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- **USAP Program Indexes**
  - Astrophysics and Geospace Sciences
    Dr. Vladimir Papitashvili, Program Director
  - Organisms and Ecosystems
    Dr. Chris Fritsen, Program Director
  - Earth Sciences
    Dr. Douglas E. Kowalewski, Program Director
  - Glaciology
    Dr. Paul Cutler, Program Director
  - Ocean and Atmospheric Sciences
    Dr. Peter Milne, Program Director
  - Integrated System Science
    Dr. Jennifer Burns, Program Director
  - Artists and Writers
    Ms. Valentine Kass, Program Director
  - Antarctic Instrumentation & Research Facilities
    Dr. Michael Jackson, Program Director
  - Education and Outreach
    Ms. Valentine Kass, Ms. Elizabeth Rom; Program Directors
- **USAP Station and Vessel Indexes**
  - Amundsen-Scott South Pole Station
  - McMurdo Station
  - Palmer Station
  - RVIB Nathaniel B. Palmer
  - ARSV Laurence M. Gould
  - Special Projects
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Principal Investigator/Link	Event No.	Project Title
Ainley, David	B-031-M	Adelie penguin response to climate change in the Ross Sea region – a full life-cycle approach
Albert, Mary R	T-150-M	IDPO / IDDO - McMurdo
Amsler, Charles D.	B-022-P	The chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula
Anderson, Kent	G-090-P/S	Global seismograph station at South Pole and Palmer Stations
Barwick, Steven	A-127-M/S	Precision operation of hexagonal radio array
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)
Binns, Walter R	A-142-M	Super Trans-Iron Galactic Element Recorder (SuperTIGER)
Bristow, William	A-369-M/S	Antarctic and Conjugate Research using SuperDARN
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
Carlson, Kirsten	W-481-M	Under the Ice: Two Artists Collaborate to Connect Audiences with Antarctic Sea Life and Science
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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Chu, Xinzhao	A-130-M	LiDAR investigation of middle and upper atmosphere temperature, composition, chemistry, and dynamics at McMurdo, Antarctica
Chu, Xinzhao	A-123-M	Simultaneous Na Doppler and Fe Boltzmann LiDAR observations and modeling of the middle and upper atmosphere at McMurdo, Antarctica
Clauer, Robert	A-106-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
Costa, Daniel	B-232-L	Collaborative Research: Foraging Ecology and Physiology of the Leopard Seal
Dolk, Shaun R	X-592-L/N	NOAA’s Global Drifter Program (GDP)
Doran, Peter	C-511-M	McMurdo LTER – Meteorology/lakes: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
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
Ducklow, Hugh William	T-904-L/P	Palmer LTER site review
Evenson, Paul	A-118-S	Element composition of high-energy solar particles
Franco, Hugo	A-145-M	NASA Long Duration Balloon (LDB) support program
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
Fritts, David	A-382-M	The PMC-Turbo balloon mission to study gravity waves and turbulence through high-resolution imaging of polar mesospheric clouds
Goebel, Michael Edward	X-591-E	Cape Shirreff
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-504-M	McMurdo LTER – Glaciers: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Gooseff, Michael N	C-506-M	McMurdo LTER – Streams/Geochemistry: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Halzen, Francis	A-333-S	Management and operations of the IceCube Neutrino Observatory 2016-2021
Harbor, Jonathan M	I-346-E	MAGIC-DML: Mapping/Measuring/Modeling Antarctic Geomorphology and Ice Change in Dronning Maud Land
Harvey, Ralph	G-058-M	Antarctic Search for Meteorites (ANSMET)
Karle, Albrecht	A-107-S	Development of the Askaryan Radio Array ultra-high energy neutrino detector at the South Pole
Kemerait, Robert C	G-078-M	Dry Valley Seismic Project
Kovac, John	A-149-S	Imaging the beginning of time from the South Pole: The next stage of the BICEP program
Kulesa, Craig	A-364-M/S	Continuing operation of the High Elevation Antarctic Terahertz (HEAT) telescope at Ridge A, Antarctica
LaBelle, James	A-128-S	Earth’s electromagnetic environment: Advancing recent discoveries in auroral plasma

		radio emission research
Lazzara, Matthew	O-283-M	Antarctic Automatic Weather Station program
Lee, Richard	B-256-P	Winter survival mechanisms and adaptive genetic variation in an Antarctic insect
MacGregor, Joseph	C-529-M/S	Operation IceBridge
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
Matthias, Paul	O-410-N	Ocean Observatories Initiative (OOI) Southern Hemisphere cruises
Morin, Paul	T-434-M	The Polar Geospatial Information Center: Joint support
O'Boyle, Shaun Michael	W-468-L	Portraits of Place at Palmer Station
Pettit, Joseph R	T-295-M	UNAVCO GPS survey support
Polito, Michael	B-023-E	Investigating Holocene shifts in the diets and paleohistory of Antarctic krill predators (Argentine collaboration)
Priscu, John	C-533-M	Subglacial Antarctic Lakes Scientific Access (SALSA): Integrated study of carbon cycling in hydrologically active subglacial environments
Priscu, John	C-505-M	McMurdo LTER – Limnology: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Priscu, John	C-534-M	Subglacial Antarctic Lakes Scientific Access (SALSA): Integrated study of carbon cycling in hydrologically-active subglacial environments: Drilling Component
Rotella, Jay	B-009-M	The consequences of maternal effects and environmental conditions on offspring success in an Antarctic predator
Schmidt, Britney Elyce	B-041-M	RISE-UP: Ross Ice Shelf and Europa Underwater Probe
Schmidt, Steven K	B-320-M	Stochasticity and cyroconite community assembly and function

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
Sletten, Ronald	G-121-M	Formation and characteristics of brine-rich water in the Dry Valleys, Antarctica
Smith, David Joseph	A-454-M	E-MIST (Exposing Microorganisms in the Stratosphere)
Sprintall, Janet	O-260-L	The Drake Passage high-density XBT program
Steinberg, Deborah	C-020-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 B	O-404-L	Investigating biogeochemical fluxes and linkages to climate change with multi-scale observations in the Drake Passage
Swift, James Howard	O-287-N	Climate variability and predictability (CLIVAR)
Takacs-Vesbach, Cristina	C-508-M	McMurdo LTER – Integrative Science: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Taylor, Michael	A-119-M/P/S	Continental-scale studies of Mesospheric dynamics using the Antarctic Gravity Wave Instrument Network (ANGWIN)
Virginia, Ross	Y-610-E	Joint Antarctic Science Expedition (JASE)
Wilson, Terry	G-079-M/S	POLENET Antarctica: Investigating links between geodynamics and ice sheets - Phase 2
Woods, John	C-529-M/S	Operation IceBridge

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2017-2018 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 (Winfly*)	22 Aug 2017	23 Aug 2017	24 Feb 2018
McMurdo (Mainbody)	3 Oct 2017	4 Oct 2017	
South Pole	1 Nov 2017	1 Nov 2017	15 Feb 2018
Palmer	6 Oct 2017	5 Apr 2018	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)	50 (winter total)
Palmer	36-44 (weekly average) 196 (total)	
RV/IB* NBP	39 science and staff / 25 crew	
ARSV** LMG	Capacity per cruise: 28 science & staff/25 crew Capacity per transit to/from Palmer Station: 37 science and staff with two berthing vans.	

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

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2017-2018 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.

Helicopters

PHI

PHI, Inc. will provide helicopter support with five helicopters (two AS-350-B2s Astars, and three Bell 212s) based out of McMurdo Station. Two Bell 212s will be based out of Shackleton Camp from late November 2017 through mid-January 2018.

The helicopters will support research in the McMurdo Sound area, the McMurdo Dry Valleys, Royal Society Range, on Ross Island, and in the Transantarctic Mountains near Shackleton Glacier.

Southern Lakes Helicopters

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 2017 through the end of January 2018.

Fixed Wing Aircraft: LC-130 Hercules, DC3 Basler, and DHC6 Twin Otters

New York Air National Guard (ANG)

The New York Air National Guard will provide re-supply and research support to South Pole Station and deep-field locations including West Antarctic Ice Sheet (WAIS) Divide, Shackleton Camp, Siple Dome, Casey Station, and Davis Station.

Kenn Borek Air

Kenn Borek Air will provide three Twin Otter and one Basler aircraft to support a number of projects throughout the USAP area of operations. In addition, Antarctica New Zealand will be operating a Twin Otter and possibly a Basler for a period of time during the 2017-18 season.

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2017-2018 USAP Field Season
Staffed Field Camps

A total of six 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

77.6°S, 162.9°E (Lake Hoare Camp)

Each year, McMurdo Long Term Ecological Research (MCM LTER) grantees and other groups conduct research in the Dry Valleys while based at the semi-permanent facilities located in the Taylor Valley. Two resident staff, based at Lake Hoare Camp, support these science operations. They also oversee camps at Lake Fryxell, F6, Lake Bonney, and New Harbor (although New Harbor will not be open in 2017-18), and a small temporary camp at Lake Miers (located farther south in the Dry Valleys) for LTER. This year, science teams B-320-M (Schmidt), G-167-M (Blackburn), and C-516-M (Tulaczyk) will be based out of the Taylor Valley camps along with the MCM LTER groups. T-295-M (Pettit - UNAVCO (University NAVSTAR Consortium)) will also provide 1-2 participants to support the MCM LTER. One artist/writer grantee, W-480-M (Neri), may also coordinate a short stay at one of the camps.

Siple Dome

507 Nautical Miles From McMurdo Station

81.4°S, 149°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 G-079-M (Wilson - POLENET (The Polar Earth Observing Network)).

WAIS Divide Field Camp

891 Nautical Miles From McMurdo Station

79.5°S, 112°W

The WAIS Divide field camp with six resident staff will support G-079-M (Wilson - POLENET) and O-283-M (Lazarra) and their Twin Otter missions from the site. Camp staff will also assist in the recovery of field gear that was cached at Pirrit Hills by I-277-M (Stone) late in the 2016-17 season; they will also help to recover the remaining sensor equipment of the A-357-M (Zesta) magnetometer buried in the snow near WAIS camp.

Shackleton Camp

459 Nautical Miles From McMurdo Station

85.1°S, 175.4°W

Now in the third and final season of Shackleton camp, a staff of 12 will support seven science groups working in the surrounding Transantarctic Mountains and one science group accessing the Whillans Ice Plain. This year, McMurdo will deploy two Bell 212 helicopters from PHI and Twin Otter aircraft from Kenn Borek Air to Shackleton in order to support the work. The science groups include B-458-M (Adams), G-192-M (Putkonen), G-058-M (Harvey - ANSMET), G-180-M (Thomson), G-135-M (Taylor), I-186-M (Stone), G-

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096-M (Sidor), and C-533-M (Priscu).

RAID

47 Nautical Miles From McMurdo Station

78.4°S, 166.4°E

After an unsuccessful attempt to test their drill in the 2016-17 season, the Rapid Access Ice Drill (RAID) project will attempt another test this season on the south side of Minna Bluff.

A traverse team of six will utilize four science tractors to haul the RAID containers and fuel from McMurdo along a route proven during the 2015-16 and 2016-17 seasons. Two drillers from D-552-M/DOSECC (Drilling, Observation and Sampling of the Earth's Continental Crust) will travel with the traverse to be on site right away. Soon after arrival, two tractors and three traverse staff will return to McMurdo in order to support SALSA staging operations (see below), and two camp staff will arrive by helicopter to establish the camp with the remaining traverse staff, followed shortly by the remaining drillers. The camp will support a population near 20, with science operations led by D-551-M (RAID) co-PIs John Goodge and Jeff Severinghaus. Science operations will end in late December. Camp and traverse staff will break down the camp, and shuttle back and forth to return all containers and equipment to McMurdo.

SALSA Staging

~600 Nautical Miles From McMurdo Station

84.4°S, 149.3°E (SLM)

The Subglacial Antarctic Lakes Scientific Access (SALSA) project is an integrative study involving 12 principal investigators led by Chief Scientist John Priscu. In preparation for SALSA drilling operations in 2018-19, this season a team will establish a traverse route to Subglacial Lake Mercer (SLM) and stage containers and drilling equipment at the proposed SLM site. After assisting with the RAID traverse, a traverse team of three will utilize the remaining three science tractors to haul containers from McMurdo to Camp 20 on the South Pole Traverse trail near the foot of the Leverett glacier. From there, they will rendezvous with two other team members and a science outreach participant. They will temporarily stage some of the containers and then establish the route to SLM. Once the team has shuttled all containers to SLM, they will berm everything for winter-over storage and construct a ski-way. Upon returning to Camp 20, they will then proceed to the nearby Whillans Ice Stream Subglacial Access Research Drilling (WISSARD) Grounding Zone site where they will deconstruct the ACT ski-way and transport any remaining materials and equipment to Camp 20. There they will create a new ski-way before returning to McMurdo.

2017-2018 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 Director
B	Organisms and Ecosystems Dr. Chris Fritsen, Program Director
C	Integrated System Science Dr. Jennifer Burns, Program Director
G	Earth Sciences Dr. Douglas E. Kowalewski, Program Director
I	Glaciology Dr. Paul Cutler, Program Director
O	Oceans and Atmospheric Sciences Dr. Peter Milne, Program Director
W	Artists and Writers Ms. Valentine Kass, Program Director
Y	Education and Outreach Ms. Valentine Kass, Ms. Elizabeth Rom; Program Directors
D	Antarctic Instrumentation & Research Facilities Dr. Michael Jackson, Program Director
T	Technical Event
X	Other Science Events

Location Suffixes

Suffix	Supporting Location

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M	McMurdo Station
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*

Principal Investigator Index

Principal Investigator	Event No.	Project Title
Ackley, Stephen F	C-531-M	Polynyas, Ice Production and seasonal Evolution in the Ross Sea (PIPERS)
Adams, Byron J	B-458-M	The role of glacial history on the structure and functioning of ecological communities in the Shackleton Glacier region of the Transantarctic Mountains
Adams, Byron J	C-507-M	McMurdo LTER – Soils: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Ainley, David	B-031-M	Adelie penguin response to climate change in the Ross Sea region – a full life-cycle approach
Albert, Mary R	T-150-M	IDPO / IDDO - McMurdo
Amsler, Charles D.	B-022-P	The chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula
Anderson, Kent	G-090-P/S	Global seismograph station at South Pole and Palmer Stations
Barwick, Steven	A-127-M/S	Precision operation of hexagonal radio array
Becker, Michael	Y-603-M	Seven Worlds - Antarctica
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)
Binns, Walter R	A-142-M	Super Trans-Iron Galactic Element Recorder (SuperTIGER)
Blackburn, Terrence	G-167-M	U-series comminution age constraints on Taylor Valley erosion
Bristow, William	A-369-M/S	Antarctic and Conjugate Research using SuperDARN
Brunt, Kelly M	X-594-M/S	88S Traverse: GPS Survey for calibration and validation of ICESat-2 altimetry data
Burns, Jennifer Moss	V-621-L	Palmer LTER Site Review - Visiting

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		group
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
Carlson, Kirsten	W-481-M	Under the Ice: Two Artists Collaborate to Connect Audiences with Antarctic Sea Life and Science
Carlstrom, John	A-379-S	Cosmological research with the 10-meter South Pole Telescope
Carpenter, Paul	T-299-M/S	IRIS/PASSCAL seismic support
Cassar, Nicolas	B-461-L	Biological and physical drivers of oxygen saturation and net community production variability at the Western Antarctic Peninsula
Chartier, Alex T	A-100-M/S	Oblique Sounding of Ionized Patches in the Antarctic Ionosphere - Instrument Development and Testing
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
Chu, Xinzhao	A-123-M	Simultaneous Na Doppler and Fe Boltzmann LiDAR observations and modeling of the middle and upper atmosphere at McMurdo, Antarctica
Clauer, Robert	A-106-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
Costa, Daniel	B-232-L	Collaborative Research: Foraging Ecology and Physiology of the Leopard Seal
Countway, Peter Dylan	B-028-P	Antarctic microbial networks and DMSP: Linking diversity, biogeochemistry, and functional gene

		expression
Cziko, Paul A	B-195-M	Habitat severity and internal ice in Antarctic notothenioid fishes
de la Pena, Santiago	D-553-S	EAGER: An operational system to measure surface mass balance deep in the interior of the Antarctic ice sheet
Dinn, Michael	X-599-S	Low Power Magnetometer (LPM) network - British Antarctic Survey (BAS)
DiTullio, Giacomo	B-007-N	Cobalamin and Iron Co-Limitation Of Phytoplankton Species (CICLOPS) in Terra Nova Bay
Dolk, Shaun R	X-592-L/N	NOAA’s Global Drifter Program (GDP)
Doran, Peter	C-511-M	McMurdo LTER – Meteorology/lakes: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
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
Ducklow, Hugh William	T-904-L/P	Palmer LTER site review
Dunbar, Robert	O-131-N	Estimation of Antarctic ice melt using stable isotopic analyses of seawater
Eppley, Dr. Sarah Margaretha	B-289-E	The functional role of moss in structuring biotic interactions and terrestrialization of Antarctica
Evenson, Paul	A-118-S	Element composition of high-energy solar particles
Franco, Hugo	A-145-M	NASA Long Duration Balloon (LDB) support program
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
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

Friedlaender, Ari Seth	B-206-L	Foraging behavior and ecological role of the least-studied Antarctic krill predator, the Antarctic minke whale (Balaenoptera bonaerensis)
Fritts, David	A-382-M	The PMC-Turbo balloon mission to study gravity waves and turbulence through high-resolution imaging of polar mesospheric clouds
Gaetani, Glenn Allan	G-170-M	Determining magma storage depths and ascent rates for the Erebus Volcanic Province, Antarctica using diffusive water loss from olivine-hosted melt inclusion
Gerrard, Andrew	A-111-M/P/S	The next generation of geospace research facilities at South Pole and McMurdo stations
Gerrard, Andrew	A-112-M/S	Scientific studies from a network of sustainable, robotic observatories across the Antarctic ice shelf: A new approach to polar research
Goebel, Michael Edward	X-591-E	Cape Shirreff
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-504-M	McMurdo LTER – Glaciers: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Gooseff, Michael N	C-506-M	McMurdo LTER – Streams/Geochemistry: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Gooseff, Michael N	C-509-M	McMurdo LTER – Algal Ops: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Gorham, Peter	A-371-M/S	Antarctic Impulsive Transient Antenna IV (ANITA IV) experiment
Hall, Brenda	I-196-M	Response of the Antarctic ice sheet to the last great global warming
Halzen, Francis	A-333-S	Management and operations of the IceCube Neutrino Observatory 2016-2021

Harbor, Jonathan M	I-346-E	MAGIC-DML: Mapping/Measuring/Modeling Antarctic Geomorphology and Ice Change in Dronning Maud Land
Harvey, Ralph	G-058-M	Antarctic Search for Meteorites (ANSMET)
Heine, John N	T-913-M	OPP/USAP diving safety officer (DSO) and Scientific Diving Control Board (SDCB) visit
Hollibaugh, James	B-114-L	Chemoautotrophy in Antarctic bacterioplankton communities supported by the oxidation of urea-derived nitrogen
Hosticka, Bouvard NMI	T-998-P	Operation and maintenance of a CTBT radionuclide monitoring station at Palmer Station
Hummon, Julia M	T-933-N	University of Hawaii Data Acquisition System (UHDAS) support
Jefferies, Stuart	A-367-S	Using gravity waves to probe the solar atmosphere
Karle, Albrecht	A-107-S	Development of the Askaryan Radio Array ultra-high energy neutrino detector at the South Pole
Kemerait, Robert C	G-078-M	Dry Valley Seismic Project
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: The next stage of the BICEP program
Kulesa, Craig	A-364-M/S	Continuing operation of the High Elevation Antarctic Terahertz (HEAT) telescope at Ridge A, Antarctica
LaBelle, James	A-128-S	Earth’s electromagnetic environment: Advancing recent discoveries in auroral plasma radio emission research
Lazzara, Matthew	O-283-M	Antarctic Automatic Weather Station program
Lee, Richard	B-256-P	Winter survival mechanisms and adaptive genetic variation in an Antarctic insect
Liwanag, Heather E	B-030-M	Growing up on ice: Physiological adaptations and developmental plasticity in Weddell seal pups across two extreme physical environments

MacGregor, Joseph	C-529-M/S	Operation IceBridge
Manahan, Donal	B-301-M	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
Matthias, Paul	O-410-N	Ocean Observatories Initiative (OOI) Southern Hemisphere cruises
McManis, James D	T-524-M	UNL hot water drilling support
Melendy, Renee	T-940-M	Cold Regions Research and Engineering Laboratory (CRREL) activities
Melendy, Renee	T-941-M	CRREL support to the Phoenix Runway
Morin, Paul	T-434-M	The Polar Geospatial Information Center: Joint support
Munro, David Russel	O-214-L	Investigating biogeochemical fluxes and linkages to climate change with multi-scale observations in the Drake Passage
Neri, Gregory	W-480-M	A children's novel
O'Boyle, Shaun Michael	W-468-L	Portraits of Place at Palmer Station
Obrien, Joseph S	T-927-M	NASA / McMurdo Ground Station (MG1)
Palo, Scott	A-284-M	Lower thermospheric science using new meteor radars at McMurdo Station
Paznukhov, Vadym V	A-373-P	Troposphere-ionosphere coupling via atmospheric gravity waves
Pettit, Joseph R	T-295-M	UNAVCO GPS survey support
Place, Sean	B-199-M	Characterizing protein homeostasis and the regulatory mechanisms controlling molecular chaperone expression in the highly stenothermal notothenioid fish, Trematomus bernacchii
Polito, Michael	B-025-E/M	Investigating Holocene shifts in the diets and paleohistory of Antarctic krill predators
Polito, Michael	B-023-E	Investigating Holocene shifts in the diets and paleohistory of Antarctic krill predators (Argentine collaboration)

Priscu, John	C-533-M	Subglacial Antarctic Lakes Scientific Access (SALSA): Integrated study of carbon cycling in hydrologically active subglacial environments
Priscu, John	C-505-M	McMurdo LTER – Limnology: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Priscu, John	C-534-M	Subglacial Antarctic Lakes Scientific Access (SALSA): Integrated study of carbon cycling in hydrologically-active subglacial environments: Drilling Component
Putkonen, Jaakko	G-192-M	Long-term sublimation/preservation of two separate, buried glacier ice masses, Ong Valley, southern Transantarctic Mountains
Ray, Laura E	I-178-M	Flow and fracture dynamics in an ice shelf lateral margin: Observations and modeling of the McMurdo Shear Zone
Rotella, Jay	B-009-M	The consequences of maternal effects and environmental conditions on offspring success in an Antarctic predator
Saba, Grace	B-050-N	Using bio-acoustics on an autonomous surveying platform for the examination of phytoplankton-zooplankton and fish interactions in the Western Ross Sea
Savoie, Ramona Ann	T-902-M	PHI, Inc.
Schmidt, Britney Elyce	B-041-M	RISE-UP: Ross Ice Shelf and Europa Underwater Probe
Schmidt, Steven K	B-320-M	Stochasticity and cyroconite community assembly and function
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
Seefeldt, Mark W	O-456-M	Implementing low-power, autonomous observing systems to improve the measurement and understanding of Antarctic precipitation
Shadwick, Elizabeth Henderson	O-270-L	Resolving CO2 system seasonality in the West Antarctic Peninsula with autonomous observations
Sidor, Christian Alfred	G-096-M	Understanding the evolution of high-latitude Permo-Triassic paleoenvironments and their vertebrate communities

Simms, Alexander R	G-412-L	New constraints on post-glacial rebound and Holocene environmental history along the northern Antarctic Peninsula from raised beaches
Sletten, Ronald	G-121-M	Formation and characteristics of brine-rich water in the Dry Valleys, Antarctica
Smith, David Joseph	A-454-M	E-MIST (Exposing Microorganisms in the Stratosphere)
Smith, David Joseph	A-454-M	E-MIST (Exposing Microorganisms in the Stratosphere)
Sprintall, Janet	O-260-L	The Drake Passage high-density XBT program
Steinberg, Deborah	C-020-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 B	O-404-L	Investigating biogeochemical fluxes and linkages to climate change with multi-scale observations in the Drake Passage
Stone, John	I-186-M	High-resolution reconstruction of Holocene deglaciation in the southern Ross Embayment
Swift, James Howard	O-287-N	Climate variability and predictability (CLIVAR)
Swift, James Howard	O-287-N	Climate variability and predictability (CLIVAR)
Szuberla, Curt	T-396-M	Operation and maintenance of a CTBT class infrasound array at Windless Bight
Takacs-Vesbach, Cristina	C-508-M	McMurdo LTER – Integrative Science: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Taylor, Edith	G-135-M	Permian and Triassic icehouse to greenhouse paleoenvironments and paleobotany in the Shackleton Glacier Area, Antarctica
Taylor, Michael	A-119-M/P/S	Continental-scale studies of Mesospheric dynamics using the Antarctic Gravity Wave Instrument Network (ANGWIN)
Taylor, Susan	O-399-S	Sampling comet dust from Antarctic air
Thomson, Stuart Nigel	G-180-M	East Antarctic Glacial Landscape Evolution (EAGLE): A study using

		combined thermochronology, geochronology and provenance analysis
Tulaczyk, Slawek M	C-516-M	ANTarctic Airborne ElectroMagnetics (ANTAEM) - revealing subsurface water in coastal Antarctica
Van Mooy, Benjamin	B-032-P	Production and fate of oxylipins in waters of the Western Antarctic Peninsula: Linkages between UV radiation, lipid peroxidation, and carbon cycling
Vieregg, Abigail G	A-340-S	Radio detection of the highest energy neutrinos with a ground-based interferometric phased array
Virginia, Ross	Y-610-E	Joint Antarctic Science Expedition (JASE)
Wilson, Terry	G-079-M/S	POLENET Antarctica: Investigating links between geodynamics and ice sheets - Phase 2
Woods, John	C-529-M/S	Operation IceBridge
Young, Karen Romano	W-218-P	The illustrated story of Antarctic microbes
Zappa, Christopher	O-403-E	Oceanic response to a coastal polynya, Terra Nova Bay, Antarctica

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Deploying Team Members Index

Team Member	Event No.	Principal Investigator
Anderson , Jeffery Scott	C-531-M	Stephen F Ackley
Adams, Marcella Marie	B-458-M	Byron J Adams
Adusumilli, Susheel	C-533-M	John Priscu
Alber, Merryl NMI	V-621-L	Jennifer Moss Burns
Amsler, Margaret O	B-022-P	Charles D. Amsler
Andersen, Jr., Richard Paul	T-902-M	Ramona Ann Savoie
Anderson, Adam NMI	A-379-S	John Carlstrom
Anderson, Lesley Michelle	A-333-S	Francis Halzen
Archambault, Simon	A-107-S	Albrecht Karle
Arnold, Emily	C-529-M/S	Joseph MacGregor
Arroyo, Maria Chiristina	O-270-L	Elizabeth Henderson Shadwick
Atkinson, Brian Anthony	G-135-M	Edith Taylor
Attaway, Patrick Ray	T-902-M	Ramona Ann Savoie
Auer, Ralf	A-333-S	Francis Halzen
Avva, Jessica Susan	A-379-S	John Carlstrom
Baker, Bill J	B-022-P	Charles D. Amsler
Balco, Gregory A.	G-192-M	Jaakko Putkonen
Ballard, Grant	B-031-M	David Ainley
Balter, Alexandra	I-196-M	Brenda Hall
Barkats, Denis	A-149-S	John Kovac
Barna, Lynette	T-940-M	Renee Melendy
Barrett, John	C-507-M	Byron J Adams
Barrowclough, Lindsay Ellen	T-902-M	Ramona Ann Savoie
Bartlett, Douglas Hoyt	B-301-M	Donal Manahan
Bault, Jennifer Louise	C-531-M	Stephen F Ackley

Project Indexes

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Find more information about 2017-2018 USAP projects by viewing project web sites.

More Information

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Bay, Ryan	D-551-M	John Goodge
Bayou, Nicolas NM	T-295-M	Joseph R Pettit
Beange, Alexander	A-145-M	Hugo Franco
Becker, Kevin	B-032-P	Benjamin Van Mooy
Becker, Maya Karina	C-384-M	Robin E Bell
Becker, Susan NMI	O-287-N	James Howard Swift
Bender, Amy Nicole	A-379-S	John Carlstrom
Bendfelt, Timothy James	A-333-S	Francis Halzen
Benson, Bradford Adam	A-379-S	John Carlstrom
Benson, Terry	A-107-S	Albrecht Karle
Bergstrom, Anna NMI	C-504-M	Michael N Gooseff
Berkelhammer, Max Benjamin	C-511-M	Peter Doran
Bernhoff, Hans	A-127-M/S	Steven Barwick
Berrilli, Francesco	A-367-S	Stuart Jefferies
Bertinato, Christopher NMI	C-384-M	Robin E Bell
Bischoff, Colin NMI	A-149-S	John Kovac
Blaisdell, George L	T-941-M	Renee Melendy
Blake, Harlan Hartwell Robert	T-902-M	Ramona Ann Savoie
Blom, Lukas J	T-396-M	Curt Szuberla
Boeckmann, Grant Vernon	G-192-M	Jaakko Putkonen
Boenish, Hans Christian	A-149-S	John Kovac
Bogan, Samuel Neill	B-199-M	Sean Place
Bolinesi, Francesco	B-007-N	Giacomo DiTullio
Bording, Thue Sylvester	C-516-M	Slawek M Tulaczyk
Bose, Richard G	A-142-M	Walter R Binns
Bospflug, Lance Frank	T-902-M	Ramona Ann Savoie
Braddock, Peter	I-178-M	Laura E Ray
Braddock, Peter	G-096-M	Christian Alfred Sidor
Branning, Kylee	A-343-M/S	Mark Conde
Brasfield, Paul	A-145-M	Hugo Franco
Braun, Dana L	A-142-M	Walter R Binns

Breece, Matthew William	B-050-N	Grace Saba
Breeding, Garrison Scott	A-145-M	Hugo Franco
Brothers, Cecilia	B-022-P	Charles D. Amsler
Brown, John	Y-603-M	Michael Becker
Buelow, Heather Nicole	C-507-M	Byron J Adams
Buelow, Heather Nicole	C-505-M	John Priscu
Burnett, Justin NMI	C-534-M	John Priscu
Burton, Bethany	C-384-M	Robin E Bell
Byrd, Don	T-396-M	Curt Szuberla
Cade, David E	B-206-L	Ari Seth Friedlaender
Campbell, Seth	I-178-M	Laura E Ray
Candela, Salvatore G	D-553-S	Santiago de la Pena
Carl, Leuschen	C-529-M/S	Joseph MacGregor
Carnat, Gauthier NM	C-531-M	Stephen F Ackley
Carpenter, Paul Joseph	T-299-M/S	Paul Carpenter
Carter, Faustin Wirkus	A-379-S	John Carlstrom
Casanova-Katny, Maria Angelica	B-289-E	Dr. Sarah Margaretha Eppley
Cassano, John Joseph	O-283-M	Matthew Lazzara
Cassano, John Joseph	C-531-M	Stephen F Ackley
Castagno, Pasquale	B-007-N	Giacomo DiTullio
Catrib-Garnier, Christine Ann	A-145-M	Hugo Franco
Cervantes, David Galindo	O-287-N	James Howard Swift
Chang, Dongming nmi	A-130-M	Xinzhao Chu
Chensue, Gavin Dunston	O-257-M/S	James Hall Butler
Chignell, Stephen McLean	C-509-M	Michael N Gooseff
Childs, Dean Mark	T-299-M/S	Paul Carpenter
Chiuchiolo, Amy	C-505-M	John Priscu
Chmielewsk, Mathew Wojciech	B-289-E	Dr. Sarah Margaretha Eppley
Chung, Philip	T-299-M/S	Paul Carpenter

Clark, Brian	A-107-S	Albrecht Karle
Clarke, Andrew	O-257-M/S	James Hall Butler
Clemens-Sewall, David William	I-193-M/S	Michelle R Koutnik
Cloutier, Michael David	T-434-M	Paul Morin
Cohen, Barbara Anne	G-058-M	Ralph Harvey
Cohn, David	A-112-M/S	Andrew Gerrard
Colburn, Richard Thomas	T-902-M	Ramona Ann Savoie
Collins, James	B-032-P	Benjamin Van Mooy
Collins, William C.	C-534-M	John Priscu
Conroy, John	C-020-L/P	Deborah Steinberg
Conway, Howard	I-193-M/S	Michelle R Koutnik
Cook, Benjamin Patrick	C-013-L/P	William Ronald Fraser
Cooper, Dewell Jennings	A-145-M	Hugo Franco
Cope, Joseph	C-020-L/P	Deborah Steinberg
Cordero, Sylvia Isabel Annamaria	C-384-M	Robin E Bell
Cornelison, James Allen	A-149-S	John Kovac
Corso, Andrew	C-020-L/P	Deborah Steinberg
Costanza, Carol Anne	O-283-M	Matthew Lazzara
Cotten, Rex	T-927-M	Joseph S Obrien
Courville, Zoe	T-940-M	Renee Melendy
Cox Jr, Junius Elswood	T-902-M	Ramona Ann Savoie
Cox, Keith Alan	T-902-M	Ramona Ann Savoie
Crawford, Thomas M	A-379-S	John Carlstrom
Culler, Lauren	Y-610-E	Ross Virginia
Curtis, Michelle Darlene	B-022-P	Charles D. Amsler
Cutter, Michael Joseph	T-902-M	Ramona Ann Savoie
Dale, Julian NMI	C-024-L/P	Ari Seth Friedlaender
Danielson, Seth NMI	V-621-L	Jennifer Moss Burns
Darling, Joshua Paul	C-506-M	Michael N Gooseff
Day, James	G-058-M	Ralph Harvey

de Garcia, Naira NMI	X-591-E	Michael Edward Goebel
de Haan, Tijmen	A-379-S	John Carlstrom
de Jong, Johannes Theodorus Matheus	C-531-M	Stephen F Ackley
De Luna, Juan Carlos	A-145-M	Hugo Franco
Dean, Christopher Ted	T-902-M	Ramona Ann Savoie
Delille, Bruno Daniel Pierre	C-531-M	Stephen F Ackley
Denny, Mark	B-301-M	Donal Manahan
Devlin, Shawn P	C-508-M	Cristina Takacs-Vesbach
DeVries, Art	B-195-M	Paul A Cziko
Dhakal, Tejendra NM	C-384-M	Robin E Bell
Dieck, Caitlin NMI	C-384-M	Robin E Bell
Dierickx, Marion Inge	A-149-S	John Kovac
Disterhoft, Patrick Lynn	O-264-P	James Hall Butler
Doney, Scott Christopher	T-904-L/P	Hugh William Ducklow
Doran, Peter T	C-508-M	Cristina Takacs-Vesbach
Douglas, Susan Joy	T-902-M	Ramona Ann Savoie
Dugan, Hilary	C-516-M	Slawek M Tulaczyk
Dugger, Katie	B-031-M	David Ainley
Duling, Dennis	T-524-M	James D McManis
Dunbar, Robert	B-007-N	Giacomo DiTullio
Dutcher, Daniel Phillip	A-379-S	John Carlstrom
DuVernois, Michael	A-333-S	Francis Halzen
Ebihara, Yusuke	A-111-M/P/S	Andrew Gerrard
Edwards, Graham	G-167-M	Terrence Blackburn
El Nimri, Salem F	T-927-M	Joseph S Obrien
Elliott, John	A-343-M/S	Mark Conde
Elliott, Joshua James	I-178-M	Laura E Ray
Ellison, Aaron NMI	V-621-L	Jennifer Moss Burns
Elrod, Megan Lynn	B-031-M	David Ainley
Emslie, Steven	B-023-E	Michael Polito

Emslie, Steven	B-023-E	Michael Polito
Emslie, Steven D	B-025-E/M	Michael Polito
Fahlbusch, James Andrew	C-024-L/P	Ari Seth Friedlaender
Falco, Pierpaolo	B-007-N	Giacomo DiTullio
Farley, Brian	C-529-M/S	Joseph MacGregor
Farry, Shawn Charles	C-013-L/P	William Ronald Fraser
Feeser, Kelli NM	C-508-M	Cristina Takacs-Vesbach
Fetterer, Peter R	T-927-M	Joseph S Obrien
Fierer, Noah George	B-458-M	Byron J Adams
Fitzsimmons, Sean P	A-142-M	Walter R Binns
Fleck, Bernhard	A-367-S	Stuart Jefferies
Foged, Nikolaj NMI	C-516-M	Slawek M Tulaczyk
Foley, Neil	G-167-M	Terrence Blackburn
Foster, Allen Michael	A-379-S	John Carlstrom
Fox, Brian Patrick	G-078-M	Robert C Kemerait
Fox, Larry Edwin	A-145-M	Hugo Franco
Fraser, Bill	T-904-L/P	Hugh William Ducklow
Fraser, Donna Lynn	C-013-L/P	William Ronald Fraser
Frazier, Curtis	A-145-M	Hugo Franco
Frearson, Nicholas Paul	C-384-M	Robin E Bell
Friedlaender, Ari	T-904-L/P	Hugh William Ducklow
Friedlander, Cherisa NMI	O-257-M/S	James Hall Butler
Friedman, Elizabeth	A-107-S	Albrecht Karle
Frissell, Nathaniel	A-112-M/S	Andrew Gerrard
Funk, Raymond	T-927-M	Joseph S Obrien
Gantz, Josiah David	B-256-P	Richard Lee
Gao, Yongli nmi	C-531-M	Stephen F Ackley
Garde, Gabriel Jose	A-145-M	Hugo Franco
Garrison, David L	V-621-L	Jennifer Moss Burns
Gartzman, Samuel Philip	C-531-M	Stephen F Ackley

Gaswint, Geoffrey NMI	A-127-M/S	Steven Barwick
Gibson, Christopher	A-107-S	Albrecht Karle
Gibson, Dar	T-524-M	James D McManis
Giebink, Cindy	A-367-S	Stuart Jefferies
Glowacki, David	A-333-S	Francis Halzen
Godfrey, Adam NMI	T-902-M	Ramona Ann Savoie
Goebel, Michael	B-232-L	Daniel Costa
Goldbogen, Jeremy	B-206-L	Ari Seth Friedlaender
Gombiner, Joel Howard	I-186-M	John Stone
Goubeaux, Ned Thomas	T-902-M	Ramona Ann Savoie
Gregg, Gerald	A-145-M	Hugo Franco
Griffin, Natasha A	C-507-M	Byron J Adams
Gross, Juliane NMI	G-058-M	Ralph Harvey
Guest, Peter S	C-531-M	Stephen F Ackley
Gulbranson, Erik	G-135-M	Edith Taylor
Gustafson, Chloe Danielle	C-384-M	Robin E Bell
Hademenos, George James	O-283-M	Matthew Lazzara
Hadley, Scott C	A-145-M	Hugo Franco
Hall, Brenda Lee	I-186-M	John Stone
Hall, Grantland Nee	A-149-S	John Kovac
Hall, Stephen M	G-078-M	Robert C Kemerait
Halpern, Mark	A-149-S	John Kovac
Hannah, Jeremy Stephen	G-078-M	Robert C Kemerait
Happell, James D	O-287-N	James Howard Swift
Harper, Carla J.	G-135-M	Edith Taylor
Hedin, Matthew Lowell	C-507-M	Byron J Adams
Heiser, Sabrina NMI	B-022-P	Charles D. Amsler
Helfrich, David George	A-145-M	Hugo Franco
Helmericks, Jay	T-396-M	Curt Szuberla
Hemming, Sidney	G-180-M	Stuart Nigel Thomson

Henderson, Randall	A-145-M	Hugo Franco
Hodge, Brendan Evans	T-295-M	Joseph R Pettit
Hogg, Derek Justin	A-145-M	Hugo Franco
Hogg, Ian	B-458-M	Byron J Adams
Hollinger, Matthew David	T-902-M	Ramona Ann Savoie
Holzapfel, William L	A-379-S	John Carlstrom
Hosek, Kristen Elyse	B-199-M	Sean Place
Howard, Susan Lynn	C-384-M	Robin E Bell
Howkins, Adrian J	C-507-M	Byron J Adams
Huang, Nicholas Dickey	A-379-S	John Carlstrom
Isbell, John	G-135-M	Edith Taylor
Ives, Elizabeth Rosa Woodford	G-135-M	Edith Taylor
Jeffer, Gilbert	A-112-M/S	Andrew Gerrard
Jeffer, Gilbert	A-111-M/P/S	Andrew Gerrard
Johnston, David	B-206-L	Ari Seth Friedlaender
Johnston, David william	B-206-L	Ari Seth Friedlaender
Jones, David	B-007-N	Giacomo DiTullio
Jones, David Kyle	G-090-P/S	Kent Anderson
Jones, Joseph	A-145-M	Hugo Franco
Jongsomjit, Dennis NMI	B-031-M	David Ainley
Kaiser, Henry	B-195-M	Paul A Cziko
Kaiser, Henry John	B-195-M	Paul A Cziko
Kaluzienski, Lynn Marie	I-178-M	Laura E Ray
Kambarn, William	T-927-M	Joseph S Obrien
Kanatous, Shane	B-232-L	Daniel Costa
Karentz, Deneb	B-301-M	Donal Manahan
Karner, James	G-058-M	Ralph Harvey
Kauer, Matt NMI	A-333-S	Francis Halzen
Kaul, Deepak NMI	T-927-M	Joseph S Obrien
Kefeli, Sinan NMI	A-149-S	John Kovac

Keister, Julie NMI	V-621-L	Jennifer Moss Burns
Kelleher, Cole	T-434-M	Paul Morin
Keller, Lindsay	G-058-M	Ralph Harvey
Kelley, John	A-333-S	Francis Halzen
Kellogg, Marissa	B-007-N	Giacomo DiTullio
Kelvin, Rushworth James Wallace	C-024-L/P	Ari Seth Friedlaender
Khandelwal, Rishabh	A-107-S	Albrecht Karle
Kibler, Peter Gregory	C-505-M	John Priscu
Kiene, Andrew Devon	A-369-M/S	William Bristow
Kienle, Sarah Stachura	B-232-L	Daniel Costa
Kim, Junhan NMI	A-379-S	John Carlstrom
Knox, Allister	A-367-S	Stuart Jefferies
Kodas, Michael unknown	B-320-M	Steven K Schmidt
Korman, Milo Chi Wen	A-379-S	John Carlstrom
Krause, Douglas	X-591-E	Michael Edward Goebel
Krula, Edwin NMI	T-524-M	James D McManis
Kubik, Donna NMI	A-379-S	John Carlstrom
Kuhl, Tanner W	D-551-M	John Goodge
Kujawski, Joseph	A-111-M/P/S	Andrew Gerrard
Kurth, Andrew Joseph	O-283-M	Matthew Lazzara
Landolt, Scott D	O-456-M	Mark W Seefeldt
Laney, Samuel Robert	B-301-M	Donal Manahan
Larsen, Greg .	C-024-L/P	Ari Seth Friedlaender
Latif, Uzair Abdul NMI	A-107-S	Albrecht Karle
Lawrence, Justin	B-041-M	Britney Elyce Schmidt
Lee, Peter	B-007-N	Giacomo DiTullio
Lees, Lauren	B-007-N	Giacomo DiTullio
Lemery, Jeffrey Jordan	T-524-M	James D McManis
Lescroel, Amelie NMI	B-031-M	David Ainley
Lever, James H	I-178-M	Laura E Ray

Lever, James H	O-399-S	Susan Taylor
Levgerne, Clayton Warren	T-902-M	Ramona Ann Savoie
Li, Wei NMI	C-505-M	John Priscu
Licht, Kathy J	G-180-M	Stuart Nigel Thomson
Lilien, David Armond	I-193-M/S	Michelle R Koutnik
Linder, Chris	B-031-M	David Ainley
Linder, Chris	B-031-M	David Ainley
Lines, Austin P	I-178-M	Laura E Ray
Lingutla, Narendra Naidu NMI	T-299-M/S	Paul Carpenter
Link, Jason Thomas	A-142-M	Walter R Binns
Liu, Lu	G-121-M	Ronald Sletten
Locke, Caitlin Dieck	C-384-M	Robin E Bell
Loose, Brice Griffith	C-531-M	Stephen F Ackley
Lou, Runnan NMI	A-123-M	Xinzhao Chu
Loutitt, Sean	C-529-M/S	Joseph MacGregor
Lovric, Mija	A-367-S	Stuart Jefferies
Lu, Ming-Yuan	A-107-S	Albrecht Karle
Lutz, Joshua Jacob	B-041-M	Britney Elyce Schmidt
Lyons, William Berry	B-458-M	Byron J Adams
Macdonald, Kaitlin R	B-009-M	Jay Rotella
Makovicky, Peter	G-096-M	Christian Alfred Sidor
Maksym, Edward NMI	C-531-M	Stephen F Ackley
Manigo, Leroy Quasim	A-145-M	Hugo Franco
Marrone, Daniel P.	A-379-S	John Carlstrom
Mase, Keiichi	A-107-S	Albrecht Karle
Masters, Otto	A-145-M	Hugo Franco
Mateling, Marian Elizabeth	O-283-M	Matthew Lazzara
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Matrai, Patricia A.	B-028-P	Peter Dylan Countway
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301	B-301-M	Manahan, Donal
317	O-317-L	Chereskin, Teresa
320	B-320-M	Schmidt, Steven
333	A-333-S	Halzen, Francis
340	A-340-S	Vieregg, Abigail
343	A-343-M/S	Conde, Mark
346	I-346-E	Harbor, Jonathan
364	A-364-M/S	Kulesa, Craig
367	A-367-S	Jefferies, Stuart
369	A-369-M/S	Bristow, William
371	A-371-M/S	Gorham, Peter
373	A-373-P	Paznukhov, Vadym
379	A-379-S	Carlstrom, John
382	A-382-M	Fritts, David
384	C-384-M	Bell, Robin
396	T-396-M	Szuberla, Curt
399	O-399-S	Taylor, Susan

403	O-403-E	Zappa, Christopher
404	O-404-L	Stephens, Britton
410	O-410-N	Matthias, Paul
412	G-412-L	Simms, Alexander
434	T-434-M	Morin, Paul
454	A-454-M	Smith, David
454	A-454-M	Smith, David
456	O-456-M	Seefeldt, Mark
458	B-458-M	Adams, Byron
461	B-461-L	Cassar, Nicolas
468	W-468-L	O'Boyle, Shaun
480	W-480-M	Neri, Gregory
481	W-481-M	Carlson, Kirsten
504	C-504-M	Gooseff, Michael
505	C-505-M	Priscu, John
506	C-506-M	Gooseff, Michael
507	C-507-M	Adams, Byron
508	C-508-M	Takacs-Vesbach, Cristina
509	C-509-M	Gooseff, Michael
511	C-511-M	Doran, Peter
516	C-516-M	Tulaczyk, Slawek
524	T-524-M	McManis, James
529	C-529-M/S	MacGregor, Joseph
529	C-529-M/S	Woods, John
531	C-531-M	Ackley, Stephen
533	C-533-M	Priscu, John
534	C-534-M	Priscu, John
551	D-551-M	Goodge, John
552	D-552-M	Goodge, John
553	D-553-S	de la Pena, Santiago

591	X-591-E	Goebel, Michael
592	X-592-L/N	Dolk, Shaun
594	X-594-M/S	Brunt, Kelly
599	X-599-S	Dinn, Michael
603	Y-603-M	Becker, Michael
610	Y-610-E	Virginia, Ross
621	V-621-L	Burns, Jennifer
902	T-902-M	Savoie, Ramona
904	T-904-L/P	Ducklow, Hugh
913	T-913-M	Heine, John
927	T-927-M	Obrien, Joseph
933	T-933-N	Hummon, Julia
940	T-940-M	Melendy, Renee
941	T-941-M	Melendy, Renee
998	T-998-P	Hosticka, Bouvard

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Technical Event

Principal Investigator	Event No.	Project Title
Albert, Mary	T-150-M	IDPO / IDDO - McMurdo
Carpenter, Paul	T-299-M/S	IRIS/PASSCAL seismic support
Ducklow, Hugh	T-904-L/P	Palmer LTER site review
Heine, John	T-913-M	OPP/USAP diving safety officer (DSO) and Scientific Diving Control Board (SDCB) visit
Hosticka, Bouvard	T-998-P	Operation and maintenance of a CTBT radionuclide monitoring station at Palmer Station
Hummon, Julia	T-933-N	University of Hawaii Data Acquisition System (UHDAS) support
McManis, James	T-524-M	UNL hot water drilling support
Melendy, Renee	T-940-M	Cold Regions Research and Engineering Laboratory (CRREL) activities
Melendy, Renee	T-941-M	CRREL support to the Phoenix Runway
Morin, Paul	T-434-M	The Polar Geospatial Information Center: Joint support
Obrien, Joseph	T-927-M	NASA / McMurdo Ground Station (MG1)
Pettit, Joseph	T-295-M	UNAVCO GPS survey support
Savoie, Ramona	T-902-M	PHI, Inc.
Szuberla, Curt	T-396-M	Operation and maintenance of a CTBT class infrasound array at Windless Bight

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Other Science Events

Principal Investigator	Event No.	Project Title
Brunt, Kelly	X-594-M/S	88S Traverse: GPS Survey for calibration and validation of ICESat-2 altimetry data
Dinn, Michael	X-599-S	Low Power Magnetometer (LPM) network - British Antarctic Survey (BAS)
Dolk, Shaun	X-592-L/N	NOAA's Global Drifter Program (GDP)
Goebel, Michael	X-591-E	Cape Shirreff

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Astrophysics and Geospace Sciences

Principal Investigator	Event No.	Project Title
Barwick, Steven	A-127-M/S	Precision operation of hexagonal radio array
Binns, Walter	A-142-M	Super Trans-Iron Galactic Element Recorder (SuperTIGER)
Bristow, William	A-369-M/S	Antarctic and Conjugate Research using SuperDARN
Carlstrom, John	A-379-S	Cosmological research with the 10-meter South Pole Telescope
Chartier, Alex	A-100-M/S	Oblique Sounding of Ionized Patches in the Antarctic Ionosphere - Instrument Development and Testing
Chu, Xinzhao	A-130-M	LiDAR investigation of middle and upper atmosphere temperature, composition, chemistry, and dynamics at McMurdo, Antarctica
Chu, Xinzhao	A-123-M	Simultaneous Na Doppler and Fe Boltzmann LiDAR observations and modeling of the middle and upper atmosphere at McMurdo, Antarctica
Clauer, Robert	A-106-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-118-S	Element composition of high-energy solar particles
Franco, Hugo	A-145-M	NASA Long Duration Balloon (LDB) support program
Fritts, David	A-382-M	The PMC-Turbo balloon mission to study gravity waves and turbulence through high-resolution imaging of polar mesospheric clouds
Gerrard, Andrew	A-111-M/P/S	The next generation of geospace research facilities at South Pole and

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		McMurdo stations
Gerrard, Andrew	A-112-M/S	Scientific studies from a network of sustainable, robotic observatories across the Antarctic ice shelf: A new approach to polar research
Gorham, Peter	A-371-M/S	Antarctic Impulsive Transient Antenna IV (ANITA IV) experiment
Halzen, Francis	A-333-S	Management and operations of the IceCube Neutrino Observatory 2016-2021
Jefferies, Stuart	A-367-S	Using gravity waves to probe the solar atmosphere
Karle, Albrecht	A-107-S	Development of the Askaryan Radio Array ultra-high energy neutrino detector at the South Pole
Kovac, John	A-149-S	Imaging the beginning of time from the South Pole: The next stage of the BICEP program
Kulesa, Craig	A-364-M/S	Continuing operation of the High Elevation Antarctic Terahertz (HEAT) telescope at Ridge A, Antarctica
LaBelle, James	A-128-S	Earth's electromagnetic environment: Advancing recent discoveries in auroral plasma radio emission research
Palo, Scott	A-284-M	Lower thermospheric science using new meteor radars at McMurdo Station
Paznukhov, Vadym	A-373-P	Troposphere-ionosphere coupling via atmospheric gravity waves
Smith, David	A-454-M	E-MIST (Exposing Microorganisms in the Stratosphere)
Smith, David	A-454-M	E-MIST (Exposing Microorganisms in the Stratosphere)
Taylor, Michael	A-119-M/P/S	Continental-scale studies of Mesospheric dynamics using the Antarctic Gravity Wave Instrument Network (ANGWIN)
Vieregg, Abigail	A-340-S	Radio detection of the highest energy neutrinos with a ground-based interferometric phased array

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Organisms and Ecosystems

Principal Investigator	Event No.	Project Title
Adams, Byron	B-458-M	The role of glacial history on the structure and functioning of ecological communities in the Shackleton Glacier region of the Transantarctic Mountains
Ainley, David	B-031-M	Adelie penguin response to climate change in the Ross Sea region – a full life-cycle approach
Amsler, Charles	B-022-P	The chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula
Cassar, Nicolas	B-461-L	Biological and physical drivers of oxygen saturation and net community production variability at the Western Antarctic Peninsula
Costa, Daniel	B-232-L	Collaborative Research: Foraging Ecology and Physiology of the Leopard Seal
Countway, Peter	B-028-P	Antarctic microbial networks and DMSP: Linking diversity, biogeochemistry, and functional gene expression
Cziko, Paul	B-195-M	Habitat severity and internal ice in Antarctic notothenioid fishes
DiTullio, Giacomo	B-007-N	Cobalamin and Iron Co-Limitation Of Phytoplankton Species (CICLOPS) in Terra Nova Bay
Eppley, Dr. Sarah	B-289-E	The functional role of moss in structuring biotic interactions and terrestrialization of Antarctica
Friedlaender, Ari	B-206-L	Foraging behavior and ecological role of the least-studied Antarctic krill predator, the Antarctic minke whale (Balaenoptera bonaerensis)
Hollibaugh, James	B-114-L	Chemoautotrophy in Antarctic bacterioplankton communities supported by the oxidation of urea-derived nitrogen
Lee, Richard	B-256-P	Winter survival mechanisms and adaptive genetic variation in an Antarctic insect

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Liwanag, Heather	B-030-M	Growing up on ice: Physiological adaptations and developmental plasticity in Weddell seal pups across two extreme physical environments
Manahan, Donal	B-301-M	Biological adaptations to environmental change in Antarctica - an advanced training program for early-career scientists
Place, Sean	B-199-M	Characterizing protein homeostasis and the regulatory mechanisms controlling molecular chaperone expression in the highly stenothermal notothenioid fish, Trematomus bernacchii
Polito, Michael	B-025-E/M	Investigating Holocene shifts in the diets and paleohistory of Antarctic krill predators
Polito, Michael	B-023-E	Investigating Holocene shifts in the diets and paleohistory of Antarctic krill predators (Argentine collaboration)
Rotella, Jay	B-009-M	The consequences of maternal effects and environmental conditions on offspring success in an Antarctic predator
Saba, Grace	B-050-N	Using bio-acoustics on an autonomous surveying platform for the examination of phytoplankton-zooplankton and fish interactions in the Western Ross Sea
Schmidt, Britney	B-041-M	RISE-UP: Ross Ice Shelf and Europa Underwater Probe
Schmidt, Steven	B-320-M	Stochasticity and cyroconite community assembly and function
Van Mooy, Benjamin	B-032-P	Production and fate of oxylipins in waters of the Western Antarctic Peninsula: Linkages between UV radiation, lipid peroxidation, and carbon cycling

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Earth Sciences

Principal Investigator	Event No.	Project Title
Anderson, Kent	G-090-P/S	Global seismograph station at South Pole and Palmer Stations
Blackburn, Terrence	G-167-M	U-series comminution age constraints on Taylor Valley erosion
Gaetani, Glenn	G-170-M	Determining magma storage depths and ascent rates for the Erebus Volcanic Province, Antarctica using diffusive water loss from olivine-hosted melt inclusion
Harvey, Ralph	G-058-M	Antarctic Search for Meteorites (ANSMET)
Kemerait, Robert	G-078-M	Dry Valley Seismic Project
Putkonen, Jaakko	G-192-M	Long-term sublimation/preservation of two separate, buried glacier ice masses, Ong Valley, southern Transantarctic Mountains
Sidor, Christian	G-096-M	Understanding the evolution of high-latitude Permo-Triassic paleoenvironments and their vertebrate communities
Simms, Alexander	G-412-L	New constraints on post-glacial rebound and Holocene environmental history along the northern Antarctic Peninsula from raised beaches
Sletten, Ronald	G-121-M	Formation and characteristics of brine-rich water in the Dry Valleys, Antarctica
Taylor, Edith	G-135-M	Permian and Triassic icehouse to greenhouse paleoenvironments and paleobotany in the Shackleton Glacier Area, Antarctica
Thomson, Stuart	G-180-M	East Antarctic Glacial Landscape Evolution (EAGLE): A study using combined thermochronology, geochronology and provenance analysis
Wilson, Terry	G-079-M/S	POLENET Antarctica: Investigating links between geodynamics and ice sheets - Phase 2

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Glaciology

Principal Investigator	Event No.	Project Title
Hall, Brenda	I-196-M	Response of the Antarctic ice sheet to the last great global warming
Harbor, Jonathan	I-346-E	MAGIC-DML: Mapping/Measuring/Modeling Antarctic Geomorphology and Ice Change in Dronning Maud Land
Koutnik, Michelle	I-193-M/S	Characterization of upstream ice and firn dynamics affecting the South Pole Ice (SPICE) core
Ray, Laura	I-178-M	Flow and fracture dynamics in an ice shelf lateral margin: Observations and modeling of the McMurdo Shear Zone
Stone, John	I-186-M	High-resolution reconstruction of Holocene deglaciation in the southern Ross Embayment

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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
Dunbar, Robert	O-131-N	Estimation of Antarctic ice melt using stable isotopic analyses of seawater
Lazzara, Matthew	O-283-M	Antarctic Automatic Weather Station program
Matthias, Paul	O-410-N	Ocean Observatories Initiative (OOI) Southern Hemisphere cruises
Munro, David	O-214-L	Investigating biogeochemical fluxes and linkages to climate change with multi-scale observations in the Drake Passage
Seefeldt, Mark	O-456-M	Implementing low-power, autonomous observing systems to improve the measurement and understanding of Antarctic precipitation
Shadwick, Elizabeth	O-270-L	Resolving CO2 system seasonality in the West Antarctic Peninsula with autonomous observations
Sprintall, Janet	O-260-L	The Drake Passage high-density XBT program
Stephens, Britton	O-404-L	Investigating biogeochemical fluxes and linkages to climate change with multi-scale observations in the Drake Passage
Swift, James	O-287-N	Climate variability and predictability (CLIVAR)
Swift, James	O-287-N	Climate variability and predictability

		(CLIVAR)
Taylor, Susan	O-399-S	Sampling comet dust from Antarctic air
Zappa, Christopher	O-403-E	Oceanic response to a coastal polynya, Terra Nova Bay, Antarctica

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Integrated System Science

Principal Investigator	Event No.	Project Title
Ackley, Stephen	C-531-M	Polynyas, Ice Production and seasonal Evolution in the Ross Sea (PIPERS)
Adams, Byron	C-507-M	McMurdo LTER – Soils: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
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 – Meteorology/lakes: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
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
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-504-M	McMurdo LTER – Glaciers: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Gooseff, Michael	C-506-M	McMurdo LTER – Streams/Geochemistry: Ecosystem response to amplified landscape

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		connectivity in the McMurdo Dry Valleys, Antarctica
Gooseff, Michael	C-509-M	McMurdo LTER – Algal Ops: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
MacGregor, Joseph	C-529-M/S	Operation IceBridge
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
Priscu, John	C-533-M	Subglacial Antarctic Lakes Scientific Access (SALSA): Integrated study of carbon cycling in hydrologically active subglacial environments
Priscu, John	C-505-M	McMurdo LTER – Limnology: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Priscu, John	C-534-M	Subglacial Antarctic Lakes Scientific Access (SALSA): Integrated study of carbon cycling in hydrologically-active subglacial environments: Drilling Component
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
Steinberg, Deborah	C-020-L/P	Palmer, Antarctica Long-Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Takacs-Vesbach, Cristina	C-508-M	McMurdo LTER – Integrative Science: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Tulaczyk, Slawek	C-516-M	ANTarctic Airborne ElectroMagnetics (ANTAEM) - revealing subsurface water in coastal Antarctica
Woods, John	C-529-M/S	Operation IceBridge

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Artists and Writers

Principal Investigator	Event No.	Project Title
Carlson, Kirsten	W-481-M	Under the Ice: Two Artists Collaborate to Connect Audiences with Antarctic Sea Life and Science
Neri, Gregory	W-480-M	A children's novel
O'Boyle, Shaun	W-468-L	Portraits of Place at Palmer Station
Young, Karen	W-218-P	The illustrated story of Antarctic microbes

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Antarctic Instrumentation & Research Facilities

Principal Investigator	Event No.	Project Title
de la Pena, Santiago	D-553-S	EAGER: An operational system to measure surface mass balance deep in the interior of the Antarctic ice sheet
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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Education and Outreach

Principal Investigator	Event No.	Project Title
Becker, Michael	Y-603-M	Seven Worlds - Antarctica
Virginia, Ross	Y-610-E	Joint Antarctic Science Expedition (JASE)

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Amundsen-Scott South Pole Station

Principal Investigator	Event No.	Project Title
Anderson, Kent	G-090-P/S	Global seismograph station at South Pole and Palmer Stations
Barwick, Steven	A-127-M/S	Precision operation of hexagonal radio array
Bristow, William	A-369-M/S	Antarctic and Conjugate Research using SuperDARN
Brunt, Kelly	X-594-M/S	88S Traverse: GPS Survey for calibration and validation of ICESat-2 altimetry data
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
Chartier, Alex	A-100-M/S	Oblique Sounding of Ionized Patches in the Antarctic Ionosphere - Instrument Development and Testing
Clauer, Robert	A-106-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
de la Pena, Santiago	D-553-S	EAGER: An operational system to measure surface mass balance deep in the interior of the Antarctic ice sheet
Dinn, Michael	X-599-S	Low Power Magnetometer (LPM) network - British Antarctic Survey (BAS)
Evenson, Paul	A-118-S	Element composition of high-energy solar particles

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Gerrard, Andrew	A-112-M/S	Scientific studies from a network of sustainable, robotic observatories across the Antarctic ice shelf: A new approach to polar research
Gorham, Peter	A-371-M/S	Antarctic Impulsive Transient Antenna IV (ANITA IV) experiment
Halzen, Francis	A-333-S	Management and operations of the IceCube Neutrino Observatory 2016-2021
Jefferies, Stuart	A-367-S	Using gravity waves to probe the solar atmosphere
Karle, Albrecht	A-107-S	Development of the Askaryan Radio Array ultra-high energy neutrino detector at the South Pole
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: The next stage of the BICEP program
Kulesa, Craig	A-364-M/S	Continuing operation of the High Elevation Antarctic Terahertz (HEAT) telescope at Ridge A, Antarctica
LaBelle, James	A-128-S	Earth’s electromagnetic environment: Advancing recent discoveries in auroral plasma radio emission research
MacGregor, Joseph	C-529-M/S	Operation IceBridge
Taylor, Michael	A-119-M/P/S	Continental-scale studies of Mesospheric dynamics using the Antarctic Gravity Wave Instrument Network (ANGWIN)
Taylor, Susan	O-399-S	Sampling comet dust from Antarctic air
Vieregg, Abigail	A-340-S	Radio detection of the highest energy neutrinos with a ground-based interferometric phased array
Wilson, Terry	G-079-M/S	POLENET Antarctica: Investigating links between geodynamics and ice sheets - Phase 2
Woods, John	C-529-M/S	Operation IceBridge

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McMurdo Station

Principal Investigator	Event No.	Project Title
Ackley, Stephen	C-531-M	Polynyas, Ice Production and seasonal Evolution in the Ross Sea (PIPERS)
Adams, Byron	B-458-M	The role of glacial history on the structure and functioning of ecological communities in the Shackleton Glacier region of the Transantarctic Mountains
Adams, Byron	C-507-M	McMurdo LTER – Soils: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Ainley, David	B-031-M	Adelie penguin response to climate change in the Ross Sea region – a full life-cycle approach
Albert, Mary	T-150-M	IDPO / IDDO - McMurdo
Barwick, Steven	A-127-M/S	Precision operation of hexagonal radio array
Becker, Michael	Y-603-M	Seven Worlds - Antarctica
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)
Binns, Walter	A-142-M	Super Trans-Iron Galactic Element Recorder (SuperTIGER)
Blackburn, Terrence	G-167-M	U-series comminution age constraints on Taylor Valley erosion
Bristow, William	A-369-M/S	Antarctic and Conjugate Research using SuperDARN
Brunt, Kelly	X-594-M/S	88S Traverse: GPS Survey for calibration and validation of ICESat-2 altimetry data
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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Carlson, Kirsten	W-481-M	Under the Ice: Two Artists Collaborate to Connect Audiences with Antarctic Sea Life and Science
Carpenter, Paul	T-299-M/S	IRIS/PASSCAL seismic support
Chartier, Alex	A-100-M/S	Oblique Sounding of Ionized Patches in the Antarctic Ionosphere - Instrument Development and Testing
Chu, Xinzhao	A-130-M	LiDAR investigation of middle and upper atmosphere temperature, composition, chemistry, and dynamics at McMurdo, Antarctica
Chu, Xinzhao	A-123-M	Simultaneous Na Doppler and Fe Boltzmann LiDAR observations and modeling of the middle and upper atmosphere at McMurdo, Antarctica
Conde, Mark	A-343-M/S	High-resolution mapping of thermospheric wind and temperature fields near the equatorward edge of the Antarctic polar cap
Cziko, Paul	B-195-M	Habitat severity and internal ice in Antarctic notothenioid fishes
Doran, Peter	C-511-M	McMurdo LTER – Meteorology/lakes: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Franco, Hugo	A-145-M	NASA Long Duration Balloon (LDB) support program
Fritts, David	A-382-M	The PMC-Turbo balloon mission to study gravity waves and turbulence through high-resolution imaging of polar mesospheric clouds
Gaetani, Glenn	G-170-M	Determining magma storage depths and ascent rates for the Erebus Volcanic Province, Antarctica using diffusive water loss from olivine-hosted melt inclusion
Gerrard, Andrew	A-111-M/P/S	The next generation of geospace research facilities at South Pole and McMurdo stations
Gerrard, Andrew	A-112-M/S	Scientific studies from a network of sustainable, robotic observatories across the Antarctic ice shelf: A new approach to polar research
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-504-M	McMurdo LTER – Glaciers: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Gooseff, Michael	C-506-M	McMurdo LTER – Streams/Geochemistry: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Gooseff, Michael	C-509-M	McMurdo LTER – Algal Ops: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Gorham, Peter	A-371-M/S	Antarctic Impulsive Transient Antenna IV (ANITA IV) experiment
Hall, Brenda	I-196-M	Response of the Antarctic ice sheet to the last great global warming
Harvey, Ralph	G-058-M	Antarctic Search for Meteorites (ANSMET)
Heine, John	T-913-M	OPP/USAP diving safety officer (DSO) and Scientific Diving Control Board (SDCB) visit
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	Continuing operation of the High Elevation Antarctic Terahertz (HEAT) telescope at Ridge A, Antarctica
Lazzara, Matthew	O-283-M	Antarctic Automatic Weather Station program
Liwanag, Heather	B-030-M	Growing up on ice: Physiological adaptations and developmental plasticity in Weddell seal pups across two extreme physical environments
MacGregor, Joseph	C-529-M/S	Operation IceBridge
Manahan, Donal	B-301-M	Biological adaptations to environmental change in Antarctica - an advanced training program for early-career scientists
McManis, James	T-524-M	UNL hot water drilling support
Melendy, Renee	T-940-M	Cold Regions Research and Engineering Laboratory (CRREL) activities

Melendy, Renee	T-941-M	CRREL support to the Phoenix Runway
Morin, Paul	T-434-M	The Polar Geospatial Information Center: Joint support
Neri, Gregory	W-480-M	A children's novel
Obrien, Joseph	T-927-M	NASA / McMurdo Ground Station (MG1)
Palo, Scott	A-284-M	Lower thermospheric science using new meteor radars at McMurdo Station
Pettit, Joseph	T-295-M	UNAVCO GPS survey support
Place, Sean	B-199-M	Characterizing protein homeostasis and the regulatory mechanisms controlling molecular chaperone expression in the highly stenothermal notothenioid fish, Trematomus bernacchii
Polito, Michael	B-025-E/M	Investigating Holocene shifts in the diets and paleohistory of Antarctic krill predators
Priscu, John	C-533-M	Subglacial Antarctic Lakes Scientific Access (SALSA): Integrated study of carbon cycling in hydrologically active subglacial environments
Priscu, John	C-505-M	McMurdo LTER – Limnology: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Priscu, John	C-534-M	Subglacial Antarctic Lakes Scientific Access (SALSA): Integrated study of carbon cycling in hydrologically-active subglacial environments: Drilling Component
Putkonen, Jaakko	G-192-M	Long-term sublimation/preservation of two separate, buried glacier ice masses, Ong Valley, southern Transantarctic Mountains
Ray, Laura	I-178-M	Flow and fracture dynamics in an ice shelf lateral margin: Observations and modeling of the McMurdo Shear Zone
Rotella, Jay	B-009-M	The consequences of maternal effects and environmental conditions on offspring success in an Antarctic predator
Savoie, Ramona	T-902-M	PHI, Inc.
Schmidt, Britney	B-041-M	RISE-UP: Ross Ice Shelf and Europa Underwater Probe

Schmidt, Steven	B-320-M	Stochasticity and cyroconite community assembly and function
Seefeldt, Mark	O-456-M	Implementing low-power, autonomous observing systems to improve the measurement and understanding of Antarctic precipitation
Sidor, Christian	G-096-M	Understanding the evolution of high-latitude Permo-Triassic paleoenvironments and their vertebrate communities
Sletten, Ronald	G-121-M	Formation and characteristics of brine-rich water in the Dry Valleys, Antarctica
Smith, David	A-454-M	E-MIST (Exposing Microorganisms in the Stratosphere)
Smith, David	A-454-M	E-MIST (Exposing Microorganisms in the Stratosphere)
Stone, John	I-186-M	High-resolution reconstruction of Holocene deglaciation in the southern Ross Embayment
Szuberla, Curt	T-396-M	Operation and maintenance of a CTBT class infrasound array at Windless Bight
Takacs-Vesbach, Cristina	C-508-M	McMurdo LTER – Integrative Science: Ecosystem response to amplified landscape connectivity in the McMurdo Dry Valleys, Antarctica
Taylor, Edith	G-135-M	Permian and Triassic icehouse to greenhouse paleoenvironments and paleobotany in the Shackleton Glacier Area, Antarctica
Taylor, Michael	A-119-M/P/S	Continental-scale studies of Mesospheric dynamics using the Antarctic Gravity Wave Instrument Network (ANGWIN)
Thomson, Stuart	G-180-M	East Antarctic Glacial Landscape Evolution (EAGLE): A study using combined thermochronology, geochronology and provenance analysis
Tulaczyk, Slawek	C-516-M	ANTarctic Airborne ElectroMagnetics (ANTAEM) - revealing subsurface water in coastal Antarctica
Wilson, Terry	G-079-M/S	POLENET Antarctica: Investigating links between geodynamics and ice sheets - Phase 2
Woods, John	C-529-M/S	Operation IceBridge

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Palmer Station

Principal Investigator	Event No.	Project Title
Amsler, Charles	B-022-P	The chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula
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
Countway, Peter	B-028-P	Antarctic microbial networks and DMSP: Linking diversity, biogeochemistry, and functional gene expression
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
Ducklow, Hugh	T-904-L/P	Palmer LTER site review
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
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
Gerrard, Andrew	A-111-M/P/S	The next generation of geospace research facilities at South Pole and McMurdo stations
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

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		adaptive genetic variation in an Antarctic insect
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
Steinberg, Deborah	C-020-L/P	Palmer, Antarctica Long-Term Ecological Research (LTER): Land-shelf-ocean connectivity, ecosystem resilience and transformation in a sea-ice influenced pelagic ecosystem
Taylor, Michael	A-119-M/P/S	Continental-scale studies of Mesospheric dynamics using the Antarctic Gravity Wave Instrument Network (ANGWIN)
Van Mooy, Benjamin	B-032-P	Production and fate of oxylipins in waters of the Western Antarctic Peninsula: Linkages between UV radiation, lipid peroxidation, and carbon cycling
Young, Karen	W-218-P	The illustrated story of Antarctic microbes

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RVIB Nathaniel B. Palmer

Principal Investigator	Event No.	Project Title
DiTullio, Giacomo	B-007-N	Cobalamin and Iron Co-Limitation Of Phytoplankton Species (CICLOPS) in Terra Nova Bay
Dolk, Shaun	X-592-L/N	NOAA's Global Drifter Program (GDP)
Dunbar, Robert	O-131-N	Estimation of Antarctic ice melt using stable isotopic analyses of seawater
Hummon, Julia	T-933-N	University of Hawaii Data Acquisition System (UHDAS) support
Matthias, Paul	O-410-N	Ocean Observatories Initiative (OOI) Southern Hemisphere cruises
Saba, Grace	B-050-N	Using bio-acoustics on an autonomous surveying platform for the examination of phytoplankton-zooplankton and fish interactions in the Western Ross Sea
Swift, James	O-287-N	Climate variability and predictability (CLIVAR)
Swift, James	O-287-N	Climate variability and predictability (CLIVAR)

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ARSV Laurence M. Gould

Principal Investigator	Event No.	Project Title
Burns, Jennifer	V-621-L	Palmer LTER Site Review - Visiting group
Cassar, Nicolas	B-461-L	Biological and physical drivers of oxygen saturation and net community production variability at the Western Antarctic Peninsula
Chereskin, Teresa	O-317-L	Southern Ocean current observations from the U.S. Antarctic research vessels
Costa, Daniel	B-232-L	Collaborative Research: Foraging Ecology and Physiology of the Leopard Seal
Dolk, Shaun	X-592-L/N	NOAA’s Global Drifter Program (GDP)
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
Ducklow, Hugh	T-904-L/P	Palmer LTER site review
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
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
Friedlaender, Ari	B-206-L	Foraging behavior and ecological role of the least-studied Antarctic krill predator, the Antarctic minke whale (Balaenoptera bonaerensis)
Hollibaugh, James	B-114-L	Chemoautotrophy in Antarctic bacterioplankton communities

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		supported by the oxidation of urea-derived nitrogen
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
Munro, David	O-214-L	Investigating biogeochemical fluxes and linkages to climate change with multi-scale observations in the Drake Passage
O'Boyle, Shaun	W-468-L	Portraits of Place at Palmer Station
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
Shadwick, Elizabeth	O-270-L	Resolving CO2 system seasonality in the West Antarctic Peninsula with autonomous observations
Simms, Alexander	G-412-L	New constraints on post-glacial rebound and Holocene environmental history along the northern Antarctic Peninsula from raised beaches
Sprintall, Janet	O-260-L	The Drake Passage high-density XBT program
Steinberg, Deborah	C-020-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-404-L	Investigating biogeochemical fluxes and linkages to climate change with multi-scale observations in the Drake Passage

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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
Goebel, Michael	X-591-E	Cape Shirreff
Harbor, Jonathan	I-346-E	MAGIC-DML: Mapping/Measuring/Modeling Antarctic Geomorphology and Ice Change in Dronning Maud Land
Polito, Michael	B-025-E/M	Investigating Holocene shifts in the diets and paleohistory of Antarctic krill predators
Polito, Michael	B-023-E	Investigating Holocene shifts in the diets and paleohistory of Antarctic krill predators (Argentine collaboration)
Virginia, Ross	Y-610-E	Joint Antarctic Science Expedition (JASE)
Zappa, Christopher	O-403-E	Oceanic response to a coastal polynya, Terra Nova Bay, Antarctica

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Project Detail

Project Title

Adelie Penguin Response To Climate Change In The Ross Sea Region – A Full Life-Cycle Approach

Summary

Event Number:
B-031-M
NSF/OPP Award 1543541

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Jenny Cunningham / Jennifer Blum

Principal Investigator

Dr. David Ainley
dainley@penguinscience.com

H.T. Harvey & Associates
Los Gatos, California

Project Web Site:
http://penguinscience.com

Location

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

Description

The Ross Sea is experiencing expanding sea-ice cover, and little is known about how this affects Antarctic marine biota. This study aims to better understand the biotic effects of these changes using a widely recognized indicator species, the Adélie penguin. Researchers will outfit penguins with time-depth recorders to monitor foraging efforts and record breeding activities of marked individuals. These data will lead to a better understanding of how changing sea-ice conditions affect penguins through their annual cycles and through individuals' lifetimes and will infer how climate change may influence their populations. The project will span four years and will involve collection of new data and extensive retrospective analysis of data gathered from 1996 to 2015.

Field Season Overview

Participants will deploy this season to continue their long-term study of Adelie Penguin demographics and response to environmental change in the Ross Sea. Deployments will be staggered throughout the field season. Team members will travel by helicopter and occupy camps at two field sites, Cape Royds and Cape Crozier, starting in late October. They will identify marked penguins at each location, collect breeding behavior data, deploy various instrumentation to obtain foraging and location data, and band new penguins near the end of the season.

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Deploying Team Members

- David Ainley (PI)
- Grant Ballard (Co-PI)
- Katie Dugger (Co-PI)
- Megan Elrod
- Dennis Jongsomjit
- Amelie Lescroel (Co-PI)
- Chris Linder
- Chris Linder
- Jean Pennycook
- Anne Schmidt (Team Leader)

2017-2018 USAP Field Season
Project Detail

Project Title

IDPO / IDDO - McMurdo

Summary

Event Number:
T-150-M

Program Manager:
Dr. Michael Jackson

ASC POC/Implementer:
Judy Shiple / Curt Labombard / Matthew Kippenhan

Principal Investigator

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

Dartmouth College
Thayer School of Engineering
Hanover, New Hampshire

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

Location

Supporting Stations: McMurdo Station
Research Locations: Around station

Description

The Ice Drilling Program Office (IDPO) and the Ice Drilling Design and Operations (IDDO) groups: 1) Provide community leadership in ice drilling research and development; 2) Identify new technology needs, plan technology development and funding; 3) Acquire new drilling technology to support science objectives for new discoveries; 4) Provide the drills, equipment, and drilling expertise needed by the science groups; 5) Enhance communication and information exchange related to ice coring and drilling science and technology, and 6) Establish activities in collaboration with the polar science and engineering community to contribute to the NSF strategic goals for desired societal outcomes.

Field Season Overview

Two drilling participants are listed on the SIP for G-192-M (Putkonen, OPP-1445205), and one participant is listed on the SIP for D-551-M (Goodge, OPP-1419935).

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2017-2018 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/OPP Award 1341333

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Matthew Erickson / Jamee Johnson

Principal Investigator

Dr. Charles D. Amsler
amsler@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 regarding 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 observed in macroalgal defenses, particularly in the common and heavily defended red algae Plocamium cartilagineum. The third objective is to understand 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 other chemically defended red algae. The investigators seek to determine the degree to which P. fissicauda is sequestering secondary metabolite defenses from P. cartilagineum to defend itself from predation.

Field Season Overview

This third and final season builds upon samples collected and experiments from the previous two seasons. This season will include similar collections as previous seasons but also manipulative experiments both in the field and in laboratory aquaria. Extensive daily dive operations, morning and afternoon, are anticipated. Laboratory experiments will include a variety of feeding bioassays of both live tissue and purified compounds prepared

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in artificial foods at Palmer Station. A gas chromatograph will be used for chemical analyses necessary for set-up of some of the field and laboratory experiments. Extensive use of the Palmer Station Aquarium resources will be required. Ten mesocosm aquarium, located outside of the Palmer Station Aquarium, will provide additional space for experiments.

Deploying Team Members

- Charles Amsler (PI)
- Margaret Amsler
- Bill Baker (Co-PI)
- Cecilia Brothers
- Michelle Curtis
- Sabrina Heiser
- James McClintock (Co-PI)
- Leucas Miller
- Andrew Shilling
- Santana Thomas

2017-2018 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. Michael Jackson

ASC POC/Implementer:
Neal Scheibe / Jamee Johnson / Paul Sullivan

Principal Investigator

Mr. Kent Anderson
kent@iris.edu

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

Project Web Site:
http://earthquake.usgs.gov/monitoring/gsn/

Location

Supporting Stations: Palmer Station, South Pole Station
Research Locations: B2 Science Building / South Pole Remote Earth Science and Seismological Observatory (SPRESSO) Vault / Terra Lab / Seismic Vault

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 quietest seismic station in the entire GSN. Lower background noise levels will allow researchers to see smaller events from farther away and help identify and characterize Antarctic seismicity.

Field Season Overview

ASC provides year-round, on-site support by an ASC research associate (RA). In addition, every other season a two-person science field team deploys to the South Pole in mid-December for routine maintenance on the installed instruments. If work is necessary in the off seasons, NSF approval is required due to limited bed space. Training for the research associate is conducted by the science project.

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Deploying Team Members

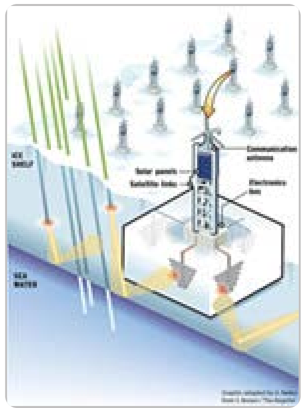
- David Jones
- Mark Robertson
- Mark Robertson
- Mark Robertson

2017-2018 USAP Field Season
Project Detail

Project Title

Precision Operation Of Hexagonal Radio Array

Summary



Event Number:
A-127-M/S
NSF/OPP Award 1607719

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Jenny Cunningham / Jennifer Blum

Principal Investigator

Dr. Steven Barwick
sbarwick@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, South Pole Station
Research Locations: ARIANNA site at Moore's Bay

Description

The Antarctic Ross Ice shelf Antenna Neutrino Array (ARIANNA) concept uses the Ross Ice Shelf (RIS) near the coast of Antarctica to increase the sensitivity to ultra-high-energy cosmogenic neutrinos by an order of magnitude when compared to the sensitivity of existing detectors and those under construction. ARIANNA tests a variety of scenarios for neutrino production and probes for physics beyond the standard model by measuring the neutrino cross-section at center of mass energies near 100 Teraelectronvolts (TeV). The recent report by IceCube of an unsimulated excess of neutrino events above 30 TeV may be the first indication of a non-terrestrial high-energy neutrino source. ARIANNA can complement these studies by exploring the spectrum at energies 1,000 times greater than IceCube and in a relatively short time frame. One of the ARIANNA stations will be deployed at South Pole for further testing in the 2017-18 austral summer season.

Field Season Overview

Team members will travel by helicopter to the ARIANNA camp site, located at Moore's Bay, about 70 miles south of McMurdo Station. They will receive ASC support for put-in and pull-out of a tent camp where they will reside for approximately three weeks. While there, they will install radio transmitters down two previously-drilled holes to collect measurements of attenuation and scattering properties of the firn snow at ARIANNA frequencies. The team will remover the transmitters from the holes prior to leaving the ARIANNA site. Ice evaluation remains a primary activity but the team will also continue to

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assess the surprising horizontal propagation of radio pulses that was discovered last season by the ARIANNA team. The team will also spend approximately 10 days at the South Pole in order to install new equipment.

Deploying Team Members

- Steven Barwick (PI)
- Hans Bernhoff
- Geoffrey Gaswint
- Christopher Persichilli (Team Leader)
- Corey Reed (Team Leader)
- Shih-hao Wang

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

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Judy Shiple / Elizabeth Kauffman

Principal Investigator

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

Columbia University
Lamont-Doherty Earth Observatory
Palisades, New York

Project Web Site:
http://pgg.ldeo.columbia.edu

Location

Supporting Stations: McMurdo Station
Research Locations: On station / 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 magnetic 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

The ROSETTA project will install and operate an integrated ice imaging system (IcePod) from McMurdo station on New York Air National Guard (NYANG) LC-130 aircraft on airborne surveys of the Ross Ice Shelf region in Antarctica. The instrumentation package consists of a scanning laser for precise measurements of the ice surface, visible and infrared imaging cameras to document the ice surface structure and temperature, ice-penetrating radar to recover the ice thickness and study the ice/ocean interface and shallow-ice radar to measure snow accumulation. Geo-referencing of the measurements will be provided by precision GPS satellite data integrated with inertial technology. Gravity and magnetics will also be employed on the ROSETTA project in conjunction with IcePod

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Project Web Sites

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on NYANG LC-130 aircraft. ALAMO floats will be deployed along the RIS front to measure temperature, salinity and current profiles. The NYANG 109th Airlift Wing will transport the entire IcePod package, including gravity and magnetics, via LC-130 from the U.S. to Antarctica. Another gravity system owned and operated by GNS New Zealand will be deployed separately from Christchurch to McMurdo on an LC-130 aircraft. IcePod, including ITAR and data reduction critical items, will return with the last C-17, if possible; other IcePod cargo coming out of Antarctica will be shipped via commercial air freight as soon as possible after the completion of IcePod field work with respect to flight lines. Field activities in Antarctic will include dedicated flight missions for ROSETTA on an LC-130 aircraft through the duration of November 1 - December 1, 2016, and further dedicated flights over a three week period in November 2016 to complete the data set, with typical flight times in the region of 6-8 hours with the intention of flying 2 flights per day. The first flight will involve a 2-3 hour shakedown component to ensure that all instruments are functioning properly. The shakedown flight will be followed by the first data acquisition flight. The initial installation of the SABIR arm, IcePod, racks and two gravimeters require 1-2 days. Subsequently, the equipment can be de-installed and re-installed according to the following:

-SABIR ARM, De-Installed in 1 hour, Reinstalled in 2 hour -ICEPOD, De-Installed in 1/2 hour, Reinstalled in 1/2 hour -RACKS, De-Installed in 1 hour, Reinstalled in 2-3 hours -GRAVIMETERS, De-Installed in 1 hour, Reinstalled in 1 hour

The IcePod system has its own ruggedized container for movement and storage. The gravimeters operate separately and need to be plugged into a power supply and kept warm at all times once they have been calibrated. The gravimeters will be installed on the aircraft before every flight and returned to the IcePod Rac-Tent after completed flight missions with the exception of back-to-back flights when the gravimeters may remain on the aircraft. The gravimeters, each strapped to a speed pallet, will be moved by forklift to and from the survey aircraft. A spare UPS from the IcePod system will be used to maintain power as the gravimeter is transferred from IcePod Rac-Tent to the aircraft. A group of supporting science and engineering staff, consisting of 12-14 ROSETTA personnel, including two GNS personnel from the New Zealand gravity team, will be deployed to McMurdo during this period. The ROSETTA team will need engineering and office space as well as space for data download and quality control at the Rac-Tent. The team will also require a base of operations in the Crary laboratory at McMurdo. Additionally, the ROSETTA/IcePod team will be using the dining facilities at Willy Field during the deployment. Further, the team will need a dedicated van for the transportation of personnel and equipment on base and between McMurdo and Willy Field. The team also requires transport between the Rac-Tent and the aircraft when it is parked in the refueling pits. The IcePod can also be used on opportune missions using the LC-130 as a shared resource for both IcePod science support and NSF infrastructure and logistics support. IcePod leverages the unique experience of the NYANG operating in Antarctica for NSF scientific research as well as infrastructure and logistics.

Deploying Team Members

- Maya Becker
- Christopher Bertinato
- Bethany Burton
- Sylvia Isabel Cordero
- Tejendra Dhakal
- Caitlin Dieck
- Nicholas Frearson (Co-PI)
- Chloe Gustafson
- Susan Howard
- Caitlin Locke
- Grant O'Brien
- David Porter
- Julian Spergel
- Kirsteen Tinto

2017-2018 USAP Field Season
Project Detail

Project Title

Super Trans-Iron Galactic Element Recorder (SuperTIGER)

Summary

Event Number:
A-142-M
NSF / NASA Agreement

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Scott Battaion / Chad Naughton

Principal Investigator

Dr. Walter R Binns
wrb@wuphys.wustl.edu

Washington University
Physics Department
St. Louis, Missouri

Project Web Site:
http://cosray.wustl.edu/

Location

Supporting Stations: McMurdo Station
Research Locations: Williams Field

Description

SuperTIGER builds on the heritage of the smaller Trans-Iron Galactic Element Recorder (TIGER) flown from Williams Field in 2001 and 2003. This next-generation version is a large-area instrument that measures the elemental abundances of cosmic rays from Zinc to Molybdenum. The instrument is capable of detecting an unprecedented combination of individual elements at an extraordinary resolution and statistical precision. The data collected will permit a sensitive test of the hypothesis that microquasars or other phenomena could superpose spectral features on the otherwise smooth energy spectra previously measured with less statistical accuracy.

Field Season Overview

Integration &Test & Flight--Super TIGER-II will be launched on a high-altitude balloon from Williams Field as a part of the CSBF LDB ballooning operations. We expect that our science team which will consist of a maximum of 9 people on the ice simultaneously will arrive at McMurdo on November 9. We would anticipate that our experiment will be launched in early December. Soon after launch, most of our team will leave for their home institutions. We estimate that would be around December 15, but that depends on when the balloon can be launched.There will be several people remaining at McMurdo to monitor data from our instrument and to participate in instrument recovery after the balloon descends. Our goal is to fly our experiment for as long as possible.

Instrument Recovery--We hope to recover the instrument the same season that we fly. Instrument recovery may require that several members of the science team camp at the recovery site for approximately 1 week to disassemble the instrument so that it can be loaded onto the recovery aircraft and flown back to McMurdo. We will obviously need air support for the recovery operations. Although we can strip the instrument down for recovery by multiple flights of a Twin Otter (4 expected), it is preferred to use the Basler since we can recover the complete instrument in one flight and we do not have to destroy any of the detectors during recovery, which we would have to do if a Twin Otter is used. As noted, about 4 Twin Otter flights would be required to return the instrument. If it is not possible to recover the full instrument this season, it is critical that the data disks be recovered this season since not all of the data will come down by telemetry. Two of our team members (Dana Braun & Sean Fitzsimmons) will redeploy to participate in instrument recovery. In addition, one or two of our science team who are planning to be in McMurdo through February 1 will participate in the recovery. The limited field support requirements listed in this SIP are predicated on a "commuter" recovery traveling from McM each day. This would require approximately 7 "commuter" trips with a 4-person science crew. If a camp is required, field support requirements will be different and are covered by our 2014 SIP and support agreement. We will need snow school for 4 members of the SuperTIGER team. Some have completed Snow School in the past but too long ago for a simple refresher.

SuperTIGER is made up of two "stacks" of detectors, each about 5 feet x 10 feet, supported on a space-frame “gondola” of about 11 feet x 13 feet. There are 7 detector units of three types in each stack, supported by aluminum honeycomb pallets. In addition, there are CSBF components attached to the gondola, including the Science Instrumentation Package (SIP). The detector stacks and gondola will be completely disassembled for recovery and the instrument and payload components will be removed. All components are light enough to be handled by hand with the proposed 4 person science team. The Total weight of SuperTIGER and CSBF material that we expect to recover is 5000 lbs (2267) kg. The instrument and gondola are designed for recovery by either Basler or Twin Otter, but the Basler is strongly preferred because it would minimize detector disassembly or destruction on site. The Twin Otter would require 10 of the large 5 foot x 10 foot detectors (scintillators and Cherenkov detectors) to be separated into two sections each. Four other detectors (tracking hodoscopes) and the honeycomb pallets that support each detector stack would have to be cut in half and destroyed. These operations are not required for the Basler. Thus, we strongly request that the highest priority be given to making the Basler available for retrograde transport of the instrument components.

In the event that the payload is terminated far from McMurdo, we would anticipate setting up a camp at the payload. Roughly 1 week will be required to disassemble the instrument and prepare it for recovery by the Basler or Twin Otter. If a Basler is used, it should take only 1 flight to make a full recovery of the instrument as was done in the SuperTIGER-1 recovery in 2015. We will supply all tools needed to disassemble the instrument. All other required equipment need to be obtained from USAP. We will also need a snowmobile to move material on site. We will coordinate our activities with ASC personnel.

Two of our planned participants have had snow school training, and only refresher courses will be required. However, the other one or two science team members that we send will require snow school training.

Deploying Team Members

- Richard Bose
- Dana Braun
- Sean Fitzsimmons
- Jason Link
- Brian Rauch
- Kenichi Sakai
- Makoto Sasaki
- Garry Simburger
- Nathan Walsh

2017-2018 USAP Field Season
Project Detail

Project Title

Antarctic And Conjugate Research Using SuperDARN

Summary

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

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Neal Scheibe / Elizabeth Kauffman / Paul Sullivan

Principal Investigator

Dr. William Bristow
wabristow@alaska.edu

University of Alaska Fairbanks
Geophysical Institute
Fairbanks, Alaska

Project Web Site:
http://superdarn.gi.alaska.edu

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: Building 72

Description

The Super Dual Auroral Radar Network (SuperDARN) is a global international radar network of 22 installations observing high-frequency (HF) bands between eight 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. In addition, the team will install an ionosonde at a yet-to-be-determined

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location on the station. The installation will require the erection of the antennas and installation of the electronic components.

Deploying Team Members

- William Bristow (PI)
- Andrew Kiene

2017-2018 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:
Neal Scheibe / 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 Observatory (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. These 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 that support 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 upgrades

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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. 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.

Deploying Team Members

- Gavin Chensue
- Andrew Clarke
- Cherisa Friedlander
- David Reibel
- Michael Rhodes
- Scott Stierle

2017-2018 USAP Field Season
Project Detail

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:
Neal Scheibe / 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: Terra Lab

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 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 that support this project.

Field Season Overview

The Palmer Station RA provides year-round support to the project by collecting weekly air samples and by monitoring the UV instruments. No participants are deploying this season.

Deploying Team Members

- Patrick Disterhoft (Co-PI)

2017-2018 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:
Neal Scheibe / 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 that support this project.

Field Season Overview

One field team member will spend five days at McMurdo Station servicing the UV instrument located at Arrival Heights. The McMurdo Station research assistant will

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subsequently support the instrument with daily checks, routine calibrations, and troubleshooting.

Deploying Team Members

- Scott Stierle

2017-2018 USAP Field Season
Project Detail

Project Title

Under The Ice: Two Artists Collaborate To Connect Audiences With Antarctic Sea Life And Science

Summary

Event Number:
W-481-M
NSF/OPP Award 1645127

Program Manager:
Ms. Valentine Kass

ASC POC/Implementer:
Elaine Hood / Jenny Cunningham

Principal Investigator

Ms. Kirsten Carlson
kc@kirstencarlson.net

Kailua, Hawaii

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

Location

Supporting Stations: McMurdo Station
Research Locations: Sea Ice

Description

"Hook and Fathom Antarctica" is a project to communicate scientific research and understanding about the planet’s coldest marine ecosystem. It will make this remote environment accessible to the general public by combining science and art in innovative ways. Two artists will collaborate to create an online journal, a traveling exhibit, and a nonfiction children’s book, all interpreting the science and sea life thriving under the ice. Through their artwork, they will also interpret the complexities of human habitation on the continent and convey how scientists plan for, experience, and adapt to working in an extreme and unpredictable environment.

Field Season Overview

Two participants will deploy for six weeks between 18 October and 28 November. The artists will work in the underwater observation tube by McMurdo Station, and also dive under the sea ice at various locations in McMurdo Sound to make direct observations. They will use field sketching, watercolor, color studies, pattern notes, writing, photography, and film to document their experiences. Participants will each conduct 20-50 dives per person in depths of 20 meters or shallower in McMurdo Sound. Potential dive sites include but are not limited to McMurdo Jetty, Arrival Heights, Cape Evans Wall, and Turtle Rock. Proposers have received letters of support from ASC Dive Services Supervisor Rob Robbins, and USAP Diving Safety Officer John Heine (Appendix 1) to support dive operations and integrate the artists with science projects on site. The group will require dive equipment and support by ASC Dive Services. They will use existing dive holes/huts,

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or will use a Reed drill to create holes in areas of interest; fish huts reserved by ASC Dive Services will be placed over holes. They will use ASC Dive Services' PistenBully when possible to access dive sites, or will use a PistenBully or two snowmobiles from the Mechanical Equipment Center (MEC) pool. As part of their goal to interpret the complexities of human habitation in Antarctica, the artists are interested in re-purposing materials leftover from human activities and scientific research and forming them into artworks. Materials that may be re-purposed will be defined as this project continues to develop, and while the artists are in McMurdo. Appropriate permissions from NSF, scientists, and/or ASC personnel must be obtained prior to the artists obtaining selected materials. The group will also visit the Ross Island historic huts, including the Discovery Hut, Scott's hut at Cape Evans, and the Nimrod Hut at Cape Royds (only if accessible over sea ice). They will take photographs and sketches of the huts' interiors and the surrounding landscape. The group will use office space in Crary Laboratory, where they will create some artworks, review photos and film, and work on their online journal/blog.

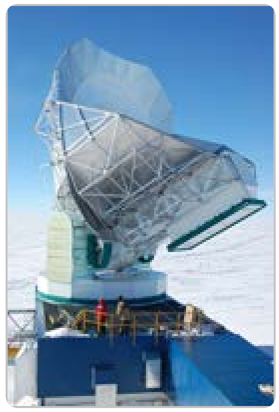
Deploying Team Members

- Kirsten Carlson (PI)
- Michelle Schwengel-Regala

Project Title

Cosmological Research With The 10-Meter South Pole Telescope

Summary



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

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Neal Scheibe / Paul Sullivan / Leah Street

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 Laboratory

Description

The South Pole Telescope (SPT) aids 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 second key project started in 2012 with the installation of an ultra-sensitive polarization receiver. Through measurements of the polarization, researchers can determine the sum of the masses of the neutrinos and either detect or set stringent upper limits on the energy scale of inflation.

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). There will be continued use of the MAPO machine shop as an overall station resource, staffed by A-379-S personnel.

Deploying Team Members

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Adam Anderson
- Jessica Avva
- Amy Bender
- Bradford Benson
- John Carlstrom (PI)
- Faustin Carter
- Thomas Crawford
- Tijmen de Haan
- Daniel Dutcher
- Allen Foster
- William Holzapfel (Co-PI)
- Nicholas Huang

Junhan Kim
- Milo Korman
- Donna Kubik
- Daniel Marrone
- Joshua Montgomery
- Andrew Nadolski
- Zhaodi Pan
- David Pernic
- Alexandra Rahlin
- Joshua Sobrin
- Nathan Whitehorn
- Matthew Young

Project Title

IRIS/PASSCAL Seismic Support

Summary

Event Number:
T-299-M/S

Program Manager:
Dr. Michael Jackson

ASC POC/Implementer:
Judy Shiple / 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 supports 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

The IRIS/PASSCAL team will provide support to the following groups during the 2017-18 season: G-079-M (Wilson), G-089-M (Wiens), any T-299 managed sites on Mount Erebus, and any as-yet-unplanned support, as feasible. Team members will also install and service test stations at the South Pole Remote Earth Science and Seismological Observatory (SPRESSO) and on the road to Castle Rock at the Castle Rock test area, and possibly 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 locations.

Deploying Team Members

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- Paul Carpenter (PI)
- Dean Childs
- Philip Chung
- Narendra Naidu Lingutla
- Kevin Nikolaus

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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

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Neal Scheibe / 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: On station

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 2017) include: (1) Neutral Fe layers and gravity waves well into the thermosphere, up to 180 km; (2) Elevated thermospheric temperatures between 110 and 150 kilometers, likely associated with aurora-enhanced 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) Persistent, dominant, and large-amplitude inertial gravity waves all-year-round with cross-Antarctic-continent features; (6) Super-exponential growth of temperature tidal amplitude in the lower thermosphere above 110 kilometers; (7) Dramatic density variations (about 40 times) of Fe layers over a time scale of multiple days (7-20 days); 8) Planetary waves with periods of 1?5 days in the stratosphere, mesosphere and lower thermosphere; 9) Seasonal variations of gravity wave period, vertical wavelength, and potential energy density in the stratosphere; and 10) A thermosphere-ionosphere Fe/Fe+ (TIFe) model has been established for exploring the TIFe layers. In particular, the thermospheric observations of Fe layers and neutral temperatures up to 180 km have opened a new door to observing the neutral polar thermosphere with ground?based instruments.

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Field Season Overview

This is the fitth season in the renewal period and the overall eighth season for the Fe Boltzmann LiDAR campaign at Arrival Heights. Team members will continue to operate and maintain the Fe Boltzmann LiDAR year around. Each summer season, the project team will participate in the LiDAR operation to help achieve multiple days of continuous LiDAR observations. A new STAR Na Doppler LiDAR for project A-123-M will be deployed in November 2017. For that reason, one of the major goals of A-130-M this season is to acquire simultaneous Fe LiDAR and Na LiDAR data as much as possible for the science goals proposed for both projects. Two team scientists will overwinter in the year of 2018 to operate and maintain the two LiDAR systems. The team will travel daily between McMurdo and Arrival Heights. Activities this season include: (1) Continuing data collection; (2) Refurbishing, maintaining and upgrading the LiDAR system to its optimum status; (3) Upgrading the LiDAR computer, data acquisition system, and wavelength control programs; (4) Training several new LiDAR operators.

Deploying Team Members

- Dongming Chang
- Clare Miller
- Zhangjun Wang
- Yufei Zhu

2017-2018 USAP Field Season
Project Detail

Project Title

Simultaneous Na Doppler And Fe Boltzmann LiDAR Observations And Modeling Of The Middle And Upper Atmosphere At McMurdo, Antarctica

Summary

Event Number:
A-123-M
NSF/OPP Award 1443726

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Neal Scheibe / Richard Dean / Chad Naughton

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/

Location

Supporting Stations: McMurdo Station
Research Locations: Arrival Heights

Description

Researchers on this project will deploy a narrowband, three-frequency Na (Sodium) Doppler LiDAR to McMurdo Station that is capable of measuring both winds and temperatures vertically. This LiDAR will make high-resolution observations of the middle and upper atmosphere and simultaneous observations with the co-located Fe Boltzmann LiDAR, which has been hosted by Antarctica New Zealand (ANZ) in their Arrival Heights building since late 2010. The Na Doppler observations will provide critical data to address key science challenges associated with the space-atmosphere interaction region.

Field Season Overview

A new STAR Na Doppler LiDAR (A-123-M) will be installed in the Antarctic New Zealand Arrival Heights building, Laboratory C, adjacent to the existing Fe Boltzmann LiDAR (A-130-M). Team members will work on both projects for installation, refurbishment, data collection, maintenance, and training. The two LiDAR will run simultaneously and will require two over-wintering scientists, one from each LiDAR team, to support science requirements.

Deploying Team Members

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

More Information

Additional information pertaining to the 2017-2018 Field Season.

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- Staffed Field Camps
- Event Numbering System

- Xinzhao Chu (PI)
- Jian Zhao
- Runnan Lou

2017-2018 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-S
NSF/OPP Award 1543364

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Neal Scheibe / Jennifer Blum / Paul Sullivan

Principal Investigator

Dr. Robert Clauer
rclauer@vt.edu

Virginia Tech
Hampton, Virginia

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

Location

Supporting Stations: 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

One team member will fly by LC-130 aircraft to South Pole Station and will then make a day trip by Twin Otter aircraft to the site of a malfunctioning Autonomous Adaptive Low-Power Instrument Platform (AAL-PIP) that was previously installed along the 40 degree magnetic meridian (site PG4). While there, they will swap the malfunctioning box with a tested replacement.

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

More Information

Additional information pertaining to the 2017-2018 Field Season.

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- Staffed Field Camps
- Event Numbering System

2017-2018 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/OPP Award 1341545

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Neal Scheibe / Elizabeth Kauffman / Paul Sullivan

Principal Investigator

Dr. Mark Conde
mgconde@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 operates and maintains all-sky imaging Fabry-Perot Spectrometers 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

This season, two team members will perform minor repairs and upgrades to the two Fabry-Perot instruments located at McMurdo and South Pole. Work will include routine mechanical maintenance, optical alignment, and data archiving. They will spend approximately one week working at each station.

Deploying Team Members

- Kylee Branning
- John Elliott

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

More Information

Additional information pertaining to the 2017-2018 Field Season.

- Home Page
- Station Schedules
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- Event Numbering System

2017-2018 USAP Field Season
Project Detail

Project Title

Collaborative Research: Foraging Ecology And Physiology Of The Leopard Seal

Summary

Event Number:
B-232-L
NSF/OPP Award 1644256

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Cara Ferrier

Principal Investigator

Dr. Daniel Costa
costa@ucsc.edu

University of California Santa Cruz
Dept of Ecology & Evolutionary Bio
Santa Cruz, California

Project Web Site:
http://costa.eeb.ucsc.edu/research/field-season-blogs/

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Cape Sherriff

Description

The Antarctic Peninsula is one of the most rapidly changing habitats in the world. Although marine mammals have evolved diverse life history patterns and physiologies to accommodate to environmental fluctuations, their ability to cope with rapidly changing habitats in the Antarctic Peninsula is not well understood. The science team will investigate the ability of the leopard seal, an apex predator, to cope with a changing environment using two complementary research themes that integrates cells to ecosystems. First, the science team will examine the foraging behavior, diet, and habitat utilization of leopard seals. They will investigate the foraging behavior of individual animals using satellite telemetry and conduct dietary analyses to determine if animals are specialists or generalists. The science team will determine if there are relationships between foraging behaviors and oceanographic features. Together these data will allow them to develop habitat models to assess and describe core foraging areas and habitat use for these animals. Second, the science team will investigate the physiological adaptations of these apex predators by establishing baseline physiological profiles for individual seals. They will examine whether the hybrid locomotion used by leopard seals (both forelimb and hindlimb propulsion) relates to their foraging behaviors and physiological capabilities. This project is a joint, interdisciplinary collaboration between a senior investigator experienced in Antarctic science (D. Costa) and three mid-career researchers with some Antarctic experience (S. Trumble, D. Crocker, and S. Kanatous).

Field Season Overview

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

More Information

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The team will dart up to 11 Leopard seals per season on land using a Tele-inject air gun darting system. The darts will contain an anesthetic. Once the anesthetic has taken effect and the seal is secured by a net, additional anesthesia will be administered by isoflurane gas. This will allow collection of physiological and foraging samples and instrument attachment using quick setting marine epoxy. While sedated, animals will be flipper tagged, sexed, measured and body condition estimated using morphometrics. Analysis on tissue and blood samples will be conducted later at the scientist’s home institutions. Tag recovery will be attempted every season.

Deploying Team Members

- Daniel Costa (PI)
- Michael Goebel
- Shane Kanatous (Co-PI)
- Sarah Kienle
- Steve Trumble (Co-PI)

2017-2018 USAP Field Season
Project Detail

Project Title

NOAA's Global Drifter Program (GDP)

Summary

Event Number:
X-592-L/N
NSF/NOAA Agreement

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Rachel Shackelford / Bruce Felix

Principal Investigator

Dr. Shaun R Dolk
shaun.dolk@noaa.gov

National Oceanic and Atmospheric Administration
Miami, Florida

Project Web Site:
http://www.aoml.noaa.gov/phod/dac/index.php

Location

Supporting Stations: ARSV Laurence M. Gould, RV/IB Nathaniel B. Palmer
Research Locations:

Description

The Global Drifter Program (GDP) is the principle component of the Global Surface Drifting Buoy Array, a branch of NOAA's Global Ocean Observing System (GOOS) and a scientific project of the Data Buoy Cooperation Panel (DBCP). Its objectives are to (1) Maintain a global 5x5 degree array of 1,250 ARGOS-tracked surface drifting buoys to meet the need for an accurate and globally dense set of in-situ observations of mixed layer currents, sea surface temperature, atmospheric pressure, winds and salinity, and (2) Provide a data processing system for scientific use of these data. These data support short-term (seasonal to interannual) climate predictions as well as climate research and monitoring.

Field Season Overview

Laurence M. Gould The project PI ships all NOAA Sound Velocity Profiling (SVP) drifters directly to Punta Arenas. The drifters will be stored in the USAP warehouse in Punta Arenas and onloaded to the vessel as required.

After each deployment staff technicians will send an email to the PI indicating the buoy identification number, date and location (latitude/longitude) where it was dropped. This consists of a scanned copy of the log sheet with deployment notes supplied for the technicians by NOAA with each drifter buoy.

For all LMG cruises, one drifter will be deployed by staff technicians during each crossing of the Drake Passage (two per cruise, one southbound and one northbound). For optimal spacing, deployments will be staggered between the southbound and northbound voyages. For example, on the southbound leg a drifter will be deployed at 59?degrees south latitude; on the northbound leg a drifter will be deployed at 60 degrees south latitude. Cruises for deployment in 2017-18:

LMG17-09 LMG17-10 LMG17-11 LMG17-12 LMG18-01 LMG18-02 LMG18-03 LMG18-04 LMG18-05 LMG18-06 LMG18-07

Nathaniel B. Palmer The PI ships all NOAA Sound Velocity Profiling (SVP) drifters directly to Punta Arenas or the port of operation for the NBP. The drifters will be stored in the USAP warehouse in Punta Arenas and onloaded to the vessel for NBP18-01 and shipped directly to Hobart for onload on NBP18-02.

After each deployment staff technicians will send an email to the PI indicating the buoy identification number, date and location (latitude/longitude) where it was dropped. This consists of a scanned copy of the log sheet with deployment notes supplied for the technicians by NOAA with each drifter buoy.

The following cruises and number of deployments are as follows: NBP18-01A: 15-20 drifters, (ex: one deployed every 5 degrees of longitude (90W, 95W, 100W) or once per day)

NBP18-02: 15-20 drifters,

NBP18-06 (CRUISE PENDING)

Project Title

McMurdo LTER – Meteorology/Lakes: Ecosystem Response To Amplified Landscape Connectivity In The McMurdo Dry Valleys, Antarctica

Summary

Event Number:
C-511-M
NSF/OPP Award 1637708

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Jenny Cunningham / Elizabeth Kauffman / Jennifer Blum

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: McMurdo 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 on this project will focus on the physical limnology of the McMurdo Dry Valleys' lakes. They will maintain long-term automated lake-monitoring equipment, monitor meteorological stations, and carry out manual measurements of lake properties. This six-year award cycle comprises seven collaborative projects: C-504-M (Gooseff), C-505-M (Priscu), C-506-M (Gooseff), C-507-M (Adams), C-508-M (Takacs-Vesbach), C-509-M (Gooseff), and C-511-M (Doran).

Field Season Overview

Five participants will deploy between 15 October and 30 January in two periods; first from mid-October to mid-December, and next from late December to late January. One participant (Doran) will double-deploy to be present in both periods. The team will work out of camps Fryxell, Bonney, and Hoare, with a stay at Lake Miers, and they will also make some day trips to Wright and Victoria Valleys. The team will conduct diving operations in Lake Fryxell in January, focusing on the moats and under the lake ice near the moats.

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

More Information

Additional information pertaining to the 2017-2018 Field Season.

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Field sites will be accessed on foot and by helicopter day trips. The group will use Dry Valleys laboratory facilities, and laboratory space at Crary Laboratory.

Deploying Team Members

- Max Berkelhammer
- Peter Doran (PI)
- Krista Myers (Team Leader)
- Madeline Myers

2017-2018 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/OPP Award 1440435

Program Manager:
Dr. Jennifer Burns

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

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: 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 Antarctica 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. The core, long-term data associated with the 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

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

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Team members will deploy on the annual LTER cruise on the ARSV Laurence M. Gould from early January to early February. The cruise will consist of eight days of transit time to and from Punta Arenas, Chile; three days of cargo/science operations at Palmer Station; one day NOAA/NSF personnel transfer; and thirty days of LTER science operations. There will also be a one day annual visit to the UK station, Rothera. While at sea, the team will conduct repeated sampling with the conductivity temperature depth (CTD) rosette and nets at historical LTER grid stations; and recovery and redeployment of one or two moored sediment traps at LTER-specified sites.

At Palmer Station, two participants will deploy water column profiling and sampling instruments at LTER Stations B and E, using both rigid-hulled inflatable boats (RHIBs) and Zodiacs. Their sampling will be in cooperation with the C-019-P/Schofield group using a shared vessel, twice per week. They will incubate their seawater samples in the Environmental Room, and will also conduct work in Lab 3 and in the Radioisotope Laboratory.

Deploying Team Members

- Hugh Ducklow (PI)
- Naomi Shelton
- Rebecca Trinh

2017-2018 USAP Field Season
Project Detail

Project Title

Palmer LTER Site Review

Summary

Event Number:
T-904-L/P
NSF/OPP Award 1440435

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Samina Ouda / Adam Jenkins

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: LTER Grid Station / On station

Description

The Palmer Long-Term Ecological Research (PAL LTER) mid-term site review brings together PAL LTER scientists, students and field assistants, NSF program directors, and outside peer reviewers to conduct an intensive, two-or-three-day study of the ongoing progress the project has achieved in its current award period. This assessment is used to help fine-tune plans for the remaining three years and to anticipate the renewal proposal schedule for 2020. The site review includes scientific presentations and group discussions over three days after the ARSV Laurence M. Gould (LMG) arrives at Palmer Station. Site review teams will meet field teams, tour labs and other station facilities, take part in whale observations and field trips to local water-column sampling sites, and visit penguin and giant petrel colonies. They will also make a day trip to a nearby LTER grid station aboard the LMG to view demonstrations of routine grid station operations (CTD/rosette casts and zooplankton net hauls).

Field Season Overview

Participants will sail on cruise LMG17-12 aboard the ARSV Laurence M. Gould (LMG) from Punta Arenas, Chile to Palmer Station. They will stay on station for three days during which they will make a half-day trip on the LMG to a nearby LTER Grid Station to observe routine LTER vessel operations. These demonstrations will include conductivity temperature depth (CTD) rosette casts, zooplankton net tows and possibly whale observations. On station, the site review team will participate in scientific presentations, group discussions, and, with

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

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Marine Technician support, they will conduct field trips on a variety of small boats to select LTER sampling stations. At the end of their stay, they will return to Punta Arenas on the LMG.

Deploying Team Members

- Scott Doney (Co-PI)
- Hugh Ducklow (PI)
- Bill Fraser (Co-PI)
- Ari Friedlaender (Co-PI)
- Oscar Schofield (Co-PI)
- Sharon Stammerjohn (Co-PI)
- Deborah Steinberg (Co-PI)

Project Title

Element Composition Of High-Energy Solar Particles

Summary

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

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Neal Scheibe / 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 the 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

A two-person science team will inspect the equipment and perform routine maintenance and/or simple upgrades (new computers, new firmware, etc.). They will use work benches, tools, and equipment in the B2 science lab. Research Associate support will be provided for routine monitoring and maintenance of equipment if required for up to two hours per

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

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week.

Deploying Team Members

- Surujhdeo Seunarine (Co-PI)
- Grace Zeit

2017-2018 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:
Samina Ouda / Scott Battaion / Chad Naughton

Principal Investigator

Mr. Hugo Franco
Hugo.Franco@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 one stratospheric balloon 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. Because of the Antarctic wind pattern that starts in early December, the balloons will circumnavigate Antarctica between 70° and 80° south latitude. 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.

Field Season Overview

Field team members will facilitate the preparation, launch, and recovery of NASA-sponsored high-altitude balloons and science payloads. The team will be housed at McMurdo Station and will commute daily to the Long Duration Balloon (LDB) 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

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

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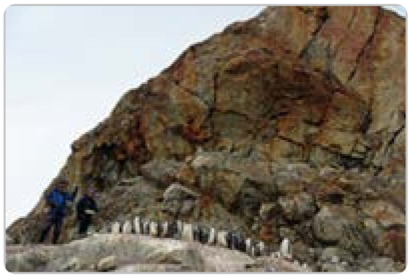
- Alexander Beange
- Paul Brasfield
- Garrison Breeding
- Christine Catrib-Garnier
- Dewell Cooper
- Juan De Luna
- Larry Fox
- Curtis Frazier
- Gabriel Garde
- Gerald Gregg
- Scott Hadley
- David Helfrich
- Randall Henderson
- Derek Hogg
- Joseph Jones
- Leroy Manigo
- Otto Masters
- Randall McDonald
- Zbigniew Moore
- Juan Perez Lara
- Jacob Richard
- Mitchell Richard
- Christopher Schwantes
- Delbert Spangler
- David Sullivan (Co-PI)
- Cesar Villasana
- David Webb
- Corey Weber
- Daniel Willette
- Curtis Wooten

2017-2018 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/OPP Award 1440435

Program Manager:
Dr. Jennifer Burns

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

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: Islands near 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 24-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 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

Team members will deploy on the annual LTER cruise on the ARSV Laurence M. Gould

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

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from early January to early February. The cruise will consist of eight days of transit time to and from Punta Arenas, Chile; three days of cargo/science operations at Palmer Station; one day NOAA/NSF personnel transfer; and thirty days of LTER science operations. One component of C-013 will consist of two team members sailing on the ARSV Laurence M. Gould from late December to early February. A five-day field camp on Avian Island and day trip to Charcot Island are planned.

The second component of the project will be based at Palmer Station from late October to early April. Over the course of the season, six total team members will live at Palmer Station while conducting their research, with only four on station at any one time. The team will use small boats to access local islands in the Palmer vicinity and will make some day trips to bird colonies in the extended boating area including Dream Island, Biscoe Point, the Joubin Islands, Cape Monaco, the Wauwermans Islands and the Rosenthal Islands.

Deploying Team Members

- Benjamin Cook
- Shawn Farry
- Donna Fraser
- William Fraser (PI)
- Carrie McAtee
- Darren Roberts
- Megan Roberts

2017-2018 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/OPP Award 1440435

Program Manager:
Dr. Jennifer Burns

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

Principal Investigator

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

University of California Santa Cruz
Institute of Marine Sciences
Santa Cruz, California

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

Location

Supporting Stations: ARSV Laurence M. Gould, Palmer Station
Research Locations: Palmer Station small-boat operations area

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. This includes identifying the mechanisms of ecosystem response to rapid climate change. One particularly important objective is to continue the 24-year-long LTER time series on the regional scale grid of hydrographic stations west of the Antarctic Peninsula. Researchers on this project 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

Team members will deploy on the annual LTER cruise on the ARSV Laurence M. Gould from early January to early February. The cruise will consist of eight days of transit time to and from Punta Arenas, Chile; three days of cargo/science operations at Palmer Station; one day NOAA/NSF personnel transfer; and thirty days of LTER science operations. There

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will also be a one day annual visit to the UK station, Rothera. Small boats will be used to deploy suction cup/satellite tags on baleen whales and to deploy an Unmanned Aerial System (UAS) for collecting whale measurements and condition.

Two project participants will be based at Palmer Station from early January through early April and will use a dedicated small boat for visual surveys of marine mammals, quantitative prey mapping, biopsy sampling, and possible suction cup tag deployment and recovery. When a second small boat is able to accompany the team, these studies will take place in the extended boating area around Palmer Station.

Deploying Team Members

- Julian Dale
- James Fahlbusch
- Rushworth Kelvin
- Greg Larsen
- Ross Nichols
- Douglas Nowacek (Co-PI)
- Logan Pallin

2017-2018 USAP Field Season
Project Detail

Project Title

The PMC-Turbo Balloon Mission To Study Gravity Waves And Turbulence Through High-Resolution Imaging Of Polar Mesospheric Clouds

Summary

Event Number:
A-382-M
NSF/NASA Agreement

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Scott Battaion / Chad Naughton

Principal Investigator

Dr. David Fritts
dave@gats-inc.com

Geosciences
Boulder, Colorado

Project Web Site:
http://www.gats-inc.com/

Location

Supporting Stations: McMurdo Station
Research Locations: Williams Field

Description

The primary PMC-Turbo instruments will consist of seven imaging systems. The goal of the project is to test the camera system design and software and to collect an independent data set to test the science team's analysis methods. Of the seven imaging systems, only one or two cameras will be added as an additional study on the A-142-M (Binns/SuperTIGER 2) Long Duration Balloon (LDB) mission.

Field Season Overview

The instruments will be attached to the SuperTIGER 2 payload gondola frame. No team members will deploy to Antarctica.

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Project Title

Cape Shirreff

Summary

Event Number:
X-591-E
NSF-PLR/NOAA-AMLR Agreement

Program Manager:
Mr. Tim McGovern

ASC POC/Implementer:
Matthew Erickson / Cara Ferrier

Principal Investigator

Dr. Michael Edward Goebel
mike.goebel@noaa.gov

National Oceanic and Atmospheric Administration
NMFS, Southwest Fisheries Science Center
La Jolla, California

Project Web Site:
http://swfsc.noaa.gov/aerd/

Location

Supporting Stations: Special Project
Research Locations: Livingston Island

Description

Cape Shirreff is located on Livingston Island, in Antarctic Specially Protected Area (ASPA) Number 149. The facility at this site, also referred to as Cape Shirreff, is operated by the National Oceanic and Atmospheric Administration (NOAA), specifically under the Antarctic Marine Living Resource (AMLR) program of NOAA's Southwest Fisheries Science Center (SWFC). Cape Shirreff currently supports a NOAA-funded project conducting marine-mammal research. The Cape Shirreff facility was built in the 1996-97 austral summer at NSF direction by Antarctic Support Associates, the NSF Antarctic contractor at that time. Since then it has been NOAA occupied with USAP support limited to personnel transport and camp openings and closings.

Field Season Overview

Each season the ARSV Laurence M. Gould (LMG) supports the Cape Shirreff camp opening, one mid-season participant turnover and resupply, and the camp closing. The camp is scheduled to open in late October and close around mid-March. The turnover/resupply mission is tentatively scheduled for January. USAP support includes small boat operations from the LMG, ASC ship personnel and science volunteers to help open and close the camp, and cargo transport for camp supplies and waste.

Deploying Team Members

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- Naira de Garcia
- Michael Goebel (PI)
- Douglas Krause (Co-PI)
- Sam Woodman

2017-2018 USAP Field Season
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/OPP Award 1419935

Program Manager:
Dr. Michael Jackson

ASC POC/Implementer:
Judy Shiple / Colleen Hardiman / Matthew Kippenhan

Principal Investigator

Dr. John Goodge
jgoodge@d.umn.edu

University of Minnesota
Department of Geological Sciences
Duluth, Minnesota

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

Location

Supporting Stations: McMurdo Station
Research Locations: Minna Bluff

Description

The Rapid Access Ice Drill (RAID) aims to rapidly drill to deep ice (up to 3,300 meters deep), followed by the coring of ice, ice-sheet bed interface, and bedrock substrate below. The RAID drilling platform will give the scientific community access to a rich record of geologic and climatic change on a variety of timescales, from the billion-year rock record to thousand-year ice and climate histories. The main objective during the 2017-18 austral summer field season is to complete a trial of the drilling system begun last season to validate its operational readiness for science drilling.

Field Season Overview

The second Antarctic Field Trial (AFT2) will operate at a site near Minna Bluff during the 2017-18 austral summer field season. This trial will commence in late 2017 after the RAID equipment is de-winterized, followed by a short traverse of approximately three days. A reconnaissance visit to the area conducted last year determined an ideal site location lying the farthest from subglacial water of the Ross Sea with great ice thickness (approximately 600 meters). Time on site is expected to be approximately four weeks. Crew will create three boreholes in proximity to the main camp site. At the conclusion of the drill trial, the equipment will be returned to the McMurdo area and winterized on snow berms at Williams Field for storage. The team will test and evaluate the ability to tow RAID onto a site, stop,

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position on rig mats, and set up for drilling with minimal effort and disturbance. One participant, Ryan Bay, will test a new optical borehole logger built for RAID. His tool and a logging winch on loan from T-150 (Ice Drilling Design and Operations, IDDO) will be used.

Deploying Team Members

- Ryan Bay
- John Goodge (PI)
- Tanner Kuhl
- Jessica Ng
- Jeffrey Severinghaus (Co-PI)

2017-2018 USAP Field Season
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/OPP Award 1419935

Program Manager:
Dr. Michael Jackson

ASC POC/Implementer:
Judy Shiple / Colleen Hardiman / Matthew Kippenhan

Principal Investigator

Dr. John Goodge
jgoodge@d.umn.edu

University of Minnesota
Department of Geological Sciences
Duluth, Minnesota

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

Location

Supporting Stations: McMurdo Station
Research Locations: Minna Bluff

Description

The Rapid Access Ice Drill (RAID) aims to rapidly drill to deep ice (up to 3,300-meter depth), followed by the coring of ice, ice-sheet bed interface, and bedrock substrate below. The RAID drilling platform will give the scientific community access to a rich record of geologic and climatic change on a variety of timescales, from the billion-year rock record to thousand-year ice and climate histories. The RAID drill was designed and built by DOSECC Exploration Services (DES) under contract to the University of Minnesota Duluth. DOSECC also provides technical personnel for the operational test of the drill system.

Field Season Overview

The second Antarctic Field Trial (AFT2) will operate at a site near Minna Bluff during the 2017-18 austral summer field season. This trial will commence in late 2017 after the RAID equipment is de-winterized, followed by a short traverse of approximately three days. A reconnaissance visit to the area conducted last year determined an ideal site location lying the farthest from subglacial water of the Ross Sea with great ice thickness (approximately 600 meters). Time on site is expected to be approximately four weeks. Crew will create three boreholes in proximity to the main camp site. At the conclusion of the drill trial, the equipment will be returned to the McMurdo area and winterized on snow berms at Williams Field for storage.

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Deploying Team Members

- Brian Shaw (Team Leader)
- Richard Szentmiklosi (Team Leader)
- Anthony Vecchiarelli
- Michael Vinson

2017-2018 USAP Field Season
Project Detail

Project Title

McMurdo LTER – Glaciers: Ecosystem Response To Amplified Landscape Connectivity In The McMurdo Dry Valleys, Antarctica

Summary

Event Number:
C-504-M
NSF/OPP Award 1637708

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Jenny Cunningham / Elizabeth Kauffman / Jennifer Blum

Principal Investigator

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

University of Colorado Boulder
Institute of Arctic and Alpine Research
Boulder, Colorado

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

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo 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. Glacier researchers will continue measurements of physical properties of Dry Valley glaciers and their response to meteorological conditions, 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 (Adams), C-508-M (Takacs-Vesbach), C-509-M (Gooseff), and C-511-M (Doran).

Field Season Overview

Three participants will deploy between 30 October and 15 February. They will primarily work out of Lake Hoare fixed camp, with two returns to McMurdo Station for a few days to process samples. From Lake Hoare, they will make day trips to Commonwealth, Howard, Canada, Sollas, and Taylor Glaciers in Taylor Valley, and to Adams Glacier in Miers Valley. The group will use helicopter support to access field sites and to fly the landscape albedo box. They will also access some field sites on foot (Canada Glacier), and will require a few days of Field Safety Coordinator assistance for working on and around the glaciers in

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November and January. Trips will also be made to active layer monitoring stations at Many Glaciers Pond, F6, Green Creek, east lobe of Lake Bonney, Canada Glacier ‘snout’, and Wormherder Creek.

Deploying Team Members

- Anna Bergstrom
- Michael Gooseff (PI)

2017-2018 USAP Field Season
Project Detail

Project Title

McMurdo LTER – Streams/Geochemistry: Ecosystem Response To Amplified Landscape Connectivity In The McMurdo Dry Valleys, Antarctica

Summary

Event Number:
C-506-M
NSF/OPP Award 1637708

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Jenny Cunningham / Elizabeth Kauffman / Jennifer Blum

Principal Investigator

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

University of Colorado Boulder
Institute of Arctic and Alpine Research
Boulder, Colorado

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

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo 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. Streams component researchers will continue to 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 (Adams), C-508-M (Takacs-Vesbach), C-509-M (Gooseff), and C-511-M (Doran).

Field Season Overview

Three participants will deploy between 1 November and 15 February. The “stream team” will stay at F6 fixed camp and work out of Lake Hoare fixed camp for two days per week. Field work will be conducted in Wright, Taylor, and Miers Valleys. The group will use laboratory facilities at F6 and Lake Hoare camps, and will also conduct analyses in Crary Laboratory. Field sites will be accessed on foot and by helicopter day trips.

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Deploying Team Members

- Joshua Darling
- Joel Singley
- Kathy Welch (Team Leader)

2017-2018 USAP Field Season
Project Detail

Project Title

Management And Operations Of The IceCube Neutrino Observatory 2016-2021

Summary

Event Number:
A-333-S
NSF/OPP Award 1600823

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Neal Scheibe / 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: On station

Description

The IceCube neutrino telescope transforms a cubic kilometer of ice into a Cherenkov detector. Using neutrinos as cosmic messengers, IceCube opens unexplored wavelength bands for astronomy. 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

On-Ice activities this season include improvements to the existing IceCube infrastructure located at The South Pole. The team will conduct most of their work in the IceCube Counting Laboratory (ICL). Planned work includes: (1) Installing scintillators in the northwest quadrant of the IceCube footprint; (2) Using a winch and specialized instrumentation to perform logging in the SPICE hole; (3) Training and transition of winterover staff; (4) Conducting IceCube calibration runs; (5) Making improvements to the 'doghouse' located on the roof of the ICL; (6) Performing IceTop Marker pole maintenance; (7) Replacing internal components to upgrade the existing telescope on the roof of the ICL; (8) Installing a mockup of a possible field deployable IceACT design near the ICL to study snow drifting effects; (9) Replacing USP batteries; and (10) Conducting small, additional IceCube maintenance and operations activities.

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Deploying Team Members

- Lesley Anderson
- Ralf Auer
- Timothy Bendfelt
- Michael DuVernois
- David Glowacki
- Matt Kauer
- John Kelley
- Perry Sandstrom
- Delia Tosa

2017-2018 USAP Field Season
Project Detail

Project Title

MAGIC-DML: Mapping/Measuring/Modeling Antarctic Geomorphology And Ice Change In Dronning Maud Land

Summary

Event Number:
I-346-E

Program Manager:
Dr. Paul Cutler

ASC POC/Implementer:
Samina Ouda / Cara Ferrier

Principal Investigator

Dr. Jonathan M Harbor
jharbor@purdue.edu

Purdue University
West Lafayette, Indiana

Project Web Site:
http://https://www.magicdml.com

Location

Supporting Stations: Special Project
Research Locations: Dronning Maud Land

Description

Reconstructing and predicting the response of the Antarctic Ice Sheet to climate change is a major challenge facing the Earth Science community. Computer models of ice sheet behavior are central to addressing this challenge. In this project we will test and improve ice sheet models by comparing model predictions of past ice extent to the geologic record in Dronning Maud Land, Antarctica. This innovative project will collect key geologic data from mountains called nunataks that extend above current and former ice levels that can be used as "dipsticks" to reconstruct changes in ice elevation that will be used to improve the models. The end result will be both much better knowledge of past three-dimensional changes of the Antarctic Ice Sheet, and improved models that allow for more accurate simulations of potential future changes in the ice sheet.

This research will fill critical gaps in the geologic record of the pattern and timing of vertical changes in the East Antarctic Ice Sheet in western Dronning Maud Land, by focusing on areas that are critical for differentiating between possible models of past ice sheet configuration. Reconstruction of ice-sheet surface changes will involve mapping and cosmogenic nuclide dating of glacially sculpted bedrock, ice-marginal moraines, and erratic boulders at different elevations on nunataks. Patterns of 10Be, 26Al, 14C, and 21Ne concentrations and ratios will enable inferences about the timing and magnitude of changes in maximum ice surface elevations and periods of burial by non-erosive (cold-based) ice. Results will be integrated with data from other areas to provide insight into changes across the entire Antarctic Ice Sheet, and into the role of large ice sheets in climate evolution and global sea level changes. The field-based results will provide constraints against which predictive ice sheet models will be tested and improved,

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contributing to glaciology, climate and Quaternary science. Broader impacts of this study will also advance the development of the next generation of STEM students and polar scientists. While gaining experience in international collaboration, field and laboratory methods, data analysis, and modeling, two graduate students will work with teachers to develop, implement, and disseminate standards-based lesson plans for student activities linking this research to learning objectives for middle school science.

Field Season Overview

The field season is being organized by Swedish Polar Research Secretariat (Håkan Grudd lead, Magnus Augner director). The group will consist of 5 scientists and 4 SPRS staff. Three of the scientists are supported by the NSF grant (Professor Jon Harbor and Graduate students Jenny Newall and Sarah Sams from Purdue University), and the other scientists are Prof Arjen Stroeven, Stockholm University, and Prof. Derek Fabel, Glasgow University.

The work of the team focuses on collecting rock samples from Nunataks along transects in Queen Maud Land. The team will start at the Sanae station, and travel using snowmobiles that have been purchased by Swedish Polar and are being shipped to the field area. At each nunatak that is selected for study, the team will collect rock samples from glacial landforms (moraines and ice-scoured surfaces) along an ice surface to nunatak peak transect. These samples will be used for cosmogenic nuclide exposure age dating that will provide a chronology of ice surface change.

Deploying Team Members

- Jonathan Harbor (PI)
- Jennifer Newall
- Sarah Sams

2017-2018 USAP Field Season
Project Detail

Project Title

Antarctic Search For Meteorites (ANSMET)

Summary

Event Number:
G-058-M

Program Manager:
Dr. Michael Jackson

ASC POC/Implementer:
Samina Ouda / Bija Sass

Principal Investigator

Dr. Ralph Harvey
rph@case.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: Elephant Moraine / Shackleton, Amundsen, and Devil's glaciers / Mounts Cecily, Raymond, Wisting and Prestrud / Cumulus Hills / Nodtvedt Nunatak / Roberts Massif

Description

Since 1976, the Antarctic Search for Meteorites (ANSMET) has found more than 17,000 meteorite specimens. While meteorites do not fall preferentially on Antarctica, they are 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 and reconnaissance in the Elephant Moraine ice fields northwest of McMurdo Station. In addition, a much larger team will conduct a systematic meteorite recovery to target locations in the southern region of the Shackleton Glacier (SHG) camp and two target locations in the northern region of the SHG. They will first conduct an aerial flight survey of target icefields to assess blue ice snow cover and to identify possible landing sites for aircraft. Results from this flight survey will be used to set the itinerary for the four target locations.

Field Season Overview

The field season plan will be completed in two parts. The eight person team, including two mountaineers, will transit to Shackleton Camp (SHG) in early December. Two groups of four will perform meteorite search and recovery efforts at several icefields in relative close proximity to SHG. Team A will work the entire field season at the Mount Cecily/Mount Raymond area. Team B will work for two weeks at the Amundsen Glacier icefields, then two weeks at Nodvedt Nunatak, and another two weeks at Mount Wisting/Mount Prestrud.

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Camp moves will be carried out by Twin Otter. Both teams will leave SHG at the end of January.

Deploying Team Members

- Barbara Cohen
- James Day
- Juliane Gross
- James Karner (Co-PI)
- Lindsay Keller
- Brian Rougeux
- John Schutt (Team Leader)

2017-2018 USAP Field Season
Project Detail

Project Title

Development Of The Askaryan Radio Array Ultra-High Energy Neutrino Detector At The South Pole

Summary

Event Number:
A-107-S
NSF/OPP Award 1404212

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Neal Scheibe / Paul Sullivan / Leah Street

Principal Investigator

Dr. Albrecht Karle
karle@icecube.wisc.edu

University of Wisconsin Madison
Department of Physics
Madison, Wisconsin

Project Web Site:
http://ara.physics.wisc.edu

Location

Supporting Stations: South Pole Station
Research Locations: On station

Description

The Askaryan Radio Array (ARA) is designed to detect and measure high-energy neutrinos from space by observing the radio pulses they generate as they travel through the ice. The research team will probe the nature and cosmic evolution of the accelerators of the highest-energy cosmic rays by observing ultra-high-energy neutrinos produced when cosmic rays interact with the microwave background. At these very high energies, neutrinos can be detected in dense, radio-frequency-transparent media, such as ice, by the Askaryan effect. Its origin is an excess negative charge that builds up when electrons are swept out along a shower front advancing relativistically through the ice. The thickness (estimated to be almost two miles) and exceptional radio-frequency clarity make the south polar ice cap an ideal place to study these ultra-high-energy neutrinos.

Field Season Overview

Team members will deploy three ARA stations, consisting of antenna and calibration strings, in the ice approximately six kilometers grid-west from the IceCube Lab (ICL). A previously installed cable will connect the stations to the IceCube Lab (ICL). Each station consists of six holes drilled to a depth of 200m with a diameter of six inches. The holes will be pumped dry, and antennas will be deployed into the bottom 25m of the holes along with data acquisition (DAQ) instrumentation that will reside at the surface. Each of these stations will require the following activities: drilling, deployment, commissioning and

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calibration. The surface vaults at ARA 1, 2 and 3 must be excavated for cable hookup to new ARA stations 4, 5 and 6. In addition, DAQ surface electronics will be replaced at ARA stations 1 and 3 in the first part of the season.

Deploying Team Members

- Simon Archambault
- Terry Benson
- Brian Clark
- Elizabeth Friedman
- Christopher Gibson
- Albrecht Karle (PI)
- Rishabh Khandelwal
- Uzair Abdul Latif
- Ming-Yuan Lu
- Keiichi Mase
- Thomas Meures
- James Roth

2017-2018 USAP Field Season
Project Detail

Project Title

Dry Valley Seismic Project

Summary

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

Program Manager:
Dr. Douglas Kowalewski

ASC POC/Implementer:
Jenny Cunningham / Elizabeth Kauffman

Principal Investigator

Dr. Robert C Kemerait
robert.kemerait@us.af.mil

United States Air Force
AFTAC
Patrick AFB, Florida

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

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo 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

Four to six personnel will deploy from late October through late November to refuel diesel generators and perform annual equipment maintenance and inspections at the Bull Pass (Wright Valley) seismic and Mt. Newall repeater sites. The team will camp at each site for seven to ten days. Camp put-ins and pull-outs will be by helicopter.

Deploying Team Members

- Brian Fox
- Stephen Hall
- Jeremy Hannah
- Andrew Pouncy
- Justin Sherman
- Richard Westra

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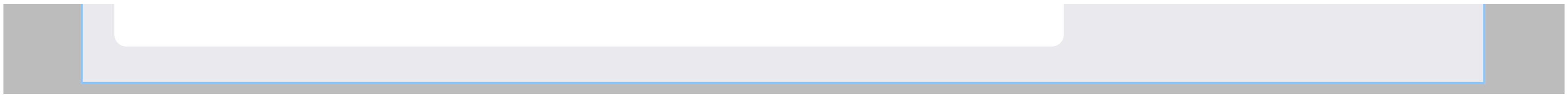

2017-2018 USAP Field Season
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Project Title

Imaging The Beginning Of Time From The South Pole: The Next Stage Of The BICEP Program

Summary

Event Number:
A-149-S
NSF/OPP Award 1638957

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Neal Scheibe / Paul Sullivan / Leah Street

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) / DSL (Dark Sector Laboratory)

Description

This project will continue the Background Imaging of Cosmic Extragalactic Polarization (BICEP)/Keck program of Cosmic Microwave Background (CMB) polarization observations as well as observations with BICEP3, while initiating the phased upgrade of the Keck array to the new BICEP array. This upgrade follows the tradition of improving upon the previous generation's detectors housed in the mounts originally built for the Degree Angular Scale Interferometer (DASI), then subsequently used by the Small Polarimeter Upgrade for DASI (SPUD) and most recently the Keck array.

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

- Denis Barkats
- John Kovac (PI)

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

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- Colin Bischoff
- Hans Boenish
- James Cornelison
- Marion Dierickx
- Grantland Hall
- Mark Halpern
- Sinan Kefeli
- Erik Nichols
- Robert Schwarz
- Michael St Germaine
- Bryan Steinbach
- Justin Willmert
- Eric Yang

2017-2018 USAP Field Season
Project Detail

Project Title

Continuing Operation Of The High Elevation Antarctic Terahertz (HEAT) Telescope At Ridge A, Antarctica

Summary

Event Number:
A-364-M/S
NSF/OPP Award 1410896

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Paul Sullivan / Jennifer Blum

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: 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) telescope observed in the 350 micron (0.8 THz) through 150 micron (2 THz) atmospheric windows, and conducted a Galactic Plane survey of atomic carbon, ionized carbon, and carbon monoxide. 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.This effort has been successfully completed and all hardware will be redeployed during the 2017-18 austral summer season.

Field Season Overview

Four participants and a mountaineer will work in McMurdo for a week before deploying to South Pole Station, where they will remain for one week to acclimatize before traveling to Ridge A by Twin Otter aircraft where they will reside in a tent camp and begin the retrograde operations for their equipment. The retrograde activities will require up to five Twin Otter days to remove all items.

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

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Deploying Team Members

- Craig Kulesa (PI)

2017-2018 USAP Field Season
Project Detail

Project Title

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

Summary

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

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Neal Scheibe / 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, making the South Pole a perfect location for the experiment.

Field Season Overview

One science team member will deploy to the South Pole to perform maintenance and consolidation of experiment-related hardware in the V8 science vault. This work will assure instrument performance for the duration of the grant and will enable the experiment to be easily shipped back to the home institution once the project has finished. An ASC research associate will provide year around support for calibration and data collection.

Deploying Team Members

Project Indexes

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- James LaBelle (PI)

2017-2018 USAP Field Season
Project Detail

Project Title

Antarctic Automatic Weather Station Program

Summary

Event Number:
O-283-M
NSF/OPP Award 1543305

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Samina Ouda / Elizabeth Kauffman

Principal Investigator

Dr. Matthew 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: Near station / WAIS Divide

Description

The Antarctic Automatic Weather Station (AWS) network has been making meteorological observations since the early 1980s. This continent-wide network is positioned to observe significant meteorological events and increase understanding of the Antarctic surface climate. Researchers use the AWS network to observe and learn about the Antarctic in a warming world. Numerous studies of surface climatology in regions around the continent, like the Ross Ice Shelf, have been possible due to the long duration of the AWS project and regular AWS maintenance. Given the duration of the AWS program and maintaining AWS sites for many years, numerous studies have been conducted on the surface climatology of regions of the continent such as the Ross Ice Shelf. This AWS-based climatology also aids in other studies such as winter warming events.

Field Season Overview

Six team members will deploy for the second component of the O-283-M event. They will conduct field work in West Antarctica, the Ross Ice Shelf, and around the local McMurdo Station area. The team will visit and repair AWS stations that develop problems during the Austral winter, and as needed throughout the deployment. Specific location details include: (1) West Antarctic sites, based out of WAIS. Austin, Kathie, Bear Peninsula, Thurston Island, Evans Knoll, and Janet are scheduled for maintenance during the 2017-2018 season; (2) Ross Ice Shelf work, based out of McMurdo Station. The following AWS sites are scheduled for maintenance during the 2017-18 season: Gill, Sabrina, Lettau, and

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Alexander Tall Tower!; (3) Ross Island sites including Willie Field, Windless Bight, and Pegasus North can be visited using ground transportation. Helicopter support will be required to access Lorne, Linda, Marble Point, Minna Bluff, and Cape Bird sites. One McMurdo research associate (RA) provides support year-round.

Deploying Team Members

- John Cassano (Co-PI)
- Carol Costanza
- George Hademenos
- Andrew Kurth
- Matthew Lazzara (PI)
- Marian Mateling
- David Mikolajczyk (Team Leader)

2017-2018 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/OPP 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 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 mid 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

Project Indexes

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- Josiah Gantz

2017-2018 USAP Field Season
Project Detail

Project Title

Operation IceBridge

Summary

Event Number:
C-529-M/S
NASA/NSF Agreement

Program Manager:
Undefined

ASC POC/Implementer:
Judy Shiple / Elizabeth Kauffman / Chad Naughton

Principal Investigator

Dr. Joseph MacGregor
joseph.a.macgregor@nasa.gov

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

Project Web Site:
http://icebridge.gsfc.nasa.gov/

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: On station / Phoenix Runway

Description

Operation IceBridge makes airborne altimetry, radar, and other geophysical measurements to monitor and characterize the cryosphere. IceBridge data will improve knowledge of the contribution of the major Arctic and Antarctic ice sheets and sea ice to sea-level rise. Major goals include: (1) Make airborne altimetry measurements of ice sheets and sea ice to extend and improve the observations begun by the Ice, Cloud, and land Elevation Satellite (ICESat); (2) Link measurements made by historical airborne laser altimeters, ICESat, ICESat-2 and CryoSat-2, to allow accurate comparison and production of a long-term ice-altimetry record; (3) Monitor key, rapidly changing areas of Arctic and Antarctic ice to maintain a long-term observation record; and (4) Provide data to improve understanding of ice dynamics and better constrain predictive models of sea-level rise and sea-ice cover conditions.

Field Season Overview

IceBridge will be deploying approximately 10-12 persons and a skied BT-67 Basler aircraft to McMurdo in the 2017-18 season. The team will fly the aircraft from Williams Field Runway between 19 November and 3 January. The aircraft will be repositioned to South Pole and will aim to fly two missions from 11 to 20 December. Some personnel will fly onboard the project's dedicated Basler while others will require transport via LC-130 to South Pole. General flight length is six hours. If all primary objectives are completed and

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extra time exists, the team will fly to Dumont d'Urville for another one to two science flights.

Deploying Team Members

- Emily Arnold
- Leuschen Carl
- Brian Farley
- Sean Loutitt
- John Woods (PI)

2017-2018 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/OPP Award 1440435

Program Manager:
Dr. Jennifer Burns

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

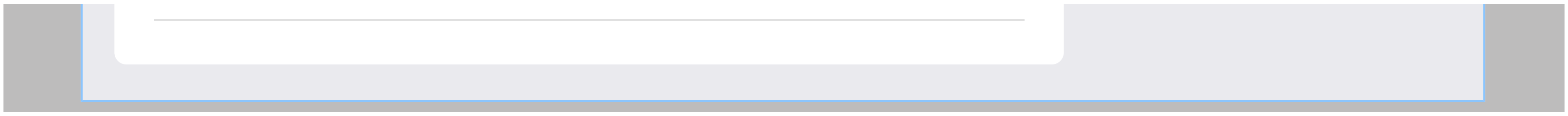
Supporting Stations: ARSV Laurence M. Gould
Research Locations: LTER study site / Palmer Station

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 24-year-long LTER time series on the regional scale grid of hydrographic stations west of the Antarctic Peninsula. Researchers on this project take the responsibility for processing and analyzing hydrographic data. The data are used to describe the hydrography and circulation in the Palmer area in particular, and the Western Antarctic Peninsula region in general, with a focus on developing circulation and coupled physical-biological models. The Antarctic shelf regions are influenced by circumpolar deep waters, and the circulation pattern in the region shows large-scale flows influenced by topography.

Field Season Overview

During the annual LTER cruise aboard the ARSV Laurence M. Gould (LMG) to the LTER research grid west of the Antarctic Peninsula, vessel marine technicians will deploy and recover up to four moorings and will make approximately 70 CTD casts to full depth for this project, and in collaboration with C-019-L (Schofield) and C-045-L (Ducklow).



2017-2018 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:
Mr. Bauke Houtman

ASC POC/Implementer:
Matthew Erickson / Adam Jenkins

Principal Investigator

Mr. Paul Matthias
pmatthias@whoi.edu

Woods Hole Oceanographic Institution
AOP&E
Woods Hole, Massachusetts

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

Location

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

Description

The Ocean Observatories Initiative (OOI) has constructed a networked infrastructure of sensor systems to measure physical, chemical, geological, and biological variables in the ocean and on the seafloor. This season, the OOI team will only service the Coastal & Global Scale Node (CGSN) at global site 55° S, 90° W (Southern Ocean) from the RVIB Nathaniel B. Palmer (NBP). On this cruise, the team will recover and redeploy the array, which consists of several moorings. The platforms carry multidisciplinary instrumentation and provide the capability for real-time communication of data and control of sampling. The surface mooring captures the surface forcing and upper-ocean variability. The profiling mooring measures the entire water column. Additionally, three sub-surface moorings will obtain vertical profiles and sample the mesoscale variability at the site.

Field Season Overview

Participants will sail on the RVIB Nathaniel B. Palmer from Punta Arenas, Chile, on cruise NBP17-09. They will replace the Global Surface Mooring and the Global Hybrid profiling mooring with two wire-following profilers, and two subsurface Mesoscale Flanking Moorings.

Deploying Team Members

Project Indexes

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- Sheri White

2017-2018 USAP Field Season
Project Detail

Project Title

The Polar Geospatial Information Center: Joint Support

Summary

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

Program Manager:
Dr. Alexandra Isern

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 in the Crary Lab and will support other field and logistics groups for general mapping and imagery services as needed.

Deploying Team Members

- Michael Cloutier (Team
- Claire Porter

Leader)

- Cole Kelleher
- Cathleen Torres Parisian

2017-2018 USAP Field Season
Project Detail

Project Title

Portraits Of Place At Palmer Station

Summary

Event Number:
W-468-L
NSF/OPP Award 1644923

Program Manager:
Ms. Valentine Kass

ASC POC/Implementer:
Matthew Erickson / Elaine Hood

Principal Investigator

Mr. Shaun Michael O'Boyle
oboylephoto@gmail.com

Dalton, Massachusetts

Project Web Site:
http://www.popantarctica.wordpress.com

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Palmer Station / Western Antarctic Peninsula / Livingston Island

Description

The artist will sail on the ARSV Laurence M. Gould (LMG) for a round-trip cruise to Palmer Station, Antarctica. He will photograph life and science on board the LMG as well as the vessel's architecture and functional spaces. At Palmer Station, he will photograph station interiors, exteriors, and infrastructure, alone and with the surrounding landscape and seascape. These images can then be used for comparison purposes for the planned infrastructure upgrades to Palmer Station. The artist will also visit and document other field sites, including Cape Shirreff and Old Palmer Station, when accessible by small boat.

Field Season Overview

The artist is scheduled to sail on the LMG17-10 cruise. During the cruise he will photograph the vessel and participants in various locations where and when permission is granted. Areas include but are not limited to open deck, lounge, laboratories and public spaces. Under his own permit, he will participate in one of the first small boat launches in support of the NOAA/AMLR Cape Shirreff camp put-in. During the put-in he will photograph the small boat operations, camp, landscape and participants.

Deploying Team Members

- Shaun O'Boyle (PI)

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Project Title

UNAVCO GPS Survey Support

Summary

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

Program Manager:
Dr. Michael Jackson

ASC POC/Implementer:
Judy Shiple / 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 / Mount Erebus / Arrival Heights

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 on the West Antarctic Ice Sheet (WAIS) Divide and at South Pole Station.

Field Season Overview

T-295 will have 3-7 personnel on the Ice throughout the 2017-2018 field season to provide technical and field engineering support and to manage the UNAVCO equipment pool. Field team members will occasionally travel to field locations as support requirements dictate. Detailed logistical support is arranged directly between UNAVCO and the science project team.

This season, UNAVCO staff are planning to visit the GPS sites on Mount Erebus by

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helicopter from McMurdo, and by helicopter from Lower Erebus Hut, if there is another group staying at the hut and if there is room for two UNAVCO engineers. They also plan to upgrade the local GPS base station in McMurdo to full Global Navigation Satellite System (GNSS) coverage. This site is also a part of the IGS global network, which puts data online in near real time to meet the objectives of a wide range of scientific and engineering applications and studies. With the deployment of new satellites by the US and other global nations, a new antenna needs to be installed, preferably at a location free of obstructions and traffic, but with power, ethernet access and easy access for maintenance. It is possible that the best option will be to leave it in its current location (north of Building 71) or relocate it to Arrival Heights. To install the new antennae if relocation is deemed necessary, the team will drill a hole roughly two meters into the soil/permafrost. They will install a steel pole in the drilled hole and will secure it with water. This will leave about one meter of pipe above ground, to which the GPS antenna will be attached. They will run cable along the ground to the US building through the primary access point on the northwest side of the building. The GNSS receivers only receive and store the satellite signals; they do not broadcast any sort of signal and will not, therefore, interfere with other experiments at Arrival Heights.

Deploying Team Members

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

2017-2018 USAP Field Season
Project Detail

Project Title

Investigating Holocene Shifts In The Diets And Paleohistory Of Antarctic Krill Predators (Argentine Collaboration)

Summary

Event Number:
B-023-E

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Matthew Erickson / Cara Ferrier

Principal Investigator

Dr. Michael 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
Research Locations: Potter Peninsula / King George Island

Description

The focus of this project, current and abandoned penguin colonies, will provide insight to the shifting interface between the ocean, shore, and ice by using radiocarbon dating to determine exactly when colonies were formed and abandoned over hundreds to thousands of years. Researchers will use stable isotope analysis of ancient and modern tissues to compare past penguin diets with those of present-day penguins for evidence of major dietary shifts.

Field Season Overview

The science team will deploy to Antarctica with support from the Argentine Antarctic Program and will be supported from their base, Carlini Station, on King George Island. Their fieldwork will include recovering modern and ancient tissue samples from Antarctic krill predators (penguins, seals, and squid). They will collect these samples from sediment at several different sites. Sediment from each stratigraphic level will be quantified by volume and washed through nested screens. All fine sediment will be transported to the laboratory for additional processing and sorting.

Deploying Team Members

- Steven Emslie (Co-PI)
- Steven Emslie (Co-PI)

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Project Web Sites

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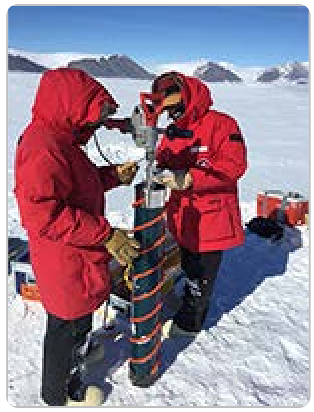
Project Title

Subglacial Antarctic Lakes Scientific Access (SALSA): Integrated Study Of Carbon Cycling In Hydrologically Active Subglacial Environments

Summary



Event Number:
C-533-M
NSF/OPP Award 1543537

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Judy Shiple / Colleen Hardiman

Principal Investigator

Dr. John Priscu
jpriscu@montana.edu

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

Project Web Site:
http://www.salsa-antarctica.org

Location

Supporting Stations: McMurdo Station
Research Locations: Whillans Ice Plain

Description

This project is the surface geophysics component of the Subglacial Antarctic Lakes Scientific Access (SALSA) project, which will drill into Subglacial Lake Mercer during the 2018-19 field season. To prepare for the drilling season, researchers rearranged the existing WISSARD GPS array (eight stations total) last season in line with the SALSA project goals. These continuous GPS (cGPS) stations will monitor subglacial lake activity and related ice-dynamic changes. The science team will service all eight cGPS stations in 2017-18.

Field Season Overview

The SALSA project has an array of eight continuous GPS stations installed on the Whillans Ice Plain. These GPS stations provide observations of subglacial lake activity and coupled ice stream dynamics. For the 2017-18 season, the team will download data from each station and work to ensure continued data collection for the next 12 months (including the physical installation, maintenance of power systems, and operation of related electronics). Two participants will be based at Shackleton Camp (SHG) for one to two weeks to visit each GPS station by Twin Otter aircraft. Transit time between SHG and the study site is approximately 45 minutes. It is estimated that the team will require one to three hours of ground time at each of the eight GPS sites, resulting in a total of four Twin Otter missions.

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Deploying Team Members

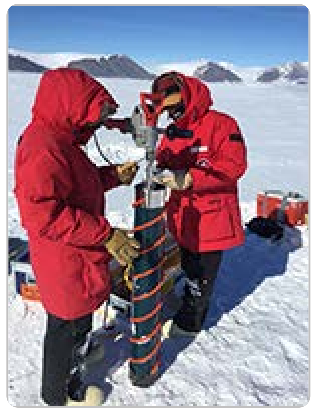
- Susheel Adusumilli
- Matthew Siegfried

2017-2018 USAP Field Season
Project Detail

Project Title

McMurdo LTER – Limnology: Ecosystem Response To Amplified Landscape Connectivity In The McMurdo Dry Valleys, Antarctica

Summary



Event Number:
C-505-M
NSF/OPP Award 1637708

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Jenny Cunningham / Elizabeth Kauffman / Jennifer Blum

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: McMurdo 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 focusing on lakes 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 (Adams), C-508-M (Takacs-Vesbach), C-509-M (Gooseff), and C-511-M (Doran).

Field Season Overview

Six participants will deploy between 20 October and 25 January. The group will rotate twice through Dry Valleys field camps (Fryxell, Miers, Hoare, Bonney) from early November through mid-December, with a final stay at Lake Hoare in early January. A Polarhaven will be set at five locations: Lakes Fryxell, Hoare, Bonney (East and West lobes), and Miers. The team will drill and melt holes in lake ice underneath these structures and in other areas of lakes to access the water. They will use radioisotopes at field sites (in Polarhavens), at the field camps, and in Crary Laboratory. Between field rotations, the team will be based in

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Crary Laboratory.

Deploying Team Members

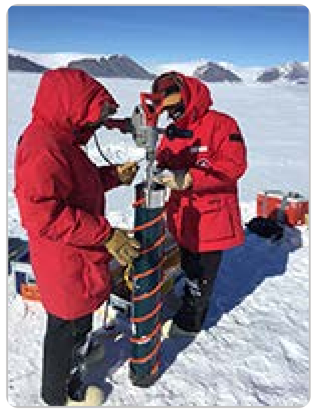
- Heather Buelow
- Amy Chiuchiolo (Team Leader)
- Peter Kibler
- Wei Li
- Madelyne Willis

2017-2018 USAP Field Season
Project Detail

Project Title

Subglacial Antarctic Lakes Scientific Access (SALSA): Integrated Study Of Carbon Cycling In Hydrologically-Active Subglacial Environments: Drilling Component

Summary



Event Number:
C-534-M
NSF/OPP Award 1543537

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Judy Shiple / Meghan Walker / Matthew Kippenhan

Principal Investigator

Dr. John Priscu
jpriscu@montana.edu

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

Project Web Site:
http://salsa-antarctica.org/

Location

Supporting Stations: McMurdo Station
Research Locations: Whillans Ice Plain

Description

The Subglacial Antarctic Lakes Scientific Access (SALSA) project will use a clean access hot water drill to penetrate into Subglacial Lake Mercer (SLM), one of the largest and most dynamic subglacial lakes on the Whillans Ice Plain, in 2018-19. The lake is hydraulically active with water replacement times on the order of a decade. Samples of basal ice, sediments, and lake water will be collected over the course of the drilling season to explain how relict organic matter deposited during marine incursions influences contemporary biodiversity and carbon cycling and to provide new information on past climatic conditions. The 2017-18 field season will focus on four components in preparation for the following year's drilling season: sea-ice testing for the Deep Submersible Capable of Under Ice Navigation and Imaging (Deep SCINI) remotely operated vehicle (ROV), drill and traverse preparation, education and outreach, and sediment laboratory cleaning. The Deep SCINI ROV will be deployed to make visual observations of borehole integrity, obtain time-series measurements of SLM's physical and chemical properties, characterize sediments and basal ice, and obtain high-resolution images of potential higher life forms.

Field Season Overview

Five team members will deploy during the 2017-18 field season. The sediment laboratory will be cleaned to 14C-dating clean specifications, and a sea ice test of the Deep SCINI ROV will be conducted. Time will also be dedicated to education and outreach including

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filming of the drill preparation and the Deep SCINI ROV sea ice test. One of the deploying grantees shall participate for up to 3 weeks filming the traverse from Camp20 to SLM as the traverse field team stages containers at SLM for use during the 2018-19 season.

Deploying Team Members

- Justin Burnett
- William Collins
- John Priscu (PI)
- Ryan Venturelli
- Robert Zook

2017-2018 USAP Field Season
Project Detail

Project Title

The Consequences Of Maternal Effects And Environmental Conditions On Offspring Success In An Antarctic Predator

Summary

Event Number:
B-009-M
NSF/OPP Award 1640481

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Jenny Cunningham / Linnah Neidel

Principal Investigator

Dr. Jay Rotella
rotella@montana.edu

Montana State University Bozeman
Ecology
Bozeman, Montana

Project Web Site:
http://www.montana.edu/weddellseals/index.html

Location

Supporting Stations: McMurdo Station
Research Locations: Big Razorback and White Islands / Cape Evans / Pram Point / Marble Point / Lewis Bay

Description

Researchers will monitor the Erebus Bay Weddell seal population, with a focus on evaluating the importance of sources of variation in pup characteristics to demographic performance. Objectives are to: (1) Record birth dates, body-mass metrics, and time spent in the water for multiple birth cohorts of pups born to known-age mothers; (2) Conduct mark-recapture studies to monitor fates of the pups through the age of first reproduction; and (3) Use mark-recapture analyses to evaluate hypotheses about how variation in birth dates, pup mass, time spent in the water, and environmental conditions relate to variation in early-life survival and recruitment for those pups. The team will conduct population monitoring efforts that will integrate the results of pup success in the context of the long-term population and recruitment dynamics that have been documented over the past decades.

Field Season Overview

Researchers will work out of a field camp at Big Razorback Island and will focus on all pupping colonies and haul outs from Cape Evans to Pram Point, and at White Island, Marble Point, and Lewis Bay. They will visit each colony every other day to find, tag, and weigh newborn pups. Pups will be located two more times during maturation for re-weighing. One hundred fifty pups will be sampled each year. The team will also conduct six

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to eight surveys per season throughout the study area to re-sight tagged individuals, tag unmarked animals, and replace broken or missing tags. Camp put in and reconnaissance flights will be by helicopter; travel between sites will be by snowmobile. Participants will be housed at McMurdo Station for one week before and after their field camp.

Deploying Team Members

- Kaitlin Macdonald
- Jay Rotella (PI)
- Jeremy Schmidt

2017-2018 USAP Field Season
Project Detail

Project Title

RISE-UP: Ross Ice Shelf And Europa Underwater Probe

Summary

Event Number:
B-041-M
NASA 15-PSTAR15_2-004

Program Manager:
Undefined

ASC POC/Implementer:
Samina Ouda / Elizabeth Kauffman / 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/riseup

Location

Supporting Stations: McMurdo Station
Research Locations: Near station sea ice / Ross Ice Shelf

Description

Over the next three field seasons, the Ross Ice Shelf and Europa Underwater Probe (RISE-UP) researchers will seek to improve understanding of the environments below ice shelves and sea ice. The science team will use the purpose-built Georgia Institute of Technology hybrid remotely operated vehicle-autonomous underwater vehicle (ROV-AUV) submersible vehicle 'Icefin' to search in situ for biological communities, map the ice and seafloor, and understand ocean water structure and currents. Through improved constraint of terrestrial ice/ocean cryosphere processes, this project will enhance the science team's understanding of the evolution of other ocean world environments in our solar system (e.g. Europa's ice shell), which are prime targets in NASA's search for life. This project aims to continue chasing the limits of life on Earth while developing techniques for future exploration of other planets or moons.

Field Season Overview

Participants will reside on station for six weeks before, and for one week after, their deployment to the field. After field staging and testing the vehicle in the sea ice near station, the team will be transported by Twin Otter or Basler aircraft to the NZARI RIS field camp on the Ross Ice Shelf. Once there, they will deploy Icefin through boreholes created by the NZARI RIS team.

Deploying Team Members

- Justin Lawrence
- Joshua Lutz
- Matthew Meister
- Britney Schmidt (PI)

2017-2018 USAP Field Season
Project Detail

Project Title

Stochasticity And Cyroconite Community Assembly And Function

Summary

Event Number:
B-320-M
NSF/OPP Award 1443578

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Jenny Cunningham / Jennifer Blum

Principal Investigator

Dr. Steven K Schmidt
steve.schmidt@colorado.edu

University of Colorado Boulder
EPOB
Boulder, Colorado

Project Web Site:
http://cryoholes.wordpress.com

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo Dry Valleys

Description

Cyroconite is a combination of dust and microbial material that can absorb solar radiation and cause localized melting when deposited on glacial surfaces. These melt areas, called cyroconite holes, become hosts to ice-bound microbe communities that feature a complex array of primary producers and consumers. Low temperatures in the McMurdo Dry Valleys cause ice lids to form over the holes and entomb the communities. These so-called lids can persist for decades. The holes melt internally each summer, and during very warm summers the ice lid can melt enough to create an open ecosystem that allows transfer of biological material and potential reorganization of the community. Through field sampling and creation of experimental cyroconite holes, researchers will investigate how the stochastic processes that guide microbial community assembly will affect patterns in biodiversity and ecosystem processes in the McMurdo Dry Valleys.

Field Season Overview

This is the second of three seasons for this Dry Valleys project; they will again be based out of Lake Hoare fixed camp in the Taylor Valley. The field team will consist of six participants including a journalist to facilitate project outreach. Their work will continue on Canada glacier, accessed on foot from Lake Hoare. They will assemble cryoconite holes using the best method determined in season one, and monitor and sample the holes as they develop through the season. While not in the field, the team will work in Crary laboratory processing samples. Helicopter support is required for camp put-ins and pull-

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outs. Field Safety Coordinator support will be provided for a few days at the start of their field season.

Deploying Team Members

- Michael Kodas
- Dorota Porazinska
- Steven Schmidt (PI)
- Pacifica Sommers
- Felix Zamora

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/OPP Award 1440435

Program Manager:
Dr. Jennifer Burns

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

Principal Investigator

Dr. Oscar Schofield
oscar@marine.rutgers.edu

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

Project Web Site:
http://pal.lter.net

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. Researchers on this project 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 them 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.

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Field Season Overview

One component of the C-019 science team will sail on the annual cruise aboard the ARSV Laurence M. Gould (LMG) to the LTER research grid west of the Antarctic Peninsula. The approximately 42-day-long cruise will include eight days of transit time to and from Punta Arenas, Chile; three days of cargo/science operations at Palmer Station; one day NOAA/NSF personnel transfer; and thirty days of LTER science operations.They will also make a one day annual visit to Rothera Station. The team will use a variety of techniques while at sea including net and acoustic tows, conductivity temperature depth (CTD) casts, Slocum gliders, and other profiling sensors.

The other component of the C-019 team will be based at Palmer Station from October through March. The team's main research objectives while at Palmer Station are to: (1) maintain the Palmer phytoplankton time series measurements at LTER stations B and E; (2) launch of several gliders; (3) use the EK-80 sonar on the new Rigid Hull Inflatable Boats (RHIBs) to assess how plankton communities change spatially and temporally; (4) use a new Imaging Flow Cytobot to take pictures of individual phytoplankton cells from water collected on sampling days; and (5) continue to conduct several videoconferences with classrooms and other groups as part of the LTER mandated educational outreach effort.

Deploying Team Members

- Oscar Schofield (PI)
- Nicole Waite

2017-2018 USAP Field Season
Project Detail

Project Title

Formation And Characteristics Of Brine-Rich Water In The Dry Valleys, Antarctica

Summary

Event Number:
G-121-M

Program Manager:
Dr. Douglas Kowalewski

ASC POC/Implementer:
Judy Shiple / Meghan Walker

Principal Investigator

Dr. Ronald Sletten
sletten@uw.edu

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

Project Web Site:
http://depts.washington.edu/icylands/

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo Dry Valleys

Description

The hyperarid, frigid Dry Valleys are a unique cold desert environment and one of the best environmental analogs for Martian soils. Similar to hot deserts, a hallmark of this environment is salt accumulation; however, actual processes controlling the ionic redistribution in soils and waters are poorly constrained. To investigate the formation and characteristics of near-surface liquid water in the Dry Valleys, the team will conduct a combination of field research on shallow groundwater features and theoretical modeling of brine and vapor transport in permafrost soils. The field work component of this science event will investigate the chemical, mineralogical, and isotopic composition of widespread shallow groundwater and soils associated with these features in the Dry Valleys.

Field Season Overview

A six-participant field team will camp for five weeks in the Dry Valleys to collect soil, rock, permafrost, and water samples from water features, including slope streaks. They will camp in the Upper Wright Valley near Don Juan Pond and in the Lower Wright Valley. The team will spend three weeks at the Upper Wright Valley camp location, sampling from the Labyrinth to Lake Vanda. Most of this sampling will be done on foot. A subset of the team will collect samples from the talus slopes coming down from the Dias and Asgard Ranges on both sides of Don Juan Pond. The team will install a camera above Don Juan Pond for the duration of the field effort. These activities will require helicopter support to move participants and sampling equipment up the slope and the assistance of one Field Safety & Training staff member for descent. Team members will make three day trips by helicopter while based in the Upper Wright Valley. The team will then spend two weeks at the Lower Wright Valley camp, collecting samples near the camp site and from Lake Brownsworth to Lake Vanda by foot. Helicopter support will be required in order to access active slope streaks. The team will take up to four helicopter day trips to the Taylor Valley and other potential locations including Victoria Valley, Beacon Valley, and New Harbor.

Deploying Team Members

- Lu Liu
- Douglas Ming
- Ronald Sletten (PI)
- Jonathan Toner

2017-2018 USAP Field Season
Project Detail

Project Title

E-MIST (Exposing Microorganisms In The Stratosphere)

Summary

Event Number:
A-454-M
NSF/NASA Agreement

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Scott Battaion / Chad Naughton

Principal Investigator

Dr. David Joseph Smith
david.j.smith-3@nasa.gov

NASA Ames Research Center
Space Biosciences Research Division
Moffett Field, California

Project Web Site:
http://www.nasa.gov/ames/research/space-biosciences/e-mist-2015

Location

Supporting Stations: McMurdo Station
Research Locations: Williams Field

Description

It is unknown how the extreme cold and dry Martian environment impacts the survival and response of terrestrial microbes. Exposing Microorganisms in the Stratosphere (E-MIST) is a NASA balloon payload built to enable studies of the Earth's stratosphere, which closely resembles the Martian environment. Using this payload, the project will evaluate the survival and response of two bacterial species to Mars-like conditions in the stratosphere over Antarctica, flying as an additional study on the A-142-M (Binns/SuperTIGER 2) Long Duration Balloon (LDB) mission.

Field Season Overview

E-MIST is an autonomous hardware system that mounts to the exterior of scientific balloon gondolas, with four independent sample holders for exposing pre-loaded microbiological samples to the stratosphere which can then be returned to the ground for analysis. The project will fly five dormant microbial strains inserted inside the E-MIST payload in triple containment. The small instrument will be attached to the SuperTIGER 2 payload gondola frame. No team members will deploy to Antarctica.

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

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Project Detail

Project Title

The Drake Passage High-Density XBT Program

Summary

Event Number:
O-260-L
NSF/OPP Award 1542902

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Rachel Shackelford / 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 (XBT) program is to measure the seasonal to interannual variability of upper-ocean temperature and geostrophic transport through the Drake Passage. Closely spaced XBT (temperature) 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

ARSV Laurence M. Gould personnel and passenger volunteers will hand-launch approximately 70 XBTs at predetermined locations on each of six Drake Passage crossings of the LMG. Salinity bottle samples will be collected at various sites. This bottle data will be used to calibrate the underway thermosalinograph (TSG) data. One project participant may visit the vessel every other year while it is in port at Punta Arenas, Chile for system maintenance.

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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/P
NSF/OPP Award 1440435

Program Manager:
Dr. Jennifer Burns

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

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, 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 24-year-long LTER time series on the regional scale grid of hydrographic stations west of the Antarctic Peninsula. Zooplankton and micro-nekton provide 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

Five team members will sail on the January-mid-February cruise aboard the ARSV

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Laurence M. Gould (LMG) to the LTER research grid west of the Antarctic Peninsula. The team will carry out repeated sampling with the CTD Rosette and nets at historical LTER grid stations and other locations when possible. The group aims to do approximately three net tows at each station. They will use the 1 m MOCNESS to sample discrete depth horizons at the process study stations and at a few of the regular grid stations, if possible. They will use an acoustic tow fish at process study stations to detect krill aggregations.

Two team members will be based at Palmer Station from late October to early April and will focus on the comprehensive sampling of the zooplankton community structure and grazing. They will conduct net tows and concurrent acoustic surveys twice per week at LTER Stations B and E as other LTER groups are sampling. Each station will consist of approximately five net tows. The team will require up to two additional weekly trips to Palmer Deep. Participants will collect live animals and water samples for zooplankton feeding experiments. They will incorporate acoustic surveys and net tows with all LTER field teams, focusing on sampling krill swarms in predator foraging areas.

Deploying Team Members

- John Conroy
- Joseph Cope
- Andrew Corso
- Collen Mcbride
- Kharis Schrage
- Patricia Thibodeau
- Leigh West

2017-2018 USAP Field Season
Project Detail

Project Title

Investigating Biogeochemical Fluxes And Linkages To Climate Change With Multi-Scale Observations In The Drake Passage

Summary

Event Number:
O-404-L
NSF/OPP Award 1543457

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Rachel Shackelford / 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 Laurence 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 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 will attend two port calls in August and February to perform system maintenance.

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Project Detail

Project Title

Climate Variability And Predictability (CLIVAR)

Summary

Event Number:
O-287-N
OCE 1407015

Program Manager:
Mr. Eric Itsweire

ASC POC/Implementer:
Matthew Erickson / Adam Jenkins

Principal Investigator

Dr. James Howard Swift
jswift@ucsd.edu

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

Project Web Site:
https://usgoship.ucsd.edu/, http://usgoship-s04p2018.blogspot.com/

Location

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

Description

The program is in support of CLIVAR and the Carbon Science Programs, and is a component of a global observing system for the physical climate/CO2 system. By integrating the scientific needs of the carbon and hydrography/tracer communities, we contribute to the following overlapping scientific objectives: Data for Model Calibration, Validation and Model Based Synthesis; Carbon System Studies; Heat and Freshwater Storage and Flux Studies; Deep and Shallow Water Mass and Ventilation Studies; and Calibration of Autonomous Sensors. A joint study of the ocean carbon cycle and circulation is helping to identify critical areas where potential changes in ocean circulation could have serious consequences for future anthropogenic uptake. Global warming-induced changes in the ocean's transport of heat and freshwater, which could affect the circulation, are being followed through these long-term measurements.

Field Season Overview

This is for the P06 track line. There are two legs for this cruise. This NBP17-06 SIP is to capture leg 1 (Sydney to Papeete). The NBP17-07 SIP will capture leg 2 (Papeete to Valparaiso). [Noted added ?: As far as is known to JHS, there is only one SIP for the two legs. Certainly JHS has worked on only one SIP form.]

The sampling on each cruise consists of boundary-to-boundary sections of full-depth stations at nominal 30 nautical mile spacing in basin interiors (closer at boundaries and

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over bathymetric features) with one deployment per station of a grantee-provided CTDO/rosette system with 36 10-liter bottles and Lowered Acoustic Doppler Current Profiler (LADCP). Additional sensors and instruments may be part of the CTD system, such as transmissometer, fluorometer, and chipod microstructure profiler (P06 and S04P) and UVP video plankton recorder (S04P only). Each station will take about four and a half hours and approximately three hours transit between each station. [Station time estimate includes coming on to station. For stations with bottom depths 4000-1000 meters, one hour in-water time per 1000 meters water depth is a generous allowance. For stations with bottom depths less than 1000 meters, in-water time is typically 45-60 minutes .] The ship's standard underway systems including meteorology, surface seawater T/S/O2/pCO2, centerline depth to bottom, navigation, hull-mounted ADCP, etc. are also required.

On Leg 2 there will be a NASA peristaltic pump and a hose deployed over the side while on station. On Leg 2, when weather, conditions, and the chief scientist permit, there will be a once-daily 30-minute NASA optical cast to ca. 200 meters within 2 hours of local noon..

P06 is the GO-SHIP line across the South Pacific that will depart from Sydney, Australia after a four day port call for mobilization and end in Valparaiso, Chile with a two day port call for demobilization. The cruise will be conducted in two legs with a three day port call between in Papeete, Tahiti. The number of stations for this cruise is nominally 284 but will be adjusted accordingly to fit within the allocated days at sea. Each station will consist of a full-depth CTD rosette cast. The Chief Scientist will work with the MPC and Captain to adjust the station spacing and number to accommodate any setbacks due to weather and high seas. The lead PI has indicated this can be done while still accomplishing the scientific goals of the cruise.

Leg 1 includes two deployments of Pressure Inverted Echo Sounders (PIES). Legs 1 and 2 include deployment of Argo and Argo?SOCCOM floats.

During the port call, the science and ASC teams will turnover personnel. It is currently known that the NASA Ocean Biology/Biogeochemistry team will join for Leg 2. The ship will also be refueled at this time.

The following sampling programs are anticipated for the P06 cruises but are subject to change (sampling programs denoted with an asterisk (*) are not yet confirmed by JHS as of 12DEC2016): • CTDO • Salinity • Oxygen (O2) • Nutrients • CFC/SF6 • Dissolved Inorganic Carbon (DIC) • Total Alkalinity (TAlk) • pH • *Helium (He) [not yet confirmed by JHS as of 12DEC2016] • *Tritium (Tr) [not yet confirmed by JHS as of 12DEC2016] • Shipboard ADCP • Lowered ADCP • Underway (UW) Temperature and Salinity (TS) • UW pCO2 • UW Navigation Bathymetry • UW Meteorological (Met) data • Carbon-14 (C14) • Carbon-13 (C13) • Transmissometer (on CTD) • Fluorometer (on CTD) • chipod microstructure profiler (on CTD frame) • Del 15N of NO3 (Nitrate) • 17O of O2 • High Performance Liquid Chromatography (HPLC) pigments, Leg 2 [Leg 1 not yet confirmed as of 12DEC2016] • Dissolved Organic Carbon (DOC)/ Total Dissolved Nitrogen (TDN) • Optical profilers- NASA program, Leg 2 • Profiling radiometer and above water radiometer – NASA program, Leg 2 • Particulate Organic Carbon (POC) – NASA program, Leg 2 • Colored Dissolved Organic Matter (CDOM) – NASA program, Leg 2 • Dissolved Organic Carbon (DOC)/ Total Dissolved Nitrogen (TDN) – NASA program, Leg 2 • plankton community compositiion (FlowCAM) - NASA program, Leg 2 • Argo Floats • SOCCOM/Argo floats • Pressure Inverted Echo Sounder deployments (2 on Leg 1 only) • *Additional water sampling programs are likely to be added before cruise (collection only)

NOTE: This group has previously worked with the USAP as CLIVAR. The support outlined is comparable to that of previous cruises on NBP14-03 and NBP11-02.

Deploying Team Members

- Susan Becker
- David Cervantes
- James Happell
- Sabine Mecking
- Isabella Rosso
- Lena Schulze
- Kevin Speer

2017-2018 USAP Field Season
Project Detail

Project Title

McMurdo LTER – Integrative Science: Ecosystem Response To Amplified Landscape Connectivity In The McMurdo Dry Valleys, Antarctica

Summary

Event Number:
C-508-M
NSF/OPP Award 1637708

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Jenny Cunningham / Elizabeth Kauffman / Jennifer Blum

Principal Investigator

Dr. Cristina Takacs-Vesbach
cvesbach@gmail.com

University of New Mexico
Albuquerque, New Mexico

Project Web Site:
http://mcmlter.org

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo 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. This event will focus on microbial ecology, activity, and biodiversity across a variety of Dry Valleys' habitats, including soils, streams, and lakes. This six-year award cycle comprises seven collaborative projects: C-504-M (Gooseff), C-505-M (Priscu), C-506-M (Gooseff), C-507-M (Adams), C-508-M (Takacs-Vesbach), C-509-M (Gooseff), and C-511-M (Doran).

Field Season Overview

Five participants will deploy in two groups, with one participant deploying between 5 November and 20 December (Takacs-Vesbach), and four deploying between 30 December and 5 February (led by Morgan-Kiss). The group will stay at Lake Bonney and Lake Fryxell fixed camps, and will access field sites with helicopter day trips and on foot. They will process and analyze some samples in Dry Valleys fixed camp laboratories, and will also perform work in Crary Laboratory.

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

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Deploying Team Members

- Shawn Devlin
- Peter Doran
- Kelli Feeser
- Rachael Morgan-Kiss (Co-PI)
- Cristina Takacs-Vesbach (PI)

2017-2018 USAP Field Season
Project Detail

Project Title

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

Summary

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

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Neal Scheibe / Elizabeth Kauffman / Jamee Johnson / 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, Palmer Station, South Pole Station
Research Locations: Terra Lab / Vernadsky Station

Description

The Antarctic Gravity Wave Imaging Network (ANGWIN) is a cooperative effort of six international Antarctic programs to collect continent-wide gravity wave measurements. This network capitalizes on existing optical and radar measurement capabilities at McMurdo, Palmer, 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. 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. 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.

Field Season Overview

Researchers do not plan to deploy to Palmer Station this season. An ASC research associate will perform routine monitoring and maintenance on the instrument, and will download acquired image data and send it to the home institution for further analysis.

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

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2017-2018 USAP Field Season
Project Detail

Project Title

Joint Antarctic Science Expedition (JASE)

Summary

Event Number:
Y-610-E
NSF/OPP Award 1550503

Program Manager:
Ms. Elizabeth Rom

ASC POC/Implementer:
Matthew Erickson / Curt Labombard

Principal Investigator

Dr. Ross Virginia
ross.a.virginia@dartmouth.edu

Dartmouth College
Environmental Studies Program
Hanover, New Hampshire

Project Web Site:
http://dickey.dartmouth.edu/environment/programs/joint-antarctic-school-expedition

Location

Supporting Stations: Special Project
Research Locations: King George Island

Description

The Joint Antarctic Science Expedition (JASE) program is designed to promote polar science education and cross-cultural exchange, and is run in parallel with the Joint Science Education Project (JSEP), currently led by faculty at Dartmouth College. Dartmouth has a lead role in the JASE program, a collaborative venture of the NSF's Office of Polar Programs (NSF/OPP) and the Chilean National Antarctic Institute (Instituto Antártico Chileno (INACH)). INACH has invited the United States to participate in an expedition to King George Island that will provide high-school students and teachers the opportunity to gain hands-on experience with ecosystems research in Antarctica.

Field Season Overview

Participants will fly from the United States to Punta Arenas, Chile (PA) in mid January 2018. They will be outfitted with Extreme Cold Weather (ECW) gear from the USAP facilities in PA and will then travel to and from King George Island via air support provided by INACH. Flights between PA and the United States, and food and lodging while in PA will be coordinated and paid for by Dartmouth College through this grant. No USAP travel support is required but the group will be tracked as USAP participants.

Deploying Team Members

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Project Web Sites

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- Lauren Culler (Co-PI)
- Maya Nunez
- Michaelle Ramos
- Giovanna Varlotta
- Joshua Villenueva
- Erica Wallstrom

2017-2018 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

Program Manager:
Dr. Douglas Kowalewski

ASC POC/Implementer:
Samina Ouda / Elizabeth Kauffman

Principal Investigator

Dr. Terry Wilson
wilson.43@osu.edu

Ohio State University
Geological Sciences and Byrd Polar and Climate Research Center
Columbus, Ohio

Project Web Site:
http://polenet.org

Location

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

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, 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 sheet contributions to global sea level change.

Field Season Overview

In the 2017-18 season, the POLENET project will work from South Pole Station, Siple Dome, WAIS Divide and McMurdo. The goals of this season are to (1) decommission a series of instruments and (2) provide maintenance, if required, to sites that will remain in

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service beyond the 2017-18 season (subject to continued funding). Continued operation of the instrument network beyond 2017-18 is subject to NSF approval and support. The team will use helicopter and fixed wing transport from McMurdo Station as well as fixed wing support from South Pole, Siple Dome, and WAIS Divide. Team members will decommision seismic and GPS instruments at Mount Paterson and will service instruments at Clark Mountains and Mount Carbone while based at Siple Dome. POLENET participants working out of South Pole Station will decommission seven seismic stations and service two sites. In the Amundsen Embayment and Marie Byrd Land sectors, the team will perform maintenance and retrieve data from nine site locations. McMurdo Station will be the hub for the decommissioning of six instrument systems at four sites using Twin Otter and the decommissioning of three GPS systems at three locations by helicopter. Team members will also make one service visit while based at McMurdo Station. Priority for GPS and seismic site visits is as follows: (1) Pulling out sites that are being decommissioned, (2) Servicing sites that have known problems and/or have not been visited in 3 years; and (3) Visiting sites needing minor maintenance and/or to download seismic data.

Deploying Team Members

- Patrick Shore

Project Title

U-Series Comminution Age Constraints On Taylor Valley Erosion

Summary

Event Number:
G-167-M
NSF/OPP Award 1644171

Program Manager:
Dr. Douglas Kowalewski

ASC POC/Implementer:
Jenny Cunningham / Jennifer Blum

Principal Investigator

Dr. Terrence Blackburn
terryb@ucsc.edu

University of California Santa Cruz
Earth Sciences
Santa Cruz, California

Location

Supporting Stations: McMurdo Station
Research Locations: Taylor Valley

Description

Two competing theories explain the timing of glacial incision in the Taylor Valley, indicating that glacial incision occurred either under the polar conditions of the last few million years, or that incision happened prior to the onset of persistent polar conditions. Researchers seek to establish the timing of silt production and subglacial erosion within the valley and finally clarify the evolution of its present glacial landscape. They will sample Quaternary moraines within the Taylor Valley, as well as the modern basal ice layer of Taylor Glacier and deposits of the Ross Sea Drift at the mouth of the Taylor Valley near McMurdo Sound. They will use U-series comminution dating to place time constraints on the production of fine particles deposited by past glacial advancement, which will shed light on when the topography of the Taylor Valley was generated.

Field Season Overview

Three participants will work out of fixed field camps at Lake Bonney, Lake Hoare, and Lake Fryxell in the Taylor Valley over approximately 18 days during October and November. Co-PI Dr. Slawomir Tulaczyk is deploying under his other project (1644187/C-516-M) but will start with G-167 then transfer to C-516 in November. G-167 will deploy one of their three participants slightly later so that they only have three participants in the field at a time.

The group will sample along transects covering areas that represent various drift deposits, including: (1) Taylor I-II basal ice around the terminus of Taylor and Rhone Glaciers (outside of ASPA 172); (2) higher elevations near West Lake Bonney; (3) South of East Lake Bonney; (4) Ross Sea Drift young; and (5) Ross Sea Drift old. Using shovels, trowels, picks, and hammers, they will dig into drift deposits to access till that is uncontaminated by

Project Indexes

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surface dust. They will remove several kilograms of material from different deposit types and ages along each transect. They will also sample ‘dirty’ basal ice from Taylor and Canada Glaciers.

Sampling areas are located within one to twelve miles of fixed camps, and the group will travel on foot or use helicopter day trips to access their sites. Helicopter support will also be required for camp put-in, two camp moves, and final camp pull-out.

Deploying Team Members

- Terrence Blackburn (PI)
- Neil Foley
- Graham Edwards

Project Title

ANTarctic Airborne ElectroMagnetics (ANTAEM) - Revealing Subsurface Water In Coastal Antarctica

Summary

Event Number:
C-516-M
NSF/OPP Award 1644187

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Judy Shiple / Jennifer Blum

Principal Investigator

Dr. Slawek M Tulaczyk
stulaczy@ucsc.edu

University of California Santa Cruz
Earth Sciences
Santa Cruz, California

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo Dry Valleys

Description

The aim of the ANTarctic Airborne ElectroMagnetics (ANTAEM) science event is to provide the first integrative system-scale overview of subsurface water distribution and hydrological connectivity in a partly ice-free coastal region of Antarctica, the McMurdo Dry Valleys. Liquid water is relatively scarce in this environment but plays an outsized role by influencing and integrating biological, biogeochemical, glaciological, and geological processes. Using ground-based electromagnets (GEM) and ground-penetrating radar (GPR) surveys, ANTAEM will map the resistivity of the Dry Valleys and the McMurdo Ice Shelf to determine hydrological connectivity around coastal margins, depth of permafrost, subglacial hydrogeology, and distribution of subsurface habitats.

Field Season Overview

This is the first of two seasons for this Dry Valleys geophysics team. Four participants will work out of fixed camps at Lake Fryxell, Lake Bonney and Lake Hoare to conduct ground-based electromagnets (GEM) and ground-penetrating radar (GPR) surveys. A fifth participant will coordinate deployment to work with collaborator Peter Doran's LTER group (1637708/C-511) for soil sample collection. There are ten identified work locations that have been prioritized into three groups from highest (P1) to lowest (P3) priorities; locations will be accessed on foot and by helicopter. Helicopter support is also required for camp put-ins, pull-outs, and camp moves. Field Safety Coordinator support will be provided for some locations. PI Slawomir Tulaczyk will deploy slightly earlier to work with Blackburn (1644171/G-167), a project in which he is the co-PI, then will transfer to C-516.

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

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Deploying Team Members

- Thue Bording
- Hilary Dugan (Team Leader)
- Nikolaj Foged
- Slawek Tulaczyk (PI)

2017-2018 USAP Field Season
Project Detail

Project Title

A Children's Novel

Summary

Event Number:
W-480-M
NSF/OPP Award 1645301

Program Manager:
Ms. Valentine Kass

ASC POC/Implementer:
Samina Ouda / Elaine Hood

Principal Investigator

Mr. Gregory Neri
greg@gregneri.com

Tampa, Florida

Location

Supporting Stations: McMurdo Station
Research Locations: Dry Valleys / Sea Ice

Description

Writer Gregory Neri will deploy to McMurdo Station for seven weeks to conduct background research, observations, and interviews for a novel aimed at students, grades 5 through 9. Neri plans to observe and interview scientists who are seeking answers to big questions through the study of Antarctica's tiniest inhabitants, such as foraminifera, that shed light on life's diversity and challenges, opening new windows into Earth's early history and its possible future. The book will capture the sense of wonder and discovery that push scientists to venture into this extreme environment to search for the secrets of life that lie within. Neri will infuse the science of Antarctica with the story of a boy struggling in post-Katrina New Orleans. The boy receives a mysterious package from a black Antarctic scientist who died while diving under the ice. The scientist, who may be the father he never knew, left behind a series of journals, observations, and ideas that empower the boy to pursue his own love of science in a world that does not value his ideals. Neri will create a transformative novel that seeks to inspire and educate underprivileged students who lack meaningful access to impactful knowledge about science and nature.

Field Season Overview

In the 2017-18 season, Gregory Neri will deploy to McMurdo Station to work with a variety of scientists from late October to early December. He will spend time at McMurdo Station and on the sea ice and make day trips or short overnight trips to Cape Royds, Cape Evans and the Dry Valleys where he will record his personal experiences and impressions in photographs and notes, conduct interviews with scientists and station personnel, and observe and assist with field-based research. Neri will also conduct a series of podcasts with diverse Antarctic scientists, host message boards, and post videos, articles, and links on a website. He will obtain approval for any webcast sessions during the SIP submission period.

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Deploying Team Members

- Gregory Neri (PI)

2017-2018 USAP Field Season
Project Detail

Project Title

The Role Of Glacial History On The Structure And Functioning Of Ecological Communities In The Shackleton Glacier Region Of The Transantarctic Mountains

Summary

Event Number:
B-458-M

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Judy Shiple / Leslie Blank

Principal Investigator

Dr. Byron J Adams
bjadams@byu.edu

Brigham Young University
College of Life Sciences
Provo, Utah

Location

Supporting Stations: McMurdo Station
Research Locations: Shackleton Glacier

Description

The goal of this project is to comprehensively characterize the functional, taxonomic, biotic, and abiotic drivers of soil ecosystems in the context of their response to deglaciation since the last glacial maximum (LGM). The researchers hypothesize that there will be patterns of community structure, such as diversity and function, which are independent of local heterogeneity. Researchers anticipate that these patterns will exist across a wide range of environmental variables and spatial scales such as the local, landscape, and regional scales, and that the patterns are correlated with time since the LGM. This correlation would be evident in variables such as the soil age and the sample position with respect to the LGM elevation, which varies by location between approximately 2456 meters above sea level (ASL) near the polar plateau to 1100 meters ASL near the base.

Field Season Overview

Seven project participants, including six scientists and one ASC mountaineer, will reside at Shackleton Camp for approximately two weeks, and will make day trips by helicopter to collect soil samples from nine features in the area. The team will collect samples at two sites on each feature from both above and below the last glacial maximum (LGM) elevation to characterize the drivers of these soil ecosystems in the context of their response to deglaciation. Each sampling area covers approximately 100 square meters.

Deploying Team Members

Project Indexes

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- Byron Adams (PI)
- Marcella Adams
- Noah Fierer (Co-PI)
- Ian Hogg
- William Lyons (Co-PI)
- Diana Wall (Co-PI)

Project Title

Long-Term Sublimation/Preservation Of Two Separate, Buried Glacier Ice Masses, Ong Valley, Southern Transantarctic Mountains

Summary

Event Number:
G-192-M

Program Manager:
Dr. Douglas Kowalewski

ASC POC/Implementer:
Judy Shiple / Leslie Blank

Principal Investigator

Dr. Jaakko Putkonen
jaakko.putkonen@und.edu

University of North Dakota
Department of Geology and Geological Engineering
Grand Forks, North Dakota

Location

Supporting Stations: McMurdo Station
Research Locations: Ong Valley

Description

The science goal of this event is to firmly establish ages of the thinly buried ice deposits in Ong Valley and the rate at which they sublimate. Collected samples will undergo testing for cosmogenic nuclide concentrations, both in the glacial till and in the embedded mineral matter suspended in the ice cores. If the ice deposits turn out to be millions of years old, the science team has the potential to study atmospheric chemistry, life forms, and geology in much older ice than is currently available.

Field Season Overview

During the course of approximately four weeks, a seven-person field team, including one Ice Drilling Design and Operations (IDDO) driller, will work from a satellite camp in the Ong Valley located approximately 200 nm from Shackleton Camp. The team will core through the one meter thick glacial till to collect cores of the ice buried below. They will drill six 10-meter cores including three holes drilled at each of two sites in Ong Valley. The Ice Drilling Program Office (IDPO) and IDDO will provide the drilling equipment and one driller. ASC will provide six drums of Isopar K for drilling operations.

LC-130s will transport the field team, drilling equipment, camp gear, bulk fuel and retrograde samples between McMurdo Station and Shackleton Camp. A Twin Otter will be used to stage the drill and field gear at the Argosy Landing Area near the Ong Valley sites which are only accessible by helicopter. Helicopter support will be utilized to move the gear and people between the Argosy Landing Area and the Ong Valley sites and to reposition the drill at a second site midway through the field season. Ice cores collected at the first drill site will be returned to the Shackleton Camp following the completion of the drill move.

Project Indexes

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Ice cores will be stored in snow caves at the drill sites and at Shackleton Camp. All cores will be moved by one LC-130 cold deck from Shackleton Camp to McMurdo and will be returned to the US on the USAP cargo vessel and then delivered to the home institutions.

Deploying Team Members

- Gregory Balco (Co-PI)
- Grant Boeckmann
- Daniel Morgan (Co-PI)
- Daniel Morgan (Co-PI)
- Jaakko Putkonen (PI)

2017-2018 USAP Field Season
Project Detail

Project Title

East Antarctic Glacial Landscape Evolution (EAGLE): A Study Using Combined Thermochronology, Geochronology And Provenance Analysis

Summary

Event Number:
G-180-M

Program Manager:
Dr. Douglas Kowalewski

ASC POC/Implementer:
Judy Shiple / Leslie Blank

Principal Investigator

Dr. Stuart Nigel Thomson
thomson@email.arizona.edu

University of Arizona
Department of Geosciences
Tucson, Arizona

Location

Supporting Stations: McMurdo Station
Research Locations: Shackleton Glacier Camp / Red Raider Rampart / Barnes Peak / The Cloudmaker

Description

The three main objectives of this project are to understand: (1) The chronology of landscape modification of the subglacial landscape of East Antarctica; (2) The tectonic and climatic forcing behind landscape modification; and (3) How the landscape has influenced past ice sheet inception and dynamics. To achieve these objectives, researchers will use records of source region cooling and erosion history contained in detrital mineral grains. These grains, from offshore sediments, were deposited both before and after the onset of Antarctic glaciation 34 million years ago. The team's onshore work will focus on the debated incision history of the large glacial troughs that cut the Transantarctic Mountains, which are now occupied by glaciers draining the East Antarctic Ice Sheet. The work will include acquiring several age/elevation transects, apatite 4He/3He thermochronometry, and conducting Pecube thermo-kinematic modeling.

Field Season Overview

Four scientists will deploy from McMurdo to Shackleton Camp for approximately two weeks. They will be supported by an ASC Field Safety and Training (FS&T) mountaineer. The five-member field team will reside at Shackleton Camp and will make helicopter day trips to collect rock samples at two locations: Red Raider Rampart and Barnes Peak & Cloudmaker. The team will collect rock samples along one or more vertical transects and at the base moraine at each location. Six or seven days are required in total for the sampling, including three days at Red Raider Rampart and three or four days at Barnes Peak & Cloudmaker. Given its distance from Shackleton Camp (>100 nm), the Barnes Peak & Cloudmaker location requires fuel caching.

Project Indexes

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Project Web Sites

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Two alternate sites, Cumulus Hills and Mount White, have been identified in the event that either of the primary sites is inaccessible.

Deploying Team Members

- Sidney Hemming (Co-PI)
- Kathy Licht (Co-PI)
- Peter Reiners (Co-PI)
- Stuart Thomson (PI)

2017-2018 USAP Field Season
Project Detail

Project Title

Permian And Triassic Icehouse To Greenhouse Paleoenvironments And Paleobotany In The Shackleton Glacier Area, Antarctica

Summary

Event Number:
G-135-M

Program Manager:
Dr. Douglas Kowalewski

ASC POC/Implementer:
Judy Shiple / Leslie Blank

Principal Investigator

Dr. Edith Taylor
etaylor@ku.edu

University of Kansas Lawrence
Department of Ecology and Evolutionary Biology
Lawrence, Kansas

Location

Supporting Stations: McMurdo Station
Research Locations: Shackleton Glacier Camp / Collinson Ridge / Mounts Butters and Weaver / Graphite Peak / Nilsen Plateau

Description

The research focus of this collaborative proposal is to collect fossil plants, fossil wood, stratigraphic, sedimentologic, paleosol, and geochemical data from plants and the rocks that contain them. The goal is to reconstruct the extent of the Gondwana glaciation in the Shackleton Glacier (SHG) area, the invasion and subsequent flourishing of life following glacial retreat, and the eventual recovery of plant life after the Late Permian biotic events. Only in Antarctica does a complete polar-to-near-polar succession occur across this climatic and biologic transition. The SHG area is an important one as it is one of the few regions in the world where the Permian-Triassic Boundary (PTB) is exposed within terrestrial rocks. In addition, outcrops in the SHG area extend from the glacigenic deposits of the Upper Carboniferous-Lower Permian through to the Upper Triassic. These outcrops thus record ecosystems and the plants that inhabited them from the Gondwana icehouse, into the Late Permian-Early Triassic greenhouse, and into presumed "full recovery" of floras from the PTB extinctions in the Late Triassic.

Field Season Overview

Seven participants, including a project mountaineer, will work from three satellite camps at Collinson Ridge, Mt. Butters, and Graphite Peak over the course of six to seven weeks.

The entire team will establish the first camp at Collinson Ridge and conduct helicopter-supported day trips from that location. After approximately one week, two of the team members will separate from the group and establish a second satellite camp at Mt. Butters. Later in the season, five of the team members will establish a third satellite camp at

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Graphite Peak while the other two team members return to Shackleton camp to collect samples from Mt. Weaver and Nilsen Plateau on day trips by Twin Otter aircraft.

Total sample retrograde for the 2017-18 season is estimated to be approximately 8000 lbs. of fossil plants, logs, and rocks. Approximately 6500 lbs. of these samples are anticipated to come from the Collinson Ridge area and on day trips conducted from that site.

Deploying Team Members

- Brian Atkinson
- Erik Gulbranson (Co-PI)
- Carla Harper
- John Isbell (Team Leader)
- Elizabeth Ives
- Rudolph Serbet (Team Leader)
- Daniel Uhlmann

2017-2018 USAP Field Season
Project Detail

Project Title

High-Resolution Reconstruction Of Holocene Deglaciation In The Southern Ross Embayment

Summary

Event Number:
I-186-M

Program Manager:
Dr. Paul Cutler

ASC POC/Implementer:
Judy Shiple / Leslie Blank

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: Duncan Mountains / The Tusk / Mounts Henson and Mason / Cape Irwyn

Description

In previous work, researchers with this project have shown that grounded ice in the Ross Sea receded rapidly from Terra Nova Bay to Beardmore Glacier in the early Holocene. Subsequent retreat to Scott Glacier occurred more gradually, but there is no geological or dating control from this 400-kilometer sector of the Transantarctic Mountains. In this project, researchers will map and date glacial deposits on coastal mountains that constrain the thinning history of Liv and Amundsen glaciers. By dating glacial erratics in elevation transects extending down to the level of floating ice at the mouths of these glaciers, the research team plans to obtain constraints on migration of the grounding line southwards along the Transantarctic Mountains. High-resolution dating will come from Be-10 surface exposure ages as well as from C-14 dates of algae within shorelines from ice-dammed ponds. Sites have been chosen to allow close comparison of these two dating methods, which will constrain Antarctic Be-10 production rates.

Field Season Overview

Four participants will work from three successive tent camps over the course of approximately five weeks, spending one to two weeks at each location. Sampling sites are within walking distance of the three camps in the Duncan Mountains, at The Tusk/Mount Henson, and at Cape Irwyn/Mt. Mason. All camps will be helicopter-supported. The team will also make one helicopter-supported day trip to Mount Roth (84° 34.99980 S, 172° 22.00020 W) from the Mount Mason/Cape Irwyn camp.

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Deploying Team Members

- Joel Gombiner
- Brenda Hall (Co-PI)
- Jillian Pelto
- John Stone (PI)

Project Title

Understanding The Evolution Of High-Latitude Permo-Triassic Paleoenvironments And Their Vertebrate Communities

Summary

Event Number:
G-096-M

Program Manager:
Dr. Douglas Kowalewski

ASC POC/Implementer:
Judy Shiple / Leslie Blank

Principal Investigator

Dr. Christian Alfred Sidor
casidor@u.washington.edu

University of Washington
Department of Biology
Seattle, Washington

Location

Supporting Stations: McMurdo Station
Research Locations: Shackleton Camp and surrounding areas

Description

The stratigraphic sequence of the Shackleton Glacier region preserves a unique record of high-latitude environments and a rich fossil record of Triassic vertebrates. Field team members will conduct fieldwork in the Shackleton Glacier region to examine the evolution of Permo-Triassic Paleoenvironments and their vertebrate communities. They will also collect data on sedimentology, paleosol morphology, paleosol geochemistry, and the composition of fossil plant organic matter. They will use these data to generate inferences about high-latitude paleoclimate. The research team aims to characterize the Permo-Triassic boundary within Shackleton area strata and correlate to other stratigraphic successions in the region. This will help them better understand the establishment of a latitudinal biodiversity gradient as the Antarctic portion of southern Pangea was invaded by tetrapods in the Early Triassic. The team will target several well-known Triassic tetrapod species for in-depth comparison of their life history attributes with their lower-latitude relatives.

Field Season Overview

Ten participants including a PI-provided mountaineer, will utilize helicopter support to collect rocks and fossils in the vicinity of Shackleton Camp and from satellite camp locations over a six to seven week period. Three satellite camps are anticipated, with team members staying at each camp for approximately one to two weeks.

First and second priority sites include Kitching Ridge and Collinson Ridge/Halfmoon Bluff. Third priority sites include Mt. Augustana, Shenk Peak, Mount Kenyon, and Thrinaxodon Col. Fourth and fifth priority sites include Graphite Peak, Ellis Bluff, and Schroeder Hill.

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Sixth and seventh priority sites include Misery Peak, Mount Heekin, and Mount Rosenwald. The lowest priority sites include Bush Mountain, McIntyre Promontory, Mount Weir, and Husky Heights.

Total sample retrograde is 3500 lbs. or less, contained in approximately 80 rock boxes. Samples include rock and fossils. The samples are fragile and will be prepared in McMurdo at the end of the field season for return shipment via the USAP cargo vessel.

Deploying Team Members

- Peter Braddock
- Peter Makovicky (Co-PI)
- Julia McIntosh
- Akiko Shinya
- Christian Sidor (PI)
- Nathan Smith (Co-PI)
- Roger Smith
- Neil Tabor (Co-PI)
- Megan Whitney
- Charles Woolley

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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
Dunbar, Robert	O-131-N	Estimation of Antarctic ice melt using stable isotopic analyses of seawater
Lazzara, Matthew	O-283-M	Antarctic Automatic Weather Station program
Matthias, Paul	O-410-N	Ocean Observatories Initiative (OOI) Southern Hemisphere cruises
Munro, David	O-214-L	Investigating biogeochemical fluxes and linkages to climate change with multi-scale observations in the Drake Passage
Seefeldt, Mark	O-456-M	Implementing low-power, autonomous observing systems to improve the measurement and understanding of Antarctic precipitation
Shadwick, Elizabeth	O-270-L	Resolving CO_2 system seasonality in the West Antarctic Peninsula with autonomous observations
Sprintall, Janet	O-260-L	The Drake Passage high-density XBT program
Stephens, Britton	O-404-L	Investigating biogeochemical fluxes and linkages to climate change with multi-scale observations in the Drake Passage
Swift, James	O-287-N	Climate variability and predictability (CLIVAR)
Swift, James	O-287-N	Climate variability and predictability

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		(CLIVAR)
Taylor, Susan	O-399-S	Sampling comet dust from Antarctic air
Zappa, Christopher	O-403-E	Oceanic response to a coastal polynya, Terra Nova Bay, Antarctica

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Project Detail

Project Title

Polynyas, Ice Production And Seasonal Evolution In The Ross Sea (PIPERS)

Summary

Event Number:
C-531-M

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Matthew Erickson / Elizabeth Kauffman

Principal Investigator

Dr. Stephen F Ackley
stephen.ackley@utsa.edu

University of Texas
San Antonio, Texas

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo Station

Description

In-situ observations of air-sea-ice interactions are paramount for improving estimates of sea-ice production and water-mass transformation in the Ross Sea. Precise measurements of the atmospheric and oceanic heat balance at the surface are needed, concurrent with observations of the atmospheric boundary layer and the effect of katabatic wind surges on low-level warming and ice growth. Measurements of ocean property changes affecting sensible heat loss and water-mass transformation are required concurrent with observations of ice growth and ice thickness evolution. The team's principal objective is to fully capture the space/time evolution of air-ice-ocean interactions initiated during the austral autumn and tracked into winter-spring in the Ross Sea.

Field Season Overview

A team of three (including a PolarTREC teacher) will deploy in November. They will use an LC-130 aircraft, equiped with IcePod instrumentation (remote sensing devices, airborne LiDAR, digital cameras, an IR imager, and shallow ice radar), to determine the ice thickness crossing the boundary between the continental shelf and the deep ocean, demarcated by the 1000m bathymetric contour. The flights will make two surveys over deployed ice mass balance buoy arrays, and one pass along the 1000 meter bathymetric contour at the shelf-slope break in the western Ross Sea. The team will collaborate with Antarctic New Zealand (ANZ) to conduct ground truthing and to collect ice cores on fast ice under the flight survey areas.

Deploying Team Members

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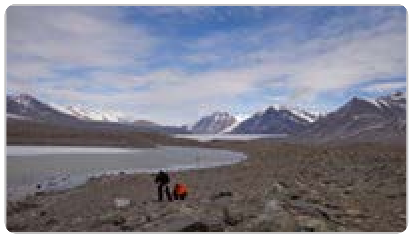
- Jeffery Anderson
- Stephen Ackley (PI)
- Jennifer Bault
- Gauthier Carnat
- John Cassano (Co-PI)
- Johannes de Jong
- Bruno Delille
- Yongli Gao
- Samuel Gartzman
- Peter Guest (Co-PI)
- Brice Loose
- Edward Maksym (Co-PI)
- Ming-Yi Jeffrey Mei
- Sarah Park
- Julie Parno
- Alek Razdan
- Laetitia Roach
- Célia Sapart
- Kelly Schick
- Sarah Searson
- Madison Smith
- Sharon Stammerjohn (Co-PI)
- Jean-Louis Tison
- Fanny Van der Linden
- Blake Weissling (Co-PI)
- Guy Williams
- Hongjie Xie (Co-PI)

2017-2018 USAP Field Season
Project Detail

Project Title

McMurdo LTER – Soils: Ecosystem Response To Amplified Landscape Connectivity In The McMurdo Dry Valleys, Antarctica

Summary



Event Number:
C-507-M
NSF/OPP Award 1637708

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Jenny Cunningham / Elizabeth Kauffman / Jennifer Blum

Principal Investigator

Dr. Byron J Adams
bjadams@byu.edu

Brigham Young University
College of Life Sciences
Provo, Utah

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo 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 focusing on soils will maintain (through application of water and nutrients), monitor (soil moisture and temperature), and sample in their long-term experimental plots near Lakes Bonney, 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 (Adams), C-508-M (Takacs-Vesbach), C-509-M (Gooseff), and C-511-M (Doran).

Field Season Overview

Seven participants will deploy between 15 December and 10 February. The group will be based in McMurdo, and will make four overnight trips (three to six nights each) to Dry Valleys fixed camps, including F6, Fryxell, Hoare, and Bonney. In addition, they will make day trips on foot and by helicopter to field sites in Taylor, Miers, and Garwood Valleys. Other sites, including sites in Beacon, Victoria, Wright, and Alatna Valleys, and Cape Royds, may be visited within the duration of the grant, though not on a yearly basis. The group will use cold storage space at the camps to store samples, and will do all sample processing at Crary Laboratory.

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Deploying Team Members

- Byron Adams (PI)
- John Barrett (Co-PI)
- Heather Buelow
- Natasha Griffin
- Matthew Hedin
- Adrian Howkins (Co-PI)
- Xia Xue

2017-2018 USAP Field Season
Project Detail

Project Title

Seven Worlds - Antarctica

Summary

Event Number:
Y-603-M
NSF/OPP Award 1745163

Program Manager:
Ms. Valentine Kass

ASC POC/Implementer:
Jenny Cunningham / Elaine Hood

Principal Investigator

Mr. Michael Becker
michael.becker@bbc.co.uk

British Broadcasting Corporation
BBC Worldwide Americas
Bristol, Other

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo Sea Ice

Description

Seven Worlds is a television series and multimedia project from BBC America and the BBC Natural History Unit, due to broadcast during the 2019-20 season. This series follows on from the successful Planet Earth, Frozen Planet, and Planet Earth II series that have impacted how both U.S. and global audiences value nature and science. Seven Worlds seeks to engage, inform, and inspire audiences with iconic landscapes, spectacular wildlife, and cutting-edge science. The series will look at the natural history unique to each of the seven continents and explore how their geographic position and geologic history have influenced the wildlife living there. A key episode will be on Antarctica and will provide an opportunity to see how Earth system processes and ecosystem dynamics have shaped the extraordinary physical and behavioral adaptations of those that manage to survive the extreme cold. It is also a chance to showcase scientific discoveries about the world's toughest environment. The intent is to create a platform that not only helps the public understand Antarctic science, but to feel immersed and connected to a place that is distant and remote. Often what is "out of sight is out of mind," but by transporting the public to a place few will ever visit, this film and associated online ecosystem will make concepts such as Antarctic biodiversity, behavioral ecology, biogeography, geomorphology, glaciology, and humanity's role in shaping the future more tangible to the show’s audience.

Field Season Overview

Four participants will deploy to McMurdo Station from mid-October to late-November in 2017. Based at McMurdo, they will focus on filming life under the sea ice at dive sites including sea ice near Arrival Heights, Cape Evans Wall, and other sites that may be identified by the group and ASC Dive Services. They may collect some invertebrates and

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small fish and bring them back to the Crary Aquarium for filming. Collected organisms will be released at the capture site or disposed of in the McMurdo waste stream. The group will also film the Weddell Seal colonies at Big Razorback Island, Little Razorback Island, Turtle Rock, and potentially Hutton Cliffs, and will dive at these sites where possible to film seals under the ice. Dr. Jay Rotella (OPP-1640481; B-009-M) will be working on the sea ice in the 2017-18 season and has provided a letter of support to collaborate with the group. The group will visit field sites with Rotella's group, and possibly other science groups to be identified, and will film and interview them about their research and Antarctic marine life. Some ‘behind-the-scenes’ filming at McMurdo Station may also take place, but this will be a small component of the work.

Deploying Team Members

- Michael Becker (PI)
- John Brown
- Hugh Miller
- Espen Rekdal

Project Title

88S Traverse: GPS Survey For Calibration And Validation Of ICESat-2 Altimetry Data

Summary

Event Number:
X-594-M/S
NSF/NASA Agreement

Program Manager:
Dr. Michael Jackson

ASC POC/Implementer:
Neal Scheibe / Jennifer Blum / Shelly Finley / Chad Naughton

Principal Investigator

Dr. Kelly M Brunt
kelly.m.brunt@nasa.gov

NASA Marshall Space Flight Center
Greenbelt, Maryland

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: Traverse from South Pole along the 88° S line of latitude

Description

This project will conduct a high-precision Global Positioning System (GPS) survey based out of South Pole Station, along the 88° S line of latitude, with the goal of producing a large-scale dataset for the calibration of airborne and space-borne altimetry, and to validate ICESat-2 elevation measurements. The traverse along the ICESat-2 ground track convergence zone represents the only large-scale, ice-based validation effort on a cold, relatively stable part of the ice-sheet interior.

Field Season Overview

During this, the first of four planned annual traverses, the science team will follow the South Pole traverse (SPOT) route out 232 Km and then travel 300 Km along the 88 degree South latitude line before returining to South Pole. They will capture GPS data and will also deploy LiDAR corner reflectors that they will maintain each subsequent season. Each traverse will have two NASA participants, one ASC-provided mountaineer, and one ASC-provided mechanic. Prior to going to the South Pole, all participants will spend one week at McMurdo Station to gather field gear and attend field trainings. Once at South Pole, the team will spend four days acclimatizing to the altitude and organizing their gear before departing on the traverse. The team will travel on two tracked vehicles. Each vehicle will have a roof-mounted GPS receiver operating at all times, and a third GPS antenna and receiver will be available for instrument redundancy. Each vehicle will also use two roof-mounted, downward-pointing ice-surface-roughness laser scanners. South Pole Station will provide one vehicle and McMurdo Station will provide the other. During the traverse, the team will camp in Scott and mountaineering tents, and will set up and take down their camp each day.The 750 km traverse will take approximately 15 days at a rate of 50 km per

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day to complete. Upon completion, the team will return to McMurdo where they will spend a few days returning their field gear.

Deploying Team Members

- Kelly Brunt (PI)
- Tom Neumann (Co-PI)

2017-2018 USAP Field Season
Project Detail

Project Title

Palmer LTER Site Review - Visiting Group

Summary

Event Number:
V-621-L

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Samina Ouda / Bruce Felix

Principal Investigator

Dr. Jennifer Moss Burns
jmmburns@nsf.gov

National Science Foundation
Office of Polar Programs
Arlington, Virginia

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations:

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, microbial and biogeochemical processes in the Antarctic marine ecosystem, including identifying the mechanisms of ecosystem response to climate variability and rapid climate change. Our overarching objectives are to continue the 25-year long LTER time series on our regional scale grid of hydrographic stations west of the Antarctic Peninsula and maintain regular twice weekly sampling around Palmer Station. The sampling region extends from Palmer Station south to Charcot Island and encompasses areas both more and less affected by climate change. Unattended moorings, drones and gliders expand sampling capabilities in space and time. During this 6-year project cycle, we continue to study seasonal-scale processes at Palmer Station, with field sampling and specific, intensively focused laboratory experiments to test hypotheses generated from the fieldwork. This experimental work requires close coordination between our Station-based and LMG-based field teams for sampling and experimental logistics. Palmer Station continues to be the focus of intensive study of Adélie, Gentoo and Chinstrap penguins, and the effects of climate change on their breeding biology, foraging ecology and population dynamics. We will link visual survey and satellite-based tracking of baleen whales with LTER synoptic data to offer unprecedented 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

Site visit participants plus NSF observers. Linked to T-904

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Deploying Team Members

- Merryl Alber
- Jennifer Burns (PI)
- Seth Danielson
- Aaron Ellison
- David Garrison
- Julie Keister
- Margaret O'Brien
- Cynthia Suchman

2017-2018 USAP Field Season
Project Detail

Project Title

Biological And Physical Drivers Of Oxygen Saturation And Net Community Production Variability At The Western Antarctic Peninsula

Summary

Event Number:
B-461-L
NSF/OPP Award 1643534

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Matthew Erickson / Adam Jenkins

Principal Investigator

Dr. Nicolas Cassar
nicolas.cassar@duke.edu

Duke University
Nicholas School of Environment
Durham, North Carolina

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Western Antarctic Peninsula

Description

This research project focuses on a high-resolution investigative survey of oxygen/argon and total oxygen supersaturation along the Palmer Long Term Ecological Research (PAL-LTER) grid to assess physical and biological drivers of the net community production (NCP) and oxygen saturation variability. The primary goal is to elucidate and parameterize the key biological factors regulating carbon fluxes and NCP. The project will accomplish this by combining high-frequency underway NCP estimates by equilibrator inlet mass spectrometry (EIMS) with community characterization by Imaging FlowCytobot (IFCB) and DNA sequencing. The observations, complemented by a comprehensive suite of measurements made by the PAL-LTER group, will identify plankton characteristics and mechanisms key to biological carbon fluxes and the fate of primary production.

Field Season Overview

One participant will deploy on two cruises on the ARSV Laurence M. Gould (LMG), LMG18-01 and LMG19-01. Central to the project is the deployment of the EIMS and the IFCB. Both instruments will be plumbed into the LMG's underway seawater line and set up in the Wet Lab and possibly in the Hydro Lab, which will also enable the participant to conduct discrete collections for DNA/RNA analysis. All instrument measurements and discrete collections will occur along the PAL-LTER cruise track. Comprehensive measurements conducted by the USAP and PAL-LTER will include IFCB , flow-through transmissometer, flow cytometry, FIRe fluorometer and del18 oxygen.

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Project Detail

Project Title

Oblique Sounding Of Ionized Patches In The Antarctic Ionosphere - Instrument Development And Testing

Summary

Event Number:
A-100-M/S
NSF/OPP Award 1643773

Program Manager:
Dr. Vladimir Papitashvili

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

Principal Investigator

Dr. Alex T Chartier
alex.chartier@jhuapl.edu

Johns Hopkins University
Applied Physics Laboratory
Baltimore, Maryland

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: T-Site / Dark Sector

Description

This project will deploy a low-powered, autonomous ionosonde to perform oblique sounding of the Antarctic ionosphere between McMurdo and South Pole stations, aiming to find the cause of the annual (rather than seasonal) trend in ionospheric polar cap patch detection. The ionosondes will be deployed at McMurdo Station and transmit radio pulses towards the South Pole, where the ionosonde's receiver will collect data. This year-long period of testing will collect enough experimental data to potentially expand an array of ionosonde transmitters at remote Antarctic locations.

Field Season Overview

The science team will develop a low-powered, autonomous ionosonde that will allow oblique sounding measurements of the Antarctic ionosphere between McMurdo and South Pole Stations. In the 2017-18 season, one participant will deploy in February to conduct a site visit to both McMurdo and South Pole Station to select the best options for installing the equipment the following season.

Deploying Team Members

- Alex Chartier (PI)

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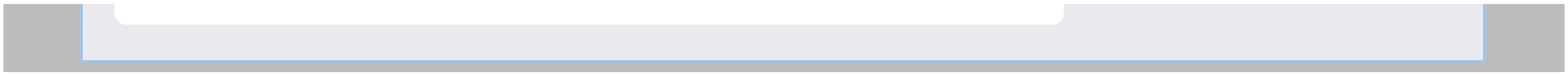

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Project Detail

Project Title

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

Summary

Event Number:
O-317-L
NSF/OPP Award 1542902

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Rachel Shackelford / 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

The high-resolution, near-repeat Expendable Bathythermograph (XBT) and acoustic Doppler current profiler (ADCP) transect sampling in the Drake Passage is designed to study modes of variability in ocean temperature, salinity, currents and backscatter in the Antarctic Circumpolar Current (ACC) on seasonal to interannual time scales and on space scales from current cores to eddies. These data represent the only year-around shipboard measurements in the Southern Ocean. With almost two decades of data now available, the primary science objectives are to analyze the Drake Passage time series and (1) describe and relate the seasonal and long-term ocean energy distribution to wind, buoyancy, and topographic forcing and sinks; and (2) describe and relate seasonal and long-term changes in the ACC fronts, water masses, and upwelling to biogeochemical variability. This project is a continuation of the long-standing support for the XBT and ADCP underway science projects currently operational on the ARSV Laurence M Gould (LMG).

Field Season Overview

This science event collects ocean current and acoustic backscatter measurements from hull-mounted shipboard acoustic Doppler profilers (ADCPs) onboard the LMG. Data is collected on all cruises with support from the shipboard electronic technicians (ETs). That support consists of starting and stopping data acquisition, and monitoring and archiving data while 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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Project Title

Antarctic Microbial Networks And DMSP: Linking Diversity, Biogeochemistry, And Functional Gene Expression

Summary

Event Number:
B-028-P
NSF/OPP Award 1543450

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Rachel Shackelford / Jamee Johnson

Principal Investigator

Dr. Peter Dylan Countway
pcountway@bigelow.org

Bigelow Laboratory for Ocean Sciences
East Boothbay, Maine

Location

Supporting Stations: Palmer Station
Research Locations: Palmer LTER stations B and E

Description

The objective of this project is to link the molecular microbial ecology of the Western Antarctic Peninsula and/or Ross Sea to the regionally-relevant (and crucial) biogenic dimethylsulfoniopropionate (DMSP) cycle that may influence the biological structure and function of this sensitive marine ecosystem.

Field Season Overview

Researchers will deploy to Palmer Station to conduct incubation experiments using water collected from Stations B and E. They will use Zodiacs and rigid-hulled inflatable boats to access their research areas and will use the Seabird ECO rosette to collect water samples. The team will perform on-station incubations in their own Ecostat incubator. Lab-based activities will include water filtration for various types of samples, sample processing for measurement on gas chromatograph equipment, chlorophyll and bacterial productivity measurements, and preservation of samples for flow-cytometry and microscopy. At the end of the season, samples will be shipped to the home institution for further analyses.

Deploying Team Members

- Peter Countway (PI)
- Patricia Matrai (Co-PI)
- Patricia Matrai (Co-PI)
- Carlton Rauschenberg
- Karen Young

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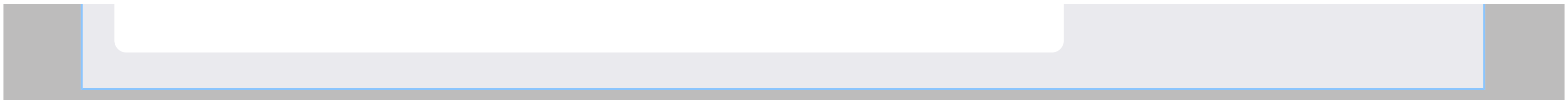

2017-2018 USAP Field Season
Project Detail

Project Title

Habitat Severity And Internal Ice In Antarctic Notothenioid Fishes

Summary

Event Number:
B-195-M
NSF/OPP Award 1644196

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Jenny Cunningham / Elizabeth Kauffman

Principal Investigator

Mr. Paul A Cziko
pcziko@gmail.com

University of Oregon
Eugene, Oregon

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo sea ice

Description

Researchers will investigate the physiology of freezing avoidance in Antarctic notothenioid fishes, focusing on the invasion and accrual of ice crystals in their bodies. Project goals are to determine whether environmental severity influences the prevalence or number of internal ice crystals in McMurdo Sound notothenioid fishes, investigate the environmental drivers of ice invasion in notothenioid fishes, and characterize high-Antarctic notothenioid habitat iciness and thermal history. Over two seasons, researchers will capture fish at different locations and depths in McMurdo Sound to examine presence and extent of internal ice. They will also monitor oceanographic conditions with dataloggers at several locations in McMurdo Sound and will install a year-round live-streaming oceanographic observatory at the McMurdo Station intake jetty. In addition to its scientific purposes, data streams from the oceanographic observatory will form the basis of various outreach activities.

Field Season Overview

2017-18 season Five participants will deploy to McMurdo from early October to early December. The primary objectives of this season will be to install the McMurdo Oceanographic Observatory (MOO) by the McMurdo intake jetty, and to deploy underwater dataloggers. The group will also capture adult fish by hand line and winch-deployed traps from deep-water fishing holes near McMurdo Station. The MOO will be equipped with a controllable HD video camera, integrated conductivity temperature depth (CTD), lights, hydrophone, and will be connected to a power/data cable from the jetty pump house threaded down the intake pump well casing. The MOO is intended to provide real-time data feeds to a dedicated server on the McMurdo intranet, which will be made available for display to station personnel and transmitted off-continent. ASC divers and IT personnel will

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assist with installation and deployment of the instrument and setup of hardware and software components (see Appendix 1). The group will deploy dataloggers under the sea ice at Cape Evans, a northern site such as Cape Bird or Granite Harbor, New Harbor, and near McMurdo Station. These sites will be visited on single day trips and accessed by helicopter and PistenBully. The group will deploy the dataloggers by diving if possible, but if there is no hole or crack to dive through, they will use a Jiffy drill to create a hole in the ice and lower the datalogger down from the surface. The Reed drill will be required to create a hole for deployment of the MOO near the end of the McMurdo Jetty, and then three additional holes over deeper water near McMurdo Station for fishing, diving, and deploying traps. One heated fish hut will be placed over the hole for deployment of the MOO, and then moved to the subsequent Reed-drilled holes. Some experiments will be performed on fish in the hut directly after capture. The group will also use a towable Apple hut to fish from Jiffy-drilled holes in multiple locations, and may also work out of other huts/holes that are typically established by ASC divers. The group will use space in Crary laboratory to prepare and test equipment, and to and process fish tissue samples. They will use a large aquarium tank to test the MOO prior to deployment, and will keep fish in one to two square tanks.

Deploying Team Members

- Paul Cziko (PI)
- Art DeVries (Co-PI)
- Henry Kaiser
- Henry Kaiser

2017-2018 USAP Field Season
Project Detail

Project Title

EAGER: An Operational System To Measure Surface Mass Balance Deep In The Interior Of The Antarctic Ice Sheet

Summary

Event Number:
D-553-S
NSF/OPP Award 1654922

Program Manager:
Dr. Michael Jackson

ASC POC/Implementer:
Neal Scheibe / Paul Sullivan / Leah Street

Principal Investigator

Dr. Santiago de la Pena
santiagodpr@gmail.com

Ohio State University
Byrd Polar and Climate Research Center
Columbus, Ohio

Location

Supporting Stations: South Pole Station
Research Locations: On station

Description

The firn layer covers most of the Antarctic continent and plays a major role in regulating ice sheet surface mass change. Changes in the mass balance of the Antarctic Ice Sheet have important consequences to eustatic sea level rise and the thermohaline ocean circulation. To constrain mass balance estimates, accurate measurements of accumulation and densification are required. Surface mass balance measurements in Antarctica are rare and limited to point measurements at a few sites, generally in coastal areas. This project will install a continuous monitoring system designed to measure surface processes and characteristics of the surface mass balance in the upper firn layer at the South Pole. The system will deploy an in-situ sensor package consisting of a snow-water equivalent sensor for measuring accumulation mass, a device for measuring firn compaction, an echo sounder for measuring accumulation thickness, and temperature, pressure, and wind sensors.

Field Season Overview

The PI and one other participant will deploy for six days to install the detectors at the South Pole. They will drill a 30-meter deep borehole for a compaction monitor and anchor rod, will erect a power and instrumentation tower, and will bury a sensor under the snow surface. The instrument positioning needs to be at least 150m away from buildings to avoid drifting, away from heavily trafficked areas, and close enough to be accessed from the station. The exact location of the instrument will be determined at a later date. Data is transmitted via Iridium provided by the PI, and power is provided by wind and solar attached to the instrument and stored locally in a battery bank, so no connection to the South Pole Station

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power grid is necessary. The project requires a generator, a hand torch, a Kovacs drill, and 30 drill flights (approximately 30 meters worth) during the initial installation.

Deploying Team Members

- Salvatore Candela
- Santiago de la Pena (PI)

2017-2018 USAP Field Season
Project Detail

Project Title

Low Power Magnetometer (LPM) Network - British Antarctic Survey (BAS)

Summary

Event Number:
X-599-S
Reciprocity Agreement

Program Manager:
Ms. Jessie Crain

ASC POC/Implementer:
Judy Shiple / Paul Sullivan

Principal Investigator

Mr. Michael Dinn
medi@bas.ac.uk

British Antarctic Survey
Cambridge, Undefined

Location

Supporting Stations: South Pole Station
Research Locations: Polar Plateau

Description

The British Antarctic Survey (BAS) has deployed a dozen low power magnetometers (LPM) in Antarctica, most of which are in the deep field. The BAS instruments are part of an international array that forms a network across Antarctica. The instruments operate unmanned all year around, powered only by a solar panel. The LPM network measures magnetic fluctuations caused by currents flowing in the ionosphere. These data can be used to produce maps of space weather in the region around the Earth where satellites orbit. The ability to predict space weather is a significant advantage to the telecommunications and aerospace industries, helping them to better protect spacecraft.

Field Season Overview

Two to three BAS personnel from Rothera Station will use South Pole Station as a support base from which to access and maintain the magnetometers that are within approximately 200 nm of the station. The BAS personnel require a period of five to six consecutive days on station, inclusive of acclimatization time, to complete the work. BAS will use its own aircraft for travel between South Pole and Rothera Stations, as well as to undertake the deep-field work. USAP support includes South Pole on-station housing, aviation fuel, and minimal meteorological support for the BAS aircraft movements. All deployment and cargo support is provided by the BAS program.

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Project Detail

Project Title

Cobalamin And Iron Co-Limitation Of Phytoplankton Species (CICLOPS) In Terra Nova Bay

Summary

Event Number:
B-007-N
NSF/OPP Award 1644073

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Matthew Erickson / Adam Jenkins

Principal Investigator

Dr. Giacomo DiTullio
ditullioj@cofc.edu

College of Charleston
Grice Marine Biological Lab
Charleston, South Carolina

Location

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: Terra Nova Bay

Description

Two primary groups of algae typically dominate the Ross Sea phytoplankton community composition: diatoms and the colonial Phaeocystis antarctica. Diatoms typically have dominated the stratified waters in Terra Nova Bay, but as recently as 2010, Phaeocystis blooms started to appear. This shift in community composition is not fully understood. The major objective of this research is to determine whether iron and vitamin B12 dynamics are primarily responsible for causing this shift in phytoplankton community composition in Terra Nova Bay. These blooms typically occur later in the summer relative to central Ross Sea blooms, presumably because of ice conditions and wind forcing. Researchers will locate and track the blooms using a Lagrangian process. They will use a free-floating drifter array to investigate in-situ microbial dynamics within two developing Phaeocystis and diatom blooms.

Field Season Overview

A team of 18 scientists, led by three co-PIs, will deploy on a two-leg cruise to carry out multiple in situ daily measurements and require 35 science days to complete this work. They will use satellite imagery to track two blooms, one diatom and one Phaeocystis, and will ideally spend 14-16 days at each bloom. Once the team locates and identifies a bloom and the ship has arrived on site, the scientists will deploy a Lagrangian drifter and sediment trap followed by three to four CTD casts every six hours daily while tracking the bloom and drifters. The sediment trap and drifter deployments and recoveries will occur in three-day cycles. The primary interest is in the upper 200 meters of the water column. In addition the team plans to conduct CTD casts to the bottom in the Terra Nova Bay vicinity up to 1000

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meters.

The science team will also deploy the USAP trace metal CTD rosette and four to five grantee-provided McLane pumps as part of this Lagrangian study. They will collect seawater with these in situ submersible pumps for on-deck incubations with USAP deck incubators, and hand-deployed net tows to collect whole Phaeocystis colonies. Shipboard 55Fe, 14C and 57Co radioisotope work will take place in the USAP-provided radioisotope van and as part of deck incubation experiments.

Deploying Team Members

- Francesco Bolinesi
- Pasquale Castagno
- Giacomo DiTullio (PI)
- Robert Dunbar (Co-PI)
- Pierpaolo Falco
- David Jones
- Marissa Kellogg
- Peter Lee (Co-PI)
- Lauren Lees
- Dawn Moran
- David Mucciarone
- Deepa Rao
- Mak Saito (Co-PI)
- Nicole Schanke

2017-2018 USAP Field Season
Project Detail

Project Title

Estimation Of Antarctic Ice Melt Using Stable Isotopic Analyses Of Seawater

Summary

Event Number:
O-131-N
NSF/OPP Award 1644118

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Matthew Erickson / Adam Jenkins

Principal Investigator

Dr. Robert Dunbar
dunbar@stanford.edu

Stanford University
Environmental Earth System Science
Stanford, California

Location

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: Amundsen Sea / Pacific Sector of Ross Sea

Description

Current estimations of ice sheet mass balance in Antarctica and Greenland rely directly on satellite-based observations of the ice sheet surface, ice margins, and ice shelves. The extent of melting ice sheets as a driver of sea level rise is not yet well understood. This project will use independent tracers of freshwater introduction from the ice sheets to the surrounding ocean to improve the ability to track how fast and where continental ice is melting. Polar ice is greatly depleted in two stable isotopes, O-18 and deuterium, relative to Southern Ocean seawater and precipitation. Using these as tracers of freshwater introduction from the ice sheet, in conjunction with precise observations of seawater temperature and salinity, the inputs of freshwater derived from melting glacial ice can be discriminated from regional precipitation. Samples will also be collected on ships of opportunity with the USAP and other national research programs. This project will collaborate with other International programs from Italy, South Korea, China, New Zealand, and Great Britain.

Field Season Overview

One participant will sail on the RV/IB Nathaniel B. Palmer on cruise NBP18-01 from Punta Arenas, Chile to research areas in the Amundsen Sea. At various locations, the participant will collect sea water samples using a conductivity temperature depth (CTD) rosette and will conduct near real-time isotopic and salinity analyses of those samples. For each sample taken for isotopic analyses (O-18 and deuterium), high quality salinity data must also be collected on the same sample. Analyzing samples with an Autosal, especially in highly stratified areas, will be essential for post-processing comparisons with the CTD data. To that end, the participant will use the USAP Autosal in conjunction with a Picarro cavity ring down spectroscopy (CRDS) system, and may also use a Guildline Portasal Salinometer. The cruise will make a brief port call at McMurdo Station and will terminate in Hobart, Australia.

Deploying Team Members

- David Mucciarone

2017-2018 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/OPP Award 1341742

Program Manager:
Dr. Chris Fritsen

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, more than 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

Researchers with this project, in collaboration with Chilean scientists from the University of Santiago, will travel to Antarctica from Chile with support from the Chilean Antarctic Institute (INACH). They will reside on the Chilean base Profesor Julio Escudero on King

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George Island where they have long-term Open Top Chamber (OTC) warming experiments from which they will collect terrestrial moss and air samples. They will also collect samples from the moss Ceratodon purpureus at other terrestrial sites on KGI, which they will reach by Zodiac inflatable boat.

Deploying Team Members

- Maria Casanova-Katny
- Mathew Chmielewsk
- Todd Rosenstiel (Co-PI)

Project Title

Foraging Behavior And Ecological Role Of The Least-Studied Antarctic Krill Predator, The Antarctic Minke Whale (Balaenoptera Bonaerensis)

Summary

Event Number:
B-206-L
NSF/OPP Award 1643877

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Samina Ouda / Jamee Johnson

Principal Investigator

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

University of California Santa Cruz
Institute of Marine Sciences
Santa Cruz, California

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Joinville Island

Description

The Antarctic Peninsula is warming, and one of the consequences is a decrease in sea-ice cover. Antarctic minke whales are the largest ice-obligate krill predator in the region, yet little is known about their foraging behavior and ecology. The goals of this project are to use a suite of new technological tools to measure the underwater behavior of the whales and better understand how they exploit the sea-ice habitat. Using video-recording motion-sensing tags, the underwater movements of the whales can be reconstructed, and it can be determined where and when they feed. Unmanned aerial systems (UAS) will be used to generate real-time images of sea-ice cover that will be linked with tag data to determine how much time whales spend in sea ice versus open water, and how the behavior of the whales changes between these two habitats. Lastly, scientific echo-sounders will be used to characterize the prey field that the whales are exploiting, and differences in krill availability in and out of the ice will be investigated. All of this information is critical to understand the ecological role of Antarctic minke whales so that better predictions can be made regarding impacts of climate change, not only on these animals, but on the structure and function of the Antarctic marine ecosystem.

Field Season Overview

In the 2017-18 season the researchers will locate aggregations of minke whales in the Joinville Island vicinity. As a contingency plan, if weather conditions do not allow access to Joinville Island in the 2017-18 season, the science team will travel instead to the Gerlache Strait, Wilhelmina Bay, Andvord Island Bay, and Crystal Sound area. Team members will place multi-sensor suction cup tags on whales and will conduct focal animal follows while

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the tags are attached. Tags are designed to remain on the whale for up to 24 hours, after which time they release passively and float to the surface where they are retrieved using a hand-held radio receiver. The team aims to deploy 10 tags per season. Concurrent to this, a second small boat will launch with a transom-mounted Simrad echo sounder system to map prey in close proximity to the tagged whale. During this time, the LMG will conduct bay-scale prey mapping surveys with a second set of echo sounders that will be brought on board. The science team will conduct net tows in each bay or location to generate a stratified length-frequency distribution estimate of the krill prey field. The science team will require the use of two small boats as well as a 1-meter net tow, standard CTD (no water samples), and underway systems to collect environmental data. It is also planned to collect data via Unmanned Aerial Systems (UAS) while whales are present.

Deploying Team Members

- David Cade
- Ari Friedlaender (PI)
- Jeremy Goldbogen (Co-PI)
- David Johnston (Co-PI)
- David Johnston (Co-PI)
- Mary Parker
- James Taylor

2017-2018 USAP Field Season
Project Detail

Project Title

Determining Magma Storage Depths And Ascent Rates For The Erebus Volcanic Province, Antarctica Using Diffusive Water Loss From Olivine-Hosted Melt Inclusion

Summary

Event Number:
G-170-M
NSF/OPP Award 1644013

Program Manager:
Dr. Douglas Kowalewski

ASC POC/Implementer:
Jenny Cunningham / Meghan Walker

Principal Investigator

Dr. Glenn Allan Gaetani
ggaetani@whoi.edu

Woods Hole Oceanographic Institution
Department of Geology & Geophysics
Woods Hole, Massachusetts

Location

Supporting Stations: McMurdo Station
Research Locations: Erebus Volcanic Province

Description

The depths at which magmas are stored, their pre-eruptive volatile contents, and the rates at which they ascend to the Earth's surface are important controls on the dynamics of volcanic eruptions. Melt inclusions (MIs), small parcels of melt entrapped by crystals growing in magma, are found in volcanic tephra and can provide a snapshot of pre-eruptive volatile contents. Researchers will collect tephra samples from various volcanic centers in the Erebus volcanic province and separate out MI-bearing olivine crystals. They will analyze MIs from the sampled tephras for major element and volatile concentrations and use these data to determine pre-eruptive magma storage depths and magma ascent rates.

Field Season Overview

Four participants will deploy between 13 November and 7 December. The group will be based in McMurdo, and will make helicopter day or night trips with close support to field locations in the Erebus volcano province. Sampling sites on Mount Discovery, Mount Morning, Cape Evans, Lewis Bay, Mount Bird, Mount Terror, and Cape Crozier (including those within the Crozier Antarctic Specially Protected Area (ASPA) No. 124) will be accessed by helicopter, and areas along the Hut Point peninsula will be accessed by snowmobile. The group may use snowmobiles to traverse sea ice and access areas along the Hut Point peninsula up to Cape Royds. At sampling sites, the group will use hammers and chisels to collect tephra (rock) samples, which will be packed in bags and rock boxes. Ten to forty pounds of material will be collected from each site. The group will use lab and office space in Crary Laboratory, including the rock saw room. Samples will be sorted and processed in McMurdo, and will be shipped to the home institution for further analyses.

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Deploying Team Members

- Glenn Gaetani (PI)
- Ayla Pamukcu
- Kenneth Sims
- Paul Wallace

2017-2018 USAP Field Season
Project Detail

Project Title

The Next Generation Of Geospace Research Facilities At South Pole And McMurdo Stations

Summary

Event Number:
A-111-M/P/S
NSF/OPP Award 1643700

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Neal Scheibe / Jamee Johnson / Elizabeth Kauffman / Paul Sullivan

Principal Investigator

Dr. Andrew Gerrard
gerrard@njit.edu

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

Location

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

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. The goal of this research effort is a better understanding of the energy transfer and modulation of the geospace system.

Field Season Overview

Field team members on this project will: (1) Check on all instrumentation and update firmware and data acquisition (DAQ) as needed; (2) Install new photometers at Arrival Heights and in B2, and package the old photometers for retrograde to the home institution; (3) Check the riometer system and repair as needed. (4) Train ASC science technicians to perform routine maintenance on the equipment; (5) Check the installation/operation of the all-sky imagers; (5) Transfer GPS data; and, (6) Install an Absolute Field Magnetometer.

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Deploying Team Members

- Yusuke Ebihara
- Gilbert Jeffer
- Joseph Kujawski
- Robert Melville
- Andrew Stillinger

2017-2018 USAP Field Season
Project Detail

Project Title

Scientific Studies From A Network Of Sustainable, Robotic Observatories Across The Antarctic Ice Shelf: A New Approach To Polar Research

Summary

Event Number:
A-112-M/S
NSF/OPP Award 1443507

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

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: AGO sites / AGO5

Description

The Automatic Geophysical Observatories (AGOs) are five unmanned observatories that provide power and data transmission capabilities for instrumentation on the Antarctic plateau. Historically, the AGO program has collected magnetospheric research data in the polar cap and auroral zone, with each AGO unit housing fluxgate and search-coils magnetometers, a riometer, a VHF antenna, and all-sky imagers. However, in the past five years the AGO platforms have attracted the attention of the broader scientific community, and now the AGO facilities also support seismometers, GPS receivers, and automatic weather stations. In the past few years, the research team has developed the AGO program to provide power at the approximately 100-Watt level with about 90 percent year-around uptime, the only limitation on power availability being a lack of wind during the austral winter.

Field Season Overview

A three-person science team and one dedicated ASC mountaineer, will visit AGO sites for two to three days to replace the Data Acquisition (DAQ) system cards. The team will be raising and shoveling the shelters at each AGO site. They will travel by Twin Otter aircraft from South Pole to AGOs 1-4, and by LC-130 aircraft from McMurdo Station to AGO 5. At all five AGO sites the team will remove snow from the shelters and inspect the condition of the solar panels. The team will also inspect the wind turbines, batteries, and the general power system to verify that all are operating properly, and will perform any necessary instrument calibrations and field upgrades/repairs. In addition, they will install a new Iridium

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Short-Burst Data (SBD) system at AGO 5, and will retrograde old propane tanks.

Deploying Team Members

- David Cohn
- Nathaniel Frissell
- Andrew Gerrard (PI)
- Gilbert Jeffer
- Robert Melville
- Andrew Stillinger

2017-2018 USAP Field Season
Project Detail

Project Title

McMurdo LTER – Algal Ops: Ecosystem Response To Amplified Landscape Connectivity In The McMurdo Dry Valleys, Antarctica

Summary

Event Number:
C-509-M
NSF/OPP Award 1637708

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Jenny Cunningham / Elizabeth Kauffman / Jennifer Blum

Principal Investigator

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

University of Colorado Boulder
Institute of Arctic and Alpine Research
Boulder, Colorado

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo 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. Geochemistry component 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 (Adams), C-508-M (Takacs-Vesbach), C-509-M (Gooseff), and C-511-M (Doran).

Field Season Overview

Two participants will deploy between 30 December and 5 February. The group will spend 3-4 weeks of January working out of F6 and Lake Hoare fixed camps. They will survey and sample established algal transects in the Taylor, Wright, Garwood, and Miers Valleys. Some sites will be accessed on foot, others will be accessed by helicopter day trips. The group will use laboratory space at field camps to filter and process samples. Following field deployment, the group will continue to process samples and prepare them for shipment in Crary Laboratory.

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

More Information

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Deploying Team Members

- Stephen Chignell
- Diane McKnight (Team Leader)

2017-2018 USAP Field Season
Project Detail

Project Title

Antarctic Impulsive Transient Antenna IV (ANITA IV) Experiment

Summary

Event Number:
A-371-M/S
NSF/NASA Agreement

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Scott Battaion / Chad Naughton

Principal Investigator

Dr. Peter Gorham
gorham@phys.hawaii.edu

University of Hawaii Manoa
Hawaii Institute of Geophysics & Planetology
Honolulu, Hawaii

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: ANITA IV landing site

Description

The Antarctic Impulsive Transient Antenna (ANITA) project was a long-duration-balloon (LDB) mission to constrain the origin of the highest-energy particles in the universe. This fourth ANITA flight, ANITA IV, observed radio impulses that are thought to originate from both ultra-high-energy cosmic neutrino interactions in the ice and ultra-high-energy cosmic rays in the Antarctic atmosphere. During the 2017-18 austral summer season, the ANITA IV payload will be collected from the landing site.

Field Season Overview

A South Pole Station based four-person science team and two volunteer South Pole ASC support personnel will travel by Twin Otter aircraft to the ANITA 4 landing site to disassemble the balloon payload structure and recover the Data Acquisition system (DAQ) and 48 quad-ridge horn antennas.

Deploying Team Members

- Christian Miki (Co-PI)

2017-2018 USAP Field Season
Project Detail

Project Title

Response Of The Antarctic Ice Sheet To The Last Great Global Warming

Summary

Event Number:
I-196-M
NSF/OPP Award 1643248

Program Manager:
Dr. Paul Cutler

ASC POC/Implementer:
Jenny Cunningham / Meghan Walker

Principal Investigator

Dr. Brenda Hall
brendah@maine.edu

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

Location

Supporting Stations: McMurdo Station
Research Locations: Southern Royal Society Range

Description

The response of the Antarctic ice sheet to past episodes of rapidly warming climate can be understood through glacial geologic data. Researchers will use a combination of glacial geologic mapping and radiocarbon dating of algal deposits enclosed in recessional moraines at the glacial headlands of the southern Royal Society Range. They aim to reconstruct the evolution of the Antarctic ice sheet during the massive warming of the last glacial/interglacial transition and inform understanding of future ice sheet response to global warming.

Field Season Overview

Five participants will work at the western margin of McMurdo Sound, concentrated in the southern Royal Society Range. In each season they will deploy to the field and tent camp at three sites for five weeks in late December through January. Field sites will be accessed by foot from camps. Helicopter support will be required for camp put-ins and moves and for three day trips to remote sites each season.

Field work will consist of ground-truthing satellite and aerial imagery and walking sampling transects to collect algal and rock samples for radiocarbon dating. Collected samples will be shipped off-continent for analysis. The group will not perform work in Crary Laboratory, but will require use of an office for short periods before and after field deployment.

Deploying Team Members

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

More Information

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- Alexandra Balter
- Brenda Hall (PI)

2017-2018 USAP Field Season
Project Detail

Project Title

OPP/USAP Diving Safety Officer (DSO) And Scientific Diving Control Board (SDCB) Visit

Summary

Event Number:
T-913-M

Program Manager:
(Other)

ASC POC/Implementer:
Curt Labombard / Rob Robbins

Principal Investigator

Mr. John N Heine
jheine@ucsd.edu

Jacksonville University
Jacksonville, Florida

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo Sea Ice

Description

Project participants will participate in and observe scientific diving operations and dive locker activities and procedures. They will also interact with all of the science groups that are participating in diving operations for the season. The OPP/USAP diving safety officer (DSO) will create an annual report, which is then presented to the Scientific Diving Control Board (SDCB) at the annual meeting in Washington, D.C. the following year. This visit assists the team members in making suggestions for improvements to the diving program.

Field Season Overview

The Principal Investigator of T-913 is the OPP/USAP Diving Safety Officer (DSO) and will be accompanied by two members of the Scientific Diving Control Board (SDCB). They will visit McMurdo Station for a week and a half to oversee and observe the USAP diving program. They will use dive equipment and space in the dive locker, and they will travel to dive sites in the Dive Services dedicated PistenBully.

Deploying Team Members

- John Heine (PI)
- Doug Schleiger
- Steven Sellers

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

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Additional information pertaining to the 2017-2018 Field Season.

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2017-2018 USAP Field Season
Project Detail

Project Title

Chemoautotrophy In Antarctic Bacterioplankton Communities Supported By The Oxidation Of Urea-Derived Nitrogen

Summary

Event Number:
B-114-L
NSF/OPP Award 1643466

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Matthew Erickson / Adam Jenkins

Principal Investigator

Dr. James Hollibaugh
aquadoc@uga.edu

University of Georgia
Marine Sciences
Athens, Georgia

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Western Antarctic Peninsula / PAL LTER Process stations

Description

Chemoautotrophic production based on nitrification has been proposed to augment bacterioplankton, and thus microbial loop production in polar regions, particularly during winter when photoautotrophy is reduced by low irradiance and ice cover. Researchers will use 15N- and 14C-labeled substrates to quantify oxidation rates of 15N supplied as NH4+, urea, and NO2-, allowing estimation of the contribution of urea-derived nitrogen (N) and complete nitrification (NH4+ to NO3-) to chemoautotrophy and bacterioplankton production in Antarctic coastal waters. Other samples will be taken to measure the concentrations of NO3-, NO2-, NH4+, and urea for real-time Polymerase chain reaction (qPCR) analysis of the abundance of relevant microorganisms and for studies of related processes.

Field Season Overview

Researchers will sample continental shelf and slope waters while onboard the ARSV Laurence M. Gould (LMG) during the January 2018 LMG18-01 cruise. They will sample three water masses at approximately 15 stations: 0-50 m, 70-100 m, and >150 m, and will sample these stations on approximately five PAL-LTER grid lines with a focus on inshore, mid-shelf and offshore sites. They will also conduct experiments during inshore Palmer Long Term Ecological Research (PAL-LTER) process stations and at other locations, as opportunities arise. The standard conductivity temperature depth (CTD) rosette will sample approximately 4 L from each of the three depths per station and ~ 14 L from each depth at each process station. Multiple onboard incubations will be conducted using 15N- and 14C-labeled substrates. Onboard incubations will be conducted in the onboard Percival incubator (shared) and 14C radioisotope van (shared). Onboard analyses will include

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

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NH_4^+ and NO_2.

Deploying Team Members

- James Hollibaugh (PI)
- Brian Popp (Co-PI)

2017-2018 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/OPP CTBTo MOA

Program Manager:
Mr. Tim McGovern

ASC POC/Implementer:
Neal Scheibe / Jamee Johnson

Principal Investigator

Mr. Bouvard NMI 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

This event continuously collects and automatically analyses daily air samples for radiation. The collected filter media samples from the RASA are sent to Vienna Austria for archiving on a quarterly basis. Additionally, periodic requests are made for single samples to be shipped to various laboratories elsewhere in the world.

The USAP provides year-round, on-site support by the ASC research associate (RA). In addition, one engineer or scientist from the CTBTO deploys each season for maintenance of the RASA, network switches, the uninterruptable power supply (UPS), and other computer hardware. Training for the RA is conducted by the science project and includes a site visit to the PI's home institution for two days prior to deployment.

Deploying Team Members

- Bouvard Hosticka (PI)

Project Indexes

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Project Detail

Project Title

University Of Hawaii Data Acquisition System (UHDAS) Support

Summary

Event Number:
T-933-N
NSF Agreement

Program Manager:
Mr. Tim McGovern

ASC POC/Implementer:
Rachel Shackelford / Bruce Felix

Principal Investigator

Dr. Julia M Hummon
hummon@hawaii.edu

University of Hawaii Manoa
JIMAR
Honolulu, Hawaii

Location

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

Description

This project maintains the acoustic Doppler current profiler (ADCP) computer system on the Nathaniel B. Palmer (NBP). These computer systems are used to manage and post-process data from the ADCP sonars on the NBP and the ARSV Laurence M. Gould (LMG). On the LMG, the ADCP data is specifically collected and managed under the Chereskin (O-317-L) project. On the NBP, the systems are maintained for general grantee requests.

Field Season Overview

Testing of the systems is completed during once a year during a scheduled port call. During these maintenance port calls, the system is tested extensively requiring the ability to actively ping the sonars in port to ensure proper system function.Testing these systems requires activating the sonars at the pier for four or five cycles of up to ten minutes each. An Exclusive Economic Zone (EEZ) permit is not required for this.

Deploying Team Members

- Julia Hummon (PI)

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

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2017-2018 USAP Field Season
Project Detail

Project Title

Using Gravity Waves To Probe The Solar Atmosphere

Summary

Event Number:
A-367-S
NSF/OPP Award 1341755

Program Manager:
Dr. Vladimir Papitashvili

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

Principal Investigator

Dr. Stuart Jefferies
sjefferies@gsu.edu

Georgia State University
Department of Physics and Astronomy
Atlanta, Georgia

Location

Supporting Stations: South Pole Station
Research Locations: South Pole Solar Observatory (SPSO)

Description

Researchers on this project will measure and characterize internal gravity waves omnipresent in the Sun's atmosphere, identify their role in transporting energy and momentum, and use the properties of those waves to provide a mapping of the structure and dynamics of the Sun's atmosphere. The data necessary to achieve these goals will come from two high-sensitivity and high-stability Doppler-magnetographs. The first is located at a remote site three to four kilometers from the South Pole; the second is the Helioseismic Magnetic Imager instrument located in outer space. The goal is to image the velocity fields with high spatial resolution at three heights in the solar atmosphere. The image data will allow the project to make the first detailed characterization of the properties of the internal gravity waves and to take a first step toward capitalizing on their potential as a diagnostic tool for probing the solar atmosphere.

Field Season Overview

Participants will reside on station and will work in the B2 Science Lab. There, they will clean and re-align the optics in their instruments, and install new vapor cells in their magneto-optical filters. Once the initial preparation of the instruments is completed, they will move their operations to a bay in the Cryogen Building where thery will mount their instruments on a tracking platform to test and validate them. While the instrument validation is taking place they will reactivate the South Pole Solar Observatory (SPSO) in the Dark Sector. Reactivation of SPSO requires burying the wooden "Smurf" observing building beneath the ice and building a small hill of ice/snow approximately two meters high about 30 meters away from the buried building (to minimize heat plumes from the building interfering with observations). When the site is ready, the tracking platform and instruments

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will be towed on a sled from station to SPSO and installed on top of the ice hill. Once the experiment is running, it will be monitored from the South Pole Station via the internet.

Deploying Team Members

- Francesco Berrilli
- Bernhard Fleck
- Cindy Giebink
- Stuart Jefferies (PI)
- Allister Knox
- Mija Lovric
- Neil Murphy (Co-PI)

2017-2018 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/OPP Award 1443471

Program Manager:
Dr. Paul Cutler

ASC POC/Implementer:
Judy Shiple / Jennifer Blum / 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, I-164-S) 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 third of four seasons for this event. Four participants will spend approximately two weeks working out of South Pole Station and at their remote field camp, 50 km from station, where instruments were installed last season. Two team members will conduct GPS and radar surveying via snowmobile along transects radiating out up to 100km from South Pole. They will again tow a Conestoga for shelter during these day trips. The other two team members will stay at the camp to perform instrument maintenance and borehole logging. All four members will be available to set up and take down the camp.

Deploying Team Members

- David Clemens-Sewall
- David Lilien

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

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- Howard Conway (Co-PI)
- Christopher Stevens

2017-2018 USAP Field Season
Project Detail

Project Title

Growing Up On Ice: Physiological Adaptations And Developmental Plasticity In Weddell Seal Pups Across Two Extreme Physical Environments

Summary

Event Number:
B-030-M
NSF/OPP Award 1543539

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Jenny Cunningham / Elizabeth Kauffman

Principal Investigator

Dr. Heather E Liwanag
hliwanag@calpoly.edu

California Poly State University
Biological Sciences
San Luis Obispo, California

Location

Supporting Stations: McMurdo Station
Research Locations: Erebus Bay

Description

Weddell seals are one of the best-studied pinnipeds and a textbook example of adaptation to the extreme Antarctic environment. A large body size and thick blubber layer enable them to stay warm both on and under the ice. Their streamlined shape, oxygen storage capacity, and collapsible lungs enable them to reach dive depths of 600 meters and remain under water for over an hour. However, they do not begin life with these advantages. Weddell seal pups are born on the fast ice with a small body size and virtually no blubber. They are generally born with the oxygen storage capacity of similarly sized terrestrial mammals and must develop diving capabilities over time. There is likely a trade-off in terms of the energy allocated to thermoregulation or to development, which would impact the ability of these animals to successfully make the transition to independence. Researchers primarily seek to answer the following questions: (1) How do these animals develop the capacity to transition, in a matter of weeks, between two extreme environments - above, and then below, the Antarctic sea ice? and (2) What are the energetic trade-offs associated with the developmental period during the transition?

Field Season Overview

The team will be housed at McMurdo Station and will make day trips by Pisten Bully and snowmobile to their field sites on the sea ice in Erebus Bay, where they will have a heated fish hut near Turtle Rock. They may also work conduct some sampling at Hutton Cliffs, where they would have an Apple portable shelter. They will use a GroDome tent as a mobile processing station for seal pups that are beyond reasonable sledging distance from the fish hut. The team will access water through cracks or holes in the sea ice. If they cannot find suitable cracks, they will drill holes with a gas-powered Jiffy drill. Over the course of their time on the ice they will conduct some of their work in the Crary Lab. Their work will record mass and morphometrics of the pups. To that end, they will use a forward looking infrared (FLIR) camera to quantify surface body temperature, and an ultrasound machine to measure blubber thickness. They will place pups in a chamber outfitted with analytical equipment to measure metabolic rates. The chamber will be filled with seawater so the pup will be partially submerged. For some sampling events, the group's veterinarian will anesthetize the pups for the collection of blood and muscle biopsies. Additionally, pups will be tagged with an accelerometer / transmitter / time-depth-recorder device at early capture time points.

Deploying Team Members

- Heather Liwanag (PI)
- Linnea Pearson (Co-PI)
- Lars Tomanek (Co-PI)
- Melissa Voisinet
- Emma Weitzner
- Sophie Whoriskey

2017-2018 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-M

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Matthew Erickson / Elizabeth Kauffman

Principal Investigator

Dr. Donal Manahan
manahan@dornsife.usc.edu

University of Southern California
Department of Biological Sciences
Los Angeles, California

Location

Supporting Stations: McMurdo Station
Research Locations: Bratina Island / Cape Evans (ASPA 155) / Dry Valleys / Ross Ice Shelf / McMurdo sea ice

Description

This science event is an international, advanced Ph.D. training course that was taught at Palmer Station during the 2016 austral winter (July-August) and will be held at McMurdo Station during the austral 2017-18 austral summer (December -February). Between 1993 and 2010, the program has deployed participants nine times to McMurdo Station in January. The goal of the course is to introduce early-career scientists to the diversity of biological organisms in the Antarctic and to study unique aspects of biology that permit life in such extreme environments. This project will give scientists who are new to the Antarctic the opportunity to learn about and appreciate the logistical possibilities and constraints of working in this extreme environment. Course participants will develop experiments and attend lectures focusing on understanding the ecology and biological adaptations of Antarctic organisms.

Field Season Overview

The science team will deploy from late December through early February with a majority of participants on ice for the month of January. An advance team will set up labs and field sites, and a few people will stay after the main group for final clean up.They will drill holes into annual sea ice at various field locations (e.g., near the Ross Ice Shelf, the sea water intake jetty, Cape Evans) to conduct water sampling. Helicopters will provide the team some support for trips to Cape Evans, some sea ice locations and to the ice edge, but they will access most sites by snow mobile or other tracked vehicles. They will use Crary Lab facilities for nearly all of the sample analyses.

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

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Deploying Team Members

- Douglas Bartlett
- Mark Denny
- Deneb Karentz
- Samuel Laney
- Donal Manahan (PI)
- Robert Shadwick

2017-2018 USAP Field Season
Project Detail

Project Title

UNL Hot Water Drilling Support

Summary

Event Number:
T-524-M
NSF/OPP Award 1543537

Program Manager:
Dr. Jennifer Burns

ASC POC/Implementer:
Judy Shiple / Colleen Hardiman / Matthew Kippenhan

Principal Investigator

Mr. James D McManis
mcmanis@unl.edu

University of Nebraska Lincoln
Lincoln, Nebraska

Location

Supporting Stations: McMurdo Station
Research Locations: Near station

Description

The Whillans Ice Stream Subglacial Access Research Drilling (WISSARD) drill is currently stored on the ice shelf a few miles out from McMurdo Station on the road to Pegasus Field. This season, the University of Nebraska-Lincoln will continue to repair and perform general maintenance on the drill to prepare it for use in the Subglacial Antarctic Lakes Scientific Access (SALSA) project in 2018-19. The WISSARD drill, which consists of several 40-foot containers located on ski kits, needs repairs to its high-pressure pumps, its filtration system, and stress cracks in the shipping containers that house the components. The plan also includes reconfiguring the drill system to make it lighter and easier to move.

Field Season Overview

Four drillers, one welder, and a drill manager from the University of Nebraska, Lincoln (UNL) will deploy to McMurdo in mid October 2017 to finish repairs and maintenance to the WISSARD Hot Water drill to prepare for drilling in 2018-19 for the Subglacial Antarctic Lakes Scientific Acces (SALSA, C-533-M) project. The majority of their work will focus on repairs for a high pressure pump unit (HPU-1), the hose reel container, and testing of the operating system, but they will also give attention to general repairs, maintenance and packing. The UNL team will do most of the repairs but will receicve assistance from skilled Antarctic Support Contractor (ASC) generator technicians and electricians. They will conduct the repairs in a near-station location to which the team will be able to drive. There also is a general downsizing that will take place to the drill so some forklift support will be requested. The work should be completed and the drill team headed off station by early December.

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

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Deploying Team Members

- Dennis Duling (Co-PI)
- Dar Gibson
- Edwin Krula
- Jeffrey Lemery
- Joshua Mehlin
- Anatoly Mironov
- Graham Roberts
- Philip Thalheim

2017-2018 USAP Field Season
Project Detail

Project Title

Cold Regions Research And Engineering Laboratory (CRREL) Activities

Summary

Event Number:
T-940-M
NSF Agreement

Program Manager:
Ms. Margaret Knuth

ASC POC/Implementer:
Samina Ouda / Bob DeValentino

Principal Investigator

Ms. Renee Melendy
Renee.D.Melendy@usace.army.mil

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

Location

Supporting Stations: McMurdo Station
Research Locations: On station / McMurdo Shear Zone

Description

The Cold Regions Research and Engineering Laboratory (CRREL) activities encompass engineering and basic research in support of a variety of projects at both McMurdo and South Pole stations. At McMurdo Station, CRREL supports ground-penetrating radar (GPR) work with the South Pole Traverse (SPoT) and support for the McMurdo Station airfields. CRREL also provides general engineering analysis for projects at McMurdo and South Pole.

Field Season Overview

The field season entails one ground penetrating radar (GPR) operator traveling to McMurdo Station, then on to the McMurdo Shear Zone with South Pole Traverse personnel by tractor. The operator will likely spend 10-12 days surveying the route using GPR, helping to profile any potentially hazardous findings, helping to mitigate any hazards, and resurveying the route after mitigation. The second participant will travel to South Pole in January.

Deploying Team Members

- Lynette Barna
- Zoe Courville
- Renee Melendy (PI)

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

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2017-2018 USAP Field Season
Project Detail

Project Title

CRREL Support To The Phoenix Runway

Summary

Event Number:
T-941-M
NSF Agreement

Program Manager:
Ms. Jessie Crain

ASC POC/Implementer:
Samina Ouda / Bob DeValentino

Principal Investigator

Ms. Renee Melendy
Renee.D.Melendy@usace.army.mil

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

Location

Supporting Stations: McMurdo Station
Research Locations: Phoenix Runway

Description

This project will continue to further develop the new Phoenix Runway and establish safe evaluation techniques. The team will observe impact of aircraft operations on the runway between landing and take-off. They will monitor tasking associated with runway construction and maintenance, allowing them to provide operational guidance to runway operators and users in oral and written form.

Field Season Overview

Two engineers will deploy to work with USAP contractors and support agencies. They will be based at McMurdo Station and will require two snowmobiles for transportation to and from the runway.

Deploying Team Members

- George Blaisdell (Co-PI)
- Terry Melendy, Jr. (Co-PI)

Project Indexes

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2017-2018 USAP Field Season
Project Detail

Project Title

Investigating Biogeochemical Fluxes And Linkages To Climate Change With Multi-Scale Observations In The Drake Passage

Summary

Event Number:
O-214-L
NSF/OPP Award 1543457

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Rachel Shackelford / Bruce Felix

Principal Investigator

Dr. David Russel Munro
david.munro@colorado.edu

University of Colorado Boulder
INSTAAR
Boulder, Colorado

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Drake Passage / Southern Ocean Pacific Sector

Description

The Southern Ocean plays an important role in the global carbon cycle and yet the timing, magnitude, and trends of key biogeochemical fluxes in this region remain poorly known due in large part to a lack of surface-ocean data. The overarching goal of this project is to collect and analyze observations that resolve variability of both oceanic and atmospheric biogeochemical tracers over a range of spatial and temporal scales and, secondarily, to improve the understanding of mechanisms driving natural variability and long-term change in the Southern Ocean. This project is an extension of the continuous underway surface ocean partial pressure of carbon dioxide (pCO2), dissolved oxygen and high precision atmospheric carbon dioxide and oxygen measurements that are currently operational on the ARSV Laurence M Gould (LMG). This also includes the extension of the discrete surface ocean sampling for nutrients and total carbon dioxide (TCO2). The extension of both physical and biogeochemical observations will ensure the continuity of the most complete, longest-running and densely sampled time series in the Southern Ocean.

Field Season Overview

Project participants deploy to one port call each year for each vessel to perform maintenance on their underway instrument. For most of the year, onboard ASC technicians monitor the equipment, turn it on and off to avoid data collection in other nations' Exclusive Economic Zones (EEZ), and perform maintenance as needed. At the end of each cruise the data is distributed to the project PIs and collaborators as well as the onboard science parties.

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

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Deploying Team Members

- David Munro (PI)
- Tim Newberger
- Colm Sweeney (Co-PI)

Project Title

NASA / McMurdo Ground Station (MG1)

Summary

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

Program Manager:
Mr. Pat Smith

ASC POC/Implementer:
Bill Jirsa / Sheryl Seagraves

Principal Investigator

Mr. Joseph S Obrien
joseph.s.obrien@nasa.gov

Wallops Island, Virginia

Location

Supporting Stations: McMurdo Station
Research Locations:

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, in collaboration with the National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite and Data Information Service, data recovery for the EUMETSAT MetOp polar weather satellite constellation.

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
- Salem El Nimri
- Peter Fetterer
- Raymond Funk
- Deepak Kaul
- Nickolas Sinkola (Co-PI)
- Steve Sirotzky
- Edward Wendell

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- William Kambarn

2017-2018 USAP Field Season
Project Detail

Project Title

Lower Thermospheric Science Using New Meteor Radars At McMurdo Station

Summary

Event Number:
A-284-M
NSF/OPP Award 1543446

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Samina Ouda / Elizabeth Kauffman / Chad Naughton

Principal Investigator

Dr. Scott Palo
scott.palo@colorado.edu

University of Colorado Boulder
Department of Aerospace Engineering Sciences
Boulder, Colorado

Location

Supporting Stations: McMurdo Station
Research Locations: On station

Description

The primary goal of this research is to observe, quantify, model, and further understand the spatial-temporal structure and variability of the mesosphere and lower thermosphere (MLT) circulation above Antarctica with a specific focus on four questions: (1) What are the zonal phase speeds and directions of individual spectral wave components? (2) What are the relationships between variations in the wave spectrum and meteorological conditions in the stratosphere and mesosphere? (3) To what degree are the various wave components consistent with proposed sources of excitation and with intervening wave propagation conditions? (4) What parts of the observed wave spectrum propagate into the space-atmosphere interaction region (SAIR) system with significant amplitudes, and what roles might they play in terms of SAIR variability or net momentum and heat deposition?

Field Season Overview

A science team of four participants will begin arriving at McMurdo Station in December 2017 to install a meteor radar and antenna array. One team member will deploy from early December to late February while a second team member will deploy in mid December to support the antenna installation. Two additional team members will arrive in early January, separated by a week, to support the transmitter, receiver and computer installation, and to perform system testing and debugging. Three team members will depart in late January and one team member will stay on through February to monitor the early operations of the system. The former Department of Energy ARM Western Antarctica Radiation Experiment (DOE AWARE / O-325-M) pad adjacent to the COSRAY building has been selected as the location for the radar. An ASC research associate will be trained to oversee the radar and

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will collect data and mail it to the PI, as opportunity allows.

Deploying Team Members

- Scott Palo (PI)

2017-2018 USAP Field Season
Project Detail

Project Title

Troposphere-Ionosphere Coupling Via Atmospheric Gravity Waves

Summary

Event Number:
A-373-P
NSF/OPP Award 1341557

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Samina Ouda / Jamee Johnson

Principal Investigator

Dr. Vadym V Paznukhov
vadym.paznukhov@bc.edu

Boston College
Institute for Scientific Research
Chestnut Hill, Massachusetts

Location

Supporting Stations: Palmer Station
Research Locations: On station

Description

The goal of this project is to enhance the comprehensive 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

This is the final season of this project. An ASC research associate will assist in taking down, packing and shipping the equipment and instruments back to the PI's home institution. ASC science construction personnel will remove the three HF antennas in the Palmer backyard.

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2017-2018 USAP Field Season
Project Detail

Project Title

Characterizing Protein Homeostasis And The Regulatory Mechanisms Controlling Molecular Chaperone Expression In The Highly Stenothermal Notothenioid Fish, Trematomus Bernacchii

Summary

Event Number:
B-199-M
NSF/OPP Award 1543419

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Jenny Cunningham / Elizabeth Kauffman

Principal Investigator

Dr. Sean Place
places@sonoma.edu

Department of Biology
Rohnert Park, California

Location

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

Description

Antarctic fishes are distinguished by unique physiological adaptations that enable them to thrive in water temperatures that are below freezing. Consequently, these species have lost some functional traits that enable survival in more variable environments. This study aims to identify regulatory mechanisms that control expression of the heat-shock response in a key fish species of the Southern Ocean, Trematomus bernacchii, and to determine if this mechanism has been permanently lost in this species. Over two field seasons, researchers will collect T. bernacchii and introduce them to different seawater temperature treatments at McMurdo Station's Crary Laboratory. After acclimatization, they will collect tissues and culture freshly isolated hepatocyte cells for molecular analyses. Ultimately, the study can infer how these fish might adapt to effects of climate change in the Southern Ocean.

Field Season Overview

Participants will reside on station and make day trips by Pisten Bully and snowmobile to their sea ice sampling locations where they will fish for live T. bernacchii specimens. A fish hut will be stationed at Cape Evans Wall, and the group will also use a dedicated portable Apple hut mounted on a sled to access short term sampling locations. They will use a Jiffy drill to create holes in the sea ice, and fish will be collected using a long line and barb-less hook with synthetic bait. Thirty to forty live T. bernacchii fish will be collected each season. Fish (11” to 14” long) will be transported to Crary Laboratory in a water cooler outfitted with a battery-operated air pump. Fish will be held in tanks of varying temperature treatments in the aquarium lab for several weeks. Following temperature treatment, various tissue

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samples will be collected from each fish and cultured in cold rooms or flash-frozen in liquid nitrogen for shipment home. The group may divide into teams of two in order to continue laboratory experiments while additional samples are collected from the field. The group will typically collect fish in the morning, return to station to work in the laboratory in the afternoon, and will then go out again and return with more samples later in the evening. They will not overnight in the field.

Deploying Team Members

- Samuel Bogan
- Kristen Hosek
- Sean Place (PI)
- Anthony Tercero

2017-2018 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

Program Manager:
Dr. Chris Fritsen

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

Principal Investigator

Dr. Michael Polito
mpolito@lsu.edu

Louisiana State University Baton Rouge
Baton Rouge, Louisiana

Location

Supporting Stations: Special Project, McMurdo Station
Research Locations: Antarctic Peninsula

Description

Researchers will sample active and abandoned penguin colonies for sediments and tissues and conduct radiocarbon, stable isotope, and mercury analyses to investigate the 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 will access those locations using existing collaborations with private tour ship companies.

Deploying Team Members

- Steven Emslie (Co-PI)
- Kelton McMahon
- Chantel Michelson

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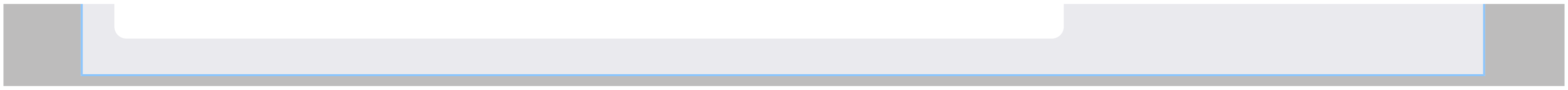

2017-2018 USAP Field Season
Project Detail

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

Program Manager:
Dr. Paul Cutler

ASC POC/Implementer:
Judy Shiple / Elizabeth Kauffman

Principal Investigator

Dr. Laura E Ray
Laura.E.Ray@dartmouth.edu

Dartmouth College
Thayer School of Engineering
Hanover, New Hampshire

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 multi-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. Two 150-pound battery-powered robots, the Yeti and Scotty, will be used to obtain GPR profiles, particularly in crevassed terrain.

Field Season Overview

A team of six, including three scientists, two robot operators, and a mountaineer, will camp near the McMurdo Shear Zone (SZ) for three weeks. The team will conduct repeat GPS surveys to obtain surface strain rates and will perform robotic GPR surveys within the SZ. Two days of helicopter support will be needed to resurvey the GPS network. Two 150 lb. battery-powered robots will be deployed in the field. The robots navigate autonomously along pre-set routes comprised of GPS waypoints to conduct transect and grid surveys in the SZ. The range of these robots is approximately 18 km. The GPS network was established in the first field season and has been resurveyed in subsequent seasons.

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Deploying Team Members

- Peter Braddock
- Seth Campbell (Co-PI)
- Joshua Elliott
- Lynn Kaluzienski
- James Lever (Co-PI)
- Austin Lines

2017-2018 USAP Field Season
Project Detail

Project Title

Using Bio-Acoustics On An Autonomous Surveying Platform For The Examination Of Phytoplankton-Zooplankton And Fish Interactions In The Western Ross Sea

Summary

Event Number:
B-050-N
NSF/OPP Award 1743035

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Matthew Erickson / Adam Jenkins

Principal Investigator

Dr. Grace Saba
saba@marine.rutgers.edu

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

Location

Supporting Stations: RV/IB Nathaniel B. Palmer
Research Locations: Terra Nova Bay

Description

The quantitative linkages between primary producers and the higher trophic levels, specifically the processes responsible for the regulation of abundance of middle trophic levels dominated by copepods and crystal krill (Euphausia crystallorophias), are virtually unknown in the Ross Sea. Using a glider equipped with a multi-frequency echo sounder, researchers will conduct a quantitative assessment of simultaneous spatial distributions of phytoplankton, zooplankton, and Antarctic silverfish in Terra Nova Bay and the surrounding shelf waters. The addition of the bioacoustic echo sounder on a glider is a new system that has not yet been deployed and tested widely. These novel data will allow for the investigation of trophic interactions between these three trophic levels as well as their relation to physical drivers.

Field Season Overview

Two participants will sail on the RVIB Nathaniel B. Palmer from Punta Arenas, Chile to Terra Nova Bay. Their primary objective on this cruise is to deploy the Slocum G2 glider with the integrated Acoustic Zooplankton and Fish Profiler (AZFP). The team will also deploy various net systems in order to ground truth the acoustic data from the glider.

The three major components of this work include: (1) An acoustic survey with one, 4-to-6 week deployment of a Slocum glider with an AZFP package to map distribution and abundance of phytoplankton, multiple zooplankton taxa, and silverfish during the spring-summer transition along TNB polynya ice shelf and in continental shelf waters adjacent to TNB; (2) Ship-based acoustic sampling via the hull-mounted EK-60 during ship transit

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when possible to complement glider-based acoustic measurements; and (3) Ship-based sampling of zooplankton and silverfish using net tows and mid-water trawls to validate acoustic data of taxa composition and size collected from the glider deployment. ASC Marine Technicians will recover the glider on leg two of the NBP18-01 cruise without a project participant present.

The operations to support this project requires collaboration and flexibility with the other science teams on board. Net tows will need to occur opportunistically during transits between the other science team's CTD (Conductivity-Temperature-Depth) and TMC (Trace Metal Clean) cast stations. Current-tracking drifters will dictate where the ship is required to be.

Deploying Team Members

- Matthew Breece
- Rachael Young

2017-2018 USAP Field Season
Project Detail

Project Title

PHI, Inc.

Summary

Event Number:
T-902-M

Program Manager:
Mr. Mike Scheuermann

ASC POC/Implementer:

Principal Investigator

Undefined Ramona Ann Savoie
msavoie@phihelico.com

PHI, Inc
Beaux Bridge, Louisiana

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

Location

Supporting Stations: McMurdo Station
Research Locations:

Description

Support the research objectives of all research teams with helicopter support.

Field Season Overview

Standard helicopter operations support package. Continuous cargo, construction, and information technology support will be required. Additional support will be required to facilitate SHG operations as we as PHI demobilization at the end of the season.

Deploying Team Members

- Richard Andersen, Jr.
- Patrick Attaway
- Lindsay Barrowclough
- Harlan Blake
- Lance Bospflug
- Richard Colburn
- Keith Cox
- Junius Cox Jr
- Michael Cutter
- Matthew Hollinger
- Clayton Levgerne
- Bryan Minnear
- Riki Neff
- Joshua Parris
- David Paul
- Aaron Pingel-Karuzas
- John Radford
- Ryan Skorecki

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- Christopher Dean
- Susan Douglas
- Adam Godfrey
- Ned Goubeaux
- Taylor Smith
- Michael Tinervia
- Rebecca Voltin

2017-2018 USAP Field Season
Project Detail

Project Title

Implementing Low-Power, Autonomous Observing Systems To Improve The Measurement And Understanding Of Antarctic Precipitation

Summary

Event Number:
O-456-M
NSF/OPP Award 1543377

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Samina Ouda / Elizabeth Kauffman

Principal Investigator

Dr. Mark W Seefeldt
mark.seefeldt@colorado.edu

University of Colorado Boulder
CIRES
Boulder, Colorado

Location

Supporting Stations: McMurdo Station
Research Locations: Williams Field / Phoenix Airfield / Alexander Tall Tower / Elaine AWS

Description

The objectives of this project focus on improving measurement of precipitation in Antarctica, advancing understanding of precipitation processes, and using this knowledge to evaluate weather and climate models. The basic measurement of precipitation in Antarctica is exceedingly difficult because of the challenge of distinguishing falling snow from blowing snow, and the relatively small amount of annual precipitation. An accurate measurement of precipitation is critical for calculating Antarctica's mass balance and contribution to global sea-level rise, interpreting ice-core records, and providing benchmarks for promising model- and satellite-based precipitation estimates. To that end, researchers will install four low-power, autonomous polar-grade instrument suites referred to as an Antarctic Precipitation System (APS). The APSs are designed with an integrated sensor approach to provide multiple types of observations of snow accumulation at a given site. The resultant observations from the four sites will directly improve knowledge of seasonal and spatial precipitation variability at locations on the Ross Ice Shelf and will be the basis of an evaluation of weather and climate models' ability to simulate regional precipitation.

Field Season Overview

A science team of two will install the APSs at four University of Wisconsin automatic weather station (AWS) sites: Williams Field, Alexander Tall Tower, Phoenix Airfield, and Elaine. Lorne AWS site is a backup site, accessible by helicopter, should the weather or priorities negate the chance to visit Elaine AWS by Twin Otter aircraft. The premier

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observation site will be co-located with the Williams Field AWS site. The team expects to complete the installations in one day of field work, except for the Williams Field and Phoenix sites, which can be accessed by truck on multiple days.

Although the APS sites are co-located at AWS sites, the projects will remain independent of each other in installation, power, and communications. The precipitation systems will run continuously and year around. The APS dataloggers will use Iridium or 900MHz radio, depending on location, to conduct the communications with the National Center for Atmospheric Research (NCAR). The project science team, including representatives from NCAR, will adjust the measurement algorithms, using the two-way comms, throughout the year to ensure the right balance between observations and power resources. The dataloggers include on-board data storage systems for the webcam images and higher frequency data collection for data that is too large for transmission by Iridium or radio. The storage systems are capable of collecting at least one year of data so that the images and data can be stored and retrieved during subsequent field visits. UNAVCO will support the project by supplying the power systems for all four APS sites. The support by UNAVCO will provide the opportunity to leverage UNAVCO's pool resources, as well as to return the systems to their pool.

Deploying Team Members

- Scott Landolt (Co-PI)
- Mark Seefeldt (PI)

2017-2018 USAP Field Season
Project Detail

Project Title

Resolving CO2 System Seasonality In The West Antarctic Peninsula With Autonomous Observations

Summary

Event Number:
O-270-L
NSF/OPP Award 1543380

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Matthew Erickson / Adam Jenkins

Principal Investigator

Dr. Elizabeth Henderson Shadwick
shadwick@vims.edu

College of William and Mary
Gloucester Point, Virginia

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Palmer LTER Site 300.100

Description

The circumpolar Southern Ocean connects the major ocean basins. It returns carbon and nutrients to the surface ocean and transports heat and carbon to the ocean interior. Understanding the Southern Ocean response to both natural and human changes is critical to understanding changing global biogeochemical cycles. However, major uncertainties persist in our knowledge of the Southern Ocean carbon budget due in part to unresolved variability at the seasonal scale, and in part to a significant lack of observations in coastal regions. The goal of this project is to increase understanding of coastal Southern Ocean carbon dioxide system variability by delivering new autonomous observations that will allow the full carbon dioxide system seasonality to be resolved. Using a moored observing system to measure pH, carbon dioxide partial pressure, temperature, salinity, and dissolved oxygen on the West Antarctic Peninsula continental shelf, the researchers will characterize diurnal and seasonal variability and identify the dominant physical and biological controls on the seasonal variations in the carbon dioxide system and the net annual air-sea exchange.

Field Season Overview

Two participants will deploy on a fifteen day cruise, using four days of ship time aboard the ARSV Laurence M. Gould (LMG). One mooring will be recovered in the Palmer Long Term Ecological Research (PAL-LTER) grid that was deployed on the LMG17-04. A 24-bottle CTD and rosette system will be used to collect water samples with higher vertical resolution in the upper water column. The samples include dissolved organic carbon/total alkalinity (DIC/TA), inorganic nutrients and dissolved organic carbon (DOC). The team will ship the mooring to the home institution for the acquisition of data. This is the final cruise of

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this project and no additional moorings will be deployed.

Deploying Team Members

- Maria Arroyo
- Elizabeth Shadwick (PI)
- Stephane Thanassekos,

2017-2018 USAP Field Season
Project Detail

Project Title

New Constraints On Post-Glacial Rebound And Holocene Environmental History Along The Northern Antarctic Peninsula From Raised Beaches

Summary

Event Number:
G-412-L
NSF/OPP Award 1644197

Program Manager:
Dr. Douglas Kowalewski

ASC POC/Implementer:
Samina Ouda / Cara Ferrier

Principal Investigator

Dr. Alexander R Simms
asimms@geol.ucsb.edu

University of California Santa Barbara
Dept. of Geological Sciences
Santa Barbara, California

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Joinville Island (Firth of Tay)

Description

Researchers will use optically stimulated luminescence to date a series of newly discovered raised beaches along the eastern Antarctic Peninsula and an already known, but only preliminarily dated, series of raised beaches in the South Shetland Islands. Data collected will include the age and elevation of raised beaches, ground-penetrating radar profiles through the raised beaches, data on the roundness of cobbles, and the lithology of ice-rafted debris found on those raised beaches. With these data researchers will test three hypotheses: (1) That uplift rates have increased in modern times relative to the late Holocene across the Antarctic Peninsula; (2) That the sea-level history at the northern tip of the Antarctic Peninsula is distinctly different than that of the South Shetland Islands; and (3) That cobble roundness and the source of ice-rafted debris on raised beaches varied systematically through time, reflecting the climate history of the northern Antarctic Peninsula.

Field Season Overview

Researchers will sample and conduct elevation and ground-penetrating radar (GPR) surveys of raised beaches at two sites in the Antarctic Peninsula, Livingston and Joinville Islands, in order to determine their age and to reconstruct past sea levels and climate based on their character. In the 2017-18 season a team of four science team members and one ASC field camp manager will deploy to Joinville Island for approximately twelve days. Fieldwork will occur within the Firth of Tay on the southern side of Joinville Island in mid-February to early March. As a contingency plan, if weather conditions do not allow access to Joinville Island in the 2017-18 season (determined prior to starting the cruise), the

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science team will travel to Livingston Island and will attempt to access Joinville Island in the 2018-19 season. Team will deploy to and retrieved from the field site via small boats. Once deployed at field site, the team will conduct all of their fieldwork from a tent-based field camp. The equipment needed at each site includes camping gear (i.e. sleep and kitchen tents, stove, water, food, fuel, etc.), a small generator to recharge GPS and GPR equipment, and 20 wooden rock boxes to transport collected beach material for later analysis. The optically stimulated luminescence (OSL) dating determines the last exposure of mineral grains to sunlight. Each day in the field, two people will collect GPR and/or OSL samples, one person will be responsible for cobble roundness measurements and/or GPS surveying, and one person will be responsible for IRD identification. The science team anticipates collecting four approximately 300 m long GPR profiles aligned orthogonally to the coast at Joinville Island and four approximately 800 m long GPR profiles on Livingston Island. They also anticipate collecting a total of 96 OSL samples on each island. The GPR will be from the PI’s university. Each box will be filled with ~30-40 lbs of rock. The GPS will be on loan from UNAVCO.

Deploying Team Members

- Alexander Simms (PI)
- Julie Zurbuchen

2017-2018 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:
Ms. Jessie Crain

ASC POC/Implementer:
Neal Scheibe / Elizabeth Kauffman

Principal Investigator

Dr. Curt Szuberla
caszuberla@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, equipped with standard remote field equipment (including snowmobiles, PistenBully, and Mattrack) will stay in a self-supporting field camp at Windless Bight for four weeks. The camp will consist of two Polarhavens and individual mountain tents. The team will typically stay at the field site, but will intermittently return one or two team members to McMurdo Station for supplies and overnight stays. The USAP also provides year around on-site support from an ASC Research Associate (RA), who occasionally visits the site during winter months for maintenance and troubleshooting.

Deploying Team Members

- Lukas Blom
- Don Byrd
- Dale Pomraning
- Guy Tytgat

Project Indexes

Find information about projects approved for the 2017-2018 USAP field season using the available indexes.

Project Web Sites

Find more information about 2017-2018 USAP projects by viewing project web sites.

More Information

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- Jay Helmericks (Team Leader)
- Andrew Winkelman

2017-2018 USAP Field Season
Project Detail

Project Title

Sampling Comet Dust From Antarctic Air

Summary

Event Number:
O-399-S
NSF/NASA Agreement

Program Manager:
Dr. Peter Milne

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

Principal Investigator

Dr. Susan Taylor
susan.taylor@erdc.dren.mil

Army Corps of Engineers
Army Engineer Research and Development Center
Hanover, New Hampshire

Location

Supporting Stations: South Pole Station
Research Locations: Clean Air Sector

Description

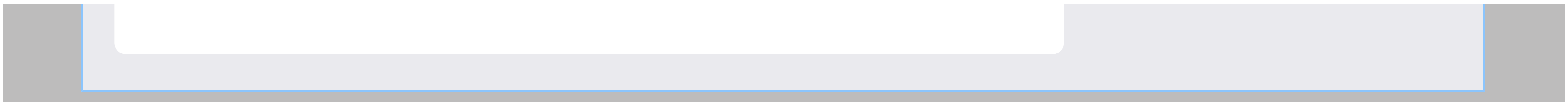
Analyses of interplanetary dust particles (IDPs) collected in the stratosphere by high-flying aircraft have shown that some of these particles, the chondritic porous IDPs (CP-IDPs), are primitive materials. They contain vapor-deposited minerals that are silicates thought to be preserved interstellar materials transported to the inner solar system by comets. Past researchers have collected rare ultra-carbonaceous micrometeorites and particles indistinguishable from CP-IDPs from melted Antarctic snow. These particles have shown affinities to CP-IDPs and grains of the Wild 2 comet. This project aims to collect samples at the South Pole in order to analyze the isotopic and elemental composition and to describe their microstructure. The results will be used to catalog the diversity of the primitive materials, origin of the comets, and increase the permanent collection for the extraterrestrial materials community.

Field Season Overview

This is the second of three seasons for this project. Participants will travel to South Pole by fixed wing aircraft to check on the performance of the equipment and determine if there are any issues with the monthly filter swaps. An ASC research associate will continue bi-weekly visits to the collector building to change filters and make measurments.

Deploying Team Members

- James Lever (Co-PI)
- Susan Taylor (PI)



2017-2018 USAP Field Season
Project Detail

Project Title

Production And Fate Of Oxylipins In Waters Of The Western Antarctic Peninsula: Linkages Between UV Radiation, Lipid Peroxidation, And Carbon Cycling

Summary

Event Number:
B-032-P
NSF/OPP Award 1543328

Program Manager:
Dr. Chris Fritsen

ASC POC/Implementer:
Rachel Shackelford / Jamee Johnson

Principal Investigator

Dr. Benjamin Van Mooy
bvanmooy@whoi.edu

Woods Hole Oceanographic Institution
Marine Chemistry & Geochemistry
Woods Hole, Massachusetts

Location

Supporting Stations: Palmer Station
Research Locations: On station / Arthur Harbor

Description

The depletion of stratospheric ozone over Antarctica every austral spring leads to abnormally high surface levels of ultraviolet radiation (UVR), which can be a source of significant stress to organisms in marine ecosystems. Increased exposure of phytoplankton to UVR-produced reactive oxygen species (ROS) can result in lipid peroxidation, but little is known about the oxylipin byproducts of this process. Oxylipins from the austral springtime blooms can be highly bioactive for zooplankton, grazers, and other phytoplankton. Many studies focus on enzymatic pathways, but this study seeks to address the UVR and/or ROS pathways. This study will apply new, highly sensitive techniques using high-mass-resolution mass spectrometry to understand the connections between UVR, ROS, oxylipins, and carbon cycling. This includes laboratory experiments with artificial membranes and diatom cultures as well as field experiments with phytoplankton, zooplankton, and bacteria in Western Antarctic Peninsula waters.

Field Season Overview

Participants will collect samples for laboratory and field experiments to assess the origin of environmental oxylipins, and to expose diatoms to UVR in order to stimulate oxylipin production. The team will use seawater pumped from Arthur Harbor into the laboratory. They will also conduct plankton tows and water column sampling in Arthur Harbor by small boat.

Deploying Team Members

Project Indexes

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Project Web Sites

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- Kevin Becker
- James Collins

Project Title

Radio Detection Of The Highest Energy Neutrinos With A Ground-Based Interferometric Phased Array

Summary

Event Number:
A-340-S
PHY 1607555

Program Manager:
Dr. Vladimir Papitashvili

ASC POC/Implementer:
Neal Scheibe / Paul Sullivan

Principal Investigator

Dr. Abigail G Vieregg
avieregg@kicp.uchicago.edu

University of Chicago
Chicago, Illinois

Location

Supporting Stations: South Pole Station
Research Locations: Askaryan Radio Array (ARA) Drill Site

Description

The ground based interferometric phased array high-energy neutrino detector is designed to discover the highest energy particles in our universe. Radio emission from particle cascades induced by neutrinos in glacial ice will be observed using an interferometric phased array co-located with the Askaryan Radio Array (ARA) (A-107-S). These observations will be used to verify and extend IceCube astrophysical neutrino flux data to higher energies, inform design decisions for future detectors, and to search for high-energy neutrinos. This project will be located at the South Pole to take advantage of the radio clarity and depth of the ice. The project will develop, construct, deploy, calibrate, and analyze data from an interferometric phased array system located at the South Pole. The project will also work closely with collaborators on the ARA experiment to integrate the hardware and antenna geometry into the ARA system. The array will be deployed with the ARA project in one of the boreholes in the summer and will run continuously, year around. The system will be calibrated and optimized through in situ measurements at the South Pole during the summer season.

Field Season Overview

Participants will deploy to South Pole Station for six weeks. At ARA site number five, they plan to install a trigger array of antennas and beamforming trigger hardware into a single ARA borehole. One participant will arrive on station near the end of ARA drilling with time to prepare the phased array for deployment into the ARA borehole. ARA participants will aid in the installation of the array down the borehole. The ARA drilling structure will be used during setup of the phased array equipment. A second participant will arrive in early January to help with the remainder of the setup.

Project Indexes

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Deploying Team Members

- Eric Oberla
- Abigail Vieregg (PI)

2017-2018 USAP Field Season
Project Detail

Project Title

The Illustrated Story Of Antarctic Microbes

Summary

Event Number:
W-218-P
NSF/OPP Award 1644842

Program Manager:
Ms. Valentine Kass

ASC POC/Implementer:
Rachel Shackelford / Jamee Johnson

Principal Investigator

Ms. Karen Romano Young
wrenyoung@gmail.com

Bethel, Connecticut

Location

Supporting Stations: Palmer Station
Research Locations: On station

Description

The goal of this artist is to tell a visual story about scientists in Antarctica researching microbes and their potential impact on climate change. Specifically, this involves working alongside the Countway (B-028-P) science team to investigate the connections between dimethylsulfoniopropionate (DMSP), dimethyl sulfide (DMS), cloud formation, and microbial diversity in Antarctica. This will ultimately lead to an illustrated field notebook or science stories on the Internet, a poster about DMSP and DMS cycling, a children's book titled, "Looking for the Invisible Ocean," and various workshops and presentations.

Field Season Overview

Ms. Young will be embedded as a field assistant with the Countway (B-028-P) team. She will deploy to Palmer Station and will work alongside the science team to sample seasonal microbial communities from Palmer Long Term Ecological Research (LTER) Station B and/or E, and will assist with the continuous growth experiments involving these samples. She will participate in Dr. Countway's sample collection and laboratory work, and will be maintaining a daily journal of research activities. She also proposes to observe other scientists' studies within the framework of the Antarctic environment.

Deploying Team Members

- Karen Young (PI)

Project Indexes

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Project Web Sites

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2017-2018 USAP Field Season
Project Detail

Project Title

Oceanic Response To A Coastal Polynya, Terra Nova Bay, Antarctica

Summary

Event Number:
O-403-E
NSF/OPP Award 1341688

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Matthew Erickson / Adam Jenkins

Principal Investigator

Dr. Christopher Zappa
zappa@ldeo.columbia.edu

Columbia University
Lamont-Doherty Earth Observatory
Palisades, New York

Location

Supporting Stations: Special Project
Research Locations: Terra Nova Bay

Description

Researchers seek to simultaneously identify the mechanisms responsible for water-mass modification within the Terra Nova Bay polynya and document all aspects of dense shelf-water formation within an Antarctic polynya system. This study will characterize the water masses within Terra Nova Bay over the course of two annual cycles using in-situ near-surface oceanic observations. With the use of enhanced automatic weather stations (AWS) and satellite imagery, the research team will quantify the surface energy budget components over the polynya and adjacent sea ice; describe the forcing for, and near surface properties of, the katabatic wind field responsible for polynya formation; and document the oceanic response to these flows at high vertical and temporal resolution. The proposed measurements will build upon the successful deep-ocean moorings deployed by the Italian CLIMA program in Terra Nova Bay since 1995. Data collected will provide the first near-surface oceanic observations of an Antarctic polynya and will provide an unprecedented view of the coupled atmospheric and oceanic processes acting at the polynya.

Field Season Overview

Two team members will sail on the South Korean Research Vessel, Araon from Hobart, Australia. The USAP will provide only cargo support to the port of departure, the Korean Polar Research Institute (KOPRI) will facilitate recovery of the team's previously deployed moorings.

Deploying Team Members

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- Una Miller
- Carson Witte
- Christopher Zappa (PI)