen, Program Director
  - **Earth Sciences**
    Dr. Thomas Wilch, Program Manager
  - **Glaciology**
    Dr. Julie Palais, Program Manager
  - **Ocean and Atmospheric Sciences**
    Dr. Peter Milne, Program Manager
  - **Integrated System Science**
    Dr. Lisa Clough, Program Manager (Acting)
  - **Artists and Writers**
    Mr. Peter West, Program Manager
  - **Instrumentation and Technology Development Index**
    Dr. Michael Jackson, Program Manager
- **USAP Station and Vessel Indexes**
  - **Amundsen-Scott South Pole Station**
  - **McMurdo Station**
  - **Palmer Station**
  - **RVIB Nathaniel B. Palmer**
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- **Principal Investigator Index**
- **Deploying Team Members Index**
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- **Event Number Index**
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- **Other Science Events**
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Principal Investigator/Link	Event No.	Project Title
Ainley, David	B-031-M	Adélie penguin response to climate change at the individual, colony, and metapopulation levels
Aydin, Murat	I-164-S	A 1,500-meter ice core from South Pole
Barwick, Steven	A-127-M	Development of hexagonal radio array for the ARIANNA ultra-high-energy neutrino detector
Bell, Robin E	C-384-M	A systems approach to understanding the Ross Ocean and ice Shelf Environment, and Tectonic setting Through Aerogeophysical surveys and modeling (ROSETTA)
Bowser, Samuel	B-043-M	Assembling and mining the genomics of giant Antarctic foraminifera
Bromirski, Peter D	I-348-M	Dynamic response of the Ross Ice Shelf to wave-induced vibrations
Burns, Jennifer	B-292-M	The cost of a new fur coat: Interactions between molt and reproduction in Weddell seals
Butler, James Hall	O-257-M/S	South Pole monitoring for climatic change
Butler, James Hall	O-264-P	Collection of atmospheric air for the NOAA/GMD worldwide flask-sampling network
Butler, James Hall	O-257-M/S	UV measurements at McMurdo Station for the NOAA/Global Monitoring Division (GMD) Antarctic UV network
Carlstrom, John	A-379-S	Cosmological research with the 10-meter South Pole Telescope
Carpenter, Paul	T-299-M/S	IRIS/PASSCAL seismic support
Chu, Xinzhao	A-130-M	LiDAR investigation of middle and upper atmosphere temperature, composition, chemistry, and dynamics at McMurdo, Antarctica

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Clauer, C. Robert	**A-106-M/S**	Polar Experiment Network for Geospace Upper-atmosphere Investigations (PENGUIn): Interhemispheric investigations along the 40-degree magnetic meridian
Conde, Mark Gerard	**A-343-M/S**	High-resolution mapping of thermospheric wind and temperature fields near the equatorward edge of the Antarctic polar cap
Cottle, John	**G-076-M**	Petrologic constraints on subduction termination from lamprophyres, Ross Orogen, Antarctica
Doran, Peter	**C-511-M**	McMurdo LTER - Lakes: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Ducklow, Hugh William	**C-045-L/P**	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Evenson, Paul	**A-120-M**	Neutron monitor observations of cosmic rays from Jang Bogo and McMurdo Station
Evenson, Paul	**A-118-S**	Element composition of high-energy solar particles
Fraser, William Ronald	**C-013-L/P**	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Friedlaender, Ari Seth	**C-024-L/P**	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Gerrard, Andrew	**A-111-M/S**	Synoptic geospace systems analysis using instrumentation from South Pole and McMurdo Stations
Gooseff, Michael N	**C-506-M**	McMurdo LTER - Streams: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program

Gooseff, Michael N	**C-504-M**	McMurdo LTER - Glaciers: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Halzen, Francis	**A-333-S**	IceCube operations and maintenance
Hansen, Samantha	**G-061-M**	CAREER: Deciphering the tectonic history of the Transantarctic Mountains and the Wilkes Subglacial Basin
Harvey, Ralph	**G-058-M**	Antarctic Search for Meteorites (ANSMET)
Hofmann, Gretchen	**B-134-M**	Ocean acidification seascape: linking natural variability and anthropogenic changes in pH and temperature to performance in calcifying Antarctic marine invertebrates
Kalnajs, Lars E	**O-324-M**	High-resolution study of atmosphere, ice, and aerosol interactions in coastal Antarctica
Kelly, Michael	**O-410-N**	Ocean Observatories Initiative (OOI) Southern Hemisphere cruises
Kemerait, Robert C	**G-078-M**	Dry Valley seismic project
Kovac, John	**A-149-S**	Imaging the beginning of time from the South Pole: Observations with the full SPUD array
Kulesa, Craig	**A-364-M/S**	High Elevation Antarctic Terahertz (HEAT) telescopes for Dome A and Ridge A
Kyle, Phillip	**G-081-M**	Mount Erebus Volcano Observatory: Operations, Science, and Outreach (MEVO-OSO)
LaBelle, James	**A-125-S**	Application of the AGO network to energy transfer in the radiation belts and remote sensing of auroral plasma processes
LaBelle, James	**A-128-S**	Earth's electromagnetic environment: Advancing recent discoveries in auroral plasma radio emission research
Lazzara, Matt	**O-283-M**	Antarctic Automatic Weather Station (AWS) program
Lee, Richard	**B-256-P**	Winter survival mechanisms and adaptive genetic variation in an

		Antarctic insect
Lubin, Dan	O-325-M	Department of Energy ARM West Antarctic Radiation Experiment (AWARE)
Lyons, W. Berry	C-509-M	McMurdo LTER - Geochemistry: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Marchant, David R	G-054-M	West Antarctic Ice Sheet stability, alpine glaciation, and climate variability: A terrestrial perspective from cosmogenic-nuclide dating in McMurdo Sound
Martinson, Doug	C-021-L	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
McClintock, James	B-022-P	The chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula
Moore, Robert C.	A-109-M/P/S	Antarctic ELF/VLF observations of Q-bursts, radio atmospherics, and energetic particle precipitation
Morin, Paul	T-434-M	The Polar Geospatial Information Center: Joint support
Orr, Gerald Dwayne	A-145-M	NASA Long Duration Balloon (LDB) support program
Pettit, Joseph R	T-295-M	UNAVCO GPS survey support
Polito, Michael John	B-025-E/M	Investigating Holocene shifts in the diets and paleohistory of Antarctic krill predators
Priscu, John	C-505-M	McMurdo LTER - Lakes: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Rotella, Jay	B-009-M	The demographic consequences of environmental variability and individual heterogeneity in life-history tactics of a long-lived Antarctic marine predator
Schmidt, Britney Elyce	B-259-M	Astrobiology science and technology for exploring planets (ASTEP)

Sprintall, Janet	O-260-L	The Drake Passage high-density XBT/XCTD program
Steinberg, Deborah	C-020-L	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Stephens, Britton B	O-404-L	High-resolution underway air-sea observations in Drake Passage for climate science
Stephens, Britton B	O-541-L/P	The O2/N2 ratio and CO2 airborne Southern Ocean (ORCAS) study
Sumner, Dawn Yvonne	G-063-M	Microbialite Morphology in Lake Joyce, Antarctica
Swanger, Kate	G-085-M	Origin and climatic significance of rock glaciers in the McMurdo Dry Valleys: Assessing spatial and temporal variability
Sweeney, Colm	O-214-L	High-resolution underway air-sea observations in Drake Passage for climate science
Taylor, Michael	A-119-M/S	Development of an ANtarctic Gravity Wave Imager Network (ANGWIN) for collaborative mesospheric research
Taylor, Michael	A-119-M/S	Investigating wave-driven Mesospheric dynamics over South Pole using an advanced Mesospheric temperature mapper
Taylor, Michael	Undefined-P	Continental-Scale Studies of Mesospheric Dynamics Using the Antarctic Gravity Wave Instrument Network (ANGWIN)
Thoman, Bruce	T-927-M	NASA/McMurdo Ground Station (MG1)
Wall, Diana	C-507-M	McMurdo LTER - Soils: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Watters, George	B-006-N	NOAA / AMLR
Wilson, Terry	G-079-M/S	POLENET Antarctica: Investigating links between geodynamics and ice sheets - Phase 2

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2015-2016 USAP Field Season
Station and Vessel Schedules

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

Opening Dates

	Austral Summer Openings		Austral Winter Openings
	Operational	Science	
McMurdo	20 Aug 2015 (Winfly*)	29 Sep 2015 (Mainbody)	28 Feb 2016
South Pole	1 Nov 2015	1 Nov 2015	15 Feb 2016
Palmer	17 Sep 2015	10 Oct 2015	N/A
Research Vessels	Vessels Operate Year-Round (Find **Vessel Schedules**)		

**A limited number of science projects deploy at Winfly*

Estimated Population

	Summer	Winter
McMurdo	850 (weekly average) 2,300 (total)	180 (winter total)
South Pole	150 (weekly average) 450 (total)	40 (winter total)
Palmer	36-44 (weekly average) 196 (total)	
RV/IB* NBP	39 science and staff / 25 crew Total annual science personnel: 132	
ARSV** LMG	38 science and staff / 25 crew Total annual science personnel: 50	

**RV/IB, Research Vessel/Icebreaker*
***ARSV, Antarctic Research Support Vessel*

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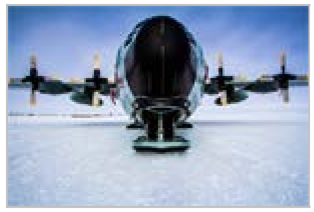
2015-2016 USAP Field Season
Air Operations

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, Inc. PHI will provide helicopter support with four helicopters (two AS-350-B2 "A-Stars" and two Bell 212s) based out of McMurdo Station.

The four helicopters will support research in the McMurdo Sound area, the McMurdo Dry Valleys, Royal Society Range, and on Ross Island.

In addition, Antarctica New Zealand will be providing a ZK-IDE B3 Type Squirrel (operated by **Southern Lakes Helicopters**) from about the beginning of November through the end of January 2016.

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 for aerial surveys and at deep-field locations including Siple Dome, West Antarctic Ice Sheet (WAIS) Divide, Grounding Zone, Shackleton Glacier (TAM Camp) Byrd Camp, Crary Ice Rise, Ohio Range, CTAM, and various open-field landing locations.

Kenn Borek Air

Kenn Borek Air Kenn Borek Air will provide four Twin Otter and one Basler aircraft to support a number of projects throughout the USAP area of operations.

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2015-2016 USAP Field Season
Staffed Field Camps

A total of seven field camps will have resident staff to provide logistical and operational assistance to McMurdo and vessel-based researchers.

Dry Valleys

50 Nautical Miles From McMurdo Station

77.30°S, 162°E

Each year, Long Term Ecological Research (LTER) grantees and other groups conduct research in the Dry Valleys. Two resident staff will operate the main base camp at Lake Hoare and the semi-permanent camps at Lake Fryxell, F-6, and Lake Bonney. Science project teams will erect small tent camps on the Taylor Glacier, near Lake Joyce, and in the Garwood, Meirs, and Wright Valleys.

Marble Point

46 Nautical Miles From McMurdo Station

77.41°S, 163.67°E

This camp supports refueling operations for helicopters working in the Dry Valleys and on local sea ice. Two resident staff and rotating fuels operators will operate the camp. Fuel and equipment will be delivered by traverse from McMurdo Station.

Siple Dome

507 Nautical Miles From McMurdo Station

81.39°S, 149.04°W

This camp serves as a fueling point for aircraft operating between McMurdo Station and West Antarctica or South Pole. Two resident staff will provide daily weather observations and maintain the camp. Siple Dome will also house and feed Kenn Borek Air (KBA) crews as needed. This season, the team will support the science operations of Weins (**G-089-M**).

WAIS Divide Field Camp

891 Nautical Miles From McMurdo Station

79.46°S, 112.08°W

The WAIS Divide field camp with 15 resident staff will support five science groups working through the site, including Twin Otter missions for Lazarra (**O-283-M**) and Polenet (**G-079-M**), the deployment of Stone (**I-277-M**) to the Pirrit Hills, Department of Energy's climate change studying AWARE project (**O-325-M**), and one participant of IDDO (**T-350-M**) who will lend assistance to removing the remainder of that project's equipment currently installed in the drilling arch. The West Antarctic Support Traverse and Camping teams will also work through WAIS Divide as they move to and from Byrd.

Byrd Camp

802 Nautical Miles From McMurdo Station

80.1°S, 119.64°W

A team of four will deploy to the site with the mission of unburying and re-berming the camp equipment stored there, re-raising the fuel bladders, returning the skiway to full

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certifications, and retrograding equipment back to McMurdo that has been called out for Shackleton Camp. A secondary traverse crew of three personnel will fly to WAIS Divide and repair heavy equipment and will traverse between Byrd and WAIS Divide to shuttle equipment to and from those locations.

Shackleton Camp

459 Nautical Miles From McMurdo Station

85.08°S, 175.38°W

Six resident staff will establish Shackleton Camp in the Transantarctic Mountains. They will receive cargo and fuel deliveries from LC-130's to support the science groups working in and around of the mountains over the next three austral summers. The three science groups supported through Shackleton include Licht (**G-095-M**), Panter (**G-073-M**), and Bromley (**I-177-M**). Harvey's ANSMET team (**G-058-M**) will pass through the site at the end of the season.

James Ross Island

189 Nautical Miles From McMurdo Station

64.17°S, 57.75°W

Two science teams Lamanna, (**G-182-N**) and Kirschvink (**G-291-N**) will occupy multiple multi-day field camps and make multiple day-long excursions to various locations of scientific interest in the area of the James Ross Basin. The ship-based field work will make use of small boat technologies aboard the RV/IB Nathaniel B. Palmer, as well as support from Air Center Helicopters Inc. (ACHI), to access the various locations of scientific interest.

2015-2016 USAP Field Season
Event Numbering System

Every USAP project is assigned a unique event number consisting of three parts: A prefix indicating the USAP program funding the effort, a project number, and a suffix denoting the location where field work will take place. If field work takes place at more than one location the event number will indicate this with multiple suffixes separated by a slash.

Sample Event Number

A – 100 – M

In the example above, the project would be funded by the Astrophysics and Geospace Sciences program, have a project number of *100*, and would consist of field work to be performed at or near McMurdo Station.

Program Prefixes

Prefix	USAP Program
A	**Astrophysics and Geospace Sciences** Dr. Vladimir Papitashvili, Program Manager
B	**Organisms and Ecosystems** Dr. Chris Fritsen, Program Director
C	**Integrated System Science** Dr. Lisa Clough, Program Manager (Acting)
G	**Earth Sciences** Dr. Thomas Wilch, Program Manager
I	**Glaciology** Dr. Julie Palais, Program Manager
O	**Oceans and Atmospheric Sciences** Dr. Peter Milne, Program Manager
W	**Artists and Writers** Mr. Peter West, Program Manager
D	**Instrumentation and Technology Development** Dr. Michael Jackson, Program Manager
T	**Technical Event**
X	**Other Science Events**

Location Suffixes

Suffix	Supporting Location
M	**McMurdo Station**

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P	**Palmer Station**
S	**South Pole Station**
N	**RV/IB* Nathaniel B. Palmer**
L	**ARSV** Laurence M. Gould**
E	**Special Projects Supported by the USAP** (e.g., Investigators working with other national Antarctic programs)

**RV/IB, Research Vessel/Icebreaker*
***ARSV, Antarctic Research Support Vessel*

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Principal Investigator Index

Principal Investigator	Event No.	Project Title
Aciego, Sarah	I-184-M	Climate controls on aerosol fluxes to Taylor Dome and Taylor Glacier
Ainley, David	B-031-M	Adélie penguin response to climate change at the individual, colony, and metapopulation levels
Albert, Mary	T-350-M	Ice Drill Design and Operations (IDDO) support for WAIS Divide
Albert, Mary	T-150-M	IDPO / IDDO - McMurdo
Anderson, Kent	G-090-P/S	Global seismograph station at South Pole and Palmer Stations
Aydin, Murat	I-164-S	A 1,500-meter ice core from South Pole
Ball, Rebecca Ann	B-300-L	Climatic and environmental constraints on aboveground-belowground linkages and diversity across a latitudinal gradient in Antarctica
Barwick, Steven	A-127-M	Development of hexagonal radio array for the ARIANNA ultra-high-energy neutrino detector
Bell, Robin E	C-384-M	A systems approach to understanding the Ross Ocean and ice Shelf Environment, and Tectonic setting Through Aerogeophysical surveys and modeling (ROSETTA)
Bowser, Samuel	B-043-M	Assembling and mining the genomics of giant Antarctic foraminifera
Bristow, William	A-369-M/S	McMurdo and South Pole SuperDARN: Investigation of the ionospheric dynamics and magnetosphere-ionosphere coupling in Antarctica
Bromirski, Peter D	I-348-M	Dynamic response of the Ross Ice Shelf to wave-induced vibrations
Bromley, Gordon R	I-177-M	Potential direct geologic constraint of ice sheet thickness in the central Transantarctic Mountains during the Pliocene warm period
Burdige, David Jay	G-430-N	Organic carbon oxidation and iron

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		remobilization by West Antarctic Shelf sediments
Burns, Jennifer	**B-292-M**	The cost of a new fur coat: Interactions between molt and reproduction in Weddell seals
Butler, James Hall	**O-257-M/S**	South Pole monitoring for climatic change
Butler, James Hall	**O-264-P**	Collection of atmospheric air for the NOAA/GMD worldwide flask-sampling network
Butler, James Hall	**O-257-M/S**	UV measurements at McMurdo Station for the NOAA/Global Monitoring Division (GMD) Antarctic UV network
Buys, Emmanuel S	**B-267-M**	Unraveling the genomic and molecular basis of the dive response: Nitric oxide signaling and vasoregulation in the Weddell seal
Carlstrom, John	**A-379-S**	Cosmological research with the 10-meter South Pole Telescope
Carpenter, Paul	**T-299-M/S**	IRIS/PASSCAL seismic support
Chereskin, Teresa	**O-317-L**	Southern Ocean current observations from the U.S. Antarctic research vessels
Chu, Xinzhao	**A-130-M**	LiDAR investigation of middle and upper atmosphere temperature, composition, chemistry, and dynamics at McMurdo, Antarctica
Clauer, C. Robert	**A-106-M/S**	Polar Experiment Network for Geospace Upper-atmosphere Investigations (PENGUIn): Interhemispheric investigations along the 40-degree magnetic meridian
Conde, Mark Gerard	**A-343-M/S**	High-resolution mapping of thermospheric wind and temperature fields near the equatorward edge of the Antarctic polar cap
Conway, Howard	**I-323-M**	Grounding line dynamics: Crary Ice Rise revisited
Cottle, John	**G-076-M**	Petrologic constraints on subduction termination from lamprophyres, Ross Orogen, Antarctica
Davis, Randall	**B-017-M**	Geomagnetic navigation by Weddell seals beneath Antarctic ice
Detrich, Bill	**B-037-L/P**	Protein folding and embryogenesis in Antarctic fishes: A comparative approach to environmental stress

Doran, Peter	**C-511-M**	McMurdo LTER - Lakes: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Ducklow, Hugh William	**C-045-L/P**	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Eppley, Dr. Sarah Margaretha	**B-289-E**	The functional role of moss in structuring biotic interactions and terrestrialization of Antarctica
Evenson, Paul	**A-120-M**	Neutron monitor observations of cosmic rays from Jang Bogo and McMurdo Station
Evenson, Paul	**A-118-S**	Element composition of high-energy solar particles
Fischer, Tobias P	**G-411-M**	Erebus volcano: Characterizing a subglacial hydrothermal system and potential effects on CO2 degassing
Fountain, Andrew	**C-517-M**	The McMurdo Dry Valleys: A landscape on the threshold of change
Fraser, William Ronald	**C-013-L/P**	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Friedlaender, Ari Seth	**C-024-L/P**	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Gao, Yuan nmi	**O-231-P**	Quantifying atmospheric iron properties over the Western Antarctic Peninsula
Gerrard, Andrew	**A-111-M/S**	Synoptic geospace systems analysis using instrumentation from South Pole and McMurdo Stations
Glazer, Helen	**W-217-M**	Above, below and within the ice
Goodge, John	**D-551-M**	Phase 2 development of a Rapid Access Ice Drilling (RAID) platform for research in Antarctica
Goodge, John	**D-552-M**	Phase 2 development of a Rapid Access Ice Drilling (RAID) platform for research in Antarctica / DOSECC Exploration Services (DES)
Gooseff, Michael N	**C-506-M**	McMurdo LTER - Streams: Increased connectivity in a polar desert resulting

		from climate warming: McMurdo Dry Valleys LTER Program
Gooseff, Michael N	**C-504-M**	McMurdo LTER - Glaciers: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Halzen, Francis	**A-333-S**	IceCube operations and maintenance
Hamilton, Gordon S	**I-178-M**	Flow and fracture dynamics in an ice shelf lateral margin: Observations and modeling of the McMurdo Shear Zone
Hansen, Samantha	**G-061-M**	CAREER: Deciphering the tectonic history of the Transantarctic Mountains and the Wilkes Subglacial Basin
Harvey, Ralph	**G-058-M**	Antarctic Search for Meteorites (ANSMET)
Higgins, John A	**I-165-M**	Window into 40 kyr world from climate records in one Ma ice from the Allan Hills blue ice area
Hofmann, Gretchen	**B-134-M**	Ocean acidification seascape: linking natural variability and anthropogenic changes in pH and temperature to performance in calcifying Antarctic marine invertebrates
Hosticka, Bouvard	**T-998-P**	Operation and maintenance of a CTBT radionuclide monitoring station at Palmer Station
Jenkins, Bethany Diane	**B-230-N**	Investigating iron-binding ligands in Southern Ocean diatom communities: The role of diatom-bacteria associations
Kalnajs, Lars E	**O-324-M**	High-resolution study of atmosphere, ice, and aerosol interactions in coastal Antarctica
Kelly, Michael	**O-410-N**	Ocean Observatories Initiative (OOI) Southern Hemisphere cruises
Kemerait, Robert C	**G-078-M**	Dry Valley seismic project
Kirschvink, Joseph	**G-291-N**	Paleomagnetism and magnetostratigraphy of the James Ross Basin, Antarctica
Kohut, Josh	**B-005-L**	Impacts of local oceanographic processes on Adélie penguin foraging ecology over Palmer Deep
Koutnik, Michelle R	**I-193-M/S**	Characterization of upstream ice and firn dynamics affecting the South Pole Ice (SPICE) core

Kovac, John	A-149-S	Imaging the beginning of time from the South Pole: Observations with the full SPUD array
Kulesa, Craig	A-364-M/S	High Elevation Antarctic Terahertz (HEAT) telescopes for Dome A and Ridge A
Kuo, Chao-Lin	A-365-S	Science observation with BICEP3 CMB polarization experiment
Kyle, Phillip	G-081-M	Mount Erebus Volcano Observatory: Operations, Science, and Outreach (MEVO-OSO)
LaBelle, James	A-125-S	Application of the AGO network to energy transfer in the radiation belts and remote sensing of auroral plasma processes
LaBelle, James	A-128-S	Earth’s electromagnetic environment: Advancing recent discoveries in auroral plasma radio emission research
Lamanna, Matthew	G-182-N	Late Cretaceous-Paleogene vertebrates from Antarctica: Implications for paleobiogeography, paleoenvironment, and extinction in Polar Gondwana
Lazzara, Matt	O-283-M	Antarctic Automatic Weather Station (AWS) program
Lee, Richard	B-256-P	Winter survival mechanisms and adaptive genetic variation in an Antarctic insect
Lessard, Marc	A-102-M/S	Studies of ULF waves associated with solar wind coupling to the magnetosphere and ionosphere
LiCata, Vincent Jerry	W-484-M	Persistence of vision: Antarctica
Licht, Kathy	G-095-M	Multidisciplinary analysis of Antarctic blue ice moraine formation and their potential as climate archives over multiple glacial cycles
Loeb, Valerie J	B-268-L	Pilot study: Addition of biological sampling to Drake Passage transits of the ARSV Laurence M. Gould
Lubin, Dan	O-325-M	Department of Energy ARM West Antarctic Radiation Experiment (AWARE)
Lyons, W. Berry	C-509-M	McMurdo LTER - Geochemistry: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
MacAyeal, Douglas R	I-190-M	Impact of supraglacial lakes on ice-

		shelf stability
Manahan, Donal	B-301-L/P	Biological adaptations to environmental change in Antarctica - an advanced training program for early career scientists
Marchant, David R	G-054-M	West Antarctic Ice Sheet stability, alpine glaciation, and climate variability: A terrestrial perspective from cosmogenic-nuclide dating in McMurdo Sound
Martinson, Doug	C-021-L	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
McCarthy, Susan Joanne	W-488-P	Observing the snowy sheathbill and its behavior
McClintock, James	B-022-P	The chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula
Moore, Robert C.	A-109-M/P/S	Antarctic ELF/VLF observations of Q-bursts, radio atmospherics, and energetic particle precipitation
Moran, Amy	B-307-M	Body size, oxygen, and vulnerability to climate change: a physiological study of Antarctic Pycnogonida
Morin, Paul	T-434-M	The Polar Geospatial Information Center: Joint support
Mukhopadhyay, Sujoy	G-438-M	Constraining Plio-Pleistocene West Antarctic Ice Sheet behavior from the Ohio Range and Scott Glacier
O'Boyle, Shaun Michael	W-468-M	Portraits of place in Antarctica
Orr, Gerald Dwayne	A-145-M	NASA Long Duration Balloon (LDB) support program
Panter, Kurt S	G-073-M	Investigating Early Miocene sub-ice volcanoes in Antarctica to provide boundary conditions for ice sheet dynamic models and improved understanding of a large diffuse alkaline magma
Paznukhov, Vadym V	A-373-P	Troposphere-ionosphere coupling via atmospheric gravity waves
Petrenko, Vasilii Victorovich	I-159-M	The Taylor Glacier, Antarctica, horizontal ice core: Exploring changes in the natural methane budget in a warming world and expanding the paleo-archive

Pettit, Joseph R	**T-295-M**	UNAVCO GPS survey support
Polito, Michael John	**X-279-M**	Biodiversity and distribution of microbial epi-endolithic communities to studying limits for life in Victoria Land, Antarctica
Polito, Michael John	**B-025-E/M**	Investigating Holocene shifts in the diets and paleohistory of Antarctic krill predators
Priscu, John	**C-505-M**	McMurdo LTER - Lakes: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Rotella, Jay	**B-009-M**	The demographic consequences of environmental variability and individual heterogeneity in life-history tactics of a long-lived Antarctic marine predator
Saint-Hilaire, Pascal	**A-337-M**	Gamma-Ray Imager/Polarimeter for Solar flares (GRIPS)
Schmidt, Britney Elyce	**B-259-M**	Astrobiology science and technology for exploring planets (ASTEP)
Schofield, Oscar	**C-019-L/P**	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Schwartz, Susan	**C-525-M**	High-resolution heterogeneity at the base of Whillans Ice Stream and its control on ice dynamics
Severinghaus, Jeff	**I-191-S**	Inert gas and methane based climate records throughout the South Pole deep ice core
Sherrell, Robert Michael	**B-203-L**	Natural iron fertilization and bioactive metal dynamics on the Western Antarctic Peninsula shelf
Smith, Craig	**B-212-L/N**	Fjord ecosystem structure and function on the Western Antarctic Peninsula - hotspots of productivity and biodiversity
Smith, Walker	**B-272-M**	Effects of temperature on phytoplankton growth rates
Spaulding, Nicole Elizabeth	**I-171-M**	Allan HILL's Englacial Site (AHILLES) selection
Sprintall, Janet	**O-260-L**	The Drake Passage high-density XBT/XCTD program
Steinberg, Deborah	**C-020-L**	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem

		resilience and transformation in a sea-ice influenced pelagic ecosystem
Stephens, Britton B	O-404-L	High-resolution underway air-sea observations in Drake Passage for climate science
Stephens, Britton B	O-541-L/P	The O2/N2 ratio and CO2 airborne Southern Ocean (ORCAS) study
Stone, John	I-277-M	EXPROBE-WAIS: Exposed rock beneath the West Antarctic Ice Sheet, a test for interglacial ice sheet collapse
Sumner, Dawn Yvonne	G-063-M	Microbialite Morphology in Lake Joyce, Antarctica
Swanger, Kate	G-085-M	Origin and climatic significance of rock glaciers in the McMurdo Dry Valleys: Assessing spatial and temporal variability
Sweeney, Colm	O-214-L	High-resolution underway air-sea observations in Drake Passage for climate science
Szuberla, Curt	T-396-M	Operation and maintenance of a CTBT class infrasound array at Windless Bight
Taylor, Michael	A-119-M/S	Development of an ANtarctic Gravity Wave Imager Network (ANGWIN) for collaborative mesospheric research
Taylor, Michael	A-119-M/S	Investigating wave-driven Mesospheric dynamics over South Pole using an advanced Mesospheric temperature mapper
Taylor, Michael	Undefined-P	Continental-Scale Studies of Mesospheric Dynamics Using the Antarctic Gravity Wave Instrument Network (ANGWIN)
Thoman, Bruce	T-927-M	NASA/McMurdo Ground Station (MG1)
Thurnherr, Andreas M	O-408-N	Flow, turbulence, and mixing in mid-ocean ridge fracture-zone canyons
Walker, Christopher	A-136-M	Stratospheric Terahertz Observatory (STO)
Wall, Diana	C-507-M	McMurdo LTER - Soils: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Waller, Rhian G	B-248-L/P	Cold corals in hot water - investigating the physiological responses of Antarctic coral larvae to climate change stress

Wannamaker, Philip	G-072-M	Magma sources, residence and pathways of Mount Erebus phonolitic volcano, Antarctica, from magnetotelluric resistivity structure
Watters, George	B-006-N	NOAA / AMLR
Wiens, Douglas	G-089-M	Mantle structure and dynamics of the Ross Sea from a passive seismic deployment on the Ross Ice Shelf
Wilson, Terry	G-079-M/S	POLENET Antarctica: Investigating links between geodynamics and ice sheets - Phase 2
Yu, Zicheng	G-094-P	Response of carbon accumulation in moss peatbanks to past warm climates in the Antarctic Peninsula

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Fu, Roger Rennan	G-291-N	Joseph Kirschvink
Aarons, Sarah Miranda	I-184-M	Sarah Aciego
Ackert, Robert	G-438-M	Sujoy Mukhopadhyay
Acosta, Dimitri Ricardo	C-511-M	Peter Doran
Adams, Byron	C-507-M	Diana Wall
Adams, Gregg P	B-292-M	Jennifer Burns
Ahmed, Zeeshan NMI	A-365-S	Chao-Lin Kuo
Aiken, Allison Carol	O-325-M	Dan Lubin
Allen, Kaitlin Nicole	B-267-M	Emmanuel S Buys
Alvarez-Colombo, Gustavo NM	B-268-L	Valerie J Loeb
Amsler, Charles	B-022-P	James McClintock
Amsler, Margaret	B-022-P	James McClintock
Anderson, Adam NMI	A-379-S	John Carlstrom
Andreas, Amanda Leola	B-043-M	Samuel Bowser
Andrews, Elisabeth Jane	O-257-M/S	James Hall Butler
Andriuzzi, Walter Salvatore	C-507-M	Diana Wall
Annett , Amber Luella	C-019-L/P	Oscar Schofield
Aquilina, Jeffrey John	O-325-M	Dan Lubin
Auer, Ralf	A-333-S	Francis Halzen
Babcock, Esther L	G-085-M	Kate Swanger
Bain, Hazel Miller	A-337-M	Pascal Saint-Hilaire
Baker, Bill	B-022-P	James McClintock
Baker, Michael G	G-089-M	Douglas Wiens
Balco, Gregory A.	I-177-M	Gordon R Bromley
Banwell, Alison F	I-190-M	Douglas R MacAyeal

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

Project Web Sites

Find more information about 2015-2016 USAP projects by viewing project web sites.

More Information

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Bayou, Nicolas NM	T-295-M	Joseph R Pettit
Beange, Alexander	A-145-M	Gerald Dwayne Orr
Beatty, James Thomas Jr.	A-136-M	Christopher Walker
Beitch, Marci Jillian	C-525-M	Susan Schwartz
Beltran, Roxanne	B-292-M	Jennifer Burns
Bender, Amy Nicole	A-379-S	John Carlstrom
Bendfelt, Timothy James	A-333-S	Francis Halzen
Bereiter, Bernhard NMI	I-159-M	Vasilii Victorovich Petrenko
Bergstrom, Anna NMI	C-504-M	Michael N Gooseff
Bernard, Jean-Daniel	G-079-M/S	Terry Wilson
Berngartt, Rachel Katherine	B-292-M	Jennifer Burns
Bertinato, Christopher NMI	C-384-M	Robin E Bell
Bhatnagar, Anjali marie	C-020-L	Deborah Steinberg
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Bleakney, Jeremy Michael	G-430-N	David Jay Burdige
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Boeckmann, Grant Vernon	T-150-M	Mary Albert
Boeckmann, Grant Vernon	I-164-S	Murat Aydin
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Bowman, Jeff	C-045-L/P	Hugh William Ducklow
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Brook, Edward Jeremy	I-159-M	Vasilii Victorovich Petrenko
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Burns, Christopher	B-292-M	Jennifer Burns
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Burton, Timothy Charles	G-081-M	Phillip Kyle
Buz, Jennifer NMI	G-291-N	Joseph Kirschvink
Byrd, Don	T-396-M	Curt Szuberla
Campbell, Seth	I-171-M	Nicole Elizabeth Spaulding
Campbell, Seth	G-438-M	Sujoy Mukhopadhyay
Carkhuff, Bliss	A-136-M	Christopher Walker
Caron, Jacob Ernest	G-078-M	Robert C Kemerait
Carpenter, Michael Scott	A-136-M	Christopher Walker
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Caspi, Amir NMI	A-337-M	Pascal Saint-Hilaire
Chamberlain, Emelia Janthina	G-054-M	David R Marchant
Chappell, Phoebe Dreux	B-230-N	Bethany Diane Jenkins
Chen, Zhao NMI	I-348-M	Peter D Bromirski
Chignell, Stephen McLean	C-517-M	Andrew Fountain

Childs, Dean Mark	T-299-M/S	Paul Carpenter
Chiuchiolo, Amy	C-505-M	John Priscu
Chmielewski, Jeanine unsure	G-081-M	Phillip Kyle
Christ, Andrew James	G-054-M	David R Marchant
Christensen, John P	G-430-N	David Jay Burdige
Chu, Wing Yin	C-384-M	Robin E Bell
Chung, Kelcey Ann Yukie	B-212-L/N	Craig Smith
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Clarke, Andrew	O-257-M/S	James Hall Butler
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Cobble, Mark Dwayne	A-145-M	Gerald Dwayne Orr
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Collins, James	C-045-L/P	Hugh William Ducklow
Conway, Howard	I-171-M	Nicole Elizabeth Spaulding
Conway, Howard	I-193-M/S	Michelle R Koutnik
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Cook, Benjamin Patrick	C-013-L/P	
Cook, Benjamin Patrick	C-013-L/P	William Ronald Fraser
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Cooper, Dewell Jennings	A-145-M	Gerald Dwayne Orr
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Cope, Joseph	C-020-L	
Corso, Andrew Derik	C-020-L	Deborah Steinberg
Cossio, Anthony	B-006-N	George Watters
Costa, Daniel P	B-267-M	Emmanuel S Buys
Costanza, Carol Anne	O-283-M	Matt Lazzara

Cotten, Rex	T-927-M	Bruce Thoman
Couto, Nicole A	C-019-L/P	Oscar Schofield
Crapster-Pregont, Ellen Jean	G-058-M	Ralph Harvey
Cziko, Paul	B-043-M	Samuel Bowser
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Davies, Theo NMI	A-343-M/S	Mark Gerard Conde
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Davis, Kristina Kay	A-136-M	Christopher Walker
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Delahunty, Christopher Alan	D-552-M	John Goodge
Denlinger, David	B-256-P	Richard Lee
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Dhakal, Tejendra NM	C-384-M	Robin E Bell
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Dietrich, Kimberly	B-006-N	George Watters
Diez, Anja NMI	I-348-M	Peter D Bromirski
Disterhoft, Patrick	O-257-M/S	James Hall Butler
Disterhoft, Patrick	O-257-M/S	James Hall Butler
Dittrich, Ribanna NMI	C-045-L/P	Hugh William Ducklow
Doan, Hai Nhu	B-272-M	Walker Smith
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Duffy, Brian	A-136-M	Christopher Walker
Dugger, Katie	B-031-M	David Ainley
Duncan, Nicole Ashley Maria	A-337-M	Pascal Saint-Hilaire
Dyonisius, Michael	I-159-M	Vasilii Victorovich Petrenko
Ebihara, Yusuke	A-111-M/S	Andrew Gerrard

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Ellis, Jody William	O-325-M	Dan Lubin
Elrod, Megan Lynn	B-031-M	David Ainley
Emslie, Steven D	B-025-E/M	Michael John Polito
Emslie, Steven D	X-279-M	Michael John Polito
Erxleben, Jennifer R	G-438-M	Sujoy Mukhopadhyay
Essex, Caleb William	G-061-M	Samantha Hansen
Evans, Colin W	B-005-L	Josh Kohut
Evans, Cynthia Ann	G-058-M	Ralph Harvey
Evens, Kayla Christine	C-019-L/P	Oscar Schofield
Farischon, Chelsea Lynne	C-019-L/P	Oscar Schofield
Farry, Shawn	C-013-L/P	
Farry, Shawn	C-013-L/P	William Ronald Fraser
Feeser, Kelli NM	B-300-L	Rebecca Ann Ball
Fegyveresi, John Michael	I-164-S	Murat Aydin
Filliger, Laura Zyanya	B-230-N	Bethany Diane Jenkins
Fitzsimmons, Jessica Nicole	B-203-L	Robert Michael Sherrell
Flannery, David Timothy	G-291-N	Joseph Kirschvink
Flesher, Chris	B-259-M	Britney Elyce Schmidt
Force, Michael Peter	B-268-L	Valerie J Loeb
Forzley, Michael James	B-009-M	Jay Rotella
Foster, Anne Frances	G-081-M	Phillip Kyle
Fox, Larry Edwin	A-145-M	Gerald Dwayne Orr
Fraser, Tandra Dawn	C-507-M	Diana Wall
Frazier, Curtis	A-145-M	Gerald Dwayne Orr
Frearson, Nicholas Paul	C-384-M	Robin E Bell
Frolli, Erin Elizabeth	B-017-M	Randall Davis
Fuiman, Lee	B-017-M	Randall Davis
Funk, Raymond	T-927-M	Bruce Thoman
Gallicchio, Jason Richard	A-379-S	John Carlstrom

Gantz, Josiah David	B-256-P	Richard Lee
Garaba , Shungudzemwoyo Pascal	C-019-L/P	Oscar Schofield
Garrott, Robert	B-009-M	Jay Rotella
Gibbs, Dillon Michael	G-078-M	Robert C Kemerait
Giordano, Michael R	O-324-M	Lars E Kalnajs
Glover, Christopher Robert	G-430-N	David Jay Burdige
Godbole, Niharika Hemendra	A-337-M	Pascal Saint-Hilaire
Goetz, James Douglas	O-324-M	Lars E Kalnajs
Gombiner, Joel Howard	I-277-M	John Stone
Goncalves, Ashley Marie	C-019-L/P	Oscar Schofield
Graly, Joseph Abraham	G-095-M	Kathy Licht
Grapenthin, Ronni NMI	G-081-M	Phillip Kyle
Graw, Jordan Hunter	G-061-M	Samantha Hansen
Grayson, James Andrew	A-365-S	Chao-Lin Kuo
Gregg, Gerald	A-145-M	Gerald Dwayne Orr
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Groppi, Christopher	A-136-M	Christopher Walker
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Guest, Brian Joseph	O-408-N	Andreas M Thurnherr
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Halfman, Maggie Jane	B-248-L/P	Rhian G Waller
Hall, Danielle Kristen	C-020-L	Deborah Steinberg
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Hall, Emiel Goodman	O-257-M/S	James Hall Butler
Hall, Emrys Goodman	O-257-M/S	James Hall Butler
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Harman, John Preston	B-259-M	Britney Elyce Schmidt
Harr, Natalie	B-256-P	Richard Lee
Harrison, Samuel NMI	A-365-S	Chao-Lin Kuo

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Hayton, Darren John	A-136-M	Christopher Walker
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Henderson, Randall	A-145-M	Gerald Dwayne Orr
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Hillebrand, Trevor Ray	I-323-M	Howard Conway
Hinderer, Ross Kenneth	B-009-M	Jay Rotella
Hindle, Allyson	B-267-M	Emmanuel S Buys
Hmiel, Benjamin Isaiah	I-159-M	Vasilii Victorovich Petrenko
Hodge, Brendan Evans	T-295-M	Joseph R Pettit
hogue, brian patrick	O-408-N	Andreas M Thurnherr
Holder, Robert Mc Carley	G-076-M	John Cottle
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Hothem, Larry	G-079-M/S	Terry Wilson
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Ilanko, Tehnuka	G-411-M	Tobias P Fischer
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Jackson, Margaret Scott	I-177-M	Gordon R Bromley
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Jayred, Michael	I-184-M	Sarah Aciego
Jayred, Michael	I-159-M	Vasilii Victorovich Petrenko
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Jenkinson, Colin Barry	O-325-M	Dan Lubin
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Jinnah, Zubair Ali	G-182-N	Matthew Lamanna
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Johnson, Jay A	T-150-M	Mary Albert
Johnson, Kevin Marquez	B-134-M	Gretchen Hofmann
Johnson, Michael Andrew	C-506-M	Michael N Gooseff
Jones, Joseph	A-145-M	Gerald Dwayne Orr
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Kaiser, Henry John	B-043-M	Samuel Bowser
Kaluzienski, Lynn Marie	I-178-M	Gordon S Hamilton
Kambarn, William	T-927-M	Bruce Thoman
Kang, Jae Hwan NMI	A-365-S	Chao-Lin Kuo
Kaplan, Michael	G-095-M	Kathy Licht
Kaplan, Rachel Linnea	C-045-L/P	
Kaplan, Rachel Linnea	C-045-L/P	Hugh William Ducklow
Karentz, Deneb	B-301-L/P	Donal Manahan
Karkare, Kirit S	A-149-S	John Kovac
Karner, James	G-058-M	Ralph Harvey
Karpel, Ethan David	A-365-S	Chao-Lin Kuo
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Kawamura, Hiroyuki Jonathan	A-136-M	Christopher Walker
Kefeli, Sinan NMI	A-149-S	John Kovac
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Kelleher, Cole	T-434-M	Paul Morin
Kelley, Amanda Lynn	B-134-M	Gretchen Hofmann
Kelley, John	A-333-S	Francis Halzen
Kemeny, Preston Cosslett	I-165-M	John A Higgins
Kendall, Traci NMI	B-017-M	Randall Davis
Kim, Ji Hyuk NMI	G-081-M	Phillip Kyle

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Kimball, Peter Wilson	B-259-M	Britney Elyce Schmidt
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Koonce, Michael Pinson	B-043-M	Samuel Bowser
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Kulesa, Craig	A-136-M	Christopher Walker
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Laurent, Glenn Thomas	A-337-M	Pascal Saint-Hilaire
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Lawrence, Justin David	B-259-M	Britney Elyce Schmidt
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Lawson, Kathleen	T-396-M	Curt Szuberla
Le François, Nathalie NM to be confirmed	B-037-L/P	Bill Detrich
Lee, Mi Jung NMI	G-081-M	Phillip Kyle
Lescroel, Amelie NMI	B-031-M	David Ainley
Lesser, David	A-136-M	Christopher Walker
Lesser, David	A-364-M/S	Craig Kulesa
Letchworth, Janet Faith	A-145-M	Gerald Dwayne Orr
Lever, James H	I-178-M	Gordon S Hamilton

Levy, Hila nm	B-025-E/M	Michael John Polito
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Liu, Xiaodong NMI	B-025-E/M	Michael John Polito
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Lu, Muzhou NMI	A-130-M	Xinzhao Chu
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024	C-024-L/P	Friedlaender, Ari
025	B-025-E/M	Polito, Michael
031	B-031-M	Ainley, David
037	B-037-L/P	Detrich, Bill
043	B-043-M	Bowser, Samuel
045	C-045-L/P	Ducklow, Hugh
054	G-054-M	Marchant, David
058	G-058-M	Harvey, Ralph
061	G-061-M	Hansen, Samantha
063	G-063-M	Sumner, Dawn
072	G-072-M	Wannamaker, Philip
073	G-073-M	Panter, Kurt
076	G-076-M	Cottle, John
078	G-078-M	Kemerait, Robert
079	G-079-M/S	Wilson, Terry
081	G-081-M	Kyle, Phillip

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089	**G-089-M**	Wiens, Douglas
090	**G-090-P/S**	Anderson, Kent
094	**G-094-P**	Yu, Zicheng
095	**G-095-M**	Licht, Kathy
102	**A-102-M/S**	Lessard, Marc
106	**A-106-M/S**	Clauer, C.
109	**A-109-M/P/S**	Moore, Robert
111	**A-111-M/S**	Gerrard, Andrew
118	**A-118-S**	Evenson, Paul
119	**A-119-M/S**	Taylor, Michael
119	**A-119-M/S**	Taylor, Michael
120	**A-120-M**	Evenson, Paul
125	**A-125-S**	LaBelle, James
127	**A-127-M**	Barwick, Steven
128	**A-128-S**	LaBelle, James
130	**A-130-M**	Chu, Xinzhao
134	**B-134-M**	Hofmann, Gretchen
136	**A-136-M**	Walker, Christopher
145	**A-145-M**	Orr, Gerald
149	**A-149-S**	Kovac, John
150	**T-150-M**	Albert, Mary
159	**I-159-M**	Petrenko, Vasilii
164	**I-164-S**	Aydin, Murat
165	**I-165-M**	Higgins, John
171	**I-171-M**	Spaulding, Nicole
177	**I-177-M**	Bromley, Gordon
178	**I-178-M**	Hamilton, Gordon
182	**G-182-N**	Lamanna, Matthew
184	**I-184-M**	Aciego, Sarah
190	**I-190-M**	MacAyeal, Douglas

191	I-191-S	Severinghaus, Jeff
193	I-193-M/S	Koutnik, Michelle
203	B-203-L	Sherrell, Robert
212	B-212-L/N	Smith, Craig
214	O-214-L	Sweeney, Colm
217	W-217-M	Glazer, Helen
230	B-230-N	Jenkins, Bethany
231	O-231-P	Gao, Yuan
248	B-248-L/P	Waller, Rhian
256	B-256-P	Lee, Richard
257	O-257-M/S	Butler, James
257	O-257-M/S	Butler, James
259	B-259-M	Schmidt, Britney
260	O-260-L	Sprintall, Janet
264	O-264-P	Butler, James
267	B-267-M	Buys, Emmanuel
268	B-268-L	Loeb, Valerie
272	B-272-M	Smith, Walker
277	I-277-M	Stone, John
279	X-279-M	Polito, Michael
283	O-283-M	Lazzara, Matt
289	B-289-E	Eppley, Dr. Sarah
291	G-291-N	Kirschvink, Joseph
292	B-292-M	Burns, Jennifer
295	T-295-M	Pettit, Joseph
299	T-299-M/S	Carpenter, Paul
300	B-300-L	Ball, Rebecca
301	B-301-L/P	Manahan, Donal
307	B-307-M	Moran, Amy
317	O-317-L	Chereskin, Teresa

323	I-323-M	Conway, Howard
324	O-324-M	Kalnajs, Lars
325	O-325-M	Lubin, Dan
333	A-333-S	Halzen, Francis
337	A-337-M	Saint-Hilaire, Pascal
343	A-343-M/S	Conde, Mark
348	I-348-M	Bromirski, Peter
350	T-350-M	Albert, Mary
364	A-364-M/S	Kulesa, Craig
365	A-365-S	Kuo, Chao-Lin
369	A-369-M/S	Bristow, William
373	A-373-P	Paznukhov, Vadym
379	A-379-S	Carlstrom, John
384	C-384-M	Bell, Robin
396	T-396-M	Szuberla, Curt
404	O-404-L	Stephens, Britton
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410	O-410-N	Kelly, Michael
411	G-411-M	Fischer, Tobias
430	G-430-N	Burdige, David
434	T-434-M	Morin, Paul
438	G-438-M	Mukhopadhyay, Sujoy
468	W-468-M	O'Boyle, Shaun
484	W-484-M	LiCata, Vincent
488	W-488-P	McCarthy, Susan
504	C-504-M	Gooseff, Michael
505	C-505-M	Priscu, John
506	C-506-M	Gooseff, Michael
507	C-507-M	Wall, Diana
509	C-509-M	Lyons, W. Berry

511	**C-511-M**	Doran, Peter
517	**C-517-M**	Fountain, Andrew
525	**C-525-M**	Schwartz, Susan
541	**O-541-L/P**	Stephens, Britton
551	**D-551-M**	Goodge, John
552	**D-552-M**	Goodge, John
927	**T-927-M**	Thoman, Bruce
998	**T-998-P**	Hosticka, Bouvard
ned	**Undefined-P**	Taylor, Michael

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Principal Investigator	Event No.	Project Title
Albert, Mary	T-350-M	Ice Drill Design and Operations (IDDO) support for WAIS Divide
Albert, Mary	T-150-M	IDPO / IDDO - McMurdo
Carpenter, Paul	T-299-M/S	IRIS/PASSCAL seismic support
Hosticka, Bouvard	T-998-P	Operation and maintenance of a CTBT radionuclide monitoring station at Palmer Station
Morin, Paul	T-434-M	The Polar Geospatial Information Center: Joint support
Pettit, Joseph	T-295-M	UNAVCO GPS survey support
Szuberla, Curt	T-396-M	Operation and maintenance of a CTBT class infrasound array at Windless Bight
Thoman, Bruce	T-927-M	NASA/McMurdo Ground Station (MG1)

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Other Science Events

Principal Investigator	Event No.	Project Title
Polito, Michael	X-279-M	Biodiversity and distribution of microbial epi-endolithic communities to studying limits for life in Victoria Land, Antarctica

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Astrophysics and Geospace Sciences

Principal Investigator	Event No.	Project Title
Barwick, Steven	A-127-M	Development of hexagonal radio array for the ARIANNA ultra-high-energy neutrino detector
Bristow, William	A-369-M/S	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
Chu, Xinzhao	A-130-M	LiDAR investigation of middle and upper atmosphere temperature, composition, chemistry, and dynamics at McMurdo, Antarctica
Clauer, C.	A-106-M/S	Polar Experiment Network for Geospace Upper-atmosphere Investigations (PENGUIn): Interhemispheric investigations along the 40-degree magnetic meridian
Conde, Mark	A-343-M/S	High-resolution mapping of thermospheric wind and temperature fields near the equatorward edge of the Antarctic polar cap
Evenson, Paul	A-120-M	Neutron monitor observations of cosmic rays from Jang Bogo and McMurdo Station
Evenson, Paul	A-118-S	Element composition of high-energy solar particles
Gerrard, Andrew	A-111-M/S	Synoptic geospace systems analysis using instrumentation from South Pole and McMurdo Stations
Halzen, Francis	A-333-S	IceCube operations and maintenance
Kovac, John	A-149-S	Imaging the beginning of time from the South Pole: Observations with the full SPUD array
Kulesa, Craig	A-364-M/S	High Elevation Antarctic Terahertz (HEAT) telescopes for Dome A and Ridge A
Kuo, Chao-Lin	A-365-S	Science observation with BICEP3

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		CMB polarization experiment
LaBelle, James	**A-125-S**	Application of the AGO network to energy transfer in the radiation belts and remote sensing of auroral plasma processes
LaBelle, James	**A-128-S**	Earth's electromagnetic environment: Advancing recent discoveries in auroral plasma radio emission research
Lessard, Marc	**A-102-M/S**	Studies of ULF waves associated with solar wind coupling to the magnetosphere and ionosphere
Moore, Robert	**A-109-M/P/S**	Antarctic ELF/VLF observations of Q-bursts, radio atmospherics, and energetic particle precipitation
Orr, Gerald	**A-145-M**	NASA Long Duration Balloon (LDB) support program
Paznukhov, Vadym	**A-373-P**	Troposphere-ionosphere coupling via atmospheric gravity waves
Saint-Hilaire, Pascal	**A-337-M**	Gamma-Ray Imager/Polarimeter for Solar flares (GRIPS)
Taylor, Michael	**A-119-M/S**	Development of an ANtarctic Gravity Wave Imager Network (ANGWIN) for collaborative mesospheric research
Taylor, Michael	**A-119-M/S**	Investigating wave-driven Mesospheric dynamics over South Pole using an advanced Mesospheric temperature mapper
Walker, Christopher	**A-136-M**	Stratospheric Terahertz Observatory (STO)

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Ainley, David	B-031-M	Adélie penguin response to climate change at the individual, colony, and metapopulation levels
Ball, Rebecca	B-300-L	Climatic and environmental constraints on aboveground-belowground linkages and diversity across a latitudinal gradient in Antarctica
Bowser, Samuel	B-043-M	Assembling and mining the genomics of giant Antarctic foraminifera
Burns, Jennifer	B-292-M	The cost of a new fur coat: Interactions between molt and reproduction in Weddell seals
Buys, Emmanuel	B-267-M	Unraveling the genomic and molecular basis of the dive response: Nitric oxide signaling and vasoregulation in the Weddell seal
Davis, Randall	B-017-M	Geomagnetic navigation by Weddell seals beneath Antarctic ice
Detrich, Bill	B-037-L/P	Protein folding and embryogenesis in Antarctic fishes: A comparative approach to environmental stress
Eppley, Dr. Sarah	B-289-E	The functional role of moss in structuring biotic interactions and terrestrialization of Antarctica
Hofmann, Gretchen	B-134-M	Ocean acidification seascape: linking natural variability and anthropogenic changes in pH and temperature to performance in calcifying Antarctic marine invertebrates
Jenkins, Bethany	B-230-N	Investigating iron-binding ligands in Southern Ocean diatom communities: The role of diatom-bacteria associations
Kohut, Josh	B-005-L	Impacts of local oceanographic processes on Adélie penguin foraging ecology over Palmer Deep
Lee, Richard	B-256-P	Winter survival mechanisms and adaptive genetic variation in an Antarctic insect

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Loeb, Valerie	**B-268-L**	Pilot study: Addition of biological sampling to Drake Passage transits of the ARSV Laurence M. Gould
Manahan, Donal	**B-301-L/P**	Biological adaptations to environmental change in Antarctica - an advanced training program for early career scientists
McClintock, James	**B-022-P**	The chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula
Moran, Amy	**B-307-M**	Body size, oxygen, and vulnerability to climate change: a physiological study of Antarctic Pycnogonida
Polito, Michael	**B-025-E/M**	Investigating Holocene shifts in the diets and paleohistory of Antarctic krill predators
Rotella, Jay	**B-009-M**	The demographic consequences of environmental variability and individual heterogeneity in life-history tactics of a long-lived Antarctic marine predator
Schmidt, Britney	**B-259-M**	Astrobiology science and technology for exploring planets (ASTEP)
Sherrell, Robert	**B-203-L**	Natural iron fertilization and bioactive metal dynamics on the Western Antarctic Peninsula shelf
Smith, Craig	**B-212-L/N**	Fjord ecosystem structure and function on the Western Antarctic Peninsula - hotspots of productivity and biodiversity
Smith, Walker	**B-272-M**	Effects of temperature on phytoplankton growth rates
Waller, Rhian	**B-248-L/P**	Cold corals in hot water - investigating the physiological responses of Antarctic coral larvae to climate change stress
Watters, George	**B-006-N**	NOAA / AMLR

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Anderson, Kent	G-090-P/S	Global seismograph station at South Pole and Palmer Stations
Burdige, David	G-430-N	Organic carbon oxidation and iron remobilization by West Antarctic Shelf sediments
Cottle, John	G-076-M	Petrologic constraints on subduction termination from lamprophyres, Ross Orogen, Antarctica
Fischer, Tobias	G-411-M	Erebus volcano: Characterizing a subglacial hydrothermal system and potential effects on CO2 degassing
Hansen, Samantha	G-061-M	CAREER: Deciphering the tectonic history of the Transantarctic Mountains and the Wilkes Subglacial Basin
Harvey, Ralph	G-058-M	Antarctic Search for Meteorites (ANSMET)
Kemerait, Robert	G-078-M	Dry Valley seismic project
Kirschvink, Joseph	G-291-N	Paleomagnetism and magnetostratigraphy of the James Ross Basin, Antarctica
Kyle, Phillip	G-081-M	Mount Erebus Volcano Observatory: Operations, Science, and Outreach (MEVO-OSO)
Lamanna, Matthew	G-182-N	Late Cretaceous-Paleogene vertebrates from Antarctica: Implications for paleobiogeography, paleoenvironment, and extinction in Polar Gondwana
Licht, Kathy	G-095-M	Multidisciplinary analysis of Antarctic blue ice moraine formation and their potential as climate archives over multiple glacial cycles
Marchant, David	G-054-M	West Antarctic Ice Sheet stability, alpine glaciation, and climate variability: A terrestrial perspective from cosmogenic-nuclide dating in McMurdo Sound
Mukhopadhyay, Sujoy	G-438-M	Constraining Plio-Pleistocene West

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		Antarctic Ice Sheet behavior from the Ohio Range and Scott Glacier
Panter, Kurt	**G-073-M**	Investigating Early Miocene sub-ice volcanoes in Antarctica to provide boundary conditions for ice sheet dynamic models and improved understanding of a large diffuse alkaline magma
Sumner, Dawn	**G-063-M**	Microbialite Morphology in Lake Joyce, Antarctica
Swanger, Kate	**G-085-M**	Origin and climatic significance of rock glaciers in the McMurdo Dry Valleys: Assessing spatial and temporal variability
Wannamaker, Philip	**G-072-M**	Magma sources, residence and pathways of Mount Erebus phonolitic volcano, Antarctica, from magnetotelluric resistivity structure
Wiens, Douglas	**G-089-M**	Mantle structure and dynamics of the Ross Sea from a passive seismic deployment on the Ross Ice Shelf
Wilson, Terry	**G-079-M/S**	POLENET Antarctica: Investigating links between geodynamics and ice sheets - Phase 2
Yu, Zicheng	**G-094-P**	Response of carbon accumulation in moss peatbanks to past warm climates in the Antarctic Peninsula

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Aydin, Murat	I-164-S	A 1,500-meter ice core from South Pole
Bromirski, Peter	I-348-M	Dynamic response of the Ross Ice Shelf to wave-induced vibrations
Bromley, Gordon	I-177-M	Potential direct geologic constraint of ice sheet thickness in the central Transantarctic Mountains during the Pliocene warm period
Conway, Howard	I-323-M	Grounding line dynamics: Crary Ice Rise revisited
Hamilton, Gordon	I-178-M	Flow and fracture dynamics in an ice shelf lateral margin: Observations and modeling of the McMurdo Shear Zone
Higgins, John	I-165-M	Window into 40 kyr world from climate records in one Ma ice from the Allan Hills blue ice area
Koutnik, Michelle	I-193-M/S	Characterization of upstream ice and firn dynamics affecting the South Pole Ice (SPICE) core
MacAyeal, Douglas	I-190-M	Impact of supraglacial lakes on ice-shelf stability
Petrenko, Vasilii	I-159-M	The Taylor Glacier, Antarctica, horizontal ice core: Exploring changes in the natural methane budget in a warming world and expanding the paleo-archive
Severinghaus, Jeff	I-191-S	Inert gas and methane based climate records throughout the South Pole deep ice core
Spaulding, Nicole	I-171-M	Allan HILL's Englacial Site (AHILLES) selection
Stone, John	I-277-M	EXPROBE-WAIS: Exposed rock beneath the West Antarctic Ice Sheet, a test for interglacial ice sheet collapse

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Ocean and Atmospheric Sciences

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Butler, James	O-257-M/S	South Pole monitoring for climatic change
Butler, James	O-264-P	Collection of atmospheric air for the NOAA/GMD worldwide flask-sampling network
Butler, James	O-257-M/S	UV measurements at McMurdo Station for the NOAA/Global Monitoring Division (GMD) Antarctic UV network
Chereskin, Teresa	O-317-L	Southern Ocean current observations from the U.S. Antarctic research vessels
Gao, Yuan	O-231-P	Quantifying atmospheric iron properties over the Western Antarctic Peninsula
Kalnajs, Lars	O-324-M	High-resolution study of atmosphere, ice, and aerosol interactions in coastal Antarctica
Kelly, Michael	O-410-N	Ocean Observatories Initiative (OOI) Southern Hemisphere cruises
Lazzara, Matt	O-283-M	Antarctic Automatic Weather Station (AWS) program
Lubin, Dan	O-325-M	Department of Energy ARM West Antarctic Radiation Experiment (AWARE)
Sprintall, Janet	O-260-L	The Drake Passage high-density XBT/XCTD program
Stephens, Britton	O-404-L	High-resolution underway air-sea observations in Drake Passage for climate science
Stephens, Britton	O-541-L/P	The O2/N2 ratio and CO2 airborne Southern Ocean (ORCAS) study
Sweeney, Colm	O-214-L	High-resolution underway air-sea observations in Drake Passage for climate science
Thurnherr, Andreas	O-408-N	Flow, turbulence, and mixing in mid-ocean ridge fracture-zone canyons

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Bell, Robin	C-384-M	A systems approach to understanding the Ross Ocean and ice Shelf Environment, and Tectonic setting Through Aerogeophysical surveys and modeling (ROSETTA)
Doran, Peter	C-511-M	McMurdo LTER - Lakes: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Ducklow, Hugh	C-045-L/P	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Fountain, Andrew	C-517-M	The McMurdo Dry Valleys: A landscape on the threshold of change
Fraser, William	C-013-L/P	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Friedlaender, Ari	C-024-L/P	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Gooseff, Michael	C-506-M	McMurdo LTER - Streams: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Gooseff, Michael	C-504-M	McMurdo LTER - Glaciers: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Lyons, W. Berry	C-509-M	McMurdo LTER - Geochemistry: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Martinson, Doug	C-021-L	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-

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		ice influenced pelagic ecosystem
Priscu, John	**C-505-M**	McMurdo LTER - Lakes: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Schofield, Oscar	**C-019-L/P**	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Schwartz, Susan	**C-525-M**	High-resolution heterogeneity at the base of Whillans Ice Stream and its control on ice dynamics
Steinberg, Deborah	**C-020-L**	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Wall, Diana	**C-507-M**	McMurdo LTER - Soils: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program

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Glazer, Helen	W-217-M	Above, below and within the ice
LiCata, Vincent	W-484-M	Persistence of vision: Antarctica
McCarthy, Susan	W-488-P	Observing the snowy sheathbill and its behavior
O'Boyle, Shaun	W-468-M	Portraits of place in Antarctica

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Goodge, John	D-551-M	Phase 2 development of a Rapid Access Ice Drilling (RAID) platform for research in Antarctica
Goodge, John	D-552-M	Phase 2 development of a Rapid Access Ice Drilling (RAID) platform for research in Antarctica / DOSECC Exploration Services (DES)

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Butler, James	O-257-M/S	South Pole monitoring for climatic change
Butler, James	O-257-M/S	UV measurements at McMurdo Station for the NOAA/Global Monitoring Division (GMD) Antarctic UV network
Carlstrom, John	A-379-S	Cosmological research with the 10-meter South Pole Telescope
Carpenter, Paul	T-299-M/S	IRIS/PASSCAL seismic support
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Evenson, Paul	A-118-S	Element composition of high-energy solar particles
Gerrard, Andrew	A-111-M/S	Synoptic geospace systems analysis using instrumentation from South Pole and McMurdo Stations
Halzen, Francis	A-333-S	IceCube operations and maintenance
Koutnik, Michelle	I-193-M/S	Characterization of upstream ice and firn dynamics affecting the South Pole Ice (SPICE) core
Kovac, John	A-149-S	Imaging the beginning of time from the South Pole: Observations with the

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		full SPUD array
Kulesa, Craig	**A-364-M/S**	High Elevation Antarctic Terahertz (HEAT) telescopes for Dome A and Ridge A
Kuo, Chao-Lin	**A-365-S**	Science observation with BICEP3 CMB polarization experiment
LaBelle, James	**A-125-S**	Application of the AGO network to energy transfer in the radiation belts and remote sensing of auroral plasma processes
LaBelle, James	**A-128-S**	Earth's electromagnetic environment: Advancing recent discoveries in auroral plasma radio emission research
Lessard, Marc	**A-102-M/S**	Studies of ULF waves associated with solar wind coupling to the magnetosphere and ionosphere
Moore, Robert	**A-109-M/P/S**	Antarctic ELF/VLF observations of Q-bursts, radio atmospherics, and energetic particle precipitation
Severinghaus, Jeff	**I-191-S**	Inert gas and methane based climate records throughout the South Pole deep ice core
Taylor, Michael	**A-119-M/S**	Development of an ANtarctic Gravity Wave Imager Network (ANGWIN) for collaborative mesospheric research
Taylor, Michael	**A-119-M/S**	Investigating wave-driven Mesospheric dynamics over South Pole using an advanced Mesospheric temperature mapper
Wilson, Terry	**G-079-M/S**	POLENET Antarctica: Investigating links between geodynamics and ice sheets - Phase 2

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McMurdo Station

Principal Investigator	Event No.	Project Title
Aciego, Sarah	I-184-M	Climate controls on aerosol fluxes to Taylor Dome and Taylor Glacier
Ainley, David	B-031-M	Adélie penguin response to climate change at the individual, colony, and metapopulation levels
Albert, Mary	T-350-M	Ice Drill Design and Operations (IDDO) support for WAIS Divide
Albert, Mary	T-150-M	IDPO / IDDO - McMurdo
Barwick, Steven	A-127-M	Development of hexagonal radio array for the ARIANNA ultra-high-energy neutrino detector
Bell, Robin	C-384-M	A systems approach to understanding the Ross Ocean and ice Shelf Environment, and Tectonic setting Through Aerogeophysical surveys and modeling (ROSETTA)
Bowser, Samuel	B-043-M	Assembling and mining the genomics of giant Antarctic foraminifera
Bristow, William	A-369-M/S	McMurdo and South Pole SuperDARN: Investigation of the ionospheric dynamics and magnetosphere-ionosphere coupling in Antarctica
Bromirski, Peter	I-348-M	Dynamic response of the Ross Ice Shelf to wave-induced vibrations
Bromley, Gordon	I-177-M	Potential direct geologic constraint of ice sheet thickness in the central Transantarctic Mountains during the Pliocene warm period
Burns, Jennifer	B-292-M	The cost of a new fur coat: Interactions between molt and reproduction in Weddell seals
Butler, James	O-257-M/S	South Pole monitoring for climatic change
Butler, James	O-257-M/S	UV measurements at McMurdo Station for the NOAA/Global Monitoring Division (GMD) Antarctic UV network

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Buys, Emmanuel	**B-267-M**	Unraveling the genomic and molecular basis of the dive response: Nitric oxide signaling and vasoregulation in the Weddell seal
Carpenter, Paul	**T-299-M/S**	IRIS/PASSCAL seismic support
Chu, Xinzhao	**A-130-M**	LiDAR investigation of middle and upper atmosphere temperature, composition, chemistry, and dynamics at McMurdo, Antarctica
Clauer, C.	**A-106-M/S**	Polar Experiment Network for Geospace Upper-atmosphere Investigations (PENGUIn): Interhemispheric investigations along the 40-degree magnetic meridian
Conde, Mark	**A-343-M/S**	High-resolution mapping of thermospheric wind and temperature fields near the equatorward edge of the Antarctic polar cap
Conway, Howard	**I-323-M**	Grounding line dynamics: Crary Ice Rise revisited
Cottle, John	**G-076-M**	Petrologic constraints on subduction termination from lamprophyres, Ross Orogen, Antarctica
Davis, Randall	**B-017-M**	Geomagnetic navigation by Weddell seals beneath Antarctic ice
Doran, Peter	**C-511-M**	McMurdo LTER - Lakes: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Evenson, Paul	**A-120-M**	Neutron monitor observations of cosmic rays from Jang Bogo and McMurdo Station
Fischer, Tobias	**G-411-M**	Erebus volcano: Characterizing a subglacial hydrothermal system and potential effects on CO2 degassing
Fountain, Andrew	**C-517-M**	The McMurdo Dry Valleys: A landscape on the threshold of change
Gerrard, Andrew	**A-111-M/S**	Synoptic geospace systems analysis using instrumentation from South Pole and McMurdo Stations
Glazer, Helen	**W-217-M**	Above, below and within the ice
Goodge, John	**D-551-M**	Phase 2 development of a Rapid Access Ice Drilling (RAID) platform for research in Antarctica
Goodge, John	**D-552-M**	Phase 2 development of a Rapid Access Ice Drilling (RAID) platform for research in Antarctica / DOSECC Exploration Services (DES)

Gooseff, Michael	C-506-M	McMurdo LTER - Streams: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Gooseff, Michael	C-504-M	McMurdo LTER - Glaciers: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Hamilton, Gordon	I-178-M	Flow and fracture dynamics in an ice shelf lateral margin: Observations and modeling of the McMurdo Shear Zone
Hansen, Samantha	G-061-M	CAREER: Deciphering the tectonic history of the Transantarctic Mountains and the Wilkes Subglacial Basin
Harvey, Ralph	G-058-M	Antarctic Search for Meteorites (ANSMET)
Higgins, John	I-165-M	Window into 40 kyr world from climate records in one Ma ice from the Allan Hills blue ice area
Hofmann, Gretchen	B-134-M	Ocean acidification seascape: linking natural variability and anthropogenic changes in pH and temperature to performance in calcifying Antarctic marine invertebrates
Kalnajs, Lars	O-324-M	High-resolution study of atmosphere, ice, and aerosol interactions in coastal Antarctica
Kemerait, Robert	G-078-M	Dry Valley seismic project
Koutnik, Michelle	I-193-M/S	Characterization of upstream ice and firn dynamics affecting the South Pole Ice (SPICE) core
Kulesa, Craig	A-364-M/S	High Elevation Antarctic Terahertz (HEAT) telescopes for Dome A and Ridge A
Kyle, Phillip	G-081-M	Mount Erebus Volcano Observatory: Operations, Science, and Outreach (MEVO-OSO)
Lazzara, Matt	O-283-M	Antarctic Automatic Weather Station (AWS) program
Lessard, Marc	A-102-M/S	Studies of ULF waves associated with solar wind coupling to the magnetosphere and ionosphere
LiCata, Vincent	W-484-M	Persistence of vision: Antarctica
Licht, Kathy	G-095-M	Multidisciplinary analysis of Antarctic blue ice moraine formation and their

		potential as climate archives over multiple glacial cycles
Lubin, Dan	**O-325-M**	Department of Energy ARM West Antarctic Radiation Experiment (AWARE)
Lyons, W. Berry	**C-509-M**	McMurdo LTER - Geochemistry: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
MacAyeal, Douglas	**I-190-M**	Impact of supraglacial lakes on ice-shelf stability
Marchant, David	**G-054-M**	West Antarctic Ice Sheet stability, alpine glaciation, and climate variability: A terrestrial perspective from cosmogenic-nuclide dating in McMurdo Sound
Moore, Robert	**A-109-M/P/S**	Antarctic ELF/VLF observations of Q-bursts, radio atmospherics, and energetic particle precipitation
Moran, Amy	**B-307-M**	Body size, oxygen, and vulnerability to climate change: a physiological study of Antarctic Pycnogonida
Morin, Paul	**T-434-M**	The Polar Geospatial Information Center: Joint support
Mukhopadhyay, Sujoy	**G-438-M**	Constraining Plio-Pleistocene West Antarctic Ice Sheet behavior from the Ohio Range and Scott Glacier
O'Boyle, Shaun	**W-468-M**	Portraits of place in Antarctica
Orr, Gerald	**A-145-M**	NASA Long Duration Balloon (LDB) support program
Panter, Kurt	**G-073-M**	Investigating Early Miocene sub-ice volcanoes in Antarctica to provide boundary conditions for ice sheet dynamic models and improved understanding of a large diffuse alkaline magma
Petrenko, Vasilii	**I-159-M**	The Taylor Glacier, Antarctica, horizontal ice core: Exploring changes in the natural methane budget in a warming world and expanding the paleo-archive
Pettit, Joseph	**T-295-M**	UNAVCO GPS survey support
Polito, Michael	**X-279-M**	Biodiversity and distribution of microbial epi-endolithic communities to studying limits for life in Victoria Land, Antarctica
Polito, Michael	**B-025-E/M**	Investigating Holocene shifts in the diets and paleohistory of Antarctic krill

		predators
Priscu, John	**C-505-M**	McMurdo LTER - Lakes: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Rotella, Jay	**B-009-M**	The demographic consequences of environmental variability and individual heterogeneity in life-history tactics of a long-lived Antarctic marine predator
Saint-Hilaire, Pascal	**A-337-M**	Gamma-Ray Imager/Polarimeter for Solar flares (GRIPS)
Schmidt, Britney	**B-259-M**	Astrobiology science and technology for exploring planets (ASTEP)
Schwartz, Susan	**C-525-M**	High-resolution heterogeneity at the base of Whillans Ice Stream and its control on ice dynamics
Smith, Walker	**B-272-M**	Effects of temperature on phytoplankton growth rates
Spaulding, Nicole	**I-171-M**	Allan HILL's Englacial Site (AHILLES) selection
Stone, John	**I-277-M**	EXPROBE-WAIS: Exposed rock beneath the West Antarctic Ice Sheet, a test for interglacial ice sheet collapse
Sumner, Dawn	**G-063-M**	Microbialite Morphology in Lake Joyce, Antarctica
Swanger, Kate	**G-085-M**	Origin and climatic significance of rock glaciers in the McMurdo Dry Valleys: Assessing spatial and temporal variability
Szuberla, Curt	**T-396-M**	Operation and maintenance of a CTBT class infrasound array at Windless Bight
Taylor, Michael	**A-119-M/S**	Development of an ANtarctic Gravity Wave Imager Network (ANGWIN) for collaborative mesospheric research
Taylor, Michael	**A-119-M/S**	Investigating wave-driven Mesospheric dynamics over South Pole using an advanced Mesospheric temperature mapper
Thoman, Bruce	**T-927-M**	NASA/McMurdo Ground Station (MG1)
Walker, Christopher	**A-136-M**	Stratospheric Terahertz Observatory (STO)
Wall, Diana	**C-507-M**	McMurdo LTER - Soils: Increased connectivity in a polar desert resulting

		from climate warming: McMurdo Dry Valleys LTER Program
Wannamaker, Philip	G-072-M	Magma sources, residence and pathways of Mount Erebus phonolitic volcano, Antarctica, from magnetotelluric resistivity structure
Wiens, Douglas	G-089-M	Mantle structure and dynamics of the Ross Sea from a passive seismic deployment on the Ross Ice Shelf
Wilson, Terry	G-079-M/S	POLENET Antarctica: Investigating links between geodynamics and ice sheets - Phase 2

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Palmer Station

Principal Investigator	Event No.	Project Title
Anderson, Kent	G-090-P/S	Global seismograph station at South Pole and Palmer Stations
Butler, James	O-264-P	Collection of atmospheric air for the NOAA/GMD worldwide flask-sampling network
Detrich, Bill	B-037-L/P	Protein folding and embryogenesis in Antarctic fishes: A comparative approach to environmental stress
Ducklow, Hugh	C-045-L/P	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Fraser, William	C-013-L/P	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Friedlaender, Ari	C-024-L/P	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Gao, Yuan	O-231-P	Quantifying atmospheric iron properties over the Western Antarctic Peninsula
Hosticka, Bouvard	T-998-P	Operation and maintenance of a CTBT radionuclide monitoring station at Palmer Station
Lee, Richard	B-256-P	Winter survival mechanisms and adaptive genetic variation in an Antarctic insect
Manahan, Donal	B-301-L/P	Biological adaptations to environmental change in Antarctica - an advanced training program for early career scientists
McCarthy, Susan	W-488-P	Observing the snowy sheathbill and its behavior
McClintock, James	B-022-P	The chemical ecology of shallow-water marine macroalgae and

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		invertebrates on the Antarctic Peninsula
Moore, Robert	**A-109-M/P/S**	Antarctic ELF/VLF observations of Q-bursts, radio atmospherics, and energetic particle precipitation
Paznukhov, Vadym	**A-373-P**	Troposphere-ionosphere coupling via atmospheric gravity waves
Schofield, Oscar	**C-019-L/P**	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Stephens, Britton	**O-541-L/P**	The O2/N2 ratio and CO2 airborne Southern Ocean (ORCAS) study
Taylor, Michael	**Undefined-P**	Continental-Scale Studies of Mesospheric Dynamics Using the Antarctic Gravity Wave Instrument Network (ANGWIN)
Waller, Rhian	**B-248-L/P**	Cold corals in hot water - investigating the physiological responses of Antarctic coral larvae to climate change stress
Yu, Zicheng	**G-094-P**	Response of carbon accumulation in moss peatbanks to past warm climates in the Antarctic Peninsula

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RVIB Nathaniel B. Palmer

Principal Investigator	Event No.	Project Title
Burdige, David	G-430-N	Organic carbon oxidation and iron remobilization by West Antarctic Shelf sediments
Jenkins, Bethany	B-230-N	Investigating iron-binding ligands in Southern Ocean diatom communities: The role of diatom-bacteria associations
Kelly, Michael	O-410-N	Ocean Observatories Initiative (OOI) Southern Hemisphere cruises
Kirschvink, Joseph	G-291-N	Paleomagnetism and magnetostratigraphy of the James Ross Basin, Antarctica
Lamanna, Matthew	G-182-N	Late Cretaceous-Paleogene vertebrates from Antarctica: Implications for paleobiogeography, paleoenvironment, and extinction in Polar Gondwana
Smith, Craig	B-212-L/N	Fjord ecosystem structure and function on the Western Antarctic Peninsula - hotspots of productivity and biodiversity
Taylor, Michael	Undefined-P	Continental-Scale Studies of Mesospheric Dynamics Using the Antarctic Gravity Wave Instrument Network (ANGWIN)
Thurnherr, Andreas	O-408-N	Flow, turbulence, and mixing in mid-ocean ridge fracture-zone canyons
Watters, George	B-006-N	NOAA / AMLR

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ARSV Laurence M. Gould

Principal Investigator	Event No.	Project Title
Ball, Rebecca	B-300-L	Climatic and environmental constraints on aboveground-belowground linkages and diversity across a latitudinal gradient in Antarctica
Chereskin, Teresa	O-317-L	Southern Ocean current observations from the U.S. Antarctic research vessels
Detrich, Bill	B-037-L/P	Protein folding and embryogenesis in Antarctic fishes: A comparative approach to environmental stress
Ducklow, Hugh	C-045-L/P	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Fraser, William	C-013-L/P	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Friedlaender, Ari	C-024-L/P	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Kohut, Josh	B-005-L	Impacts of local oceanographic processes on Adélie penguin foraging ecology over Palmer Deep
Loeb, Valerie	B-268-L	Pilot study: Addition of biological sampling to Drake Passage transits of the ARSV Laurence M. Gould
Manahan, Donal	B-301-L/P	Biological adaptations to environmental change in Antarctica - an advanced training program for early career scientists
Martinson, Doug	C-021-L	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem

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Schofield, Oscar	C-019-L/P	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Sherrell, Robert	B-203-L	Natural iron fertilization and bioactive metal dynamics on the Western Antarctic Peninsula shelf
Smith, Craig	B-212-L/N	Fjord ecosystem structure and function on the Western Antarctic Peninsula - hotspots of productivity and biodiversity
Sprintall, Janet	O-260-L	The Drake Passage high-density XBT/XCTD program
Steinberg, Deborah	C-020-L	Palmer, Antarctica Long Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Stephens, Britton	O-404-L	High-resolution underway air-sea observations in Drake Passage for climate science
Stephens, Britton	O-541-L/P	The O2/N2 ratio and CO2 airborne Southern Ocean (ORCAS) study
Sweeney, Colm	O-214-L	High-resolution underway air-sea observations in Drake Passage for climate science
Waller, Rhian	B-248-L/P	Cold corals in hot water - investigating the physiological responses of Antarctic coral larvae to climate change stress

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Special Projects

Principal Investigator	Event No.	Project Title
Eppley, Dr. Sarah	B-289-E	The functional role of moss in structuring biotic interactions and terrestrialization of Antarctica
Polito, Michael	B-025-E/M	Investigating Holocene shifts in the diets and paleohistory of Antarctic krill predators
Taylor, Michael	Undefined-P	Continental-Scale Studies of Mesospheric Dynamics Using the Antarctic Gravity Wave Instrument Network (ANGWIN)

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Project Detail

Project Title

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

Summary

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

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Sune Tamm / Ryan Wallace

Principal Investigator

Dr. David Ainley
dainley@penguinscience.com

H.T. Harvey & Associates
Los Gatos, California

Project Web Site:
http://www.penguinscience.com

Location

Supporting Stations: McMurdo Station
Research Locations: Capes Crozier and Royds

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, countering the long-standing assumption that Adélie penguins are highly philopatric. This project is a collaboration of six co-PIs from the United States, New Zealand, and France and will continue the outreach and education program, including webisodes and PenguinScience.com.

Field Season Overview

The project continues an effort begun in 1996. Based out of McM Station, we will deploy camps to Capes Crozier and Royds. We will remain mostly at our two field camps, with

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different team members (2-3) at each; some switching of persons perhaps among camps during the season. Our field season will be from late Nov until late January, which covers most of the Adelie Penguin nesting season. We will be spending a lot of effort hiking about looking for penguins previously banded as chicks, logging their breeding status as well. We will continue our operation of computerized weighbridges to log trip duration and food loads at Crozier. This species of penguin does not mature until 3-8 years of age, thus, even after 19 years, we are just beginning to see oldest breeders among the birds we have banded each year as chicks.

Work on the educational 'Penguin Science' webisodes and website will continue through our efforts at Cape Royds. The educational program as developed in previous seasons will continue during this one.

Deploying Team Members

- David Ainley (PI)
- Katie Dugger (Co-PI)
- Megan Elrod
- Amelie Lescroel
- Jean Pennycook
- Anne Schmidt
- Arvind Varsani

2015-2016 USAP Field Season
Project Detail

Project Title

A 1,500-Meter Ice Core From South Pole

Summary

Event Number:
I-164-S
NSF/PLR Award 1142517

Program Manager:
Dr. Julie Palais

ASC POC/Implementer:
Samina Ouda / Leah Street

Principal Investigator

Dr. Murat Aydin
maydin@uci.edu

University of California Irvine
Earth System Science
Irvine, California

Project Web Site:
http://spicecore.org/

Location

Supporting Stations: South Pole Station
Research Locations: Field sites near South Pole Station

Description

The South Pole Ice Core (SPICE Core) project will collect a 1500-meter ice core from a site within five kilometers of the South Pole Station. The ice core will provide an environmental record spanning approximately 40,000 years that will be used to investigate the magnitude and timing of changes in climate and climate forcing through time. The target of 40,000 years includes the transition from the peak of the last glacial period when ice sheets were at their maximum extent, referred to as the Last Glacial Maximum (LGM), to the present warm period (the Holocene) called an interglacial period. Collecting an ice core from the South Pole will provide researchers with one of the best trace gas records possible due to the very cold temperatures and low impurity levels at the South Pole, both of which enable more accurate measurement of gases that exist at very low concentrations.

Field Season Overview

Ten participants will reside at the Elevated Station and will commute daily to the drill site. Using an Intermediate Depth Drill (supplied by I-164-S/IDDO) they will drill from the 738 m point, achieved in 2014-15 season, down to 1500 meters and will collect ice cores. If time allows, drilling and coring may continue to 1600 m. The cores will be flown by LC-130 aircraft to McMurdo Station where they will be housed in either a SAFECORE freezer, or at the Ice Core Transfer Facility, until they are shipped north on the cargo vessel.

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Deploying Team Members

- Murat Aydin (PI)
- Grant Boeckmann
- John Fegyveresi
- Jay Johnson
- Emma Kahle
- Zachary Meulemans
- Elizabeth Morton
- Melinda Nicewonger
- Shawntel Stapleton
- Eric Steig (Co-PI)
- Dominic Winski
- Nicholas Wipperfurth

2015-2016 USAP Field Season
Project Detail

Project Title

Development Of Hexagonal Radio Array For The ARIANNA Ultra-High-Energy Neutrino Detector

Summary

Event Number:
A-127-M
NSF/PLR Award 0970175

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Judy Shiple / Meghan Walker

Principal Investigator

Dr. Steven Barwick
barwick@cosmic.ps.uci.edu

University of California Irvine
Department of Physics and Astronomy
Irvine, California

Project Web Site:
http://arianna.ps.uci.edu/

Location

Supporting Stations: McMurdo Station
Research Locations: ARIANNA site at Moore's Bay

Description

The ARIANNA concept uses the Ross Ice Shelf near the coast of Antarctica 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 probe for physics beyond the standard model by measuring the neutrino cross-section at the center of mass energies near 100 Tera-electron-Volts. This is made possible by the capability of ARIANNA to capitalize on several remarkable properties of the Ross Ice Shelf. For example, shelf ice is now measured to be 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 to the surface antennas. The ability to operate continuously for nearly six months (or possibly more with the addition of wind power), the low energy threshold (~3x1017 electron-Volts), and a field of view of more than half the sky, combine to make ARIANNA a highly sensitive neutrino detector.

Field Season Overview

Antarctic Ross Ice-Shelf Antenna Neutrino Array (ARIANNA) is a neutrino telescope consisting of Ultra-High Energy detector stations arranged in a grid on the Ross Ice Shelf. This season, four team members will travel by helicopter to the ARIANNA camp site at

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Moore's Bay on the Ross Ice Shelf. They will stay for two weeks to perform maintenance on the ARIANNA array. An ASC field coordinator will provide put-in and pull-out assistance for a maximum of four days.

Deploying Team Members

- Steven Barwick (PI)
- Anna Nelles
- Christopher Persichilli
- Corey Reed

2015-2016 USAP Field Season
Project Detail

Project Title

A Systems Approach To Understanding The Ross Ocean And Ice Shelf Environment, And Tectonic Setting Through Aerogeophysical Surveys And Modeling (ROSETTA)

Summary

Event Number:
C-384-M
NSF/PLR Award 1443534

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Judy Shiple / Jennifer Rhemann

Principal Investigator

Dr. Robin E Bell
robinb@ldeo.columbia.edu

Columbia University
Palisades, New York

Project Web Site:
http://www.ldeo.columbia.edu/research/marine-geology-geophysics/icepod-development-ice-imaging-system-monitoring-changing-ice-she

Location

Supporting Stations: McMurdo Station
Research Locations: Ross Ice Shelf

Description

The Ross Ocean and ice Shelf Environment, and Tectonic setting Through Aerogeophysical surveys and modeling (ROSETTA) project aims to advance understanding of the dynamics of the ice-shelf system. To accomplish this, ROSETTA researchers will collect new high-resolution data that will determine the thickness and structure of the Ross Ice Shelf (RIS) and characterize the bedrock and seabed bathymetry under the ice shelf. The ROSETTA surveys will acquire magnetics and gravity data for geologic interpretations, and radar, LiDAR, and imagery for mapping the RIS fine-structure, including crevasses and channels, debris, and the distribution of marine ice and accumulation.

Field Season Overview

During this first of two proposed field seasons, the ROSETTA team will acquire aerogeophysical data using the IcePod sensor suite and two gravimeters installed in an LC-130 aircraft provided by the New York Air National Guard 109th Airlift Wing. Data collection will be generally along 10-km spaced east-west lines and 55-km spaced tie lines over the entire RIS.

Deploying Team Members

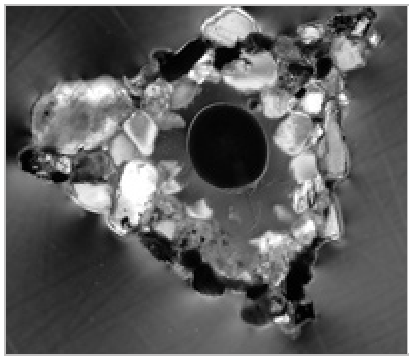
Christopher Bertinato
Wing Chu
Indrani Das
Tejendra Dhakal
Nicholas Frearson (Co-PI)
Sarah Starke
Fabio Tontini

2015-2016 USAP Field Season
Project Detail

Project Title

Assembling And Mining The Genomics Of Giant Antarctic Foraminifera

Summary



Event Number:
B-043-M
NSF/PLR Award 1341612

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Sune Tamm / Elizabeth Kaufmann

Principal Investigator

Dr. Samuel Bowser
Samuel.Bowser@health.ny.gov

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

Project Web Site:
http://www.icelabyrinth.blogspot.com

Location

Supporting Stations: McMurdo Station
Research Locations: New Harbor Camp / Explorers Cove / Cape Bernacchi

Description

This project will study the evolution, genome structure, and associated biomes of foraminiferan protists (forams). It will use next-generation sequencing (NGS) and simple microdissection methods to obtain and analyze nuclear and mitochondrial genomes from crown members of three distinct, early-evolving foraminiferal clades: notodendrodids, crithioninids, and astramminids. In an effort to better understand factors involved in both the large-scale and microdistribution of forams, researchers will also use NGS to characterize the in-situ prokaryotic assemblages of notodendrodids and compare them to reference sediment microbiomes.

Field Season Overview

A team of six will travel by helicopter to New Harbor where they will stay at an established camp to conduct their dives. From there, they will make day trips by ATV and snowmobile to additional sea-ice dive sites. The divers plan to conduct an estimated 40 dive missions to collect forams and sediment cores.

Deploying Team Members

- Amanda Andreas
- Henry Kaiser

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

Project Web Sites

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More Information

Additional information pertaining to the 2015-2016 Field Season.

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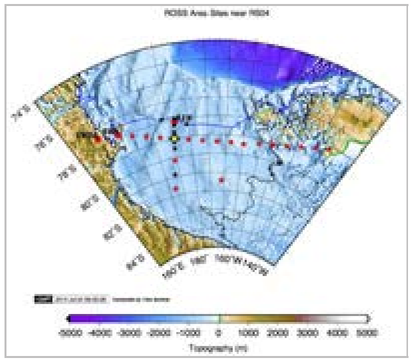
Samuel Bowser (PI)	Michael Koonce
Paul Cziko	Laura Von Rosk

2015-2016 USAP Field Season
Project Detail

Project Title

Dynamic Response Of The Ross Ice Shelf To Wave-Induced Vibrations

Summary



Event Number:
I-348-M
NSF/PLR Award 1246151

Program Manager:
Dr. Julie Palais

ASC POC/Implementer:
Sune Tamm / Elizabeth Kauffman

Principal Investigator

Dr. Peter D Bromirski
pbromirski@ucsd.edu

Scripps Institution of Oceanography
Physical Oceanography Research Division
San Diego, California

Project Web Site:
http://scripps.ucsd.edu/centers/iceshelfvibes/

Location

Supporting Stations: McMurdo Station
Research Locations: Ross Ice Shelf

Description

This project will conduct field observations and numerical simulations to discover how ocean-wave induced vibrations on ice shelves in general, and the Ross Ice Shelf (RIS) in particular, can be used to: (1) Infer spatial and temporal variability of ice shelf mechanical properties; (2) Infer bulk elastic properties from signal-propagation characteristics; and (3) Determine whether the RIS response to infragravity (IG) wave forcing, observed distant from the front, propagates as stress waves from the front, or is 'locally' generated by IG wave energy penetrating the RIS cavity. Ocean gravity waves are dynamic elements of the global ocean environment that are affected by ocean warming and changes in ocean and atmospheric circulation patterns. Their evolution may drive changes in ice-shelf stability by both mechanical interactions and potentially increased basal melting, which in turn feed back on sea-level rise.

Field Season Overview

Field team members will travel by Basler aircraft to the Ross Ice Shelf where they will establish a tent camp for two to three weeks. From there, they will travel by snowmobile to 10 sites installed last season. They will use Twin Otter aircraft from McMurdo Station to access six additional stations. They will spend approximately three hours at each site retrieving data. At the end of their field season, the team will again travel by Basler back to McMurdo Station. They will be installing nine GPS units at currently installed seismic stations.

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Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

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Deploying Team Members

Peter Bromirski (PI)	Anja Diez
Zhao Chen	Jerome Wanatick

2015-2016 USAP Field Season
Project Detail

Project Title

The Cost Of A New Fur Coat: Interactions Between Molt And Reproduction In Weddell Seals

Summary

Event Number:
B-292-M
NSF/PLR Award 1246463

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Sune Tamm / Meghan Walker

Principal Investigator

Dr. Jennifer Burns
jmburns@uaa.alaska.edu

University of Alaska Anchorage
Anchorage, Alaska

Project Web Site:
http://https://www.facebook.com/weddellsealbiology

Location

Supporting Stations: McMurdo Station
Research Locations: Big Razorback Island / Hutton Cliffs / McMurdo Sound / Ross Ice Shelf / Scott Base

Description

Researchers will determine mechanisms linking Weddell seal reproduction and molt timing and how late-summer condition impacts next season's reproductive success. They will assess physiological condition (lipid stores, hormone profiles) at the reproductive period's end, monitor behavioral patterns (diving activity, diet) between reproduction and molt, and assess physiological condition and pregnancy status during molting. By targeting known-age females with various prior reproductive timing, these measurements can be used to assess whether molt timing is more responsive to hormonal or energy indices. By targeting females early and late in the molt cycle, researchers will characterize the molting process histologically and physiologically and gather new and important data on factors influencing the onset of active gestation and/or miscarriage rates. The data will provide baseline values for models predicting the impacts of changing climate and food availability during the austral summer on molt timing and future reproductive success. Through collaboration with B-009-M (Rotella), molt status will be linked to reproductive performance. The data will be used to generate state-dependent hierarchical data, stage-projection matrix, and/or energetic models.

Field Season Overview

This team will continue their research of the Weddell Seal population in the Ross Sea to better understand the interactions between reproduction, molting, and physiological

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condition as well as the demographic consequences of trade-offs between these factors. Researchers will deploy twice during the field season in order to assess animal condition at the end of lactation and again during the molt. The team will also continue collaborations with another Weddell Seal research group, B-009-M. During the first deployment, field team members will be based out of McMurdo Station and will take daily trips onto the sea ice by snow machine to locate specific adult female Weddell seals, measure their health and condition, and equip them with tags that will monitor diving patterns and aid in relocation. Researchers hope to handle 15-24 adult females. The work will be focused around the breeding colonies within Erebus Bay. During the second deployment, the team will again be based out of McMurdo Station. They hope to relocate animals handled earlier in the season to assess reproductive condition and health status. Work during this period will be conducted during day trips via snow machine and via helicopter. An ASC mountaineer/field coordinator will provide sea ice support as necessary.

Deploying Team Members

- Gregg Adams
- Roxanne Beltran
- Rachel Berngartt
- Christopher Burns
- Jennifer Burns (PI)
- Alice Eilers
- Amy Kirkham
- Robert McCorkell
- Michelle Shero
- Skyla Walcott

2015-2016 USAP Field Season
Project Detail

Project Title

South Pole Monitoring For Climatic Change

Summary

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

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Judy Shiple / Paul Sullivan

Principal Investigator

Dr. James Hall Butler
James.H.Butler@noaa.gov

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

Project Web Site:
http://www.esrl.noaa.gov/gmd/

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: Atmospheric Research Laboratory (ARO)

Description

At the South Pole, the National Oceanic and Atmospheric Administration's (NOAA) 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 affects climate, particularly when the data are included in climate-model studies in support of this project.

Field Season Overview

Operational requirements will continue as before, with the use of the Atmospheric Research Observatory (ARO) for the NOAA instrument suite and the management of the Clean Air Sector. A minimum of two NOAA personnel will staff the observatory year-round. Scientists will deploy for short periods throughout the austral summer performing

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

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upgrades and routine maintenance on the instruments at the South Pole and working at the ARO, in addition to the two core staff. At no time will the NOAA/GMD South Pole ARO staffing be less than two. The need for space and logistics support for balloon launching will continue with only minor changes. Additional staff will be present at the end of the new Balloon Inflation Facility construction to assist with moving our ground station over and testing the new set up. The use of helium will continue with no changes. Air samples will be returned to NOAA/GMD in Boulder, Colorado on a regular schedule for analysis of carbon dioxide and other trace constituents. Cargo, mail, supplies, and communications support are required as described in the appropriate sections. Other operational requirements exist which will be described in the appropriate sections of this SIP.

Deploying Team Members

- Elisabeth Andrews
- John Booth
- Andrew Clarke
- Patrick Disterhoft
- Emiel Hall
- Emrys Hall
- Refael Klein
- Jesse Milton
- Christine Schultz

Project Title

Collection Of Atmospheric Air For The NOAA/GMD Worldwide Flask-Sampling Network

Summary

Event Number:
O-264-P
NSF / NOAA Agreement

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Judy Shiple / Jamee Johnson

Principal Investigator

Dr. James Hall Butler
James.H.Butler@noaa.gov

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

Project Web Site:
http://www.esrl.noaa.gov/gmd/

Location

Supporting Stations: Palmer Station
Research Locations: T-5 Building

Description

The National Oceanic and Atmospheric Administration's (NOAA) Global Monitoring Division (GMD) team will continue long-term measurements of trace constituents that influence climate and the ozone layer. The work done at Palmer Station is in conjunction with the ongoing worldwide measurements of carbon dioxide, methane, carbon monoxide, aerosols, water vapor, surface and stratospheric ozone, chlorofluorocarbons, and the ozone layer. The work is part of NOAA's effort to determine and assess the long-term buildup of global pollutants in the atmosphere. Measurements will be 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 aerosols with the 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 this research are to determine the rate at which concentrations of these atmospheric constituents change and to examine the sources, sinks, and budgets. Working with the climate modelers and diagnosticians, researchers will use the data to determine how the rate of change of these parameters affects climate, particularly when the data are included in climate-model studies in support of this project.

Field Season Overview

Staff research associates (RAs) will collect weekly air samples year around using a portable flushing and pressurizing apparatus. One or two samples will be collected each

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

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week, and environmental conditions will be logged. Sampling will occasionally be deferred until certain meteorological criteria are met. All samples are returned to NOAA/GMD in Boulder, Colorado on a regular schedule for analysis of carbon dioxide and other trace constituents. The RA will also support the UV instrument with daily checks, routine calibrations, and troubleshooting as needed.

2015-2016 USAP Field Season
Project Detail

Project Title

UV Measurements At McMurdo Station For The NOAA/Global Monitoring Division (GMD) Antarctic UV Network

Summary

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

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Judy Shiple / Elizabeth Kauffman

Principal Investigator

Dr. James Hall Butler
James.H.Butler@noaa.gov

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

Project Web Site:
http://www.esrl.noaa.gov/gmd/

Location

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

Description

The National Oceanic and Atmospheric Administration (NOAA) Earth System Research Laboratory (ESRL) Global Monitoring Division (GMD) will continue long-term measurements of ultra-violet (UV) radiation that influences climate and the ozone layer. The work at McMurdo Station is in conjunction with ongoing worldwide measurements of carbon dioxide, methane, carbon monoxide, aerosols, water vapor, surface and stratospheric ozone, chlorofluorocarbons, and the ozone layer at South Pole and Palmer Stations. The measurements will be 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 aerosols with the 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 this research are to determine the rate at which concentrations of these atmospheric constituents change and to examine the related sources, sinks, and budgets. Researchers will use the data to determine how the rate of change of these parameters affect climate, particularly when the data are included in climate-model studies in support of this project.

Field Season Overview

One field team member will spend five days on station servicing the UV instrument

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Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

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located at Arrival Heights. The McMurdo Station research assistant will subsequently support the instrument with daily checks, routine calibrations, and troubleshooting.

Deploying Team Members

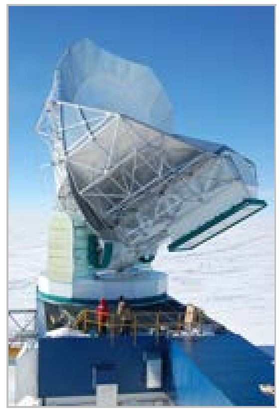
- Patrick Disterhoft (Co-PI)
- Emiel Hall

2015-2016 USAP Field Season
Project Detail

Project Title

Cosmological Research With The 10-Meter South Pole Telescope

Summary



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

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Judy Shiple / Paul Sullivan

Principal Investigator

Dr. John Carlstrom
jc@kicp.uchicago.edu

University of Chicago
Astronomy and Astrophysics
Chicago, Illinois

Project Web Site:
http://pole.uchicago.edu

Location

Supporting Stations: South Pole Station
Research Locations: Dark Sector

Description

The South Pole Telescope (SPT) conducts cosmological research by measuring the intensity and polarization anisotropy of the cosmic microwave background (CMB) radiation. The project's goal is detecting all galaxy clusters in this region of the sky through the spectral distortion they impart on the CMB. Called the Sunyaev-Zel'dovich effect, it has the remarkable property of being independent of the distance to the cluster. The resulting SPT catalog of galaxy clusters is used to set constraints on the mysterious dark energy that dominates the Universe's mass-energy density and causes the expansion of the Universe to accelerate. The second key project started in 2012 with the installation of an ultra-sensitive polarization receiver. Through measurements of the polarization, researchers will determine the sum of the masses of the neutrinos and either detect or set stringent upper limits on the energy scale of inflation. The SPT polarization program will be increased in sensitivity by an order of magnitude this season with the SPT-3G deployment. This includes a 16,000-detector focal plane in a new receiver and optics cryostat, new readout electronics, and a new secondary mirror.

Field Season Overview

The upcoming season is similar to last year in that SPT team members will conduct CMB measurements and will install the Event Horizon Telescope (EHT). Continued use of the MAPO machine shop as an overall station resources will be staffed by A-379-S personnel.

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

Project Web Sites

Find more information about 2015-2016 USAP projects by viewing project web sites.

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Deploying Team Members

- Adam Anderson
- Amy Bender
- John Carlstrom (PI)
- Jason Gallicchio
- Junhan Kim
- Daniel Marrone
- Andrew Nadolski
- Erik Nichols
- Stephen Padin
- David Pernic
- Thakur Ritoban
- Charlie Sievers
- Todd Veach

2015-2016 USAP Field Season
Project Detail

Project Title

IRIS/PASSCAL Seismic Support

Summary

Event Number:
T-299-M/S
NSF Agreement

Program Manager:
Dr. Mark Kurz

ASC POC/Implementer:
Cara Sucher / Elizabeth Kauffman / Paul Sullivan

Principal Investigator

Mr. Paul Carpenter
pcarpenter@passcal.nmt.edu

New Mexico Institute of Mining and Technology
IRIS/PASSCAL Instrument Center
Socorro, New Mexico

Project Web Site:
http://www.passcal.nmt.edu/content/polar

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: As required to support NSF-funded projects

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. Each year, the facility provides instrumentation and support to NSF-funded seismological projects while also developing cold-station deployment strategies, collaborating with vendors to develop and test equipment rated -55° C / -67° F, building an equipment pool, and creating a repository for cold-station techniques.

Field Season Overview

This field season, ten PASSCAL members will be based at McMurdo Station throughout the austral summer. Four members will deploy to South Pole. They will provide technical and field engineering support, and manage a pool of PASSCAL equipment. Field team members will travel to field locations as project support requirements dictate. Detailed logistical support is arranged directly between PASSCAL and the science project teams. The team will also will also be installing / servicing test stations at the South Pole Remote Earth Science and Seismological Observatory (SPRESSO), at the Castle Rock test area, and on Observation Hill. These test sites are to further prove and test developing technologies and current equipment used by PIs requesting seismic support in polar

Project Indexes

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locations.

Deploying Team Members

Paul Carpenter (PI)

Jason Hebert

Dean Childs

2015-2016 USAP Field Season
Project Detail

Project Title

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

Summary

Event Number:
A-130-M
NSF/PLR Award 1246405

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Judy Shiple / Richard Dean

Principal Investigator

Dr. Xinzhao Chu
xinzhao.chu@colorado.edu

University of Colorado Boulder
CIRES
Boulder, Colorado

Project Web Site:
http://cires1.colorado.edu/science/groups/chu/projects/mcmurdo.html

Location

Supporting Stations: McMurdo Station
Research Locations: Arrival Heights

Description

This project continues the operation of the Fe-Boltzmann LiDAR instrument installed in the Antarctica New Zealand (ANZ) lab at Arrival Heights. Primary research objectives are to acquire vertical profiles of atmospheric temperature (30–155 kilometers), Fe (iron) density (70–155 kilometers), and polar mesospheric cloud (PMC), to study the chemistry and dynamics of the polar atmosphere and to establish the baseline temperature, Fe, PMC, and gravity wave climatologies. New science discoveries based on the observations and measurements made to date (December 2010 to March 2015) include: (1) Neutral Fe layers and gravity waves well into the thermosphere, from 155 kilometers up to 170 kilometers; (2) Elevated thermospheric temperatures between 110 and 150 kilometers, likely associated with Joule heating; (3) Explosive release of exceptionally large Fe densities between 85 and 95 kilometers during summer, likely from visible and sub-visible ice particles; (4) Significant solar effects on the Fe-layer bottom side during local sunrise and sunset; (5) Strong and nearly persistent inertial gravity waves with cross-Antarctic-continent features; (6) Super-exponential growth of temperature tidal amplitude in the lower thermosphere above 110 kilometers; and (7) Dramatic density variations (about 40 times) of Fe layers over a time scale of multiple days (7-20 days).

Field Season Overview

The four-member team will collect LiDAR data in both summer and winter seasons; only

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one LiDAR scientist will winter over. The team will refurbish and maintain the LiDAR system to its optimum status.

Deploying Team Members

- Ian Barry
- Ian Barry
- Xinzhao Chu (PI)
- Xinzhao Chu (PI)
- Muzhou Lu
- Muzhou Lu
- Xian Lu

2015-2016 USAP Field Season
Project Detail

Project Title

Polar Experiment Network For Geospace Upper-Atmosphere Investigations (PENGUIn): Interhemispheric Investigations Along The 40-Degree Magnetic Meridian

Summary

Event Number:
A-106-M/S
NSF/PLR Award 1243398

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Judy Shiple / Meghan Walker / Paul Sullivan

Principal Investigator

Dr. C. Robert Clauer
rclauer@vt.edu

Virginia Tech
Hampton, Virginia

Project Web Site:
http://mist.nianet.org/index.html

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: East Antarctic Plateau

Description

The solar wind-magnetosphere-ionosphere system and the space weather it controls is a complex and dynamic environment that affects critical infrastructure such as satellite communications and power grids. To forecast, and thus adapt to, the effects of weather events, researchers must develop accurate geomagnetic models of the Sun-Earth environment. The northern hemisphere is relatively well instrumented. However, the southern hemisphere is not. This project is establishing a chain of Autonomous Adaptive Low-Power Instrument Platforms (AAL-PIP) along the 40-degree magnetic meridian. This chain of instruments will obtain measurements conjugate to the west coast of Greenland for the investigation of interhemispheric electrodynamic coupling.

Field Season Overview

This project will continue the installation of a chain of Autonomous Adaptive Low-Power Instrument Platforms (AAL-PIP) along the 40 degree magnetic meridian. Three field team members and an ASC mountaineer/field coordinator will travel by LC-130 aircraft from McMurdo to South Pole Station where one AAL-PIP system (Sys3) is currently installed. They will retrieve that system and package it for field deployment. After acclimation, the team will then travel by Twin Otter aircraft from South Pole to a remote field camp (PG5) on the East Antarctic Plateau where they will tent camp for approximately one week while they install and test the system. An LC-130 fuel drop will occur to support this project.

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

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Deploying Team Members

Michael Hartinger	Zhonghua Xu
Taikara Peek	

2015-2016 USAP Field Season
Project Detail

Project Title

High-Resolution Mapping Of Thermospheric Wind And Temperature Fields Near The Equatorward Edge Of The Antarctic Polar Cap

Summary

Event Number:
A-343-M/S
NSF/PLR Award 1341545

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Judy Shiple / Elizabeth Kauffman / Paul Sullivan

Principal Investigator

Dr. Mark Gerard Conde
mark.conde@gi.alaska.edu

University of Alaska Fairbanks
Physics Department
Fairbanks, Alaska

Project Web Site:
http://sdi_server.gi.alaska.edu/sdiweb/index.asp

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: Arrival Heights / Atmospheric Research Observatory (ARO)

Description

The project will deploy an all-sky imaging Fabry-Perot Spectrometer at McMurdo Station and at South Pole Station to map the wind and temperature fields that occur in the thermosphere above Antarctica. Data collected from these instruments will be used to test the hypothesis that the thermosphere's most dynamic weather occurs in latitudes just poleward of the boundary between the auroral oval and the polar cap.

Field Season Overview

During the 2015-16 Season, the instruments will be deployed for installation at the Arrival Heights and the Atmospheric Research Observatory (ARO) buildings. Installations at each location will utilize spaces in the respective buildings with existing roof penetrations. Three project participants will deploy for approximately two weeks at each location for installation activities.

Deploying Team Members

- Theo Davies
- Dale Pomraning

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

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2015-2016 USAP Field Season
Project Detail

Project Title

Petrologic Constraints On Subduction Termination From Lamprophyres, Ross Orogen, Antarctica

Summary

Event Number:
G-076-M
NSF/PLR Award 1443296

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Sune Tamm / Meghan Walker

Principal Investigator

Dr. John Cottle
cottle@geol.ucsb.edu

University of California Santa Barbara
Department of Geological Sciences
Santa Barbara, California

Project Web Site:
http://www.antarctica360.net/

Location

Supporting Stations: McMurdo Station
Research Locations: Lakes Vanda and Joyce / Nussbaum Riegal / Hidden Lake in the Dry Valleys

Description

Rocks highly enriched in potassium such as lamprophyres potentially provide direct insight into foundering and the processes that occur during, and immediately after, termination of subduction. These enigmatic rocks are important because they represent near-primary mantle-melt compositions and therefore their age, geochemistry, and petrologic evolution reveal key information on both the composition of the upper mantle and its thermal state. Of equal importance, they reveal how these key parameters vary through both space and time. This project will study a suite of lamprophyres spanning approximately 1300 kilometers along-strike and emplaced during the latest stages of the Neoproterozoic-Ordovician Ross Orogeny. High-precision geochronology coupled with whole rock and mineral-scale elemental, isotope geochemical, and petrologic analysis will elucidate the mechanisms for, and temporal and spatial scales over which, deep crustal foundering/delamination occurred and the processes responsible for the significant isotopic heterogeneities observed in these rocks.

Field Season Overview

This project will conduct detailed geologic mapping and collect lamprophyre and associated rock samples from the southern Dry Valleys. Four small tent campsites will be required: Lake Vanda, Nussbaum Riegal, Lake Joyce, and Hidden Lake. Four team

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

Project Web Sites

Find more information about 2015-2016 USAP projects by viewing project web sites.

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members will be transported to the Dry Valleys by helicopter and will collect samples within walking distance of each camp. Helicopter close support to visit outcrops beyond walking distance will be used throughout the field season.

Deploying Team Members

- Nicholas Browne
- John Cottle (PI)
- Robert Holder
- Demian Nelson

2015-2016 USAP Field Season
Project Detail

Project Title

McMurdo LTER - Lakes: Increased Connectivity In A Polar Desert Resulting From Climate Warming: McMurdo Dry Valleys LTER Program

Summary

Event Number:
C-511-M
NSF/PLR Award 1115245

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Sune Tamm / Elizabeth Kauffman

Principal Investigator

Dr. Peter Doran
pdoran@lsu.edu

Louisiana State University Baton Rouge
Department of Geology and Geophysics
Baton Rouge, Louisiana

Project Web Site:
http://www.mcmlter.org/

Location

Supporting Stations: McMurdo Station
Research Locations: Dry Valleys

Description

Initially funded in 1980, the U.S. Long-Term Ecological Research (LTER) Network is a collaborative effort involving more than 1,800 scientists and students. The McMurdo LTER program is an inter-disciplinary and multi-disciplinary study of the aquatic and terrestrial ecosystems in the ice-free McMurdo Dry Valleys. It is one of 26 LTER sites where researchers are studying ecological processes over long temporal and broad spatial scales. Its primary focus is the physical limnology of the McMurdo Dry Valleys lakes. This year's goals are: (1) To upgrade and maintain long-term automated lake-monitoring equipment; (2) Carry out manual lake hydrologic balance measurements (lake level and ablation); (3) Measure the movement of surface ice using high-precision GPS; (4) Characterize signatures and patterns of benthic productivity (using SCUBA); and (5) Collect sediment and water samples for a suite of geochemical experiments. This six-year award cycle comprises seven collaborative projects: Michael Gooseff C-504, John Priscu C-505, Michael Gooseff C-506, Diana Wall C-507, Jeb Barrett, C-508, Berry Lyons C-509, and Peter Doran C-511.

Field Season Overview

Participants will be based at the established field camps Fryxell, Bonney, and Hoare, with an extended stay at Lake Miers, and will make day trips by helicopter to Wright and Victoria Valleys. With UNAVCO's assistance, they will also survey established ablation

Project Indexes

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Project Web Sites

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stakes in the Taylor Valley. Several sensors and dataloggers on the meteorological and lake stations will be swapped out and sent back to the manufacturer for recalibration. The replaced meteorological sensors and dataloggers will remain in the field for two to five years.

Deploying Team Members

- Dimitri Acosta
- Jade Lawrence
- Krista Myers
- Maciej Obryk (Team Leader)

2015-2016 USAP Field Season
Project Detail

Project Title

Palmer, Antarctica Long Term Ecological Research (LTER): Land-Shelf-Ocean Connectivity, Ecosystem Resilience And Transformation In A Sea-Ice Influenced Pelagic Ecosystem

Summary

Event Number:
C-045-L/P
NSF/PLR Award 1440435

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Samina Ouda / Adam Jenkins / Jamee Johnson

Principal Investigator

Dr. Hugh William Ducklow
hducklow@ldeo.columbia.edu

Columbia University
Lamont Doherty Earth Observatory
Palisades, New York

Project Web Site:
http://pal.lternet.edu

Location

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

Description

The overall objectives of Palmer LTER research are to document and understand the phenology and variability in sea-ice dynamics, primary production, zooplankton ecology, seabird and marine mammal demography, and microbial and biogeochemical processes in the Antarctic marine ecosystem, including identifying the mechanisms of ecosystem response to rapid climate change. An important objective is to continue the 23-year long LTER time series on the regional scale grid of hydrographic stations west of the Antarctic Peninsula. The sampling region extends from Palmer Station to Charcot Island and encompasses areas both more and less affected by climate change. Researchers will continue studying seasonal-scale processes at Palmer Station, with field sampling and specific, focused lab experiments testing hypotheses generated from fieldwork. Palmer Station continues to be the focus of study of Adélie, Gentoo, and Chinstrap penguins, and the effects of climate change on their breeding biology, foraging ecology, and population dynamics. Researchers will link visual survey and satellite-based tracking of baleen whales with LTER synoptic data to offer insights into how the distribution and abundance of these krill predators relates to environmental variability and how it will be affected by climate change.

Field Season Overview

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The science team will travel on the ARSV Laurence M. Gould (LMG) from Punta Arenas, Chile to Palmer Station. Once on station, the team will perform several incubation experiments to test specific hypotheses about microbial processes and organic matter cycling. All fieldwork will be performed in Arthur Harbor at the LTER A-G hydrographic stations within the boating area. The research includes some work with soils and glacier runoff in the Palmer region, though no soil samples will be shipped off site. An ASC Research Associate will provide support for over-winter collection of chlorophyll and biogeochemical samples.

Deploying Team Members

- Jeff Bowman
- James Collins
- Ribanna Dittrich
- Hugh Ducklow (PI)
- Colleen Hansel Wankel
- Rachel Kaplan
- Emilie Schattman
- Naomi Shelton
- Conor Sullivan
- Griffin Whitlock

2015-2016 USAP Field Season
Project Detail

Project Title

Neutron Monitor Observations Of Cosmic Rays From Jang Bogo And McMurdo Station

Summary

Event Number:
A-120-M
NSF/PLR Award 1245939

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Elizabeth Kauffman

Principal Investigator

Dr. Paul Evenson
evenson@udel.edu

University of Delaware
Physics and Astronomy
Newark, Delaware

Project Web Site:
http://neutronm.bartol.udel.edu/

Location

Supporting Stations: McMurdo Station
Research Locations: Building 84

Description

Installed during the 1959-60 field season, the Cosray Lab is the longest continually running experiment in the U.S. Antarctic Program. This 56-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. The observations will also assist space-weather forecasting and specification.

Field Season Overview

To ensure continuity of the McMurdo long-term dataset, this project is in the process of moving the neutron monitor to the new Korean station, Jang Bogo. The monitor section that was shipped from McMurdo to Christchurch, New Zealand in the 2014-15 season will be loaded on the Korean vessel R/V Araon, for transport to the Jang Bogo. USAP team members and their Korean colleagues will first install the building that will house the neutron monitor at Jang Bogo, then will assemble the monitor and verify its proper operation. At McMurdo Station, another team will perform routine maintenance and minor

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Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

Project Web Sites

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upgrades to the neutron monitor there. They will activate the IGY neutron monitor, will complete an inventory, and prepare a retrograde plan for next season (2016-17). This team will also travel to South Pole Station to service the neutron monitor currently installed there.

Deploying Team Members

- Paul Evenson (PI)
- James Madsen (Co-PI)
- Laura Moon
- Joseph Wagner

2015-2016 USAP Field Season
Project Detail

Project Title

Element Composition Of High-Energy Solar Particles

Summary

Event Number:
A-118-S
NSF/PLR Award 1341562

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Paul Sullivan

Principal Investigator

Dr. Paul Evenson
evenson@udel.edu

University of Delaware
Physics and Astronomy
Newark, Delaware

Project Web Site:
http://neutronm.bartol.udel.edu/

Location

Supporting Stations: South Pole Station
Research Locations: B2 Science Building

Description

This project will continue operating the suite of neutron monitors at South Pole Station. Data from the South Pole enhance the worldwide neutron monitor networks with a unique location at high altitude and low cutoff rigidity, a well-established spectral detection capability, and a very long baseline of existing measurements. The South Pole neutron monitor serves as the linchpin of the worldwide neutron monitor network at low energies. Opening the IceCube Neutrino Observatory has added a new dimension to this capability in the form of the IceTop array of ice Cherenkov detectors. Central to the research is the need to understand the response of these detectors to the radiation environment of the South Pole, particularly to determine the cause of the peculiar secular decline in cosmic ray intensity at South Pole throughout the 50-year operating period of the neutron monitor. Understanding this decline is important because cosmic rays produce radionuclides like Beryllium-10 that become trapped in the ice and are used to determine ice-core ages and precipitation levels over the Earth's polar regions. A full understanding of the production rate is vital to interpreting these data.

Field Season Overview

Three participants will deploy to South Pole Station where they will spend one week servicing the neutron monitor.

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Deploying Team Members

James Madsen (Co-PI)

Joseph Wagner

Laura Moon

2015-2016 USAP Field Season
Project Detail

Project Title

Palmer, Antarctica Long Term Ecological Research (LTER): Land-Shelf-Ocean Connectivity, Ecosystem Resilience And Transformation In A Sea-Ice Influenced Pelagic Ecosystem

Summary

Event Number:
C-013-L/P
NSF/PLR Award 1440435

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Samina Ouda / Adam Jenkins / Jamee Johnson

Principal Investigator

Dr. William Ronald Fraser
bfraser@3rivers.net

Polar Oceans Research Group
Sheridan, Montana

Project Web Site:
http://pal.lternet.edu/

Location

Supporting Stations: ARSV Laurence M. Gould, Palmer Station
Research Locations: LTER study site / Palmer Station

Description

The core, long-term data associated with the 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

The science team will travel on the ARSV Laurence M. Gould (LMG) from Punta Arenas, Chile to Palmer Station. From station, they will conduct Zodiac operations within the local boating area and to some outlying islands. Their field research in the Palmer Station vicinity will focus on the larger seabird community, particularly the three breeding species of Pygoscelid penguins, and is timed to coincide with the entire October-March breeding season. Although most of the science team's work will be accomplished using Zodiacs for daily travel to nearby seabird colonies, they will also establish multi-day field camps at

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Biscoe and Dream Islands. Science team members will concentrate on censusing and mapping seabird colonies, obtaining indices of reproductive success, determining diets and foraging ranges, and examining chick growth and energetics. They will use Palmer Station's lab facilities to house and process GIS and telemetry data, and to analyze diet samples. The science team will use a Polar Haven tent for the duration of the season as additional workspace.

Deploying Team Members

- Benjamin Cook
- Shawn Farry
- William Fraser (PI)
- Carrie McAtee

2015-2016 USAP Field Season
Project Detail

Project Title

Palmer, Antarctica Long Term Ecological Research (LTER): Land-Shelf-Ocean Connectivity, Ecosystem Resilience And Transformation In A Sea-Ice Influenced Pelagic Ecosystem

Summary

Event Number:
C-024-L/P
NSF/PLR Award 1440435

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Samina Ouda / Adam Jenkins / Jamee Johnson

Principal Investigator

Dr. Ari Seth Friedlaender
ari.friedlaender@oregonstate.edu

Oregon State University
Marine Mammal Program
Newport, Oregon

Project Web Site:
http://pal.lternet.edu/

Location

Supporting Stations: ARSV Laurence M. Gould, Palmer Station
Research Locations: Palmer boating limit

Description

The overall objectives of Palmer LTER research are to document and understand the phenology and variability in sea-ice dynamics, primary production, zooplankton ecology, seabird and marine mammal demography, and microbial and biogeochemical processes in the Antarctic marine ecosystem, including identifying the mechanisms of ecosystem response to rapid climate change. One particularly important objective is to continue the 23-year-long LTER time series on the regional scale grid of hydrographic stations west of the Antarctic Peninsula. This component will focus on the dynamics of baleen whale populations. Researchers will link visual survey and satellite-based tracking of baleen whales with LTER synoptic data. The goal is to offer insights into how the distribution and abundance of these krill predators relates to environmental variability and how it will be affected by climate change.

Field Season Overview

Two field team members will deploy to Palmer Station for the austral summer season (January through April) Using a Zodiac inflatable boat, they will conduct daily visual surveys of marine mammals, quantitative prey mapping and biopsy sampling. On the ARSV Laurence M. Gould they will conduct visual surveys while the ship is underway

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between sampling stations or otherwise in transit. While at sampling stations, and during the process station periods, this group's main objectives will be to collect skin and blubber biopsy samples, collect individual photo-identification images of individual whales, and deploy satellite-linked tags to a number of whales.

Deploying Team Members

- Ari Friedlaender (PI)
- Doug Nowacek (Co-PI)
- Logan Pallin
- Erin Pickett

2015-2016 USAP Field Season
Project Detail

Project Title

Synoptic Geospace Systems Analysis Using Instrumentation From South Pole And McMurdo Stations

Summary

Event Number:
A-111-M/S
NSF/PLR Award 1247975

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Elizabeth Kauffman / Paul Sullivan

Principal Investigator

Dr. Andrew Gerrard
gerrard@njit.edu

New Jersey Institute of Technology
Department of Physics
Newark, New Jersey

Project Web Site:
http://www.antarcticgeospace.org

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: Arrival Heights (ASPA 122) / B2 Science Building / Atmospheric Research Observatory

Description

The ionosphere-thermosphere-magnetosphere (ITM) region of Earth's atmosphere, which is part of the larger geospace environment, is the portal through which the solar wind can enter and impact our planetary system. Though space weather research over the past decades has greatly increased our understanding of a wide variety of phenomena associated with ITM physics, the sum of these individual processes occurring in the geospace environment does not replicate the rich diversity and scope of this complex region. Thus, a more holistic approach to ITM research is necessary, one that integrates clustered instrumentation at multiple locations to simultaneously look at the interactions within the entire system. Using coordinated and collaborative instrumentation currently installed in Antarctica, researchers will study interrelated ITM phenomena observed at high latitudes with the goal of better understanding the energy transfer and modulation of the geospace system.

Field Season Overview

Field team members on this project will be divided into two teams. Team 1 will consist of three people. The primary goals of this team are to: (1) Check on all instrumentation at McMurdo and South Pole and update firmware and data acquisition (DAQ) as needed; (2)

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Install a new photometer at Arrival Heights and package the old one for retrograde to the home institution; (3) Install a new photometer in the hatch in science building B-2; (4) Site and begin preparation for an absolute magnetometer vault to be installed in the 2016-17 season; (5) Check the riometer system and repair as needed. (6) Train ASC science technicians at both McMurdo and South Pole to perform routine maintenance on the equipment. Team 2 will deploy later in the season and will consist of two people. The primary goals of this team are to: (1) Check the installation/operation of the all-sky imagers at Arrival Heights; (2) Re-install the imager at the South Pole site; (3) Train ASC science technicians at both McMurdo and South Pole to perform routine maintenance on the equipment.

Deploying Team Members

- Yusuke Ebihara
- Gilbert Jeffer
- Satoshi Kurita
- Bob Melville (Team Leader)
- Andrew Stillinger

2015-2016 USAP Field Season
Project Detail

Project Title

McMurdo LTER - Streams: Increased Connectivity In A Polar Desert Resulting From Climate Warming: McMurdo Dry Valleys LTER Program

Summary

Event Number:
C-506-M
NSF/PLR Award 1115245

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Sune Tamm / Elizabeth Kauffman

Principal Investigator

Dr. Michael N Gooseff
michael.gooseff@colorado.edu

University of Colorado Boulder
Boulder, Colorado

Project Web Site:
http://www.mcmlter.org/

Location

Supporting Stations: McMurdo Station
Research Locations: F6 / Garwood and Wright Valleys / Lakes Bonney, Fryxell, Hoare, and Miers

Description

Initially funded in 1980, the U.S. Long-Term Ecological Research (LTER) Network is a collaborative effort involving more than 1,800 scientists and students. The McMurdo LTER program is an inter-disciplinary and multi-disciplinary study of the aquatic and terrestrial ecosystems in the ice-free McMurdo Dry Valleys. It is one of 26 LTER sites where researchers are studying ecological processes over long temporal and broad spatial scales. Streams component researchers operate a network of 16 stream flow gauges, collect water quality samples from 30 streams, and make hydrologic measurements. This six-year award cycle comprises seven collaborative projects: C-504-M (Gooseff), C-505-M (Priscu), C-506-M (Gooseff), C-507-M (Wall), C-508-M (Barrett), C-509-M (Lyons), and C-511-M (Doran).

Field Season Overview

The operational support needed for this season will be similar to past seasons with the addition of establishing a new stream gage in Garwood Valley. Our primary activities will be long term stream monitoring and biological surveying conducted in the Dry Valleys. Our work from November to February will involve collaboration with other events in the MCMLTER project, especially the soils and biogeochemistry teams, and with several ASC units providing logistical support from Environmental, BFC, MACOPS, as well as helicopter support. We will spend the majority of the season at the Dry Valley field camps.

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

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We will be the primary occupants of the F6 field camp.

Additionally, Christa Torrens will be doing nutrient uptake experiments on six streams within Taylor Valley.

Deploying Team Members

- Michael Gooseff (PI)
- Chris Jaros
- Michael Johnson
- Diane McKnight (Co-PI)
- Aneliya Sakaeva
- Zachary Sudman
- Christa Torrens
- Adam Wlostowski

2015-2016 USAP Field Season
Project Detail

Project Title

McMurdo LTER - Glaciers: Increased Connectivity In A Polar Desert Resulting From Climate Warming: McMurdo Dry Valleys LTER Program

Summary

Event Number:
C-504-M
NSF/PLR Award 1115245

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Sune Tamm / Elizabeth Kauffman

Principal Investigator

Dr. Michael N Gooseff
michael.gooseff@colorado.edu

University of Colorado Boulder
Boulder, Colorado

Project Web Site:
http://www.mcmlter.org

Location

Supporting Stations: McMurdo Station
Research Locations: Dry Valleys

Description

Initially funded in 1980, the U.S. Long-Term Ecological Research (LTER) Network is a collaborative effort involving more than 1,800 scientists and students. The McMurdo LTER program is an inter-disciplinary and multi-disciplinary study of the aquatic and terrestrial ecosystems in the ice-free McMurdo Dry Valleys. It is one of 26 LTER sites where researchers are studying ecological processes over long temporal and broad spatial scales. Project researchers will continue measurements of physical properties of Dry Valley glaciers and meteorology, with special emphasis on LTER core research areas. This six-year award cycle comprises seven collaborative projects: C-504-M (Gooseff), C-505-M (Priscu), C-506-M (Gooseff), C-507-M (Wall), C-508-M (Barrett), C-509-M (Lyons), and C-511-M (Doran).

Field Season Overview

This group will be the primary occupants of the F6 field camp but will make periodic day and overnight trips to camps at Lakes Hoare and Bonney. They will monitor sites in the Taylor Valley, with monitoring continuing in Wright and Miers Valleys. This year they will establish a new stream gauge at the outlet of Lake Colleen in Garwood Valley.

Deploying Team Members

Project Indexes

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Anna Bergstrom
Forrest McCarthy
Michael Gooseff (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

IceCube Operations And Maintenance

Summary

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

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Paul Sullivan / Leah Street

Principal Investigator

Dr. Francis Halzen
halzen@icecube.wisc.edu

University of Wisconsin Madison
Physics Department
Madison, Wisconsin

Project Web Site:
http://icecube.wisc.edu

Location

Supporting Stations: South Pole Station
Research Locations: Ice Cube Counting Laboratory

Description

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

Field Season Overview

Field team members will deploy to Amundsen-Scott South Pole Station. On-Ice activities include maintenance and operational improvements to the existing infrastructure. This work will take place primarily in the IceCube Counting Laboratory (ICL), Building 21.

Deploying Team Members

- Ralf Auer
- Timothy Bendfelt
- Matt Kauer
- John Kelley
- Aongus O'Murchadha
- Tomasz Palczewski
- Leif Raedel
- James Roth

Project Indexes

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Morten Medici	Delia Tosa
Sarah Nowicki	Jakob van Santen

2015-2016 USAP Field Season
Project Detail

Project Title

CAREER: Deciphering The Tectonic History Of The Transantarctic Mountains And The Wilkes Subglacial Basin

Summary

Event Number:
G-061-M
NSF/PLR Award 1148982

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Matthew Erickson / Elizabeth Kauffman

Principal Investigator

Dr. Samantha Hansen
shansen@geo.ua.edu

University of Alabama Tuscaloosa
Department of Geological Sciences
Tuscaloosa, Alabama

Project Web Site:
http://geo.ua.edu/profile/hansen-samantha/

Location

Supporting Stations: McMurdo Station
Research Locations: Terra Nova Bay

Description

An understanding of the tectonic development of Antarctica requires characterization of the seismic structure beneath the Transantarctic Mountains (TAM) and the Wilkes Subglacial Basin (WSB). Current constraints on crustal thickness and seismic velocity structure beneath the TAM and the WSB are limited, leading to uncertainties over competing geodynamic models. To broaden the investigation of this region, a new 15-station seismic deployment, the Transantarctic Mountains Northern Network (TAMNNET), is being installed across the northern TAM and the WSB. The study will address four fundamental questions: (1) How variable is the crustal structure beneath the TAM? (2) Is the WSB characterized by thin crust and thick sedimentary layers? (3) How do seismic velocities vary along strike beneath the TAM? And (4) How did the TAM and the WSB originate and how does their formation relate to the geologic history of Antarctica? Data from TAMNNET will be combined with that from other previous and ongoing seismic initiatives and analyzed using proven modeling techniques to generate an unprecedented image of the seismic structure beneath the TAM and the WSB.

Field Season Overview

During this, the fourth year of the five-year TAMNNET project, team members will decomission and retrieve their 15 seismic stations from remote field sites in the Transantarctic Mountains and on the East Antarctic Plateau. They will reach these

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locations primarily by fixed wing aircraft from McMurdo Station. The Italian program may also provide some logistical support.

Deploying Team Members

- Gregory Brenn
- Caleb Essex
- Jordan Graw
- Samantha Hansen (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

Antarctic Search For Meteorites (ANSMET)

Summary

Event Number:
G-058-M
NASA Award

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Sune Tamm / Bija Sass

Principal Investigator

Dr. Ralph Harvey
rph@cwru.edu

Case Western Reserve University
Department of Geological Sciences
Cleveland, Ohio

Project Web Site:
http://www.case.edu/ansmet

Location

Supporting Stations: McMurdo Station
Research Locations: Miller Range

Description

Since 1976, the Antarctic Search for Meteorites (ANSMET) has found more than 17,000 specimens. Meteorites do not fall preferentially on Antarctica; they are just easier to find on the white snow- and ice-scapes and because the ice transport and ablation process leads to accumulation in certain areas. This season, ANSMET will conduct full-scale systematic meteorite recovery from the Miller Range (MIL) Icefields in the Transantarctic Mountains, as well as systematic recovery in the Elephant Moraine (EET) ice fields northwest of McMurdo Station. A total of five previous seasons of systematic searching as well as several shorter reconnaissance visits at MIL have resulted in the recovery of nearly 2,800 meteorite specimens from these icefields, including many rare meteorites such as martian and lunar samples. A large region of blue ice remains unsearched, mostly around a larger icefield on the southern end of the range, as well as some smaller ice fields in the north MIL area. The field team will attempt to cover as much of this area as possible through overlapping systematic transects.

Field Season Overview

Support needs for the systematic search team are basic and echo those of previous seasons. A field team of 8 will be equipped with standard remote field equipment, living in Scott tents and conducting searches on snowmobiles. Fixed-wing support will take the team and its gear for staging to the CTAM camp and then shuttled out to MIL. Once in the field, the team will generally be self-sufficient, but there will be a resupply flight

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shortly after Christmas.

After four to five weeks of work at south MIL part of our field team (6 individuals) will make a camp move to the north Miller ice fields to search there. The 6 will make the move by overland traverse but air support will be needed to ferry heavy gear to the new camp. The other part of the team (2 individuals) will move to the Elephant Moraine ice fields (after a couple day layover at MCM) to complete searches there.

Pull-out from the north MIL camp at the end of Jan. will hopefully be done by Basler and should be completed in 3 flights. Pull-out from EET on Jan. 30 will be done by Twin Otter and will take two flights.

Deploying Team Members

- Ellen Crapster-Pregont
- Cynthia Evans
- James Karner (Team Leader)
- Nina Lanza
- Morgan Martinez
- Brian Rougeux
- John Schutt
- Constantine Tsang

2015-2016 USAP Field Season
Project Detail

Project Title

Ocean Acidification Seascape: Linking Natural Variability And Anthropogenic Changes In PH And Temperature To Performance In Calcifying Antarctic Marine Invertebrates

Summary

Event Number:
B-134-M
NSF/PLR Award 1246202

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Samina Ouda / Beverly Walker

Principal Investigator

Dr. Gretchen Hofmann
hofmann@lifesci.ucsb.edu

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

Project Web Site:
http://labs.eemb.ucsb.edu/hofmann/gretchen/

Location

Supporting Stations: McMurdo Station
Research Locations: Cape Evans / McMurdo Jetty / New Harbor / Crary Lab

Description

This project will examine the effects of environmental change on a key Antarctic marine invertebrate — a pelagic mollusk, the pteropod, Limacina helicina antarctica. There are two main activities in this project: (1) To deploy oceanographic equipment — in this case, autonomously recording pH sensors called SeaFETs (sea field-effect transistors) and other devices that record temperature and salinity; and (2) To use these environmental data in the laboratory at McMurdo Station to study the response of the marine invertebrates to future changes in water quality that are expected in the next few decades. The researcher's objective again this season is to retrieve and re-deploy SeaFET sensors at field site locations in McMurdo Sound. These sensors were deployed last December by divers. The replacement sensors will record until next austral summer field season when they will again be replaced.

Field Season Overview

Field work for this project will have three main components: (1) A project diver will swap out existing sensors and deploy a new one at New Harbor. Sensors at all the sites will be left in place over the winter; (2) Organisms will be collected using folding plankton nets deployed through the sea ice using a Thern electric winch. The holes in the sea ice will be drilled with the Reed Drill; (3) Seawater samples will be collected daily using Niskin water-sampling bottles. Water samples will be returned to the Crary Lab for analysis. The

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holes in the sea ice will be bored with a Jiffy drill and will be sheltered by fish huts and an "apple" prefabricated fiberglass field hut.

Deploying Team Members

- Gretchen Hofmann (PI)
- Umihiko Hoshijima
- Kevin Johnson
- Amanda Kelley
- Cailan Sugano
- Juliet Wong

2015-2016 USAP Field Season
Project Detail

Project Title

High-Resolution Study Of Atmosphere, Ice, And Aerosol Interactions In Coastal Antarctica

Summary

Event Number:
O-324-M
NSF/PLR Award 1341628

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Sune Tamm / Beverly Walker

Principal Investigator

Dr. Lars E Kalnajs
kalnajs@colorado.edu

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

Project Web Site:
http://www.2odiac.com

Location

Supporting Stations: McMurdo Station
Research Locations: Sea Ice

Description

Aerosol particles play a critical role in the chemical and radiative balance of the Antarctic atmosphere. Aerosols are a source and sink of gas-phase constituents as well as a transport mechanism for oceanic chemical species into the continental interior. The interaction between aerosols, the gas phase, sea ice, and the snow pack is complex and not well understood. Recent observations of ozone-depletion events and submicron aerosol mass increase, highlight the coupling of the gas and particle phases. These interactions can lead to aerosol formation as well as the deposition of trace elements to the snow pack. It is the incorporation of these aerosol particles into the ice-core record that provides a window into Earth's past atmospheres. A more complete understanding of the coupling will improve interpretation of past Antarctic climate.

Field Season Overview

Team members will be based at McMurdo Station and will travel by Pisten Bully to and from a field site near Inaccessible Island. There, they will deploy ~10 aerosol, trace gas and meteorological instruments. The instrumentation will be run 24/7 and will require near constant supervision for the first few weeks, with less supervision required as the season progresses. The instruments will be powered by diesel generators located down wind of the site to minimize contamination.

Deploying Team Members

Sean Davis	Lars Kalnajs (PI)
Michael Giordano	Anondo Mukherjee
James Goetz	Andrew Slater

2015-2016 USAP Field Season
Project Detail

Project Title

Ocean Observatories Initiative (OOI) Southern Hemisphere Cruises

Summary

Event Number:
O-410-N
NSF-OOI Agreement

Program Manager:
Dr. Jean McGovern

ASC POC/Implementer:
Matthew Erickson / Adam Jenkins

Principal Investigator

Mr. Michael Kelly
mkelly@oceanleadership.org

Arlington, Virginia

Project Web Site:
http://oceanobservatories.org/

Location

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

Description

The Ocean Observatories Initiative (OOI) has constructed a networked infrastructure of science-driven sensor systems to measure physical, chemical, geological, and biological variables in the ocean and on the seafloor. This effort will involve the deployment of two Coastal & Global Scale Nodes (CGSN) at Global Site 42° S, 42° W (Argentine Basin) and Global Site 55° S, 90° W (Southern Ocean). Yearly cruises will be planned for replacing all the CGSN moorings and gliders.

Field Season Overview

Researchers will make two cruises on the NBP, both departing from and returning to Punta Arenas, Chile. On the first cruise, NBP15-10, the team will sail to locations in the Argentine Basin where they will deploy one Global Surface Mooring, one Global Hybrid Profiler mooring, two subsurface Mesoscale Flanking Moorings, and five gliders. The moorings will support sensors for measurement of air-sea fluxes of heat, moisture and momentum, and physical, biological and chemical properties throughout the water column. Gliders will be equipped with acoustic modems to relay data from the mesoscale flanking moorings to shore via satellite telemetry and will sample within and around the triangular array. These gliders will carry sensor suites with the capability to alter sampling rates during a mission. On the second cruise, NBP15-11, the team will sail to locations in the Southern Ocean where they will deploy a similar suite of moorings and gliders.

Deploying Team Members

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Project Detail

Project Title

Dry Valley Seismic Project

Summary

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

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Matthew Erickson / Elizabeth Kauffman

Principal Investigator

Dr. Robert C Kemerait
kemerait@tt.aftac.gov

United States Air Force
AFTAC
Patrick AFB, Florida

Project Web Site:
http://www.aftac.gov

Location

Supporting Stations: McMurdo Station
Research Locations: Dry Valleys

Description

The Dry Valley 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 are transmitted to the National Data Center in Florida and made available to the international scientific community.

Field Season Overview

The team will travel by helicopter to field camps at Bull Pass and Mount Newall to refuel the diesel generators, perform annual engine, electrical, and technical, maintenance and inspections.

Deploying Team Members

- Jacob Caron
- Dillon Gibbs
- Gregory Helms (Team Leader)
- Nathan Shaw

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Project Detail

Project Title

Imaging The Beginning Of Time From The South Pole: Observations With The Full SPUD Array

Summary

Event Number:
A-149-S
NSF/PLR Award 1145172

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Judy Shiple / Paul Sullivan

Principal Investigator

Dr. John Kovac
jmkovac@cfa.harvard.edu

Harvard University
Cambridge, Massachusetts

Project Web Site:
http://bicepkeck.org/

Location

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

Description

SPUD (Small Polarimeter Upgrade for DASI) is a next-generation instrument following on from the BICEP (Background Imaging of Cosmic Extragalactic Polarization) and BICEP2 program. It consists of multiple receivers similar to BICEP2 on the telescope mount originally built for the Degree Angular Scale Interferometer (DASI) experiment. The research team's objective is the same as BICEP2 - to attempt to measure B-mode polarization caused by gravity waves spawned in the first tiny fraction of a second after the big bang by the process of "inflation." Inflation is the favored cosmogenic model, and finding direct "smoking gun" evidence for it is one of the highest priorities in cosmology today. SPUD increases sensitivity over BICEP2 by increasing the number of detectors and by expanding to other frequencies to identify and mitigate possible foreground contamination.

Field Season Overview

At station opening, a team will arrive to perform calibrations on their receivers. The will use the MAPO roof crane to take down three of the receivers for focal-plane replacement. Once that is done, and the receivers are re-mounted, they will run test observations and perform any necessary calibrations.

Deploying Team Members

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- Denis Barkats
- Colin Bischoff
- Eric Bullock
- Kirit Karkare
- Sinan Kefeli
- John Kovac (PI)
- Hien Nguyen
- Roger O'Brient
- Roger O'Brient
- Clement Pryke (Co-PI)
- Robert Schwarz
- Anthony Turner
- Donald Wiebe
- Justin Willmert

2015-2016 USAP Field Season
Project Detail

Project Title

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

Summary

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

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Meghan Walker / Paul Sullivan

Principal Investigator

Dr. Craig Kulesa
ckulesa@email.arizona.edu

University of Arizona Tucson
Steward Observatory
Tucson, Arizona

Project Web Site:
http://soral.as.arizona.edu/heat/

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: Dome A / Ridge A

Description

This project is a joint United States and Australian venture to build and deploy a fully automated 0.6-meter terahertz astronomical observatory for remote operation at Ridge A, which is the highest elevation on the Antarctic Plateau. High Elevation Antarctic Terahertz (HEAT) observes in the 350 micron (0.8 THz) through 150 micron (2 THz) atmospheric windows, the latter of which is unique to Ridge A. The HEAT instrument conducts 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. The telescope is mounted on top of the Australian University of New South Wales' PLATeau Observatory (PLATO) module that provides housing for the instrument's electronics and diesel engines used to generate electrical power during winter observations. PLATO and the telescope operate autonomously for more than a year at a time, with commands and data being transmitted from and to the home institutions daily via Iridium satellites.

Field Season Overview

This project will continue operation and maintenance for the High Elevation Antarctic Terahertz Telescope (HEAT) and Plateau Observatory (PLATO-R). Team members will travel via LC-130 aircraft from McMurdo to South Pole Station. After acclimation, preparing the replacement HEAT cryostat, and testing PLATO-R components, two

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science participants and an ASC mountaineer/field coordinator will be transported by Twin Otter aircraft to Ridge A. The team will tent camp at Ridge A for approximately one week to service the telescope and observatory. An LC-130 fuel drop will occur in early December to support this project. The two science participants will also working on another project in McMurdo, A-136-M , both before and after their South Pole deployment, if time allows.

Deploying Team Members

- Craig Kulesa (PI)
- David Lesser

2015-2016 USAP Field Season
Project Detail

Project Title

Mount Erebus Volcano Observatory: Operations, Science, And Outreach (MEVO-OSO)

Summary

Event Number:
G-081-M
NSF/PLR Award 1142083

Program Manager:
Dr. Michael Jackson

ASC POC/Implementer:
Sune Tamm / Meghan Walker

Principal Investigator

Dr. Phillip Kyle
kyle@nmt.edu

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

Project Web Site:
http://erebus.nmt.edu

Location

Supporting Stations: McMurdo Station
Research Locations: Mount Erebus

Description

Mount Erebus is the most active volcano in Antarctica. It is unique in containing a persistent convecting lava lake of anorthoclase phonolite magma. Degassing of the lake and underlying magmatic system emits volcanic gases into the pristine Antarctic atmosphere. Because of the excellent access and the nature of the small Strombolian eruptions, Mount Erebus has become a model volcano for volcanological studies. This project continues long-term surveillance using geophysical, geodetic, and geochemical observatories, and measures the seismicity, infrasound, gas emissions, and deformation using GPS observations of the volcano.

Field Season Overview

This project will continue geophysical, geochemical, and remote sensing observations of the Erebus eruptive and non-eruptive magmatic system. Field activities involve the deployment and servicing of long-term surveillance systems, seasonal observations, and sample collections at various locations on the mountain. This season, researchers will service by helicopter an array of five seismometers installed around the flanks of Mount Erebus and on Mount Bird. A large team will occupy the Lower Erebus Hut (LEH) for three to four weeks and use it as a base of operations for work on Erebus and the surrounding area. A tent camp to accommodate acclimatization will be established at Fang Glacier. Snow machines will be used for travel in the summit area of Mount Erebus. This project is collaborating with the Korean Polar Research Institute (KOPRI); a few

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team members may travel to Jang Bogo Station during the field season by non-USAP air transport.

Deploying Team Members

- Timothy Burton
- Jeanine Chmielewski
- Anne Foster
- Ronni Grapenthin
- Evgenia Ilyinskaya
- Ji Hyuk Kim
- Phillip Kyle (PI)
- Mi Jung Lee
- Clive Oppenheimer (Co-PI)
- David Parmelee
- Nial Peters

2015-2016 USAP Field Season
Project Detail

Project Title

Application Of The AGO Network To Energy Transfer In The Radiation Belts And Remote Sensing Of Auroral Plasma Processes

Summary

Event Number:
A-125-S
NSF/PLR Award 1141817

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Paul Sullivan

Principal Investigator

Dr. James LaBelle
jlabelle@einstein.dartmouth.edu

Dartmouth College
Department of Physics & Astronomy
Hanover, New Hampshire

Project Web Site:
http://www.dartmouth.edu/~spacephy/labelle_group

Location

Supporting Stations: South Pole Station
Research Locations: AGO sites

Description

This project addresses questions about energy transfer in the Earth's radiation belts and auroral plasma physics. Energetic plasma interacting with the geomagnetic field in the near-Earth space (geospace) environment emits electromagnetic waves across the radio spectrum. Ground-based measurements of these waves are used as diagnostic tools to investigate various processes in geospace. This investigation takes advantage of an existing network of radio receivers at Automated Geophysical Observatory (AGO) sites located from -70° to -85° of invariant geomagnetic latitude and operating in the frequency range from extra-low to high frequencies. The Antarctic continent is ideally suited for these types of natural radio wave experiments since it is largely devoid of anthropogenic electromagnetic interference such as radio-frequency broadcast transmissions. The project will focus on studies of three geophysically important plasma waves: Chorus waves, auroral hiss, and auroral kilometric radiation (AKR). Chorus waves are believed to be a major driver of radiation belt electron acceleration and loss. The auroral hiss and AKR waves are generated in the auroral acceleration region and have the potential to be used for remote sensing of this complex and poorly understood near-Earth region.

Field Season Overview

No science personnel will deploy this season. On-station science technicians will continue to support instrument calibration and data collection.

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Project Detail

Project Title

Earth's Electromagnetic Environment: Advancing Recent Discoveries In Auroral Plasma Radio Emission Research

Summary

Event Number:
A-128-S
NSF/PLR Award 1443338

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Paul Sullivan

Principal Investigator

Dr. James LaBelle
jlabelle@einstein.dartmouth.edu

Dartmouth College
Department of Physics & Astronomy
Hanover, New Hampshire

Project Web Site:
http://www.dartmouth.edu/~spacephy/labelle_group/

Location

Supporting Stations: South Pole Station
Research Locations: B2 Science Building / V8 vault

Description

This project will use existing instruments at South Pole Station to answer outstanding questions raised by the discovery of correlations between auroral kilometric radiation (AKR) observed 200,000 kilometers above Earth, and AKR-like signals observed simultaneously at South Pole Station; the discovery of higher electron cyclotron harmonic radiation whose polarization suggests a different and possibly nonlinear generation mechanism; and the discovery of a new type of auroral radio emission at frequencies just above the electron cyclotron frequency. These three phenomena are best observed, and in most cases can only be observed, from Antarctica, thus making the South Pole a perfect location for the experiment.

Field Season Overview

No personnel will deploy for this project this season. Instead, AGO field-team personnel who are deploying under a different project, A-111-M/S (Gerrard), will upgrade an antenna, install two new preamplifiers, and test the new configuration of the equipment and instruments currently installed in both the B2 laboratory and the V8 vault.

Deploying Team Members

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Project Detail

Project Title

Antarctic Automatic Weather Station (AWS) Program

Summary

Event Number:
O-283-M
NSF/PLR Award 1245663

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Cara Sucher / Elizabeth Kauffman

Principal Investigator

Dr. Matt Lazzara
mattl@ssec.wisc.edu

University of Wisconsin Madison
Space Science and Engineering Center/AMRC
Madison, Wisconsin

Project Web Site:
http://amrc.ssec.wisc.edu/

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo Station / WAIS Divide / other field sites

Description

The Antarctic Automatic Weather Station (AWS) network is the largest in the Antarctic and has the broadest spatial coverage. As the AWS program reaches its 35th year, the primary focus is measuring Antarctica's surface climatology using the lengthy datasets (20 to 30 years in some cases) collected by the stations. A second focus is an investigation of the surface-wind regime of the Ross Ice Shelf. In the Antarctic, short observational records and large spacing between available observations have limited the ability to observe and detect climate change. The AWS network is now capable of providing critical observational records that will allow researchers to assess the near-surface climate of the Antarctic and begin to identify signs of climate change in the Antarctic. AWS measurements also provide the verification for satellite studies and model forecasts.

Field Season Overview

This year a field party of four will deploy to McMurdo Station to visit and repair stations on the Ross Ice Shelf, in West Antarctica, at Cape Hallett, and in the local McMurdo Station area. Two groups of two grantees will deploy for two separate six-week deployments, throughout the summer season. Two new installations will be completed in West Antarctica. This project collaborates with other NSF grantees as well as other international programs. The team visits sites that report problems or cease transmitting during the austral winter. They receive support from riggers, fixed-wing, and helicopter operations.

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Deploying Team Members

Carol Costanza	Mark Seefeldt
David Mikolajczyk (Team Leader)	Lee Welhouse (Team Leader)

2015-2016 USAP Field Season
Project Detail

Project Title

Winter Survival Mechanisms And Adaptive Genetic Variation In An Antarctic Insect

Summary

Event Number:
B-256-P
NSF/PLR Award 1341385

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Samina Ouda / Jamee Johnson

Principal Investigator

Dr. Richard Lee
leere@miamioh.edu

Miami University
Oxford, Ohio

Project Web Site:
http://www.units.muohio.edu/cryolab/education/antarctic.htm

Location

Supporting Stations: Palmer Station
Research Locations: Christine, Cormorant, Hermit, Humble, and Torgersen Islands / Norsel Point

Description

The Antarctic midge can survive even if it loses 70 percent of its body water. Since polar regions are deserts that are not only cold but also lack access to free water, the midge survives in this environment via unique mechanisms that include the ability to tolerate freezing and extensive dehydration. How this is done is of interest for understanding seasonal adaptations of insects and how they respond to climate change. Additionally, the molecular and physiological mechanisms employed may offer valuable insights into more general mechanisms that might be exploited for cryopreservation and long-term storage of human tissue and organs for transplantation and other medical applications.

Field Season Overview

A science team of five will be based at Palmer Station for January and February to collect adult and larvae midges. They will use a Zodiac inflatable boat to access several islands near station. Two team members will remain on station through the month of March to continue lab work and field studies, tracking seasonal changes in microclimatic conditions and the physiological state of larvae as they prepare to overwinter. Samples will be returned to the home institution for further study.

Deploying Team Members

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David Denlinger (Co-PI)	Richard Lee (PI)
Josiah Gantz	Drew Spacht
Natalie Harr	

2015-2016 USAP Field Season
Project Detail

Project Title

Department Of Energy ARM West Antarctic Radiation Experiment (AWARE)

Summary

Event Number:
O-325-M
NSF/DOE Agreement

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Judy Shiple / Chad Naughton

Principal Investigator

Dr. Dan Lubin
dlubin@ucsd.edu

Scripps Institution of Oceanography
La Jolla, California

Project Web Site:
http://www.arm.gov/campaigns/amf2015aware

Location

Supporting Stations: McMurdo Station
Research Locations: Near station / West Antarctic Ice Sheet (WAIS)

Description

The Department of Energy (DOE) Atmospheric Radiation Measurement (ARM) program will deploy more than 60 atmospheric measuring instruments to McMurdo Station to make the first observations of Antarctic cloud microphysics using advanced instrumentation over an entire annual cycle. Team members will deploy a subset of the ARM instrumentation to the West Antarctic Ice Sheet (WAIS) Divide to make complete surface and atmospheric energy balance measurements over one summer season. The ARM instruments are integrated into standard ISO containers or installed on meteorological towers. The project's McMurdo Station area main facility will comprise up to 12 ISO containers and one calibration tower, while the WAIS Divide facility comprises one ISO container and a number of helium-gas cylinders. Balloon and radiosonde launching will also occur at both locations.

Field Season Overview

The Los Alamos National Laboratory, Field Instrument Deployments and Operations Team, working for the United States Department of Energy, will measure climate conditions at McMurdo. A team of up to 15 DOE personnel will be based at McMurdo to begin installing the AMF2 Facility at their designated pad below the CosRay Bldg. Six standard 20 foot shipping containers will be set up in a cluster to house most of the climate research instrumentation. Four 20 foot containers for equipment and storage will also be located at the CosRay site. Two radar "target towers" are to be placed at predetermined locations approved by ASC from a previous scoping trip. Two technicians

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will remain onsite to operate, repair, and maintain the instrumentation at McMurdo through the winter. A 30 foot met tower is to be erected in the center of the field instrumentation area. This project is closely coupled with a separate team (O-326) that will measure climate conditions at the WAIS Divide field site. A shipping container and two pallets of scientific instrumentation will be sent to WAIS by LC 130 aircraft. A team of four will set-up the container and field instrumentation. Two personnel will remain to maintain and operate the instrumentation and launch weather balloons until late January. Up to three technicians will arrive from McMurdo to help the technicians pack the instrumentation. They will then leave WAIS, and the container and pallets will be transported back to McMurdo where some of the instruments will be integrated into the Cosray site. The remaining instrumentation and container will be stored at the Cosray site for the Austral winter.

Deploying Team Members

- Allison Aiken
- Jeffrey Aquilina
- Jody Ellis
- Colin Jenkinson
- Krzysztof Krzton
- Iosif Lindenmaier
- Dan Lubin (PI)
- Kim Nitschke
- Paul Ortega
- Heath Powers (Team Leader)
- Maciej Ryczek
- Ryan Scott
- Joshua Snider
- Gregory Stone

2015-2016 USAP Field Season
Project Detail

Project Title

McMurdo LTER - Geochemistry: Increased Connectivity In A Polar Desert Resulting From Climate Warming: McMurdo Dry Valleys LTER Program

Summary

Event Number:
C-509-M
NSF/PLR Award 1115245

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Sune Tamm / Elizabeth Kauffman

Principal Investigator

Dr. W. Berry Lyons
lyons.142@osu.edu

Ohio State University
The School of Earth Sciences
Columbus, Ohio

Project Web Site:
http://mcmlter.org

Location

Supporting Stations: McMurdo Station
Research Locations: Dry Valleys

Description

Initially funded in 1980, the U.S. Long-Term Ecological Research (LTER) Network is a collaborative effort involving more than 1,800 scientists and students. The McMurdo LTER program is an inter-disciplinary and multi-disciplinary study of the aquatic and terrestrial ecosystems in the ice-free McMurdo Dry Valleys. It is one of 26 LTER sites where researchers are studying ecological processes over long temporal and broad spatial scales. Researchers monitor the inorganic geochemistry of waters and solid samples collected from the glaciers, streams, ponds, lakes, and landscape of the Dry Valleys. They also continue to study the upland seeps and ponds to gain a better understanding of their hydrologic and geochemical controls. This six-year award cycle comprises seven collaborative projects: C-504-M (Gooseff), C-505-M (Priscu), C-506-M (Gooseff), C-507-M (Wall), C-508-M (Barrett), C-509-M (Lyons), and C-511-M (Doran).

Field Season Overview

Field team members will collect water, snow, and sediment samples. They will travel to their sampling sites by foot or by helicopter from McMurdo Station or Lake Hoare. They will work with the limnology and stream teams at Lakes Hoare, Bonney, F6, and Fryxell. At upland pond sites within the Dry Valleys, team members will collect additional water samples. They will return to Crary Lab to perform chemical analysis of lake, stream, glacier, and other samples.

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Project Web Sites

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Deploying Team Members

W. Berry Lyons (PI)	Elsa Saelens
Sydney Olund	Kathy Welch (Team Leader)

2015-2016 USAP Field Season
Project Detail

Project Title

West Antarctic Ice Sheet Stability, Alpine Glaciation, And Climate Variability: A Terrestrial Perspective From Cosmogenic-Nuclide Dating In McMurdo Sound

Summary

Event Number:
G-054-M
NSF/PLR Award 1246316

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Judy Shiple / Meghan Walker

Principal Investigator

Dr. David R Marchant
marchant@bu.edu

Boston University
Department of Earth Sciences
Boston, Massachusetts

Project Web Site:
http://people.bu.edu/marchant/

Location

Supporting Stations: McMurdo Station
Research Locations: Mount Discovery / Black Island / Brown Peninsula

Description

This project will develop high-resolution maps of drifts deposited from grounded marine-based ice and alpine glaciers on islands and peninsulas in McMurdo Sound. In addition, researchers will acquire multi-clast/multi-nuclide cosmogenic analyses of these mapped drift sheets and alpine moraines. They will use regional climate modeling to shed light on the range of possible environmental conditions in the McMurdo region during periods of grounded-ice expansion and recession. The researchers will also make use of geological records for ice sheet and alpine glacier fluctuations preserved on the flanks of Mount Discovery, Black Island, and Brown Peninsula. Drifts deposited from grounded, marine-based ice will yield spatial constraints for former advances and retreats of the West Antarctic Ice Sheet (WAIS). Moraines from alpine glaciers, hypothesized to be of interglacial origin, could yield a first-order record of hydrologic change in the region. Synthesizing the field data, the team proposes to improve the resolution of existing regional-scale climate models for the Ross Embayment. The overall approach and anticipated results will provide the first steps towards linking the marine and terrestrial records in this critical sector of Antarctica.

Field Season Overview

This project aims to provide chronological control for past fluctuations of the West Antarctic Ice Sheet and alpine glaciers in McMurdo Sound, with results complementing the

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ANDRILL marine record. Five people will deploy to McMurdo Station to conduct glacial-geologic mapping and cosmogenic-nuclide sample collection. Four small tent campsites will be required: one on Mount Discovery, two on Black Island, and one on Sperm Bluff. Field team members will travel by helicopter to these camp sites and conduct research within walking distance of each site. Helicopter close support will be used to access nearby sites as well as glacial moraines across the islands and peninsulas of McMurdo Sound. One mid-season participant swap will occur. Rock and ice samples will be shipped to home institutions for analysis.

Deploying Team Members

- Emelia Chamberlain
- Andrew Christ (Team Leader)
- David Marchant (PI)
- Natalie Robinson
- Daniel Rybarczyk

2015-2016 USAP Field Season
Project Detail

Project Title

Palmer, Antarctica Long Term Ecological Research (LTER): Land-Shelf-Ocean Connectivity, Ecosystem Resilience And Transformation In A Sea-Ice Influenced Pelagic Ecosystem

Summary

Event Number:
C-021-L
NSF/PLR Award 1440435

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Samina Ouda / Adam Jenkins

Principal Investigator

Dr. Doug Martinson
dgm@ldeo.columbia.edu

Columbia University
Lamont-Doherty Earth Observatory
Palisades, New York

Project Web Site:
http://pal.lternet.edu

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Palmer study site / Palmer Station

Description

The overall objectives of Palmer LTER research are to document and understand the phenology and variability in sea ice dynamics, primary production, zooplankton ecology, seabird and marine mammal demography, and microbial and biogeochemical processes in the Antarctic marine ecosystem, including identifying the mechanisms of ecosystem response to rapid climate change. One particularly important objective is to continue the 23-year-long LTER time series on the regional scale grid of hydrographic stations west of the Antarctic Peninsula. 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 (WAP) 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

Shiptime: We will conduct our summer cruise aboard LMG between ca. Jan 1 - Feb 15. The actual dates must allow for 30 science days (PAL?PAL) on the cruise proper, and a two-day loading and setup period at Palmer Station prior to the cruise. The date range (plus/minus a few days) is also critical. In order to minimize confusing seasonal with

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interannual variability, we need to keep the actual observation period uniform from year to year. Operations: Standard hydrographic, net, trawl, MOCNESS, acoustic sampling gear, full access to the bridge for seabird and marine mammal surveys and other related shipboard support are required as in past LTER cruises aboard LMG, both during the survey of the LTER Grid and during extended (3-5 day) process studies. At the process study stations we will conduct repeated sampling with the CTD-Rosette, nets and gliders and perform intensive deckboard and lab experiments. Two sediment trap moorings will be recovered and redeployed at the LTER site near Hugo Island. Four physical oceanographic moorings will recovered and redeployed. We will conduct sampling for the Thorium-234 deficit in the upper water column, and process samples on board the vessel. We will conduct 1 to 5 day field camps on Avian and Charcot Islands. Zodiac support is required for deploying to these field sites, as time and ice conditions permit. Zodiac support will be required for glider operations and to deploy satellite tags on baleen whales and to collect biopsy samples and individual photo ID data. Two fully?equipped radioisotope vans are required (one for C14 and one for 3H). Thorium-234 work must to be accommodated in the main lab spaces. Marine technician support is required to deploy hydrographic sampling instrumentation, Zodiacs, gliders and moorings. We require 20 science berths on the cruise. An education and outreach component requires transfer of images and other files, up to 25 MB daily from ship and shore. Standard hydrographic, net, trawl, MOCNESS, acoustic sampling gear, full access to the bridge for seabird and marine mammal surveys and other related shipboard support are required as in past LTER cruises aboard LMG, both during the survey of the LTER Grid and during extended (3-5 day) process studies. At the process study stations we will conduct repeated sampling with the CTD-Rosette, nets and gliders and perform intensive deckboard and lab experiments. Two sediment trap moorings will be recovered and redeployed at the LTER site near Hugo Island. Four physical oceanographic moorings will recovered and redeployed. We will conduct sampling for the Thorium 234 deficit in the upper water column, and process samples on board the vessel. We will conduct 1 to 5 day field camps on Avian and Charcot Islands. Zodiac support is required for deploying to these field sites, as time and ice conditions permit. Zodiac support will be required for glider operations and to deploy satellite tags on baleen whales and to collect biopsy samples, and individual photo ID data. Two fully?equipped radioisotope vans are required (one for C14 and one for 3H). We will collect several small soil samples during visits to Rothera and Charcot Island, in accord with ACA, Treaty and BAS regulations. Thorium 234 work needs to be accommodated in the main lab spaces. Marine technician support is required to deploy hydrographic sampling instrumentation, Zodiacs, gliders and moorings. We require 20 science berths on the cruise. The two additional science berths are allocated to Dr. Sherrell (funded separately). An education and outreach component requires transfer of images and other files, up to 10 MB daily from ship and shore.

2015-2016 USAP Field Season
Project Detail

Project Title

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

Summary

Event Number:
B-022-P
NSF/PLR Award 1341333

Program Manager:
Mr. David Garrison

ASC POC/Implementer:
Matthew Erickson / Jamee Johnson

Principal Investigator

Dr. James McClintock
mcclinto@uab.edu

University of Alabama Birmingham
Department of Biology
Birmingham, Alabama

Project Web Site:
http://www.uab.edu/antarctica/

Location

Supporting Stations: Palmer Station
Research Locations: Palmer Station

Description

Researchers will focus on three main objectives that are a direct outcome of their past and current studies of the chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula. The first objective is to expand the current understanding of an apparent community-wide mutualism between macroalgae and their associated amphipods to include gastropods, which are also abundant on many macroalgae. The second objective focuses on the basis and implications of the substantial chemodiversity the investigators have observed in macroalgal defenses, particularly in the common and heavily defended red alga Plocamium cartilagineum. The third objective looks into understanding the relationship between P. cartilagineum and the amphipod Paradexamine fissicauda, particularly the benefits and costs to P. fissicauda from being uniquely able to consume P. cartilagineum and some other chemically defended red algae. The investigators also seek to definitively demonstrate that P. fissicauda is sequestering secondary metabolite defenses from P. cartilagineum to defend itself from predation.

Field Season Overview

In this, the first of three planned field seasons, a team of four divers will deploy to Palmer Station with the goal of collecting frozen algae and enumerating the associated amphipods. Dives will be from shore and from Zodiac inflatable boat. Samples will be

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analyzed on station and some will be shipped to the home institution for further analysis.

Deploying Team Members

- Charles Amsler (Co-PI)
- Margaret Amsler
- Bill Baker (Co-PI)
- Ryan Young

2015-2016 USAP Field Season
Project Detail

Project Title

Antarctic ELF/VLF Observations Of Q-Bursts, Radio Atmospherics, And Energetic Particle Precipitation

Summary

Event Number:
A-109-M/P/S
NSF/PLR Award 1246275

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Elizabeth Kauffman / Jamee Johnson / Paul Sullivan

Principal Investigator

Dr. Robert C. Moore
moore@ece.ufl.edu

University of Florida
Gainesville, Florida

Project Web Site:
http://www.vlf.ece.ufl.edu/Antarctica/

Location

Supporting Stations: McMurdo Station, Palmer Station, South Pole Station
Research Locations: Crary Lab / Arrival Heights (ASPA 122) / Cusp Lab / Terra Lab

Description

Extremely Low Frequency/Very Low Frequency (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 U.S. Antarctic research stations. At Arrival Heights, the radiometer has operated continually 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 continually records ELF and VLF data streams and provides real-time data processing and access via the Internet.

Field Season Overview

This season, researchers will continually record ELF/VLF data and provide real-time data processing and access via the Internet, when available, in support of coordinated lightning-related experiments to be performed in North-Central Florida. Minor support will

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be provided on station throughout the year by contract research associates. Researchers plan to replace receiver hardware during site visits to McMurdo and South Pole Stations.

Deploying Team Members

- Robert Moore (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

The Polar Geospatial Information Center: Joint Support

Summary

Event Number:
T-434-M
NSF/PLR Award 1043681

Program Manager:
Dr. Michael Jackson

ASC POC/Implementer:
Matthew Erickson / Elizabeth Kauffman

Principal Investigator

Mr. Paul Morin
lpaul@umn.edu

University of Minnesota
Geology & Geophysics
St. Paul, Minnesota

Project Web Site:
http://www.pgc.umn.edu

Location

Supporting Stations: McMurdo Station
Research Locations: On station

Description

The Polar Geospatial Center (PGC) was founded in 2007 as the Antarctic Geospatial Information Center (AGIC) and has since expanded to include both polar regions. PGC provides geospatial support in the form of mapping, data delivery, and geographic information systems (GIS) analysis to science and logistics communities of the NSF's Arctic and Antarctic research programs. Deployed PGC technicians provide on-site cartographic assistance in the form of GIS data formats, maps, and paper documents to science-project grantees and other USAP entities, collect ground-control points to calibrate imagery, and gather satellite and aerial imagery from a variety of national and international sources.

Field Season Overview

Four participants will deploy, with a maximum of two at McMurdo Station at the same time. PGC will maintain a presence at the Crary Lab and will support other field and logistics groups for general mapping and imagery services on an on-demand basis.

Deploying Team Members

- Michael Cloutier
- Cole Kelleher

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Bradley Herried George Roth

2015-2016 USAP Field Season
Project Detail

Project Title

NASA Long Duration Balloon (LDB) Support Program

Summary

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

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Cara Sucher / Chad Naughton / Scott Battaion

Principal Investigator

Mr. Gerald Dwayne Orr
Dwayne.Orr@csbf.nasa.gov

Columbia Scientific Balloon Facility
Palestine, Texas

Project Web Site:
http://www.csbf.nasa.gov

Location

Supporting Stations: McMurdo Station
Research Locations: Williams Field

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 using 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° south latitude.

Field Season Overview

The CSBF field team members will be deployed to McMurdo Station from mid October thru early February to facilitate the preparation, launch, and recovery of NASA-sponsored high-altitude balloons and science payloads. The team members will be housed at McMurdo Station and commute to the Williams Field launch facility. Balloon and payload preparations are timed to coincide with favorable weather and wind patterns. Upon termination of the flights, recovery teams will use fixed-wing and/or helicopter support to retrieve the payloads.

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Deploying Team Members

- Alexander Beange
- Paul Brasfield
- Garrison Breeding
- Mark Cobble
- Dewell Cooper
- Larry Fox
- Curtis Frazier
- Gerald Gregg
- Scott Hadley
- Randall Henderson
- Joseph Jones
- Joshua King
- Janet Letchworth
- Otto Masters
- Randall McDonald
- Bobby Meazell
- Robert Mullenax
- Gerald Orr (PI)
- Juan Perez Lara
- Jacob Richard
- Delbert Spangler
- David Sullivan (Co-PI)
- Jeffrey Tuttle
- Julia Uberuaga
- Cesar Villasana
- David Webb
- Corey Weber
- Daniel Willette

2015-2016 USAP Field Season
Project Detail

Project Title

UNAVCO GPS Survey Support

Summary

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

Program Manager:
Dr. Michael Jackson

ASC POC/Implementer:
Cara Sucher / Elizabeth Kauffman

Principal Investigator

Mr. Joseph R Pettit
pettit@unavco.org

UNAVCO
Boulder, Colorado

Project Web Site:
http://www.unavco.org/projects/project-support/polar/polar.html

Location

Supporting Stations: McMurdo Station
Research Locations: Crary Lab / field sites

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 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 Mount Erebus for GPS data retrieval from the Transantarctic Mountains, and an Iridium satellite communications hub in Colorado. Technical support is also provided for the Palmer Station GPS surveying system. Operation and maintenance is provided as needed for the NASA International Global Navigation Satellite System (GNSS) Service (IGS) stations MCM4 and PALM, the POLENET (ANET) remote GPS stations, and GPS reference stations at the West Antarctic Ice Sheet (WAIS) Divide and South Pole Station.

Field Season Overview

This field season, three to six UNAVCO staffers will be based at McMurdo Station throughout the austral summer. They provide technical and field engineering support and manage the UNAVCO equipment pool. Field team members will occasionally travel to field locations as project support requirements dictate. Detailed logistical support is arranged directly between UNAVCO and the science project team.

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Deploying Team Members

- Nicolas Bayou
- Brendan Hodge
- Spencer Niebuhr
- Spencer Niebuhr
- Thomas Nylen
- Joseph Pettit (PI)
- Anne Zaino

2015-2016 USAP Field Season
Project Detail

Project Title

Investigating Holocene Shifts In The Diets And Paleohistory Of Antarctic Krill Predators

Summary

Event Number:
B-025-E/M
NSF/PLR Award 1443585

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Matthew Erickson / Cara Ferrier / Elizabeth Kauffman

Principal Investigator

Dr. Michael John Polito
mpolito@lsu.edu

Louisiana State University Baton Rouge
Baton Rouge, Louisiana

Project Web Site:
http://www.uncw.edu/penguins/

Location

Supporting Stations: Special Project, McMurdo Station
Research Locations: Mario Zucchelli Station

Description

Researchers will sample active and abandoned penguin colonies for sediments and tissues and conduct radiocarbon, stable isotope, and mercury analyses to investigate paleohistory and diet of penguins. Sediments will be analyzed by Chinese collaborators for bio-elements from past penguin occupations. Data will be correlated with paleoclimatic signals to assess population movement and occupation history in penguins. This project will also involve international collaborations to investigate the underlying mechanisms behind shifts in the diets and paleohistory of Antarctic krill predators in concert with climate variability and anthropogenic harvesting during the Holocene. Modern and ancient Antarctic krill predator tissues from penguins, seals, and squid recovered during this project will be combined with historic museum specimens and modern and ancient tissues available from previous paleoecological excavations.

Field Season Overview

Researchers will sample locations that have active penguin colonies in the northern Antarctic Peninsula region. They'll access those locations using existing collaborations with private tour ship companies, the Instituto Antártico Argentino, and the Chinese Antarctic Program. In collaboration with the Italian Antarctic Program (PNRA) and the New Zealand Antarctic Program, the team will also conduct sampling efforts at several sites on the other side of the continent in the northern Ross Sea area. They will establish field camps at each site and will recover modern and ancient Antarctic krill predator

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(penguins, seals, and squid) tissues from sediment at each sampling site. They will then return to McMurdo Station where they will use Crary Lab facilities to process their field samples.

Deploying Team Members

- Larry Coats
- Steven Emslie (Team Leader)
- Hila Levy
- Xiaodong Liu
- Ashley McKenzie

2015-2016 USAP Field Season
Project Detail

Project Title

McMurdo LTER - Lakes: Increased Connectivity In A Polar Desert Resulting From Climate Warming: McMurdo Dry Valleys LTER Program

Summary

Event Number:
C-505-M
NSF/PLR Award 1115245

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Sune Tamm / Elizabeth Kauffman

Principal Investigator

Dr. John Priscu
jpriscu@montana.edu

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

Project Web Site:
http://www.mcmlter.org

Location

Supporting Stations: McMurdo Station
Research Locations: Dry Valleys

Description

Initially funded in 1980, the U.S. Long-Term Ecological Research (LTER) Network is a collaborative effort involving more than 1,800 scientists and students. The McMurdo LTER program is an inter-disciplinary and multi-disciplinary study of the aquatic and terrestrial ecosystems in the ice-free McMurdo Dry Valleys. It is one of 26 LTER sites where researchers are studying ecological processes over long temporal and broad spatial scales. Researchers will continue their long-term measurements of biological, chemical, and physical limnological properties of Dry Valley lakes and lake ice, with special emphasis on LTER core research areas. This six-year award cycle comprises seven collaborative projects: C-504-M (Gooseff), C-505-M (Priscu), C-506-M (Gooseff), C-507-M (Wall), C-508-M (Barrett), C-509-M (Lyons), and C-511-M (Doran).

Field Season Overview

We will make routine lake measurements from early November through mid January as part of the LTER project.

LTER Crary Lab space (Rm. 106) will be used for approximately 10 days before field deployment in late October/early November, for approximately 10 days during late November/early December, and for approximately 30 days for project close-out during late December through late January. We will periodically occupy the field camps at Lakes Bonney, Hoare and Fryxell from early November to early January, and will stay overnight

Project Indexes

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for approximately 5 nights during November and December at Lake Miers. Our field rotation will begin at Lake Fryxell in early November, move to Lake Hoare and then Lake Miers approximately the second week of November, and to Lake Bonney approximately the third week of November. Our second round of sampling will occur in early December and will follow the same lake rotation. A 5 day sampling trip to Fryxell, Hoare, Miers and Bonney will be made during late December/early January and will be based out of the Lake Hoare and Lake Bonney camps.

We will require helicopter support between McMurdo Station and the dry valleys from early November through early January. This includes camp put-in, camp moves, passenger moves, day trips, transportation of scientific samples back to MCM, cargo/resupply, and camp close-out.

Deploying Team Members

- Amy Chiuchiolo (Team Leader)
- Noell Martinez
- Jeffrey Patriarche
- Cristina Takacs-Vesbach (Co-PI)
- Madelyne Willis

2015-2016 USAP Field Season
Project Detail

Project Title

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

Summary

Event Number:
B-009-M
NSF/PLR Award 1141326

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Sune Tamm / Beverly Walker

Principal Investigator

Dr. Jay Rotella
rotella@montana.edu

Montana State University Bozeman
Ecology
Bozeman, Montana

Project Web Site:
http://www.montana.edu/rgarrott/antarctica/index.htm

Location

Supporting Stations: McMurdo Station
Research Locations: Big Razorback Island / Hutton Cliffs / McMurdo Sea Ice / Turtle Rock

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. Their field studies include collecting data on seal body mass – a surrogate for annual variation in marine food resources. This 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

Eight participants will deploy to McMurdo Station and then to their field camp at Big Razorback Island. All pups born within Erebus Bay will be marked during the early field season (October-November) with a smaller effort to mark adults that have not been marked previously. After pupping is finished, the team will conduct population-wide surveys of marked and unmarked seals in Erebus Bay. A sample of adults and pups will be physically weighed, tissue sampled, and 40-day temperature loggers will be deployed on a small number of pups. The data will be correlated with a variety of maternal traits

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and environmental metrics. The field team will use helicopter support for population counts and reconnaissance flights over the study area and to look for tagged seals outside their study area.

Deploying Team Members

- Eric Boyd
- Michael Forzley
- Robert Garrott (Co-PI)
- Ross Hinderer
- Kaitlin Macdonald
- Erika Nunlist
- John Paterson
- Jay Rotella (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

Astrobiology Science And Technology For Exploring Planets (ASTEP)

Summary

Event Number:
B-259-M
NASA Award 11-ASTEP11-0007

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Samina Ouda / Steve Zellerhoff / Chad Naughton

Principal Investigator

Dr. Britney Elyce Schmidt
britneys@eas.gatech.edu

Georgia Institute of Technology
Earth & Atmospheric Sciences
Atlanta, Georgia

Project Web Site:
http://schmidt.eas.gatech.edu/simple/

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo Ice Shelf

Description

This project, the Sub-ice Investigation of Marine and PLanetary-analog Ecosystems (SIMPLE), addresses the need to understand the extent and limitations of life in sub-ice environments. Researchers will seek to accomplish this objective by determining the distribution of any active biological communities under the McMurdo Ice Shelf as well as the fundamental ice and ocean properties that make such communities viable. SIMPLE will focus on critical observations of the Earth's sub-shelf ecosystems and the ice processes upon which they rely as analogs for active geology and habitable zones on Jupiter's moon, Europa.

Field Season Overview

In this season we will be establishing a field camp near the sea ice-ice shelf transition. We will be deploying the ARTEMIS AUV through a hole in the sea ice to swim up to 15 km from the dive site. We will deploy to McMurdo with two teams.

We are requesting 13 field team members. This includes 8 engineers and 5 science team members. The first team will consist of 7-10 individuals deploying at winfly to establish camp and complete initial check out. The second team will arrive during main body. The remaining 3 engineers will be on the first main body flight and the three science team members will join in early-mid October. Because of the length of the season, we request the option to swap out team members on a very limited basis. The project will support the

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cost of these additional flights to CHC.

WINFLY: During Winfly, we will be aiming to 1) Establish the sea ice camp The camp will be at 77o53' S 166o50' We are establishing a camp that includes a fish hut for ROV and diver operations (diver operations will be only during main body and will adhere to the approved dive plan), the Endurance Bot Garage with gantry system (into which our launch and recovery system will be installed by the team), and another Polar haven tent with floor for a kitchen and team work space. This camp needs to be fully set up by the beginning of main body so that operations can start immediately. The full Winfly team will be available to help with construction of both tents. The needs for this camp will be: -large vehicle support to establish the fish hut -Bladed vehicle support to move snow -2 PB Pax and weather permitting, snow machines late in the winfly window -reed drill to prep 1 54" hole early in the window, 1 65" hole late in the window -hotsies to keep the hole open, with a special ASC made melt ring to remove them -culverts to keep the holes free of ice that do not destroy the AUV/ROV tether cables -outhouse/s 2) Characterize present sub-ice conditions We will use an ROV, weighing approximately 200 lbs, to explore through the sea ice hole and characterize the local environment to guarantee the safety of ARTEMIS. We will perform these operations, as possible according to weather, from the fish hut established early on the sea ice.

During Winfly, the full team will be housed in MCM.

MAIN BODY: During main body, we will be operating from a camp on the sea ice in in front of the ice shelf. The Wifly team will be joined by the remaining programming and science team staff during early to mid-October. Operations on the sea ice will run until the close of the sea ice, or as long as we can be allowed to operate at our camp site. By the start of main body, we will be ready to operate as soon as our vehicle is shipped down. It is critical that if the vehicle does not make a winfly cargo shipment in August/Septeber, that ARTEMIS is on the first flight down of main body to avoid delays of operations.

During Main Body we will: 1) Conduct daily traverses of the vehicle under the ice shelf from operations center in the Bot Garage. These operations will involve dropping the vehicle through the sea ice using the gantry launch system. Divers from our team (through the approved dive plan) will be on hand to retrieve the vehicle or assist in launch and recovery. The first weeks of operations will be check out runs to ensure that the vehicle has been shipped without damage and to carefully characterize the vehicle's behavior in the Antarctic environment. Following check out, we will proceed with science operations. During science operations, the vehicle will make pre-programmed patterned traverses from the dive site to the end of 10-15km radials. THe vehicle will conduct surveys at both the ice-ocean interface and seafloor interface. Operations include onboard oceanographic and biological characterization as well as water sampling on board the vehicle. Samples will be retuned to the lab for prepping and freezing. 2) Laboratory Sample preparation We will prepare sample bottles and process water samples in the Crary lab. We will store the samples in the -40 freezers in the Crary Lab before shipping back on the vessel. This requires access to a shared lab with hood. 3) Ice Cores We will take two 25-m ice cores through the MIS in order to calibrate the radar data as well as the results from the underwater vehicle. These cores will be processed and stored in the -40 freezers in the Crary Lab.

Support: We will need to have ARTEMIS delivered from the flight to the Bot Garage to reconfigure the vehicle. We may need occasional support to remove drifted snow from the camp if it becomes extreme. We will require internet access from the field and communications support.

Timeline: We have made three plans for the timeline. The best scenario, Scenario 1, would have most of the team and the ARTEMIS vehicle come down on WInfly flights. Scenario 2 has a smaller team deploying at Winfly to set up camp and characterize the environment, with ARTEMIS and the remaining team arriving on the first main body flights. We need to begin operations at the beginning of main body, requiring our remaining engineering team members, vehicle and tools on the first flights of main body. We request that ARTEMIS be sent down on any August/September winfly cargo flight if one ends up being planned. In all cases, we will plan to complete operations with the close of the sea ice. However, we request that we be allowed to operate as long as conditions at our site are safe. Because our camp is close to town, placed on a multi-year ice, and near the Pegasus transition, we can continue operations longer than the more remote camps, and conditions should remain safe for the removal of the camp later in the season. We request that the ASC staff consider ways to extend operations there by monitoring conditions at the site and the Pegasus transition. We will help the staff with monitoring, and the full team will be available to expedite breaking down camp.

Deploying Team Members

- Evan Clark
- Peter Doran (Co-PI)
- Chris Flesher
- John Harman
- Keith Huffstutler
- Peter Kimball
- Justin Lawrence
- Joshua Moor
- Brian Pease
- Kristof Richmond
- Britney Schmidt (PI)
- Vickie Siegel
- Mark Skidmore
- Bill Stone (Co-PI)
- Luke Winslow

2015-2016 USAP Field Season
Project Detail

Project Title

The Drake Passage High-Density XBT/XCTD Program

Summary

Event Number:
O-260-L
NSF/PLR Award 1341431

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Matthew Erickson / Bruce Felix

Principal Investigator

Dr. Janet Sprintall
jsprintall@ucsd.edu

Scripps Institution of Oceanography
Physical Oceanography Research Division
La Jolla, California

Project Web Site:
http://www-hrx.ucsd.edu

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Drake Passage

Description

The objective of the eXpendable BathyThermograph / eXpendable Conductivity Temperature Depth (XBT/XCTD) program is to measure the seasonal to interannual variability of upper-ocean temperature and geostrophic transport through the Drake Passage. Closely spaced XBT (temperature) and XCTD (salinity) measurements are collected underway on six to eight Drake Passage crossings of the ARSV Laurence M. Gould (LMG) per year. The project has been ongoing since 1996. With the multi-year time series, researchers have observed substantial variability in circulation, transport, and water properties on time scales from seasonal to interannual, and spatial scales from mesoscale eddies to the Antarctic Circumpolar Current cores.

Field Season Overview

Underway XBT and XCTD measurements are requested on the six L.M. Gould cruises during the FY2015 season. However, the R/V Laurence M. Gould Operating Schedule published 12 March 2015 does not as yet account for the full 2015-2016 field season.

The PI would like to sample on LMG15-08 (southbound)

and select an additional five (5) cruises during a later date when the LMG schedule is more defined.

In general, my XBT/XCTD sampling plan objective is to schedule sampling on the LMG

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approximately every 2 months, but this is not always possible. Approximately 70 XBTs are dropped per crossing. The XBTs are loaded and launched using the SIO automatic XBT launcher and associated software that automates the collection of the XBT profiles. The SIO system drops an XBT probe at pre-specified locations, and prompted by the GPS location. The XBT system should be solely dedicated for the use of the XBT program.

During this season, we will continue the transition to the Windows 7 OS and work at compatibility with the Amverseas communication with Iridium. This could potentially require a port call by the Marine Technician Mr. Glenn Pezzoli (or an equivalent personnel from within the XBT laboratory group) to confirm that the system is operating correctly, although the shipboard personnel have been extremely helpful and diligent in helping with this upgrade.

Any problems that arise in any part of the system should be referred to Janet Sprintall (jsprintall@ucsd.edu), Glenn Pezzoli (gpezzoli@ucsd.edu), and Lucian Parry (loparry@ucsd.edu).

We request 11 TSK XCTDs be dropped per XBT sampling cruise, at every half degree between 55.5S and 60S (i.e. 55.5S, 56S, 56.5S, 57S, 57.5S, 58S, 58.5S, 59S, 59.5S, 60S, 60.5S). This means that each XBT/XCTD sampling cruise should have a box of XCTDs on board (12 probes), and 1 probe is to be used as a spare in case of failure of one of the 11 probes.

Salinity bottle samples will be collected at each XCTD deployment. This bottle data will be used to calibrate the XCTD and underway thermosalinograph (TSG) data. Offsets between the bottle salt data and the TSG can be significant, and this is one way of determining the offset. The offset between two salinities is lowered when the TSG is cleaned before the crossing, and we would request this occur on each XBT/XCTD transect.

To undertake the XBT/XCTD sampling, we request the support from 1-2 Rathyeon personnel for set-up and loading the XBT probes in the launcher, the XCTD deployments, and the collection of salinity bottle samples. XBT/XCTD log sheets should note bottom depth < 800 m, and probe success or failures. All data and log sheets to be downloaded to CD and sent to PI Sprintall upon cruise completion. We also request TSG, met and navigation data from each cruise be sent on CD via US mail.

2015-2016 USAP Field Season
Project Detail

Project Title

Palmer, Antarctica Long Term Ecological Research (LTER): Land-Shelf-Ocean Connectivity, Ecosystem Resilience And Transformation In A Sea-Ice Influenced Pelagic Ecosystem

Summary

Event Number:
C-020-L
NSF/PLR Award 1440435

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Samina Ouda / Adam Jenkins / Jamee Johnson

Principal Investigator

Dr. Deborah Steinberg
debbies@vims.edu

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

Project Web Site:
http://pal.lternet.edu/

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: LTER study site / Palmer Station

Description

The overall objectives of Palmer LTER research are to document and understand the phenology and variability in sea ice dynamics, primary production, zooplankton ecology, seabird and marine mammal demography, and microbial and biogeochemical processes in the Antarctic marine ecosystem, including identifying the mechanisms of ecosystem response to rapid climate change. One particularly important objective is to continue the 23-year-long LTER time series on the regional scale grid of hydrographic stations west of the Antarctic Peninsula. Zooplankton and micro-nekton provides the main trophic link between primary producers and apex predators in the Southern Ocean. Researchers on this project will focus on: (1) Trophic cascading and food selectivity experiments; (2) Determining the target strength and backscattering cross section of krill in response to data from an acoustic Doppler current profiler (ADCP) deployed 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

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The science team will travel on the ARSV Laurence M. Gould (LMG) from Punta Arenas, Chile to Palmer Station. Once on station, the team will perform several incubation experiments to test specific hypotheses about microbial processes and organic matter cycling. All fieldwork will be performed in Arthur Harbor at the LTER A-G hydrographic stations within the boating area. The research includes some work with soils and glacier runoff in the Palmer region, though no soil samples will be shipped off site. ASC Lab Staff will provide support for over-winter collection of chlorophyll and biogeochemical samples.

Deploying Team Members

- Anjali Bhatnagar
- Joseph Cope
- Andrew Corso
- Danielle Hall
- Patricia Thibodeau

Project Title

High-Resolution Underway Air-Sea Observations In Drake Passage For Climate Science

Summary

Event Number:
O-404-L
NSF/PLR Award 1341431

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Matthew Erickson / Bruce Felix

Principal Investigator

Dr. Britton B Stephens
stephens@ucar.edu

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

Project Web Site:
http://www.eol.ucar.edu/homes/stephens/GO2

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Drake Passage

Description

Since June 2012, this project has collected underway atmospheric oxygen and carbon dioxide concentration measurements from the ARSV L.M. Gould (LMG), in collaboration with the longer-running efforts collecting partial pressure carbon dioxide (pCO2), eXpendable BathyThermograph (XBT), and acoustic Doppler current profiler (ADCP) measurements. The objectives of these atmospheric oxygen and carbon dioxide measurements are to improve our understanding of the large-scale thermal and biological forcing of Southern Ocean seasonal air-sea carbon dioxide fluxes, to help in assessing the scaling of the Drake Passage underway pCO2 and discrete measurements to basin scales, and to explore short-term oxygen variations as a diagnostic of local-scale productivity.

Field Season Overview

This project will conduct ongoing measurements of atmospheric O2 and CO2 in the Drake Passage from the LMG. Measurements are conducted on every cruise as “underway science” by semi-automated underway systems that require minimal intervention from staff technicians. Data is sent to the PI daily by email, and at the end of each cruise by mailing a USB pen drive. A team member may make one or two visits to the vessel to perform system maintenance when the vessel is in port.

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2015-2016 USAP Field Season
Project Detail

Project Title

The O2/N2 Ratio And CO2 Airborne Southern Ocean (ORCAS) Study

Summary

Event Number:
O-541-L/P
NSF/PLR Award 1501993

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Samina Ouda / Adam Jenkins

Principal Investigator

Dr. Britton B Stephens
stephens@ucar.edu

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

Project Web Site:
http://www.eol.ucar.edu/field_projects/orcas

Location

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

Description

The O2/N2 Ratio and CO2 Airborne Southern Ocean (ORCAS) study will be achieved through intensive airborne surveys of atmospheric oxygen, carbon dioxide, related gases, and ocean surface properties over diverse biogeochemical regions adjacent to the southern tip of South America and the Antarctic Peninsula. The NSF/National Center for Atmospheric Research (NCAR) Gulfstream V aircraft with a suite of high-precision in-situ and remote-sensing instruments will perform 14 flights over a period of six weeks in austral mid-summer. The primary research objective is to characterize summertime variations in atmospheric oxygen and carbon dioxide over the Southern Ocean adjacent to South America and the Antarctic Peninsula at a range of time and space scales. Hyperspectral remote sensing of the ocean surface and characterization of the emissions of biogenic reactive gases over the Southern Ocean will also be accomplished using on-board instruments.

Field Season Overview

This research continues a three year project of atmospheric O2 and CO2 measurements in the Drake Passage from the LMG. They are conducted on every cruise as “underway science” by semi-automated underway systems that require minimal intervention from staff technicians. Data is returned by daily email and by mailing a USB pen drive at the end of each cruise.

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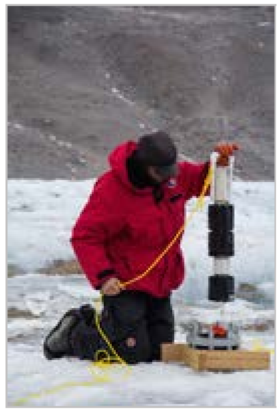
Project Detail

Project Title

Microbialite Morphology In Lake Joyce, Antarctica

Summary



Event Number:
G-063-M
NASA Award 11-EXO11-0013

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Sune Tamm / Meghan Walker

Principal Investigator

Dr. Dawn Yvonne Sumner
dysumner@ucdavis.edu

University of California Davis
Geology Department
Davis, California

Project Web Site:
http://mygeologypage.ucdavis.edu/sumner/Antarctica.html

Location

Supporting Stations: McMurdo Station
Research Locations: Lake Joyce / Pearse Valley

Description

Researchers will characterize microbial mats that are growing on the floor of Lake Joyce. Previous results demonstrate that these mats are morphologically similar to fossil mats that are 2.5 to three billion years old in diverse locations around the globe. They will use the living mats in Lake Joyce to develop a model for biological, sedimentological, and geochemical processes that influence microbial mat morphology and will use that model to help constrain processes influencing ancient mat growth.

Field Season Overview

This project will finish their microbial mat study this season at Lake Joyce. Two science participants will be transported by helicopter to a small tent camp at Lake Joyce for two weeks. One ASC field coordinator will provide approximately one week of assistance to remove previously-deployed sediment traps through the ice cover of Lake Joyce. The sediment traps are self-heated which should allow them to melt out of the ice cover on their own, but the Mechanical Equipment Center may provide back-up equipment to assist with the removal. Water and sediment samples will be collected and sent to home institutions for further analysis. Construction staff will remove the Polar Haven at Lake Joyce for retrograde to McMurdo.

Deploying Team Members

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

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Tyler Mackey (Co-PI)	Frances Rivera-Hernandez

2015-2016 USAP Field Season
Project Detail

Project Title

Origin And Climatic Significance Of Rock Glaciers In The McMurdo Dry Valleys: Assessing Spatial And Temporal Variability

Summary

Event Number:
G-085-M
NSF/PLR Award 1341284

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Sune Tamm / Bija Sass

Principal Investigator

Dr. Kate Swanger
Kate_Swanger@uml.edu

University of Massachusetts
Lowell, Massachusetts

Project Web Site:
http://faculty.uml.edu/Kate_Swanger/KS/Research.html

Location

Supporting Stations: McMurdo Station
Research Locations: Dry Valleys

Description

Rock glaciers are common in the McMurdo Dry Valleys, but they are concentrated in a few isolated regions: western Taylor Valley, western Wright Valley, Pearse Valley, and Bull Pass. The researchers hypothesize that the origin and age of these features varies by region; that rock glaciers in Pearse and Taylor Valleys originated as buried glacier ice, whereas rock glaciers in Wright Valley formed through permafrost processes, such as mobilization of ice-rich talus. These hypotheses are born out of previous research demonstrating regional-scale variability in the sediment-ice ratio of rock-glacier cores and stratigraphic relationships between rock glaciers and alpine glaciers. To address these hypotheses, the researchers propose to: (1) Develop relative and absolute chronologies for the studied rock glaciers (through file mapping and optically stimulated luminescence dating of overlying sediments); (2) Assess the origin of clean-ice cores through stable isotopic analyses; (3) Determine if present-day soil-moisture and temperature conditions are conducive to rock glacier formation/preservation, and (4) Investigate whether the hypothesized glacigenic rock glaciers are in equilibrium with present-day climate. To achieve these research goals, researchers will incorporate geomorphic mapping, sedimentology, geochemical analyses, and geophysical techniques.

Field Season Overview

During the 2015–16 final field season, five participants will deploy to Antarctica to conduct helicopter-supported fieldwork at five main sites in the McMurdo Dry Valleys

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(MDV). A sixth participant will be a field coordinator from Field Support and Training (FST). During the first part of the season, three participants will operate out of two camps. They will extract shallow ice cores from buried ice in Taylor and Pearse valleys. The focus of these camps will be to complete the ice coring while the weather is still cool. This first part of the field season will require increased helicopter support to transport the cores back to McMurdo. Duing the final three weeks of the season, or the second half of the project, the team of five will camp in the Wright and Taylor Valleys. They will gather sediment and water samples for geochemical analyses, will deploy and retrieve meteorological stations, and will conduct ground-penetrating radar scans and mapping. As per previous field seasons, they will also be supported with tent-camping gear, communications equipment, and temporary office space in Crary Lab.

Deploying Team Members

- Esther Babcock
- James Dickson
- Kate Swanger (PI)
- Rachel Valletta
- Kelsey Winsor

2015-2016 USAP Field Season
Project Detail

Project Title

High-Resolution Underway Air-Sea Observations In Drake Passage For Climate Science

Summary

Event Number:
O-214-L
NSF/PLR Award 1341431

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Matthew Erickson / Bruce Felix

Principal Investigator

Dr. Colm Sweeney
colm.sweeney@noaa.gov

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

Project Web Site:
http://www.ldeo.columbia.edu/CO2

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Drake Passage

Description

The Antarctic Circumpolar Current is the strongest wind-driven ocean current on the planet. Encircling the entire continent, it has a natural “chokepoint” in the form of the Drake Passage between South America and the Antarctic Peninsula. Since 1994, this project has collected data during all Drake Passage crossings, first on the R/V Polar Duke, then the ARSV Laurence M. Gould. The installed equipment measures underway surface partial pressure of carbon dioxide (pCO2) and takes discrete samples of other parameters of interest to studying the carbon system, e.g., total carbon dioxide (TCO2) and isotopic (13C/12C and 14C/12C) ratios in surface TCO2. During selected southbound Drake Passage transects of O-260-L (Sprintall), this group also obtains direct measurements from seawater samples and collects physical hydrographic data using eXpendable BathyThermograph (XBT) and expendable Conductivity, Temperature, Depth (XCTD) probes. Since 2012, this group has also conducted underway measurements of atmospheric oxygen and nitrogen. The measurement set provides an opportunity to increase our understanding of the major processes that control spatial, seasonal, and inter-annual variability of dissolved carbon dioxide in the waters of the Drake Passage as well as biogeochemical fluxes in the Southern Ocean.

Field Season Overview

Project participants deploy to one port call each year to maintain and upgrade equipment. Onboard support staffers and technicians monitor the equipment, turn it on and off to

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avoid data collection in other nations' Exclusive Economic Zones (EEZ), and perform maintenance as needed. During Janet Sprintall's O-260 Drake Passage transects, contract technicians collect water samples for this project. At the end of each cruise the data is distributed to the project PIs and collaborators as well as the onboard science parties.

Deploying Team Members

- Tim Newberger
- Britton Stephens (Co-PI)
- Andrew Watt
- Sonja Wolter

2015-2016 USAP Field Season
Project Detail

Project Title

Development Of An ANtarctic Gravity Wave Imager Network (ANGWIN) For Collaborative Mesospheric Research

Summary

Event Number:
A-119-M/S
NSF/PLR Award 1443730

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Elizabeth Kauffman

Principal Investigator

Dr. Michael Taylor
mike.taylor@usu.edu

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

Project Web Site:
http://ail.usu.edu/Data/Data.html

Location

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

Description

The primary goal of this research is to quantify the properties, variability, and momentum fluxes of short-period (less than an hour) mesospheric gravity waves and their dominant sources and effects over Antarctica. To achieve this, researchers have implemented an ANtarctic Gravity Wave Imaging Network (ANGWIN) that provides an exceptional capability for investigating mesospheric gravity waves over selected regions around the Antarctic continent and deep in the interior, essentially creating continent-wide coverage of gravity-wave measurements. The specific research goals are: (1) Exploit one of the world's most intense gravity wave sources, the Antarctic Peninsula, to investigate the effects of orographic forcing on mesospheric dynamics; (2) Quantify longitudinal variations in mesospheric gravity-wave activity and propagation headings around Antarctica and associated momentum flux variability; (3) Investigate the propagation and ducting of gravity waves capable of traveling large distances over the Antarctic continent; and (4) Identify dominant wave sources using combined instrument data sets together with state-of-the-art ray techniques.

Field Season Overview

Field team members will visit the Arrival Heights facility to service their equipment. After that, they will travel to South Pole Station to service equipment for their companion project, A-119-S.

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Deploying Team Members

Pierre-Dominique Pautet (Co-PI)

Michael Taylor (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

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

Summary

Event Number:
A-119-M/S
NSF/PLR Award 1443730

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Paul Sullivan

Principal Investigator

Dr. Michael Taylor
mike.taylor@usu.edu

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

Project Web Site:
http://ail.usu.edu/Data/Data.html

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: B2 Science Building

Description

The Antarctic Gravity Wave Imaging Network (ANGWIN) is a cooperative effort of six international Antarctic programs to collect continent-wide gravity wave measurements. The network capitalizes on existing optical and radar measurement capabilities at McMurdo, South Pole, and six other research stations: Halley (UK), Syowa (Japan), Davis (Australia), Rothera (UK), and Ferraz (Brazil). Infrared (IR) all-sky mesospheric OH (hydroxyl) imagers are installed at Davis, McMurdo, and Halley Stations. An all-sky near-IR imager is also installed at Palmer Station to augment the existing instrumentation and create a capability for studying gravity wave properties at each site. The network quantifies the properties, variability, and momentum fluxes of short-period (less than one hour) mesospheric gravity waves and their dominant sources and effects over the Antarctic continent. Measurements at South Pole focus on quantifying the temperature signatures of gravity waves deep within the polar vortex and complementing the ANGWIN sites around the continent.

Field Season Overview

Deploying field team members will spend five days at South Pole Station where they will service the camera, optics, filter wheel and computer, and will update the acquisition software. They will also provide training to a contract research associate on running and troubleshooting the instrument.

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

Project Web Sites

Find more information about 2015-2016 USAP projects by viewing project web sites.

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Deploying Team Members

Pierre-Dominique Pautet (Co-PI)

Michael Taylor (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

Continental-Scale Studies Of Mesospheric Dynamics Using The Antarctic Gravity Wave Instrument Network (ANGWIN)

Summary

Event Number:
Undefined-P

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:

Principal Investigator

Dr. Michael Taylor
mike.taylor@usu.edu

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

Project Web Site:
http://ail.usu.edu/Data/Data.html

Location

Supporting Stations: ned-Palmer Station
Research Locations:

Description

The Antarctic Gravity Wave Imaging Network (ANGWIN) is a cooperative effort of six international Antarctic programs to collect continent wide gravity wave measurements. The network capitalizes on existing optical and radar measurement capabilities at McMurdo, South Pole, and five other research stations: Halley (UK), Syowa (Japan), Davis (Australia), Rothera (UK), and Ferraz (Brazil). Infrared (IR) all-sky mesospheric OH (hydroxyl) imagers have been installed at Davis, McMurdo, and Halley. To extend the network on the Antarctic Peninsula, an new all-sky imager will be installed at Palmer station to augment the existing measurements around the continent and create an unprecedented capability for studying gravity wave properties at each site. ANGWIN represents a novel opportunity for the international Antarctic research community to work together producing "high impact" science well above that which can be achieved individually. The network will quantify the properties, variability and momentum fluxes of short-period (less than one hour) mesospheric gravity waves and their dominant sources and effects over the Antarctic continent. Measurements at South Pole focus on quantifying the temperature signatures of gravity waves deep within the polar vortex and complementing the ANGWIN sites around the continent.

Field Season Overview

We are delighted with the continued success of our measurements at McMurdo and at the South Pole Station and we expect to continue our operations at these two locations. To expend our program, we are planning to install another all-sky OH airglow imager at

Palmer Station. This instrument is similar to the one running at McMurdo. It had been previously operated during several winter seasons at the Pole. We need to install it under an optical dome and setup the data acquisition procedure. We also would like to teach the RA how to run and troubleshoot it.

Deploying Team Members

- Pierre-Dominique Pautet (Co-PI)
- Michael Taylor (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

NASA/McMurdo Ground Station (MG1)

Summary

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

Program Manager:
Mr. Pat Smith

ASC POC/Implementer:
Cara Sucher / Bill Jirsa

Principal Investigator

Mr. Bruce Thoman
bruce.e.thoman@nasa.gov

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

Project Web Site:
http://www.nasa.gov/directorates/heo/scan/services/networks/txt_nen.html

Location

Supporting Stations: McMurdo Station
Research Locations: On station

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. MG1 also provides Launch and Early Operations Phase (LEOP) support for launches from Vandenberg Air Force Base involving satellite missions that require downrange telemetry support; telemetry and command for satellite housekeeping and recovery from satellite operational emergencies; and data recovery for the EUMETSAT MetOp polar weather satellite constellation; in collaboration with the National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite and Data Information Service.

Field Season Overview

The MG1 activity is a year-round effort, for which two NASA technicians are deployed to McMurdo Station to operate and maintain the systems. During the austral summer, additional personnel deploy to support special projects, perform systems and infrastructure checks, and conduct crew turnovers.

Deploying Team Members

- Rex Cotten
- Nickolas Sinkola (Co-PI)

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

Project Web Sites

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Raymond Funk

Edward Wendell

William Kambarn

2015-2016 USAP Field Season
Project Detail

Project Title

McMurdo LTER - Soils: Increased Connectivity In A Polar Desert Resulting From Climate Warming: McMurdo Dry Valleys LTER Program

Summary

Event Number:
C-507-M
NSF/PLR Award 1115245

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Sune Tamm / Elizabeth Kauffman

Principal Investigator

Dr. Diana Wall
diana.wall@colostate.edu

Colorado State University
Natural Resource Ecology Laboratory
Fort Collins, Colorado

Project Web Site:
http://wp.natsci.colostate.edu/walllab/

Location

Supporting Stations: McMurdo Station
Research Locations: Lakes Bonney, Fryxell, and Hoare

Description

Initially funded in 1980, the U.S. Long-Term Ecological Research (LTER) Network is a collaborative effort involving more than 1,800 scientists and students. The McMurdo LTER program is an inter-disciplinary and multi-disciplinary study of the aquatic and terrestrial ecosystems in the ice-free McMurdo Dry Valleys. It is one of 26 LTER sites where researchers are studying ecological processes over long temporal and broad spatial scales. Researchers maintain (through application of water and nutrients), monitor (soil moisture and temperature), and sample (soils) in their long-term experimental plots near Lakes Bonnie, Fryxell, and Hoare. The project aims to determine the impacts of natural factors and those associated with potential climate change on the abundance, distribution, and diversity of soil biota. This six-year award cycle comprises seven collaborative projects: C-504-M (Gooseff), C-505-M (Priscu), C-506-M (Gooseff), C-507-M (Wall), C-508-M (Barrett), C-509-M (Lyons), and C-511-M (Doran).

Field Season Overview

Ten participants will travel by helicopter for brief (one to seven days) trips to the Dry Valleys for monitoring, maintenance and sampling of their long term experiments. They will also collect soil samples to support developing work on the N and P cycles, turnover of organic matter, and moss-soil interactions in the field. They will return to the Crary Laboratory at McMurdo Station for sample processing and initial analysis, as well as to

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perform incubation assays on selected soils.

Deploying Team Members

- Byron Adams (Co-PI)
- Walter Andriuzzi
- John Barrett (Co-PI)
- Daniel Bransford
- Tandra Fraser
- Ruth Heindel
- Elizabeth Shaw
- Jessica Trout-Haney
- Ross Virginia (Co-PI)
- Diana Wall (PI)
- Xia Xue

2015-2016 USAP Field Season
Project Detail

Project Title

NOAA / AMLR

Summary

Event Number:
B-006-N
NSF/NOAA Agreement

Program Manager:
Undefined

ASC POC/Implementer:
Adam Jenkins

Principal Investigator

Dr. George Watters
george.watters@noaa.gov

National Oceanic and Atmospheric Administration
La Jolla, California

Project Web Site:
http://swfsc.noaa.gov/textblock.aspx?id=551&ParentMenuId=42

Location

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: Antarctic Peninsula

Description

National Oceanic and Atmospheric Administration (NOAA) Fisheries' AMLR (Antarctic Marine Living Resources) program supports the development of U.S. policy regarding the conservation and management of the marine living resources in the Southern Ocean. For the past 25 years, the AMLR field program has been conducted in the vicinity of Elephant Island, the South Shetland Islands, and the Antarctic Peninsula during the austral summer. This austral winter, researchers will conduct a 27-day shakedown cruise to test U.S. AMLR sampling protocols and procedures during the winter and in the sea ice. Ultimately, these protocols and procedures will be adapted and applied in future winter surveys.

Field Season Overview

Field team members will sail on an austral winter cruise on the NBP from Punta Arenas, Chile, to their research locations in the South Shetland Islands and the Western Antarctic Peninsula. They will use vessel-based sampling equipment and deploy ice-based dynamics. They may also deploy sampling equipment owned by NOAA's U.S. AMLR. Specific goals include: (1) Conducting a bio-acoustic, oceanographic and net-based krill survey in the vicinity of the South Shetland Islands to map meso-scale features of water mass structure, phytoplankton biomass and productivity, zooplankton and bacterioplankton composition, and the dispersion and population demography of krill during mid-winter; (2) Calibrating shipboard acoustic system during the cruise, possibly in Chilean waters; (3) Collecting continuous measurements of ship's position, sea surface

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temperature, salinity, turbidity, fluorescence, air temperature, barometric pressure, relative humidity, and wind speed and direction; (4) Collect underway observations of seabirds and marine mammals; (5) Collecting data to characterize the sea ice, including thickness, type, color and other qualitative components with the goal of deriving a standardized description of ice during the survey; (6) Deploying drifter buoys (number to be determined); (7) Deploying XBTs or XCTDs during the crossing of the Drake Passage and elsewhere in the survey area; (8) Quantifying sea ice algae community by collecting ice cores at select stations; (9) Measuring water column irradiance using a hand held PRR700; (10) Extending their acoustic, net, and oceanographic study through the Gerlache Strait and down to Andvord Bay; (11) Performing a small scale study in the Bransfield Strait.

Deploying Team Members

- Anthony Cossio
- Kimberly Dietrich
- Ryan Driscoll
- Rachel Pound
- Christian Reiss (Co-PI)
- Jarrod Santora
- Jennifer Walsh
- Elliot Weiss

2015-2016 USAP Field Season
Project Detail

Project Title

POLENET Antarctica: Investigating Links Between Geodynamics And Ice Sheets - Phase 2

Summary

Event Number:
G-079-M/S
NSF/PLR Award 1249631

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Sune Tamm / Elizabeth Kauffman

Principal Investigator

Dr. Terry Wilson
twilson@mps.ohio-state.edu

Ohio State University
Geological Sciences and Byrd Polar
Columbus, Ohio

Project Web Site:
http://polenet.org

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: Byrd Camp / Union Glacier

Description

Phase 2 of the Antarctic-POLENET project (ANET) will continue and expand GPS and seismic studies to advance understanding of geodynamic processes and their influence on the West Antarctic Ice Sheet (WAIS). The Phase 2 ANET instrumentation will add nine remote continuous GPS stations, to be deployed in collaboration with UK and Italian partners. In partnership with UK colleagues, a high-resolution crustal and mantle seismic array will traverse the deep subglacial basins underlying the catchments of the glacio-dynamically critical Pine Island and Thwaites Glaciers. Absolute gravity data will provide independent data on crustal uplift and mass change, helping discriminate rebound driven by modern versus ancient ice-mass change. The integrated geodetic and geophysical data will allow testing of key hypotheses about the history and dynamics of the WAIS and interactions with the solid earth beneath. Both the viscoelastic response of the solid earth, constraining mass change since the Last Glacial Maximum (LGM), and the elastic response, resulting from mass change within the last few decades, can be modeled from these measurements together with earth properties derived from seismic data. The ice mass change estimates will allow better estimates of Antarctic ice sheets contributions to global sea level change.

Field Season Overview

The field season this year will consist of servicing existing GPS/seismic stations, including

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the mini-array of temporary seismic stations on ice, deployed in 2014-15. Work planned for this season will be carried out using fixed-wing support from South Pole Station and WAIS Divide field camp, and fixed-wing and helicopter support from McMurdo Station. Eight stations will be serviced from South Pole. In the Amundsen Embayment and Marie Byrd Land sectors, 16 stations will be visited for maintenance/data retrieval. McMurdo Station will be the hub for servicing six to eight existing GPS/seismic stations, and for completing absolute gravity measurements in collaboration with French, New Zealand, and Italian colleagues.

Deploying Team Members

- Jean-Daniel Bernard
- David Borrego
- Melody Eimer
- Ashley Grijalva
- Larry Hothem (Team Leader)
- J.R. Roberts
- Michael Roberts
- Yves Rogister
- David Saddler
- Mark Whetu
- Austin White-Gaynor
- Terry Wilson (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

Mantle Structure And Dynamics Of The Ross Sea From A Passive Seismic Deployment On The Ross Ice Shelf

Summary

Event Number:
G-089-M
NSF/PLR Award 1142518

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Sune Tamm / Elizabeth Kauffman

Principal Investigator

Dr. Douglas Wiens
doug@wustl.edu

Washington University
Department of Earth and Planetary Sciences
St. Louis, Missouri

Location

Supporting Stations: McMurdo Station
Research Locations: Ross Ice Shelf / Siple Dome

Description

Last austral summer, this research project deployed 18 broadband seismographs across the Ross Ice Shelf (RIS) to constrain the seismic structure associated with the Ross Sea extension. The presence of the RIS provides an outstanding opportunity to instrument this region without the expense and logistical issues associated with ocean-bottom seismograph deployments in polar regions. Previous deployments of broadband seismographs on the RIS show that seismic P waves and Rayleigh waves can be well-recorded despite the underlying ice and water layers, permitting P-wave and surface-wave tomography and noise-correlation studies. Tomographic models developed from these data will be used to choose between competing models for the dynamics of the Ross Sea. In particular, researchers will investigate whether low-velocity hot mantle is localized in the vicinity of Ross Island and the Marie Byrd Land dome. Alternatively, a broad region of hot mantle, including the Eastern Ross Sea, would indicate distributed recent tectonic activity and call into question models stating that Eastern Ross Sea extension largely ceased during the Mesozoic. The data will also allow researchers to investigate the deeper structure (greater than 200 kilometers) to evaluate the possible role of mantle plumes and/or small-scale convection in driving regional volcanism and tectonism across the region.

Field Season Overview

Field team members will work out of McMurdo and Siple Dome using the Twin Otter aircraft to reach various locations on the ice shelf to retrieve data from 18 previously-installed seismic stations. They will spend approximately three hours on the ground at

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each site. They will also install four new GPS stations in conjunction with group I-348-M (Bromirski).

Deploying Team Members

- Michael Baker
- Tsitsi Madziwa-Nussinov
- Weisen Shen
- Patrick Shore

2015-2016 USAP Field Season
Project Detail

Project Title

EXPROBE-WAIS: Exposed Rock Beneath The West Antarctic Ice Sheet, A Test For Interglacial Ice Sheet Collapse

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Summary

Event Number:
I-277-M
NSF/PLR Award 1341728

Program Manager:
Dr. Julie Palais

ASC POC/Implementer:
Judy Shiple / Meghan Walker

Principal Investigator

Dr. John Stone
stone@ess.washington.edu

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

Location

Supporting Stations: McMurdo Station
Research Locations: Pirrit Hills

Description

Researchers with this project hope to determine whether the West Antarctic Ice Sheet (WAIS) has collapsed in the past, exposing bedrock that is currently covered by the ice sheet. The project will involve drilling through the ice sheet to recover cores from underlying bedrock. These will be analyzed for isotopes produced by cosmic radiation, thus testing whether bedrock surfaces beneath the ice sheet have ever been exposed during warm climatic periods in the past. Multiple cosmogenic isotopes will be measured on recovered cores to constrain the timing of last exposure, duration of past exposure periods, and whether surfaces have been exposed one time or many. Stable isotope measurements on ice from above the bedrock surfaces will provide additional constraints on the timing of last exposure. Results will indicate whether warm interglacial periods such as Marine Isotope Stages 5e, 11, or 31 produced significant WAIS deglaciation. By pointing to the paleoclimatic conditions associated with past thinning of the ice sheet, these results will help to identify future climatic factors and thresholds likely to endanger the WAIS.

Field Season Overview

This project aims to determine whether bedrock surfaces currently beneath the West Antarctic Ice Sheet (WAIS) have been ice free during past warm interglacial periods. Ice and bedrock cores will be collected in the Pirrit Hills area in 2016-17. This season will primarily serve as a second reconnaissance to select a drill site (the first reconnaissance season was 2012-13). Two science participants, one ASC mountaineer/field coordinator and their equipment will be staged at WAIS Divide Camp by LC-130 aircraft before being

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shuttled by Twin Otter aircraft to Pirrit Hills for an approximately 10-day field season. The camp site will be at the Harter Nunatak drill site; snowmobiles will be utilized to move camp gear and for fieldwork via day trips. Fieldwork will include: (1) Shallow hand auger drilling to measure the firn depth (2) Collect 2 short rock cores (approx. 30-40 cm) and opportunistic rock collection up to ~240lbs (3) A limited ground penetrating radar (GPR) survey (4) Placement of motion stakes around Harter Nunatak (5) Scouting for a suitable LC-130 aircraft landing zone close to the drill site. A SLACO (ski-landing area control officer) will be sent out at some point during the season to survey and certify the landing zone. A fuel cache will likely be placed in order to support the Twin Otter flights between WAIS and Pirrit Hills.

Deploying Team Members

- Joel Gombiner
- John Stone (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

Ice Drill Design And Operations (IDDO) Support For WAIS Divide

Summary

Event Number:
T-350-M
NSF Agreement

Program Manager:
Dr. Michael Jackson

ASC POC/Implementer:
Cara Sucher / Ryan Wallace

Principal Investigator

Dr. Mary Albert
mary.r.albert@dartmouth.edu

Dartmouth College
Thayer School of Engineering
Hanover, New Hampshire

Location

Supporting Stations: McMurdo Station
Research Locations: WAIS Divide Camp

Description

The Ice Drill Design and Operations (IDDO) team is the principle supplier of ice drilling and coring equipment, support, and expertise for NSF-funded research. It is operated under the auspices of the Ice Drilling Program Office (IDPO), which works in close conjunction with the ice coring and drilling research community.

Field Season Overview

One participant from IDDO will deploy to WAIS Divide to assist with clearing out the remaining drilling equipment from the drilling arch on site, and to direct the installation of the borehole extension tube.

Deploying Team Members

- James Koehler (Team Leader)

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Project Detail

Project Title

Multidisciplinary Analysis Of Antarctic Blue Ice Moraine Formation And Their Potential As Climate Archives Over Multiple Glacial Cycles

Summary

Event Number:
G-095-M
NSF/PLR Award 1443433

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Sune Tamm / Meghan Walker

Principal Investigator

Dr. Kathy Licht
klicht@iupui.edu

Indiana Univ.-Purdue Univ. Indianapolis
Indianapolis, Indiana

Location

Supporting Stations: McMurdo Station
Research Locations: Mount Achernar Moraine Complex

Description

The goal of this study is improving understanding of ice sheet response to changing climate in the central Transantarctic Mountains. This goal will be pursued via two main objectives: (1) Determine processes and rates of blue ice moraine formation. Researchers will collect and analyze pebbles and boulders from the moraines using cosmogenic nuclides to determine surface exposure ages material on the moraines to quantify the general range of time material has been coming to the surface. They will also map trimlines along the southern margin of the Mount Achernar Moraine Complex (MAMC) to constrain ice thickness changes. Till and debris-rich ice samples will be collected to determine the till composition and range of debris concentration delivered by the Law Glacier. GPS data will be collected in the field and used in the lab to create a one dimensional flow-line model to simulate the flow and behavior of the Law Glacier under present-day conditions. This will allow for better understanding of how ice flows and allow for simulations of different environmental boundary conditions in order to assess changes in the glacier's geometry and flow in the past. (2) Determine the topographic, glaciological, and climatic controls on blue-ice moraine evolution. The research team will use ground-penetrating radar to document ice thickness, bed topography, and internal ice structure to determine if there are thresholds related to bed topography that may limit debris delivery and assess the geometry of connections between the active Law Glacier and the ridged, debris-covered ice.

Field Season Overview

Six field team members will spend four to five weeks at a camp near the Mount Achernar Moraine complex (MAMC) in the Central Transantarctic Mountains. The group and their

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equipment will be staged at the Shackleton Camp by LC-130 aircraft before being shuttled by Twin Otter aircraft to their camp site. Prior work was done in this location during 2010-11. The team will make day trips via snowmobile to collect till and rock samples from the top surface (~10 cm) of blue ice moraines and will also collect shallow ice cores. GPS units will be temporarily installed along the Law Glacier margin for the duration of the field work and will be removed prior to being pulled out. GPR equipment will be used for imaging of internal ice structure.

Deploying Team Members

- Peter Braddock
- Joseph Graly
- Michael Kaplan (Co-PI)
- Christine Kassab
- Kathy Licht (PI)
- Katrin Lindback

2015-2016 USAP Field Season
Project Detail

Project Title

Investigating Early Miocene Sub-Ice Volcanoes In Antarctica To Provide Boundary Conditions For Ice Sheet Dynamic Models And Improved Understanding Of A Large Diffuse Alkaline Magma

Summary

Event Number:
G-073-M
NSF/PLR Award 1443576

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Sune Tamm / Meghan Walker

Principal Investigator

Dr. Kurt S Panter
kpanter@bgsu.edu

Bowling Green State University
Department of Geology
Bowling Green, Ohio

Location

Supporting Stations: McMurdo Station
Research Locations: Mounts Early and Wyatt / Sheridan Bluff in the La Gorce Mountains

Description

This project will focus on reconstructing Early Miocene ice sheet conditions using volcanic outcrops in the La Gorce Mountains. The study of subglacially erupted volcanic rocks is now the most powerful proxy methodology for establishing precise "snapshots" of ice sheets, including multiple critical ice parameters. Using field mapping and lithofacies analysis, researchers will establish whether East Antarctic ice was present during their formation. The team will derive the coeval ice thicknesses, surface elevations, and basal thermal regime(s), the latter a critical indicator for relative ice sheet stability, within a precise new geochronology. In addition, geochemical tracers and a wide range of isotopes will be used to characterize volcanic origins and test hypotheses for volcanism and continental rifting.

Field Season Overview

Four field team members will spend approximately three weeks collecting rock and sediment samples from volcanic outcrops in the La Gorce Mountains, located within the Central Transantarctic Mountains. The group and their equipment will be staged at the Shackleton Camp by LC-130 aircraft before being shuttled by Twin Otter aircraft to a landing site on the south side of Mount Early. The team will camp near Sheridan Bluff and collect samples in that area. They will also make day trips by snowmobile to sampling sites near Mount Early and Mount Wyatt.

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Deploying Team Members

Timothy Burton	Jenna Reindel
Kurt Panter (PI)	John Smellie

2015-2016 USAP Field Season
Project Detail

Project Title

Potential Direct Geologic Constraint Of Ice Sheet Thickness In The Central Transantarctic Mountains During The Pliocene Warm Period

Summary

Event Number:
I-177-M
NSF/PLR Award 1443321

Program Manager:
Dr. Julie Palais

ASC POC/Implementer:
Sune Tamm / Meghan Walker

Principal Investigator

Dr. Gordon R Bromley
gordon.r.bromley1@maine.edu

The University of Maine
IQCS/ Department of Geological Sciences
Orono, Maine

Location

Supporting Stations: McMurdo Station
Research Locations: Otway Massif / Dominion Range

Description

This project proposes to reconstruct the long-term history of glacier variability in the upper Beardmore and Shackleton Glaciers during periods of warmer-than-present climate. Beardmore and Shackleton Glaciers are major outlets of the East Antarctic Ice Sheet with extensive ice-free terrain located close to the ice-sheet margin. Resolving the history of ice-surface-elevation change in these regions will: (1) Help identify periods during which the East Antarctic Ice Sheet was at least as extensive as today; (2) Potentially provide insight into ice-sheet behavior on time scales longer than the late Pleistocene; and (3) Provide a benchmark for ice-sheet geometry in long-term Antarctic ice-sheet models.

Field Season Overview

Five field team members will spend between three to four weeks at sites in the Central Transantarctic Mountains. The group and their equipment will be staged at the Shackleton Camp by LC-130 aircraft before being shuttled by Twin Otter aircraft to their first field site near Otway Massif, where they will work for approximately 10 days. Twin Otter aircraft will move the team to their second field site near Dominion Range where they will work for approximately two weeks. Both field sites are located near the head of the Beardmore Glacier. The team will map glacial deposits, excavate shallow pits for sediment sampling, and collect rock samples for multiple-nuclide surface-exposure dating within walking distance of their camp locations. The team will use one snowmobile for camp operations.

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Deploying Team Members

Gregory Balco (Co-PI)

Gordon Bromley (PI)

Margaret Jackson

Christopher Simmons

Holly Thomas

2015-2016 USAP Field Season
Project Detail

Project Title

Late Cretaceous-Paleogene Vertebrates From Antarctica: Implications For Paleobiogeography, Paleoenvironment, And Extinction In Polar Gondwana

Summary

Event Number:
G-182-N
NSF/PLR Award 1142129

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Matthew Erickson / Cara Ferrier / Adam Jenkins

Principal Investigator

Dr. Matthew Lamanna
lamannam@carnegiemnh.org

Pittsburgh, Pennsylvania

Location

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: James Ross Basin

Description

This project will locate and collect vertebrate fossils (primarily those of fish, marine reptiles, non-avian dinosaurs, birds, and mammals) in late Cretaceous through Paleogene deposits on islands in the James Ross Island Group in the Antarctic Peninsula. Material recovered will have implications for understanding the role of the Antarctic Peninsula in the dispersal of vertebrates between West Antarctica and southernmost South America at the end of the Mesozoic and the beginning of the Cenozoic eras. Depending on the specific discoveries made, significant new light may be shed on the evolution, faunal dynamics, and/or paleobiogeography of such important vertebrate groups as non-avian dinosaurs, crown clade birds and therian mammals in the critical interval that brackets the Cretaceous-Paleogene boundary. Geological (i.e., stratigraphic, sedimentological, geochronological, and taphonomic) and paleobotanical work is also planned to place vertebrate finds into accurate and detailed temporal and paleoenvironmental contexts.

Field Season Overview

Team members will sail on the RVIB Nathaniel B. Palmer to field camp sites on the Antactic Peninsula and neighboring islands. Scientific activities will entail exploring for and collecting fossils and geological samples using hand tools (e.g., rock hammers, picks, shovels, sample bags, dry and wet screens). At the conclusion of the field season, any recovered fossils, concentrate (resulting from screening activities), and/or geologic samples will be taken to South America and then shipped to the home institution.

Deploying Team Members

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

Project Web Sites

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- Kerin Claeson (Co-PI)
- Julia Clarke (Co-PI)
- Zubair Jinnah
- Matthew Lamanna (PI)
- Eric Lund
- Ross MacPhee (Co-PI)
- Patrick O'Connor (Co-PI)
- Eric Roberts
- Steven Salisbury (Co-PI)
- Christopher Torres
- Abagael West

Project Title

Paleomagnetism And Magnetostratigraphy Of The James Ross Basin, Antarctica

Summary

Event Number:
G-291-N
NSF/PLR Award 1341729

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Matthew Erickson / Cara Ferrier / Adam Jenkins

Principal Investigator

Dr. Joseph Kirschvink
kirschvink@caltech.edu

California Institute of Technology
Geological and Planetary Sciences
Pasadena, California

Location

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: James Ross Basin

Description

The objective of this project is to extend the magnetostratigraphic record in the late Cretaceous and early Tertiary sediments of the James Ross Basin. During late Maastrichtian time, the earth's climate began to show the first signs of what would eventually (30 million years later) be the shift from the uniform Mesozoic greenhouse to the more diverse climate of the Neogene. It was also a time when biogeographic and trophic patterns were changing and becoming more similar to those that would characterize the modern world. During the 20-million-year Santonian–Maastrichtian interval, major biotic groups experienced drastic changes, including the nature of reefs, shallow marine communities, and deep-water communities. There were also important geophysical events happening, such as the presumed launch of the Deccan Traps Superplume from the core mantle boundary and possible bursts of true polar wander. Paleomagnetic data from the James Ross Basin of the Antarctic Peninsula are critical for placing these events in a global time framework and for testing various hypotheses for these events.

Field Season Overview

Working in collaboration with Lamanna (G-182), field team members will sail on the RV/IB Nathaniel B. Palmer (NBP) from Punta Arenas, Chile to sites on the Antarctic Peninsula. They'll make land by helicopters and zodiacs and, once on site, will establish several field camps. They'll move from camp to camp by air or zodiac. They'll collect rock samples and fossils using rock hammers and chisels, and will collect short, 1" cylinders of the bedrock, using a gasoline-powered, hand-held coring drill. Samples will be returned to the home

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institution for further analysis.

Deploying Team Members

- Roger Fu
- Jennifer Buz
- David Flannery
- Joseph Kirschvink (PI)
- Ross Mitchell
- Joseph O'Rourke
- Steven Skinner
- Sarah Slotznick
- David Smith
- Francis Sousa
- Thomas Tobin
- Lizzy (Elizabeth) Trower

2015-2016 USAP Field Season
Project Indexes

USAP Program Index
Ocean and Atmospheric Sciences

Principal Investigator	Event No.	Project Title
Butler, James	O-257-M/S	South Pole monitoring for climatic change
Butler, James	O-264-P	Collection of atmospheric air for the NOAA/GMD worldwide flask-sampling network
Butler, James	O-257-M/S	UV measurements at McMurdo Station for the NOAA/Global Monitoring Division (GMD) Antarctic UV network
Chereskin, Teresa	O-317-L	Southern Ocean current observations from the U.S. Antarctic research vessels
Gao, Yuan	O-231-P	Quantifying atmospheric iron properties over the Western Antarctic Peninsula
Kalnajs, Lars	O-324-M	High-resolution study of atmosphere, ice, and aerosol interactions in coastal Antarctica
Kelly, Michael	O-410-N	Ocean Observatories Initiative (OOI) Southern Hemisphere cruises
Lazzara, Matt	O-283-M	Antarctic Automatic Weather Station (AWS) program
Lubin, Dan	O-325-M	Department of Energy ARM West Antarctic Radiation Experiment (AWARE)
Sprintall, Janet	O-260-L	The Drake Passage high-density XBT/XCTD program
Stephens, Britton	O-404-L	High-resolution underway air-sea observations in Drake Passage for climate science
Stephens, Britton	O-541-L/P	The O2/N2 ratio and CO2 airborne Southern Ocean (ORCAS) study
Sweeney, Colm	O-214-L	High-resolution underway air-sea observations in Drake Passage for climate science
Thurnherr, Andreas	O-408-N	Flow, turbulence, and mixing in mid-ocean ridge fracture-zone canyons

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Project Detail

Project Title

Climate Controls On Aerosol Fluxes To Taylor Dome And Taylor Glacier

Summary

Event Number:
I-184-M
NSF/PLR Award 1246702

Program Manager:
Dr. Julie Palais

ASC POC/Implementer:
Matthew Erickson / Meghan Walker

Principal Investigator

Dr. Sarah Aciego
aciego@umich.edu

University of Michigan
Department of Geological Sciences
Ann Arbor, Michigan

Location

Supporting Stations: McMurdo Station
Research Locations: Taylor Glacier

Description

The objective of this project is to apply high-precision geochemical techniques to the high-volume, high-resolution horizontal ice core at Taylor Glacier. This research is expected to de-convolve regional versus global aerosol flux sources, determine if the aerosol compositional changes record regional climate and weather changes, and provide a continuous record of southern hemisphere dust.

Field Season Overview

Three team members will travel by helicopter to lower Taylor Glacier where they will camp for one week. With the assistance of an Ice Drilling Design and Operations (IDDO) technician they will use a Blue Ice Drill to collect a total of 10 ice cores to obtain glacial dust samples for high-precision radiogenic isotopic measurements. In order to obtain 10 good ice cores in this area of overturned ice, the team will core 10 shallow holes (~7 meters deep) and 1 deep core (~20 meters deep). The ice cores will be sent to the home institution for analysis. Collaborator I-159 Petrenko will begin their field season in the same location immediately following I-184. The IDDO technician will remain to work with I-159.

Deploying Team Members

- Sarah Aarons
- Sarah Aciego (PI)
- Michael Jayred

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

Project Web Sites

Find more information about 2015-2016 USAP projects by viewing project web sites.

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2015-2016 USAP Field Season
Project Detail

Project Title

IDPO / IDDO - McMurdo

Summary

Event Number:
T-150-M
NSF Agreement

Program Manager:
Dr. Michael Jackson

ASC POC/Implementer:
Judy Shiple / Matthew Kippenhan

Principal Investigator

Dr. Mary Albert
mary.r.albert@dartmouth.edu

Dartmouth College
Thayer School of Engineering
Hanover, New Hampshire

Location

Supporting Stations: McMurdo Station
Research Locations:

Description

This project's objective is to perform a field test of the packer devices for the RAID and ASIG drills that are currently in development for future polar use by the science community. The RAID Drill is being developed by DOSECC Exploration Services (DES) in conjunction with the University of Minnesota-Duluth. Both the Ice Drill Design and Operations (IDDO) and DES personnel will participate in this project, along with Jeff Severinghaus, co-PI for the RAID drill development. Science groups involved in this joint effort are T-150-M (Albert - IDDO), D-551-M (Goodge), and D-552-M (Goodge - DES). As part of this test, IDDO will provide drilling and augering equipment to create pilot holes in which the packer devices will be tested. DES and Severinghaus will also provide additional equipment for the test.

Field Season Overview

IDDO plans to provide 3 IDDO personnel for this field test. All three people will be returning to McMurdo Station around 01 Feb following the SPICE Core project at the South Pole (I-164-S). This packer test project is expected to take up to one week, including prep work in McMurdo and at least four full days of field testing outside of McMurdo Station. IDDO personnel will require accommodation in McMurdo from approximately 02 Feb - 09 Feb and will require transport of the personnel and test equipment to and from the test site each day. Such transportation requirements are outlined in the DES D-552-M SIP, which is the 'primary' SIP for this packer test.

Deploying Team Members

Project Indexes

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Grant Boeckmann

Zachary Meulemans

Jay Johnson

2015-2016 USAP Field Season
Project Detail

Project Title

Global Seismograph Station At South Pole And Palmer Stations

Summary

Event Number:
G-090-P/S
NSF/EAR 1261681

Program Manager:
Dr. Mark Kurz

ASC POC/Implementer:
Samina Ouda / Jamee Johnson / Paul Sullivan

Principal Investigator

Mr. Kent Anderson
kent@iris.edu

United States Geological Survey
Albuquerque Seismological Laboratory
Sandia Park, New Mexico

Location

Supporting Stations: Palmer Station, South Pole Station
Research Locations: B2 Lab / SPRESSO Vault / Terra Lab

Description

The Incorporated Research Institutions for Seismology (IRIS) is a university consortium sponsored by the NSF and dedicated to the operation of scientific facilities for the acquisition, management, and distribution of freely available seismic data. This project is a long-term study of seismicity and is part of IRIS's 120-plus station Global Seismographic Network (GSN). Seismic stations at Palmer Station and at the Amundsen-Scott South Pole Station are named PMSA and QSPA respectively. Recently, the South Pole seismic station was moved from the V1 vault (near the old dome site) to SPRESSO to reduce station-related "cultural" noise. The move has made QSPA the most quiet seismic station in the entire GSN. Lower background noise levels will allow researchers to see smaller events from farther away as well as help identify and characterize Antarctic seismicity.

Field Season Overview

No team members will deploy to Palmer Station or the South Pole this year. ASC research associates will perform routine maintenance on the instruments.

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Project Detail

Project Title

Climatic And Environmental Constraints On Aboveground-Belowground Linkages And Diversity Across A Latitudinal Gradient In Antarctica

Summary

Event Number:
B-300-L
NSF/PLR Award 1341429

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Matthew Erickson / Cara Ferrier

Principal Investigator

Dr. Rebecca Ann Ball
becky.ball@asu.edu

Arizona State University Tempe
Phoenix, Arizona

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Signy, Elephant, King George, Livingston, Spert, Anvers, Berthelot and Rhyolite Islands

Description

The Antarctic Peninsula is experiencing rapid environmental changes that will influence the community of organisms living there. Little is known about the microscopic organisms living in the soil in this region. Soil biology (including bacteria, fungi, and invertebrates) are responsible for many important processes that sustain ecosystems, such as nutrient recycling. Without understanding the environmental conditions that influence soil biodiversity along the Antarctic Peninsula, the ability to predict the consequences of global change is very limited. In this project, researchers will combine expertise in Antarctic soil biogeochemistry and biology in an international collaboration to determine the nature and strength of aboveground-belowground linkages in influencing soil community biogeography and diversity over a latitudinal gradient of environmental and climatic conditions. They will: (1) Increase understanding of current biogeography and diversity by providing in-depth knowledge of soil community composition and complexity as it relates to environmental (above and belowground) and climatic characteristics; and (2) Determine the nature of aboveground-belowground community linkages over varying spatial scales, quantifying how the strength of linkages changes along the gradient.

Field Season Overview

Five team members will sail on the ARSV Laurence M. Gould from Punta Arenas, Chile. They will stop at several islands off the Antarctic Peninsula to collect samples. They will process the samples in the laboratory on the boat during the approximately two days transit between locations. At the end of the cruise, samples will be sent to the home instituion.

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Deploying Team Members

Rebecca Ball (PI)

David Van Horn (Co-PI)

Kelli Feeser

Connor Wetzel-Brown

Uffe Neilsen

2015-2016 USAP Field Season
Project Detail

Project Title

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

Summary

Event Number:
A-369-M/S
NSF/PLR Award 1443504

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Elizabeth Kauffman / Paul Sullivan

Principal Investigator

Dr. William Bristow
bill.bristow@gi.alaska.edu

University of Alaska Fairbanks
Geophysical Institute
Fairbanks, Alaska

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: Near stations

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. These systems also help 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. These qualities allow scientists to address the most fundamental and important questions of space physics. The 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

Each austral summer researchers deploy to McMurdo and South Pole Stations to perform system maintenance such as inspecting the equipment, tightening guy wires and antennas, replacing shackles, re-leveling the radar poles, and updating/repairing the on-site computer system. Throughout the year, contractor staff maintain system components and vehicular access to the array.

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

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Deploying Team Members

Jonathan Klein

Jeff Spaleta

2015-2016 USAP Field Season
Project Detail

Project Title

Organic Carbon Oxidation And Iron Remobilization By West Antarctic Shelf Sediments

Summary

Event Number:
G-430-N
NSF/PLR Award 1551195

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Matthew Erickson / Adam Jenkins

Principal Investigator

Dr. David Jay Burdige
dburdige@odu.edu

Old Dominion University
Norfolk, Virginia

Location

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: Palmer Long-Term Ecological Research (LTER) grid

Description

This project will use sediment cores to determine the sediment-water fluxes of dissolved oxygen, total carbon dioxide, nutrients, and the vertical distributions of these dissolved compounds. They will also measure iron and manganese in the pore waters. Researchers will collect sediment cores using USAP-provided mega- and Kasten corers and will take measurements using a combination of microelectrodes, centrifugation, and rhizon samplers.

Field Season Overview

Field team members will sail on the RVIB Nathaniel B. Palmer from Punta Arenas, Chile to sampling stations in the Western Antarctic Peninsula area. Fieldwork will include repeated mega-coring, Kasten coring and conventional conductivity-temperature-depth (CTD) sampling. The team will sample at 14 stations located on the existing Palmer Long Term Ecological Research (PAL-LTER) grid. At each station they will conduct two mega-core deployments, a single Kasten core deployment, and a single bottom-depth CTD deployment. They will use the acquired samples to conduct a series of shipboard microelectrode experiments and incubations along with processing of the sediment cores. At the end of their cruise they will return to Punta Arenas. Samples will be shipped to the home institution for further analysis.

Deploying Team Members

- Jeremy Bleakney
- Anna Makaretz

Project Indexes

Find information about projects approved for the 2015-2016 USAP field season using the available indexes.

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David Burdige (PI)
John Christensen (Co-PI)
Christopher Glover
Cédric Magen
Richard Taylor
Patrick Tennis
Stephan Zeeman

2015-2016 USAP Field Season
Project Detail

Project Title

Unraveling The Genomic And Molecular Basis Of The Dive Response: Nitric Oxide Signaling And Vasoregulation In The Weddell Seal

Summary

Event Number:
B-267-M
NSF/PLR Award 1443554

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Sune Tamm / Beverly Walker

Principal Investigator

Dr. Emmanuel S Buys
ebuys@partners.org

Massachusetts General Hospital
Boston, Massachusetts

Location

Supporting Stations: McMurdo Station
Research Locations: On station / Big Razorback Island

Description

A key component of the dive response exhibited by Weddell seals and other diving animals is strong cardiovascular regulation, with tissue-specific control of blood flow. This control likely results from varied sympathetic innervation and also from differential production of local modulators by endothelial cells (such as nitric oxide (NO)). The goal of this project is to obtain biosamples from Weddell seals to support an investigation of the NO-cGMP (cyclic guanosine monophosphate) system and other complementary pathways, at both the genomic and molecular levels. Field team members will collect tissues by performing opportunistic necropsies of pups (up to 20) and adults (up to 10) found dead of natural causes in the colonies. These measures will be verified in biopsy and blood samples collected from 10 living adult seals and 10 weaned pups. They will also collect umbilical tissue from 10 delivered placentas or newborn pups (as well as use other collected tissues) to develop Weddell seal cell lines that will make possible further laboratory experiments at their home institution.

Field Season Overview

Field team members will be housed on station and will make day trips by snowmobile to a fish hut near Big Razorback Island where they will acquire samples from recently dead Weddell seal pups as well as adults. Reconnaissance helicopter flights and flights with close support will help locate Weddell seals. Samples will be processed and stored in Crary Lab.

Deploying Team Members

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Kaitlin Allen
Emmanuel Buys (PI)
Daniel Costa (Co-PI)
Allyson Hindle (Co-PI)
Luis Huckstadt
Warren Zapol (Co-PI)

2015-2016 USAP Field Season
Project Detail

Project Title

Southern Ocean Current Observations From The U.S. Antarctic Research Vessels

Summary

Event Number:
O-317-L
NSF/PLR Award 1341431

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Matthew Erickson / Bruce Felix

Principal Investigator

Dr. Teresa Chereskin
tchereskin@ucsd.edu

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

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Drake Passage

Description

This project builds upon a successful 13-year collaboration that developed the capability to routinely acquire, process, and archive ocean-current measurements from hull-mounted shipboard acoustic Doppler current profilers (ADCPs) onboard the RVIB Nathaniel B. Palmer (NBP) and ARSV Laurence M. Gould (LMG) research vessels. The long-term science objectives are to measure the seasonal and interannual variability of upper-ocean currents within the Drake Passage, to combine this information with similar temperature observations to study the variability in the heat exchange, and to characterize the velocity and acoustic backscatter structure in the Southern Ocean on a variety of time and space scales. The onboard equipment includes 150kHz narrow-band ADCPs (running since the start of the project) and newer 38kHz phased-array ADCPs (installed on the LMG in 2004 and on the NBP in 2009). The collected, QC'ed data are used by a wide variety of Antarctic science programs and are easily accessible for retrospective analyses, planning future observations, and validating numerical models.

Field Season Overview

The O-317-L component shall collect ocean current and acoustic backscatter measurements from hull-mounted shipboard acoustic Doppler profilers (ADCPs) onboard the LMG. Data will be collected on all cruises with support from the shipboard electronic technicians (ETs). The operational support from LMG ETs will be similar to that required during previous years of the project. Logistical support from the ETs consists of starting/stopping data acquisition, monitoring and archiving data at sea. During cruises events ET or IT support may be required, as time allows, in the event that system maintenance or software changes need to be made while underway.

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2015-2016 USAP Field Season
Project Detail

Project Title

Grounding Line Dynamics: Crary Ice Rise Revisited

Summary

Event Number:
I-323-M
NSF/PLR Award 1443356

Program Manager:
Dr. Julie Palais

ASC POC/Implementer:
Judy Shiple / Meghan Walker

Principal Investigator

Dr. Howard Conway
conway@ess.washington.edu

University of Washington
Earth and Space Sciences
Seattle, Washington

Location

Supporting Stations: McMurdo Station
Research Locations: Crary Ice Rise

Description

Results from numerical models show that ice rises and ice rumples exert strong control on the stability of a marine ice sheet such as in West Antarctica, but in-situ measurements needed to validate the models are sparse, partly because of logistical challenges. The Crary Ice Rise (CIR), located at ~ 82deg 56' S, 172deg 40' W, just downstream from the Whillans Ice Plain in the Ross Sea, is relatively accessible. Field campaigns were conducted there in the 1970s and 1980s. This field campaign will revisit CIR with new tools (radars, seismic instruments, high-precision GPS) and make a suite of measurements for use in the development and validation of numerical models. The models and measurements will be used to address questions about the glacial history of the CIR, how it affects discharge through the ice streams, and its role under future environmental changes including warming and changes in sea level.

Field Season Overview

This project will conduct research at Crary Ice Rise (CIR) on the Ross Ice Shelf. The team will investigate basal and englacial conditions and ice flow through coordinated seismic, radar and GPS measurements. Six team members will be transported by LC-130 via open-field landing to CIR and will work from a tent camp for approximately six weeks. They will use three snowmobiles and sleds for day trips. The principal investigator and another participant will be picked up from CIR by Twin Otter in mid-December to accommodate their collaborations with other groups. That flight will also serve as resupply for the camp.

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Deploying Team Members

- Howard Conway (PI)
- Maurice Conway
- Linna Cooley
- Trevor Hillebrand
- Carlos Martin Garcia
- Paul Winberry (Co-PI)

2015-2016 USAP Field Season
Project Detail

Project Title

Geomagnetic Navigation By Weddell Seals Beneath Antarctic Ice

Summary

Event Number:
B-017-M
NSF/PLR Award 1341469

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Sune Tamm / Beverly Walker

Principal Investigator

Dr. Randall Davis
davisr@tamug.edu

Texas A & M University
Dept. of Marine Biology
League City, Texas

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo Sound

Description

Researchers will address the following overarching question: Do Weddell seals possess a magnetic sense, and do they use it to sense earth's geomagnetic field for navigating under sea ice over small spatial scales? The primary objectives are to determine: (1) Whether Weddell seals diving under shore-fast sea ice respond predictably to spatial variations in Earth's magnetic field; (2) How the seals use information obtained from earth's magnetic field to return to the vicinity of known breathing holes; (3) Whether light intensity and day length affect seal responses to differences in earth's magnetic field; and (4) Whether energetic efficiency of navigation by Weddell seals is altered by differences in earth's magnetic fields. To achieve those objectives, researchers will conduct experiments on translocated Weddell seals in which they will measure changes in behavioral and energetic responses of individuals to different geomagnetic field properties and test those responses against precise predictions. By conducting experiments during periods of high light intensity and long day length (October and November) and low light intensity and reduced day length (mid-August and September), and by documenting the orientation of fixed sound sources and water currents, the experiment should identify a geomagnetic response and eliminate other sensory modalities.

Field Season Overview

Researchers will make day trips by Pisten Bully to three sea ice locations on McMurdo Sound to capture Wedell seals, perform controlled releases, and recover instrumentation temporarily mounted on the seals. Each location will have a fish hut placed over a 1.2 meter diameter hole in the sea ice. Instrumented seals will be consecutively released into each of the three holes in order to observe their behavior as they experience different

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geomagnetic fields.

Deploying Team Members

- Georgina Davis
- Randall Davis (PI)
- Erin Frolli
- Lee Fuiman (Co-PI)
- Jason John
- Traci Kendall
- Kristen McGovern
- Terrie Williams (Co-PI)

2015-2016 USAP Field Season
Project Detail

Project Title

Protein Folding And Embryogenesis In Antarctic Fishes: A Comparative Approach To Environmental Stress

Summary

Event Number:
B-037-L/P
NSF/PLR Award 1444167

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Matthew Erickson / Jamee Johnson

Principal Investigator

Dr. Bill Detrich
w.detrich@neu.edu

Northeastern University
Department of Biology
Nahant, Massachusetts

Location

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

Description

Since the advent of Antarctic continental glaciation, the opening of the Drake Passage between South America and the Antarctic Peninsula, and the onset of cooling of the Southern Ocean (SO), evolution of Antarctic marine organisms has been driven by the development of cold temperatures. Because Antarctic notothenioid fishes are stenothermal ectotherms – their body temperatures fall in a narrow range determined by their habitat (-1.9° to +2.0°C) – they are particularly attractive models for understanding how organismal physiology and biochemistry have been shaped to maintain life in a cooling environment. Yet these fishes are now threatened by rapid warming of the SO over periods measured in a few centuries. The long-term objective of this project is to understand the molecular and physiological capacities of Antarctic notothenioid fishes to acclimatize and/or adapt to rapid oceanic warming through analysis of their underlying genomic and transcriptomic "toolkits." This objective will be accomplished by: (1) Assessing the effects of elevated temperatures on gene expression during development of notothenioid embryos; (2) Examining the effects of elevated temperatures on embryonic morphology and on the temporal and spatial patterns of gene expression; and (3) Evaluating the evolutionary mechanisms that have led to the loss of the erythroid (red blood cell) genetic program by the Antarctic icefishes.

Field Season Overview

A two-person field team will sail to Palmer Station in early March on the ARSV Laurence M. Gould (LMG). In late March, the remainder of the team will deploy to Palmer Station, bringing the total team population to six. All six team members will stay at Palmer Station

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and will conduct short fishing cruises to collect specimens of two abundant fish species, N. coriiceps and C. aceratus, by trawling or fish trapping from the LMG. They will return their collected specimens to aquariums on station where they will breed them and then conduct six- to seven- month thermal acclimation experiments with the two species of produced embryos. They will conduct their experiments in a grantee-provided incubator system which will be housed in one of the environmental rooms on station. Part of the team will winterover on station until late October.

Deploying Team Members

- Thomas Desvigne
- Bill Detrich (PI)
- Nathalie Le François

2015-2016 USAP Field Season
Project Detail

Project Title

The Functional Role Of Moss In Structuring Biotic Interactions And Terrestrialization Of Antarctica

Summary

Event Number:
B-289-E
NSF/PLR Award 1341742

Program Manager:
Dr. Charles Amsler

ASC POC/Implementer:
Samina Ouda / Cara Ferrier

Principal Investigator

Dr. Dr. Sarah Margaretha Eppley
eppley@pdx.edu

Portland State University
Department of Biology
Portland, Oregon

Location

Supporting Stations: Special Project
Research Locations: King George and Livingston Islands

Description

Despite the harsh abiotic conditions, over 100 moss species occur in Antarctica (compared with only two flowering plants). As the continent becomes warmer and wetter, mosses are colonizing newly exposed ground and are predicted to become even more dominant. Researchers will test hypotheses concerning the effects of warming on how Antarctic mosses structure terrestrial ecosystems. Using open-top chamber passive-warming experiments previously installed by a Chilean collaborator on King George and Livingston Islands, researchers will concentrate on how warming impacts bryophyte productivity, sexual systems, and secondary chemistries, and how these changes affect community processes. They will pursue three integrated research hypotheses: (1) Warming will alter moss species composition, moss sex ratio, and deferentially impact moss productivity and reproductive success in Antarctica; (2) Warming will impact the production of moss secondary compounds, influencing the dynamics of biotic interactions and biosphere-atmosphere exchange in terrestrial Antarctica; and (3) Warming will alter moss-microbe interactions, resulting in alterations to the moss food web and community dynamics in terrestrial Antarctica. The data will be the first comprehensive measures of how Antarctic mosses engineer their environment and thereby drive terrestrial responses to global warming.

Field Season Overview

We are collaborating with Chilean scientists, Dr. Angelica Casanova-Katny (University of Santiago, Santiago, Chile) and Dr. Dr. Gustavo Zúñiga, University of Santiago, Santiago, Chile. They currently have long-term Open Top Chamber (OTC) warming experiments in

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Antarctica, and are working out of the Chilean Antarctic Institute's Base Profesor Julio Escudero on King George Island (KGI). Our team of three will travel to Antarctica from Chile with support from the Chilean Antarctic Institute (INACH) on January 21, 2016, for a collaborative stay with the Chilean Antarctica program. INACH will transfer us to and from Punta Arena and KGI, and we expect this transfer via plane, although ship transfer if a possibility depending on weather.

We will spend our deployment at Fildes Peninsula (KGI), as this is our where our main field sites with OTC experiments have been established by our collaborator. We will be collecting terrestrial moss and air samples from OTC experiments on KGI. We will also collect samples from the moss Ceratodon purpureus at other terrestrial sites on KGI. INACH will transfer us among our research sites on KGI, via zodiac and ship, and we have made these arrangements. We will stay for the entirety of our time in Antarctica at Base Profesor Julio Escudero. INACH will provide food and housing on KGI.

Deploying Team Members

- Maria Casanova-Katny
- Hannah Prather
- Todd Rosenstiel (Co-PI)

2015-2016 USAP Field Season
Project Detail

Project Title

Erebus Volcano: Characterizing A Subglacial Hydrothermal System And Potential Effects On CO2 Degassing

Summary

Event Number:
G-411-M
NSF/PLR Award 1443633

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Sune Tamm / Meghan Walker

Principal Investigator

Dr. Tobias P Fischer
fischer@unm.edu

University of New Mexico
Albuquerque, New Mexico

Location

Supporting Stations: McMurdo Station
Research Locations: Lower Erebus Hut and Ice Caves

Description

Erebus Volcano is a natural laboratory of magmatic processes and the ideal place to investigate magma degassing. Although the degassing processes from the active lava lake have been studied in detail over the past decades, comparatively little work has been done on the processes that affect flank degassing. Erebus is glaciated and is the site of ice towers and caves that are the surface expression of heat and volatiles escaping from the edifice into the atmosphere. Contrary to non-glaciated volcanoes where flank degassing is often diffuse and challenging to identify, the ice caves provide visible clues to the escape of gases and heat. Preliminary gas sampling from five of the estimated 100 ice caves shows that gas compositions are dominated by a fractionated air component, with minor amounts of carbon dioxide, methane, and dihydrogen. Significantly, the relative abundance of air-derived gases strongly suggests the presence of an aqueous phase below the surface. Into this liquid, magmatic- and air-derived gases dissolve. As the liquid moves away from the crater area, it cools, eventually freezes and, during this process, releases the gases through the ice caves. The goal of this project is to better characterize the liquid phase in terms of temperatures, gas contents, and its effect on carbon dioxide dissolution and degassing.

Field Season Overview

Two team members will deploy by helicopter to the Lower Erebus Hut (LEH) for three weeks to collect gas samples. With the assistance of an ASC mountaineer/field coordinator, they will collect samples from approximately 20 to 25 previously-visited caves, mostly along Ice-Tower Ridge. Each vent sample will be left in situ for 24 hours with four vent sampling instruments deployed concurrently. CO2 flux samples will be taken

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along a grid inside selected caves. Gas samples will be prepared in the Crary Lab for transport back to the home institution. Snowmobiles will be available for use if necessary.

Deploying Team Members

- Tobias Fischer (PI)
- Tehnuka Ilanko

2015-2016 USAP Field Season
Project Detail

Project Title

The McMurdo Dry Valleys: A Landscape On The Threshold Of Change

Summary

Event Number:
C-517-M
NSF/PLR Award 1246342

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Judy Shiple / Elizabeth Kauffman

Principal Investigator

Dr. Andrew Fountain
andrew@pdx.edu

Portland State University
Geology
Portland, Oregon

Location

Supporting Stations: McMurdo Station
Research Locations: Garwood, Taylor, and Wright Valleys / Lake Hoare

Description

Rapid landscape change has been observed in the McMurdo Dry Valleys during the past decade. Increased solar radiation is hypothesized to cause surface sediment warming and subsequent rapid melting of ice in areas where sediment is in contact with ice. Surface topography, energy budget, biogeochemistry, and hydrology are changing as a result. This project will evaluate the range of changes occurring in the Dry Valleys and subsequent impacts on biological, glaciological, and hydrological systems using airborne LiDAR measurements and supporting ground analyses.

Field Season Overview

Field team members will travel by helicopter to their field camps in the Taylor and Garwood Valleys. They will work throughout the Dry Valleys' Antarctic Specially Managed Areas (ASMA), but will avoid Antarctic Specially Protected Areas (ASPA). Field work will include ground-based ground-penetrating radar (in collaboration with New Zealand Antarctic program); soil, sediment, and fresh water sampling; and instrument placement (thermistors and soil moisture probes) and retrieval.

Deploying Team Members

- Stephen Chignell
- Joseph Levy (Co-PI)
- Logan Schmidt
- David Van Horn (Co-PI)
- Jaclyn Watters

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Project Detail

Project Title

Quantifying Atmospheric Iron Properties Over The Western Antarctic Peninsula

Summary

Event Number:
O-231-P
NSF/PLR Award 1341494

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Matthew Erickson / Jamee Johnson

Principal Investigator

Ms. Yuan nmi Gao
yuangaoh@andromeda.rutgers.edu

Rutgers University
Newark, New Jersey

Location

Supporting Stations: Palmer Station
Research Locations: Near the Seismic Vault

Description

The primary goal of this project is to quantify atmospheric iron properties in the marine atmospheric boundary layer over the Western Antarctic Peninsula (WAP). The specific objectives are to: (1) Identify the sources of atmospheric iron; (2) Determine iron solubility and aerosol composition; (3) Measure the temporal variability of atmospheric iron/dust deposition; and (4) Examine the iron-sulfur relationships. To accomplish these objectives, researchers will collect atmospheric samples (aerosols and atmospheric deposition) at Palmer Station, using two sampling plans. The first plan is intensive austral summer field atmospheric sampling to be made in two successive field seasons. This will be accomplished via the use of seven air samplers controlled by a wind sector to measure chemical and physical properties of aerosol particles and atmospheric deposition. The second plan is for inter-annual measurements of aerosols and atmospheric deposition for a two-year period. This plan will collect total atmospheric deposition monthly and atmospheric aerosols weekly.

Field Season Overview

ASC science construction will erect an atmoshpheric sampling platform to support eight atmospheric instruments. The platform will be sited far enough from station to minimize the potential for sample contamination from station emissions. Some samples will be immediately processed and analyzed by the science team while they are on station, others will be collected by a Palmer research technician and shipped to the PI's home institution every two to three months.

Deploying Team Members

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Yuan Gao (PI)
Shun Yu
Rafael Jusino-Atresino

2015-2016 USAP Field Season
Project Detail

Project Title

Above, Below And Within The Ice

Summary

Event Number:
W-217-M
NSF/PLR Award 1444831

Program Manager:
Mr. Peter West

ASC POC/Implementer:
Sune Tamm / Elaine Hood

Principal Investigator

Ms. Helen Glazer
helen@helenglazer.com

Artist & Writers Program
Owings Mills, Maryland

Location

Supporting Stations: McMurdo Station
Research Locations: Explorers Cove / McMurdo Dry Valleys / Cape Royds

Description

The artist on this project will take photographs of ice formations and use them as the basis for a series of hand-colored photographs and three-dimensional relief sculptures of Antarctica. The artwork will be informed by scientific understanding of the interactions of water, atmosphere, geology, and, in some places, organisms and wildlife. The artwork will also show how physical forces sculpt ice at the surface, within and beneath it, and through cycles of compression, freezing, and melting.

Field Season Overview

The artist has letters of support from three Principal Investigators who have committed to share helicopter and field camp resources. The PI will complete safety training at McMurdo Station in the middle of November and then spend one week embedded with each of the following projects: 1. Bowser(B-043-M/PLR-1341612)atExplorersCove/NewHarbor. 2. Ainley(B-031-M/PLR-0944411)atCapeRoyds. 3. Gooseff(C-504-M/PLR-1115245)LTER-GlaciersteamintheMcMurdoDryValleys. At each site the PI will help with daily camp tasks as well as conduct her own work. The PI requires a BFC-issued tent and camping gear to bring with her to each site; adequate food will be available at the different locations to accommodate an additional person. In between field visits the PI will return to McMurdo to work.. Total deployment time for this project is approximately five to six weeks.

Deploying Team Members

- Helen Glazer (PI)

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Project Detail

Project Title

Phase 2 Development Of A Rapid Access Ice Drilling (RAID) Platform For Research In Antarctica

Summary

Event Number:
D-551-M
NSF/PLR Award 1419935

Program Manager:
Dr. Michael Jackson

ASC POC/Implementer:
Judy Shiple / Matthew Kippenhan

Principal Investigator

Dr. John Goodge
jgoodge@d.umn.edu

University of Minnesota
Department of Geological Sciences
Duluth, Minnesota

Location

Supporting Stations: McMurdo Station
Research Locations: Castle Rock Loop

Description

This small project aims to test whether a critical component of the Rapid Access Ice Drill (RAID) system, a rubber packer designed to make a seal against the ice borehole wall, functions adequately in natural, glacial ice. A second goal is testing whether an auger can successfully make a hole all the way through the firn layer, which is the intended method of drilling through the firn for RAID operations.

Field Season Overview

A collaborative team of drillers and scientists from three different organizations (IDDO, DOSECC Exploration Services, and Scripps Institution of Oceanography) will converge on McMurdo around January 26, 2016, and spend a week at a site about one mile from McMurdo on the Castle Rock Loop, drilling holes through the firn with conventional ice coring drills and augers, and testing various rubber packers for sealing effectiveness.

Deploying Team Members

- Jeffrey Severinghaus (Co-PI)

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Project Detail

Project Title

Phase 2 Development Of A Rapid Access Ice Drilling (RAID) Platform For Research In Antarctica / DOSECC Exploration Services (DES)

Summary

Event Number:
D-552-M
NSF/PLR Award 1419935

Program Manager:
Dr. Michael Jackson

ASC POC/Implementer:
Judy Shiple / Matthew Kippenhan

Principal Investigator

Dr. John Goodge
jgoodge@d.umn.edu

University of Minnesota
Department of Geological Sciences
Duluth, Minnesota

Location

Supporting Stations: McMurdo Station
Research Locations: Castle Rock Loop

Description

DOSECC Exploration Services (DES) has two objectives during the 2015-2016 season. The first is receiving all RAID equipment off the USAP shipment at McMurdo Station (late January 2016). The second objective is to perform a field test of the packer devices for the RAID and Agile Sub-Ice Geological (ASIG) drills currently in development for future polar use by the science community. The RAID drill is being developed by DES in conjunction with the University of Minnesota-Duluth. Both Ice Drilling Design and Operations (IDDO) and DES personnel will participate in this project, along with Jeff Severinghaus (D-551-M), co-PI for the RAID development. As part of this test, DES will provide a video bore hole logger and suitable lost-circulation material. IDDO and Severinghaus will provide additional equipment for the tests.

Field Season Overview

DES Plans to provide 2 DES personnel for this equipment receipt and field test while listing an alternate. IDDO has three people returning to McMurdo station around 01 Feb following the SPICE Core project at the South Pole (I-164-S). This packer test project is expected to take up to one week, including prep work in McMurdo and four full days of field testing outside of McMurdo Station. IDDO personnel will require accommodation in McMurdo from approximately 02 Feb - 09 Feb and will require transport of the personnel and test equipment to and from the test site each day. Such transportation requirements are outlined in this DES D-552-M SIP, which is the 'primary' SIP for this packer test.

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Deploying Team Members

Christopher Delahunty

Richard Szentmiklosi

2015-2016 USAP Field Season
Project Detail

Project Title

Flow And Fracture Dynamics In An Ice Shelf Lateral Margin: Observations And Modeling Of The McMurdo Shear Zone

Summary

Event Number:
I-178-M
NSF/PLR Award 1246400

Program Manager:
Dr. Julie Palais

ASC POC/Implementer:
Judy Shiple / Elizabeth Kauffman

Principal Investigator

Dr. Gordon S Hamilton
gordon.hamilton@maine.edu

University of Maine
Climate Change Institute
Orono, Maine

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo Shear Zone

Description

The McMurdo Shear Zone (SZ) is a five-kilometer wide swath of intensely and extensively crevassed ice about 40 kilometers from McMurdo Station. At present, there is little understanding of its dynamics with regard to how often, how wide, and where crevasses form, other than a general knowledge of the mechanics of fracture. It is unknown if the SZ is a stable or a transient and chaotic boundary layer evolving into even more chaotic flow that will eventually degrade and separate the Ross and McMurdo Ice Shelves. During this three-year project, researchers hope to answer this question of present and future stability by gathering observations required for the development of a three-dimensional finite element time-dependent model of the McMurdo SZ stress fields. To accomplish this objective, the science team will establish a GPS network and perform ground-penetrating radar (GPR) surveys both within and outside the SZ. The Yeti robot will be used to obtain GPR profiles, particularly in crevassed terrain.

Field Season Overview

During this second of three field seasons, a team of five, including three scientists, two robot operators, and a mountaineer, will camp near the shear zone for up to three weeks. Helicopter support will be used to establish the GPS network. The South Pole Traverse team will assist in caching fuel and equipment for the team.

Deploying Team Members

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Peter Braddock
Lynn Kaluzienski
Joshua Cook
James Lever (Co-PI)
Gordon Hamilton (PI)
Benjamin Walker

2015-2016 USAP Field Season
Project Detail

Project Title

Window Into 40 Kyr World From Climate Records In One Ma Ice From The Allan Hills Blue Ice Area

Summary

Event Number:
I-165-M
NSF/PLR Award 1443263

Program Manager:
Dr. Julie Palais

ASC POC/Implementer:
Sune Tamm / Meghan Walker

Principal Investigator

Dr. John A Higgins
jahiggin@princeton.edu

Princeton University
Department of Geosciences
Princeton, New Jersey

Location

Supporting Stations: McMurdo Station
Research Locations: Allan Hills

Description

Between about 2.8 million to 0.9 million years ago (Ma), earth's climate was characterized by 40,000 year (40 kyr) cycles, driven or paced by changes in the tilt of the earth's spin axis. Much is known about the 40 kyr world from studies of deep-sea sediments, but understanding of climate change during this period is incomplete due to lack of records of Antarctic climate and direct records of atmospheric greenhouse-gas concentrations. Researchers hope to fill some of the gaps in these data sets/climate records by building on recent studies of ancient ice from the Main Ice Field (MIF), Allan Hills, Antarctica. During previous field seasons researchers recovered ice extending, discontinuously, from 0.1 Ma to one Ma. The team has identified two different sites, each overlying bedrock at about 200 meters in depth, as targets for coring ice dating to one Ma and beyond.

Field Season Overview

Four participants and one Ice Drilling Design and Operations (IDDO)-provided driller will deploy by Twin Otter aircraft to the Allan Hills in early November to build on recent studies of ancient ice from the Main Ice Field (MIF). The group will drill two 150 - 200m ice cores with an IDDO Eclipse drill. In addition, the team will re-drill Bit 58 to the bedrock, previously cored by PI Kurbatov (I-349-M) during the 2009-10 and 2010-11 seasons. Using a PICO hand auger and extension, the science team will also generate 10-20 short (~10m) ice cores in areas where previous work and terrestrial meteorite ages suggest ancient surface ice. Transport to these short ice core sites will be by two cleated Skandic skidoos using two Nansen sleds for materials. There will not be any camp moves as all sites can be accessed from one camp. Ice cores will be transported to McMurdo

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throughout the field season via twin otter flights. One additional member may join the group in early December (Ed Brook, deploying with I-159-M to Taylor Glacier) for approximately one week traveling to and from the Allan Hills on already-scheduled resupply/sample flights.

Deploying Team Members

- Edward Brook (Co-PI)
- John Higgins (PI)
- Preston Kemeny
- Sean Mackay
- Mike Waszkiewicz
- Yuzhen Yan

2015-2016 USAP Field Season
Project Detail

Project Title

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

Summary

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

Program Manager:
Mr. Pat Smith

ASC POC/Implementer:
Samina Ouda / Jamee Johnson

Principal Investigator

Mr. Bouvard Hosticka
bh@virginia.edu

University of Virginia
Charlottesville, Virginia

Location

Supporting Stations: Palmer Station
Research Locations: Terra Lab

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

A Palmer Station Research Associate will monitor the equipment throughout the year and ship samples, on a quarterly basis to the home institution, and sometimes by request to various institutions around the world. An engineer will make one site visit to perform maintenance and upgrades.

Deploying Team Members

- Bouvard Hosticka (PI)

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Project Detail

Project Title

Investigating Iron-Binding Ligands In Southern Ocean Diatom Communities: The Role Of Diatom-Bacteria Associations

Summary

Event Number:
B-230-N
NSF/PLR Award 1443474

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Matthew Erickson / Adam Jenkins

Principal Investigator

Dr. Bethany Diane Jenkins
jenkins.bethany@gmail.com

University of Rhode Island
Graduate School of Oceanography
Kingston, Rhode Island

Location

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: Western Antarctic Peninsula

Description

This project will combine expertise in trace-metal biogeochemistry, phytoplankton cultivation and molecular biology to address questions regarding iron-binding ligand production and the role of diatom-bacterial interactions in a well-established iron-limited region, the Southern Ocean. Team members will conduct field incubation experiments in both the low-iron, high-nutrient, low-chlorophyll waters of the Drake Passage, and in the naturally iron-enriched waters of the Western Antarctic Peninsula. They will conduct the incubations in early austral spring and will collect all seawater for experiments with trace-metal-clean sampling and techniques to minimize contamination risks. They will conduct three incubation experiments, seven days each, over the course of one cruise using shipboard incubators set to the ambient seawater temperature and light cycles.

Field Season Overview

Team members will sail on the RVIB Nathaniel B. Palmer from Punta Arenas, Chile. Fieldwork will include repeated seawater collection with a trace metal and conventional sampling rosettes at three stations for a series of shipboard incubation experiments designed around ambient biological communities. The team will use three weeks of ship time aboard the RVIB Nathaniel B. Palmer (NBP) for their shipboard field incubation experiments. At the start of the cruise, they will sample an offshore station in the South Drake Passage. At the beginning of the second week, they will sample an inshore station within the Palmer-Long Term Ecological Research (LTER) inshore sampling grid, and at the beginning of the third week, they will resample the initial South Drake Passage site to complete the third incubation experiment. The group will conduct daily, standard, shallow

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CTD casts to collect water for monitoring change in the phytoplankton community.

Deploying Team Members

- Kristen Buck (Co-PI)
- Phoebe Chappell (Co-PI)
- Laura Filliger
- Bethany Jenkins (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

Impacts Of Local Oceanographic Processes On Adélie Penguin Foraging Ecology Over Palmer Deep

Summary

Event Number:
B-005-L
NSF/PLR Award 1327248

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Samina Ouda / Cara Ferrier

Principal Investigator

Dr. Josh Kohut
kohut@marine.rutgers.edu

Rutgers University
Institute for Marine & Coastal Sciences
New Brunswick, New Jersey

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Palmer Deep / Joubin and Wauwerman Islands

Description

The application of innovative ocean-observing and animal-telemetry technology over Palmer Deep (Western Antarctic Peninsula; WAP) is leading to new understanding and also to many new questions related to polar ecosystem processes and their control by bio-physical interactions in the polar environment. This multi-platform field study will investigate the impact of coastal physical processes, e.g., tides, currents, upwelling events, and sea ice, on Adélie penguin foraging ecology in the vicinity of Palmer Deep off Anvers Island, WAP. Research efforts will be guided by real-time surface convergence and divergences based on remotely sensed surface-current maps derived from a coastal network of high-frequency radars (HFRs). The multidisciplinary research team will adaptively sample the distribution of phytoplankton and zooplankton, which influence Adélie penguin foraging ecology, to understand how local oceanographic processes structure the ecosystem.

Field Season Overview

Field team members will sail on the ARSV Laurence M. Gould (LMG) to Palmer Station, with stops at Joubin and Wauwermans Islands. There, they will visually inspect the HF Radars they installed last season and collect the external data drives. Additionally, they will inspect and repair the Remote Power Modules (RPMs) that support the site operations. These RPMs provide power and shelter to the HF radar electronics. During the cruise, they will also attempt to retrieve a mooring that was deployed last season. They hope to complete their work with Zodiac-supported day trips.

Project Indexes

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Deploying Team Members

Colin Evans

Hank Statscewich

2015-2016 USAP Field Season
Project Detail

Project Title

Characterization Of Upstream Ice And Firn Dynamics Affecting The South Pole Ice (SPICE) Core

Summary

Event Number:
I-193-M/S
NSF/PLR Award 1443471

Program Manager:
Dr. Julie Palais

ASC POC/Implementer:
Judy Shiple / Meghan Walker / Paul Sullivan

Principal Investigator

Dr. Michelle R Koutnik
mkoutnik@uw.edu

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

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: SPICE core upstream catchment

Description

The goal of this project is to improve the ice and gas chronologies for the South Pole Ice core (SPICE core) by making in-situ measurements of firn compaction in the upstream catchment area. The upstream catchment area is a 110 kilometer by 70° wedge between 110°E and 180°E, situated to the northeast of South Pole Station. The research team will measure the modern gradients in accumulation rate, surface temperature, and water-stable isotopes to separate spatial (advection) variation from temporal (climate) variations in the ice-core records.

Field Season Overview

This is the first of four seasons for this project. The goal is to improve the ice and gas chronologies for the South Pole Ice core (SPICE core) by making in situ measurements of firn compaction in the upstream catchment area. The upstream catchment area is a 110 km by 70° wedge between 110°E and 180°E situated to the northeast of South Pole Station. Two team members will travel by LC-130 aircraft from McMurdo to South Pole Station in mid-December. After acclimation, the team will set up a network of approximately 70 poles within the upstream catchment area and survey them with UNAVCO-provided GPS units to determine surface velocities. The poles will be left in situ during the course of their study. Approximately 14 days of field work will be conducted by snowmobile day trips from South Pole Station. The team will also spend approximately six days at a field camp 100 km from South Pole Station in order to set up the poles on the farther side of the network. Transport to the camp will be by snowmobile traverse. No field air support is allocated to this project.

Deploying Team Members

Howard Conway (Co-PI)

Michelle Koutnik (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

Science Observation With BICEP3 CMB Polarization Experiment

Summary

Event Number:
A-365-S
NSF/PLR Award 1313010

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Judy Shiple / Paul Sullivan

Principal Investigator

Dr. Chao-Lin Kuo
clkuo@stanford.edu

Stanford University
Stanford, California

Location

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

Description

Background Imaging of Cosmic Extragalactic Polarization (BICEP) is an experiment designed to measure the polarization of the cosmic microwave background (CMB) to unprecedented precision, and, in turn, answer crucial questions about the beginnings of the Universe. BICEP3 is the latest upgrade to the BICEP/Keck series of refractor experiments that study degree-scale B-mode polarization from inflation. Compared to BICEP2 and SPUD (Small Polarimeter Upgrade for DASI), BICEP3's aperture is twice as large, allowing for a much larger focal plane area. BICEP3 doubles the survey speed of SPUD and focuses the sensitivity at 100 GHz, a frequency that is much less affected by dust foregrounds. BICEP3 is a powerful instrument to test whether BICEP2's measured signal is indeed of cosmological origin.

Field Season Overview

Ressearchers plan to remove the receiver from the BICEP mount, warm up, replace the sub-Kelvin truss structure, install 12 new detector tiles, cool down the receiver, and load it back onto the mount. After verifying the performance of the reinstalled receiver, they plan to spend two weeks to one month to measure the beam response of the detectors.

Deploying Team Members

- Zeeshan Ahmed
- Rachel Bowens-Rubin
- James Grayson
- Chao-Lin Kuo (PI)
- Walter Ogburn
- Bryan Steinbach

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Samuel Harrison
Howard Hui
Jae Hwan Kang
Ethan Karpel
Keith Thompson
Albert Wandui
Kimmy Wu
Kiwon Yoon

2015-2016 USAP Field Season
Project Detail

Project Title

Studies Of ULF Waves Associated With Solar Wind Coupling To The Magnetosphere And Ionosphere

Summary

Event Number:
A-102-M/S
NSF/PLR Award 1341677

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Elizabeth Kauffman / Paul Sullivan

Principal Investigator

Dr. Marc Lessard
marc.lessard@unh.edu

University of New Hampshire
Space Science Center
Durham, New Hampshire

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: Cusp Lab / Arrival Heights

Description

This project is a continuation of current studies using search-coil magnetometers previously installed and operating at South Pole Station's Cusp Lab, McMurdo Station's Arrival Heights, and the UK base, Halley Station. Researchers use time-series data from magnetometers at these and other Antarctic sites, including the Polar Experiment Network for Geospace Upper-atmosphere Investigations (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

No project participants deploy in support of this project. Staff Research Associates (RAs) perform routine monitoring of the equipment and computers.

2015-2016 USAP Field Season
Project Detail

Project Title

Persistence Of Vision: Antarctica

Summary

Event Number:
W-484-M
NSF/PLR Award 1344440

Program Manager:
Mr. Peter West

ASC POC/Implementer:
Matthew Erickson / Katherine Jensen

Principal Investigator

Dr. Vincent Jerry LiCata
licata@lsu.edu

Louisiana State University Baton Rouge
Baton Rouge, Louisiana

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo area / Williams Field / Dry Valleys / Cape Royds

Description

Persistence of Vision: Antarctica will be a moving image art installation that imaginatively stages encounters between historical and contemporary depictions of exploration and research in Antarctica. The encounters are conducted via creative reenactments of still and moving images from historical expeditions to Antarctica. A selection of images will be re-staged in situ with modern substitutions for persons and objects. The images are broken out into six specific stations: Scientist portraits, provisioning, a soccer game, mess, Pole, and landscapes. The contemporary images will be done using video portraiture. Audio recordings of environmental sounds and the discussions of the persons will be added to the final product.

Field Season Overview

The artists will create a moving image art installation that stages creative "re-enactments" of still and moving images from historical and contemporary exploration and research in Antarctica. The images are broken out into six specific stations: Scientist Portraits, Provisioning, A Soccer Game, A Dining Hall, The South Pole, and Landscapes.

Deploying Team Members

- Vincent LiCata (PI)
- Patricia Suchy (Co-PI)

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2015-2016 USAP Field Season
Project Detail

Project Title

Pilot Study: Addition Of Biological Sampling To Drake Passage Transits Of The ARSV Laurence M. Gould

Summary

Event Number:
B-268-L

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Matthew Erickson / Cara Ferrier

Principal Investigator

Dr. Valerie J Loeb
loeb@mlml.calstate.edu

San Jose State University
Moss Landing Marine Laboratory
Moss Landing, California

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Drake Passage

Description

Analysis of acoustic Doppler current profiler (ADCP) records from supply transits of the Drake Passage by the ARSV Laurence M Gould (LMG), from 1999 to the present, indicate that underway observations of the upper-ocean scattering layer can serve as a proxy to monitor changes in the Southern Ocean ecosystem due to climate warming. Researchers will use these long-term ADCP records in identifying those organisms responsible for seasonal, inter-annual, and longer-term variability observed in ADCP records collected since 1999. In the upcoming third cruise in support of this project, net tows accompanied by videography will again be conducted during the austral autumn period of elevated acoustic backscattering. This will provide further information on the abundance and taxonomic-size composition of organisms likely to be dominant sound scatterers within the three biogeographic zones of the Drake Passage.

Field Season Overview

Researchers will sail on the LMG and conduct net tows, coincidental with ADCP, using an Isaacs-Kidd Midwater Trawl on both south- and north-bound transits of the Drake Passage. They will conduct three tows at three sites on both transits. The trawl will have a grantee-supplied video camera and time depth recorder (TDR) mounted on the frame. The three sample sites are across the Patagonian Shelf, the Peninsula Shelf, and the Polar Front. While the vessel is underway, the team will conduct top-predator surveys. One team member using hand-held binoculars will conduct standardized strip transects to estimate the relative abundance of seabirds, and line-transect methodology to collect marine mammal sightings.

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Deploying Team Members

Gustavo Alvarez-Colombo

Michael Force

Valerie Loeb (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

Impact Of Supraglacial Lakes On Ice-Shelf Stability

Summary

Event Number:
I-190-M
NSF/PLR Award 1443126

Program Manager:
Dr. Julie Palais

ASC POC/Implementer:
Sune Tamm / Matthew Kippenhan

Principal Investigator

Dr. Douglas R MacAyeal
drm7@midway.uchicago.edu

University of Chicago
Department of Geophysicial Sciences
Chicago, Illinois

Location

Supporting Stations: McMurdo Station
Research Locations: Pegasus Field

Description

This project will help establish a comprehensive theory of how ice shelves catastrophically disintegrate. The field work this year is a pilot season, with further support awarded based on the evaluation of the pilot year's outcomes. The science team has three goals for the season: (1) Develop a viscoelastic model of the ice-shelf response to loads at Pegasus Field using observational methods and computer modeling; (2) Quantify the ability to dig a man-made supraglacial lake basin using heavy equipment operations and develop a prototype basin; (3) Identify options for seeding a full-size basin with water if the project moves into the 2016-17 field season; and (4) Conclude whether or not the project can be supported in further field seasons in its full, proposed capacity.

Field Season Overview

The first ("pilot") field season of activity is designed to objectively evaluate whether it is possible to build and maintain an artificial lake on the surface of the McMurdo Ice Shelf. If such a lake is found to be perennial, i.e., capable of surviving from year to year on its own, then its study will continue in future years as a means to observe processes of importance both to the future evolution of Antarctica's ice sheets in a cost-effective manner and to the technical aspects of maintaining runways at McMurdo Station.

A field team of 4 scientists will begin field activity by surveying the site proposed for building the artificial surface lake. The site survey will involve 3-5 days of optical and GPS surface topography measurements to develop a map of the ice-shelf surface elevation (and slope) within about a 1 km by 1 km area located somewhere NW of the Pegasus runway zone of exclusion. (It is necessary that our site, and roadways accessing

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our site not interfere with the regulations and mandates of the station's Pegasus Airfield.)

Following the site survey, the field team will assist and advise the USAP contractor to construct a 30 m by 30 m (by 2 m deep) surface basin using heavy machinery (e.g., earth moving machines). It is anticipated that this phase of field activity will last for 2-4 days (depending on preparation time). Lake construction will require keeping ice/snow removed to form the basin within a close proximity to the excavated basin (i.e., we envision the basin excavation to be done by "pushing" the loosened ice into a berm that forms the northern side of the basin). How this will be done will be developed by on-going consultations between the USAP contractor and the scientific team. One possible disposition of the snow and ice tailings will be to pile them into a berm that sits on the down-surface-gradient side of the artificial basin. We additionally desire shallow 2-3 m wide trenches to be dug (50 cm deep) on either side of the basin, extending some hundred to hundreds of meters form the basin, to present "catchment wings" that collect and channel any running surface water into the basin. Our goal is to fill the basin with running surface water that originates elsewhere to the south of the basin (e.g., runoff from the vicinity of Pegasus runway).

At the immediate conclusion of the basin construction phase, fresh water will be introduced into the basin. The goal of introducing water will be to flood the basin floor with between 50 cm and 100 cm of water. This water will "seed" the energy-balance characteristics of the basin so that it can continue to fill with meltwater due to solar loading.

Following the lake construction phase of the field activity. The field team will continue to conduct optical and GPS surveys through the approximately 1 km by 1 km region surrounding the basin, and will conduct preliminary electrical resistivity profiling to determine the response of the McM ice shelf to the lake. Additionally, a automatic weather station (AWS) will be placed within the lake on a tripod, mast or tower (potentially requiring some support from construction to optimize for a lake bottom footing) to monitor surface energy balance and weather conditions.

The field team anticipates remaining in the field after the lake is constructed for approximately 2-4 weeks while the summer melt season progresses. During this time, the field team expects to interact with the USAP engineers in their constant consideration of conditions on the Pegasus runway and surrounding infrastructure as a means of contributing to the USAP mission.

It is anticipated that the AWS will be left to winter over in the lake, and that it will be either removed (if the lake fails to re-open the following field season) or maintained after one full year of operation. At the conclusion of the winter-over period, the AWS units will either be maintained by the science team (e.g., should the "pilot study" be continued) or will be extracted by USAP station personnel in consultation with the science team (in the event that it does not deploy).

Deploying Team Members

- Alison Banwell (Team Leader)
- Douglas MacAyeal (PI)
- Grant Macdonald
- Ian Willis

2015-2016 USAP Field Season
Project Detail

Project Title

Biological Adaptations To Environmental Change In Antarctica - An Advanced Training Program For Early Career Scientists

Summary

Event Number:
B-301-L/P
NSF/PLR Award 1245703

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Matthew Erickson / Jamee Johnson

Principal Investigator

Dr. Donal Manahan
manahan@usc.edu

University of Southern California
Department of Biological Sciences
Los Angeles, California

Location

Supporting Stations: ARSV Laurence M. Gould, Palmer Station
Research Locations: On station

Description

This project is an international, advanced PhD-level, training course that will be taught at Palmer Station (with support from the ARSV Laurence M. Gould) for one month during the austral winter. The course will attract a competitive group of young, early-career scientists. The goals for the course are to introduce students to the diversity of biological organisms in Antarctic polar regions, to study unique aspects of biology that permit life in such extreme environments, and to provide the opportunity for scientists new to the Antarctic to learn about and appreciate the logistical possibilities and constraints of working in this extreme environment. Longstanding questions in evolution and ecology (such as cold adaptation and food limitation) concerning the biology of Antarctic organisms and their ability to adapt to a changing world will be examined through physiological experiments with organisms, studies of isolated cells and tissues, experiments on protein structure and function, and molecular analysis of genetics systems. Lectures will emphasize physiological, biochemical, and molecular biological approaches to understanding the ecology and biological adaptations of Antarctic organisms. Student activities and class projects will follow these themes. The students will gain an understanding of the power, but also the limitations, of physiological, biochemical, and molecular biological methods that are currently being used to answer research questions in environmental science and biological adaptation.

Field Season Overview

Participants in the Antarctic biology training course will sail on the ARSV Laurence M. Gould (LMG) from Punta Arenas, Chile to Palmer Station. Once at Palmer Station, the

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class will develop experiments and associated sampling protocols. The team will be housed on station during their stay except during two vessel cruises. They will have a total of 40 days including eight days of transit to and from Palmer Station, 24 days at Palmer Station, and two, four-day cruises to accomplish their science objectives.

Deploying Team Members

- Deneb Karentz
- Donal Manahan (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

Observing The Snowy Sheathbill And Its Behavior

Summary

Event Number:
W-488-P
NSF/PLR Award 1344304

Program Manager:
Mr. Peter West

ASC POC/Implementer:
Matthew Erickson / Elaine Hood

Principal Investigator

Ms. Susan Joanne McCarthy
s_j_mccarthy@hotmail.com

San Francisco, California

Location

Supporting Stations: Palmer Station
Research Locations: Palmer Station

Description

Writer Susan McCarthy and artist Terri Nelson will observe a little-known Antarctic bird, the snowy sheathbill (Chionis albus), the only land bird to breed on the Antarctic continent. Based on their observations, notes, and sketches, McCarthy and Nelson will produce a children's book, "Don't Let the Penguin in the Picture." It will show that sheathbills are fascinating creatures with interesting adaptations to the harsh south polar world. Using the sheathbill material, McCarthy and Nelson will also collaborate on a graphic novel, "Maybe We Should Find A Different Poster Animal," which will look at why some animals are popular, famous, beloved, or "charismatic," and others are neglected.

Field Season Overview

McCarthy and Nelson will be not have a permit as they will be observing the sheathbills on islands that do not require a permit. They will need all the boating and safety classes, so they can travel to the area islands as a team. They will need either an office or lab space, with two monitors for their own laptops.

Deploying Team Members

- Susan McCarthy (PI)
- Terri Nelson

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Project Detail

Project Title

Body Size, Oxygen, And Vulnerability To Climate Change: A Physiological Study Of Antarctic Pycnogonida

Summary

Event Number:
B-307-M
NSF/PLR Award 1341476

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Judy Shiple / Beverly Walker

Principal Investigator

Dr. Amy Moran
morana@hawaii.edu

University of Hawaii Manoa
Honolulu , Hawaii

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo Sound

Description

This project will test the hypothesis that the giant size of many polar ectotherms makes them among the most vulnerable of organisms to global climate change. To do this, researchers will examine the physiology and scaling of metabolism, cuticular structure, and leg strength in Antarctic pycnogonids (sea spiders). They will also examine the structure, permeability, strength and flexural stiffness of their leg cuticles to determine whether cuticular permeability trades off with leg strength and stiffness. Using physiological and morphological data, they will develop mathematical models to predict physiological responses to future climate scenarios.

Field Season Overview

Five researchers will make day trips by Pisten Bully to multiple locations around McMurdo Sound, and by helicopter to sites at New and Granite Harbors. They will dive approximately four times a week to video record and collect samples of pycnogonids. They will also deploy and redeploy oxygen and temperature dataloggers, and will perform laboratory respiration, thermal tolerance and biomechanical experiments in Crary lab.

Deploying Team Members

- Steven Lane
- Amy Moran (PI)
- Caitlin Shishido
- Bret Tobalske (Co-PI)
- Arthur Woods (Co-PI)

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Project Detail

Project Title

Constraining Plio-Pleistocene West Antarctic Ice Sheet Behavior From The Ohio Range And Scott Glacier

Summary

Event Number:
G-438-M
NSF/PLR Award 1341658

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Judy Shiple / Elizabeth Kauffman

Principal Investigator

Dr. Sujoy Mukhopadhyay
sujoy@eps.harvard.edu

Harvard University
Cambridge, Massachusetts

Location

Supporting Stations: McMurdo Station
Research Locations: Ohio Range

Description

This project aims to place constraints on interior West Antarctic Ice Sheet (WAIS) elevations during the mid-Pliocene, when atmospheric carbon dioxide levels were similar to today's. Researchers will collect surface and subglacial bedrock samples over the course of this two-year project for analysis of cosmogenic nuclides.

Field Season Overview

Six participants will work from a single field camp for approximately four weeks. LC-130 and Twin Otter aircraft will put in and pull out the camp. Participants will use snowmobiles to access sampling locations and to move equipment and samples. Surface-towed, ground-penetrating radar will be used to locate drilling sites for subglacial-bedrock sampling next season.

Deploying Team Members

- Robert Ackert (Team Leader)
- Seth Campbell
- Jennifer Erxleben
- Jennifer Middleton

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Project Detail

Project Title

Portraits Of Place In Antarctica

Summary

Event Number:
W-468-M
NSF/PLR Award 1444805

Program Manager:
Mr. Peter West

ASC POC/Implementer:
Matthew Erickson / Elaine Hood

Principal Investigator

Mr. Shaun Michael O'Boyle
oboylephoto@gmail.com

Dalton, Massachusetts

Location

Supporting Stations: McMurdo Station
Research Locations: On station / Dry Valleys

Description

This photography project will document the built environments of McMurdo Station and its relationship to surrounding landscapes. The photographer will show the chronological progression of station architecture to give a sense of the time periods of its construction and of the building techniques employed. This will be done by examining all buildings, from science labs, housing, and social space, to the infrastructure that keeps the station running. Visual comparisons will be made to early explorations by taking photographs of the current landscapes in the Dry Valleys and displaying them alongside historical documents.

Field Season Overview

The primary focus is photographing the facilities of McMurdo Station, with additional visits to New Harbor, Lake Bonney, Taylor Valley Glacier, Shackleton's Hut at Cape Royds, Scott's Hut at Cape Evans, Wilson's igloo triangle at Crozier, and Scott's Discovery Hut at Hut Point.

Peter West, NSF, has provided permission for O'Boyle to be ticketed to Christchurch one week in advance of his scheduled deployment date for grant-related research at the Canterbury Museum.

Deploying Team Members

- Shaun O'Boyle (PI)

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Project Detail

Project Title

Troposphere-Ionosphere Coupling Via Atmospheric Gravity Waves

Summary

Event Number:
A-373-P
NSF/PLR Award 1341557

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Samina Ouda / Jamee Johnson

Principal Investigator

Dr. Vadym V Paznukhov
vadym.paznukhov@bc.edu

Chestnut Hill, Massachusetts

Location

Supporting Stations: Palmer Station
Research Locations: Palmer Station

Description

The goal of this project is to enhance the comprehensive research understanding of troposphere-ionosphere coupling via atmospheric gravity waves (AGWs) in the Antarctic region. The Antarctic Peninsula offers a unique opportunity for studying troposphere-ionosphere interaction via AGWs since this region was shown to have a significant presence of tropospherically generated AGWs. Researchers will use both experimental and modeling efforts to investigate the efficiency and main characteristics of such coupling and will address several questions remaining in the current understanding of this coupling process.

Field Season Overview

During the 2014-15 season, two science team members will deploy to Palmer Station in mid-May 2015 to install the Septentrio PolaRxs GPS receiver (with GPS antenna) and an HF receiver with one temporary installed receive antenna. All instrumentation and equipment will be constructed at Boston College. An HF receiver will include USRP N210 unit with the reference oscillator OctoClock-G. At a yet-to-be-determined time between mid-May and late June 2015, team members will travel, via the ARSV Laurence M. Gould (LMG) to Vernadsky station, where they will install an HF transmitter. Once that is complete, the LMG will retrieve the team and return them to Palmer Station. Palmer Station support will mainly be from the ASC Research Associate, who will assist the science team with finding a suitable location for the installations at Palmer Station. The following season, 2015-16, one science team member will deploy to Palmer Station from mid-October to early November 2015 to install three HF antennas in the Palmer Backyard. The antennas will be made at Boston College. Two additional HF receivers will be located in the Terra Laboratory. At the end of the 2017-18 season, the deployed equipment will need to be taken down, packed and shipped back to Boston College. This

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effort will require approximately 40 hours of the Palmer station personnel time. Science construction personnel will remove the three HF antennas in the backyard (approximately 40 hours). Throughout the duration of this project, we will need an assistance by shipping external hard drives back to Boston College.

Deploying Team Members

- Keith Groves
- Vadym Paznukhov (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

The Taylor Glacier, Antarctica, Horizontal Ice Core: Exploring Changes In The Natural Methane Budget In A Warming World And Expanding The Paleo-Archive

Summary

Event Number:
I-159-M
NSF/PLR Award 1245659

Program Manager:
Dr. Julie Palais

ASC POC/Implementer:
Matthew Erickson / Meghan Walker

Principal Investigator

Dr. Vasilii Victorovich Petrenko
vpetrenk@ur.rochester.edu

University of Rochester
Rochester, New York

Location

Supporting Stations: McMurdo Station
Research Locations: Taylor Glacier

Description

The objective of this project is to continue the use of the Taylor Glacier ice ablation area for paleoenvironmental studies and to expand the understanding of the surface-ice stratigraphy. Researchers will examine the methane record, cosmogenic 14C, variations of carbon dioxide, nitrous oxide and their isotopes, and will continue age mapping of the ice. In addition, they will conduct pilot studies of new tracers, filter meltwater for extraterrestrial dust and organic material, and perform on-site methane isotopic analyses.

Field Season Overview

Team members will travel to Taylor Glacier by helicopter and camp for approximately two months. Their field season will immediately follow collaborator, Sarah Aciego (I-184), at the same location; one participant from I-184 will remain to work with I-159. The team will use the Marble Point Traverse to transport some project and camp cargo from McMurdo to Marble Point, and will then have it flown to Taylor Glacier. The research team will drill at numerous locations on the glacier to depths up to 70 meters. Large-diameter cores will be extracted and melted on-site, from which the released air will be captured. Smaller-diameter cores will also be extracted. Air samples and ice cores will be transported to McMurdo throughout the season and on to various home institutions for further analysis. The team will retrograde their camp equipment and materials at the end of this season.

Deploying Team Members

- Bernhard Bereiter
- James Menking

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- Edward Brook (Co-PI)
- Michael Dyonisius
- Benjamin Hmiel
- Michael Jayred
- Joseph McConnell
- Peter Neff
- Vasilii Petrenko (PI)
- Kathryn Schroeder
- Sarah Shackleton
- Andrew Smith

2015-2016 USAP Field Season
Project Detail

Project Title

Biodiversity And Distribution Of Microbial Epi-Endolithic Communities To Studying Limits For Life In Victoria Land, Antarctica

Summary

Event Number:
X-279-M
NSF/PLR Award 1443585

Program Manager:
(Other)

ASC POC/Implementer:
Matthew Erickson / Elizabeth Kauffman

Principal Investigator

Dr. Michael John Polito
mpolito@lsu.edu

Louisiana State University Baton Rouge
Baton Rouge, Louisiana

Location

Supporting Stations: McMurdo Station
Research Locations: Dry Valleys

Description

This research team will collect plants and lichens in the McMurdo Dry Valleys for taxonomic analysis and will collect rocks and rocks colonized by microbial endolithic communities, for isolation of microbes, systematic studies, and studies on total biodiversity of the communities.

Field Season Overview

Two Italian collaborators and the principal investigator will be based out of McMurdo Station and will make day trips by helicopter to four sites in the Dry Valleys. They will spend one to two days at each site conducting surveys and collecting rock samples. At the end of the field work, the Italian team will return to Mario Zucchelli Station with their samples. Samples will be shipped to Italy from Zucchelli Station.

Deploying Team Members

- Steven Emslie
- Laura Selbmann

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2015-2016 USAP Field Season
Project Detail

Project Title

Gamma-Ray Imager/Polarimeter For Solar Flares (GRIPS)

Summary

Event Number:
A-337-M
NSF/NASA Agreement

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Cara Sucher / Chad Naughton / Scott Battaion

Principal Investigator

Dr. Pascal Saint-Hilaire
shilaire@ssl.berkeley.edu

University of California Berkeley
Space Sciences Laboratory
Berkeley, California

Location

Supporting Stations: McMurdo Station
Research Locations: Williams Field

Description

The Gamma-Ray Imager/Polarimeter for Solar flares (GRIPS) is a high-altitude balloon-borne experiment. GRIPS will provide detailed high-resolution spectroscopy, imaging, and polarimetry of the gamma/hard X-Ray (HXR) spectrum over wide ranges of energy (20 kilo-electron-Volts to 10 million-electron-Volts) and spatial resolutions (quasi-continuously from 12.5 – 162 arcseconds). GRIPS will shed light on a number of solar flare mysteries: Do all flares accelerate ions? Which ions are accelerated and when? What causes the separation between the ion-produced gamma rays and energetic electron HXR emissions in the foot points of flares? Are the accelerated electrons anisotropic? What are the properties of coronal gamma-ray sources?

Field Season Overview

Field team members will facilitate the preparation, launch, and recovery of NASA-sponsored high-altitude balloons and science payloads. They will be housed at McMurdo Station and will commute daily to the Williams Field launch facility. Balloon and payload preparations are timed to coincide with favorable weather and wind patterns. Upon termination of the flights, recovery teams will use fixed-wing and/or helicopter support to retrieve the payloads.

Deploying Team Members

- Hazel Bain
- Bennett Maruca

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- Amir Caspi
- Nicole Duncan
- Niharika Godbole
- Glenn Laurent
- Nelson Machado
- Brent Mochizuki
- Nicole Moody
- Jerome Olson
- Pascal Saint-Hilaire (PI)
- Albert Shih

2015-2016 USAP Field Season
Project Detail

Project Title

Palmer, Antarctica Long Term Ecological Research (LTER): Land-Shelf-Ocean Connectivity, Ecosystem Resilience And Transformation In A Sea-Ice Influenced Pelagic Ecosystem

Summary

Event Number:
C-019-L/P
NSF/PLR Award 1440435

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Samina Ouda / Adam Jenkins / Jamee Johnson

Principal Investigator

Dr. Oscar Schofield
oscar@marine.rutgers.edu

Rutgers University
Institute for Marine & Coastal Sciences
New Brunswick, New Jersey

Location

Supporting Stations: ARSV Laurence M. Gould, Palmer Station
Research Locations: LTER study site / Palmer Station

Description

The overall objectives of Palmer LTER research are to document and understand the phenology and variability in sea-ice dynamics, primary production, zooplankton ecology, seabird and marine mammal demography, and microbial and biogeochemical processes in the Antarctic marine ecosystem, including identifying the mechanisms of ecosystem response to rapid climate change. One particularly important objective is to continue the 23-year-long LTER time series on the regional scale grid of hydrographic stations west of the Antarctic Peninsula. Project researchers seek to understand how changes in phytoplankton dynamics, such as an increase in fresh water due to melting ice, propagate through the ecosystem, ultimately affecting fish, seabirds, and marine mammals. Because photosynthesis is driven by sunlight, characterizing the quality and quantity of light available for use by phytoplankton is important. Researchers will deploy a wide range of sensors to measure these optical properties, which, in turn, will help understand the underlying role of light variability in phytoplankton dynamics. In addition to their role at the base of the marine ecosystem, the fate of phytoplankton biomass is important to understanding climate-change feedback. By conducting experiments to study phytoplankton physiology, researchers hope to develop a clear picture of the fate of phytoplankton biomass once it enters the Antarctic ecosystem.

Field Season Overview

The science team will travel on the ARSV Laurence M. Gould (LMG) from Punta Arenas,

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Chile to Palmer Station. The team's main research objectives are to: (1) maintain the Palmer phytoplankton time series measurements at LTER stations B and E; (2) launch of two gliders; (3) define temperature impact on overall community ecology and physiology of phytoplankton populations collected from stations B and E; and, (4) continue to conduct several videoconferences with classrooms and other groups as part of the LTER mandated educational outreach effort.

Deploying Team Members

- Amber Annett
- Michael Brown
- Nicole Couto
- Kayla Evens
- Chelsea Farischon
- Shungudzemwoyo Garaba
- Ashley Goncalves
- Carly Moreno
- Emily Olsen

2015-2016 USAP Field Season
Project Detail

Project Title

High-Resolution Heterogeneity At The Base Of Whillans Ice Stream And Its Control On Ice Dynamics

Summary

Event Number:
C-525-M
NSF/PLR Award 1443525

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Judy Shiple / Meghan Walker

Principal Investigator

Dr. Susan Schwartz
ssschwartz@pmc.ucsc.edu

University of California Santa Cruz
Earth Sciences
Santa Cruz, California

Location

Supporting Stations: McMurdo Station
Research Locations: Whillans Ice Stream Grounding Zone

Description

This project is a two-year extension of the geophysical monitoring of the Whillans Ice Stream (WIS) initiated in 2012-13 as an addition to the Whillans Ice Stream Subglacial Access Research Drilling (WISSARD) project. The primary objective of the work is to investigate basal sliding of the WIS, both near and far, from regions known to be underlain by subglacial water, and to assess the role that hydrologic and mechanical properties of the ice-bed interface play in ice-stream motion.

Field Season Overview

A field team of four scientists and an ASC mountaineer/field coordinator will travel by LC-130 or Basler aircraft to the Whillans Ice Stream grounding zone (Air National Guard landing site: ACT) of the West Antarctic Ice Sheet. They will continue geophysical monitoring as part of the Whillans Ice Stream Subglacial Access Research Drilling (WISSARD) project. The team will tent camp near ACT and other locations throughout the study area, accessing instrument sites by snowmobile. The instrument suite the science team will monitor includes six borehole seismometers and six to eight surface passive seismic instruments associated with each, as well as eight GPS stations. An LC-130 or Basler aircraft will pull-out this team after approximately two weeks in the field.

Deploying Team Members

- Marci Beitch
- Sarah Neuhaus

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Bradley Lipovsky Daniel Sampson

2015-2016 USAP Field Season
Project Detail

Project Title

Inert Gas And Methane Based Climate Records Throughout The South Pole Deep Ice Core

Summary

Event Number:
I-191-S
NSF/PLR Award 1443710

Program Manager:
Dr. Julie Palais

ASC POC/Implementer:
Judy Shiple / Paul Sullivan

Principal Investigator

Dr. Jeff Severinghaus
jseveringhaus@ucsd.edu

Scripps Institution of Oceanography
Geosciences Research Division
La Jolla, California

Location

Supporting Stations: South Pole Station
Research Locations: near SPICE core site

Description

The project aims to construct the gas chronology for the South Pole 1500-meter ice core (SPICE core) using measured inert gases (d15N, d40Ar) and methane in combination with a next-generation firn densification model. The model addresses the stochastic nature of air trapping and the role of impurities on densification. This work comprises the first-ever firn air pumping experiment that has tightly co-located measurements on the core taken from the same borehole. Measurements of firn structural properties include high-resolution density, micro-computed tomography (CT) porosity, subannual-resolution impurity content, and partially-trapped gases.

Field Season Overview

The fieldwork will take place during one field season (2015-16). A three-participant team will drill two borings for firn air sampling and firn core collection as detailed below. The team includes two scientists and one driller and will be part of the station population throughout the field effort.

1) ASC will set up a small drill camp, including a warm structure such as a 6-section Weatherport, near the SPICE core location. 2) The team will use the Ice Drilling Design and Operations (IDDO)-provided Badger-Eclipse 3-inch drill to drill two holes, incrementally, to 130 m depth. The holes will be approximately 100 m apart. 3) The team will use the community firn air sampling equipment to extract firn air from 15 depths in each hole during drilling. The science team will fill six to eight glass flasks at each depth, prepare them for shipping and store them in DNF staging space. 4) ASC will secure one

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of the holes such that it remains open to accommodate several years of logging by another project. The open hole will be clearly marked and then sealed off from the surface using suitable heavy equipment. 5) The team will collect a 20 m ice core from the bottom of one hole, pack it for shipping in ice core boxes, and store it in the SPICE core snow trench until the cores are retrograded by LC-130 cold deck to McMurdo. Transport off-continent for all samples is by USAP cargo vessel.

The plan to collect only the 20 m ice core may be subject to revision depending on the fate of related proposals in the April 2015 competition.

Deploying Team Members

- Christo Buizert
- Todd Sowers
- Trevor Popp

2015-2016 USAP Field Season
Project Detail

Project Title

Natural Iron Fertilization And Bioactive Metal Dynamics On The Western Antarctic Peninsula Shelf

Summary

Event Number:
B-203-L
NSF/PLR Award 1142250

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Samina Ouda / Adam Jenkins

Principal Investigator

Dr. Robert Michael Sherrell
sherrell@marine.rutgers.edu

Rutgers University
Institute for Marine & Coastal Sciences
New Brunswick, New Jersey

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Western Antarctic Peninsula

Description

The shelf waters off the Western Antarctic Peninsula (WAP) constitute a natural iron (Fe) fertilization zone in which Fe inputs, ultimately of continental origin, relieve the micronutrient limitation characteristic of the broader Southern Ocean Antarctic Circumpolar Current (ACC) waters just off the shelf break. The objectives of this project are to build on preliminary surface-distribution trace-metal data by launching a major effort to quantify the three-dimensional distributions of, and processes driving, dissolved concentrations of Fe as well as the distributions of bioactive metals manganese, zinc, cobalt, copper, and nickel on the WAP shelf. Over the course of this project, researchers will test the following hypotheses: (1) Fe flux to the WAP euphotic zone is dominated by upwelling of upper circumpolar deep water (UCDW) modified by exchange with shelf sediments; (2) The euphotic zone over the seaward half of the shelf includes major Fe-limited regions, causing deep Chlorophyll-a max as a result of Fe inputs mixed in from deeper pycnocline waters; (3) Dissolved Fe (<0.2 microns) and euphotic zone particulate Fe/C serve as good proxies for bioavailable Fe, even though bioavailable Fe is a labile sub-fraction of the dissolved pool; and (4) Distribution of Neodymium isotopes on and off the shelf demonstrates that the shelf system exports continentally derived Fe to the pelagic ACC, augmenting Fe from spring sea-ice melting.

Field Season Overview

Primary activities will be focused on deployments of, and sampling from, the trace metal clean (TMC) conductivity-temperature-depth (CTD) rosette system, from which researchers will collect dissolved, particulate, and colloidal trace metal samples. They

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expect up to 30 deployments over the course of the cruise, conducted back-to-back, with deployments of the ship's rosette. In addition, they will conduct deployments to provide metal-clean water for incubation experiments planned by LTER PI Schofield's (C-019) group. The team also hopes to conduct Zodiac-based trace metal sampling from Palmer Station.

Deploying Team Members

- Jessica Fitzsimmons
- Laramie Jensen

2015-2016 USAP Field Season
Project Detail

Project Title

Fjord Ecosystem Structure And Function On The Western Antarctic Peninsula - Hotspots Of Productivity And Biodiversity

Summary

Event Number:
B-212-L/N
NSF/PLR Award 1443680

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Matthew Erickson / Adam Jenkins

Principal Investigator

Dr. Craig Smith
craigsmi@hawaii.edu

University of Hawaii Manoa
Department of Oceanography
Honolulu, Hawaii

Location

Supporting Stations: ARSV Laurence M. Gould, RV/IB Nathaniel B. Palmer
Research Locations: Gerlache Strait / Andvord Bay

Description

Western Antarctic Peninsula (WAP) fjords are intense potentially climate-sensitive hotspots of biological production and biodiversity, yet the structure and dynamics of these fjord ecosystems are very poorly understood. The goals of this project are to: (1) Determine whether sub-polar WAP fjords are regionally significant hotspots of productivity and biodiversity; (2) Elucidate and model the physical, biological, and chemical processes that interact in these fjords to enhance productivity and biodiversity; and (3) Evaluate, through dynamic modeling, the sensitivity of physical, chemical, and biological processes driving WAP fjord productivity/diversity to changes in meltwater and sediment input.

Field Season Overview

This field season will involve two process cruises. The first cruise on the ARSV Laurence M. Gould, LMG15-10, will depart from Punta Arenas, Chile and sail to field sites along the West Antarctic Peninsula. The second cruise on the RVIB Nathanial B Palmer, NBP16-03, will also depart from Punta Arenas, Chile and sail to field sites along the West Antarctic Peninsula. Both cruises will support the collection of physical oceanographic, plankton, and benthic ecological data. Some of the equipment deployed during the cruises will include: physical oceanographic moorings, McLane sediment traps, digital seafloor and glacier time-lapse cameras, Automatic Weather Stations (AWS), a conductivity temperature depth (CTD) rosette with attached shipboard acoustic Doppler current profiler (ADCP), a towed AUV/Acrobat, plankton nets, a Megacorer, box corer, Blake trawls, a Yo-Yo camera, and a vertical microprofiler.

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Deploying Team Members

- Kelcey Ann Chung
- McKenna Lewis
- Øyvind Lundesgaard
- Clifton Nunnally
- Craig Smith (PI)
- Eric Vetter, Jr
- Amanda Ziegler

2015-2016 USAP Field Season
Project Detail

Project Title

Effects Of Temperature On Phytoplankton Growth Rates

Summary

Event Number:
B-272-M
NSF/PLR Award 1443258

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Cara Sucher / Beverly Walker

Principal Investigator

Dr. Walker Smith
wos@vims.edu

Virginia Institute of Marine Sciences
Biological Sciences
Gloucester Pt., Virginia

Location

Supporting Stations: McMurdo Station
Research Locations: On station

Description

Temperature is a fundamental variable in all ecosystems and is the single most important delimiting feature of polar systems. Despite the clear and profound influence of temperature of biological systems, nearly all biogeochemical models use a temperature-growth rate formulation that was derived from temperate cultures. Although there is no doubt that lower temperatures result in lower growth rates, it is by no means clear that the relationship derived from studies at temperatures > 4°C can be extrapolated to the temperatures commonly encountered in the surface waters of the Southern Ocean. This project's objectives are to quantify the phytoplankton maximum growth rate-temperature relationship at the temperatures most likely to be encountered in the Antarctic.

Field Season Overview

The science team will collect water samples at the sea ice edge. The water samples will be filtered and and manipulated in the Crary Laboratory. Various algal colonies will be enriched with nutrients and trace metals and incubated under constant irradiance at temperatures of -1.0C. Samples will be sent to the home instution for further analysis.

Deploying Team Members

- Hai Nhu Doan
- Walker Smith (PI)

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Project Detail

Project Title

Allan HILL's Englacial Site (AHILLES) Selection

Summary

Event Number:
I-171-M
NSF/PLR Award 1443461

Program Manager:
Dr. Julie Palais

ASC POC/Implementer:
Sune Tamm / Meghan Walker

Principal Investigator

Dr. Nicole Elizabeth Spaulding
nicole.spaulding@maine.edu

University of Maine
Climate Change Institute
Orono, Maine

Location

Supporting Stations: McMurdo Station
Research Locations: Allan Hills

Description

The goal of this project is to conduct a comprehensive ground-penetrating radar survey aimed at tracing the signature of the one million years ago (Ma) ice isochrone throughout the region. The most important deliverable of this project will be the selection of the future drill site from which an ice core containing a 1+ Ma continuous climate record will be collected. Once a site is selected, a new proposal will be submitted to use the Intermediate Ice Core Drill to recover a higher quality core than that recovered during previous dry drilling attempts.

Field Season Overview

This project will conduct a comprehensive ground-penetrating radar (GPR) survey in the Allan Hills aimed at tracing the signature of 1 Ma ice isochrones throughout the region. Ultimately a future drill site will be selected from data obtained this season and a new proposal will be submitted to recover a high quality core. This season, four team members will fly to Allan Hills by Twin Otter aircraft and work from a small tent camp for 3-4 weeks. They will conduct GPR surveys on day trips using two snowmobiles pulling sleds with mounted GPR units. They will place fifteen steel conduit GPS survey stakes over the course of the GPR survey. The GPS stakes will be left in situ and retrograded as part of a future proposal. If no future proposal is able to support the retrograde effort by 2020-21, ASC will remove the stakes. During the GPR survey, the team will conduct opportunistic meteorite collection using approved methods and procedures.

Deploying Team Members

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Seth Campbell

Laura Kehrl

Howard Conway (Co-PI)

Nicole Spaulding (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

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

Summary

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

Program Manager:
Mr. Pat Smith

ASC POC/Implementer:
Matthew Erickson / Elizabeth Kauffman

Principal Investigator

Dr. Curt Szuberla
cas@gi.alaska.edu

University of Alaska Fairbanks
Geophysical Institute
Fairbanks, Alaska

Location

Supporting Stations: McMurdo Station
Research Locations: Windless Bight

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 volcanic 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

A group of six will be equipped with standard remote field equipment (including snowmobiles, Pisten Buly, and Mattrack) to stay in a self-supporting field camp at Windless Bight for four weeks.

Deploying Team Members

- Lukas Blom
- Don Byrd
- Brian Lawson
- Kathleen Lawson
- Guy Tytgat (Team Leader)

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Project Title

Flow, Turbulence, And Mixing In Mid-Ocean Ridge Fracture-Zone Canyons

Summary

Event Number:
O-408-N
OCE 1235094

Program Manager:
Mr. Eric Itsweire

ASC POC/Implementer:
Matthew Erickson / Adam Jenkins

Principal Investigator

Dr. Andreas M Thurnherr
ant@ldeo.columbia.edu

Columbia University
Lamont-Doherty Earth Observatory
Palisades, New York

Location

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: Mid-Atlantic Ridge

Description

The primary aim of this project is to improve understanding of the dynamics over the corrugated flanks of slow-spreading mid-ocean ridges. To that end, researchers will conduct high-resolution surveys of hydrography, three-dimensional flow, internal-wave activity, and mixing. The surveys will be conducted in two neighboring canyons and over the intervening "topographic spur" in the Brazil Basin Tracer Release Experiment (BBTRE) region to determine the relative contributions of tidal and sill-related mixing. Insights gained during this project will improve understanding of abyssal mixing in many different regions with similar bottom topography. It will also provide the basis for establishing better parameters of the effects of turbulence and mixing in large-scale circulation and climate models that cannot resolve these small-scale processes.

Field Season Overview

The field team will sail on a 48-day cruise on the RV/IB Nathaniel B. Palmer departing from and returning to Punta Arenas, Chile. The area of study lies over the western flank of the Mid-Atlantic Ridge (MAR). They will perform conductivity-temperature-depth / acoustic Doppler current profiling (CTD / ADCP), will recover previously-deployed moorings, and will deploy 20 ARGO floats.

Deploying Team Members

- Louis Clement
- Louis St. Laurent (Co-PI)

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- Meghan Donohue
- Brian Guest
- brian hogue
- Sophia Merrifield
- Marshall Swartz
- Andreas Thurnherr (PI)
- Sean Whelan
- Jian Zhao

2015-2016 USAP Field Season
Project Detail

Project Title

Stratospheric Terahertz Observatory (STO)

Summary

Event Number:
A-136-M
NSF/NASA Agreement

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Cara Sucher / Scott Battaion / Chad Naughton

Principal Investigator

Dr. Christopher Walker
cwalker@as.arizona.edu

University of Arizona Tucson
Steward Observatory
Tucson, Arizona

Location

Supporting Stations: McMurdo Station
Research Locations: Williams Field

Description

The Stratospheric Terahertz Observatory (STO) is a Long Duration Balloon (LDB) experiment designed to address a key problem in modern astrophysics: Understanding the life cycle of the Interstellar Medium (ISM). During its upcoming science flight from Williams Field, STO will survey a section of the Milky Way using a balloon-borne, 0.8-meter optical telescope and ultra-high-frequency receivers tuned to monitor the emission from interstellar clouds containing carbon and nitrogen atoms.

Field Season Overview

This project will use the NASA LDB payload facility on the permanent ice shelf beyond Williams Field. Field team members will set up a workspace, unpack equipment, and begin to commission the LDB payload systems comprised of the gondola, telescope, pointing systems, telecommunications, SIP interface, and science instrument and cryogenic systems. Once each subsystem is validated, the team will work toward the goal of being ready for flight by the first week of December. After the mission launch, the majority of the technical team will redeploy, leaving the missions operations and science team, with the final remaining participants consisting of the payload recovery team, if applicable.

Deploying Team Members

- James Beatty
- Jenna Kloosterman

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- Bliss Carkhuff
- Michael Carpenter
- Kristina Davis
- Ruben Dominguez
- Brian Duffy
- Christopher Groppi
- Darren Hayton
- Casey Honniball
- Hiroyuki Kawamura
- Craig Kulesa (Co-PI)
- Wouter Laauwen
- David Lesser
- William Peters
- Richard Schickling
- Jose Siles Perez
- Katherine Stambaugh
- Christopher Walker (PI)
- Abram Young

2015-2016 USAP Field Season
Project Detail

Project Title

Cold Corals In Hot Water - Investigating The Physiological Responses Of Antarctic Coral Larvae To Climate Change Stress

Summary

Event Number:
B-248-L/P
NSF/PLR Award 1245766

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Judy Shiple / Jamee Johnson

Principal Investigator

Dr. Rhian G Waller
rhian.waller@maine.edu

University of Maine
School of Marine Sciences
Walpole, Maine

Location

Supporting Stations: ARSV Laurence M. Gould, Palmer Station
Research Locations: Palmer Station / Smith Island

Description

Cold-water corals are thought to be more vulnerable to global climate change than their tropical counterparts, yet actual physiological data are scarce. Limited data exist on how the larvae of cold-water corals will fare under future climate scenarios, yet successful larval development and recruitment to the benthos is vital to ensure healthy adults and viable populations. How will cold-water corals cope with current ocean-warming trends on the Western Antarctic Peninsula? Will cold-water coral larvae be able to develop normally under predicted conditions? This project will seek to better understand the impact of warming sea water on cold-water coral larvae, specifically the non-seasonal, brooding scleractinian Flabellum impensum.

Field Season Overview

The project will use two platforms: the Laurence M. Gould (LMG) for sample collection and Palmer Station for a 30-day controlled temperature experiment. The science team will deploy on the LMG and collect adult coral and sea water from approximately 500 meters depth near Smith Island while en route to Palmer Station; the sample collection will take place over approximately three days. Coral and sea water will be maintained at -2C in a freezer van during transit to Palmer Station. Once at station, the team will set up five individual experimental tank systems, including a control tank. Each system will incorporate three small tanks, with an overall space requirement compact enough to fit into an upright incubator. Each of the five experimental systems will be accurately maintained at different temperatures, specifically with control at -2C and experiments at +1, +2, +3 and +4C. Larvae will be dissected from the adult coral and introduced to the

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experimental systems. Over the course of the 30-day experiment, water and larvae samples will be collected from the tanks and prepared for offsite analyses and shipment. All analyses will be conducted at offsite locations.

Deploying Team Members

- Maggie Halfman
- James Lunden
- Rhian Waller (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

Magma Sources, Residence And Pathways Of Mount Erebus Phonolitic Volcano, Antarctica, From Magnetotelluric Resistivity Structure

Summary

Event Number:
G-072-M
NSF/PLR Award 1443522

Program Manager:
Dr. Thomas Wilch

ASC POC/Implementer:
Sune Tamm / Meghan Walker

Principal Investigator

Dr. Philip Wannamaker
pewanna@egi.utah.edu

University of Utah
EGI
Salt Lake City, Utah

Location

Supporting Stations: McMurdo Station
Research Locations: Mount Erebus

Description

This project will collect approximately 100 magnetotelluric (MT) soundings over the active phonolitic volcano Mount Erebus and Ross Island in cooperation with Antarctica New Zealand, GNS Science, and Tokyo Institute of Technology. Analysis of these data will yield a three-dimensional tomographic model of electrical resistivity through the crust and into the uppermost mantle. This physical property will provide inferences on location of the upper-middle crustal magma chamber implied from petrology, the staging volume of parental melts near Moho levels, and the magma/volatile conduit through the crust and volcanic edifice. The entire MT sounding number is meant to be achieved over three field seasons. One season, carried out within the Antarctica New Zealand program has been completed (2014-15). In that season, 52 site occupations were made, including the reference, of which 45 are of high quality. A similar data collection regimen is planned for the 2015-16 season. Researchers anticipate that a third, lesser season (2016-17) will be required pending results to date in terms of site quality and sampling needs.

Field Season Overview

This the second season of fieldwork on Erebus for this project. Field data collection is an international collaboration between USAP principal investigator Dr. Phil Wannamaker and Dr. Graham Hill of Antarctica New Zealand (AntNZ), project number K-108. The team aims to collect at least 50 new magnetotelluric (MT) soundings this season over Mount Erebus and Ross Island. Field team members will be housed at Scott Base and will make day trips by helicopter to sampling sites. Helicopter support will be provided by both the USAP and AntNZ. Two teams of three will spend approximately two hours at each site to

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Project Web Sites

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More Information

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set up MT recording components. The components will be left to record data for 48 hours before the team returns to retrieve them. The team is aiming for two installations per group per day under ideal weather and operational conditions.

Deploying Team Members

- Michal Kordy
- Virginie Maris
- John Stodt
- Daniel Uhlmann
- Philip Wannamaker (PI)

2015-2016 USAP Field Season
Project Detail

Project Title

Response Of Carbon Accumulation In Moss Peatbanks To Past Warm Climates In The Antarctic Peninsula

Summary

Event Number:
G-094-P
NSF/PLR Award 1246190

Program Manager:
Dr. Mark Kurz

ASC POC/Implementer:
Samina Ouda / Jamee Johnson

Principal Investigator

Dr. Zicheng Yu
ziy2@lehigh.edu

Lehigh University
Bethlehem, Pennsylvania

Location

Supporting Stations: Palmer Station
Research Locations: Litchfield Island

Description

This project will assess the response of carbon accumulation in moss peatbanks to climate changes over the last 1,000 years on the Antarctic Peninsula. The overall goal is to document the formation ages and temporal changes in these peat-forming ecosystems in response to climate warming and ice retreat in an ice-dominated region. To that end, researchers will target the most recent pre-industrial warm period, the Medieval Warm Period, about 800 years ago, and the recent and ongoing warming interval over the last several decades. The high-resolution time series of ecosystem and climate changes that they develop will help put the observed recent changes into a long-term context, and help bridge process-level understanding across decadal, centennial, and millennial time scales. The researcher's approach is to evaluate the outcomes of past, natural climate warming events that have occurred on the Antarctic Peninsula to better understand polar ecosystem responses to climate change in the past and future.

Field Season Overview

No team members will deploy this season. ASC research associates and instrument technicians will monitor, maintain and download data from instruments installed on Litchfield Island. In February 2016, all instruments will be removed by ASC lab staff and shipped back to the PI's home institution.

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More Information

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