



United States Antarctic Program
SCIENCE PLANNING SUMMARIES
2014-2015 FIELD SEASON



Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

Project Web Sites

Find more information about 2014-2015 USAP projects by viewing project web sites.

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2014-2015 USAP Field Season Project Indexes

- **USAP Program Indexes**
 - **Astrophysics and Geospace Sciences**
Dr. Vladimir Papitashvili, Program Manager
 - **Organisms and Ecosystems**
Dr. Charles Amsler, Program Director
 - **Earth Sciences**
Dr. Mark Kurz, Program Manager
 - **Glaciology**
Dr. Julie Palais, Program Manager
 - **Ocean and Atmospheric Sciences**
Dr. Peter Milne, Program Manager
 - **Integrated System Science**
Dr. Lisa Clough, Program Manager (Acting)
 - **Artists and Writers**
Mr. Peter West, Program Manager
- **USAP Station and Ship Indexes**
 - **Amundsen-Scott South Pole Station**
 - **McMurdo Station**
 - **Palmer Station**
 - **RVIB Nathaniel B. Palmer**
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Principal Investigator/Link	Event No.	Project Title
Ainley, David	B-031-M	Adelie penguin response to climate change at the individual, colony, and metapopulation levels
Albert, Mary	T-350-M	Ice Coring and Drilling Services (ICDS) support for WAIS Divide
Anderson, Kent	G-090-P/S	Global seismograph station at South Pole and Palmer Stations
Aydin, Murat	I-164-S	Collaborative Research: A 1,500-meter ice core from South Pole
Barwick, Steven	A-127-M	Development of hexagonal radio array for the ARIANNA ultra-high-energy neutrino detector
Bell, Robin E	G-053-M	MRI-R2: Development of an ice imaging system for monitoring changing ice sheets mounted on the NYANG LC-130
Boggs, Steven Edward	A-372-M	LDB-COMPTON Spectrometer and Imager (COSI)
Butler, James Hall	O-257-M/S	UV measurements at McMurdo Station for the NOAA/Global Monitoring Division (GMD) Antarctic UV network
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
Carlstrom, John	A-379-S	Cosmological research with the 10-meter South Pole Telescope
Carpenter, Paul	T-299-M/S	IRIS/PASSCAL seismic support
Chu, Xinzhaoh	A-130-M	LiDAR Investigation of middle and upper atmosphere temperature, composition, chemistry, and dynamics at McMurdo, Antarctica
Clauer, C. Robert	A-106-M/S	Polar Experiment Network for Geospace Upper-atmosphere Investigations (PENGUIn): Interhemispheric investigations along the 40-degree magnetic meridian



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Conde, Mark Gerard 	A-343-M/S	High-resolution mapping of thermospheric wind and temperature fields near the equatorward edge of the Antarctic polar cap
Conway, Howard 	I-209-M	Deglaciation of the Ross Sea Embayment - constraints from Roosevelt Island
Doran, Peter 	C-511-M	McMurdo LTER - Lakes: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Ducklow, Hugh William 	C-045-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, microbial ecology component
Durbin, Edward G 	B-014-N	Euphausia superba feeding using DNA analysis of gut contents
Evenson, Paul 	A-118-S	Collaborative Research: Element composition of high energy solar particles
Evenson, Paul 	A-120-M	Neutron monitor observations of cosmic rays from Jang Bogo and McMurdo Station
Fraser, Bill 	C-013-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, apex predator component
Friedlaender, Ari Seth 	C-024-L/P	Long Term Ecological Research (LTER) Whale Component
Gerrard, Andrew 	A-111-M/S	Synoptic geospace systems analysis using instrumentation from South Pole and McMurdo Stations
Gooseff, Michael N 	C-504-M	McMurdo LTER - Glaciers: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Gorham, Peter W 	A-371-M	Antarctic Impulsive Transient Antenna (ANITA III) experiment
Halzen, Francis 	A-333-S	IceCube operations and maintenance
Harvey, Ralph 	G-058-M	Antarctic Search for Meteorites (ANSMET)
Hofmann, Gretchen 	B-134-M	Ocean acidification seascape:

		linking natural variability and anthropogenic changes in pH and temperature to performance in calcifying Antarctic marine invertebrates
Jones, William Claude 	A-143-M	Sub-orbital Polarimeter for Inflation Dust and the Epoch of Reionization (SPIDER)
Kemerait, Robert C 	G-078-M	Dry Valley seismic project
Kim, Stacy 	B-174-M	Benthic-pelagic coupling in an intact ecosystem: The role of top predators in McMurdo Sound
Kovac, John 	A-149-S	Imaging the beginning of time from the South Pole: Observations with the full SPUD array
Kulesa, Craig 	A-364-M/S	High Elevation Antarctic Terahertz (HEAT) telescopes for Dome A and Ridge A
Kyle, Phillip 	G-081-M	Mount Erebus Volcano Observatory: Operations, Science, and Outreach (MEVO-OSO)
LaBelle, James 	A-125-S	Application of the AGO network to energy transfer in the radiation belts and remote sensing of auroral plasma processes
Lazzara, Matt 	O-283-M/S	Antarctic Automatic Weather Station (AWS) program
Lubin, Dan 	O-325-M	Department of Energy ARM West Antarctic Radiation Experiment (AWARE)
Lyons, W. Berry 	C-509-M	McMurdo LTER - Geochemistry: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Martinson, Doug 	C-021-L	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, physical oceanography component
McKnight, Diane 	C-506-M	McMurdo LTER - Streams: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Mitchell, John W 	A-142-M	Super Trans-Iron Galactic Element Recorder (SuperTIGER)

Moore, Robert C. 	A-109-M/P/S	Antarctic ELF/VLF observations of Q-bursts, radio atmospherics, and energetic particle precipitation
Morin, Paul 	T-434-M	The Polar Geospatial Information Center: Joint support
O'Brien, Kristin M. 	B-036-L/P	Collaborative Research: The physiological and biochemical underpinnings of thermal tolerance in Antarctic notothenioid fishes
Orr, Gerald Dwayne 	A-145-M	NASA Long Duration Balloon (LDB) support program
Pettit, Joseph R 	T-295-M	UNAVCO GPS survey support
Powell, Ross 	C-522-M	Integrative study of marine ice sheet stability and subglacial life habitats - Robotic Access to Grounding-zones for Exploration and Science (RAGES)
Priscu, John 	C-523-M	GeomicroBiology of Antarctic Subglacial Environments (GBASE) beneath the Mercer and Whillans Ice Streams
Priscu, John 	C-505-M	McMurdo LTER - Lakes: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Romalis, Michael V. 	A-103-S	Test of Lorentz invariance at the South Pole
Rotella, Jay 	B-009-M	The demographic consequences of environmental variability and individual heterogeneity in life-history tactics of a long-lived Antarctic marine predator
Saba, Grace 	B-068-P	Synergistic effects of elevated carbon dioxide and temperature on the metabolism, growth, and reproduction of Antarctic krill (<i>Euphausia superba</i>)
Schwartz, Susan 	C-525-M	Investigating (un)stable sliding of Whillans Ice Stream and subglacial water dynamics using borehole seismology: A component of the Whillans Ice Stream Subglacial Access Research Drilling (WISSARD) project
Sprintall, Janet 	O-260-L	The Drake Passage high-density XBT/XCTD program
Szuberla, Curt	T-396-M	Operation and maintenance of a



		CTBT class infrasound array at Windless Bight
Taylor, Kendrick	I-477-M	WAIS Divide Science Coordination Office (SCO)
Taylor, Michael	A-119-M/S	Development of an ANtartic Gravity Wave Imager Network (ANGWIN) for collaborative mesospheric research
Thoman, Bruce	T-927-M	NASA/McMurdo Ground Station (MG1)
Tulaczyk, Slawek M	C-521-M	Integrative study of marine ice sheet stability and subglacial life habitats - Lake and Ice Stream Subglacial Access Research Drilling (LISSARD)
Wall, Diana	C-507-M	McMurdo LTER - Soils: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Watters, George	B-006-N	NOAA/AMLR Cruise
Wilson, Terry	G-079-M	POLENET Antarctica: Investigating links between geodynamics and ice sheets - Phase 2
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2014-2015 USAP Field Season

Station and Vessel Schedules

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

Opening Dates

	Austral Summer Openings		Austral Winter Openings
	Operational	Science	
McMurdo	20 Aug 2014 (Winfly*)	29 Sep 2014 (Mainbody)	28 Feb 2015
South Pole	1 Nov 2014	1 Nov 2014	15 Feb 2015
Palmer	17 Sep 2014	10 Oct 2014	N/A
Research Vessels	Vessels Operate Year-Round (Find Vessel Schedules)		

*A limited number of science projects deploy at Winfly

Estimated Population

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

*RV/IB, Research Vessel/Icebreaker

**ARSV, Antarctic Research Support Vessel



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2014-2015 USAP Field Season

Air Operations

McMurdo Station

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

PHI

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

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

In addition, Antarctica New Zealand will be providing a ZK-IDE B3 Type Squirrel (operated by **Southern Lakes Helicopters**) from about the beginning of November through the end of January 2015.



New York Air National Guard (ANG)

The New York Air National Guard will provide re-supply and research support to South Pole Station. They will support research activities at deep-field locations including Siple Dome, West Antarctic Ice Sheet (WAIS) Divide, Grounding Zone, Subglacial Lake Whillans (SLW), Union Glacier, and various open-field landing locations.

Kenn Borek Air

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

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2014-2015 USAP Field Season

Staffed Field Camps

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

Dry Valleys

50 Nautical Miles From McMurdo Station

77.30°S, 162°E

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



Marble Point

46 Nautical Miles From McMurdo Station

77.41°S, 163.67°E

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

Pine Island Glacier (PIG) Traverse

Operating in vicinity of Byrd Surface Camp, WAIS Divide Field Camp, and PIG Camp

A staff of five will conduct a traverse from the West Antarctic Ice Sheet (WAIS) Divide camp to Pine Island Glacier. The traverse team's arrival will be preceded by a four-person advance arrival team that will assist with digging out and retrograding the remaining equipment that was stationed there in 2012-13.

Siple Dome

507 Nautical Miles From McMurdo Station

81.39°S, 149.04°W

This camp serves as a fueling point for aircraft operating between McMurdo Station and West Antarctica or South Pole. Two resident staff will provide daily weather observations and maintain the camp. Siple Dome will also house and feed Kenn Borek Air (KBA) crews as needed.

WAIS Divide Field Camp

924 Nautical Miles From McMurdo Station

79.46°S, 112.08°W

The WAIS Divide field camp with 15 resident staff will support six science projects conducting logging in the WAIS Divide borehole: Peters (I-161-M), Pettit (I-166-M), Talghader (I-172-M), and Clow (I-475-M). Charles Bentley with the Ice Drilling Design and Operations team (T-350-M) will send two personnel to assist with the logging winch and borehole operations. The WAIS camp will also house Kenn Borek Air (KBA) crews in support of Lazzara (O-283-M) who will service automatic weather stations (AWS) in the vicinity. The WAIS camp will also act as the logistical hub for the SuperTiger Long



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Duration Balloon recovery in West Antarctica and be the start/end point for the PIG traverse.

WISSARD Grounding Zone

575 Nautical Miles From McMurdo Station

84.34°S, 163.61°W

The Whillians Ice Stream Subglacial Access Research Drilling (WISSARD) campaign will focus scientific efforts at the Grounding Zone (GZ), an area where the Antarctic ice sheet starts to flow from land to ocean and float as the Ross Ice Shelf. Staff will consist of seven permanent staff members and will be joined by five of the WISSARD traverse crew. The WISSARD camp at the GZ will support the scientific efforts of the following projects: Tulaczyk (C-521-M), Powell (C-522-M), Priscu (C-523-M), Rack (C-524-M), and Schwartz (C-525-M).

WISSARD Traverse

Operating in vicinity of the Grounding Zone (GZ)

A staff of five will conduct a traverse from McMurdo Station to Subglacial Lake Whillians (SLW) to uncover and repair structures/equipment that wintered at the site. They will traverse the entire science platform to the GZ, which will be the new location for WISSARD science operations for the season. The traverse team will return sleds and equipment back to McMurdo Station in February 2015. The traverse will also provide ancillary support to the Sub-ice Investigation of Marine and PLanetary-analog Ecosystems (SIMPLE) project prior to departing for the deep field (including members of B-259-M and C-530-M).



2014-2015 USAP Field Season Event Numbering System

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

Sample Event Number

A – **100** – **M**

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

Program Prefixes

Prefix	USAP Program
A	Astrophysics and Geospace Sciences Dr. Vladimir Papitashvili, Program Manager
B	Organisms and Ecosystems Dr. Charles Amsler, Program Director
C	Integrated System Science Dr. Lisa Clough, Program Manager (Acting)
G	Earth Sciences Dr. Mark Kurz, Program Manager
I	Glaciology Dr. Julie Palais, Program Manager
O	Oceans and Atmospheric Sciences Dr. Peter Milne, Program Manager
W	Artists and Writers Mr. Peter West, Program Manager
T	Technical Event

Location Suffixes

Suffix	Supporting Location
M	McMurdo Station
P	Palmer Station
S	South Pole Station
	RV/IB* Nathaniel B. Palmer



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N

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
Ainley, David	B-031-M	Adelie penguin response to climate change at the individual, colony, and metapopulation levels
Albert, Mary	T-350-M	Ice Coring and Drilling Services (ICDS) support for WAIS Divide
Allen, Andrew	B-394-M	Synergistic effects of iron, carbon dioxide, and temperature on the fate of nitrate: Implications for future changes in export production in the Southern Ocean
Anderson, Kent	G-090-P/S	Global seismograph station at South Pole and Palmer Stations
Aronson, Richard	B-002-L	Climate change and predatory invasion of the Antarctic benthos
Arrigo, Kevin	B-244-N	Adaptive responses of Phaeocystis populations in Antarctic ecosystems
Aydin, Murat	I-164-S	Collaborative Research: A 1,500-meter ice core from South Pole
Balco, Gregory	G-410-M	Collaborative Research: Terrestrial exposure-age constraints on the last glacial maximum extent of the Antarctic Ice Sheet in the Western Ross Sea
Ball, Rebecca Ann	B-300-E	Collaborative Research: Climatic and environmental constraints on aboveground-belowground linkages and diversity across a latitudinal gradient in Antarctica
Bart, Philip	G-154-N	Timing and duration of Last Glacial Maximum (LGM) and post-LGM grounding events in the Whales Deep paleo ice streams, Eastern Ross Sea continental shelf
Barwick, Steven	A-127-M	Development of hexagonal radio array for the ARIANNA ultra-high-energy neutrino detector
Bell, Robin E	G-053-M	MRI-R2: Development of an ice imaging system for monitoring changing ice sheets mounted on the NYANG LC-130
Bench, Shelley R	B-018-P	Postdoctoral research fellowship



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Bilyk, Kevin Thomas	B-266-P	Evolutionary fates of hemoglobin and heme scavengers in white-blooded Antarctic icefishes
Boggs, Steven Edward	A-372-M	LDB-COMpton Spectrometer and Imager (COSI)
Bristow, William	A-369-M/S	McMurdo and South Pole SuperDARN: Investigation of the ionospheric dynamics and magnetosphere-ionosphere coupling in Antarctica
Bromirski, Peter D	I-348-M	Collaborative Research: Dynamic response of the Ross Ice Shelf to wave-induced vibrations
Burns, Jennifer	B-292-M	The cost of a new fur coat: Interactions between molt and reproduction in Weddell seals
Butler, James Hall	O-257-M/S	UV measurements at McMurdo Station for the NOAA/Global Monitoring Division (GMD) Antarctic UV network
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
Carlstrom, John	A-379-S	Cosmological research with the 10-meter South Pole Telescope
Carpenter, Edward	B-012-M	Collaborative Research: Importance of heterotrophic and phototrophic N ₂ fixation in the McMurdo Dry Valleys on local, regional, and landscape scales
Carpenter, Paul	T-299-M/S	IRIS/PASSCAL seismic support
Chu, Xinzhao	A-130-M	LiDAR Investigation of middle and upper atmosphere temperature, composition, chemistry, and dynamics at McMurdo, Antarctica
Clauer, C. Robert	A-106-M/S	Polar Experiment Network for Geospace Upper-atmosphere Investigations (PENGUIn): Interhemispheric investigations along the 40-degree magnetic meridian
Clow, Gary Dawson	I-475-M	WAIS logging
Conde, Mark Gerard	A-343-M/S	High-resolution mapping of thermospheric wind and temperature fields near the equatorward edge of the Antarctic polar cap

Conway, Howard	I-209-M	Deglaciation of the Ross Sea Embayment - constraints from Roosevelt Island
Dalziel, Ian	G-087-N	Role of the Central Scotia Sea in the onset and development of the Antarctic Circumpolar Current
Davis, Randall	B-017-M	Collaborative Research: Geomagnetic navigation by Weddell seals beneath Antarctic ice
Doran, Peter	B-280-M	Habitability of Antarctic lakes and detectability of microbial life in icy environments by autonomous year-round instrumentation
Doran, Peter	C-511-M	McMurdo LTER - Lakes: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Ducklow, Hugh William	C-045-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, microbial ecology component
Durbin, Edward G	B-014-N	Euphausia superba feeding using DNA analysis of gut contents
Eppley, Dr. Sarah Margaretha	B-289-E	The functional role of moss in structuring biotic interactions and terrestrialization of Antarctica
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Evenson, Paul	A-120-M	Neutron monitor observations of cosmic rays from Jang Bogo and McMurdo Station
Fountain, Andrew	C-517-M	The McMurdo Dry Valleys: A landscape on the threshold of change
Fraser, Bill	C-013-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, apex predator component
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Girton, James Bannister	O-398-N	Collaborative Research: Pathways of Circumpolar Deep Water to West Antarctica from profiling float and satellite measurements
Gooseff, Michael N	C-504-M	McMurdo LTER - Glaciers: Increased

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Gorham, Peter W	A-371-M	Antarctic Impulsive Transient Antenna (ANITA III) experiment
Hall, Brenda	I-196-M	Assessing the Antarctic contribution to sea-level changes during the last deglaciation: Constraints from Darwin Glacier
Halzen, Francis	A-333-S	IceCube operations and maintenance
Hamilton, Gordon S	I-178-M	Flow and fracture dynamics in an ice shelf lateral margin: Observations and modeling of the McMurdo Shear Zone
Hansen, Samantha	G-061-M	CAREER: Deciphering the tectonic history of the Transantarctic Mountains and the Wilkes Subglacial Basin
Harvey, Ralph	G-058-M	Antarctic Search for Meteorites (ANSMET)
Hofmann, Gretchen	B-134-M	Ocean acidification seascape: linking natural variability and anthropogenic changes in pH and temperature to performance in calcifying Antarctic marine invertebrates
Hosticka, Bouvard	T-998-P	Operation and maintenance of a CTBT radionuclide monitoring station at Palmer Station
Huntsman, Dwight David	T-982-M	NASA's McMurdo Tracking and Data Relay Satellite System Upgrade (MTRSU) deployment support
Jones, William Claude	A-143-M	Sub-orbital Polarimeter for Inflation Dust and the Epoch of Reionization (SPIDER)
Kalnajs, Lars E	O-324-M	Collaborative Research: High-resolution study of atmosphere, ice, and aerosol interactions in coastal Antarctica
Kemerait, Robert C	G-078-M	Dry Valley seismic project
Kim, Stacy	B-174-M	Benthic-pelagic coupling in an intact ecosystem: The role of top predators in McMurdo Sound
Kirschvink, Joseph	G-291-E	Paleomagnetism and magnetostratigraphy of the James Ross Basin, Antarctica.
Klein, Andrew	B-518-M/P	Temporal variability in natural and anthropogenic disturbance of McMurdo Station

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Kovac, John	A-149-S	Imaging the beginning of time from the South Pole: Observations with the full SPUD array
Kulesa, Craig	A-364-M/S	High Elevation Antarctic Terahertz (HEAT) telescopes for Dome A and Ridge A
Kuo, Chao-Lin	A-365-S	Collaborative Research: Science observation with BICEP3 CMB polarization experiment
Kyle, Phillip	G-081-M	Mount Erebus Volcano Observatory: Operations, Science, and Outreach (MEVO-OSO)
LaBelle, James	A-125-S	Application of the AGO network to energy transfer in the radiation belts and remote sensing of auroral plasma processes
Lazzara, Matt	O-283-M/S	Antarctic Automatic Weather Station (AWS) program
Lessard, Marc	A-102-M/S	Collaborative Research: Studies of ULF waves associated with solar wind coupling to the magnetosphere and ionosphere
Levy, Joseph	G-084-M	Cryptic hydrology of the McMurdo Dry Valleys: Water track contributions to water and geochemical budgets in Taylor Valley, Antarctica
Loeb, Valerie J	B-268-L	Pilot study: Addition of biological sampling to Drake Passage transits of the ARSV Laurence M. Gould
Lubin, Dan	O-325-M	Department of Energy ARM West Antarctic Radiation Experiment (AWARE)
Lyons, W. Berry	C-509-M	McMurdo LTER - Geochemistry: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Malin, Michael C	G-075-M	Collaborative Proposal: Decades-long experiment on wind-driven rock abrasion in the ice-free valleys, Antarctica
Marchant, David R	G-054-M	West Antarctic Ice Sheet stability, alpine glaciation, and climate

		variability: A terrestrial perspective from cosmogenic-nuclide dating in McMurdo Sound
Martinson, Doug	C-021-L	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, physical oceanography component
McKnight, Diane	C-506-M	McMurdo LTER - Streams: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Mikucki, Jill	C-528-M	MIDGE: Minimally Invasive Direct Glacial Exploration of biogeochemistry, hydrology, and glaciology of Blood Falls, McMurdo Dry Valleys
Mitchell, John W	A-142-M	Super Trans-Iron Galactic Element Recorder (SuperTIGER)
Moore, Robert C.	A-109-M/P/S	Antarctic ELF/VLF observations of Q-bursts, radio atmospheric, and energetic particle precipitation
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Pettit, Joseph R	T-295-M	UNAVCO GPS survey support
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Sims, Kenneth W	G-092-M	A geochemical study of the nature and evolution of mantle upwelling

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Sumner, Dawn Yvonne	G-063-M	Lake Joyce Microbialites - NSF
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Taylor, Edith	G-496-M	Life in a volcanic landscape: Early Jurassic paleoenvironments and paleobotany
Taylor, Kendrick	I-477-M	WAIS Divide Science Coordination Office (SCO)
Taylor, Michael	A-119-M/S	Development of an ANtarctic Gravity Wave Imager Network (ANGWIN) for collaborative mesospheric research
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Thompson, Andrew F	O-275-L	Boundary control of upwelling in Southern Drake Passage: Whither Weddies?
Thurnherr, Andreas M	O-408-N	Collaborative Research: Flow, turbulence, and mixing in mid-ocean ridge fracture-zone canyons
Todgham, Anne Elizabeth	B-207-M	Research in Undergraduate Institutions (RUI): Synergistic effects of ocean acidification and warming on larval development in Antarctic fishes
Tulaczyk, Slawek M	C-521-M	Integrative study of marine ice sheet stability and subglacial life habitats - Lake and Ice Stream Subglacial Access Research Drilling (LISSARD)

Wall, Diana	C-507-M	McMurdo LTER - Soils: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
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Wiens, Douglas	G-089-M	Collaborative Research: Mantle structure and dynamics of the Ross Sea from a passive seismic deployment on the Ross Ice Shelf
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Team Member	Event No.	Principal Investigator
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Achberger, Amanda	C-523-M	John Priscu
Ackert, Robert	G-438-M	Sujoy Mukhopadhyay
Acosta, Dimitri Ricardo	C-511-M	Peter Doran
Adams, Byron	C-507-M	Diana Wall
Adhikari, Deepak NMI	B-048-P	Jeannette Yen
Ahmed, Zeeshan NMI	A-365-S	Chao-Lin Kuo
Aird, Ken	A-379-S	John Carlstrom
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Alexander, Harriet NMI	B-014-N	Edward G Durbin
Alexander, Kate Denham	A-149-S	John Kovac
Allison, Patrick	A-371-M	Peter W Gorham
Alsip, Benjamin Michael	C-511-M	Peter Doran
Amsler, Margaret	B-002-L	Richard Aronson
Anderson, Sean Robert	B-014-N	Edward G Durbin
Anthony, Robert Ernest	G-089-M	Douglas Wiens
Armstrong, Brian Michael	G-090-P/S	Kent Anderson
Aster, Rick	G-089-M	Douglas Wiens
Auer, Ralf	A-333-S	Francis Halzen
Aydin, Murat	I-164-S	Murat Aydin
Babcock, Steve A.	G-154-N	Philip Bart
Baer, Steve	B-394-M	Andrew Allen
Baker, Michael nmi	G-079-M	Terry Wilson
Balassoubramaniane, Yamini NMI	I-166-M	Erin Pettit
Ballard, Grant	B-031-M	David Ainley

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Barrett, John	C-507-M	Diana Wall
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Bauska, Thomas Keith	I-159-M	Vasilii Victorovich Petrenko
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Bayou, Nicolas NM	T-295-M	Joseph R Pettit
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Behar, Alberto E	G-081-M	Phillip Kyle
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Beltran, Roxanne	B-292-M	Jennifer Burns
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Bloomquist, Douglas Karl	T-299-M/S	Paul Carpenter
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Botella, Juan NM		Janet Warburton
Bowens-Rubin, Rachel NMI	A-365-S	Chao-Lin Kuo
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Burton, Timothy	G-081-M	Phillip Kyle
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Campbell, Seth	G-438-M	Sujoy Mukhopadhyay
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Cervantes, David Galindo		Lynne D. Talley
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Chaves, Esteban Sibala	C-525-M	Susan Schwartz
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Fantozzi, Laura		Lynne D. Talley
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Ketchum, Nicholas	B-247-M	Rachael Morgan-Kiss
Khanwalkar, Urjeet NMI		Bill Detrich
Kierans, Carolyn NMI	A-372-M	Steven Edward Boggs
Kim, Hyewon NMI	C-045-L/P	Hugh William Ducklow
Kim, Junhan NMI	A-379-S	John Carlstrom
King, Courtney Christie	I-196-M	Brenda Hall
King, Joshua Alan	A-145-M	Gerald Dwayne Orr
Kirk, Katherine Anne		Lynne D. Talley
Kirkham, Amy	B-292-M	Jennifer Burns
Kirkpatrick, Donald Irvin	T-350-M	Mary Albert
Klein, Jonathan T	A-369-M/S	William Bristow
Knox, Matthew	C-507-M	Diana Wall
Kowalewski, Douglas Edward	G-054-M	David R Marchant
Kromer, Edward	G-090-P/S	Kent Anderson
Kromer, Edward P	G-090-P/S	Kent Anderson
Krusor, Megan Leigh	G-063-M	Dawn Yvonne Sumner
Kuhl, Tanner W	I-164-S	Murat Aydin
Kwon, Miye NMI	C-505-M	John Priscu
Laundrie, Andrew	A-333-S	Francis Halzen
Lawson, Brian	T-396-M	Curt Szuberla
Lawson, Kathleen	T-396-M	Curt Szuberla
Lawver, Lawrence A	G-087-N	Ian Dalziel
Le François, Nathalie NM to be confirmed		Bill Detrich
Leidman, Sasha Z	G-063-M	Dawn Yvonne Sumner
Leiker, Jason Phelps	T-299-M/S	Paul Carpenter
Leitch, Erik	A-379-S	John Carlstrom
Lemery, Jeffrey Jordan	C-524-M	Frank Rack

Lescroel, Amelie	B-031-M	David Ainley
Lever, James H	I-178-M	Gordon S Hamilton
Lewis, Katelyn	B-244-N	Kevin Arrigo
Li, Wei NMI	B-247-M	Rachael Morgan-Kiss
Licht, Kathy J	G-297-M	Trevor Williams
Lin, Chih-Hsun NMI	A-372-M	Steven Edward Boggs
Linder, Chris	B-005-L/P	Josh Kohut
Linder, Chris	B-005-L/P	Josh Kohut
Link, William August	B-009-M	Jay Rotella
Lloyd, Andrew	G-079-M	Terry Wilson
Loisel, Julie NMI		Zicheng Yu
Lombard, Darci Lynn	B-268-L	Valerie J Loeb
Lowell, Alexander NMI	A-372-M	Steven Edward Boggs
Lowry, Kate	B-244-N	Kevin Arrigo
Lunden, James Joseph	B-134-M	Gretchen Hofmann
Macdonald, Kaitlin R	B-009-M	Jay Rotella
Mackay, Sean	G-054-M	David R Marchant
Mackey, Tyler	G-063-M	Dawn Yvonne Sumner
Madsen, James	A-120-M	Paul Evenson
Mah, Merlin NM	I-172-M	Joseph John Talghader
Maillefer, Luke Robert		Janet Warburton
Malloy, Mary Margaret	B-174-M	Stacy Kim
Marquis, Peter Jonathan	A-106-M/S	C. Robert Clauer
Marrone, Daniel P.	A-379-S	John Carlstrom
Mass, Alexandra	C-504-M	Michael N Gooseff
Mass, Alexandra	C-504-M	Michael N Gooseff
Masters, Otto	A-145-M	Gerald Dwayne Orr
McAtee, Carrie Elizabeth	C-013-L/P	Bill Fraser
McConnell, Madison Hipp	C-013-L/P	Bill Fraser
McCorkell, Robert NMI	B-292-M	Jennifer Burns
McCoy, Iain Mimm	B-014-N	Edward G Durbin

McGovern, Kristen Ann	B-017-M	Randall Davis
McIlhattan, Elin ARWEN	O-283-M/S	Matt Lazzara
McLain, Kevin Lewis	G-059-N	Frank-Oliver Nitsche
McQuarrie, Francis ?	C-019-L/P	Oscar Schofield
Mears, Patrick NMI		Lynne D. Talley
Meazell, Bobby	A-145-M	Gerald Dwayne Orr
Meister, Konrad Kaspar	B-266-P	Kevin Thomas Bilyk
Meister, Matthew Ryan	B-259-M	Britney Elyce Schmidt
Mele, Philip A	O-408-N	Andreas M Thurnherr
Melville, Bob	A-111-M/S	Andrew Gerrard
Menden-Deuer, Susanne	B-014-N	Edward G Durbin
Menking, James Andrew	I-159-M	Vasilii Victorovich Petrenko
Meschede, Wolfgang NMI	G-081-M	Phillip Kyle
Michaud, Alexander	C-523-M	John Priscu
Michel, Lauren Ashley	G-496-M	Edith Taylor
Mickus, Kevin Lee	G-081-M	Phillip Kyle
Middag, Rob NMI	B-244-N	Kevin Arrigo
Middleton, Jennifer	G-438-M	Sujoy Mukhopadhyay
Miki, Christian	A-371-M	Peter W Gorham
Mikolajczyk, David	O-283-M/S	Matt Lazzara
Mikucki, Jill	C-523-M	John Priscu
Miller, Melissa Truth		Lynne D. Talley
Miller, Nathan Andrew	B-207-M	Anne Elizabeth Todgham
Millstein, Joanna NMI	I-209-M	Howard Conway
Milton, Jesse Phelan	O-257-M/S	James Hall Butler
Miner, Kimberley Noel Raine	C-045-L/P	Hugh William Ducklow
Mitchell, Andrew Charles	C-523-M	John Priscu
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Mitchell, Ross Nelson		Joseph Kirschvink
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Monk, David T	C-522-M	Ross Powell
Morris, Alexander F	A-369-M/S	William Bristow
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Mowchan, Lucy Coleman	G-063-M	Dawn Yvonne Sumner
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Mullin, Matthew Michael	A-145-M	Gerald Dwayne Orr
Mulrey, Katharine Beatrice	A-371-M	Peter W Gorham
Murray, Alison	B-006-N	George Watters
Myhre, Matthew Jesse	A-145-M	Gerald Dwayne Orr
Nagy, Johanna M	A-143-M	William Claude Jones
Nash-Arrigo, Janice Elaine	B-244-N	Kevin Arrigo
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Netterfield, Calvin	A-143-M	William Claude Jones
Neuhaus, Sarah Alta Avenue	C-525-M	Susan Schwartz
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Nicewonger, Melinda Renee	I-164-S	Murat Aydin
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Nichols, Erik	A-365-S	Chao-Lin Kuo
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Ogawa, Yasunobu NMI	A-111-M/S	Andrew Gerrard

Ogburn, Walter	A-365-S	Chao-Lin Kuo
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Parker, Tim	T-299-M/S	Paul Carpenter
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Pautet, Pierre-Dominique	A-119-M/S	Michael Taylor
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Radich, John Adam		Lynne D. Talley
Rahlin, Alexandra S	A-143-M	William Claude Jones
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Ramirez, Sebastián Gabriel	G-087-N	Ian Dalziel
Rauch, Brian Flint	A-371-M	Peter W Gorham
Raycroft, Shenandoah unknown	B-005-L/P	Josh Kohut
Read, Andrew J	C-024-L/P	Ari Seth Friedlaender
Reed, Corey	A-127-M	Steven Barwick
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Reese, Jon n/a	B-009-M	Jay Rotella
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Rembold, Randy	T-396-M	Curt Szuberla
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Riverman, Kiya Lihn	I-161-M	Leo Everett Peters
Roberts, Graham Wallace	C-524-M	Frank Rack

Roberts, J.R.	G-079-M	Terry Wilson
Roberts, Jarred NMI	A-371-M	Peter W Gorham
Roberts, Michael	G-079-M	Terry Wilson
Roberts, Michael J	G-079-M	Terry Wilson
Roberts, Seth Ryan	G-085-M	Kate Swanger
Rodman, William	A-145-M	Gerald Dwayne Orr
Roman, Christopher Neil	B-014-N	Edward G Durbin
Roman, Mathew John	G-075-M	Michael C Malin
Romero-Wolf, Andrew	A-371-M	Peter W Gorham
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Roth, James	A-118-S	Paul Evenson
Roth, James	A-333-S	Francis Halzen
Rotter, Benjamin	A-371-M	Peter W Gorham
Rougeux, Brian Paul	G-058-M	Ralph Harvey
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Ruhl, John	A-143-M	William Claude Jones
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Saddler, David Michael	G-079-M	Terry Wilson
Saenz, Benjamin	B-174-M	Stacy Kim
Saenz, Edward joseph	B-014-N	Edward G Durbin
Saltzberg, David	A-371-M	Peter W Gorham
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Sánchez Muñoz, Eric Leonardo		Lynne D. Talley
Sandstrom, Perry	A-333-S	Francis Halzen
Sansone, Steven NMI	A-365-S	Chao-Lin Kuo
Santiago, Alessandra Marie	B-244-N	Kevin Arrigo
Santora, Jarrod	B-268-L	Valerie J Loeb
Santora, Jarrod	B-006-N	George Watters
Sartori, Michael Peter	C-517-M	Andrew Fountain

Sato, Yuka NMI	A-111-M/S	Andrew Gerrard
Saustrup, Steffen	G-087-N	Ian Dalziel
Schatzman, Courtney Marin		Lynne D. Talley
Scheiber, Daniel Michael	A-145-M	Gerald Dwayne Orr
Scherer, Reed	C-522-M	Ross Powell
Scheuermann, Jordan NMI	G-084-M	Joseph Levy
Schmidt, Anne	B-031-M	David Ainley
Schoorlemmer, Harm NMI	A-371-M	Peter W Gorham
Schroeder, Kathryn NMI	I-159-M	Vasilii Victorovich Petrenko
Schutt, John	G-058-M	Ralph Harvey
Schwantes, Christopher	A-145-M	Gerald Dwayne Orr
Schwarz, Robert	A-149-S	John Kovac
Seibel, Brad	B-068-P	Grace Saba
Selz, Virginia C.	B-244-N	Kevin Arrigo
Serbet, Rudolph	G-496-M	Edith Taylor
Severinghaus, Jeffrey Peck	I-159-M	Vasilii Victorovich Petrenko
Shackleton, Sarah Ann	I-159-M	Vasilii Victorovich Petrenko
Shariff, Jamil Aly	A-143-M	William Claude Jones
Shaw, Elizabeth Ashley	C-507-M	Diana Wall
Sheehan, Eileen Pamela		Bill Detrich
Shelton, Naomi Louise	C-045-L/P	Hugh William Ducklow
Shero, Michelle	B-292-M	Jennifer Burns
Sherve, John S	C-523-M	John Priscu
Shore, Patrick	G-089-M	Douglas Wiens
Shore, Patrick John	G-089-M	Douglas Wiens
Siegfried, Matthew	C-525-M	Susan Schwartz
Simmons, Christopher	G-410-M	Gregory Balco
Simons, Elizabeth Gabrielle		Lynne D. Talley
Singhania, Abhinav NMI	C-517-M	Andrew Fountain
Sinkola, Nickolas	T-927-M	Bruce Thoman
Sipler, Rachel	B-394-M	Andrew Allen

Skidmore, Mark	C-523-M	John Priscu
Slater, Andrew Gareth	O-283-M/S	Matt Lazzara
Sletten, Ronald S	G-075-M	Michael C Malin
Slonczewski, Joan NMI	B-247-M	Rachael Morgan-Kiss
Smalley, Bob	G-087-N	Ian Dalziel
Smith, Casey Marie	B-244-N	Kevin Arrigo
Smith, John	A-130-M	Xinzhao Chu
Smith, Kathryn	B-002-L	Richard Aronson
Snyder, Avery NMI	O-398-N	James Bannister Girton
Sohm, Jill	B-012-M	Edward Carpenter
Sokol, Eric	C-507-M	Diana Wall
Sontag, Philip Tighe	C-019-L/P	Oscar Schofield
Sorensen, Caroline NMI	A-149-S	John Kovac
Spackeen, Jenna	B-394-M	Andrew Allen
Spaleta, Jeff	A-369-M/S	William Bristow
Spears, Anthony Martin	B-259-M	Britney Elyce Schmidt
Spencer, Robert Sterling	C-506-M	Diane McKnight
Sperlich, Peter NMI	I-159-M	Vasilii Victorovich Petrenko
Sprintall, Janet NMI	O-275-L	Andrew F Thompson
Stapleton, Shawntel NMI	I-164-S	Murat Aydin
Statscewich, Hank nmi	B-005-L/P	Josh Kohut
Steinbach, Bryan NMI	A-365-S	Chao-Lin Kuo
Steinberg, Deborah Kay	C-020-L	
Stephen, Ralph A	I-348-M	Peter D Bromirski
Stierle, Scott William	O-257-M/S	James Hall Butler
Stierle, Scott William	O-257-M/S	James Hall Butler
Stillinger, Andrew	A-111-M/S	Andrew Gerrard
Stockham, Jessica Gayle	A-371-M	Peter W Gorham
Stockham, Mark Laverne	A-371-M	Peter W Gorham
Stone, John O	I-196-M	Brenda Hall
Stone, Joshua Paul	C-020-L	

Strutt, Benjamin Alexander Fairs	A-371-M	Peter W Gorham
Sudman, Zachary William	C-517-M	Andrew Fountain
Sullivan, Conor Andrew	C-045-L/P	Hugh William Ducklow
Sullivan, David Wayne	A-372-M	Steven Edward Boggs
Sullivan, David Wayne	A-145-M	Gerald Dwayne Orr
Swaim, Zachary Taylor	C-024-L/P	Ari Seth Friedlaender
Sweet, Stephen	B-518-M/P	Andrew Klein
Sweet, Steven R	B-005-L/P	Josh Kohut
Szuta, Dorota	B-174-M	Stacy Kim
Tamsitt, Veronica Margaret		Lynne D. Talley
Tardona, Mary NMI		Zicheng Yu
Tatar, Joulien	A-127-M	Steven Barwick
Taylor, Dylan D	G-079-M	Terry Wilson
Teply, Grant	A-149-S	John Kovac
Thibodeau, Patricia S.	C-020-L	
Thompson, Andrew Robert	C-507-M	Diana Wall
Thompson, Keith	A-365-S	Chao-Lin Kuo
Thoresen, Lars	B-006-N	George Watters
Tilton, Mary	B-518-M/P	Andrew Klein
Todd, Claire	G-410-M	Gregory Balco
Todoroff, Katherine unknown	B-005-L/P	Josh Kohut
Tolan, James	A-365-S	Chao-Lin Kuo
Tseng, Chao-Hsiung NMI	A-372-M	Steven Edward Boggs
Tulaczyk, Slawek	C-528-M	Jill Mikucki
Tuttle, Jeffrey Wayne	A-145-M	Gerald Dwayne Orr
Tytgat, Guy Christian	T-396-M	Curt Szuberla
Usner, Marcel NMI	A-333-S	Francis Halzen
Van Dijken, Gerrit	B-244-N	Kevin Arrigo
Vara, Marissa Anne	G-087-N	Ian Dalziel
Vargo, Brian NMI	G-079-M	Terry Wilson

Varsani, Arvind	B-031-M	David Ainley
Vaughn, James Ian Scott	B-014-N	Edward G Durbin
Verlinde, Johannes NMI	O-325-M	Dan Lubin
Vick, Trista	C-523-M	John Priscu
Vieregg, Abigail	A-371-M	Peter W Gorham
Vieregg, Abigail	A-149-S	John Kovac
Villasana, Cesar Rene	A-145-M	Gerald Dwayne Orr
Vimont, Isaac Josef	I-159-M	Vasilii Victorovich Petrenko
Virginia, Ross	C-507-M	Diana Wall
Voigt, Don	I-477-M	Kendrick Taylor
Waite, Nicole Laura	C-019-L/P	Oscar Schofield
Walker, Benjamin Shawn	I-178-M	Gordon S Hamilton
Walker, Catherine Collelo	B-259-M	Britney Elyce Schmidt
Walker, James Anthony	A-127-M	Steven Barwick
Walker, Michael Mathew	B-017-M	Randall Davis
Walker, Shannon NMI	G-058-M	Ralph Harvey
Walsh, Jennifer	B-006-N	George Watters
Walter, Jacob NMI	C-528-M	Jill Mikucki
Wang, Xuchen NMI	B-014-N	Edward G Durbin
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Warner, Mark James		Lynne D. Talley
Warren, Joseph David	B-014-N	Edward G Durbin
Watters, Jaclyn Laparo	G-084-M	Joseph Levy
Webb, David Charles	A-145-M	Gerald Dwayne Orr
Weber, Corey	A-145-M	Gerald Dwayne Orr
Weiss, Elliot	B-006-N	George Watters
Weissburg, Marc Joel	B-048-P	Jeannette Yen
Welch, Kathy	C-509-M	W. Berry Lyons
Welhouse, Lee	O-283-M/S	Matt Lazzara
Wendell, Edward	T-927-M	Bruce Thoman

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West, Michael Erik	B-259-M	Britney Elyce Schmidt
Whetu, Mark Anthony	G-079-M	Terry Wilson
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Wiles, Linda M	A-145-M	Gerald Dwayne Orr
Willette, Daniel Wayne	A-145-M	Gerald Dwayne Orr
Williams, Terrie	B-017-M	Randall Davis
Willmert, Justin NMI	A-149-S	John Kovac
Winberry, J. Paul	G-079-M	Terry Wilson
Winsor, Peter NMI	B-005-L/P	Josh Kohut
Wissel, Stephanie Ann	A-371-M	Peter W Gorham
Wlostowski, Adam	C-504-M	Michael N Gooseff
Woehler, Eric NMI	B-031-M	David Ainley
WorriLOW, Scott	O-408-N	Andreas M Thurnherr
Worssam, Jillian Beth	G-087-N	Ian Dalziel
Wu, Kimmy Wai Ling	A-365-S	Chao-Lin Kuo
Xu, Kai	B-394-M	Andrew Allen
Xu, Zhonghua NM	A-106-M/S	C. Robert Clauer
Yang, Chien-Ying NMI	A-372-M	Steven Edward Boggs
Yarnall, Michael NMI	B-009-M	Jay Rotella
Yeager, Kirstie Lorene	B-009-M	Jay Rotella
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Yopak, Regina Reed	B-014-N	Edward G Durbin
Young, Edward NMI	A-143-M	William Claude Jones
Young, Thomas C	G-078-M	Robert C Kemerait
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Carpenter, Paul	T-299-M/S	IRIS/PASSCAL seismic support
Hosticka, Bouvard	T-998-P	Operation and maintenance of a CTBT radionuclide monitoring station at Palmer Station
Huntsman, Dwight	T-982-M	NASA's McMurdo Tracking and Data Relay Satellite System Upgrade (MTRSU) deployment support
Morin, Paul	T-434-M	The Polar Geospatial Information Center: Joint support
Pettit, Joseph	T-295-M	UNAVCO GPS survey support
Szuberla, Curt	T-396-M	Operation and maintenance of a CTBT class infrasound array at Windless Bight
Thoman, Bruce	T-927-M	NASA/McMurdo Ground Station (MG1)

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Boggs, Steven	A-372-M	LDB-COMPTON Spectrometer and Imager (COSI)
Bristow, William	A-369-M/S	McMurdo and South Pole SuperDARN: Investigation of the ionospheric dynamics and magnetosphere-ionosphere coupling in Antarctica
Carlstrom, John	A-379-S	Cosmological research with the 10-meter South Pole Telescope
Chu, Xinzhaoh	A-130-M	LiDAR Investigation of middle and upper atmosphere temperature, composition, chemistry, and dynamics at McMurdo, Antarctica
Clauer, C.	A-106-M/S	Polar Experiment Network for Geospace Upper-atmosphere Investigations (PENGUIn): Interhemispheric investigations along the 40-degree magnetic meridian
Conde, Mark	A-343-M/S	High-resolution mapping of thermospheric wind and temperature fields near the equatorward edge of the Antarctic polar cap
Evenson, Paul	A-118-S	Collaborative Research: Element composition of high energy solar particles
Evenson, Paul	A-120-M	Neutron monitor observations of cosmic rays from Jang Bogo and McMurdo Station
Gerrard, Andrew	A-111-M/S	Synoptic geospace systems analysis using instrumentation from South Pole and McMurdo Stations
Gorham, Peter	A-371-M	Antarctic Impulsive Transient Antenna (ANITA III) experiment
Halzen, Francis	A-333-S	IceCube operations and maintenance
Jones, William	A-143-M	Sub-orbital Polarimeter for Inflation Dust and the Epoch of Reionization (SPIDER)

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Kovac, John	A-149-S	Imaging the beginning of time from the South Pole: Observations with the full SPUD array
Kulesa, Craig	A-364-M/S	High Elevation Antarctic Terahertz (HEAT) telescopes for Dome A and Ridge A
Kuo, Chao-Lin	A-365-S	Collaborative Research: Science observation with BICEP3 CMB polarization experiment
LaBelle, James	A-125-S	Application of the AGO network to energy transfer in the radiation belts and remote sensing of auroral plasma processes
Lessard, Marc	A-102-M/S	Collaborative Research: Studies of ULF waves associated with solar wind coupling to the magnetosphere and ionosphere
Mitchell, John	A-142-M	Super Trans-Iron Galactic Element Recorder (SuperTIGER)
Moore, Robert	A-109-M/P/S	Antarctic ELF/VLF observations of Q-bursts, radio atmospherics, and energetic particle precipitation
Orr, Gerald	A-145-M	NASA Long Duration Balloon (LDB) support program
Romalis, Michael	A-103-S	Test of Lorentz invariance at the South Pole
Taylor, Michael	A-119-M/S	Development of an ANtarctic Gravity Wave Imager Network (ANGWIN) for collaborative mesospheric research
Taylor, Michael	A-119-M/S	Investigating wave-driven Mesospheric dynamics over South Pole using an advanced Mesospheric temperature mapper
Taylor, Michael	A-119-M/S	Investigating wave-driven Mesospheric dynamics over South Pole using an advanced Mesospheric temperature mapper

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USAP Program Index Organisms and Ecosystems

Principal Investigator	Event No.	Project Title
Ainley, David	B-031-M	Adelie penguin response to climate change at the individual, colony, and metapopulation levels
Allen, Andrew	B-394-M	Synergistic effects of iron, carbon dioxide, and temperature on the fate of nitrate: Implications for future changes in export production in the Southern Ocean
Aronson, Richard	B-002-L	Climate change and predatory invasion of the Antarctic benthos
Arrigo, Kevin	B-244-N	Adaptive responses of Phaeocystis populations in Antarctic ecosystems
Ball, Rebecca	B-300-E	Collaborative Research: Climatic and environmental constraints on aboveground-belowground linkages and diversity across a latitudinal gradient in Antarctica
Bench, Shelley	B-018-P	Postdoctoral research fellowship
Bilyk, Kevin	B-266-P	Evolutionary fates of hemoglobin and heme scavengers in white-blooded Antarctic icefishes
Burns, Jennifer	B-292-M	The cost of a new fur coat: Interactions between molt and reproduction in Weddell seals
Carpenter, Edward	B-012-M	Collaborative Research: Importance of heterotrophic and phototrophic N ₂ fixation in the McMurdo Dry Valleys on local, regional, and landscape scales
Davis, Randall	B-017-M	Collaborative Research: Geomagnetic navigation by Weddell seals beneath Antarctic ice
Doran, Peter	B-280-M	Habitability of Antarctic lakes and detectability of microbial life in icy environments by autonomous year-round instrumentation
Durbin, Edward	B-014-N	Euphausia superba feeding using DNA analysis of gut contents
Eppley, Dr. Sarah	B-289-E	The functional role of moss in structuring biotic interactions and



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Hofmann, Gretchen	B-134-M	Ocean acidification seascape: linking natural variability and anthropogenic changes in pH and temperature to performance in calcifying Antarctic marine invertebrates
Kim, Stacy	B-174-M	Benthic-pelagic coupling in an intact ecosystem: The role of top predators in McMurdo Sound
Klein, Andrew	B-518-M/P	Temporal variability in natural and anthropogenic disturbance of McMurdo Station
Klein, Andrew	B-518-M/P	Temporal variability in natural and anthropogenic disturbance of McMurdo Station
Kohut, Josh	B-005-L/P	Collaborative Research: Impacts of local oceanographic processes on Adélie penguin foraging ecology over Palmer Deep
Loeb, Valerie	B-268-L	Pilot study: Addition of biological sampling to Drake Passage transits of the ARSV Laurence M. Gould
Morgan-Kiss, Rachael	B-247-M	CAREER: Protist diversity and function in the Dry Valley lakes
O'Brien, Kristin	B-036-L/P	Collaborative Research: The physiological and biochemical underpinnings of thermal tolerance in Antarctic notothenioid fishes
Rotella, Jay	B-009-M	The demographic consequences of environmental variability and individual heterogeneity in life-history tactics of a long-lived Antarctic marine predator
Saba, Grace	B-068-P	Synergistic effects of elevated carbon dioxide and temperature on the metabolism, growth, and reproduction of Antarctic krill (<i>Euphausia superba</i>)
Schmidt, Britney	B-259-M	Astrobiology Science and Technology for Exploring Planets (ASTEP)
Sherrell, Robert	B-203-L	Natural iron fertilization and bioactive metal dynamics on the Western Antarctic Peninsula shelf
Todgham, Anne	B-207-M	Research in Undergraduate Institutions (RUI): Synergistic effects of ocean acidification and warming on larval development in Antarctic fishes
Watters, George	B-006-N	NOAA/AMLR Cruise
Yen, Jeannette	B-048-P	Ocean acidification: Pteropod swimming behavior as a bioassay for

ocean acidification

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USAP Program Index Earth Sciences

Principal Investigator	Event No.	Project Title
Anderson, Kent	G-090-P/S	Global seismograph station at South Pole and Palmer Stations
Balco, Gregory	G-410-M	Collaborative Research: Terrestrial exposure-age constraints on the last glacial maximum extent of the Antarctic Ice Sheet in the Western Ross Sea
Bart, Philip	G-154-N	Timing and duration of Last Glacial Maximum (LGM) and post-LGM grounding events in the Whales Deep paleo ice streams, Eastern Ross Sea continental shelf
Bell, Robin	G-053-M	MRI-R2: Development of an ice imaging system for monitoring changing ice sheets mounted on the NYANG LC-130
Dalziel, Ian	G-087-N	Role of the Central Scotia Sea in the onset and development of the Antarctic Circumpolar Current
Hansen, Samantha	G-061-M	CAREER: Deciphering the tectonic history of the Transantarctic Mountains and the Wilkes Subglacial Basin
Harvey, Ralph	G-058-M	Antarctic Search for Meteorites (ANSMET)
Kemerait, Robert	G-078-M	Dry Valley seismic project
Kirschvink, Joseph	G-291-E	Paleomagnetism and magnetostratigraphy of the James Ross Basin, Antarctica.
Kyle, Phillip	G-081-M	Mount Erebus Volcano Observatory: Operations, Science, and Outreach (MEVO-OSO)
Levy, Joseph	G-084-M	Cryptic hydrology of the McMurdo Dry Valleys: Water track contributions to water and geochemical budgets in Taylor Valley, Antarctica
Malin, Michael	G-075-M	Collaborative Proposal: Decades-long experiment on wind-driven rock abrasion in the ice-free valleys, Antarctica



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Marchant, David	G-054-M	West Antarctic Ice Sheet stability, alpine glaciation, and climate variability: A terrestrial perspective from cosmogenic-nuclide dating in McMurdo Sound
Mukhopadhyay, Sujoy	G-438-M	Constraining Plio-Pleistocene West Antarctic Ice Sheet behavior from the Ohio Range and Scott Glacier
Nitsche, Frank-Oliver	G-059-N	Vulnerability of East Antarctic ice shelves to warm ocean-water incursions
Sims, Kenneth	G-092-M	A geochemical study of the nature and evolution of mantle upwelling beneath Ross Island and its relationship to tectonics in the West Antarctic Rift System
Sumner, Dawn	G-063-M	Lake Joyce Microbialites - NSF
Swanger, Kate	G-085-M	Origin and climatic significance of rock glaciers in the McMurdo Dry Valleys: Assessing spatial and temporal variability
Taylor, Edith	G-496-M	Life in a volcanic landscape: Early Jurassic paleoenvironments and paleobotany
Wiens, Douglas	G-089-M	Collaborative Research: Mantle structure and dynamics of the Ross Sea from a passive seismic deployment on the Ross Ice Shelf
Williams, Trevor	G-297-M	Collaborative research: Deglacial ice dynamics in the Weddell Sea embayment using sediment provenance
Wilson, Terry	G-079-M	POLENET Antarctica: Investigating links between geodynamics and ice sheets - Phase 2
Young, Duncan	G-099-M	Geophysical Investigation of Marie Byrd Land Lithospheric Evolution - GIMBLE

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USAP Program Index Glaciology

Principal Investigator	Event No.	Project Title
Aydin, Murat	I-164-S	Collaborative Research: A 1,500-meter ice core from South Pole
Bromirski, Peter	I-348-M	Collaborative Research: Dynamic response of the Ross Ice Shelf to wave-induced vibrations
Clow, Gary	I-475-M	WAIS logging
Conway, Howard	I-209-M	Deglaciation of the Ross Sea Embayment - constraints from Roosevelt Island
Hall, Brenda	I-196-M	Assessing the Antarctic contribution to sea-level changes during the last deglaciation: Constraints from Darwin Glacier
Hamilton, Gordon	I-178-M	Flow and fracture dynamics in an ice shelf lateral margin: Observations and modeling of the McMurdo Shear Zone
Peters, Leo	I-161-M	Constraining englacial temperatures through active seismic methods
Petrenko, Vasiliï	I-159-M	The Taylor Glacier, Antarctica, horizontal ice core: Exploring changes in the natural methane budget in a warming world and expanding the paleo-archive
Pettit, Erin	I-166-M	Velvet Ice - evolution of fabric and texture in ice at WAIS Divide, West Antarctica
Talghader, Joseph	I-172-M	Optical fabric and fiber logging of glacial ice
Taylor, Kendrick	I-477-M	WAIS Divide Science Coordination Office (SCO)

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USAP Program Index Ocean and Atmospheric Sciences

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Butler, James	O-257-M/S	UV measurements at McMurdo Station for the NOAA/Global Monitoring Division (GMD) Antarctic UV network
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
Girton, James	O-398-N	Collaborative Research: Pathways of Circumpolar Deep Water to West Antarctica from profiling float and satellite measurements
Kalnajs, Lars	O-324-M	Collaborative Research: High-resolution study of atmosphere, ice, and aerosol interactions in coastal Antarctica
Lazzara, Matt	O-283-M/S	Antarctic Automatic Weather Station (AWS) program
Lubin, Dan	O-325-M	Department of Energy ARM West Antarctic Radiation Experiment (AWARE)
Sprintall, Janet	O-260-L	The Drake Passage high-density XBT/XCTD program
Thompson, Andrew	O-275-L	Boundary control of upwelling in Southern Drake Passage: Whither Weddies?
Thurnherr, Andreas	O-408-N	Collaborative Research: Flow, turbulence, and mixing in mid-ocean ridge fracture-zone canyons

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USAP Program Index Integrated System Science

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Ducklow, Hugh	C-045-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, microbial ecology component
Fountain, Andrew	C-517-M	The McMurdo Dry Valleys: A landscape on the threshold of change
Fraser, Bill	C-013-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, apex predator component
Friedlaender, Ari	C-024-L/P	Long Term Ecological Research (LTER) Whale Component
Gooseff, Michael	C-504-M	McMurdo LTER - Glaciers: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Lyons, W. Berry	C-509-M	McMurdo LTER - Geochemistry: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Martinson, Doug	C-021-L	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, physical oceanography component
McKnight, Diane	C-506-M	McMurdo LTER - Streams: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Mikucki, Jill	C-528-M	MIDGE: Minimally Invasive Direct Glacial Exploration of biogeochemistry, hydrology, and glaciology of Blood Falls, McMurdo Dry Valleys
Powell, Ross	C-522-M	Integrative study of marine ice sheet stability and subglacial life habitats - Robotic Access to Grounding-zones for Exploration and Science (RAGES)



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Priscu, John	C-523-M	GeomicroBiology of Antarctic Subglacial Environments (GBASE) beneath the Mercer and Whillans Ice Streams
Priscu, John	C-505-M	McMurdo LTER - Lakes: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Rack, Frank	C-524-M	Developing New Science and Technology for Subglacial Studies of the Whillans Ice Plain and West Antarctic Ice Sheet.
Rack, Frank	C-530-M	WISSARD Roving Drill
Schofield, Oscar	C-019-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, phytoplankton component
Schwartz, Susan	C-525-M	Investigating (un)stable sliding of Whillans Ice Stream and subglacial water dynamics using borehole seismology: A component of the Whillans Ice Stream Subglacial Access Research Drilling (WISSARD) project
Tulaczyk, Slawek	C-521-M	Integrative study of marine ice sheet stability and subglacial life habitats - Lake and Ice Stream Subglacial Access Research Drilling (LISSARD)
Wall, Diana	C-507-M	McMurdo LTER - Soils: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program

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Artists and Writers

Principal Investigator	Event No.	Project Title
Simonson, Lily	W-486-M	Painting Between the Ice: Antarctic biodiversity from the Dry Valleys to the sea floor

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USAP Station Index

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
Aydin, Murat	I-164-S	Collaborative Research: A 1,500-meter ice core from South Pole
Bristow, William	A-369-M/S	McMurdo and South Pole SuperDARN: Investigation of the ionospheric dynamics and magnetosphere-ionosphere coupling in Antarctica
Butler, James	O-257-M/S	UV measurements at McMurdo Station for the NOAA/Global Monitoring Division (GMD) Antarctic UV network
Butler, James	O-257-M/S	South Pole monitoring for climatic change
Carlstrom, John	A-379-S	Cosmological research with the 10-meter South Pole Telescope
Carpenter, Paul	T-299-M/S	IRIS/PASSCAL seismic support
Clauer, C.	A-106-M/S	Polar Experiment Network for Geospace Upper-atmosphere Investigations (PENGUIn): Interhemispheric investigations along the 40-degree magnetic meridian
Conde, Mark	A-343-M/S	High-resolution mapping of thermospheric wind and temperature fields near the equatorward edge of the Antarctic polar cap
Evenson, Paul	A-118-S	Collaborative Research: Element composition of high energy solar particles
Gerrard, Andrew	A-111-M/S	Synoptic geospace systems analysis using instrumentation from South Pole and McMurdo Stations
Halzen, Francis	A-333-S	IceCube operations and maintenance
Kovac, John	A-149-S	Imaging the beginning of time from the South Pole: Observations with the full SPUD array
Kulesa, Craig	A-364-M/S	High Elevation Antarctic Terahertz



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		(HEAT) telescopes for Dome A and Ridge A
Kuo, Chao-Lin	A-365-S	Collaborative Research: Science observation with BICEP3 CMB polarization experiment
LaBelle, James	A-125-S	Application of the AGO network to energy transfer in the radiation belts and remote sensing of auroral plasma processes
Lazzara, Matt	O-283-M/S	Antarctic Automatic Weather Station (AWS) program
Lessard, Marc	A-102-M/S	Collaborative Research: Studies of ULF waves associated with solar wind coupling to the magnetosphere and ionosphere
Moore, Robert	A-109-M/P/S	Antarctic ELF/VLF observations of Q-bursts, radio atmospherics, and energetic particle precipitation
Romalis, Michael	A-103-S	Test of Lorentz invariance at the South Pole
Taylor, Michael	A-119-M/S	Development of an ANtarctic Gravity Wave Imager Network (ANGWIN) for collaborative mesospheric research
Taylor, Michael	A-119-M/S	Investigating wave-driven Mesospheric dynamics over South Pole using an advanced Mesospheric temperature mapper
Taylor, Michael	A-119-M/S	Investigating wave-driven Mesospheric dynamics over South Pole using an advanced Mesospheric temperature mapper

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USAP Station Index McMurdo Station

Principal Investigator	Event No.	Project Title
Ainley, David	B-031-M	Adelie penguin response to climate change at the individual, colony, and metapopulation levels
Albert, Mary	T-350-M	Ice Coring and Drilling Services (ICDS) support for WAIS Divide
Allen, Andrew	B-394-M	Synergistic effects of iron, carbon dioxide, and temperature on the fate of nitrate: Implications for future changes in export production in the Southern Ocean
Balco, Gregory	G-410-M	Collaborative Research: Terrestrial exposure-age constraints on the last glacial maximum extent of the Antarctic Ice Sheet in the Western Ross Sea
Barwick, Steven	A-127-M	Development of hexagonal radio array for the ARIANNA ultra-high-energy neutrino detector
Bell, Robin	G-053-M	MRI-R2: Development of an ice imaging system for monitoring changing ice sheets mounted on the NYANG LC-130
Boggs, Steven	A-372-M	LDB-COMpton Spectrometer and Imager (COSI)
Bristow, William	A-369-M/S	McMurdo and South Pole SuperDARN: Investigation of the ionospheric dynamics and magnetosphere-ionosphere coupling in Antarctica
Bromirski, Peter	I-348-M	Collaborative Research: Dynamic response of the Ross Ice Shelf to wave-induced vibrations
Burns, Jennifer	B-292-M	The cost of a new fur coat: Interactions between molt and reproduction in Weddell seals
Butler, James	O-257-M/S	UV measurements at McMurdo Station for the NOAA/Global Monitoring Division (GMD) Antarctic UV network
Butler, James	O-257-M/S	South Pole monitoring for climatic change



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Carpenter, Edward	B-012-M	Collaborative Research: Importance of heterotrophic and phototrophic N ₂ fixation in the McMurdo Dry Valleys on local, regional, and landscape scales
Carpenter, Paul	T-299-M/S	IRIS/PASSCAL seismic support
Chu, Xinzhao	A-130-M	LiDAR Investigation of middle and upper atmosphere temperature, composition, chemistry, and dynamics at McMurdo, Antarctica
Clauer, C.	A-106-M/S	Polar Experiment Network for Geospace Upper-atmosphere Investigations (PENGUIn): Interhemispheric investigations along the 40-degree magnetic meridian
Clow, Gary	I-475-M	WAIS logging
Conde, Mark	A-343-M/S	High-resolution mapping of thermospheric wind and temperature fields near the equatorward edge of the Antarctic polar cap
Conway, Howard	I-209-M	Deglaciation of the Ross Sea Embayment - constraints from Roosevelt Island
Davis, Randall	B-017-M	Collaborative Research: Geomagnetic navigation by Weddell seals beneath Antarctic ice
Doran, Peter	B-280-M	Habitability of Antarctic lakes and detectability of microbial life in icy environments by autonomous year-round instrumentation
Doran, Peter	C-511-M	McMurdo LTER - Lakes: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Evenson, Paul	A-120-M	Neutron monitor observations of cosmic rays from Jang Bogo and McMurdo Station
Fountain, Andrew	C-517-M	The McMurdo Dry Valleys: A landscape on the threshold of change
Gerrard, Andrew	A-111-M/S	Synoptic geospace systems analysis using instrumentation from South Pole and McMurdo Stations
Gooseff, Michael	C-504-M	McMurdo LTER - Glaciers: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valleys LTER Program
Gorham, Peter	A-371-M	Antarctic Impulsive Transient Antenna (ANITA III) experiment

Hall, Brenda	I-196-M	Assessing the Antarctic contribution to sea-level changes during the last deglaciation: Constraints from Darwin Glacier
Hamilton, Gordon	I-178-M	Flow and fracture dynamics in an ice shelf lateral margin: Observations and modeling of the McMurdo Shear Zone
Hansen, Samantha	G-061-M	CAREER: Deciphering the tectonic history of the Transantarctic Mountains and the Wilkes Subglacial Basin
Harvey, Ralph	G-058-M	Antarctic Search for Meteorites (ANSMET)
Hofmann, Gretchen	B-134-M	Ocean acidification seascape: linking natural variability and anthropogenic changes in pH and temperature to performance in calcifying Antarctic marine invertebrates
Huntsman, Dwight	T-982-M	NASA's McMurdo Tracking and Data Relay Satellite System Upgrade (MTRSU) deployment support
Jones, William	A-143-M	Sub-orbital Polarimeter for Inflation Dust and the Epoch of Reionization (SPIDER)
Kalnajs, Lars	O-324-M	Collaborative Research: High-resolution study of atmosphere, ice, and aerosol interactions in coastal Antarctica
Kemerait, Robert	G-078-M	Dry Valley seismic project
Kim, Stacy	B-174-M	Benthic-pelagic coupling in an intact ecosystem: The role of top predators in McMurdo Sound
Klein, Andrew	B-518-M/P	Temporal variability in natural and anthropogenic disturbance of McMurdo Station
Klein, Andrew	B-518-M/P	Temporal variability in natural and anthropogenic disturbance of McMurdo Station
Kulesa, Craig	A-364-M/S	High Elevation Antarctic Terahertz (HEAT) telescopes for Dome A and Ridge A
Kyle, Phillip	G-081-M	Mount Erebus Volcano Observatory: Operations, Science, and Outreach (MEVO-OSO)
Lazzara, Matt	O-283-M/S	Antarctic Automatic Weather Station (AWS) program
Lessard, Marc	A-102-M/S	Collaborative Research: Studies of ULF waves associated with solar wind

		coupling to the magnetosphere and ionosphere
Levy, Joseph	G-084-M	Cryptic hydrology of the McMurdo Dry Valleys: Water track contributions to water and geochemical budgets in Taylor Valley, Antarctica
Lubin, Dan	O-325-M	Department of Energy ARM West Antarctic Radiation Experiment (AWARE)
Lyons, W. Berry	C-509-M	McMurdo LTER - Geochemistry: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Malin, Michael	G-075-M	Collaborative Proposal: Decades-long experiment on wind-driven rock abrasion in the ice-free valleys, Antarctica
Marchant, David	G-054-M	West Antarctic Ice Sheet stability, alpine glaciation, and climate variability: A terrestrial perspective from cosmogenic-nuclide dating in McMurdo Sound
McKnight, Diane	C-506-M	McMurdo LTER - Streams: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Mikucki, Jill	C-528-M	MIDGE: Minimally Invasive Direct Glacial Exploration of biogeochemistry, hydrology, and glaciology of Blood Falls, McMurdo Dry Valleys
Mitchell, John	A-142-M	Super Trans-Iron Galactic Element Recorder (SuperTIGER)
Moore, Robert	A-109-M/P/S	Antarctic ELF/VLF observations of Q-bursts, radio atmospherics, and energetic particle precipitation
Morgan-Kiss, Rachael	B-247-M	CAREER: Protist diversity and function in the Dry Valley lakes
Morin, Paul	T-434-M	The Polar Geospatial Information Center: Joint support
Mukhopadhyay, Sujoy	G-438-M	Constraining Plio-Pleistocene West Antarctic Ice Sheet behavior from the Ohio Range and Scott Glacier
Orr, Gerald	A-145-M	NASA Long Duration Balloon (LDB) support program
Peters, Leo	I-161-M	Constraining englacial temperatures through active seismic methods
Petrenko, Vasilii	I-159-M	The Taylor Glacier, Antarctica,

		horizontal ice core: Exploring changes in the natural methane budget in a warming world and expanding the paleo-archive
Pettit, Erin	I-166-M	Velvet Ice - evolution of fabric and texture in ice at WAIS Divide, West Antarctica
Pettit, Joseph	T-295-M	UNAVCO GPS survey support
Powell, Ross	C-522-M	Integrative study of marine ice sheet stability and subglacial life habitats - Robotic Access to Grounding-zones for Exploration and Science (RAGES)
Priscu, John	C-523-M	GeomicroBiology of Antarctic Subglacial Environments (GBASE) beneath the Mercer and Whillans Ice Streams
Priscu, John	C-505-M	McMurdo LTER - Lakes: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Rack, Frank	C-524-M	Developing New Science and Technology for Subglacial Studies of the Whillans Ice Plain and West Antarctic Ice Sheet.
Rack, Frank	C-530-M	WISSARD Roving Drill
Rotella, Jay	B-009-M	The demographic consequences of environmental variability and individual heterogeneity in life-history tactics of a long-lived Antarctic marine predator
Schmidt, Britney	B-259-M	Astrobiology Science and Technology for Exploring Planets (ASTEP)
Schwartz, Susan	C-525-M	Investigating (un)stable sliding of Whillans Ice Stream and subglacial water dynamics using borehole seismology: A component of the Whillans Ice Stream Subglacial Access Research Drilling (WISSARD) project
Simonson, Lily	W-486-M	Painting Between the Ice: Antarctic biodiversity from the Dry Valleys to the sea floor
Sims, Kenneth	G-092-M	A geochemical study of the nature and evolution of mantle upwelling beneath Ross Island and its relationship to tectonics in the West Antarctic Rift System
Sumner, Dawn	G-063-M	Lake Joyce Microbialites - NSF
Swanger, Kate	G-085-M	Origin and climatic significance of rock glaciers in the McMurdo Dry Valleys:

		Assessing spatial and temporal variability
Szuberla, Curt	T-396-M	Operation and maintenance of a CTBT class infrasound array at Windless Bight
Talghader, Joseph	I-172-M	Optical fabric and fiber logging of glacial ice
Taylor, Edith	G-496-M	Life in a volcanic landscape: Early Jurassic paleoenvironments and paleobotany
Taylor, Kendrick	I-477-M	WAIS Divide Science Coordination Office (SCO)
Taylor, Michael	A-119-M/S	Development of an ANtarctic Gravity Wave Imager Network (ANGWIN) for collaborative mesospheric research
Taylor, Michael	A-119-M/S	Investigating wave-driven Mesospheric dynamics over South Pole using an advanced Mesospheric temperature mapper
Taylor, Michael	A-119-M/S	Investigating wave-driven Mesospheric dynamics over South Pole using an advanced Mesospheric temperature mapper
Thoman, Bruce	T-927-M	NASA/McMurdo Ground Station (MG1)
Todgham, Anne	B-207-M	Research in Undergraduate Institutions (RUI): Synergistic effects of ocean acidification and warming on larval development in Antarctic fishes
Tulaczyk, Slawek	C-521-M	Integrative study of marine ice sheet stability and subglacial life habitats - Lake and Ice Stream Subglacial Access Research Drilling (LISSARD)
Wall, Diana	C-507-M	McMurdo LTER - Soils: Increased connectivity in a polar desert resulting from climate warming: McMurdo Dry Valley LTER Program
Wiens, Douglas	G-089-M	Collaborative Research: Mantle structure and dynamics of the Ross Sea from a passive seismic deployment on the Ross Ice Shelf
Williams, Trevor	G-297-M	Collaborative research: Deglacial ice dynamics in the Weddell Sea embayment using sediment provenance
Wilson, Terry	G-079-M	POLENET Antarctica: Investigating links between geodynamics and ice sheets - Phase 2

Young, Duncan

G-099-M

Geophysical Investigation of Marie
Byrd Land Lithospheric Evolution -
GIMBLE

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USAP Station Index Palmer Station

Principal Investigator	Event No.	Project Title
Anderson, Kent	G-090-P/S	Global seismograph station at South Pole and Palmer Stations
Bench, Shelley	B-018-P	Postdoctoral research fellowship
Bilyk, Kevin	B-266-P	Evolutionary fates of hemoglobin and heme scavengers in white-blooded Antarctic icefishes
Butler, James	O-264-P	Collection of atmospheric air for the NOAA/GMD worldwide flask-sampling network
Ducklow, Hugh	C-045-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, microbial ecology component
Fraser, Bill	C-013-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, apex predator component
Friedlaender, Ari	C-024-L/P	Long Term Ecological Research (LTER) Whale Component
Hosticka, Bouvard	T-998-P	Operation and maintenance of a CTBT radionuclide monitoring station at Palmer Station
Klein, Andrew	B-518-M/P	Temporal variability in natural and anthropogenic disturbance of McMurdo Station
Klein, Andrew	B-518-M/P	Temporal variability in natural and anthropogenic disturbance of McMurdo Station
Kohut, Josh	B-005-L/P	Collaborative Research: Impacts of local oceanographic processes on Adélie penguin foraging ecology over Palmer Deep
Moore, Robert	A-109-M/P/S	Antarctic ELF/VLF observations of Q-bursts, radio atmospheric, and energetic particle precipitation
O'Brien, Kristin	B-036-L/P	Collaborative Research: The physiological and biochemical underpinnings of thermal tolerance in Antarctic notothenioid fishes

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Saba, Grace	B-068-P	Synergistic effects of elevated carbon dioxide and temperature on the metabolism, growth, and reproduction of Antarctic krill (<i>Euphausia superba</i>)
Schofield, Oscar	C-019-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, phytoplankton component
Yen, Jeannette	B-048-P	Ocean acidification: Pteropod swimming behavior as a bioassay for ocean acidification

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USAP Station Index

RVIB Nathaniel B. Palmer

Principal Investigator	Event No.	Project Title
Arrigo, Kevin	B-244-N	Adaptive responses of Phaeocystis populations in Antarctic ecosystems
Bart, Philip	G-154-N	Timing and duration of Last Glacial Maximum (LGM) and post-LGM grounding events in the Whales Deep paleo ice streams, Eastern Ross Sea continental shelf
Dalziel, Ian	G-087-N	Role of the Central Scotia Sea in the onset and development of the Antarctic Circumpolar Current
Durbin, Edward	B-014-N	Euphausia superba feeding using DNA analysis of gut contents
Girton, James	O-398-N	Collaborative Research: Pathways of Circumpolar Deep Water to West Antarctica from profiling float and satellite measurements
Nitsche, Frank-Oliver	G-059-N	Vulnerability of East Antarctic ice shelves to warm ocean-water incursions
Thurnherr, Andreas	O-408-N	Collaborative Research: Flow, turbulence, and mixing in mid-ocean ridge fracture-zone canyons
Watters, George	B-006-N	NOAA/AMLR Cruise

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ARSV Laurence M. Gould

Principal Investigator	Event No.	Project Title
Aronson, Richard	B-002-L	Climate change and predatory invasion of the Antarctic benthos
Ducklow, Hugh	C-045-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, microbial ecology component
Fraser, Bill	C-013-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, apex predator component
Friedlaender, Ari	C-024-L/P	Long Term Ecological Research (LTER) Whale Component
Kohut, Josh	B-005-L/P	Collaborative Research: Impacts of local oceanographic processes on Adélie penguin foraging ecology over Palmer Deep
Loeb, Valerie	B-268-L	Pilot study: Addition of biological sampling to Drake Passage transits of the ARSV Laurence M. Gould
Martinson, Doug	C-021-L	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, physical oceanography component
O'Brien, Kristin	B-036-L/P	Collaborative Research: The physiological and biochemical underpinnings of thermal tolerance in Antarctic notothenioid fishes
Schofield, Oscar	C-019-L/P	Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, phytoplankton component
Sherrell, Robert	B-203-L	Natural iron fertilization and bioactive metal dynamics on the Western Antarctic Peninsula shelf
Sprintall, Janet	O-260-L	The Drake Passage high-density XBT/XCTD program
Thompson, Andrew	O-275-L	Boundary control of upwelling in Southern Drake Passage: Whither Weddies?



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USAP Station Index Special Projects

Principal Investigator	Event No.	Project Title
Ball, Rebecca	B-300-E	Collaborative Research: Climatic and environmental constraints on aboveground-belowground linkages and diversity across a latitudinal gradient in Antarctica
Eppley, Dr. Sarah	B-289-E	The functional role of moss in structuring biotic interactions and terrestrialization of Antarctica
Kirschvink, Joseph	G-291-E	Paleomagnetism and magnetostratigraphy of the James Ross Basin, Antarctica.

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2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

B-031-M
NSF/PLR Award 0944411

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Addie Coyac / Ryan Wallace



Principal Investigator

Dr. David Ainley
dainley@penguinscience.com

H.T. Harvey & Associates

Los Gatos, California

Project Web Site:

<http://www.penguinscience.com>

Location

Supporting Stations: McMurdo Station

Research Locations: Beaufort, Franklin, and Inexpressible Islands / Capes Crozier and Royds

Description

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

Field Season Overview

Ten field team members will deploy camps to Capes Crozier and Royds and will make day trips, depending on sea ice conditions, to Beaufort Island. The field work from late

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October to early February spans the Adelle nesting season. On foot, team members will look for penguins previously banded as chicks to collect data and log their breeding status. To investigate foraging as it affects breeding effort, researchers will deploy time-depth-recorders at each site. Computerized weighbridges will continue to log trip duration and food loads. This species of penguin does not mature until 3-8 years of age, thus, even after 15 years, researchers are just beginning to see breeders among the birds banded as chicks.

Deploying Team Members

- David Ainley (PI)
- Grant Ballard (Co-PI)
- Megan Elrod
- Dennis Jongsomjit
- Amelie Lescroel (Co-PI)
- Jean Pennycook
- Valeria Ruoppolo
- Anne Schmidt
- Arvind Varsani
- Eric Woehler



2014-2015 USAP Field Season

Project Detail

Project Title

Ice Coring And Drilling Services (ICDS) Support For WAIS Divide

Summary

Event Number:

T-350-M

NSF Agreement

Program Manager:

Dr. Julie Palais

ASC POC/Implementer:

John Rand / Ryan Wallace



Principal Investigator

Dr. Mary Albert

mary.r.albert@dartmouth.edu

Dartmouth College

Thayer School of Engineering

Hanover, New Hampshire

Project Web Site:

<http://waisdivide.unh.edu>

Location

Supporting Stations: McMurdo Station

Research Locations: WAIS Divide Camp

Description

The West Antarctic Ice Sheet (WAIS) Divide is a collaboration of about 40 separate but synergistic projects funded by the NSF to collect deep ice cores from the West Antarctic Ice Sheet. Work began with construction of a field camp in 2005-06, and the first cores were recovered in 2006-07. On December 31, 2011 drillers reached the final depth goal of 3,405 meters and recovered the longest U.S. ice core to date from the polar regions. The Ice Drilling Program Office (IDPO), established in 2008, is led by Mary Albert at Dartmouth College in collaboration with the University of New Hampshire and in partnership with the University of Wisconsin-Madison. The IDPO was established to articulate and maintain long- and short-term goals and plans in conjunction with the ice coring and drilling research community, enhance communication and information exchange within the research community and to the public, and oversee the Ice Drill Design and Operations (IDDO). (IDDO is the principle supplier of ice drilling and coring equipment, support and expertise for NSF-funded research.) In addition, the IDPO convenes a science advisory board for the purpose of forming and updating a long-range science plan that articulates the direction of U.S. ice coring and drilling science and identifies the drills and drilling technology required to enable the science.

Field Season Overview

Five participants will deploy to the WAIS Divide Arch facility where they will disassemble and pack all drilling equipment to be traversed or flown to McMurdo Station.



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Deploying Team Members

- Jeffrey Donenfeld
- Donald Kirkpatrick



Project Title

Global Seismograph Station At South Pole And Palmer Stations

Summary

Event Number:

G-090-P/S

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Samina Ouda / 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://www.iris.edu/hq/>

Location

Supporting Stations: Palmer Station, South Pole Station

Research Locations: Quiet Sector

Description

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

Field Season Overview

Two field team members will fly to South Pole Station to perform routine maintenance on their previously installed seismic stations. They may also upgrade their seismic station at Scott Base. The team will not deploy to Palmer Station.

Deploying Team Members

- Brian Armstrong
- Edward Kromer



Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.



Project Web Sites

Find more information about 2014-2015 USAP projects by viewing project web sites.



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- Edward Kromer



2014-2015 USAP Field Season

Project Detail

Project Title

Collaborative Research: A 1,500-Meter Ice Core From South Pole

Summary

Event Number:

I-164-S
NSF/PLR Award 1142517

Program Manager:

Dr. Julie Palais

ASC POC/Implementer:

John Rand / Leah Street



Principal Investigator

Dr. Murat Aydin
maydin@uci.edu

University of California Irvine

Earth System Science
Irvine, California

Project Web Site:

<http://spiccore.org/>

Location

Supporting Stations: South Pole Station

Research Locations: Field sites near South Pole Station

Description

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

Field Season Overview

Ten participants will reside at the Elevated Station and will commute daily to the drill site. Using an Intermediate Depth Drill (supplied by I-164-S/IDDO) they will drilling to 700 meters and collect ice cores. The cores will be flown by LC-130 aircraft throughout the field season to McMurdo Station where they will be housed in one SAFECORE freezer until they are shipped north on the cargo vessel.

Deploying Team Members

Project Indexes

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Project Web Sites

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- Murat Aydin (PI)
- Grant Boeckmann
- Kimberly Casey
- David Ferris
- Tyler Fudge

- Joshua Goetz
- Tanner Kuhl
- Elizabeth Morton
- Melinda Nicewonger
- Shawntel Stapleton



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

A-127-M
NSF/PLR Award 0970175

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Judy Shiple / Meghan Walker



Principal Investigator

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

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

Project Web Site:

<http://arianna.ps.uci.edu/>

Location

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

Description

The ARIANNA concept uses the Ross Ice Shelf near the coast of Antarctica to increase the sensitivity to ultra-high-energy cosmogenic neutrinos by roughly an order of magnitude when compared to the sensitivity of existing detectors and those under construction. Therefore, ARIANNA can test a wide variety of scenarios for neutrino production and probe for physics beyond the standard model by measuring the neutrino cross-section at the center of mass energies near 100 Tera-electron-Volts. ARIANNA capitalizes on several remarkable properties of the Ross Ice Shelf. For example, shelf ice is now measured to be relatively transparent to electromagnetic radiation at the radio frequencies of interest, and the water-ice boundary below the shelf behaves like a mirror that reflects radio signals from downgoing neutrinos back up to the surface antennas. The ability to operate continuously for nearly six months (or possibly more with the addition of wind power), the low energy threshold ($\sim 3 \times 10^{17}$ electron-Volts), and a field of view of more than half the sky, combine to make ARIANNA a highly sensitive neutrino detector.

Field Season Overview

Five field team members will deploy for approximately six weeks to install the remaining four of their instruments. From McMurdo Station they will be transported by helicopter to Moore's Bay on the Ross Ice Shelf. Field Safety and Training personnel will assist them with camp put in and tear down.

Project Indexes

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Deploying Team Members

- Steven Barwick (PI)
- Christopher Persichilli
- Corey Reed
- Joulieu Tatar
- James Walker



2014-2015 USAP Field Season

Project Detail

Project Title

MRI-R2: Development Of An Ice Imaging System For Monitoring Changing Ice Sheets Mounted On The NYANG LC-130

Summary

Event Number:

G-053-M
NSF/PLR Award 1444690

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Judy Shiple / Elizabeth Kauffman



Principal Investigator

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

Columbia University

Palisades, New York

Project Web Site:

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

Location

Supporting Stations: McMurdo Station

Research Locations: Williams Field

Description

The icePod system is an integrated ice imaging system capable of measuring in detail both the ice surface and the ice bed. The instrument package consists of ice-penetrating radar, infrared and visible cameras, laser altimeter, inertial measurement unit, GPS receiver, and data acquisition system. IcePod will also enable other instruments to be used in the modular Common Science Support Pod. It will be installed and operated on New York Air National Guard (NYANG) LC-130 aircraft during routine and targeted missions across Antarctica and Greenland as a shared community research facility providing data to scientists and educators globally. This project will design, build, calibrate, test, and commission the instrument.

Field Season Overview

Six field team members will deploy to McMurdo Station to install and commission the instrumentation and to train and assist the New York Air National Guard in the deployment and operation of the instrument. There will be 10 dedicated IcePod flight hours for instrumentation tests, and the IcePod will be operated in up to 15 other flights for routine data collection during this field season.

Deploying Team Members

Project Indexes

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- Robin Bell (PI)
- Christopher Bertinato
- Scott Brown

- Tejendra Dhakal
- Nicholas Frearson (Co-PI)



Project Title

LDB-COMpton Spectrometer And Imager (COSI)

Summary

Event Number:

A-372-M
NSF / NASA Agreement

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

John Rand / Ryan Wallace



Principal Investigator

Dr. Steven Edward Boggs
boggs@berkeley.edu

University of California Berkeley

Space Sciences Laboratory
Berkeley, California

Project Web Site:

<http://hea.ssl.berkeley.edu/research/cosi/>

Location

Supporting Stations: McMurdo Station

Research Locations: Long-Duration Balloon (LDB) Facility at Williams Field

Description

The COMpton Spectrometer and Imager (COSI) is a balloon-borne wide-field telescope designed to study the high-energy sky at gamma-ray energies. It will study the nature of gamma-ray burst explosions, the origin of positrons in our galaxy, and the creation of elements in our nearby Universe.

Field Season Overview

Field team members will deploy to McMurdo Station in early November to prepare the ANITA payload for launch on a NASA high-altitude balloon in late December or early January. The payload will remain aloft and will operate autonomously for 24 days, after which it will be recovered and the data analyzed.

Deploying Team Members

- Steven Boggs (PI)
- Hsiang-Kuang Chang (Co-PI)
- Cheng-Lun Chiu
- Jane Hoberman
- Alexander Lowell
- Brent Mochizuki
- David Sullivan
- Chao-Hsiung Tseng
- Chien-Ying Yang

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- Carolyn Kierans
- Chih-Hsun Lin



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

O-257-M/S

NSF / NOAA Agreement

Program Manager:

Dr. Peter Milne

ASC POC/Implementer:

Judy Shiple / Elizabeth Kauffman



Principal Investigator

Dr. James Hall Butler

James.H.Butler@noaa.gov

National Oceanic and Atmospheric Administration

Global Monitoring Division (GMD)

Boulder, Colorado

Project Web Site:

<http://www.esrl.noaa.gov/gmd/>

Location

Supporting Stations: McMurdo Station, South Pole Station

Research Locations: Arrival Heights

Description

The National Oceanic and Atmospheric Administration (NOAA) Earth System Research Laboratory (ESRL) Global Monitoring Division (GMD) will continue long-term measurements of ultra-violet (UV) radiation that influences climate and the ozone layer. The work at McMurdo Station is in conjunction with ongoing worldwide measurements of carbon dioxide, methane, carbon monoxide, aerosols, water vapor, surface and stratospheric ozone, chlorofluorocarbons, and the ozone layer at South Pole and Palmer Stations. The measurements will be used for time-series analysis of multi-year data records that focus on stratospheric ozone depletion; trans-Antarctic transport and deposition; interplay of the trace gases aerosols with the solar and terrestrial radiation fluxes on the polar plateau; the magnitude of seasonal and temporal variations in greenhouse gases; and the development of polar stratospheric clouds. Other objectives of this research are to determine the rate at which concentrations of these atmospheric constituents change and to examine the related sources, sinks, and budgets. Researchers will use the data to determine how the rate of change of these parameters affect climate, particularly when the data are included in climate-model studies in support of this project.

Field Season Overview

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



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Project Web Sites

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

Deploying Team Members

- Scott Stierle



2014-2015 USAP Field Season

Project Detail

Project Title

South Pole Monitoring For Climatic Change

Summary

Event Number:

O-257-M/S
NSF / NOAA Agreement

Program Manager:

Dr. Peter Milne

ASC POC/Implementer:

Judy Shiple / Paul Sullivan



Principal Investigator

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

National Oceanic and Atmospheric Administration

Global Monitoring Division (GMD)
Boulder, Colorado

Project Web Site:

<http://www.esrl.noaa.gov/gmd/>

Location

Supporting Stations: McMurdo Station, South Pole Station
Research Locations: Atmospheric Research 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. The data help climate modelers and diagnosticians determine how the rate of change of these parameters affect climate, particularly when the data are included in climate-model studies.

Field Season Overview

Each austral summer, two project team members staff the Atmospheric Research Observatory (ARO). Other personnel deploy for shorter periods throughout the field season to perform upgrades and routine maintenance on the instruments. Over the austral winter, two NOAA personnel will remain on station to continue observations and measurements.

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Deploying Team Members

- John Booth
- Andrew Clarke
- Jesse Milton
- Joseph Phillips
- James Salzman-Walsh
- Scott Stierle



2014-2015 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:

Judy Shiple / Jamee Johnson



Principal Investigator

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

National Oceanic and Atmospheric Administration

Global Monitoring Division (GMD)
Boulder, Colorado

Project Web Site:

<http://www.esrl.noaa.gov/gmd/>

Location

Supporting Stations: Palmer Station

Research Locations: T-5 Building

Description

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

Field Season Overview

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



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

Deploying Team Members

- Patrick Disterhoft (Co-PI)



2014-2015 USAP Field Season

Project Detail

Project Title

Cosmological Research With The 10-Meter South Pole Telescope

Summary

Event Number:

A-379-S
NSF/PLR Award 1248097

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Judy Shiple / Paul Sullivan



Principal Investigator

Dr. John Carlstrom
jc@kicp.uchicago.edu

University of Chicago

Astronomy and Astrophysics
Chicago, Illinois

Project Web Site:

<http://pole.uchicago.edu>

Location

Supporting Stations: South Pole Station

Research Locations: Dark Sector

Description

The South Pole Telescope (SPT) conducts cosmological research by measuring the intensity and polarization anisotropy of the cosmic microwave background (CMB) radiation. The first key project was to survey over 2,500 square degrees of the sky with high sensitivity in three wavelength bands centered at 90, 150, and 220 GHz. This survey was completed in November 2011. The goal of the project is to detect all galaxy clusters in this region of the sky through the spectral distortion they impart on the CMB. The distortion is called the Sunyaev-Zel'dovich effect. The observed effect has the remarkable property of being independent of the distance to the cluster. The resulting SPT catalog of galaxy clusters is being used to set constraints on the mysterious dark energy that dominates the mass-energy density of the Universe and is causing the expansion of the Universe to accelerate. The second key project started in 2012 with the installation of an ultra-sensitive polarization receiver on the SPT. Through measurements of the polarization, researchers will determine the sum of the masses of the neutrinos and either detect or set stringent upper limits on the energy scale of inflation.

Field Season Overview

This coming austral summer season for the SPT project will be focused primarily on maintenance and calibration. The science team also will be installing the Event Horizon Telescope receiver and will add a compressor for the BICEP3 project.

Project Indexes

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Deploying Team Members

- Ken Aird
- John Carlstrom (PI)
- Thomas Crawford
- Jason Gallicchio
- Christopher Greer
- Nicholas Huang
- Christopher Kendall
- Junhan Kim
- Erik Leitch
- Daniel Marrone



2014-2015 USAP Field Season

Project Detail

Project Title

IRIS/PASSCAL Seismic Support

Summary

Event Number:

T-299-M/S
NSF/EAR Award 1261681

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

John Rand / Elizabeth Kauffman / Paul Sullivan



Principal Investigator

Mr. Paul Carpenter

pcarpenter@passcal.nmt.edu

New Mexico Institute of Mining and Technology

IRIS/PASSCAL Instrument Center
Socorro, New Mexico

Project Web Site:

<http://www.passcal.nmt.edu/content/polar>

Location

Supporting Stations: McMurdo Station, South Pole Station

Research Locations: As required to support NSF-funded projects

Description

The IRIS Program for Array Seismic Studies of the Continental Lithosphere (PASSCAL), Instrument Center and EarthScope USArray, Array Operations Facility (AOF) at New Mexico Institute of Mining and Technology support cutting-edge seismological research into Earth's fundamental geological structure and processes. The facility provides instrumentation to NSF-funded seismological projects in Antarctica and elsewhere. Antarctic and Arctic projects comprise five to 10 percent of all the projects PASSCAL supports worldwide. Each year, PASSCAL supports a variety of NSF-funded science projects while also developing cold-station deployment strategies, collaborating with vendors to develop and test equipment rated for -55°C / -67°F, building an equipment pool, and creating a repository for cold-station techniques.

Field Season Overview

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

Deploying Team Members

Project Indexes

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- Douglas Bloomquist
- Paul Carpenter (PI)
- Dean Childs
- Jason Hebert

- Jason Leiker (Team Leader)
- Tim Parker
- Tim Parker



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

A-130-M
NSF/PLR Award 1246405

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Judy Shiple / Elizabeth Kauffman



Principal Investigator

Dr. Xinzhao Chu
xinzhao.chu@colorado.edu

University of Colorado Boulder

CIRES
Boulder, Colorado

Project Web Site:

<http://cires.colorado.edu/science/groups/chu/projects/mcmurdo.html>

Location

Supporting Stations: McMurdo Station

Research Locations: Arrival Heights

Description

This project continues the operation of the Fe-Boltzmann LiDAR (light detecting and ranging) instrument installed in the Antarctica New Zealand (ANZ) lab at Arrival Heights near McMurdo Station. The initial instrument installation took place during the 2010-11 summer season. 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 2014) include : (1) Neutral Fe layers and gravity waves well into the thermosphere, from 155 kilometers up to 170 kilometers; (2) Elevated thermospheric temperatures between 110 and 150 kilometers, likely associated with Joule heating; (3) Explosive release of exceptionally large Fe densities between 85 and 95 kilometers during summer, likely from visible and sub-visible ice particles; (4) Significant solar effects on the Fe-layer bottom side during local sunrise and sunset; (5) Strong and nearly persistent inertial gravity waves with cross-Antarctic-continent features; (6) Super-exponential growth of temperature tidal amplitude in the lower thermosphere above 110 kilometers; and (7) Dramatic density variations (about 40 times) of Fe layers over a time scale of multiple days (7-20 days).

Field Season Overview

Project Indexes

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The four-member team will collect LiDAR data in both summer and winter seasons; only one LiDAR scientist will winter over. The team will refurbish and maintain the LiDAR system to its optimum status.

Deploying Team Members

- Ian Barry
- Xinzhao Chu (PI)
- Wentao Huang
- John Smith
- Jian Zhao



Project Title

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

Summary

Event Number:

A-106-M/S
NSF/PLR Award 1243398

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Judy Shiple / Elizabeth Kauffman / Paul Sullivan



Principal Investigator

Dr. C. Robert Clauer
rclauer@vt.edu

Virginia Tech

Hampton, Virginia

Project Web Site:

<http://mist.nianet.org/index.html>

Location

Supporting Stations: McMurdo Station, South Pole Station

Research Locations: 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

Currently at South Pole Station, two AAL-PIP systems (Sys2 and Sys4) are installed and one system (Sys6) is packed for remote-field deployment. The two installed systems will be updated with a new fluxgate sensor and repaired electronics and will remain on site for another year. In addition, a new sensor and electronics will be shipped to South Pole and installed by the field members.

Deploying Team Members

Project Indexes

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- Bruce Fritz
- Peter Marquis

- Zhonghua Xu



Project Title

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

Summary

Event Number:

A-343-M/S
NSF/PLR Award 1341545

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Judy Shiple / Elizabeth Kauffman / Paul Sullivan



Principal Investigator

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

University of Alaska Fairbanks

Physics Department
Fairbanks, Alaska

Project Web Site:

http://sdi_server.gi.alaska.edu/sdiweb/index.asp

Location

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

Description

The project will deploy two all-sky imaging Fabry-Perot Spectrometers at McMurdo and South Pole Stations 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, one science team participant will make site visits to McMurdo and South Pole Stations. Off Ice, the science team will undertake construction of a new instrument for McMurdo Station and the recovery of an existing instrument from Mawson Station, Antarctica, for South Pole Station. The Australian Antarctic Division may deliver this instrument directly to South Pole Station in January 2015, if logistics allow.

Deploying Team Members

- Mark Conde (PI)

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

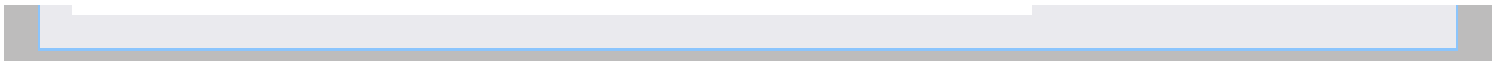
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Project Title

Deglaciation Of The Ross Sea Embayment - Constraints From Roosevelt Island

Summary

Event Number:

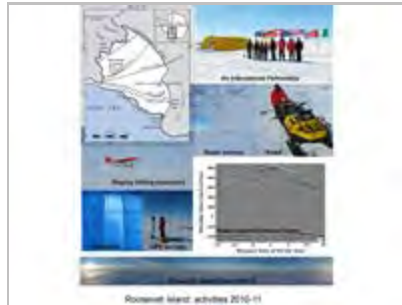
I-209-M
NSF/PLR Award 0944307

Program Manager:

Dr. Julie Palais

ASC POC/Implementer:

Matthew Erickson / Brian Johnson



Principal Investigator

Dr. Howard Conway
conway@ess.washington.edu

University of Washington

Earth and Space Sciences
Seattle, Washington

Project Web Site:

http://www.ess.washington.edu/Surface/Glaciology/projects/ross_sea_history/

Location

Supporting Stations: McMurdo Station

Research Locations: Roosevelt Island

Description

This international ice core drilling project on Roosevelt Island is a partnership with Antarctica New Zealand (ANZ), the UK, Denmark, Germany, and China. Researchers seek to understand past, present, and future environmental changes in the Ross Sea sector of West Antarctica. The scientific objectives are to determine histories of climate and ice thickness for Roosevelt Island and to develop an updated model of the configuration and thickness of the ice in the Ross Sea Embayment during the last glacial maximum. Results from this work will provide ground truth for new-generation ice-sheet models that incorporate ice streams and fast-flow dynamics. Realistic ice-sheet models are needed not only for predicting the response to future possible environments but also for investigating past behaviors of ice sheets. This research also contributes to understanding spatial and temporal patterns of climate change and climate dynamics over the past 40 thousand years, one of the primary goals of the International Partnerships in Ice Core Sciences (IPICS).

Field Season Overview

New Zealand partners completed drilling a 763-meter ice core to the bed on December 20, 2012. In the coming season, field team members will re-log the borehole and recover their automated weather station equipment.

Deploying Team Members

Project Indexes

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Project Web Sites

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- David Clemens-Sewall
- Robert Hawley (Co-PI)

- Joanna Millstein



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

C-511-M
NSF/PLR Award 1115245

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Sune Tamm / Elizabeth Kauffman



Principal Investigator

Dr. Peter Doran
pdoran@uic.edu

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

Project Web Site:

<http://www.mcmlter.org/>

Location

Supporting Stations: McMurdo Station
Research Locations: Dry Valleys

Description

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

Field Season Overview

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

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Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

Project Web Sites

Find more information about 2014-2015 USAP projects by viewing project web sites.

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

Deploying Team Members

- Dimitri Acosta
- Benjamin Alsip
- Kyle Cronin (Team Leader)



Project Title

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

Summary

Event Number:

C-045-L/P
NSF/PLR Award 1440435

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Adam Jenkins / Jamee Johnson / Samina Ouda



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

Microorganisms form an important ecosystem component at the base of Antarctic foodwebs and catalyze critical biogeochemical transformations in the carbon, nitrogen, and other elemental cycles. This project documents long-term trends variability of bulk bacterial and Archaeal biomass and production rates in space and time. Researchers seek to understand the effects of climate change and ecosystem response on dissolved oxygen and organic and inorganic carbon—key biogeochemical properties. The Southern Ocean is an important sink for atmospheric carbon dioxide and studies of the metabolically active gases can clarify the linkages among biological and physical processes affecting oxygen storage. Microbial oxidation of dissolved organic compounds is an important flow in marine ecosystems and provides a link between microbial functioning and oxygen/carbon dioxide cycles.

Field Season Overview

At Palmer Station the group will continue to sample the Thorium-234 deficit at a reduced level (weekly samples). They will perform several incubation experiments to test specific hypotheses about microbial processes and organic-matter cycling. Project participants will also sail onboard the annual 28-day LTER cruise onboard the LMG from January 1 to February 15th. Vessel-based activities include collecting samples by trawling, conducting multiple CTD casts, deploying gliders, and servicing five physical oceanographic



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Find information about projects approved for the 2014-2015 USAP field season using the available indexes.



Project Web Sites

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moorings. A sediment trap mooring will be recovered and re-deployed at the LTER site near Hugo Island. Three- to five-day field camps will take place on Avian and Charcot Islands. Zodiac inflatable boat support is required for deploying to these field sites, as time and ice conditions permit. During the time at process stations, Zodiac support will be allocated for glider operations and to deploy satellite tags on baleen whales, collect biopsy samples, and individual photo-identification data. Two fully-equipped radioisotope vans will be used for C14 and for 3H.

Deploying Team Members

- Hugh Ducklow (PI)
- Rachel Kaplan
- Hyewon Kim
- Kimberley Miner
- Naomi Shelton
- Conor Sullivan
- Leigh West



2014-2015 USAP Field Season

Project Detail

Project Title

Euphausia Superba Feeding Using DNA Analysis Of Gut Contents

Summary

Event Number:

B-014-N
NSF/PLR Award 1142107

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Addie Coyac / Adam Jenkins



Principal Investigator

Dr. Edward G Durbin
edurbin@gso.uri.edu

University of Rhode Island

Graduate School of Oceanography
Narragansett, Rhode Island

Project Web Site:

<http://krillcruise.wordpress.com/>

Location

Supporting Stations: RV/IB Nathaniel B. Palmer

Research Locations: Western Antarctic Peninsula

Description

The overall goal of this project is to investigate krill (*Euphausia superba*) in-situ feeding and swimming behavior in the Western Antarctic Peninsula (WAP) region during austral spring and early summer. This will cover the period when phytoplankton is likely to be the major prey. Researchers will also investigate whether alternative food resources, such as benthos or zooplankton, may form an important component of krill diets. Four specific objectives are proposed: (1) To determine how the oceanographic environment structures krill prey distributions and the associations of krill with these; (2) To use the DNA approach to determine the in-situ consumption of all prey by krill collected in the WAP during the spring phytoplankton bloom; (3) To determine the in-situ feeding rates of *E. superba* diet on abundant prey items; (4) To determine both the smaller- and larger-scale prey fields and how the distribution patterns of krill are related.

Field Season Overview

Researchers will sail on NBP14-10 from Punta Arenas, Chile to their research sites off the Western Antarctic Peninsula. They will collect samples using a conductivity-temperature-depth (CTD) sensor, a one-meter Multiple Opening/Closing Net and Environmental Sensing System (MOCNESS), and ring nets. Based on patterns of krill distribution they will then choose locations to carry out both day and night sampling to characterize phytoplankton, zooplankton, and krill in the water column, determine prey consumed in situ, and make in-situ swimming observations using an acoustic Doppler current profiler (ADCP) and camera, both in the water column and at the benthic-water



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column interface. In addition, krill will be captured and maintained in aquaria on board for shipboard digestion-rate experiments.

Deploying Team Members

- Harriet Alexander
- Sean Anderson
- Maria Casas
- Alison Cleary
- Michelle Dennis
- Edward Durbin (PI)
- Sonya Dyhrman
- Michael Fong
- David Gleeson
- Francoise Heylebroeck-Morison
- Mary Kane
- Iain McCoy
- Susanne Menden-Deuer
- Ian Paynter
- Jessica Perreault
- Christopher Roman (Co-PI)
- Edward Saenz
- James Vaughn
- Xuchen Wang
- Joseph Warren
- Regina Yopak
- Meng Zhou (Co-PI)
- Yiwu Zhu



Project Title

Collaborative Research: Element Composition Of High Energy Solar Particles

Summary

Event Number:

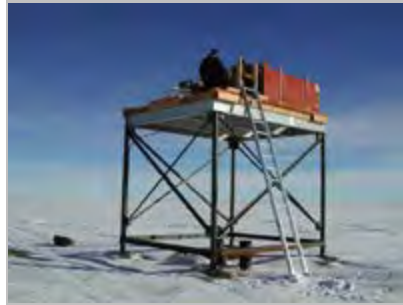
A-118-S
NSF/PLR Award 1341562

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Samina Ouda / Paul Sullivan



Principal Investigator

Dr. Paul Evenson
evenson@udel.edu

University of Delaware

Physics and Astronomy
Newark, Delaware

Project Web Site:

<http://neutronm.bartol.udel.edu/>

Location

Supporting Stations: South Pole Station

Research Locations: B2 Science Building

Description

This project will continue operating the suite of neutron monitors at South Pole Station. Data from South Pole enhance the worldwide neutron monitor network with a unique location at high altitude and low cutoff rigidity, a well-established spectral detection capability and very long baseline of existing measurements, serving as the lynchpin 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

One participant will deploy to test and repair the detectors as needed. Upgraded firmware will be installed in the recording system to increase data value by adding "multiplicity" recording and by synchronizing the data stream to GPS time.

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Deploying Team Members

- James Roth



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

A-120-M
NSF/PLR Award 1245939

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Samina Ouda / Elizabeth Kauffman



Principal Investigator

Dr. Paul Evenson
evenson@udel.edu

University of Delaware

Physics and Astronomy
Newark, Delaware

Project Web Site:

<http://neutronm.bartol.udel.edu/>

Location

Supporting Stations: McMurdo Station

Research Locations: Building 84

Description

Installed during the 1959-60 field season, the Cosray Lab is the longest continually running experiment in the US Antarctic Program. This 53-year data set plays a crucial role in understanding the nature and cause of cosmic ray and solar terrestrial variations occurring over the 11-year sunspot cycle, 22-year Hale cycle, and longer time scales. Neutron monitoring provides a three-dimensional perspective of the anisotropic flux of cosmic rays that continuously bombard Earth. The data acquired by this research project will advance the understanding of fundamental plasma processes that occur on the Sun and in interplanetary space. Researchers will analyze data acquired on station in concert with data from the "Spaceship Earth" neutron monitor network to understand variations associated with solar energetic particles that occur on time scales of minutes to hours. In a new application made possible by real-time data availability, the observations will also assist space-weather forecasting and specification.

Field Season Overview

In order to maintain the proper normalization of the detectors' baseline between two locations, McMurdo Station and the South Korean station, Jang Bogo, the neutron monitor must be moved in two phases, dismantling and shipping the monitor in sections. This requires temporarily reactivating the International Geophysical Year (IGY) neutron monitor at McMurdo Station for the duration of the inter-calibration interval. One detector section will be shipped via vessel to Christchurch, New Zealand where it will be stored until it can be picked up by the Korean ship, Araon, for delivery to Jang Bogo.



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Deploying Team Members

- Paul Evenson (PI)
- Samuel Gardner
- James Madsen (Co-PI)



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

C-013-L/P
NSF/PLR Award 0823101

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Samina Ouda / Adam Jenkins / Jamee Johnson



Principal Investigator

Dr. Bill Fraser
bfraser@3rivers.net

Polar Oceans Research Group
Sheridan, Montana

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

Location

Supporting Stations: ARSV Laurence M. Gould, Palmer Station
Research Locations: LTER Study Site / Palmer Station

Description

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

Field Season Overview

Based at Palmer Station from October to April, field team members will use Zodiacs to make day trips and possible overnights within the local boating area. Team members will concentrate on censusing and mapping seabird colonies, obtaining indices of reproductive success, determining diets and foraging ranges, and examining chick growth and energetics. In the lab, researchers will process GIS and telemetry data and analyze diet samples. During LTER's annual cruise aboard the LMG, the birder group will establish a field camp of several days duration on Avian and Charcot Islands to census and map Adélie Penguin colonies, obtain diet samples and instrument birds with satellite transmitters and dive-depth recorders. Onboard the vessel they will conduct seabird

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observations from the bridge. If the conditions and logistics allow, a field party may disembark at stops between Anvers Island and Marguerite Bay to conduct penguin diet sampling.

Deploying Team Members

- Benjamin Cook
- Shawn Farry
- Bill Fraser (PI)
- Carrie McAtee
- Madison McConnell
- Donna Patterson-Fraser



Project Title

Long Term Ecological Research (LTER) Whale Component

Summary

Event Number:
C-024-L/P

Program Manager:
Dr. Lisa Clough

ASC POC/Implementer:
Samina Ouda



Principal Investigator

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

Oregon State University
Marine Mammal Program
Newport, Oregon

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

Location

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

Description

This new Long Term Ecological Research (LTER) project, focusing on the dynamics of baleen whale populations, will link visual survey and satellite-based tracking of baleen whales with LTER synoptic data. The researchers' 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

One field team member will deploy to Palmer Station for the austral summer season (October through March) and will be joined by an additional team member for the two final months. Using a Zodiac inflatable boat, they will conduct daily visual surveys of marine mammals, quantitative prey mapping, biopsy sampling, and suction cup tag deployment and recovery. On the ARSV Laurence M. Gould they will conduct visual surveys while the ship is underway between sampling stations or otherwise in transit. While at sampling stations, and during the process station periods, this group's main objectives will be to collect skin and blubber biopsy samples, collect individual photo-identification images of individual whales, and deploy satellite-linked tags to a number of whales.

Deploying Team Members

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David Johnston (Co-PI)

Zachary Swaim

- Andrew Read



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

A-111-M/S
NSF/PLR Award 1247975

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Samina Ouda / Elizabeth Kauffman / Paul Sullivan



Principal Investigator

Dr. Andrew Gerrard
gerrard@njit.edu

New Jersey Institute of Technology

Department of Physics
Newark, New Jersey

Project Web Site:

<http://www.antarcticgeospace.org>

Location

Supporting Stations: McMurdo Station, South Pole Station

Research Locations: Arrival Heights / Atmospheric Research Observatory / Cusp Lab

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 with this project will study interrelated ITM phenomena observed at high latitudes with the goal of better understanding the energy transfer and modulation of the geospace system.

Field Season Overview

American and Japanese teams will work collaboratively at both McMurdo (Arrival Heights) and South Pole Stations. The first team, from the New Jersey Institute of Technology, will deploy to McMurdo Station where they will update the data acquisition system at Arrival Heights and install a search-coil magnetometer. They will then move on to South Pole Station, where they will update the data acquisition system and install a photometer

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system in science building B2. They will also install three GPS receivers at the SPA site, and will site the location of a new proton magnetometer vault. Conversely, the second team, from the Japanese National Institute of Polar Research, will deploy to South Pole first to perform maintenance on the existing all-sky imager. They will also travel to McMurdo Station where they will install a new all-sky imager at Arrival Heights.

Deploying Team Members

- Gilbert Jeffer
- Bob Melville
- Yasunobu Ogawa
- Yuka Sato
- Andrew Stillinger



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

C-504-M
NSF/PLR Award 1115245

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Sune Tamm / Elizabeth Kauffman



Principal Investigator

Dr. Michael N Gooseff
mgooseff@rams.colostate.edu

Colorado State University

Fort Collins, Colorado

Project Web Site:

<http://www.mcmlter.org>

Location

Supporting Stations: McMurdo Station

Research Locations: Dry Valleys

Description

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

Field Season Overview

Researchers will occupy the Lake Hoare camp and possibly the F6 camp. From there, they will make day trips to the Commonwealth, Howard, Canada, and Taylor glaciers to conduct mass balance measurements and biological studies. They also plan to install new mass balance stakes on Miers Glacier and to visit existing active layer monitoring stations (ALMSs) in Taylor Valley. They will install a new ALMS in Miers Valley. Additional day trips will be made to Budda Lake in Garwood Valley to monitor the hydrologic conditions, and to upper Taylor, Wright, and Victoria Valleys to acquire glacier repeat photographs at established locations. They will also deploy a pressure transducer in the Dry Valley Drilling Project borehole at Don Juan Pond.

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Deploying Team Members

- Andrew Fountain (Co-PI)
- Michael Gooseff (PI)
- Alexandra Mass
- Alexandra Mass
- Adam Wlostowski



2014-2015 USAP Field Season

Project Detail

Project Title

Antarctic Impulsive Transient Antenna (ANITA III) Experiment

Summary

Event Number:

A-371-M
NASA / NSF Agreement

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

John Rand / Ryan Wallace



Principal Investigator

Dr. Peter W Gorham
gorham@phys.hawaii.edu

University of Hawaii Manoa

Hawaii Institute of Geophysics & Planetology
Honolulu, Hawaii

Project Web Site:

<http://www.phys.hawaii.edu/~anita>

Location

Supporting Stations: McMurdo Station

Research Locations: Long-Duration Balloon (LDB) Facility at Williams Field

Description

Researchers will conduct the third flight of the long-duration balloon payload ANITA III, above the Antarctic Plateau to observe 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. These impulses are observed primarily in reflection from the ice surface. ANITA's payload is a large array of VHF/UHF antennas capable of observing and geolocating these radio impulses and deriving a possible direction and energy for any neutrinos or cosmic rays observed. ANITA is the first NASA mission whose goal is ultra-high-energy cosmic particle detection. This third flight will continue the accumulation of a unique and statistically significant data set of radio-detected cosmic particles.

Field Season Overview

Field team members will deploy to McMurdo Station in mid October to prepare the ANITA payload for launch on a NASA high-altitude balloon in December. Some team members will make day trips by fixed-wing aircraft to remote field sites where they will install autonomous calibration stations. Once the balloon has been launched, the team will be decreased by half. The remaining members will await the landing and payload recovery and will do the final packing and retrieval of the data vaults.

Deploying Team Members

Project Indexes

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- Patrick Allison
- Keith Bechtol
- Peter Gorham (PI)
- Brian Hill
- Christian Miki
- Katharine Mulrey
- Ryan Nichol
- Brian Rauch
- Jarred Roberts
- Andrew Romero-Wolf
- Benjamin Rotter
- David Saltzberg
- Harm Schoorlemmer
- Jessica Stockham
- Mark Stockham
- Benjamin Strutt
- Abigail Vieregg
- Stephanie Wissel



2014-2015 USAP Field Season

Project Detail

Project Title

IceCube Operations And Maintenance

Summary

Event Number:

A-333-S
NSF/PLR Award 0937462

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Samina Ouda / Paul Sullivan / Leah Street



Principal Investigator

Dr. Francis Halzen
halzen@icecube.wisc.edu

University of Wisconsin Madison

Physics Department
Madison, Wisconsin

Project Web Site:

<http://icecube.wisc.edu>

Location

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

Description

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

Field Season Overview

Field team members will deploy to Amundsen-Scott South Pole Station. On-Ice activities for the 2014-15 austral summer season include maintenance and operational improvements to the existing infrastructure. This work will take place primarily in the IceCube Counting Laboratory (ICL), Building 021.

Deploying Team Members

- Ralf Auer
- Erik Beiser
- James Casey
- Sam De Ridder
- Andrew Laudrie
- Hans Niederhausen
- Elisa Pinat
- Stephan Richter

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- Michael DuVernois
- Michael Frere
- James Haugen
- Seongjin In
- Martin Jurkovic

- Armando Rivera
- James Roth
- Perry Sandstrom
- Marcel Usner



2014-2015 USAP Field Season

Project Detail

Project Title

Antarctic Search For Meteorites (ANSMET)

Summary

Event Number:

G-058-M

NASA Award

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Sune Tamm / Meghan Walker



Principal Investigator

Dr. Ralph Harvey

rph@cwru.edu

Case Western Reserve University

Department of Geological Sciences

Cleveland, Ohio

Project Web Site:

<http://www.case.edu/ansmet>

Location

Supporting Stations: McMurdo Station

Research Locations: Davis Nunataks

Description

Since 1976, the Antarctic Search for Meteorites (ANSMET) has found more than 17,000 specimens. Meteorites do not fall preferentially on Antarctica; they are just easier to find on the white snow- and ice-scapes and because the ice transport and ablation process leads to accumulation in certain areas. One of those areas is the extreme southern end of the Transantarctic Mountains. This year, the ANSMET reconnaissance team will explore the Graves Nunataks and Upper Robison Glacier region and the Amundsen and Devil's Glacier region. Spanning about 100 kilometers from end to end, these areas are about 200 kilometers from South Pole Station and about 900 kilometers from McMurdo Station.

Field Season Overview

Eight field team members will live in Scott tents and conduct searches on snowmobiles. LC-130 aircraft will take the team and its gear to the Central TransAntarctic Mountain (CTAM) camp and then they will be shuttled by Twin Otter out to Miller Range. Once in the field, the team will generally be self-sufficient, with at least two resupply flights in mid-season. The field season is expected to last about six weeks.

Deploying Team Members

- Devon Burr
- Brian Rougeux



Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.



Project Web Sites

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More Information

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- Vinciane Debaille
- Christine Floss
- Ralph Harvey (PI)
- James Karner

- John Schutt
- Shannon Walker
- Ryan Zeigler



Project Title

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

Summary

Event Number:

B-134-M
NSF/PLR Award 1246202

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Samina Ouda / Beverly Walker



Principal Investigator

Dr. Gretchen Hofmann
hofmann@lifesci.ucsb.edu

University of California Santa Barbara

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

Project Web Site:

<http://labs.eemb.ucsb.edu/hofmann/gretchen/>

Location

Supporting Stations: McMurdo Station

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

Description

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

Field Season Overview

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

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

Project Web Sites

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Deploying Team Members

- Gretchen Hofmann (PI)
- Umihiko Hoshijima
- Kevin Johnson
- Amanda Kelley
- Amanda Kelley
- James Lunden



Project Title

Sub-Orbital Polarimeter For Inflation Dust And The Epoch Of Reionization (SPIDER)

Summary

Event Number:

A-143-M
NSF / NASA Agreement

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

John Rand / Ryan Wallace



Principal Investigator

Dr. William Claude Jones
wcjones@princeton.edu

Princeton University

Department of Physics
Princeton, New Jersey

Project Web Site:

<http://www.princeton.edu/jones/research/spider/>

Location

Supporting Stations: McMurdo Station

Research Locations: Long-Duration Balloon (LDB) Facility at Williams Field

Description

SPIDER is a balloon-borne microwave polarimeter designed to survey the 8 percent of the southern hemisphere that is most free of galactic-dust emission. The primary objective of SPIDER is to study the genesis of the early Universe, probing fundamental physics at energy scales that are far beyond the reach of terrestrial particle accelerators. The main result will be to experimentally validate the simplest Grand Unified Theory (GUT) scale inflationary models or to exclude them, thereby pointing toward a lower energy scale or more complex model space. SPIDER also addresses two secondary science goals. The most immediate of these is to dramatically improve our understanding of the interstellar medium in our own Milky Way Galaxy, especially the nature of diffuse high-latitude dust and its interactions with the large scale magnetic field of the galaxy. Additionally, SPIDER will provide an unambiguous measurement of the weak gravitational lensing of the Cosmic Microwave Background (CMB) polarization resulting from the integrated distribution of matter along the line of sight to the surface of last scattering.

Field Season Overview

Field team members will deploy to McMurdo Station in mid October to prepare the SPIDER payload for launch on a NASA high-altitude balloon in early December. The payload will remain aloft and will operate autonomously for 24 days, after which it will be recovered and the data analyzed.

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

Project Web Sites

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Deploying Team Members

- Steven Benton
- Sean Bryan
- Hsin Chiang
- Jeff Filippini
- Anne Gambrel
- Natalie Gandilo
- Jon Gudmundsson
- Mark Halpern
- John Hartley
- Matthew Hasselfield
- William Jones (PI)
- Zigmund Kermish
- Lorenzo Moncelsi
- Johanna Nagy
- Calvin Netterfield
- Ivan Padilla
- Alexandra Rahlin
- John Ruhl
- Jamil Shariff
- Donald Wiebe
- Edward Young



2014-2015 USAP Field Season

Project Detail

Project Title

Dry Valley Seismic Project

Summary

Event Number:

G-078-M
NSF/PLR-DoD MOA

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Matthew Erickson / Elizabeth Kauffman



Principal Investigator

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

United States Air Force

AFTAC
Patrick AFB, Florida

Project Web Site:

<http://www.aftac.gov>

Location

Supporting Stations: McMurdo Station

Research Locations: Dry Valleys

Description

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

Field Season Overview

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

Deploying Team Members

- Erik Cornelison
- Austin Dohm
- Wesley Hale
- Gregory Helms
- Thomas Young

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

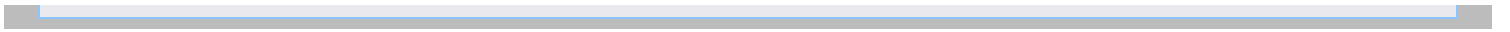
Project Web Sites

Find more information about 2014-2015 USAP projects by viewing project web sites.

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2014-2015 USAP Field Season

Project Detail

Project Title

Benthic-Pelagic Coupling In An Intact Ecosystem: The Role Of Top Predators In McMurdo Sound

Summary

Event Number:

B-174-M
NSF/PLR Award 0944747

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Addie Coyac / Curt LaBombard



Principal Investigator

Dr. Stacy Kim
skim@mlml.calstate.edu

San Jose State University

Moss Landing Marine Laboratories
Moss Landing, California

Project Web Site:

<http://scini-penguin.mlml.calstate.edu/>

Location

Supporting Stations: McMurdo Station

Research Locations: Cape Royds / Ice Runway / Sea Ice / Crary Lab

Description

This project will focus on food web interactions of three dominant predators, Adélie penguins, minke whales, and the fish-eating Ross Sea killer whales, all of which exert foraging pressure on their main prey—crystal krill and silver fish. The annual arrival of an icebreaker to open a channel through fast ice to McMurdo Station (20 kilometers from the ice edge) provides a large-scale natural experiment for investigations of predator effects on prey distributions. Thousands of penguins and dozens of whales follow the ship, foraging to either side of the channel to the extent of their breath-holding ability.

Field Season Overview

Team members will divide into three separate working groups: (1) The penguin group will tag and observe penguins, (2) the whale group will tag and track killer and minke whales, assessing novel feeding behaviors, and (3) the remotely operated vehicle (ROV) and plankton group will work on the fast ice, operating an ROV to map prey (krill and fish) distributions, quantify phytoplankton/ice algae dynamics, and conduct education and outreach efforts. The teams will use a combination of sea-ice camps, snowmobiles, and helicopter support for work on the ice.

Deploying Team Members

Project Indexes

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Project Web Sites

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- Laughlin Barker
- Heather Broadbent
- Philip Chung
- Kendra Daly (Co-PI)
- John Durban
- Martin Hynes

- Stacy Kim (PI)
- Mary Malloy
- Robert Pitman
- Benjamin Saenz
- Dorota Szuta



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

A-149-S
NSF/PLR Award 1145172

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Judy Shiple / Paul Sullivan



Principal Investigator

Dr. John Kovac
jmkovac@cfa.harvard.edu

Harvard University
Cambridge, Massachusetts

Project Web Site:
<http://www.cfa.harvard.edu/CMB/keckarray/>

Location

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

Description

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

Field Season Overview

This season, a team of 13 will conduct season-ending calibrations on their receivers. They will use the MAPO roof crane to take down two of the receivers for focal-plane replacement. Once this work is complete, the team will re-mount the receivers.

Deploying Team Members

- Kate Alexander
- Clement Pryke (Co-PI)

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

Project Web Sites

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- Colin Bischoff
- Eric Bullock
- Mark Halpern
- Kirit Karkare
- John Kovac (PI)
- Hien Nguyen

- Robert Schwarz
- Caroline Sorensen
- Grant Teply
- Abigail Viereg
- Justin Willmert



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

A-364-M/S
NSF/PLR Award 0944335

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Samina Ouda / Paul Sullivan



Principal Investigator

Dr. Craig Kulesa
ckulesa@email.arizona.edu

University of Arizona Tucson

Steward Observatory
Tucson, Arizona

Project Web Site:

<http://soral.as.arizona.edu/heat/>

Location

Supporting Stations: McMurdo Station, South Pole Station

Research Locations: Dome A / Ridge A

Description

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

Field Season Overview

This austral summer researchers will swap the HEAT telescope and refuel and refurbish the Plateau Observatory (PLATO). The field party of American and Australian grantees will be based at Amundsen-Scott South Pole Station where they will acclimate while assembling and testing the new instrument. A lesser number of team members will travel



Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.



Project Web Sites

Find more information about 2014-2015 USAP projects by viewing project web sites.



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to Ridge A by Twin Otter for a 2-4 day field deployment intended to maximize the probability of success given the remoteness of the site, attention to safety, and accounting for difficult working conditions at altitude.

Deploying Team Members

- Craig Kulesa (PI)



Project Title

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

Summary

Event Number:

G-081-M
NSF/PLR Award 1142083

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Sune Tamm / Meghan Walker



Principal Investigator

Dr. Phillip Kyle
kyle@nmt.edu

New Mexico Institute of Mining and Technology

Department of Earth & Environmental Science
Socorro, New Mexico

Project Web Site:

<http://erebus.nmt.edu>

Location

Supporting Stations: McMurdo Station

Research Locations: Mounts Erebus and Bird

Description

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

Field Season Overview

In mid November researchers will service, by helicopter, an array of five seismometers installed around the flanks of Mount Erebus and on Mount Bird. A large team will occupy the Lower Erebus Hut (LEH) for four weeks and use it as a base of operation for work on Erebus and the surrounding area. A tent camp to accommodate acclimatization will be established at Fang Glacier. Snow machines will be used for travel in the summit area of Mount Erebus.

Deploying Team Members

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

Project Web Sites

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Alberto Behar

- Timothy Burton
- Aaron Curtis
- Christian Eichenauer
- Ronni Grapenthin

Phillip Kyle (PI)

- Wolfgang Meschede
- Kevin Mickus
- Clive Oppenheimer (Co-PI)
- Nial Peters



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

A-125-S
NSF/PLR Award 1141817

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Samina Ouda / Paul Sullivan



Principal Investigator

Dr. James LaBelle
jlabelle@einstein.dartmouth.edu

Dartmouth College

Department of Physics & Astronomy
Hanover, New Hampshire

Project Web Site:

http://www.dartmouth.edu/~spacephy/labelle_group

Location

Supporting Stations: South Pole Station

Research Locations: AGO sites

Description

This project addresses questions about energy transfer in the Earth's radiation belts and auroral plasma physics. Energetic plasma interacting with the geomagnetic field in the near-Earth space (geospace) environment emits electromagnetic waves across the radio spectrum. Ground-based measurements of these waves are used as diagnostic tools to investigate various processes in geospace. This investigation takes advantage of an existing network of radio receivers at Automated Geophysical Observatory (AGO) sites (Weatherwax A-112) located from -70 to -85 degrees of invariant geomagnetic latitude and operating in the frequency range from extra-low to high frequencies. The Antarctic continent is ideally suited for these types of natural radio wave experiments since it is largely devoid of anthropogenic electromagnetic interference such as power line harmonics and radio frequency broadcast transmissions. The project will focus on studies of three geophysically important plasma waves: Chorus waves, auroral hiss, and auroral kilometric radiation (AKR). Chorus waves are believed to be a major driver of radiation belt electron acceleration and loss. The auroral hiss and AKR waves are generated in the auroral acceleration region and have the potential to be used for remote sensing of this complex and poorly understood near-Earth region.

Field Season Overview

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



Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.



Project Web Sites

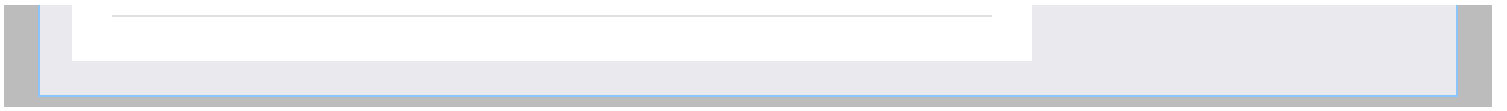
Find more information about 2014-2015 USAP projects by viewing project web sites.



More Information

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Project Title

Antarctic Automatic Weather Station (AWS) Program

Summary

Event Number:

O-283-M/S
NSF/PLR Award 1245663

Program Manager:

Dr. Peter Milne

ASC POC/Implementer:

John Rand / Elizabeth Kauffman



Principal Investigator

Dr. Matt Lazzara
mattl@ssec.wisc.edu

University of Wisconsin Madison

Space Science and Engineering Center/AMRC
Madison, Wisconsin

Project Web Site:

<http://amrc.ssec.wisc.edu/>

Location

Supporting Stations: McMurdo Station, South Pole Station

Research Locations: AWS sites

Description

The Antarctic Automatic Weather Station (AWS) network is the largest in the Antarctic and has the broadest spatial coverage. As the AWS program reaches its 32nd year, the primary focus is measuring Antarctica's surface climatology using the lengthy datasets (20 to 30 years in some cases) collected by the stations. A second focus is an investigation of the surface wind regime of the Ross Ice Shelf. In the Antarctic, short observational records and large spacing between available observations have limited the ability to observe and detect climate change. The AWS network is now capable of providing critical observational records that will allow researchers to assess the near-surface climate of the Antarctic and begin to identify signs of climate change in the Antarctic. AWS measurements also provide the verification for satellite studies and model forecasts.

Field Season Overview

This year a field party of five will deploy to McMurdo Station to visit and repair stations on the Ross Ice Shelf, in West Antarctica, and in the local McMurdo Station area. Three stations in West Antarctica may be removed. The continued transition of local McMurdo stations to Freewave radio modems will help reduce data telemetry costs. This project collaborates with other NSF grantees as well as other international programs. The team visits sites that report problems or cease transmitting during the austral winter. They receive support from riggers, fixed-wing, and helicopter operations.

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

Project Web Sites

Find more information about 2014-2015 USAP projects by viewing project web sites.

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Deploying Team Members

- Carol Costanza
- Elin Mcilhattan
- David Mikolajczyk
- Andrew Slater
- Lee Welhouse (Team Leader)



2014-2015 USAP Field Season

Project Detail

Project Title

Department Of Energy ARM West Antarctic Radiation Experiment (AWARE)

Summary

Event Number:
O-325-M

Program Manager:
Dr. Peter Milne

ASC POC/Implementer:
Judy Shiple / Chad Naughton



Principal Investigator

Dr. Dan Lubin
dlubin@ucsd.edu

Scripps Institution of Oceanography
La Jolla, California

Project Web Site:
<http://www.arm.gov>

Location

Supporting Stations: McMurdo Station
Research Locations: Near station

Description

The unique data set to be provided by the Atmospheric Radiation Measurement (ARM) West Antarctic Radiation Experiment (AWARE) should greatly advance regional and global modeling for Antarctica, considering little in-situ cloud information is available for the continent (e.g., Bromwich, et al. 2012). Nicolas and Bromwich (2011) show a pronounced impact of marine-air transport over central West Antarctica, including the West Antarctic Ice Sheet (WAIS) site proposed for AWARE, so that the late spring-summer observations from that location will monitor Southern Ocean advective clouds that are responsible for warming reported by Bromwich, et al in 2013. Similarly, Monaghan, et al. (2005), found that oceanic air approaches Ross Island and McMurdo Station from the southeast, moving clockwise around cyclones located over the Ross Sea. From an unimpeded site facing southeast, the ARM Mobile Facility (AMF) will episodically capture oceanic clouds throughout the year from the McMurdo Station vicinity.

Field Season Overview

It is intended that during the 2014-15 summer season that a brief site-selection visit be made to McMurdo Station and environs to determine the optimal location for the AMF deployment that is due to commence operations during the following 2015-16 austral summer. This visit, in consultation with contractor representatives, will afford an opportunity to consider ideal siting of AMF infrastructure and instrumentation and to consider impacts that AMF operation may have on McMurdo Station operations. The visit will also provide valuable information to the ARM project team on station operations, staff accommodation, resource availability, and logistics.

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

Project Web Sites

Find more information about 2014-2015 USAP projects by viewing project web sites.

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Deploying Team Members

- Kim Nitschke
- Paul Ortega
- Johannes Verlinde



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

C-509-M

NSF/PLR Award 1115245

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Sune Tamm / Elizabeth Kauffman



Principal Investigator

Dr. W. Berry Lyons

lyons.142@osu.edu

Ohio State University

Byrd Polar Research Center
Columbus, Ohio

Project Web Site:

<http://mcmilter.org>

Location

Supporting Stations: McMurdo Station

Research Locations: Dry Valleys

Description

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

Field Season Overview

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

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

Project Web Sites

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Deploying Team Members

- Carolyn Dowling
- Steven Goldsmith
- W. Berry Lyons (PI)
- Kathy Welch (Team Leader)



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

C-021-L

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Adam Jenkins / Samina Ouda



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

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

Field Season Overview

During the annual LTER cruise aboard the ARSV Laurence M. Gould this group will conduct standard hydrographic surveys with the Conductivity-Temperature-Depth (CTD) Rosette. In addition, three physical oceanographic moorings will be recovered, serviced, and redeployed.



Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.



Project Web Sites

Find more information about 2014-2015 USAP projects by viewing project web sites.



More Information

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2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

C-506-M
NSF/PLR Award 1115245

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Sune Tamm / Elizabeth Kauffman



Principal Investigator

Dr. Diane McKnight
diane.mcknight@colorado.edu

University of Colorado Boulder

Institute of Arctic and Alpine Research (INSTAAR)
Boulder, Colorado

Project Web Site:

<http://www.mcmlter.org/>

Location

Supporting Stations: McMurdo Station

Research Locations: F6 / Garwood and Wright Valleys / Lakes Bonney, Fryxell, Hoare and Miers

Description

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

Field Season Overview

Seven participants will be the primary occupants of the F6 field camp. Most monitoring will take place in Taylor Valley, with monitoring continuing in Wright and Miers Valleys. New gauging sites and algal monitoring transects will be established in Miers and Garwood Valleys. Team members will continue to upgrade temperature and specific-conductance probes at several gauges in order to minimize the loss of data collected during the season. The team will continue to measure lake levels at Lakes Joyce, House, Vida, Vanda, and Don Juan Pond, visit 16 stream sites to collect algal mat, water-quality

Project Indexes

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Project Web Sites

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samples, and conduct LiDAR surveys.

Deploying Team Members

- Jessica Ebert
- Chris Jaros
- Diane McKnight (PI)
- Robert Spencer



2014-2015 USAP Field Season

Project Detail

Project Title

Super Trans-Iron Galactic Element Recorder (SuperTIGER)

Summary

Event Number:

A-142-M
NASA/NSF Agreement

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

John Rand / Ryan Wallace



Principal Investigator

Dr. John W Mitchell
john.w.mitchell@nasa.gov

National Aeronautics and Space Administration

Goddard Space Flight Center
Greenbelt, Maryland

Project Web Site:

<http://physics.wustl.edu/supertiger/>

Location

Supporting Stations: McMurdo Station

Research Locations: SuperTIGER site

Description

Super-TIGER 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 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

Support this year is for payload recovery from last year's flight. A four-person field camp will be established at the recovery area to dig out and disassemble the balloon payload and to construct a skiway to enable the landing of either a Twin Otter or Basler aircraft to retrieve it.

Deploying Team Members

- Sean Fitzsimmons
- Thomas Hams (Co-PI)
- John Mitchell (PI)
- John Mitchell



Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.



Project Web Sites

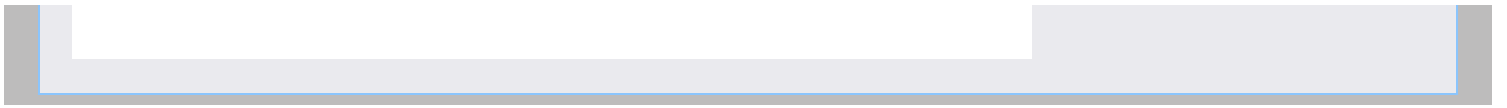
Find more information about 2014-2015 USAP projects by viewing project web sites.



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2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

A-109-M/P/S
NSF/PLR Award 1246275

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Samina Ouda / Elizabeth Kauffman / Paul Sullivan



Principal Investigator

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

University of Florida
Gainesville, Florida

Project Web Site:

<http://www.vlf.ece.ufl.edu/Antarctica/>

Location

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

Research Locations: Arrival Heights / Cusp Lab / Terra Lab

Description

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

Field Season Overview

This season, researchers will continually record ELF/VLF data and provide real-time data processing and access via the Internet, when available, in support of coordinated lightning-related experiments to be performed in North-Central Florida. Minor support will be provided on station throughout the year by contract research associates. Researchers



Project Indexes

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Project Web Sites

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plan to replace receiver hardware during their site visit. They will also perform a noise survey and determine a potential location for a future antenna site on Black Island. ELF antennas will be installed in the backyard at Palmer Station this season, necessitating the construction of a vault, the laying of about 2,000 feet of instrumentation cable, and the installation of hardware electronics.

Deploying Team Members

- Neal Dupree (Team Leader)
- Bruce Fritz



Project Title

The Polar Geospatial Information Center: Joint Support

Summary

Event Number:

T-434-M
NSF/PLR Award 1043681

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

John Rand / 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: Ice roads / town roads / Dry Valleys

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 three at McMurdo Station at the same time. Field work will include gathering Google Street View images along the sea-ice roads, assisting with the deployment and retrieval of GPS stations for the 2014-15 light detecting and ranging (LiDAR) campaign (C-517-M), and supporting other field and logistics groups for general mapping and imagery services on an on-demand basis.

Deploying Team Members

Project Indexes

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Bradley Herried

- Cole Kelleher

Claire Porter

- Jonathan Pundsack



2014-2015 USAP Field Season

Project Detail

Project Title

Collaborative Research: The Physiological And Biochemical Underpinnings Of Thermal Tolerance In Antarctic Notothenioid Fishes

Summary

Event Number:

B-036-L/P
NSF/PLR Award 1341663

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Matthew Erickson / Curt LaBombard



Principal Investigator

Dr. Kristin M. O'Brien
kmobrien@alaska.edu

University of Alaska Fairbanks

Institute of Arctic Biology
Fairbanks, Alaska

Project Web Site:

<http://sites.google.com/a/alaska.edu/antarctic-fish-biology/>

Location

Supporting Stations: ARSV Laurence M. Gould, Palmer Station

Research Locations: Dallmann Bay / Low and Livingston Islands

Description

The research objectives of this project are to understand the physiological and biochemical mechanisms that define thermal tolerance of Antarctic notothenioids. The project aims to elucidate why white-blooded notothenioids are less tolerant of elevations in temperature than red-blooded notothenioids. The objectives of the first field season are to measure critical thermal maximum (CT_{max}) while monitoring heart rate, and to use an in-situ preparation to measure cardiac work in animals held at ambient temperature and animals that have been acclimated to an elevated temperature. They will also quantify behavioral changes in animals undergoing a temperature ramping (warming) regime. All laboratory manipulations will be carried out in temperature-controlled water tanks located in the Palmer Station aquarium facilities. Tissues will also be harvested, frozen, and shipped to home institutions for biochemical and molecular analyses.

Field Season Overview

Field team members will collect fishes in the area of the Antarctic Peninsula by gear deployment from the ARSV Laurence M. Gould. Fishing will be done by benthic Otter trawl in Dallmann Bay, off the south shore of Low Island, the southeast shore of Livingston Island, and other areas with suitable bottom for this type of fishing gear. They also plan to capture fish by sets of buoyed and anchored baited fish pots (traps).



Project Indexes

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Project Web Sites

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Deploying Team Members

- Amanda Biederman
- Elizabeth Crockett (Co-PI)
- Stuart Egginton
- Elizabeth Evans
- Anthony Farrell
- Michael Friedlander
- Theresa Grove
- Scharping Jordan
- Kristin O'Brien (PI)



2014-2015 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:

John Rand / Ryan Wallace



Principal Investigator

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

Columbia Scientific Balloon Facility

Palestine, Texas

Project Web Site:

<http://www.csbf.nasa.gov>

Location

Supporting Stations: McMurdo Station

Research Locations: Long-Duration Balloon (LDB) Facility at Williams Field

Description

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

Field Season Overview

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

Deploying Team Members

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- Alexander Beange
- Paul Brasfield
- Garrison Breeding
- Henry Cathey
- Mark Cobble
- Andrew Denney IV
- Derek Dolbey
- Christopher Field
- Larry Fox
- Hugo Franco
- Curtis Frazier
- Gabriel Garde
- Gerald Gregg
- Scott Hadley
- Jess Haggard
- Randall Henderson
- Joseph Jones
- Michael Jones

- Joshua King
- Otto Masters
- Bobby Meazell
- Matthew Mullin
- Matthew Myhre
- Michael Patterson
- Juan Perez Lara
- Jacob Richard
- William Rodman
- Daniel Scheiber
- Christopher Schwantes
- David Sullivan (Co-PI)
- Jeffrey Tuttle
- Cesar Villasana
- David Webb
- Corey Weber
- Linda Wiles
- Daniel Willette



Project Title

UNAVCO GPS Survey Support

Summary

Event Number:

T-295-M
NSF/PLR Award 1261833

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

John Rand / Elizabeth Kauffman / Jamee Johnson



Principal Investigator

Mr. Joseph R Pettit

pettit@unavco.org

UNAVCO

Boulder, Colorado

Project Web Site:

<http://www.unavco.org/projects/project-support/polar/polar.html>

Location

Supporting Stations: McMurdo Station

Research Locations: Crary Lab / field sites

Description

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

Field Season Overview

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

Project Indexes

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Deploying Team Members

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



2014-2015 USAP Field Season

Project Detail

Project Title

Integrative Study Of Marine Ice Sheet Stability And Subglacial Life Habitats - Robotic Access To Grounding-Zones For Exploration And Science (RAGES)

Summary

Event Number:

C-522-M
NSF/PLR Award 0839107

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

John Rand / Matthew Kippenhan



Principal Investigator

Dr. Ross Powell
rpowell@niu.edu

Northern Illinois University

Department of Geology & Envir. Geosciences
DeKalb, Illinois

Project Web Site:

<http://www.wissard.org>

Location

Supporting Stations: McMurdo Station

Research Locations: Subglacial Lake Whillans

Description

The WISSARD project is composed of three interrelated sets of grants: LISSARD (Tulaczyk C-521), RAGES (Powell C-522) and GBASE (Priscu C-523). These projects are connected scientifically through common interest in coupled fluxes of ice, nutrients and water, subglacial sediments, and by the common need to characterize and quantify physical, chemical, and biological processes operating subglacially. The research will focus on the lower portion of Whillans Ice Stream, where two hydrologically connected subglacial environments that lie in close geographical proximity can be accessed: Subglacial Lake Whillans and wet subglacial sediments, including the grounding-zone wedge. The RAGES component will investigate the sedimentary record for evidence of past changes in the ice sheet, subglacial environment, and ocean influences.

Field Season Overview

The first RAGES personnel will deploy in mid-December to prepare equipment and instruments. They will then deploy to the Grounding Zone (GZ). The GZ field camp and traverse infrastructure will be operational by early January and will provide up to eight days of borehole operations before shutting down. Infrastructure will be returned and stored near McMurdo Station. Samples will be shipped back to McMurdo Station and then on to the home institution.

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

Project Web Sites

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Deploying Team Members

- Jason Coenen
- Robert Haven
- Timothy Hodson
- David Monk
- Ross Powell (PI)
- Rebecca Puttkammer (Team Leader)
- Reed Scherer (Co-PI)



2014-2015 USAP Field Season

Project Detail

Project Title

GeomicroBiology Of Antarctic Subglacial Environments (GBASE) Beneath The Mercer And Whillans Ice Streams

Summary

Event Number:

C-523-M
NSF/PLR Award 0838933

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

John Rand / 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://www.wissard.org>

Location

Supporting Stations: McMurdo Station
Research Locations: Subglacial Lake Whillans

Description

The WISSARD project is composed of three interrelated sets of grants: LISSARD (Tulaczyk C-521), RAGES (Powell C-522) and GBASE (Priscu C-523). These projects are connected scientifically through common interest in coupled fluxes of ice, nutrients and water, subglacial sediments and by the common need to characterize and quantify physical, chemical, and biological processes operating subglacially. The research will focus on the lower portion of Whillans Ice Stream, where two hydrologically connected subglacial environments that lie within close geographical proximity can be accessed: Subglacial Lake Whillans and wet subglacial sediments, including the grounding-zone wedge. The GBASE component will address metabolic and phylogenetic diversity and associated biogeochemical transformations in subglacial lake and grounding zone environments.

Field Season Overview

The first GBASE personnel will deploy in mid-December to prepare equipment and instruments. They will then deploy to the Grounding Zone (GZ). The GZ field camp and traverse infrastructure will be operational by early January and will provide up to eight days of borehole operations before shutting down. Infrastructure will be returned and stored near McMurdo Station. Samples will be shipped back to McMurdo Station and then on to the home institution.

Project Indexes

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Deploying Team Members

- Amanda Achberger
- Brent Christner (Co-PI)
- Alexander Michaud
- Jill Mikucki (Co-PI)
- Andrew Mitchell (Co-PI)
- John Priscu (PI)
- John Priscu (PI)
- Alicia Purcell
- John Sherve (Team Leader)
- Mark Skidmore (Co-PI)
- Trista Vick



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

C-505-M
NSF/PLR Award 1115245

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Sune Tamm / Elizabeth Kauffman



Principal Investigator

Dr. John Priscu
jpriscu@montana.edu

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

Project Web Site:

<http://www.mcmlter.org/index.html>

Location

Supporting Stations: McMurdo Station

Research Locations: Dry Valleys

Description

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

Field Season Overview

Five participants will make routine lake measurements, periodically occupying field camps at Lakes Bonney, Hoare, and Fryxell from early November to early January. Sediment traps will be retrieved and re-deployed in East and West Lake Bonney between mid November and mid December. They will camp for at least five nights at Lake Miers to measure biological, chemical, and physical limnological properties. Team members will visit the ice edge or an ice hole in McMurdo Sound to calibrate the Seabird CTD (conductivity/temperature/depth) instrument.



Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.



Project Web Sites

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Deploying Team Members

- Heather Buelow
- Amy Chiuchiolo (Team Leader)
- Miye Kwon
- Stephen Pedersen
- John Priscu (PI)
- John Priscu (PI)



Project Title

Test Of Lorentz Invariance At The South Pole

Summary

Event Number:

A-103-S
NSF/PLR Award 1142032

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Samina Ouda / Paul Sullivan



Principal Investigator

Dr. Michael V. Romalis
romalis@princeton.edu

Princeton University

Princeton, New Jersey

Project Web Site:

<http://physics.princeton.edu/romalis/CPT/>

Location

Supporting Stations: South Pole Station

Research Locations: Cryogen Facility

Description

This project will test Lorentz invariance by placing an atomic spin sensor at the South Pole, where it will be unaffected by Earth rotation. The experiment will constrain several possible forms of Lorentz violation in the sensitivity range where the effects of quantum gravity can be expected, improving existing limits by a factor of 103. The goal for this season is to use the experience of operating the Lorentz violation experiment at the South Pole to further improve its sensitivity. The two current sources of uncertainty are random noise and systematic drifts. Some of this noise is intrinsic to the apparatus, and some is caused by environmental disturbances. The primary objective for the season is to complete the Lorentz-violation experiment and retrograde the apparatus.

Field Season Overview

One researcher will travel to the South Pole Station to conduct calibration measurements and prepare the apparatus for retrograde shipment.

Deploying Team Members

- Morgan Hedges



Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.



Project Web Sites

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Project Title

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

Summary

Event Number:

B-009-M
NSF/PLR Award 1141326

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Addie Coyac / Beverly Walker



Principal Investigator

Dr. Jay Rotella
rotella@montana.edu

Montana State University Bozeman

Ecology
Bozeman, Montana

Project Web Site:

<http://www.montana.edu/rgarrott/antarctica/index.htm>

Location

Supporting Stations: McMurdo Station
Research Locations: Big Razorback Island

Description

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

Field Season Overview

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

Project Indexes

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outside their study area.

Deploying Team Members

- Eric Boyd
- Robert Garrott (Co-PI)
- William Link
- Kaitlin Macdonald
- John Paterson
- Jon Reese
- Jay Rotella (PI)
- Michael Yarnall
- Kirstie Yeager



2014-2015 USAP Field Season

Project Detail

Project Title

Synergistic Effects Of Elevated Carbon Dioxide And Temperature On The Metabolism, Growth, And Reproduction Of Antarctic Krill (*Euphausia Superba*)

Summary

Event Number:

B-068-P
NSF/PLR Award 1246293

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Matthew Erickson / Jamee Johnson



Principal Investigator

Dr. Grace Saba
saba@marine.rutgers.edu

Rutgers University

Institute for Marine & Coastal Sciences
Burlington, New Jersey

Project Web Site:

<http://coseenow.net/project-parka/>

Location

Supporting Stations: Palmer Station

Research Locations: On station

Description

Field team members will conduct prolonged exposure experiments with Antarctic krill (*Euphausia superba*) to pinpoint the underlying physiological mechanisms of carbon dioxide- and temperature-induced responses, determine potential costs of increased energetic demand at elevated CO₂ levels, determine potential acclimation of krill to high CO₂ and temperature, and understand the associated feedback on the ecosystem and biogeochemical cycles. The goals of the study are: (1) To examine the independent and synergistic effects of CO₂ and temperature on acid-base regulation and metabolic physiology of adult Antarctic krill; and (2) Determine potential costs in growth and reproduction of Antarctic krill due to the increased energetic demand of acid-base regulation to compensate for elevated carbon dioxide.

Field Season Overview

Researchers will conduct CO₂ perturbation experiments at Palmer Station using on-site aquarium tanks, a large walk-in incubator, and laboratory space for running real-time carbonate chemistry samples. This year their work will focus on the independent and synergistic effects of CO₂ and temperature on metabolism of adult krill. Krill will be collected in the Palmer region by Dr. Deborah Steinberg's group aboard the ARSV Laurence M. Gould at the beginning and end of the annual Long Term Ecological Research (LTER) cruise (LMG15-01).

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Deploying Team Members

- Abigail Bockus
- Grace Saba (PI)
- Brad Seibel (Co-PI)



2014-2015 USAP Field Season

Project Detail

Project Title

Investigating (Un)Stable Sliding Of Whillans Ice Stream And Subglacial Water Dynamics Using Borehole Seismology: A Component Of The Whillans Ice Stream Subglacial Access Research Drilling (WISSARD) Project

Summary

Event Number:

C-525-M
NSF/PLR Award 1043784

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

John Rand / Matthew Kippenhan

Principal Investigator

Dr. Susan Schwartz
sschwartz@pmc.ucsc.edu

University of California Santa Cruz

Earth Sciences
Santa Cruz, California

Project Web Site:

<http://www.wissard.org>



Location

Supporting Stations: McMurdo Station

Research Locations: Subglacial Lake Whillans

Description

A component of WISSARD, this project focuses on deployment of a surface passive seismic network and an array of borehole seismometers on Whillans Ice Stream (WIS) in the vicinity of Subglacial Lake Whillans (SLW). The seismic data will help to reveal the role of subglacial hydrology in controlling temporal variability of ice stream dynamics and mass balance. Specifically, borehole seismology will allow basal earthquakes and seismic signals generated by subglacial hydrology to be recorded and studied that are orders of magnitude smaller and have a more complete frequency content than possible using surface instrumentation alone. Determination of the source characteristics of basal events will permit assessing the role of small asperities or 'sticky spots' in controlling basal motion. The study area experiences large changes in ice velocity in response to tidally triggered stick-slip cycles of the WIS and periodic filling and draining of SLW, allowing the characteristics of basal motion during fast and slow ice movement and subglacial lake inflow, outflow, and quiescence to be compared.

Field Season Overview

The goal of this field season is to retrieve all instrumentation that has been deployed to the ice stream in the past seven years. To that end, field team members will arrive at Subglacial Lake Whillans by LC-130 aircraft and will exist as their own self-supported mobile field team focusing on multiple geophysical installations accessed via snowmobile



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on the Whillans Ice Stream area. Upon arrival at SLW, the team will dig out their gear and four of the six snow machines that are bermed there. The remaining gear and two snow machines will be transported to the grounding zone (GZ) by WISSARD Traverse and returned to McMurdo Station. The instrumentation to be retrieved is centered around four sites on the ice stream. Team members will establish camp at each of those for sites for six to nine days, collecting the nearby instruments and shuttling them via snow machine to the GZ for return to McMurdo Station. When their work is complete, the field team will rendezvous with the larger WISSARD team at the GZ by early December before the put-in of the GZ science team in order to retrograde the retrieved instrumentation to McMurdo Station efficiently. At this point, the team will no longer be considered an independent camp and instead be part of the WISSARD drill camp at the GZ, participating in science operations as needed.

Deploying Team Members

- Esteban Chaves
- Sarah Neuhaus
- Matthew Siegfried (Team Leader)



2014-2015 USAP Field Season

Project Detail

Project Title

The Drake Passage High-Density XBT/XCTD Program

Summary

Event Number:

O-260-L
NSF/PLR Award 0943818

Program Manager:

Dr. Peter Milne

ASC POC/Implementer:

Addie Coyac / Bruce Felix



Principal Investigator

Dr. Janet Sprintall
jsprintall@ucsd.edu

Scripps Institution of Oceanography

Physical Oceanography Research Division
La Jolla, California

Project Web Site:

<http://www-hrx.ucsd.edu>

Location

Supporting Stations: ARSV Laurence M. Gould

Research Locations: Drake Passage

Description

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

Field Season Overview

On selected Drake Passage transit cruises, LMG staff technicians will deploy XBT and XCTD sensors and collect the data they send back to the vessel during their descent. Approximately 70 XBTs are dropped by an automatic launcher at pre-specified locations identified by shipboard GPS. Approximately 12 XCTD probes are dropped at specified locations during the same transects. Research support staff technicians load the launcher and collect salinity samples which are used to calibrate the XCTD and underway thermosalinograph (TSG) data. One project participant will deploy to a port call to install new software and upgrade existing instrumentation.

Project Indexes

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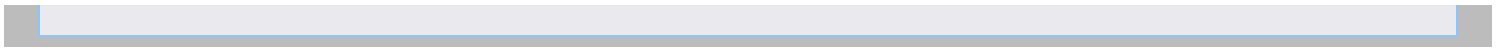
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Project Title

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

Summary

Event Number:

T-396-M
NSF/CTBT MOA

Program Manager:

Mr. Pat Smith

ASC POC/Implementer:

Matthew Erickson / Elizabeth Kauffman



Principal Investigator

Dr. Curt Szuberla
cas@gi.alaska.edu

University of Alaska Fairbanks

Geophysical Institute
Fairbanks, Alaska

Project Web Site:

<http://www.gi.alaska.edu/infrasound/>

Location

Supporting Stations: McMurdo Station

Research Locations: Windless Bight

Description

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

Field Season Overview

A group of six will be equipped with standard remote field equipment (including snowmobiles, Pisten Buly, and Mattrack) to stay in a self-supporting field camp at Windless Bight for four weeks.

Deploying Team Members

- Don Byrd
- Amy Helmericks
- Jay Helmericks (Team Leader)
- Kathleen Lawson
- Randy Rembold
- Guy Tytgat



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- Brian Lawson



Project Title

WAIS Divide Science Coordination Office (SCO)

Summary

Event Number:

I-477-M
WAIS Retro

Program Manager:

Dr. Julie Palais

ASC POC/Implementer:

John Rand / Ryan Wallace



Principal Investigator

Dr. Kendrick Taylor
kendrick@dri.edu

Desert Research Institute

Division of Hydrological Science
Reno, Nevada

Project Web Site:

<http://waisdivide.unh.edu/>

Location

Supporting Stations: McMurdo Station

Research Locations: West Antarctic Ice Sheet (WAIS) Divide

Description

West Antarctic Ice Sheet (WAIS) Divide is a collaboration of about 40 separate but synergistic projects funded to collect deep ice cores from the West Antarctic Ice Sheet. Work began with construction of a field camp in 2005-06 and the first cores were recovered in 2006-07. On December 31, 2011 drillers reached the final depth goal of 3,405 meters and recovered the longest U.S. ice core to date from the polar regions. This project represents the Science Coordination Office (SCO) for WAIS Divide, providing scientific and field oversight.

Field Season Overview

A field party of two will travel by fixed-wing aircraft to WAIS Divide to disassemble and retrograde the science equipment in the arch (deep ice sheet coring (DISC) drill and associated equipment). Some of the core handling equipment will be returned to the National Ice Core Laboratory, while other items will be returned to USAP inventory.

Deploying Team Members

- Peter Burkett
- Don Voigt (Team Leader)



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Project Web Sites

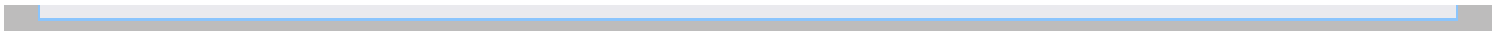
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Project Title

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

Summary

Event Number:

A-119-M/S
NSF/PLR Award 1143587

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Samina Ouda / Elizabeth Kauffman



Principal Investigator

Dr. Michael Taylor
mike.taylor@usu.edu

Utah State University

Center for Atmospheric and Space Sciences
Logan, Utah

Project Web Site:

<http://ail.usu.edu/Data/Data.html>

Location

Supporting Stations: McMurdo Station, South Pole Station

Research Locations: Arrival Heights

Description

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

Field Season Overview

Field team members will visit the Arrival Heights facility in January 2015 to service their equipment. After that, they will travel to South Pole Station to service equipment for their companion project (A-119-S).



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Deploying Team Members

- Pierre-Dominique Pautet
- Michael Taylor (PI)



2014-2015 USAP Field Season

Project Detail

Project Title

NASA/McMurdo Ground Station (MG1)

Summary

Event Number:

T-927-M

NSF / NASA Agreement

Program Manager:

Mr. Pat Smith

ASC POC/Implementer:

John Rand / August Stoen



Principal Investigator

Mr. Bruce Thoman

bruce.e.thoman@nasa.gov

National Aeronautics and Space Administration

Goddard Space Flight Center

Greenbelt, Maryland

Project Web Site:

<http://scp.gsfc.nasa.gov/gn/>

Location

Supporting Stations: McMurdo Station

Research Locations: Above McMurdo Station

Description

NASA's McMurdo Ground Station (MG1) is a 10-meter antenna housed in a white radome visible on the hill above McMurdo Station. It is used primarily for data recovery from polar-orbiting science satellites. MG1 also provides launch and early operations phase (LEOP) support for launches from Vandenberg Air Force Base involving satellite missions that require downrange telemetry support; telemetry and command for satellite housekeeping and recovery from satellite operational emergencies; and data recovery for the EUMETSAT MetOp polar weather satellite constellation in collaboration with the National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite and Data Information Service.

Field Season Overview

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

Deploying Team Members

- Rex Cotten
- William Kambarn



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- Raymond Funk
- Mark Harris (Co-PI)

- Nickolas Sinkola (Co-PI)
- Edward Wendell



2014-2015 USAP Field Season

Project Detail

Project Title

Integrative Study Of Marine Ice Sheet Stability And Subglacial Life Habitats - Lake And Ice Stream Subglacial Access Research Drilling (LISSARD)

Summary

Event Number:

C-521-M
NSF/PLR Award 0839142

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

John Rand / Matthew Kippenhan



Principal Investigator

Dr. Slawek M Tulaczyk
tulaczyk@pmc.ucsc.edu

University of California Santa Cruz

Earth Sciences
Santa Cruz, California

Project Web Site:

<http://www.wissard.org/>

Location

Supporting Stations: McMurdo Station

Research Locations: Subglacial Lake Whillans

Description

Because of their unknown effects on ice sheet stability for global warming scenarios, understanding subglacial lakes is a high priority for the US and international research communities. LISSARD's primary science goals are to: (1) Provide observational bases for improving computer models of ice sheet mass balance and stability; (2) Reconstruct the history of West Antarctica's ice sheet and ice stream stability from records of basal water and ice flow variability contained in subglacial sediments, porewater, lake water, and basal accreted ice; and (3) Provide a background understanding of subglacial lake environments to benefit collaborative projects (Powell C-522-M and Priscu C-523-M). Researchers will use an unprecedented synthesis of approaches including remote sensing, surface geophysics, borehole measurements, and sampling.

Field Season Overview

The first LISSARD personnel will deploy in mid-December to prepare equipment and instruments. They will then deploy to the Grounding Zone (GZ) area. The GZ field camp and traverse infrastructure will be operational by early January and will provide up to eight days of borehole operations before shutting down. Infrastructure will be returned and stored near McMurdo Station. Samples will be shipped back to McMurdo Station and then on to the home institution.

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Deploying Team Members

- Carolyn Branecky
- Slawek Tulaczyk (PI)



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

C-507-M
NSF/PLR Award 1115245

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Sune Tamm / Elizabeth Kauffman



Principal Investigator

Dr. Diana Wall
diana.wall@colostate.edu

Colorado State University
Natural Resource Ecology Laboratory
Fort Collins, Colorado

Project Web Site:

<http://wp.natsci.colostate.edu/walllab/>

Location

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

Description

Initially funded in 1980, the US Long-Term Ecological Research (LTER) Network is a collaborative effort involving more than 1,800 scientists and students. The McMurdo LTER program is an inter-disciplinary and multi-disciplinary study of the aquatic and terrestrial ecosystems in the ice-free McMurdo Dry Valleys. It is one of 26 LTER sites where researchers are studying ecological processes over long temporal and broad spatial scales. Researchers maintain (through application of water and nutrients), monitor (soil moisture and temperature), and sample (soils) in their long-term experimental plots near Lakes Fryxell, Hoare, and Bonney. 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: Michael Gooseff C-504, John Priscu C-505, Diane McKnight C-506, Diana Wall C-507, Jeb Barrett, C-508, Berry Lyons C-509, and Peter Doran C-511.

Field Season Overview

The 2014-15 field season will consist of brief trips (one to seven days) to the Dry Valleys for monitoring, maintenance, and sampling of long-term experiments, and sampling of soil to support developing work on the N and P cycles, turnover of organic matter, and moss-soil interactions in the field. Researchers will return to the Crary Laboratory at McMurdo Station for sample processing and initial analysis as well as to perform incubation assays on selected soils. They will require field camp and helicopter work to support activities in

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the field. The research team will also require space and support in the Crary Analytical Laboratory in McMurdo Station for processing and sampling of soils and sediments collected in the Dry Valleys. Biological activity in soil is at a peak in December/January, so deployment during this period is essential. One member of the research team will be servicing the aeolian collectors as well as assisting with glacier coring work.

Deploying Team Members

- Zachary Aanderud
- Byron Adams (Co-PI)
- John Barrett (Co-PI)
- Tandra Fraser
- Ruth Heindel
- Matthew Knox
- Elizabeth Shaw
- Eric Sokol
- Andrew Thompson
- Ross Virginia (Co-PI)
- Diana Wall (PI)



2014-2015 USAP Field Season

Project Detail

Project Title

NOAA/AMLR Cruise

Summary

Event Number:

B-006-N

NOAA / AMLR

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Adam Jenkins



Principal Investigator

Dr. George Watters

george.watters@noaa.gov

National Oceanic and Atmospheric Administration

La Jolla, California

Project Web Site:

<http://swfsc.noaa.gov/textblock.aspx?id=551&ParentMenuId=42>

Location

Supporting Stations: RV/IB Nathaniel B. Palmer

Research Locations: Elephant Island

Description

National Oceanic and Atmospheric Administration (NOAA) Fisheries' AMLR (Antarctic Marine Living Resources) program supports the development of US policy regarding the conservation and management of the marine living resources in the Southern Ocean. For the past 25 years, the AMLR field program has been conducted in the vicinity of Elephant Island, the South Shetland Islands, and the Antarctic Peninsula during the austral summer. This austral winter, researchers will conduct an 18-day shakedown cruise to test US AMLR sampling protocols and procedures during the winter and in the sea ice. Ultimately, these protocols and procedures will be adapted and applied in future winter surveys.

Field Season Overview

Field team members will deploy onboard NPB14-07 in August. They will conduct a bio-acoustic, oceanographic, and net-based krill survey in the vicinity of Elephant Island to map meso-scale features of water-mass structure, phytoplankton biomass and productivity, zooplankton and bacterioplankton composition, and the dispersion and population demography of krill during mid winter.

Deploying Team Members

- Anthony Cossio
- Christian Reiss (Co-PI)



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- Adrian Dahood-Fritz
- Kimberly Dietrich
- Ryan Driscoll
- Alison Murray
- Rachel Pound

- Kate Richerson
- Jarrod Santora
- Lars Thoresen
- Jennifer Walsh
- Elliot Weiss



Project Title

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

Summary

Event Number:

G-079-M

NSF/PLR Award 1249631

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Sune Tamm / Elizabeth Kauffman



Principal Investigator

Dr. Terry Wilson

twilson@mps.ohio-state.edu

Ohio State University

Geological Sciences and Byrd Polar
Columbus, Ohio

Project Web Site:

<http://www.polenet.org>

Location

Supporting Stations: McMurdo Station

Research Locations: West Antarctica

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 glaciodynamically critical Pine Island and Thwaites Glaciers. Absolute gravity data will provide independent data on crustal uplift and mass change, helping discriminate rebound driven by modern versus ancient ice-mass change. The integrated geodetic and geophysical data will allow testing of key hypotheses about the history and dynamics of the WAIS and interactions with the solid Earth beneath. Both the viscoelastic response of the solid earth, constraining mass change since the Last Glacial Maximum (LGM), and the elastic response, resulting from mass change within the last few decades, can be modeled from these measurements together with earth properties derived from seismic data. The ice mass change estimates will allow better estimates of Antarctic ice sheets contribution to global sea level change.

Field Season Overview

The field season this year will consist of servicing existing GPS/seismic stations, installing three new GPS stations in collaboration with the Italian program, and deploying a 'mini-

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array' of seismic sensors on the ice sheet in West Antarctica. Work will be carried out using fixed-wing aircraft support from the Antarctic Logistics & Expeditions (ALE) Camp at Union Glacier, fixed-wing support and snow machine traverse from the WAIS Divide field camp, and fixed-wing and helicopter support from McMurdo Station. The ALE camp at Union Glacier will be used as a hub to service seven to eight existing stations.

Deploying Team Members

- Michael Baker
- Jie Chen
- Erica Emry
- Teo Fisher
- Damien Gomez
- Audrey Huerta
- Eric Kendrick
- Andrew Lloyd
- Maeva Pourpoint
- Cristo Ramirez
- J.R. Roberts
- Michael Roberts
- Michael Roberts
- David Saddler
- Dylan Taylor
- Brian Vargo
- Mark Whetu
- Terry Wilson (PI)
- J. Paul Winberry



USAP Program Index Ocean and Atmospheric Sciences

Principal Investigator	Event No.	Project Title
Butler, James	O-257-M/S	UV measurements at McMurdo Station for the NOAA/Global Monitoring Division (GMD) Antarctic UV network
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
Girton, James	O-398-N	Collaborative Research: Pathways of Circumpolar Deep Water to West Antarctica from profiling float and satellite measurements
Kalnajs, Lars	O-324-M	Collaborative Research: High-resolution study of atmosphere, ice, and aerosol interactions in coastal Antarctica
Lazzara, Matt	O-283-M/S	Antarctic Automatic Weather Station (AWS) program
Lubin, Dan	O-325-M	Department of Energy ARM West Antarctic Radiation Experiment (AWARE)
Sprintall, Janet	O-260-L	The Drake Passage high-density XBT/XCTD program
Thompson, Andrew	O-275-L	Boundary control of upwelling in Southern Drake Passage: Whither Weddies?
Thurnherr, Andreas	O-408-N	Collaborative Research: Flow, turbulence, and mixing in mid-ocean ridge fracture-zone canyons

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Project Detail

Project Title

Synergistic Effects Of Iron, Carbon Dioxide, And Temperature On The Fate Of Nitrate: Implications For Future Changes In Export Production In The Southern Ocean

Summary

Event Number:

B-394-M
NSF/PLR Award 1043671

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Addie Coyac / Beverly Walker



Principal Investigator

Dr. Andrew Allen

aallen@jcvl.org

J. Craig Venter Institute

San Diego, California

Location

Supporting Stations: McMurdo Station

Research Locations: McMurdo Sound

Description

This project uses a novel combination of research approaches to evaluate the effects of temperature, carbon dioxide, and iron on three ecologically and biogeochemically critical Southern Ocean phytoplankton functional groups: Large centric diatoms, small pennate diatoms, and Phaeocystis antarctica. Dominance shifts among these three major algal groups have very different consequences for nutrient and carbon biogeochemistry in the rapidly changing Antarctic marine environments. Researchers aim to understand how the individual and combined influences of these three variables affect Southern Ocean phytoplankton community structure and to determine how these assemblage-level responses are linked to fundamental cellular responses at the levels of nutrient physiology and gene expression. The goal is to build a knowledge base of polar phytoplankton genomics and physiology.

Field Season Overview

Field team members will be based on station and make day trips by helicopter to McMurdo Sound near the edge of the first year ice. They will filter water for RNA and DNA samples and collect water samples for incubation experiments in Cray Lab. The incubation experiments must be initiated the same day that the water is collected. The experiment will take place outside the lab and will run for about three weeks. Additional samples will be collected during this time.

Deploying Team Members

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- Andrew Allen (PI)
- Steve Baer
- Erin Bertrand
- Erin Bertrand
- Deborah Bronk (Co-PI)
- Jeffrey Hoffman
- David Hutchins (Co-PI)
- Rachel Sipler
- Jenna Spackeen
- Kai Xu
- Zhi Zhu



Project Title

Climate Change And Predatory Invasion Of The Antarctic Benthos

Summary

Event Number:

B-002-L
NSF/PLR Award 1141877

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Adam Jenkins



Principal Investigator

Dr. Richard Aronson
aronson@fit.edu

Florida Institute of Technology
Melbourne, Florida

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations:

Description

The Antarctic benthos, living at the lower thermal limit to marine life, serves as a natural laboratory for understanding the impacts of climate change on marine systems in general. The endemic marine fauna of Antarctica currently lacks the durophagous (skeleton-breaking) predators that structure benthic food webs in nearshore habitats at tropical, temperate and Arctic latitudes. A cooling trend beginning about 41 million years ago in the Eocene eliminated modern bony fish, crabs, lobsters, and other benthic walking forms, and almost all modern sharks, rays, and skates from Antarctic waters. Since that time, the benthos has evolved toward an archaic, quasi-Paleozoic community structure in the absence of that upper trophic level. Now, climate change appears destined to reconfigure subtidal marine communities in Antarctica. Rapid warming of the Southern Ocean is removing physiological barriers to the reinvasion of durophagous predators, and the larval and adult stages of crabs are reappearing. The goal of this study is to assess the status, viability and ecological impacts of populations of potentially invading, predatory king crabs in the Bellingshausen Sea. The data will provide a baseline for large-scale, long-term monitoring programs to track benthic assemblages in Antarctica over the coming decades of climate change.

Field Season Overview

Field team members will use a towed-camera vehicle to record benthic transects on the continental shelf at various depths. The quality of these images will be high enough to identify, size, and enumerate king crabs and any other decapods to the species level. Once crabs are located, the science party will deploy five bottom lines with 10 baited traps each. Upon retrieval, each living crab will be sexed and measured. After the crabs are inspected externally for parasites and, for females, reproductive state, their stomachs will be removed for dietary analysis. Following removal of the stomachs, the crabs will be

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frozen and shipped to the home institution for further analysis.

Deploying Team Members

- Margaret Amsler
- Michelle Deal
- Daniel Ellis
- William James
- Kathryn Smith



2014-2015 USAP Field Season

Project Detail

Project Title

Adaptive Responses Of Phaeocystis Populations In Antarctic Ecosystems

Summary

Event Number:

B-244-N
NSF/PLR Award 1142018

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Adam Jenkins



Principal Investigator

Dr. Kevin Arrigo
arrigo@stanford.edu

Stanford University

Geophysics
Stanford, California

Location

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

Description

Researcher's objectives are to use a combination of field and laboratory-based studies to identify the environmental factors that control the distribution of the unicellular algae, *Phaeocystis antarctica*, in the Southern Ocean and to identify the specific adaptive responses to these environmental factors.

Field Season Overview

Field team members will sail on the RV/IB Nathaniel B. Palmer (NBP) from Punta Arenas, Chile to collect water samples and perform bioassay incubation experiments in ice-free waters and waters in the marginal ice zone around the Western Antarctic Peninsula (WAP) and open ocean waters in the Antarctic Circumpolar Current (ACC). Researchers will sample with the conventional CTD rosette system as well as the Trace Metal Clean (TMC) CTD system. Most casts will be of the top 500 meters of the water column, and occasionally researchers will collect some deep samples (2000 meters). Underway samples will be collected with the NBP inline water system, as well as with a researcher-provided TMC tow fish. Incubations will be carried out under TMC conditions in deck incubators. Both water column and incubations will be sampled for physiological, chemical, and molecular (genome and transcriptome) characteristics.

Deploying Team Members

- Anne-Carlijn Alderkamp
- Katelyn Lewis
- Kevin Arrigo (PI)
- Kate Lowry

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- Erin Bertrand
- John Butterfield
- Tom Delmont
- Erin Dillon
- Zachary Erickson
- Caroline Ferguson
- Laura Filliger
- Hannah Joy-Warren

- Rob Middag
- Janice Nash-Arrigo
- Hilde Oliver
- Ella Patterson
- Alessandra Santiago
- Virginia Selz
- Casey Smith
- Gerrit Van Dijken



Project Title

Collaborative Research: Terrestrial Exposure-Age Constraints On The Last Glacial Maximum Extent Of The Antarctic Ice Sheet In The Western Ross Sea

Summary

Event Number:

G-410-M
NSF/PLR Award 1341420

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Matthew Erickson / Elizabeth Kauffman



Principal Investigator

Dr. Gregory Balco

balcs@bgc.org

Berkeley, California

Location

Supporting Stations: McMurdo Station

Research Locations: Tucker, Mariner, and Aviator Glaciers

Description

This project aims to reconstruct ice-surface elevation change between the Last Glacial Maximum (LGM) and the present at several glaciers that flow into the Ross Sea in northern Victoria Land. To that end, researchers will visit ice-free areas adjacent to the glaciers, map the surficial geology to identify deposits that mark past ice-margin positions, and determine the age of the deposits using the technique of cosmogenic-nuclide exposure dating. These data are important because during the Last Glacial Maximum (15,000 - 18,000 years ago) these glaciers were most likely flowing together with grounded ice from both the East and West Antarctic Ice Sheets that expanded across the Ross Sea continental shelf to near the present shelf edge. Thus, the thickness of these glaciers was probably controlled in part by the extent and thickness of the Ross Sea ice sheet and ice shelf. The data to be collected can provide constraints on the position of the grounding line in the western Ross Sea during the Last Glacial Maximum, the time that position was reached, and ice thickness changes that occurred after that time.

Field Season Overview

A field team of five will travel by LC-130 aircraft to Tucker Glacier where they will camp in tents for roughly four weeks. The Italian Antarctic Program will provide helicopter support for day trips to Mariner and Aviator Glaciers. The team will map glacial deposits and collect glacial-geological and geochronological data from ice-free regions adjacent to three of the major glaciers that drain into the northwest sector of the Ross Sea.

Deploying Team Members

Project Indexes

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- Gregory Balco (PI)
- Brent Goehring (Co-PI)
- Isaac Moening-Swanson
- Christopher Simmons
- Claire Todd (Co-PI)



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

B-300-E
NSF/PLR Award 1341429

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Matthew Erickson / Cara Ferrier



Principal Investigator

Dr. Rebecca Ann Ball

becky.ball@asu.edu

Arizona State University Tempe

Phoenix, Arizona

Location

Supporting Stations: Special Project

Research Locations: Mare and Ares Oases / Anchorage, Lagoon, Leonie, Jennie and Lagotellerie Islands

Description

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

Field Season Overview

Two team members will travel by air from Punta Arenas, Chile to the UK base, Rothera Station. From there, they will make day trips to collect soil microbial (bacteria, archaea, fungi) and invertebrate community samples. Samples will be shipped north on the ARSV Laurence M. Gould when it makes a port call at Rothera in 2015.



Project Indexes

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Deploying Team Members

- Rebecca Ball (PI)
- Uffe Neilsen



2014-2015 USAP Field Season

Project Detail

Project Title

Timing And Duration Of Last Glacial Maximum (LGM) And Post-LGM Grounding Events In The Whales Deep Paleo Ice Streams, Eastern Ross Sea Continental Shelf

Summary

Event Number:

G-154-N

NSF/PLR Award 1246357

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Adam Jenkins / Addie Coyac



Principal Investigator

Dr. Philip Bart

pbart@lsu.edu

Louisiana State University Baton Rouge

Department of Geology and Geophysics

Baton Rouge, Louisiana

Location

Supporting Stations: RV/IB Nathaniel B. Palmer

Research Locations: Eastern Ross Sea

Description

The research objective is to determine the timing and duration of Western Antarctic Ice Sheet (WAIS) grounding events on the outer and middle shelf of the Whales Deep Basin in the eastern Ross Sea. Evidence from the eastern Ross Sea continental shelf indicates that WAIS advanced and retreated during the last glacial cycle, but it is unclear whether the ice sheet advanced to the shelf edge or just to the middle shelf. These two end-member scenarios offer different interpretations as to why, how, and when the WAIS oscillated.

Field Season Overview

Researchers will sail from Lyttelton, New Zealand to the Ross Sea on the RV/IB Nathaniel B. Palmer. They will conduct a single-channel seismic survey followed by a large-area multibeam survey. They will also obtain video and still photo images of the ocean floor and will collect sediment cores at approximately 11 stations using standard piston, jumbo piston, box, kasten, and gravity corers.

Deploying Team Members

- Steve Babcock
- Philip Bart (PI)
- Matthew DeCesare
- Achim Herrmann
- Daniel Mullally
- Brad Rosenheim



Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.



Project Web Sites

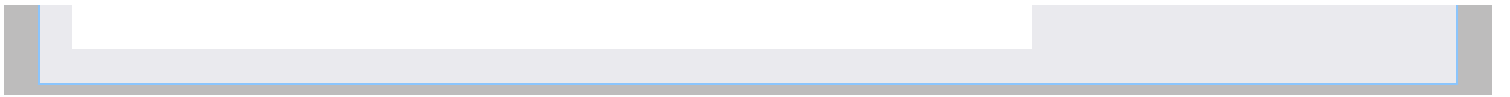
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2014-2015 USAP Field Season

Project Detail

Project Title

Postdoctoral Research Fellowship

Summary

Event Number:

B-018-P
NSF/PLR Award 1204266

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Matthew Erickson / Jamee Johnson



Principal Investigator

Dr. Shelley R Bench
shellierb@gmail.com

Stanford University

Environmental Earth System Science
San Jose, California

Location

Supporting Stations: Palmer Station

Research Locations: LTER Station B / Palmer Lab

Description

The Western Antarctic Peninsula (WAP) is undergoing some of the most dramatic warming on the globe, with correspondingly rapid ecosystem changes. Research, especially from work carried out by the Palmer Long-Term Ecological Research (LTER) program, has shown that resulting changes are occurring to phytoplankton of WAP waters, but few details are known about species composition and metabolic activity. Therefore, this three-year project will be based on high-throughput DNA sequencing of the phytoplankton community, followed by design and fabrication of microarrays to assess phytoplankton community composition and metabolism. In order to capture the intra-annual community changes, samples will be collected by filtering off-shore water at regular intervals throughout the entire austral summer season (October to April). The goal this year is to collect high-biomass and high-quality phytoplankton samples for DNA and RNA sequencing. Finally, the microarrays will be put to use to identify temporal and spatial changes in phytoplankton in the short-term, and the designs will be made available to the research community for monitoring the ecosystem in the long term.

Field Season Overview

One field team member will collect seawater samples once or twice weekly from a 10-meter depth. Most sampling will be done at a single offshore station using a submersible pump or Go-Flo bottles from a Zodiac inflatable boat. In addition, samples will be collected from a subset of stations in the sampling grid during the annual LTER cruise on the ARSV Laurence M. Gould. While on station, the PI will train other scientists on station in the collection and processing protocols so sampling can continue once weekly while the PI is on the LTER cruise and for the last few weeks of the summer field season.



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Deploying Team Members

- Shelley Bench (PI)



Project Title

Evolutionary Fates Of Hemoglobin And Heme Scavengers In White-Blooded Antarctic Icefishes

Summary

Event Number:

B-266-P
NSF/PLR Award 1341701

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Addie Coyac / Cara Ferrier



Principal Investigator

Dr. Kevin Thomas Bilyk
kbilyk@life.illinois.edu

University of Illinois Urbana

Animal Biology c/o Art DeVries
Champaign, Illinois

Location

Supporting Stations: Palmer Station

Research Locations: Gerlache and Bismarck Straits / Andvord, Paradise and Dallman Bays

Description

The Antarctic icefishes are unique among adult vertebrates for their absence of the normally indispensable respiratory protein hemoglobin in all species, as well as myoglobin in some. The goal of this project is to understand how this loss has impacted two proteins that serve accessory roles to these hemoproteins, haptoglobin and hemopexin. This work will broaden researchers' knowledge and insights into genetic trait loss or change accompanying species evolution generally as well as within the uniquely isolated, frigid Southern Ocean. The system of oxygen-carrying and related proteins being studied is important to human health and the two proteins being specifically studied (haptoglobin and hemopexin) have crucial roles in preventing excess iron loading in the kidneys. As such, the project has the potential to contribute novel insights that could be valuable to medical science.

Field Season Overview

Researchers will sail on the ARSV Laurence M. Gould from Punta Arenas, Chile. They will collect specimens of ice fish in the waters of the Western Antarctic Peninsula through trapping and trawling. In addition to the ice fish they will also collect specimens of several of the red blooded notothenioid fishes for comparative studies. Healthy specimens of the collected fish will be transported to Palmer Station where they will be held in the aquarium facilities until sampled for biochemical and molecular work. Fish collected aboard the Gould will also be supplemented by specimens collected in the waters surrounding Palmer Station with traps and by hook and line.



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Deploying Team Members

- Kevin Bilyk (PI)
- Mateusz Grobelny
- Konrad Meister



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

A-369-M/S
NSF/PLR Award 0944270

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Samina Ouda / Curt LaBombard / Paul Sullivan



Principal Investigator

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

University of Alaska Fairbanks

Geophysical Institute
Fairbanks, Alaska

Location

Supporting Stations: McMurdo Station, South Pole Station

Research Locations: Near stations

Description

The Super Dual Auroral Radar Network (SuperDARN) is a global international radar network of 22 installations observing high frequency (HF) bands between 8 and 22 MHz. Radar systems have been installed at McMurdo Station (2009-10) and South Pole Station (2011-12), extending the global-scale coverage in the southern hemisphere. These systems also help answer questions about geomagnetic conjugacy of global magnetic storms and substorms and differences in the ionospheric plasma convection caused by the asymmetry of solar illumination in both hemispheres. The SuperDARN network, with its ability to observe global-scale convection with excellent temporal and spatial resolution, has proven to be the most powerful tool available for the ground-based research, allowing 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 the 2014-15 season at McMurdo Station, the primary focus will be on repairing the antenna arrays damaged in the 2013-14 season.

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Deploying Team Members

- William Bristow (PI)
- Jonathan Klein
- Alexander Morris
- Jeff Spaleta



Project Title

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

Summary

Event Number:

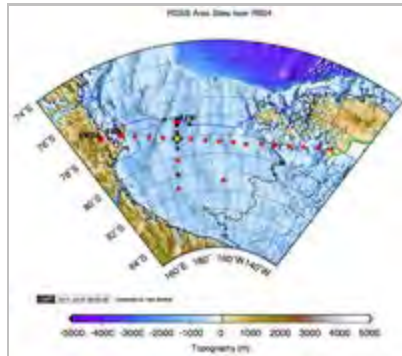
I-348-M
NSF/PLR Award 1246151

Program Manager:

Dr. Julie Palais

ASC POC/Implementer:

Sune Tamm / Elizabeth Kauffman



Principal Investigator

Dr. Peter D Bromirski
pbromirski@ucsd.edu

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

Location

Supporting Stations: McMurdo Station
Research Locations: Ross Ice Shelf

Description

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

Field Season Overview

Five field team members will travel by LC-130 aircraft to the Ross Ice Shelf where they will establish a tent camp for three to four weeks. From there, they will travel by snowmobile and Twin Otter aircraft to the sites where they will install their instruments. At the end of their field season, the field team will again travel by LC-130 back to McMurdo Station.

Deploying Team Members

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- Peter Bromirski (PI)
- Reinhard Flick

- Peter Gerstoft (Co-PI)
- Ralph Stephen (Co-PI)



Project Title

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

Summary

Event Number:

B-292-M

NSF/PLR Award 1246463

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Sune Tamm / Meghan Walker



Principal Investigator

Dr. Jennifer Burns

jmburns@uaa.alaska.edu

University of Alaska Anchorage

Anchorage, Alaska

Location

Supporting Stations: McMurdo Station

Research Locations: Big Razorback Island, Hutton Cliffs, McMurdo Sound, Ross Ice Shelf, Scott Base

Description

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

Field Season Overview

There are two parts to this project's field efforts: (1) Assessment of animal condition at the end of lactation; and (2) assessment of animal condition during the molt. Therefore, researchers plan to deploy twice during the field season. During the first deployment, field team members will be based out of McMurdo Station and will take daily trips onto the sea ice by snow machine with gear towed in sleds to locate specific adult female Weddell seals, measure their health and condition, and equip them with tags that will monitor

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diving patterns and aid in relocation. Researchers hope to handle 15-24 adult females. The work will be focused around the breeding colonies within Erebus Bay. During the second deployment, they will return to relocate animals handled earlier and to assess their reproductive condition and health status.

Deploying Team Members

- Roxanne Beltran
- Rachel Bergartt
- Jennifer Burns (PI)
- Alice Eilers
- Amy Kirkham
- Robert McCorkell
- Michelle Shero



2014-2015 USAP Field Season

Project Detail

Project Title

Collaborative Research: Importance Of Heterotrophic And Phototrophic N₂ Fixation In The McMurdo Dry Valleys On Local, Regional, And Landscape Scales

Summary

Event Number:

B-012-M
NSF/PLR Award 1246373

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Sune Tamm / Meghan Walker



Principal Investigator

Dr. Edward Carpenter

ecarpent@sfsu.edu

San Francisco State University

Romberg Tiburon Center
Tiburon, California

Location

Supporting Stations: McMurdo Station

Research Locations: Garwood and Miers Valleys

Description

Researchers will study the microbial ecology of soils under and alongside stream beds (the hyporheic zone) and associated arid soils in various McMurdo Dry Valleys systems. They plan to study the biogeochemistry of these sites and the activity, composition, and distribution of the nitrogen-fixing communities. Ultimately, researchers would like to map the distribution of these communities throughout the valley ecosystem, via a landscape model, and extrapolate their influence on total nitrogen budgets.

Field Season Overview

Four team members will establish a tent camp in the Garwood Valley and will travel on foot to nearby sampling sites. Additional sites in the Miers Valley will be accessed by helicopter.

Deploying Team Members

- Kathryn Coyne
- Alexander Parker
- Troy Gunderson
- Jill Sohm (Team Leader)

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Project Title

WAIS Logging

Summary

Event Number:

I-475-M

WAIS Logging Oversight

Program Manager:

Dr. Julie Palais

ASC POC/Implementer:

John Rand / Ryan Wallace



Principal Investigator

Mr. Gary Dawson Clow

gclow.usgs@gmail.com

United States Geological Survey

Denver Federal Center

Boulder, Colorado

Location

Supporting Stations: McMurdo Station

Research Locations: West Antarctic Ice Sheet (WAIS)

Description

This project will use the United States Geological Survey (USGS) high-precision temperature logging tool to examine the condition of the main WAIS-Divide borehole and to support logging work by other investigators. Temperature data resulting from this test will be used to refine estimates of the geothermal heat flow at this site, the melting rate at the base of the ice sheet, and reconstructing past surface temperatures through the use of borehole paleothermometry.

Field Season Overview

This project provides overall support for all the borehole logging projects to be done at WAIS Divide during the 2014-15 field season. The WAIS-Divide logging projects include: I-475 (Clow), I-161 (Peters), I-166 (Pettit/Obbard), and I-172 (Bay/Talghader). The logging teams, deep logging winch, and logging instruments will be transported to WAIS-Divide by LC-130 aircraft. The logging winch, logging shelter, and a heated shelter will be setup on the surface adjacent to the drill arch. The logging cable will subsequently be fed through the roof of the arch via a sheave wheel and then guided into the borehole using a second sheave wheel located on the floor of the arch. Logging the 3.4-kilometer deep borehole is estimated to take about three weeks.

Deploying Team Members

- Gary Clow (PI)



Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.



Project Web Sites

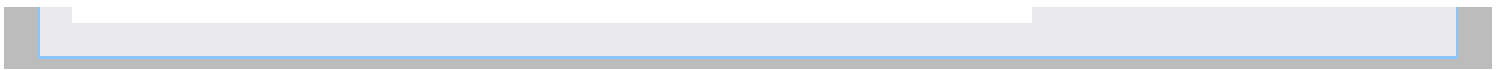
Find more information about 2014-2015 USAP projects by viewing project web sites.



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2014-2015 USAP Field Season

Project Detail

Project Title

Role Of The Central Scotia Sea In The Onset And Development Of The Antarctic Circumpolar Current

Summary

Event Number:

G-087-N

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Addie Coyac / Adam Jenkins



Principal Investigator

Dr. Ian Dalziel

ian@utig.utexas.edu

University of Texas Austin

Institute for Geophysics

Austin, Texas

Location

Supporting Stations: RV/IB Nathaniel B. Palmer

Research Locations: Central Scotia Sea, South Georgia Island

Description

The goal of this project is to understand the tectonic evolution of the Central Scotia Sea and North Scotia Ridge and their bearing on the onset and development of the Antarctic Circumpolar Current (ACC). Initiation of the ACC has been associated in time with a major abrupt drop in global temperatures and the rapid expansion of the Antarctic ice sheets about 33 to 34 million years ago. Events leading to the formation of the Drake Passage gateway are poorly known. Understanding the tectonic evolution of the floor of the Central Scotia Sea (CSS) and the North Scotia Ridge is a key to this understanding. Previous work has demonstrated that superimposed constructs formed a volcanic arc that likely blocked direct eastward flow from the Pacific to the Atlantic through the opening Drake Passage gateway as the active South Sandwich arc does today. During a cruise, the research team will test, develop and refine, with targeted mapping and dredging, their theory of CSS tectonics and the influence it had on the onset and development of the ACC. They will also install a GPS receiver to test their paleogeographic reconstructions and determine whether South Georgia Island is moving as part of the South American plate.

Field Season Overview

This Nathaniel B Palmer (NBP) cruise will depart Punta Arenas, Chile and head to South Georgia Island. The NBP's seismic system will be deployed along a line to and from the Northeast Georgia Rise to the northeast of South Georgia. Three continuous Global Navigation Satellite Systems (cGNSS) stations will be installed on the South Georgia microcontinent. The first GPS station will be installed at the eastern tip of South Georgia Island. The NBP will then transit to the southwest into the central Scotia Sea where a second GPS station will be installed on or near Annenkov Island. A third GPS station will



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be installed on Bird Islet. Each GPS station installation will be planned as two-day deployments. Seismic data will be collected across the northern-central Scotia Sea onto the central Rise. Two seamounts previously mapped will be dredged and re-mapped as the vessel proceeds east to cross the boundary between the central Scotia Sea and the very young East Scotia Sea. One more seamount near the Eastern Scotia Sea spreading center will be mapped and dredged if found.

Deploying Team Members

- Nicolas Bayou
- Ian Dalziel (PI)
- Joshua Davis
- Marcy Davis
- Lawrence Lawver
- Julian Pearce
- Sebastián Ramirez
- Steffen Sastrup
- Bob Smalley (Co-PI)
- Marissa Vara
- Jillian Worssam
- Julia Zurbuchen



Project Title

Collaborative Research: Geomagnetic Navigation By Weddell Seals Beneath Antarctic Ice

Summary

Event Number:

B-017-M
NSF/PLR Award 1341469

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

John Rand / Beverly Walker



Principal Investigator

Dr. Randall Davis
davisr@tamug.edu

Texas A & M University

Dept. of Marine Biology
League City, Texas

Location

Supporting Stations: McMurdo Station

Research Locations: McMurdo Sound

Description

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

Field Season Overview

Researchers will make day trips by Pisten Bully to a sea ice camp on McMurdo Sound to capture Weddell seals, perform controlled releases, and finally recover instrumentation temporarily mounted on the seals. The camp will consist of two fish huts and a RAC tent, each placed over a 1.2 meter diameter hole in the sea ice. Instrumented seals will be consecutively released into each of the three holes in order to observe their behavior as they experience different geomagnetic fields.

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Deploying Team Members

- Willem Buitendyk
- Randall Davis (PI)
- Erin Frolli
- Lee Fuiman (Co-PI)
- Traci Kendall
- Kristen McGovern
- Michael Walker
- Terrie Williams (Co-PI)



2014-2015 USAP Field Season

Project Detail

Project Title

Habitability Of Antarctic Lakes And Detectability Of Microbial Life In Icy Environments By Autonomous Year-Round Instrumentation

Summary

Event Number:

B-280-M
NSF/PLR Award 1340905

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Sune Tamm / Elizabeth Kauffman



Principal Investigator

Dr. Peter Doran
pdoran@uic.edu

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

Location

Supporting Stations: McMurdo Station
Research Locations: Lake Bonney

Description

Researchers will deploy autonomous instrumentation in selected Taylor Valley lakes to collect the first below-ice suite of physical, chemical, and biological data during the polar night. Their proposed research will test the overarching hypothesis that the winter darkness induces a cascade of physiological changes that alters the biodiversity and functional roles of autotrophic and heterotrophic microplankton within the lakes.

Field Season Overview

Field team members will swap sensors and perform upgrades of existing Autonomous Lake Profiling and Sampling (ALPS) stations in both the east and west lobes of Lake Bonney. These stations add to existing Long-Term Ecological Research (LTER) monitoring equipment and consist of ice-tethered profilers, phytoplankton samplers, and remote access samplers, along with requisite power and communication. The stations will operate year around.

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2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

B-289-E
NSF/PLR Award 1341742

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Addie Coyac / Cara Ferrier



Principal Investigator

Undefined Dr. Sarah Margaretha Eppley
eppley@pdx.edu

Portland State University

Portland, Oregon

Location

Supporting Stations: Special Project

Research Locations: King George and Livingston Islands

Description

Despite the harsh abiotic conditions, over 100 moss species occur in Antarctica (compared with only two flowering plants). As the continent becomes warmer and wetter, mosses are colonizing newly exposed ground and are predicted to become even more dominant. Researchers will test hypotheses concerning the effects of warming on how Antarctic mosses structure terrestrial ecosystems. Using open-top chamber passive-warming experiments previously installed by a Chilean collaborator on King George and Livingston Islands, researchers will concentrate on how warming impacts bryophyte productivity, sexual systems, and secondary chemistries, and how these changes affect community processes. They will pursue three integrated research hypotheses: (1) Warming will alter moss species composition, moss sex ratio, and differentially 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. These 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

A team of three will travel by plane, and possibly by boat, to and from Antarctica with support from the Chilean Antarctic Institute (INACH). They will be based out of Base Profesor Julio Escudero, on King George Island and will make periodic visits to Fildes and Byers Peninsulas, where their Chilean collaborator has been conducting studies.



Project Indexes

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Deploying Team Members

- Dr. Sarah Eppley (PI)
- Hannah Prather
- Todd Rosenstiel (Co-PI)



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

C-517-M

NSF/PLR Award 1246342

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Judy Shiple / Elizabeth Kauffman



Principal Investigator

Dr. Andrew Fountain

andrew@pdx.edu

Portland State University

Geology

Portland, Oregon

Location

Supporting Stations: McMurdo Station

Research Locations: Lake Hoare / Dry, Garwood, Taylor and Wright Valleys

Description

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

Field Season Overview

A three-man airborne team, composed of two LiDAR operators and one global positioning system (GPS) ground station operator, will conduct an airborne LiDAR survey using a Twin Otter aircraft over approximately 5000 square kilometers of the Dry Valleys. Other field team members will work throughout Dry Valleys' Antarctic Specially Managed Areas (ASMA), but will avoid Antarctic Specially Protected Areas (ASPAs). Field work will include ground-based ground penetrating radar (GPR); soil, sediment, and fresh water sampling; and instrument placement (thermistors and soil-moisture probes) and retrieval.

Deploying Team Members

- Juan Fernandez-Diaz
- Rickard Pettersson
- Darren Hauser
- Michael Sartori



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Maciej Obryk (Team Leader)

- Rickard Pettersson

Abhinav Singhanian

- Zachary Sudman



2014-2015 USAP Field Season

Project Detail

Project Title

Collaborative Research: Pathways Of Circumpolar Deep Water To West Antarctica From Profiling Float And Satellite Measurements

Summary

Event Number:

O-398-N
NSF/PLR Award 1341496

Program Manager:

Dr. Peter Milne

ASC POC/Implementer:

Adam Jenkins



Principal Investigator

Dr. James Bannister Girton
girton@apl.washington.edu

University of Washington

Seattle, Washington

Location

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

Description

Researchers plan to investigate the Amundsen Sea pathways of Circumpolar Deep Water (CDW) transport from the open ocean to the Antarctic continental shelf. Subsurface profiling floats equipped to operate under sea ice will be launched on multiple cruises during Austral summer. The floats will be launched south of the Polar Front and will measure shear, turbulence, temperature, and salinity to 2000 m depth for two-year missions while following the CDW layer. In addition to identifying specific trajectories (aided by the velocity measurement technique of motional induction to improve under-ice navigation), the subsurface data collected by the floats will be used to extrapolate the spatial and temporal coverage of satellite-derived surface currents to the deeper levels where CDW is found.

Field Season Overview

Team members will deploy up to four EM-APEX profiling floats in an ice-free region of the seasonal ice zone in the Amundsen Sea sector during a transit from Punta Arenas to McMurdo Station on the RV/IB Nathaniel B. Palmer. The target sites for these deployments will be along the cruise track planned for the transit at the intersection with primary satellite-derived frontal pathways toward the continental slope.

Deploying Team Members

- Avery Snyder

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

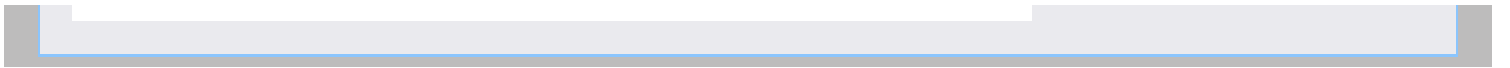
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2014-2015 USAP Field Season

Project Detail

Project Title

Assessing The Antarctic Contribution To Sea-Level Changes During The Last Deglaciation: Constraints From Darwin Glacier

Summary

Event Number:

I-196-M

NSF/PLR Award 1246170

Program Manager:

Dr. Julie Palais

ASC POC/Implementer:

Matthew Erickson / 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: Derrick Peak / Diamond Hill

Description

Researchers will reconstruct past changes in the Darwin/Hatherton Glacier system to develop a record of ice extent and thickness in the Ross Sea during the last glacial maximum and subsequent deglaciation. They will map glacial deposits in the mountains adjacent to the glaciers and collect samples of rocks and fossil algae for radiocarbon and cosmogenic surface-exposure dating. They will integrate the data with an ice-flow model to develop a better understanding of the behavior of the Antarctic Ice Sheet during the last glacial cycle and its contribution to global sea level. Reconstructing past fluctuations of the Antarctic Ice Sheet (AIS) is critical for understanding the sensitivity of ice volume to sea-level and climatic change. Constraints on past behavior help put ongoing changes into context and provide a basis for predicting future sea-level rise.

Field Season Overview

Four field team members will operate out of a small tent camp at Hatherton Glacier. Camp put in will be by helicopter. They will make day trips by foot and will move between sites by helicopter. At the end of the season, samples will be prepared for in Cray Lab and then shipped to the home institution.

Deploying Team Members

- Brenda Hall (PI)
- Courtney King
- Trevor Hillebrand
- John Stone (Co-PI)



Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.



Project Web Sites

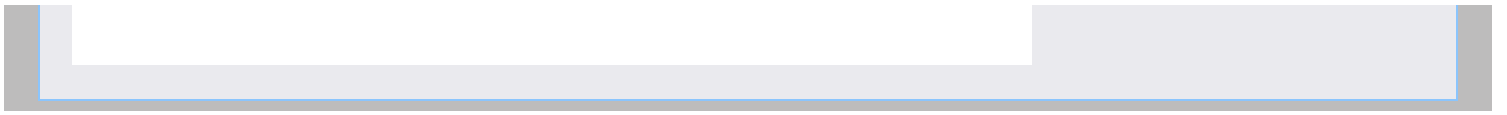
Find more information about 2014-2015 USAP projects by viewing project web sites.



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2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

I-178-M
NSF/PLR Award 1246400

Program Manager:

Dr. Julie Palais

ASC POC/Implementer:

Judy Shiple / Elizabeth Kauffman



Principal Investigator

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

University of Maine

Climate Change Institute
Orono, Maine

Location

Supporting Stations: McMurdo Station
Research Locations: McMurdo Shear Zone

Description

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

Field Season Overview

During this first of three field seasons, a team of five, including two scientists, two robot operators, and a mountaineer, will camp near the shear zone for up to three weeks. Helicopter support will be used to establish the GPS network.

Deploying Team Members

- Peter Braddock
- James Lever (Co-PI)

Project Indexes

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- Elyn Enderlin
- Gordon Hamilton (PI)

- Benjamin Walker



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

G-061-M

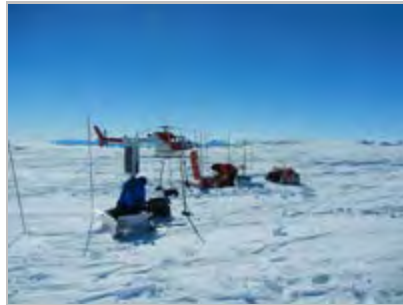
NSF/PLR Award 1148982

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Matthew Erickson / Elizabeth Kauffman



Principal Investigator

Dr. Samantha Hansen

shansen@geo.ua.edu

University of Alabama Tuscaloosa

Department of Geological Sciences

Tuscaloosa, Alabama

Location

Supporting Stations: McMurdo Station

Research Locations: Terra Nova Bay

Description

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

Field Season Overview

During this, the third year of the five-year TAMNNET project, researchers will service and collect data from previously-installed polar seismic equipment from IRIS-PASSCAL at 15 locations across the northern Transantarctic Mountains and the East Antarctic plateau. Research sites will be accessed by Twin Otter aircraft. The Italian and Korean Antarctic programs may also provide some logistical support.



Project Indexes

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Deploying Team Members

- Douglas Bloomquist
- Gregory Brenn
- Brian DuBay
- Jordan Graw
- Samantha Hansen (PI)



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

T-998-P
NSF/PLR CTBTo MOA

Program Manager:

Mr. Pat Smith

ASC POC/Implementer:

Samina Ouda / Jamee Johnson



Principal Investigator

Mr. Bouvard Hosticka

bh@virginia.edu

University of Virginia

Charlottesville, Virginia

Location

Supporting Stations: Palmer Station

Research Locations: Terra Lab

Description

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

Field Season Overview

We require continuing local support by the Palmer Station RA for the installed monitoring equipment as well as one site visit per year of an engineer or scientist for maintenance and upgrades to the equipment. Logistical support involves shipping supplies such as filter media and replacement equipment to the station as well as sending the samples on a quarterly basis to Vienna Austria. There are occasionally single samples that must be sent to a laboratory elsewhere in the world for reanalysis. The Annual supplies consist of about 50 pounds of filter media.

We plan on upgrades to the Detector and Met system requiring about 250 pounds of equipment for the site visit.

Deploying Team Members

- Bouvard Hosticka (PI)



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2014-2015 USAP Field Season

Project Detail

Project Title

NASA's McMurdo Tracking And Data Relay Satellite System Upgrade (MTRSU)
Deployment Support

Summary

Event Number:
T-982-M

Program Manager:
Mr. Pat Smith

ASC POC/Implementer:
David Huntsman



Principal Investigator

Mr. Dwight David Huntsman
David.Huntsman.Contractor@usap.gov

Antarctic Support Contract
Lockheed Martin
Centennial, Colorado

Location

Supporting Stations: McMurdo Station
Research Locations: Joint Spacecraft Operations Center / Building 69 / MTRSU
Antenna

Description

This project provides monitoring for the off-continent data transport of NASA's McMurdo Tracking and Data Relay Satellite System's (MTRSU) new Soil Moisture Active-Passive (SMAP) satellite.

Field Season Overview

Two participants will be housed at McMurdo Station and will travel as needed by van to and from Crater Hill and the MTRSU satellite antenna.

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

Project Web Sites

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2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

O-324-M
NSF/PLR Award 1341628

Program Manager:

Dr. Peter Milne

ASC POC/Implementer:

Sune Tamm / Beverly Walker



Principal Investigator

Dr. Lars E Kalnajs
kalnajs@colorado.edu

University of Colorado Boulder

Laboratory for Atmospheric and Space Physics
Boulder, Colorado

Location

Supporting Stations: McMurdo Station
Research Locations: Inaccessible Island

Description

Aerosol particles play a critical role in the chemical and radiative balance of the Antarctic atmosphere. Aerosols are a source and sink of gas-phase constituents as well as a transport mechanism for oceanic chemical species into the continental interior. The interaction between aerosols, the gas phase, sea ice, and the snow pack is complex and not well understood. Recent observations of ozone-depletion events and submicron aerosol mass increase highlight the coupling of the gas and particle phases. These interactions can lead to aerosol formation as well as the deposition of trace elements to the snow pack. It is the incorporation of these aerosol particles into the ice-core record that provides a window into the Earth's past atmospheres. A more complete understanding of the coupling will improve interpretation of past Antarctic climate. Researchers will make high-resolution temporal and size distribution measurements of aerosol composition and size in the Ross Island region, coastal Antarctica. Using an Aerosol Mass Spectrometer (AMS), they will collect quantitative size and chemical mass loading information in near real-time of non-refractory sub-micron aerosol particles (sulfate, nitrate, chloride, ammonium, and organic carbon species).

Field Season Overview

Six participants will spend two to three weeks setting up nine aerosol/chemical/meteorological instruments in a fish hut near Inaccessible Island, with line of sight to McMurdo Station. Two five Kilowatt generators connected by a 100 meter cable to avoid contaminating samples will provide power. Team members will be based at McMurdo Station, but there will be a continuous presence at the field site. They will travel to and from the site by Pisten Bully.

Project Indexes

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Deploying Team Members

- Sean Davis
- Peter Decarlo (Co-PI)
- Terry Deshler
- Michael Giordano
- Anita Johnson
- Lars Kalnajs (PI)



Project Title

Paleomagnetism And Magnetostratigraphy Of The James Ross Basin, Antarctica.

Summary

Event Number:

G-291-E
NSF/PLR Award 1341729

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Matthew Erickson / Cara Ferrier



Principal Investigator

Dr. Joseph Kirschvink
kirschvink@caltech.edu

California Institute of Technology

Geological and Planetary Sciences
Pasadena, California

Location

Supporting Stations: Special Project

Research Locations: Seymour and James Ross Islands

Description

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

Field Season Overview

Two field team members will travel with a team from the Argentine Antarctic Institute to Marambio Base on Seymour Island. From there the team will travel by helicopter to field sites around Hamilton Point where they will collect oriented rock samples to be analyzed at the home institution.

Deploying Team Members

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▪ Joseph Kirschvink (PI)

▪ Ross Mitchell



Project Title

Temporal Variability In Natural And Anthropogenic Disturbance Of McMurdo Station

Summary

Event Number:

B-518-M/P

NSF Agreement

Program Manager:

Dr. Polly Penhale

ASC POC/Implementer:

Judy Shiple / Elizabeth Kauffman



Principal Investigator

Dr. Andrew Klein

klein@geog.tamu.edu

Texas A & M University

Department of Geography

College Station, Texas

Location

Supporting Stations: McMurdo Station, Palmer Station

Research Locations: On station

Description

This project aims to establish a long-term environmental monitoring program at Palmer Station, similar to that at McMurdo Station, that will aid the United States Antarctic Program (USAP) in meeting reporting requirements of the Antarctic Treaty. The Antarctic Treaty's Protocol on Environmental Protection, supplemented by the policies and practices of the nations that work and do science there, have combined to focus scrutiny on foreseeable or detected anthropogenic impacts. This project collects a system of observations that should enable scientists to be more aware of anthropogenic impacts on both marine and terrestrial habitats. The observations are located precisely and tracked over time. Researchers will use geographic information systems (GIS) techniques and geostatistical methods to organize these diverse data sets into a coherent, coordinated framework.

Field Season Overview

Four participants will sail to and from Palmer Station on the ARSV Laurence M. Gould. While at Palmer Station, they will collect soil and sediment samples from several locations. Support contractor dive support will also enable them to sample the shallow marine environment around the station.

Deploying Team Members

- Andrew Klein (PI)
- Stephen Sweet
- Terence Palmer
- Mary Tilton



Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.



Project Web Sites

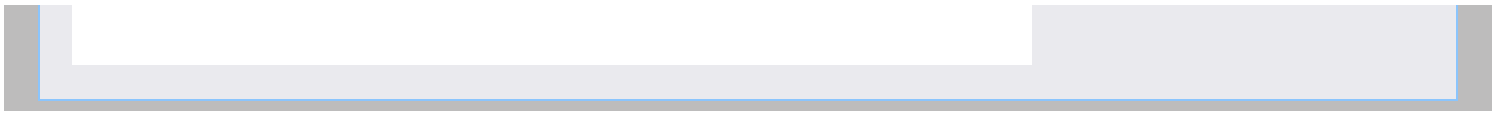
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2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

B-005-L/P
NSF/PLR Award 1327248

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Samina Ouda / Cara Ferrier



Principal Investigator

Dr. Josh Kohut
kohut@marine.rutgers.edu

Rutgers University

Institute for Marine & Coastal Sciences
New Brunswick, New Jersey

Location

Supporting Stations: ARSV Laurence M. Gould, Palmer Station

Research Locations: Palmer Deep

Description

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

Field Season Overview

Field team members will sail to Palmer Station on the ARSV Laurence M. Gould. During the transit, they will recover, service, and redeploy a mooring that will remain in place and collect data for 12 months. At Palmer Station they will deploy three gliders from Zodiac inflatable boats. One glider will be deployed once over a two month period and then recovered. The two remaining gliders will be deployed and recovered twice during the season. The team will also conduct Zodiac-based acoustic krill surveys and net tows to catch krill for length measurements. A photographer and a writer will deploy with the team to connect the science to a broad audience through an online expedition journal and periodic live video calls from Palmer Station. The science team members will install remote power modules and HF Radars at Joubin and Wauwerman Islands.

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Deploying Team Members

- Kim Bernard (Co-PI)
- Megan Cimino
- Megan Cimino
- Josh Kohut (PI)
- Chris Linder (Co-PI)
- Chris Linder (Co-PI)
- Mathew Oliver (Co-PI)
- Hugh Powell
- Shenandoah Raycroft
- Hank Statscewich
- Steven Sweet
- Katherine Todoroff
- Peter Winsor (Co-PI)



Project Title

Collaborative Research: Science Observation With BICEP3 CMB Polarization Experiment

Summary

Event Number:

A-365-S
NSF/PLR Award 1313010

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Judy Shiple / Paul Sullivan



Principal Investigator

Dr. Chao-Lin Kuo
clkuo@stanford.edu

Stanford University
Stanford, California

Location

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

Description

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

Field Season Overview

Twenty participants will be deploying at various times throughout the season to South Pole Station to deploy the BICEP3 telescope.

Deploying Team Members

- Zeeshan Ahmed
- Jamie Bock
- Rachel BOWENS-Rubin
- Jake Connors
- Erik Nichols
- Roger O'Brien
- Walter Ogburn
- Steffen Richter

Project Indexes

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James Grayson

- Howard Hui
- Jae Hwan Kang
- Kirit Karkare
- Ethan Karpel
- Chao-Lin Kuo (PI)

Steven Sansone

- Bryan Steinbach
- Keith Thompson
- James Tolan
- Kimmy Wu
- Kiwon Yoon



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

A-102-M/S
NSF/PLR Award 1341677

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Samina Ouda / Elizabeth Kauffman / Paul Sullivan



Principal Investigator

Dr. Marc Lessard
marc.lessard@unh.edu

University of New Hampshire

Space Science Center
Durham, New Hampshire

Location

Supporting Stations: McMurdo Station, South Pole Station

Research Locations: Cusp Lab / Arrival Heights

Description

This project is a continuation of current studies using search-coil magnetometers that were previously installed and operating at South Pole Station's Cusp Lab, at Arrival Heights at McMurdo Station, and at the UK base, Halley Station. Researchers use time-series data from magnetometers at these and other Antarctic sites, including the Polar Experiment Network for Geospace Upper-atmosphere Investigations (PENGUIn) Automated Geophysical Observatories, often in conjunction with data from other Arrival Heights instruments, to study the dynamics of the Earth's ionosphere and magnetosphere.

Field Season Overview

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



Project Indexes

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Project Web Sites

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Project Title

Cryptic Hydrology Of The McMurdo Dry Valleys: Water Track Contributions To Water And Geochemical Budgets In Taylor Valley, Antarctica

Summary

Event Number:

G-084-M

NSF/PLR Award 1142184

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Sune Tamm / Meghan Walker



Principal Investigator

Dr. Joseph Levy

joe.levy@utexas.edu

University of Texas Austin

Institute for Geophysics

Austin, Texas

Location

Supporting Stations: McMurdo Station

Research Locations: F6 / Lakes Bonney and Hoare / Wright Valley

Description

Water tracks are narrow bands of high soil moisture that route water downslope, in the absence of overland flow, through permafrost dominated soils in polar regions. In water tracks, moisture moves as shallow groundwater, flowing through the permafrost active layer (the seasonally-thawed portion of permafrost) along linear depressions in the ice table (the portion of the permafrost that remains frozen and ice-cemented during summer months), resulting in channelized flow. Water tracks represent a largely unexplored frontier for understanding basic earth processes in Antarctica. This project will quantify the contribution of water tracks to water, solute, and basic carbon cycling on Antarctic hillslopes. Researchers aim to answer several questions about water tracks in Taylor Valley: (1) How much water flows through water tracks every year? (2) How much salt moves from highlands to lowlands in water tracks? (3) How do water tracks affect rock weathering in different lithological terrains? (4) How do water tracks affect Dry Valleys carbon budgets on glacial/interglacial timescales?

Field Season Overview

Field team members will rotate through their earlier-established field sites at New Harbor, Andrews Ridge, and Wormherder Creek, collecting samples at least three times from each site. They will conduct water-track extension projects in Wright and Garwood Valleys on day trips from the Taylor Valley camps. Helicopters will provide camp-move logistics and the team members will return to Cray Lab to process and package the samples for shipment to the home institution.

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Deploying Team Members

- James Dickson
- Joseph Levy (PI)
- Tammy Rittenour
- Jordan Scheuermann
- Jaclyn Watters



2014-2015 USAP Field Season

Project Detail

Project Title

Pilot Study: Addition Of Biological Sampling To Drake Passage Transits Of The ARSV Laurence M. Gould

Summary

Event Number:

B-268-L
NSF/PLR Award 1347911

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Matthew Erickson / Cara Ferrier



Principal Investigator

Dr. Valerie J Loeb
loeb@mml.calstate.edu

San Jose State University

Moss Landing Marine Laboratory
Moss Landing, California

Location

Supporting Stations: ARSV Laurence M. Gould
Research Locations: Patagonian and Peninsula Shelves / Polar Front

Description

Analysis of acoustic Doppler current profilers (ADCP) records from supply transits of the Drake Passage by the ARSV Laurence M Gould (LMG), from 1999 to the present, indicate that underway observations of the upper-ocean scattering layer can serve as a proxy to monitor changes in the Southern Ocean ecosystem due to climate warming. Researchers will use these long-term ADCP records in identifying those organisms responsible for seasonal, inter-annual, and longer-term variability observed in ADCP records collected since 1999. Net tows accompanied by videography during spring, summer, and autumn periods of elevated acoustic backscattering will provide information on the abundance and taxonomic-size composition of organisms likely to be dominant sound scatterers within the three biogeographic zones of the Drake Passage.

Field Season Overview

Researchers will sail on the LMG and conduct net tows, coincidental with ADCP, using an Isaacs-Kidd Midwater Trawl on both south- and north-bound transits of the Drake Passage. There will be three tows at three sites on both transits. The trawl will have a grantee-supplied video camera and time depth recorder (TDR) mounted on the frame. The three sample sites are across the Patagonian Shelf, the Peninsula Shelf, and the Polar Front. While the vessel is underway, top-predator surveys will be conducted. A team member using hand-held binoculars will conduct standardized strip transects to estimate the relative abundance of seabirds and line-transect methodology to collect marine mammal sightings.

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Deploying Team Members

- Kimberly Dietrich
- Valerie Loeb (PI)
- Darci Lombard
- Jarrod Santora (Co-PI)



2014-2015 USAP Field Season

Project Detail

Project Title

Collaborative Proposal: Decades-Long Experiment On Wind-Driven Rock Abrasion In The Ice-Free Valleys, Antarctica

Summary

Event Number:

G-075-M
NSF/PLR Award 1341754

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Sune Tamm / Meghan Walker



Principal Investigator

Dr. Michael C Malin
malin@msss.com

Malin Space Science Systems

San Diego, California

Location

Supporting Stations: McMurdo Station

Research Locations: Dry Valleys / Allan Hills

Description

This project will capitalize on a unique long-term field experiment to determine rates of wind-driven rock abrasion in ice-free areas of Southern Victoria Land. This region is strongly affected by eolian activity, and is a terrestrial end member in terms of atmospheric precipitation of liquid water. During the 1983 to 1984 field seasons, more than 5,000 rock targets were installed at five heights facing the four ordinal directions at 10 locations (with an additional site containing fewer materials) to study rates of physical weathering due primarily to eolian abrasion. In addition, rock cubes and cylinders were deployed at each site to examine effects of chemical weathering. Initial studies indicate that measurable mass loss occurred annually, even at sites with very little mobile mineral debris available, showing that the measurement techniques had the requisite sensitivity. This proposal addresses the return of samples after 31 years and the analysis of the mass loss data in light of complementary environmental and sand kinetic energy flux data. It promises to improve insights into the principal active geomorphic process in the Dry Valleys.

Field Season Overview

This deployment includes retrieval of all currently deployed samples and structures at the 11 sample sites and project closeout. Four team members will deploy to 11 sites in the Dry Valleys and Allan Hills by helicopter. They will camp for one to two nights at each location in order to package all samples and structures for transport to McMurdo Station.

Deploying Team Members

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- Bernard Hallet (Co-PI)
- Bernard Hallet (Co-PI)
- Michael Malin (PI)

- Mathew Roman
- Ronald Sletten (Co-PI)



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

G-054-M
NSF/PLR Award 1246316

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Judy Shiple / Meghan Walker



Principal Investigator

Dr. David R Marchant
marchant@bu.edu

Boston University

Department of Earth Sciences
Boston, Massachusetts

Location

Supporting Stations: McMurdo Station

Research Locations: Brown Peninsula / Mount Discovery / Sperm Bluff

Description

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

Field Season Overview

Two field team members will deploy early in the season to set up a small camp on Brown Peninsula where they will conduct mapping studies and ground penetrating radar (GPR) on Brown Peninsula and Mount Discovery. They will be joined by three additional team members a month later. Those three will then camp on Sperm Bluff for 3-5 days to conduct mapping and sample collection.

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Deploying Team Members

- Austin Canty
- Andrew Christ (Team Leader)
- Douglas Kowalewski (Co-PI)
- Sean Mackay
- David Marchant (PI)



2014-2015 USAP Field Season

Project Detail

Project Title

MIDGE: Minimally Invasive Direct Glacial Exploration Of Biogeochemistry, Hydrology, And Glaciology Of Blood Falls, McMurdo Dry Valleys

Summary

Event Number:

C-528-M
NSF/PLR Award 1144178

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Sune Tamm / Meghan Walker



Principal Investigator

Dr. Jill Mikucki
jmikucki@utk.edu

University of Tennessee

Microbiology
Knoxville, Tennessee

Location

Supporting Stations: McMurdo Station
Research Locations: Blood Falls / Lake Bonney

Description

This collaborative project will integrate geophysical measurements, molecular microbial ecology, and geochemical analyses to explore a subglacial system known as Blood Falls. Blood Falls is a hypersaline, subglacial brine supporting an active microbial community. The subglacial brine is released from a crevasse at the Taylor Glacier's surface, providing an access point into an Antarctic subglacial ecosystem. Recent geochemical and molecular analyses support a marine source for the salts and microorganisms in Blood Falls. The last time marine waters inundated this part of the McMurdo Dry Valleys was during the Late Tertiary, suggesting the brine is ancient. No direct samples have been collected from the subglacial source to Blood Falls, so little is known about the brine's origin or how long it has been sealed below Taylor Glacier. It remains unclear what triggers episodic releases of brine exclusively at the Blood Falls crevasse or the extent to which brine is altered as it rises to the surface. MIDGE aims to determine the brine release mechanism at Blood Falls, evaluate changes in the geochemistry and the microbial community within the englacial conduit, and assess if Blood Falls waters have a distinct impact on Taylor Glacier thermal and stress state.

Field Season Overview

Ten field team members will deploy by helicopter from McMurdo Station to the Blood Falls camp. They will work primarily along the Blood Falls crevasse conducting a thermal survey and drilling for sample collection with the thermal melting probe (IceMole). They will conduct some of their sample processing and radioisotope enrichment experiments in the lab at Lake Bonney and at the Cray Lab.

Project Indexes

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Deploying Team Members

- James Davis
- Clemens Espe
- Marco Feldmann
- Neil Foley
- Gero Francke
- Laura German
- Dirk Heinen
- Jill Mikucki (PI)
- Slawek Tulaczyk (Co-PI)
- Jacob Walter



Project Title

CAREER: Protist Diversity And Function In The Dry Valley Lakes

Summary

Event Number:

B-247-M
NSF/PLR Award 1056396

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Sune Tamm / Elizabeth Kauffman



Principal Investigator

Dr. Rachael Morgan-Kiss
morganr2@miamioh.edu

Miami University

Oxford, Ohio

Location

Supporting Stations: McMurdo Station

Research Locations: Dry Valleys / Lakes Bonney and Fryxell

Description

Protists play important roles in energy flow and material cycling and act as primary producers (fixing inorganic carbon by photosynthesis) and consumers (preying on bacteria by phagotrophic digestion). The McMurdo Dry Valleys (MDV) located in Victoria Land, Antarctica, harbor microbial communities that are isolated in the unique aquatic ecosystem of perennially ice-capped lakes. The lakes support exclusively microbial consortia in chemically stratified water columns that are not influenced by seasonal mixing, allochthonous inputs, or direct human impact. The objectives of this project are to understand the metabolic versatility of single-celled eukaryotic microbial (protist) species residing in MDV lakes and to link protist trophic strategy with specific abiotic drivers, e.g., temperature, light, and nutrients. Specific objectives for this field season are: (1) Generate depth profiles of autotrophic and heterotrophic activity across select MDV lakes; (2) Identify taxonomic affiliation of mixotrophic protists at depths of mixed trophic activity; (3) Cultivate new photoautotrophic and mixotrophic protists from MDV lakes.

Field Season Overview

Three participants will collect lake samples from Lakes Bonney (east and west lobes), Fryxell, and Vanda at various depths through the water column during the summer season. They will be based at Lakes Bonney and Fryxell established camps and use labs there for sample processing. While at Lake Bonney, researchers will make one day trip to Lake Vanda to collect lake water. Helicopters will provide support for put-in, take-out, camp moves, and returning samples to McMurdo Station.

Deploying Team Members

Project Indexes

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- Nicholas Ketchum
- Wei Li

- Rachael Morgan-Kiss (PI)
- Joan Slonczewski



Project Title

Constraining Plio-Pleistocene West Antarctic Ice Sheet Behavior From The Ohio Range And Scott Glacier

Summary

Event Number:

G-438-M
NSF/PLR Award 1341658

Program Manager:

Dr. Julie Palais

ASC POC/Implementer:

Judy Shiple / Elizabeth Kauffman



Principal Investigator

Dr. Sujoy Mukhopadhyay
sujoy@eps.harvard.edu

Harvard University

Cambridge, Massachusetts

Location

Supporting Stations: McMurdo Station

Research Locations: Ohio Range

Description

This project aims to place constraints on interior West Antarctic Ice Sheet (WAIS) elevations during the mid-Pliocene, when atmospheric CO₂ levels were similar to today's. Surface and subglacial bedrock samples will be collected over the course of this two-year project for analysis of cosmogenic nuclides. The fieldwork will take place in the Ohio Range in the southern Transantarctic Mountains. Sampling locations include transects along Treves Butte, Discovery Ridge, and Darling Ridge (west side), as well as Bennett-I, -II, and -III Nunataks and Tuning Nunatak.

Field Season Overview

During this first of two seasons, six participants will work from a single field camp that is central to the sampling locations for approximately four weeks. LC-130 and Twin Otter aircraft will put in and pull out the camp. Participants will use snowmobiles to access sampling locations and to move equipment and samples. Surface-towed, ground-penetrating radar will be used to locate drilling sites for subglacial-bedrock sampling next season.

Deploying Team Members

- Robert Ackert (Team Leader)
- Seth Campbell
- Jennifer Erxleben
- Jennifer Middleton



Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.



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- Philip Davis



Project Title

Vulnerability Of East Antarctic Ice Shelves To Warm Ocean-Water Incursions

Summary

Event Number:

G-059-N
NSF/PLR Award 1245879

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Addie Coyac / Adam Jenkins



Principal Investigator

Dr. Frank-Oliver Nitsche
fnitsche@ldeo.columbia.edu

Columbia University

Lamont-Doherty Earth Observatory
Palisades, New York

Location

Supporting Stations: RV/IB Nathaniel B. Palmer

Research Locations: Wilkes Land Shelf

Description

This project will investigate whether a cross-shelf trough exists in front of a significant ice stream along a section of the East Antarctic continental margin. If the trough exists, researchers will use a conductivity-temperature-depth (CTD) rosette to collect water samples to identify if the trough could provide pathways for warm ocean-water intrusion to the underside of the ice shelves and thus increase melting.

Field Season Overview

Field team members will sail on the RV/IB Nathaniel B Palmer from Lyttelton, New Zealand. They will conduct multibeam surveys and water-column measurements in front of several ice streams along the East Antarctic continental margin and shelf between Victoria Land and Prydz Bay. The cruise will end in Punta Arenas, Chile.

Deploying Team Members

- Raul Guerrero
- Kevin McLain
- Frank-Oliver Nitsche (PI)
- Dominique Richardson



Project Indexes

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Project Web Sites

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Project Title

Constraining Englacial Temperatures Through Active Seismic Methods

Summary

Event Number:

I-161-M
NSF/PLR Award 1043675

Program Manager:

Dr. Julie Palais

ASC POC/Implementer:

John Rand / Ryan Wallace



Principal Investigator

Dr. Leo Everett Peters
lep144@psu.edu

Pennsylvania State University

Department of Geosciences
University Park, Pennsylvania

Location

Supporting Stations: McMurdo Station

Research Locations: West Antarctic Ice Sheet (WAIS) Divide

Description

Researchers will perform a borehole seismic experiment at the West Antarctic Ice Sheet (WAIS) Divide drill site to measure how the propagation of seismic waves are affected at various depths through the ice column, with a specific focus on seismic attenuation in ice. Since seismic attenuation in ice exhibits a temperature dependence, researchers aim to compare these measurements through the ice column to borehole temperature observations and develop a relationship for correlating measured englacial seismic attenuation to temperature. Surface seismic observations of seismic attenuation through the ice column will also be made to see how well these results compare to the borehole data. Ultimately, researchers hope to develop a surface-based active seismic approach for inferring the temperature profile through ice in locations where it is not feasible to obtain in-situ measurements.

Field Season Overview

Two field team members will deploy by aircraft to WAIS Divide. They will use a snow machine to travel from site to site. They will collect a vertical seismic profile, initiating the seismic sources (explosives) in more than 20-meter-deep holes at various distances from the WAIS Divide borehole. A seismometer will be lowered downhole to record the released energy and image the ice column.

Deploying Team Members

- Nicholas Holschuh
- Kiya Riverman

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

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- Leo Peters (PI)



Project Title

The Taylor Glacier, Antarctica, Horizontal Ice Core: Exploring Changes In The Natural Methane Budget In A Warming World And Expanding The Paleo-Archive

Summary

Event Number:

I-159-M
NSF/PLR Award 1245659

Program Manager:

Dr. Julie Palais

ASC POC/Implementer:

John Rand / Meghan Walker



Principal Investigator

Dr. Vasilii Victorovich Petrenko
vpetrenk@ur.rochester.edu

University of Rochester

Rochester, New York

Location

Supporting Stations: McMurdo Station

Research Locations: Taylor Glacier

Description

The objective of this project is to continue the use of the Taylor Glacier ice ablation area for paleoenvironmental studies and to expand the understanding of the surface-ice stratigraphy. Researchers will examine the methane record, cosmogenic ^{14}C , variations of CO_2 , nitrous oxide and their isotopes, and will continue age mapping of the ice. In addition, they will conduct pilot studies of new tracers, filter meltwater for extraterrestrial dust and organic material, and perform on-site methane isotopic analyses.

Field Season Overview

A science team of 13 will camp on Taylor Glacier for two months. They will drill at numerous locations on the glacier to depths up to 70 meters. Large-diameter cores will be extracted and melted on-site, from which the released air will be captured and transported to home institutions for further analysis. In addition, numerous smaller-diameter cores will be drilled at various locations on the glacier. A small quantity of ice will also be shipped to the home institution.

Deploying Team Members

- Thomas Bauska
- Edward Brook (Co-PI)
- Michael Dyonisius
- Michael Jayred
- Kathryn Schroeder
- Jeffrey Severinghaus (Co-PI)
- Sarah Shackleton
- Peter Sperlich

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- James Menking
- Vasilii Petrenko (PI)
- Rachael Rhodes

- Isaac Vimont
- Jacob Ward



Project Title

Velvet Ice - Evolution Of Fabric And Texture In Ice At WAIS Divide, West Antarctica

Summary

Event Number:

I-166-M
NSF/PLR Award 1142167

Program Manager:

Dr. Julie Palais

ASC POC/Implementer:

John Rand / Ryan Wallace



Principal Investigator

Dr. Erin Pettit
pettit@gi.alaska.edu

University of Alaska Fairbanks

Fairbanks, Alaska

Location

Supporting Stations: McMurdo Station

Research Locations: West Antarctic Ice Sheet (WAIS) Divide

Description

Velvet Ice is a project linking the microstructure of ice to the modern deformation and climate history at West Antarctic Ice Sheet (WAIS) Divide. Researchers will use an acoustic televiwer downhole instrument to measure the shape and tilt of the borehole at high resolution to form a basis for measuring future changes in borehole shape and tilt. The acoustic televiwer can also provide information to map tilted layers or other anomalies in the borehole wall. Researchers will correlate these measurements with laboratory measurements of ice microstructure and the other ice core and borehole measurements from other WAIS Divide projects.

Field Season Overview

A research team of four will fly to WAIS Divide for approximately four weeks. They will use an acoustic televiwer downhole instrument to measure the shape and tilt of the borehole at high resolution to form a basis for measuring future changes in borehole shape and tilt. The acoustic televiwer can also provide information to map tilted layers or other anomalies in the borehole wall. Researchers will correlate these measurements with laboratory measurements of ice microstructure and the other ice core and borehole measurements from other WAIS projects.

Deploying Team Members

- Yamini Balassoubramaniane
- Rachel Obbard (Co-PI)
- Christina Carr
- Erin Pettit (PI)

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Tiffany Green



Project Title

Developing New Science And Technology For Subglacial Studies Of The Whillans Ice Plain And West Antarctic Ice Sheet.

Summary

Event Number:

C-524-M
NSF/PLR Award 1346249

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

John Rand / Matthew Kippenhan



Principal Investigator

Dr. Frank Rack
frack2@unl.edu

University of Nebraska Lincoln

Department of Geosciences
Lincoln, Nebraska

Location

Supporting Stations: McMurdo Station

Research Locations: Subglacial Lake Whillans

Description

The aim of the Whillans Ice Stream Subglacial Access Research Drilling (WISSARD) project is to drill into the hydrological system beneath the Whillans Ice Stream at three different locations: Subglacial Lake Whillans at the top of the system; the subglacial river/stream between the lake and the grounding line; and the ocean beneath where the Whillans Ice Stream flows into the Ross Ice Shelf. This campaign will require three field seasons. During the first month of the 2012-13 field season, the drill system was tested on the McMurdo Ice Shelf. Later that season, the system was traversed to the top of the Whillans Ice Stream to begin penetration into Subglacial Lake Whillans. The drill system was left on site, and the rest of the project will be carried out over the next two field seasons.

Field Season Overview

The WISSARD drill will be transported from the Subglacial Lake Whillans (SLW) winter site to the grounding zone (GZ) field site, repaired, and reactivated in order to make a hole through the ice (about 800 meters thick at this location) that will allow science tools/instruments to access the subglacial environment. A second borehole may be attempted to recover basal ice by utilizing a basal-ice coring system adjacent to the main borehole. Once both boreholes are complete and any additional reaming is no longer required, the drill will be shut down and prepared for the traverse back to McMurdo Station and stored on winter snow berms until further guidance is provided.

Deploying Team Members

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- Daren Blythe
- Justin Burnett
- Dennis Duling
- Dar Gibson

- Jeffrey Lemery
- Frank Rack (PI)
- Graham Roberts
- Robert Zook



2014-2015 USAP Field Season

Project Detail

Project Title

WISSARD Roving Drill

Summary

Event Number:

C-530-M

NSF/PLR Award 1346249

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Chad Naughton / Curt LaBombard



Principal Investigator

Dr. Frank Rack

frack2@unl.edu

University of Nebraska Lincoln

Department of Geosciences

Lincoln, Nebraska

Location

Supporting Stations: McMurdo Station

Research Locations: McMurdo Ice Shelf

Description

The University of Nebraska Antarctic Drilling Project (ANDRILL) office's roving drill will make possible the research goals defined in Projects B-259-M (Schmidt-SIMPLE) and B-174-M (Kim) by drilling into the McMurdo Ice Shelf at six locations to provide access for two remotely operated vehicles (ROV). The ROV work in 2014-15 will help define the location for ARTEMIS in 2015-16, the next generation ENDURANCE autonomous ROV (B-259-M Schmidt).

Field Season Overview

Three drillers from University of Nebraska-Lincoln (UNL) will deploy to McMurdo Station in early- to mid-October to effect repairs/upgrades on the roving drill. This may require moving the drill from its current location to the Scott Base transition for easier access. The field team anticipates roughly two weeks of repair work, after which the drill will be traversed to the first drill site. At each site, the drill will make a hole in the ice large enough for the Yellowfin ROV to access the sub-ice environment for several hours. The current time estimate includes four days for drilling and science at each location, plus one day to move between sites. It is anticipated that the project will be complete by the end of November, after which the drillers will transition to the WISSARD project (C-524).



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2014-2015 USAP Field Season

Project Detail

Project Title

Astrobiology Science And Technology For Exploring Planets (ASTEP)

Summary

Event Number:

B-259-M

NASA Award 11-ASTEP11-0007

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Addie Coyac / Curt LaBombard / Chad Naughton



Principal Investigator

Dr. Britney Elyce Schmidt

britneys@eas.gatech.edu

Georgia Institute of Technology

Earth & Atmospheric Sciences

Atlanta, Georgia

Location

Supporting Stations: McMurdo Station

Research Locations: McMurdo Ice Shelf

Description

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

Field Season Overview

Field team members will deploy two remotely operated vehicles (ROVs), SCINI (Submersible Capable of under Ice Navigation and Imaging) and Icefin, through hot water-drilled access holes in the McMurdo Ice Shelf. Hot water drilling will be provided by project C-530-M (Rack). They will drill a total of six holes through the ice shelf and will spend roughly one week at each hole. The team will be based out of McMurdo Station and will drive to the site daily. They will also maintain a camp at each hole to allow staff to stay onsite in case of inclement weather.

Deploying Team Members

- Jacob Buffo
- Anthony Spears
- Matthew Meister
- Catherine Walker



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▪ Britney Schmidt (PI)

▪ Michael West



2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

C-019-L/P
NSF/PLR Award 0823101

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Adam Jenkins / Jamee Johnson / Samina Ouda



Principal Investigator

Dr. Oscar Schofield
oscar@marine.rutgers.edu

Rutgers University

Institute for Marine & Coastal Sciences
New Brunswick, New Jersey

Location

Supporting Stations: ARSV Laurence M. Gould, Palmer Station

Research Locations: LTER Study Site / Palmer Station

Description

Project researchers seek to understand how changes in phytoplankton dynamics, such as an increase in fresh water due to melting ice, propagate through the ecosystem, ultimately affecting fish, seabirds, and marine mammals. Because photosynthesis is driven by sunlight, characterizing the quality and quantity of light available for use by phytoplankton is important. Researchers will deploy a wide range of sensors to measure these optical properties, which, in turn, will help understand the underlying role of light variability in phytoplankton dynamics. In addition to their role at the base of the marine ecosystem, the fate of phytoplankton biomass is important to understanding climate-change feedback. By conducting experiments to study phytoplankton physiology, researchers hope to develop a clear picture of the fate of phytoplankton biomass once it enters the Antarctic ecosystem.

Field Season Overview

Field team members will (1) Maintain the phytoplankton Palmer time series measurements at LTER stations B and E. The time series consists of water collection for HPLC, 14C productivities, and Chlorophyll a measurements. These measurements are complemented with a full array of multi- and hyperspectral optical measurements. Efforts will focus on resolving both the apparent and inherent optical properties. The optics will be complemented by CTD measurements; (2) Expand glider operations to fly four gliders: One FIRE glider, one ADCP glider, and a backscatter glider. These gliders are 200-meter vessel class. One deep 1000-meter glider will be launched and flown to Rothera base; (3) Work with Debbie Steinberg's LTER team to calibrate the glider ADCP instruments using

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live zooplankton (krill, salps, etc.) maintained at Palmer. (4) Focus on defining the temperature impact on overall community ecology and physiology of phytoplankton populations collected from stations B and E by examining the response to temperature of the phytoplankton in a series of incubations, within a custom tempertron that will allow for community responses to be defined. (5) Use the tow-fish when transiting between Stations B and E to help fill in data gaps for the long standing time series. (6) Conduct several videoconferences with classrooms and other groups as part of the LTER mandated educational outreach effort. Project participants will also sail onboard the annual 28-day LTER cruise on the ARSV Laurence M. Gould (LMG) from January 1 to February 15th. Vessel-based activities include collecting samples by trawling, conducting multiple CTD casts, deploying gliders and servicing five physical oceanographic moorings. A sediment trap mooring will be recovered and re-deployed at the LTER site near Hugo Island. Three- to five-day field camps will take place on Avian and Charcot Islands. Zodiac support is required for deploying to these field sites, as time and ice conditions permit. During the time at process stations, Zodiac support will be allocated for glider operations and to deploy satellite tags on baleen whales, collect biopsy samples, and individual photo-ID data. Two fully-equipped radioisotope vans will be used for C-14 and for 3H (tritium).

Deploying Team Members

- Ana Filipa Carvalho
- James Fiorendino
- Francis McQuarrie
- Oscar Schofield (PI)
- Philip Sontag
- Nicole Waite



2014-2015 USAP Field Season

Project Detail

Project Title

Natural Iron Fertilization And Bioactive Metal Dynamics On The Western Antarctic Peninsula Shelf

Summary

Event Number:

B-203-L
NSF/PLR Award 1142250

Program Manager:

Dr. Peter Milne

ASC POC/Implementer:

Adam Jenkins



Principal Investigator

Dr. Robert Michael Sherrell
sherrell@marine.rutgers.edu

Rutgers University

Institute for Marine & Coastal Sciences
New Brunswick, New Jersey

Location

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

Description

The shelf waters off the Western Antarctic Peninsula (WAP) constitute a natural iron (Fe) fertilization zone in which Fe inputs, ultimately of continental origin, relieve the micronutrient limitation characteristic of the broader Southern Ocean Antarctic Circumpolar Current (ACC) waters just off the shelf break. The objectives of this project are to build on preliminary surface-distribution trace-metal data by launching a major effort to quantify the three-dimensional distributions of, and processes driving, dissolved concentrations of Fe as well as the distributions of bioactive metals manganese, zinc, cobalt, copper, and nickel on the WAP shelf. Over the course of this project, researchers will test the following hypotheses: (1) Fe flux to the WAP euphotic zone is dominated by upwelling of upper circumpolar deep water (UCDW) modified by exchange with shelf sediments; (2) The euphotic zone over the seaward half of the shelf includes major Fe-limited regions, causing deep Chlorophyll-a max as a result of Fe inputs mixed in from deeper pycnocline waters; (3) Dissolved Fe (<0.2 microns) and euphotic zone particulate Fe/C serve as good proxies for bioavailable Fe, even though bioavailable Fe is a labile sub-fraction of the dissolved pool; and (4) Distribution of Neodymium isotopes on and off the shelf demonstrates that the shelf system exports continentally-derived Fe to the pelagic ACC, augmenting Fe from spring sea-ice melting.

Field Season Overview

Primary activities will be focused on deployments of, and sampling from, the trace metal clean (TMC) conductivity-temperature-depth (CTD) rosette system, from which researchers will collect dissolved, particulate, and colloidal trace metal samples. They expect up to 24 deployments over the course of the cruise, conducted back-to-back, with

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deployments of the ship's rosette. In addition, they will conduct deployments to provide metal-clean water for incubation experiments planned by LTER PI Schofield's (C-019) group.

Deploying Team Members

- Jessica Fitzsimmons
- Robert Sherrell (PI)



2014-2015 USAP Field Season

Project Detail

Project Title

Painting Between The Ice: Antarctic Biodiversity From The Dry Valleys To The Sea Floor

Summary

Event Number:

W-486-M
NSF/PLR Award 1344504

Program Manager:

Mr. Peter West

ASC POC/Implementer:

Sune Tamm / Peter Rejcek



Principal Investigator

Undefined Lily Jasmine Skolnick Simonson
lilysimonson@gmail.com

California Poly State University

Los Angeles, California

Location

Supporting Stations: McMurdo Station

Research Locations: McMurdo Sea Ice / Taylor Valley

Description

This project will collaborate with scientists in Antarctica to explore and paint the ecosystems surrounding Ross Island and the McMurdo Dry Valleys. The artist posits that Antarctic invertebrates and the environments in which they thrive may be on the verge of profound transformation. She will create a series of mural-size paintings based on organisms native to the Southern Ocean's sea floor and the soil of the Dry Valleys. The work will magnify these invertebrates to human scale and delve into physical and hydrological features that support them. This new body of work will expand the artist's longstanding practice of painting larger-than-life scenes of invertebrates flourishing in extreme environments and using these paintings as a platform to excite audiences about scientific revelations.

Field Season Overview

During the first phase of this project, the artist will be based at McMurdo Station and will make day trips to the sea ice where she will dive with ASC divers to sketch in situ. She will then create large-scale paintings in a makeshift studio at McMurdo Station, expanding on the in-situ sketches. The second phase will involve work at field sites in the Dry Valleys in collaboration with the Long-Term Ecological Research (LTER) projects of Diana Wall (C-507-M) and Joe Levy (G-084-M).

Deploying Team Members

- Lily Simonson (PI)



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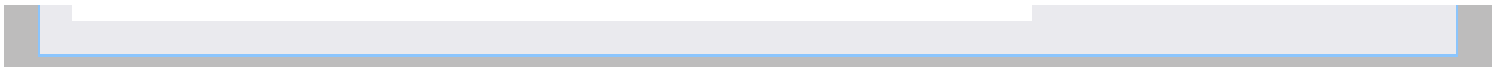
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Project Detail

Project Title

A Geochemical Study Of The Nature And Evolution Of Mantle Upwelling Beneath Ross Island And Its Relationship To Tectonics In The West Antarctic Rift System

Summary

Event Number:

G-092-M

NSF/PLR Award 1141167

Program Manager:

Dr. Lisa Clough

ASC POC/Implementer:

Judy Shiple / Meghan Walker



Principal Investigator

Dr. Kenneth W Sims

ksims7@uwyo.edu

University of Wyoming

Department of Geology and Geophysics
Laramie, Wyoming

Location

Supporting Stations: McMurdo Station

Research Locations: Lewis Bay

Description

This project will conduct a detailed field- and laboratory-based geochemical study focused on understanding the genesis, evolution, and tectonic context of alkaline magmatism on Ross Island. The fieldwork focuses on the collection of volcanic rocks from numerous locations on Ross Island, with emphasis on the Lewis Bay area, Mount Terror, Mount Bird, and Hut Point Peninsula.

Field Season Overview

Two field team members will travel by helicopter to various sites around the coast of Ross Island to sample volcanic rocks. Between flying days, work will be undertaken by snow machine and tracked vehicle along Hut-Point Peninsula. Samples will be shipped to the home institution.

Deploying Team Members

- John Catto
- Kenneth Sims (PI)

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Project Detail

Project Title

Lake Joyce Microbialites - NSF

Summary

Event Number:

G-063-M

NASA Award 11-EXO11-0013

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Sune Tamm / Meghan Walker



Principal Investigator

Dr. Dawn Yvonne Sumner

dysumner@ucdavis.edu

University of California Davis

Geology Department

Davis, California

Location

Supporting Stations: McMurdo Station

Research Locations: Lake Joyce

Description

Researchers will characterize microbial mats that are growing on the floor of Lake Joyce. Previous results demonstrate that these mats are morphologically similar to fossil mats that are 2.5 to 3 billion years old in diverse locations around the globe. They will use the living mats in Lake Joyce to develop a model for biological, sedimentological, and geochemical processes that influence microbial mat morphology and will use that model to help constrain processes influencing ancient mat growth.

Field Season Overview

Seven field team members will camp at Lake Joyce for seven weeks. They will melt a dive hole through the lake ice and divers will collect samples by push core and spatula for analysis on the surface. Other diving activities will include collecting underwater video transects of microbial mats and measuring in-situ environmental conditions with hand-held data loggers.

Deploying Team Members

- Ian Hawes (Co-PI)
- Anne Jungblut (Co-PI)
- Megan Krusor
- Sasha Leidman
- Tyler Mackey (Co-PI)
- Lucy Mowchan



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Project Title

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

Summary

Event Number:

G-085-M
NSF/PLR Award 1341284

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Sune Tamm / Meghan Walker



Principal Investigator

Dr. Kate Swanger
Kate_Swanger@uml.edu

University of Massachusetts

Lowell, Massachusetts

Location

Supporting Stations: McMurdo Station

Research Locations: Dry Valleys

Description

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

Field Season Overview

Four researchers will deploy by helicopter to four different sites in the McMurdo Dry Valleys. The team will set up tent-based remote field camps at Pearse Valley, the North Fork of Wright Valley, and the Rhone Glacier. During the first field season, the main research activities will include: Field mapping sedimentology, ground-penetrating radar, and optically-stimulated-luminescence and cosmogenic-nuclide sampling, meteorological and soil data accumulation. Ten small meteorological stations will remain in the field over

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the winter.

Deploying Team Members

- Myles Danforth
- Regina DeWitt
- Seth Roberts
- Kate Swanger (PI)



Project Title

Optical Fabric And Fiber Logging Of Glacial Ice

Summary

Event Number:

I-172-M
NSF/PLR Award 1142010

Program Manager:

Dr. Julie Palais

ASC POC/Implementer:

John Rand / Ryan Wallace



Principal Investigator

Dr. Joseph John Talghader
joey@umn.edu

University of Minnesota

Minneapolis, Minnesota

Location

Supporting Stations: McMurdo Station

Research Locations: West Antarctic Ice Sheet (WAIS) Divide

Description

The research team has two primary goals for this project: (1) To introduce fiber-optic based tools that circumvent the need to have power supplies, laser sources, optics, detectors, and electronic processing capabilities mounted on the unit that descends into the borehole, thus keeping most of the system weight, size, and complexity on the surface; (2) To add some level of fabric measurement capability to borehole logging tools using polarized light backscattered from the borehole ice and analyzed using polarization-sensitive optics.

Field Season Overview

Researchers will travel to WAIS Divide to test borehole logging instruments. They will have one fiber-based instrument whose purpose is to compare the quality of data taken to the optical dust logger that another researcher will deploy in the main WAIS Divide borehole. They will also have another optical instrument that will attempt to measure average fabric and grain size. Since the project is one of technology development, the most important work can be done in the secondary boreholes rather than the primary, but if there is open space in the schedule, they may also test their fiber tool in the main hole.

Deploying Team Members

- Ryan Bay (Co-PI)
- Joseph Talghader (PI)
- Merlin Mah

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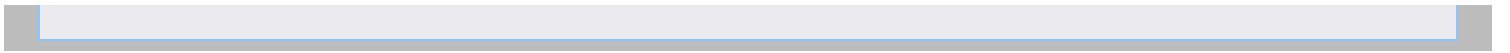
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Project Title

Life In A Volcanic Landscape: Early Jurassic Paleoenvironments And Paleobotany

Summary

Event Number:

G-496-M
NSF/PLR Award 1142495

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Sune Tamm / Meghan Walker



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: Coombs Hills / Prince Albert and Shapeless Mountains

Description

The record of Jurassic plant life in continental Antarctica is sparse, possibly due to tectonic and magmatic activity associated with the breakup of Gondwana and the emplacement of the Ferrar Large Igneous Province. This project will examine early Jurassic floras and paleoenvironments in Southern Victoria Land using sedimentology, stratigraphy, geochemistry, and paleobotany. The work will provide much-needed baseline data on the composition of the floras as well as the depositional and growth environments of these southernmost floras. The data will contribute to understanding plant life and paleoenvironment in Antarctica during a time of increasing volcanism and will provide floral information that can be compared to other, better known floras elsewhere in Gondwana.

Field Season Overview

Eight field team members will travel by Twin Otter aircraft to Allan Hills. They will camp there for the duration of their project, making day trips by helicopter to Carapace Nunatak. The field team will measure sections and collect fossil plants. Collected specimens will be returned to the home institution for processing and analysis.

Deploying Team Members

- Andrew Brown
- Erik Gulbranson (Co-PI)
- David Buchanan
- Carla Harper

Project Indexes

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Charles Daghlian

- Anne-Laure Decombeix
- Ignacio Escapa

Lauren Michel

- Rudolph Serbet (Team Leader)



Project Title

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

Summary

Event Number:

A-119-M/S
NSF/PLR Award 1143587

Program Manager:

Dr. Vladimir Papitashvili

ASC POC/Implementer:

Samina Ouda / Paul Sullivan



Principal Investigator

Dr. Michael Taylor
mike.taylor@usu.edu

Utah State University

Center for Atmospheric and Space Sciences
Logan, Utah

Location

Supporting Stations: McMurdo Station, South Pole Station

Research Locations: B2 Science Building

Description

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

Field Season Overview

Deploying field team members will spend five days at South Pole Station where they will inspect and service the IR imaging system.

Deploying Team Members

- Pierre-Dominique Pautet
- Michael Taylor (PI)

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

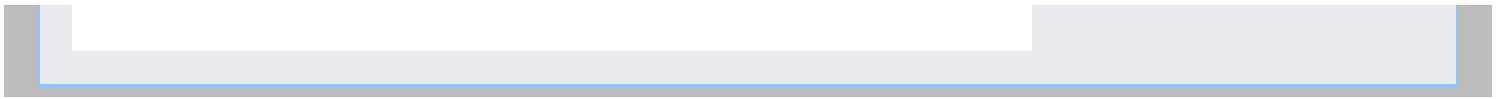
Project Web Sites

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Project Title

Boundary Control Of Upwelling In Southern Drake Passage: Whither Weddies?

Summary

Event Number:

O-275-L
NSF/PLR Award 1246460

Program Manager:

Dr. Peter Milne

ASC POC/Implementer:

Addie Coyac



Principal Investigator

Dr. Andrew F Thompson
andrewt@caltech.edu

California Institute of Technology

Geological and Planetary Sciences
Pasadena, California

Location

Supporting Stations: ARSV Laurence M. Gould

Research Locations: Southern Drake Passage

Description

The extension of the Antarctic Peninsula into the Antarctic Circumpolar Current (ACC) leads to the injection of Weddell Sea waters, with its unique physical and biogeochemical properties, into the global circulation. Exchange between the Weddell Sea and the ACC depends intricately on a collection of interacting frontal currents that occupy the continental shelf and slope along the southern boundary of the Drake Passage. Satellite and in-situ observations suggest that mesoscale eddies and variability emanating from the Weddell Sea, or "Weddies," are prevalent, yet the physical processes that lead to their formation and evolution (e.g. baroclinic and barotropic instabilities, thermohaline intrusions) remain uncertain. The objective of this proposal is to observe and quantify the dominant spatial and temporal scales of variability in this region as well as the physical mechanisms that give rise to it.

Field Season Overview

Vessel technicians will assist with the deployment of four gliders in two separate locations from the ARSV Laurence M. Gould (LMG). The gliders will remain in the water collecting data for five months. They will be recovered on a later LMG cruise and returned to the home institution.

Deploying Team Members

- Xiaozhou Ruan
- Andrew Thompson (PI)
- Janet Sprintall (Co-PI)

Project Indexes

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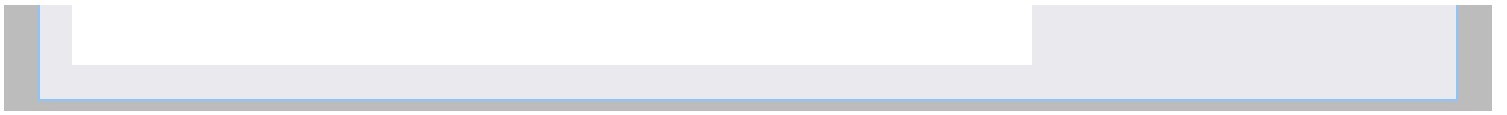
Project Web Sites

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2014-2015 USAP Field Season

Project Detail

Project Title

Collaborative Research: Flow, Turbulence, And Mixing In Mid-Ocean Ridge Fracture-Zone Canyons

Summary

Event Number:

O-408-N
NSF/PLR Award 1235094

Program Manager:

Mr. Eric Itsweire

ASC POC/Implementer:

Addie Coyac



Principal Investigator

Dr. Andreas M Thurnherr
ant@ldeo.columbia.edu

Columbia University

Lamont-Doherty Earth Observatory
Palisades, New York

Location

Supporting Stations: RV/IB Nathaniel B. Palmer

Research Locations: Mid-Atlantic Ridge

Description

The primary aim of this project is to improve understanding of the dynamics over the corrugated flanks of slow-spreading mid-ocean ridges. To that end, researchers will conduct high-resolution surveys of hydrography, three-dimensional flow, internal-wave activity, and mixing. The surveys will be conducted in two neighboring canyons and over the intervening "topographic spur" in the Brazil Basin Tracer Release Experiment (BBTRE) region to determine the relative contributions of tidal and sill-related mixing. Insights gained during this project will improve understanding of abyssal mixing in many different regions with similar bottom topography and provide the basis for establishing better parameters of the effects of turbulence and mixing in large-scale circulation and climate models that cannot resolve these small-scale processes.

Field Season Overview

The field team will sail on a 45-day cruise on the RV/IB Nathaniel B. Palmer departing from and returning to Punta Arenas, Chile. The area of study lies over the western flank of the Mid-Atlantic Ridge (MAR). They will perform: (1) A conductivity-temperature-depth / acoustic Doppler current profiler (CTD / ADCP) survey of two neighboring canyons on the MAR flank; (2) A topographic survey using the ship's multibeam sonar system; and (3) Deployments of four McLane Moored Profiler (MMP) moorings and three ADCP mini moorings.

Deploying Team Members

Project Indexes

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- Bruce Huber
- Philip Mele

- Andreas Thurnherr (PI)
- Scott Worriow



2014-2015 USAP Field Season

Project Detail

Project Title

Research In Undergraduate Institutions (RUI): Synergistic Effects Of Ocean Acidification And Warming On Larval Development In Antarctic Fishes

Summary

Event Number:

B-207-M

NSF/PLR Award 1142122

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Samina Ouda / Beverly Walker



Principal Investigator

Dr. Anne Elizabeth Todgham

todgham@ucdavis.edu

University of California Davis

Davis, California

Location

Supporting Stations: McMurdo Station

Research Locations: McMurdo Sea Ice

Description

The primary goal of this group is to understand the interaction of ocean acidification and the projected rise in mean sea-surface temperature on the physiological performance, growth, and development of early-life history stages (eggs, larvae, and juveniles) of Notothenioids, the dominant fish of the Antarctic marine ecosystem.

Field Season Overview

The field team will be making daily to twice-daily trips on the sea ice where they will erect fish huts and use a Reed Drill to drill eight to 10 holes through which they will fish with traps. In addition, support contractor divers will collect fish and fish eggs for further study in the Crary Lab. Some samples will be returned to the home institution.

Deploying Team Members

- Brittany Bjelde
- Nann Fanguie
- Erin Flynn
- Nathan Miller
- Anne Todgham (PI)



Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.



Project Web Sites

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2014-2015 USAP Field Season

Project Detail

Project Title

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

Summary

Event Number:

G-089-M
NSF/PLR Award 1142518

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Sune Tamm / Elizabeth Kauffman



Principal Investigator

Dr. Douglas Wiens

doug@wustl.edu

Washington University

Department of Earth and Planetary Sciences
St. Louis, Missouri

Location

Supporting Stations: McMurdo Station

Research Locations: Ross Ice Shelf / Siple Dome

Description

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

Field Season Overview

Field team members will establish a temporary camp on the Ross Ice Shelf from which they will fly by Twin Otter aircraft to various locations on the shelf to install 18 seismic stations.

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

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Deploying Team Members

- Robert Anthony
- Rick Aster (Co-PI)
- Chen Cai
- Patrick Shore (Team Leader)
- Patrick Shore (Team Leader)
- Douglas Wiens (PI)



2014-2015 USAP Field Season

Project Detail

Project Title

Collaborative Research: Deglacial Ice Dynamics In The Weddell Sea Embayment Using Sediment Provenance

Summary

Event Number:

G-297-M

NSF/PLR Award 1342213

Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

Sune Tamm / Elizabeth Kauffman



Principal Investigator

Dr. Trevor Williams

trevor@ideo.columbia.edu

Columbia University

Lamont Doherty Earth Observatory
Palisades, New York

Location

Supporting Stations: McMurdo Station

Research Locations: Thomas Hills, Stephenson Bastion / Whichaway Nunataks

Description

The overarching goal of this study is to improve the understanding of ice-sheet response to changing climate in the Weddell Sea embayment of Antarctica. This goal will be pursued via two main objectives: (1) Establish a comprehensive isotope geochemical source signature of glacially eroded detritus carried by each of the major ice streams that flow into the Weddell Sea embayment; and (2) Document the sequence and location of ice retreat during the last three deglaciations, based on changes in the provenance of ice-rafted debris and glacially eroded material in two deep-water sediment cores from the Weddell Sea continental rise.

Field Season Overview

A field party of four will travel by LC-130 aircraft to the Thomas Hills where they will camp for four weeks. Traveling by snow machine, they will collect samples from exposed tills on the edge of the Foundation Ice Stream. Two day trips by Twin Otter aircraft will be made by two team members to Stephenson Bastion and Whichaway Nunataks. Till samples will be collected at each of the sites.

Deploying Team Members

- Peter Braddock
- Kathy Licht (Co-PI)
- Sidney Hemming (Co-PI)
- Trevor Williams (PI)

Project Indexes

Find information about projects approved for the 2014-2015 USAP field season using the available indexes.

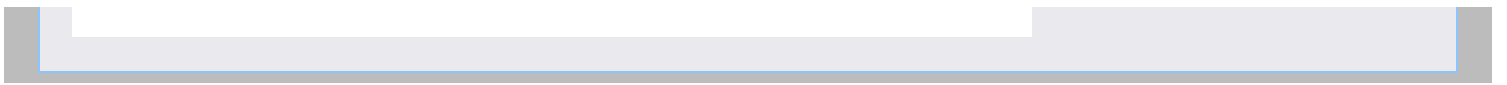
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2014-2015 USAP Field Season

Project Detail

Project Title

Ocean Acidification: Pteropod Swimming Behavior As A Bioassay For Ocean Acidification

Summary

Event Number:

B-048-P
NSF/PLR Award 1246296

Program Manager:

Dr. Charles Amsler

ASC POC/Implementer:

Addie Coyac / Jamee Johnson



Principal Investigator

Dr. Jeannette Yen
jeannette.yen@biology.gatech.edu

Georgia Institute of Technology

School of Biology
Atlanta, Georgia

Location

Supporting Stations: Palmer Station
Research Locations: LTER Study Area / Palmer Aquarium

Description

Researchers seek to develop a biological assay (bioassay) for ocean acidification based on the swimming behavior of a key sentinel of ocean acidification, thecosome pteropods (sea butterflies). Pteropods are responsible for more than 40 percent of the community grazing impact in the Southern Ocean and are capable of capturing in their mucus feeding nets 63 percent of the total zooplankton in the Ross Sea. Reduced survivorship of pteropods is likely to have a strong affect on the aquatic ecosystem. With ocean acidification, the pteropod shell will thin because the aragonite is so soluble. With a behavioral bioassay, researchers expect to see a change in the frequency of the flapping parapodia (two wing-like lobes used in swimming) and the wobble of the swimming organism. Since behavioral data can be gathered immediately, this bioassay may provide early warning of the impending onset of ocean acidification effects on this important member of the plankton.

Field Season Overview

Field team members will travel to Palmer Station on the ARSV Laurence M. Gould. They will collect live samples of zooplankton while underway and will collect additional samples by Zodiac inflatable boat. They will use infrared laser illuminated videography on station to collect data on the swimming responses of their live specimens. Some specimens will be returned to the home institution for further study.

Deploying Team Members

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- Deepak Adhikari
- David Fields
- Roi Holtzman

- Marc Weissburg
- Jeannette Yen (PI)



2014-2015 USAP Field Season

Project Detail

Project Title

Geophysical Investigation Of Marie Byrd Land Lithospheric Evolution - GIMBLE

Summary

Event Number:

G-099-M

NSF/PLR Award 1043761



Program Manager:

Dr. Mark Kurz

ASC POC/Implementer:

John Rand / Elizabeth Kauffman

Principal Investigator

Dr. Duncan A Young

duncan@ig.utexas.edu

University of Texas Austin

Institute for Geophysics

Austin, Texas

Location

Supporting Stations: McMurdo Station

Research Locations: Byrd Camp

Description

Marie Byrd Land represents a significant highland dividing the Amundsen Sea Embayment (ASE) of West Antarctica from its Ross Embayment. Its topographic evolution likely played a key role in the origin of the West Antarctic Ice Sheet (WAIS). A number of contesting hypotheses for the origin of Marie Byrd Land make predictions for the potential fields and the geomorphology of the underlying crust. This project will perform a 16-flight aerogeophysical survey of Marie Byrd Land, collecting three key datasets: gravity, magnetics, and radar data. Gravity with collocated radar will be used to constrain the compensation state of Marie Byrd Land; magnetics will be used to assess the potential for ongoing sub-ice volcanism (and thus qualitatively assess heat flow); and ice-penetrating radar will be used to map out, at five-kilometer resolution, the topography of the interior slope of Marie Byrd Land's bedrock, to understand the evolution of erosion and thus regional topography.

Field Season Overview

Team members will operate from Williams Field and WAIS Divide camp, using a Basler aircraft modified to accommodate their radar, altimetry, and gravity suite of instruments. Key measurements will include ice-penetrating radar, airborne gravity and magnetics, and laser altimetry. Daily operations will revolve around one 6.5-hour flight per day, followed by post-flight data processing, quality control, and flight planning.

Deploying Team Members

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- Donald Blankenship (Co-PI)
- Jamin Greenbaum
- Gregory Ng
- Thomas Richter
- Duncan Young (PI)