



USAP Field Season

2009-2010



PROJECT INDEXES

GO

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



PROJECT WEB SITES

GO

Link to current USAP project websites and find information about the research and the people involved.

MORE INFORMATION:

Technical Events

Station Schedules

Air Operations

Staffed Field Camps

Event Numbering System



Science Program Indexes: 2009-2010

- [Project Web Sites](#)
- [Principal Investigator Index](#)
- [USAP Program Indexes](#)
 - ➔ [Aeronomy and Astrophysics](#) Dr. Vladimir Papitashvili, program manager
 - ➔ [Organisms and Ecosystems](#)
Dr. Roberta Marinelli, program manager
 - ➔ [Earth Sciences](#)
Dr. Alexandra Isern, program manager
 - ➔ [Glaciology](#)
Dr. Julie Palais, program manager
 - ➔ [Ocean and Atmospheric Sciences](#)
Dr. Peter Milne, program manager
 - ➔ [Artists and Writers](#)
Peter West, program manager
 - ➔ [International Polar Year \(IPY\) Education and Outreach](#)
Renee D. Crain, program manager
Valentine Kass, program manager
Sandra Welch, program manager
 - ➔ [Integrated System Science](#)
Dr. Lisa Clough, program manager
- [Institution Index](#)
- [USAP Station and Ship Indexes](#)
 - ➔ [Amundsen-Scott South Pole Station](#)
 - ➔ [McMurdo Station](#)
 - ➔ [Palmer Station](#)
 - ➔ [RVIB Nathaniel B. Palmer](#)
 - ➔ [ARSV Laurence M. Gould](#)
 - ➔ [Special Projects](#)
 - ➔ [ODEN Icebreaker](#)
- [Event Number Index](#)
- [Technical Event Index](#)
- [Deploying Team Members Index](#)



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- ➔ [Home Page](#)
- ➔ [Station Schedules](#)
- ➔ [Air Operations](#)
- ➔ [Staffed Field Camps](#)
- ➔ [Event Numbering System](#)

Project Web Sites: 2009-2010

[Return to 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 |
| Amsler, Charles | B-022-P | Collaborative Research: The chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula |
| Balco, Gregory | C-515-N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multidisciplinary Approach - Marine and Quaternary Geosciences |
| Barbeau, David L. | G-432-E | COLLABORATIVE RESEARCH: Testing the Polar Gateway Glaciation Hypothesis: the Kinematic, Sedimentary, Water-Mass, and Ice-Volume Record of Drake Passage Opening |
| Besson, Dave | A-123-S | Neutrino Array Radio Calibration |
| Bieber, John | A-120-M | Cosmic ray observations at McMurdo Station |
| Bindschadler, Robert | C-407-M | IPY: Collaborative Research: Ocean-ice sheet interaction in the Amundsen Sea: The keystone of West Antarctic stability |
| Blankenship, Donald | G-098-M | IPY Research: Investigating the cryospheric evolution of the central Antarctic plate (ICECAP) |
| Bristow, William | A-369-M | Southpole (McMurdo) SuperDARN |
| Buesseler, Kenneth O | O-288-L/N | WAP-flux: New Tools to Study the Fate of Phytoplankton Production in the West Antarctic Peninsula |
| Butler, James | O-257-S | South Pole monitoring for climatic |



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

| | | |
|---------------------------|------------------|--|
| | | change |
| Carlstrom, John | A-379-S | Cosmological Research with the 10-meter South Pole Telescope |
| Carlstrom, John | A-370-S | Science Coordination Office for Astrophysical Research in Antarctica (SCOARA-II) |
| Conway, Howard | I-157-M | IPY collaborative research: Constraining the mass balance deficit of the Amundsen Coast's glaciers |
| Deshler, Terry | O-131-M | Measurements of Antarctic ozone and polar stratospheric cloud profiles in a time of decreasing atmospheric chlorine, climate change, and fluctuations in polar vortex strength |
| Domack, Eugene | C-515-N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multidisciplinary Approach - Marine and Quaternary Geosciences |
| Doran, Peter | B-426-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program |
| Emslie, Steven D | B-034-E/M | Stable isotope analyses of pygoscelid penguin remains from active and abandoned colonies in Antarctica |
| Engler, Elise | W-219-M | Unpacking Antarctica |
| Evenson, Paul | A-118-S | Element composition of high-energy solar particles |
| Evenson, Paul | A-120-M | Cosmic ray observations at McMurdo Station |
| Evenson, Paul | A-333-S | IceCube operations and maintenance |
| Foreman, Christine | B-046-M | The biogeochemical evolution of dissolved organic matter in a fluvial system on the Cotton Glacier, Antarctica |

| | | |
|---------------------------|------------------|--|
| Fountain, Andrew | B-425-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valleys LTER program |
| Fraser, Bill | B-013-L/P | Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, apex predator component |
| Garrott, Robert | B-009-M | The demographic consequences of environmental variability and individual heterogeneity in life-history tactics of a long-lived Antarctic marine predator |
| Gogineni, Prasad | I-188-M | Center for Remote Sensing of Ice Sheets (CReSIS) - ground radar and seismic operations |
| Gogineni, Prasad | I-189-M | Center for Remote Sensing of Ice Sheets (CReSIS) - Basler airborne radar survey |
| Gogineni, Prasad | I-185-M | Center for Remote Sensing of Ice Sheets (CReSIS) - Unmanned Aerial System (UAS) operations |
| Hernandez, Gonzalo | A-110-M/S | Austral high-latitude atmospheric dynamics |
| Inan, Umran | A-108-S | A VLF beacon transmitter at South Pole |
| Inan, Umran | A-336-P | ELF/VLF observation of whistler-mode waves, lightning discharge, and gamma-ray events from Palmer Station |
| Inan, Umran | A-327-N | ELF/VLF observation in the southern Pacific Ocean |
| Johns, Bjorn | T-295-M | UNAVCO GPS survey support |
| Joughin, Ian | I-157-M | IPY collaborative research: Constraining the mass balance deficit of the Amundsen Coast's glaciers |
| Karentz, Deneb | B-301-M | A graduate training program in Antarctica: Integrative biology and adaptation of antarctic marine organisms |

| | | |
|--------------------------|------------------|--|
| Kemerait, Robert | G-078-M | Dry Valley seismic project |
| Kennicutt, Mahlon | B-518-M | Temporal variability in natural and anthropogenic disturbance of McMurdo Station |
| Kim, Stacy | B-174-M | Development of a remotely operated vehicle for under-ice research in polar environments |
| Kovac, John | A-039-S | Collaborative Research: BICEP2 and SPUD - A search for inflation with degree-scale polarimetry from the South Pole |
| Kurbatov, Andrei | I-349-M | Collaborative Research: Exploring a 2 million-year-plus ice climate archive-Allan Hills blue ice area (2MBIA) |
| Kyle, Phillip | G-081-M | Mount Erebus Volcano Observatory III (MEVO III): Conduit processes and surveillance |
| LaBelle, James | A-128-S | Collaborative Research: Multi-instrument studies of auroral plasma radiation |
| Lazzara, Matt | O-283-M/S | Collaborative research: Antarctic Automatic Weather Station Program (AWS), 2007-2010 |
| Lee, Richard | B-256-P | Role of dehydration and photoperiodism in preparing an Antarctic insect for the polar night |
| Linder, Chris | W-218-M | Raptor of the South |
| Lyons, W. Berry | B-420-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valleys LTER program |
| Manahan, Donal | B-301-M | A graduate training program in Antarctica: Integrative biology and adaptation of antarctic marine organisms |
| Martinson, Doug | B-021-L | Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, physical oceanography |

| | | |
|---------------------------|------------------|---|
| | | component |
| McKee, Anna | W-217-M | Ice Cores, Translucent Truths from the Antarctic Ice Sheet |
| Mende, Stephen | A-104-S | Antarctic auroral imaging |
| Millan, Robyn | A-144-M | Balloon Array for RBSP Relativistic Electron Losses (BARREL) |
| Mitchell, John | A-140-M | Balloon-borne Experiment with a Superconducting Spectrometer (BESS) |
| Morin, Paul | T-434-M | The Antarctic Geospatial Information Center: Collecting, creating, delivering and archiving for the community |
| Neill, Christopher | Y-609-P | IPY: Improving the public's understanding of polar research through hands-on fellowships for science journalists in the Arctic and Antarctic |
| Nowacek, Douglas P | B-249-N | Collaborative research: The ecological role of a poorly studied Antarctic krill predator, the humpback whale (<i>Megaptera novaeangliae</i>) |
| Nyblade, Andy | G-055-M | Collaborative Research: A broadband seismic experiment to image the lithosphere beneath the Gamburtsev Mountains, East Antarctica |
| Parker, Timothy | T-299-M | IRIS/PASSCAL seismic support |
| Pettit, Erin | C-514-E/N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multi-disciplinary Approach -- Cryosphere and Oceans (LARISSA) |
| Priscu, John | B-422-M | The Role of Resource Legacy on Contemporary Linkages Between Biodiversity and Ecosystem Processes in a Cold Desert Ecosystem: The McMurdo Dry Valley LTER Program |
| Pryke, Clement | A-039-S | Collaborative Research: BICEP2 |

| | | |
|---------------------------|------------------|---|
| | | and SPUD - A search for inflation with degree-scale polarimetry from the South Pole |
| Scambos, Theodore | C-514-E/N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multi-disciplinary Approach -- Cryosphere and Oceans (LARISSA) |
| Seo, Eun-Suk | A-137-M | Cosmic Ray Energetics And Mass (CREAM) |
| Sivjee, Gulamabas | A-129-S | Observation of upper-atmospheric energetics, dynamics, and long-term variations over South Pole Station |
| Sprintall, Janet | O-260-L | The Drake Passage high-density XBT/XCTD program |
| Steffen, Konrad | I-077-E | IPY: Stability of Larsen C Ice Shelf in a warming climate |
| Steinberg, Deborah | B-020-L/P | Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, zooplankton component |
| Stepp, Bill | A-145-M | NASA Long Duration Balloon (LDB) support program |
| Sweeney, Colm | O-214-L | Processes driving spatial and temporal variability of surface pCO ₂ in the Drake Passage |
| Szuberla, Curt | T-396-M | Operation and maintenance of a CTBT class infrasound array at Windless Bight |
| Taylor, Kendrick | I-477-M | Investigation of climate, ice dynamics, and biology using a deep ice core from the West Antarctic Ice Sheet |
| Taylor, Michael | A-119-S | Investigating wave-driven mesospheric dynamics over South Pole using an advanced mesospheric temperature mapper |
| Torres, Joseph J | B-258-N | Collaborative research: Possible climate-induced change in the distribution of Pleuragramma |

antarcticum on the Western Antarctic Peninsula shelf

Vernet, Maria

C-246-N

Title: Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multidisciplinary Approach-Marine Ecosystems

Virginia, Ross

B-423-M

Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program

Wall, Diana

B-424-M

Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program

Zesta, Eftyhia

A-357-M

South American Meridional B-Field Array (SAMBA): An American-Chilean chain

[Return to Index](#)

Science Program Indexes: 2009-2010

Technical Event Index

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|-------------------------|---|
| Comberiate, Mike | T-966-M | TDRSS and NAILS |
| Johns, Bjorn | T-295-M | UNAVCO GPS survey support |
| Morin, Paul | T-434-M | The Antarctic Geospatial Information Center: Collecting, creating, delivering and archiving for the community |
| Parker, Timothy | T-299-M | IRIS/PASSCAL seismic support |
| Szuberla, Curt | T-396-M | Operation and maintenance of a CTBT class infrasound array at Windless Bight |

[Return to Index](#)



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Station Schedules: 2009-2010

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

| Station | Austral Summer Season Openings | | Austral Winter Season Openings |
|------------------|---|----------------------------|--------------------------------|
| | Operational | Science | |
| McMurdo | 20 Aug 2009 (WinFly*) | 29 Sept 2009 (Mainbody) | 20 Feb 2010 |
| South Pole | 15 Oct 2009 | 4 Nov 2009 | 14 Feb 2010 |
| Palmer | 26 Sept 2009 | 17 Oct 2009 | 10 April 2010 |
| Research Vessels | Year-round Operations Vessel schedules on the Internet: http://www.usap.gov/vesselScienceAndOperations/ | | |

*A limited number of science projects deploy at Winfly

| | Estimated Population | |
|------------|---------------------------------------|--------------------------------------|
| | Austral Summer | Austral Winter |
| McMurdo | 850 (weekly average) 2,200 (total) | 150 (winter total) |
| South Pole | 250 (weekly average) 820 (total) | 50 winter total) |
| Palmer | 30-40 (weekly average) 77 (total) | 20-25 (weekly average) 58 (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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Find information about current USAP projects using the principal investigator, event number station, and other indexes.



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Air Operations: 2009-2010

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.

Petroleum Helicopters, Inc. (PHI)



Petroleum Helicopters, Inc. (PHI) will provide helicopter support with four helicopters (two AS-350-B2 "A-Stars" and two Bell 212s) based out of McMurdo Station. They will support research in the McMurdo Dry Valleys, Royal Society Range and on Ross Island.

<http://www.phihelico.com/>

New York Air National Guard (ANG)

The New York Air National Guard will provide re-supply and research support to South Pole Station. They will support research activities at deep field locations including Siple Dome, WAIS Divide, Byrd Station and AGAP South.

<http://www-105aw.ang.af.mil/>



Kenn Borek Air



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

<http://www.borekair.com/>



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Staffed Field Camps: 2009-2010

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

Dry Valleys

77°30 S, 162° E

50 nautical miles from McMurdo Station

Each year numerous groups conduct research throughout the Dry Valleys. Two resident staff will operate the main base camp at Lake Hoare and the other semi-permanent camps at Lake Fryxell, F-6, and Lake Bonney. The Dry Valleys are predominately occupied by the Long Term Ecological Research grantees. Other large projects this season include Endurance (Doran B-211-M), Skidmore (B-236-M), Forman (B-046-M), Doran (B-211-M), Costa (B-232-M), and Saito (B-243-M) and Morin (G-434-M). Several other groups will operate from small tent camps throughout the region, including project in the Garwood, Meirs, and McKelvey, Wright, and University Valleys and at Lake Joyce and Lake Vanda.

Marble Point

77°41 S, 163°67 E

46 nautical miles from McMurdo Station

Two resident staff and a fuels operator maintain the Marble Point Field camp. The main focus of the camp is to support refueling operations for helicopters working in the Dry Valleys and local sea ice.

Siple Dome

81°39 S, 149°04 W

507 nautical miles from McMurdo Station

Siple Dome will have two resident field camp staff. They will provide daily weather observations for planes operating in West Antarctica. They will also house and feed Kenn Borek Air pilots that may remain overnight at the camp.

WAIS Divide Field Camp

79°46 S, 112°08 W

924 nautical miles from McMurdo Station

The West Antarctic Ice Sheet (WAIS) Divide Field Camp with eleven resident staff will support nine projects: Kendrick Taylor (I-477-M) will continue collecting a 3,400 m deep ice core in West Antarctica. The National Ice Core Laboratory (I-478-M) will provide quality assurance and oversight for ice coring operations. Richard Alley (I-168-M) will provide records of visible stratigraphy, depth evolution of ice grain size and orientation, bubble sizes, size distributions and characteristics of the Deep Ice Sheet Core. Charles Bentley–Ice Core Drilling Services (T-350-M) will complete the setup and operate the DISC Drill System at WAIS Divide. The AWS (automatic weather station) project team, O-283-M (Charles Stearns), will service stations from the camp. Eftyhia Zesta's team (A-357-M) will service their magnetometer. A-105 (Lessard) will install the ARRO instrumentation, and the Long Duration Balloon project (Mitchell A-147-M) will retrieve their BESS payload, launched in 07-08. Anna McKee will visit WAIS Divide as an artist and writer.

CReSIS Traverse

77°35 S, 109°2.7 W (Seismic UP)



Project Indexes

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



Project Web Sites

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

1084 nm from McMurdo Station,
and 160 nm from WAIS Divide

Prasad Gogineni - Center for Remote Sensing of Ice Sheets (CReSIS, I-188-M) and Sridhar Anandakrishnan (I-205-M) will traverse from WAIS Divide to the Thwaites glacier (Seismic Up and Seismic Down) and back, conducting reflection seismic experiments to study flow dynamics and the glacier subsurface. This is the final field season of this traverse. One Heavy Equipment Mechanic services the two Tuckers, drill equipment, snow machines, generators, and sleds, and assists the science group with any requests.

Byrd Field Camp

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

The Byrd field camp will have an approximate population of 55 people. Eleven resident staff, and a cargo coordinator in McMurdo, support five projects: Polenet (G-079, Wilson), CReSIS (I-189, Gogineni) and Joughin (I-157). Also, UNAVCO and Bindschadler will depart for the Pine Island Glacier from Byrd. Polenet is installing a GPS array throughout West Antarctica and I-189 and I-157 will fly grid patterns to the Pine Island Glacier collecting radar data. In support of the long radar flights, a three person team will groom a skiway at several fuel cache locations.

AGAP South Field Camp

84°29 S, 77°14 E
805 nm from McMurdo,
and 330 nm from South Pole

This high elevation camp (11,700 feet with pressure altitudes commonly at 12,500 feet) will support seismic surveys of the Gamburtsev Mountain range in East Antarctica. GAMSEIS (Nyblade, G-055) will complete their passive seismic experiment, retrieving an array of seismometers. Approximate population is 30 people, including 9 staff. This is final planned season of the AGAP camp.

Event Numbering System: 2009-2010

Every project is assigned a unique event number.

The first letter indicates the USAP program funding a project:

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

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

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



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Science Program Indexes: 2009-2010

Principal Investigator Index

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|-------------------------|---|
| Adams, Byron J | B-321-M | Collaborative Research: Limits and Drivers of Metazoan Distributions in the TAM (A Small Grants for Exploratory Research Proposal) |
| Ainley, David | B-031-M | Adelie Penguin response to climate change at the individual, colony and metapopulation levels |
| Alley, Richard | I-168-M | Collaborative research: Physical properties of the WAIS Divide deep core |
| Amsler, Charles | B-022-P | Collaborative Research: The chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula |
| Andersen, Dale | G-441-M | Lake Joyce microbialites resubmittal |
| Anderson, John B. | G-083-O | History of, and Mechanisms Leading to, Post-LGM Retreat of the West Antarctic Ice Sheet |
| Balco, Gregory | C-515-N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multidisciplinary Approach - Marine and Quaternary Geosciences |
| Barbeau, David L. | G-432-E | COLLABORATIVE RESEARCH: Testing the Polar Gateway Glaciation Hypothesis: the Kinematic, Sedimentary, Water-Mass, and Ice-Volume Record of Drake Passage Opening |
| Bay, Ryan | I-347-M | Dust Logging at Dome C for Abrupt Climate Changes, Large Volcanic Eruptions and Bolide Impacts |
| Bender, Michael | G-070-M | Collaborative Research: Dating and paleoenvironmental studies on |



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

| | | |
|----------------------|------------------|---|
| | | ancient ice in the Dry Valleys, Antarctica |
| Besson, Dave | A-123-S | Neutrino Array Radio Calibration |
| Bieber, John | A-120-M | Cosmic ray observations at McMurdo Station |
| Bindschadler, Robert | C-407-M | IPY: Collaborative Research: Ocean-ice sheet interaction in the Amundsen Sea: The keystone of West Antarctic stability |
| Blankenship, Donald | G-098-M | IPY Research: Investigating the cryospheric evolution of the central Antarctic plate (ICECAP) |
| Bristow, William | A-369-M | Southpole (McMurdo) SuperDARN |
| Buesseler, Kenneth O | O-288-L/N | WAP-flux: New Tools to Study the Fate of Phytoplankton Production in the West Antarctic Peninsula |
| Butler, James | O-257-S | South Pole monitoring for climatic change |
| Carlstrom, John | A-379-S | Cosmological Research with the 10-meter South Pole Telescope |
| Carlstrom, John | A-370-S | Science Coordination Office for Astrophysical Research in Antarctica (SCOARA-II) |
| Carpenter, Edward | B-305-M | Collaborative Research: Biogeochemistry of cyanobacterial mats and hyporheic zone microbes in McMurdo Dry Valley glacial meltwater streams |
| Cassano, John | O-400-M | Collaborative Research: Atmosphere-Ocean-Ice Interaction in a Coastal Polynya |
| Cohn, Stephen | O-363-M | IPY: NCAR facility support, scientific contributions and collaborative research to understand environmental change in Antarctica through participation in the international CONCORDIASI project |
| Comberiate, Mike | T-966-M | TDRSS and NAILS |
| Conway, Howard | I-157-M | IPY collaborative research: Constraining the mass balance deficit of the Amundsen Coast's glaciers |

| | | |
|--------------------|------------------|--|
| Costa, Daniel | B-232-M | Collaborative Research: Weddell seals as autonomous sensors of the winter oceanography of the Ross Sea |
| Davis, Randall | B-017-M | Collaborative Research: Hunting in darkness: Behavioral and energetic strategies of Weddell seals in winter |
| Deshler, Terry | O-131-M | Measurements of Antarctic ozone and polar stratospheric cloud profiles in a time of decreasing atmospheric chlorine, climate change, and fluctuations in polar vortex strength |
| Domack, Eugene | C-515-N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multidisciplinary Approach - Marine and Quaternary Geosciences |
| Doran, Peter | B-426-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program |
| Emslie, Steven D | B-034-E/M | Stable isotope analyses of pygoscelid penguin remains from active and abandoned colonies in Antarctica |
| Engler, Elise | W-219-M | Unpacking Antarctica |
| Evenson, Paul | A-118-S | Element composition of high-energy solar particles |
| Evenson, Paul | A-120-M | Cosmic ray observations at McMurdo Station |
| Evenson, Paul | A-333-S | IceCube operations and maintenance |
| Foreman, Christine | B-046-M | The biogeochemical evolution of dissolved organic matter in a fluvial system on the Cotton Glacier, Antarctica |
| Fountain, Andrew | B-425-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert |

| | | |
|----------------------|------------------|--|
| | | ecosystem: The McMurdo Dry Valleys LTER program |
| Fraser, Bill | B-013-L/P | Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, apex predator component |
| Fritts, David | A-113-E | Radar measurements of large- and small-scale dynamics of the MLT on the Antarctic Peninsula with an existing MF radar and a new generation meteor radar at British and Brazilian bases |
| Garrott, Robert | B-009-M | The demographic consequences of environmental variability and individual heterogeneity in life-history tactics of a long-lived Antarctic marine predator |
| Gillies, John | G-167-M | Dynamics of aeolian processes in the McMurdo Dry Valleys, Antarctica |
| Gogineni, Prasad | I-188-M | Center for Remote Sensing of Ice Sheets (CReSIS) - ground radar and seismic operations |
| Gogineni, Prasad | I-189-M | Center for Remote Sensing of Ice Sheets (CReSIS) - Basler airborne radar survey |
| Gogineni, Prasad | I-185-M | Center for Remote Sensing of Ice Sheets (CReSIS) - Unmanned Aerial System (UAS) operations |
| Greenberg, Stanley | W-220-S | Photographs of the IceCube Neutrino Observatory |
| Gutierrez, Carlos | Y-602-M/S | Frozen Planet |
| Hall, Brenda | G-082-M | Development of Quantitative Weathering Indicators in Proximal Alluvial Sediments to Assess Glacial Activity in the Rock Record |
| Hargreaves, Geoffrey | I-478-M | National Ice Core Laboratory (NICL) core-handling and data recording |
| Hernandez, Gonzalo | A-110-M/S | Austral high-latitude atmospheric dynamics |
| Huerta, Audrey | G-437-M | Byrd Glacier: Evidence for plateau collapse |
| Inan, Umran | A-108-S | A VLF beacon transmitter at South |

| | | |
|--------------------|----------------|--|
| | | Pole |
| Inan, Umran | A-336-P | ELF/VLF observation of whistler-mode waves, lightning discharge, and gamma-ray events from Palmer Station |
| Inan, Umran | A-327-N | ELF/VLF observation in the southern Pacific Ocean |
| Johns, Bjorn | T-295-M | UNAVCO GPS survey support |
| Joughin, Ian | I-157-M | IPY collaborative research: Constraining the mass balance deficit of the Amundsen Coast's glaciers |
| Karentz, Deneb | B-301-M | A graduate training program in Antarctica: Integrative biology and adaptation of antarctic marine organisms |
| Kemerait, Robert | G-078-M | Dry Valley seismic project |
| Kennicutt, Mahlon | B-518-M | Temporal variability in natural and anthropogenic disturbance of McMurdo Station |
| Kim, Stacy | B-174-M | Development of a remotely operated vehicle for under-ice research in polar environments |
| Kirschvink, Joseph | G-436-E | Collaborative Research: Upper Cretaceous-lower Paleocene strata from the James Ross Island region: Chemo-, Magneto-, and biomarker tests of intercontinental correlation and extinction hypotheses |
| Kovac, John | A-039-S | Collaborative Research: BICEP2 and SPUD - A search for inflation with degree-scale polarimetry from the South Pole |
| Kurbatov, Andrei | I-349-M | Collaborative Research: Exploring a 2 million-year-plus ice climate archive-Allan Hills blue ice area (2MBIA) |
| Kyle, Phillip | G-081-M | Mount Erebus Volcano Observatory III (MEVO III): Conduit processes and surveillance |
| LaBelle, James | A-128-S | Collaborative Research: Multi-instrument studies of auroral plasma radiation |

| | | |
|-----------------|------------------|--|
| Lazzara, Matt | O-283-M/S | Collaborative research: Antarctic Automatic Weather Station Program (AWS), 2007-2010 |
| Lee, Richard | B-256-P | Role of dehydration and photoperiodism in preparing an Antarctic insect for the polar night |
| Lessard, Marc | A-105-M | Collaborative Research: Polar Experiment Network for Geospace Upper atmosphere Investigations (PENGUIn) - Advancing the vision for global studies |
| Linder, Chris | W-218-M | Raptor of the South |
| Lyons, W. Berry | B-420-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valleys LTER program |
| MacPhee, Ross | G-170-E | Vertebrate paleontology of Livingston Island, South Shetlands, Antarctica |
| Manahan, Donal | B-301-M | A graduate training program in Antarctica: Integrative biology and adaptation of antarctic marine organisms |
| Martinson, Doug | O-241-L | SASSI Mooring Array in the Western Antarctic Peninsula |
| Martinson, Doug | B-021-L | Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, physical oceanography component |
| McKee, Anna | W-217-M | Ice Cores, Translucent Truths from the Antarctic Ice Sheet |
| Mende, Stephen | A-104-S | Antarctic auroral imaging |
| Millan, Robyn | A-144-M | Balloon Array for RBSP Relativistic Electron Losses (BARREL) |
| Mitchell, John | A-140-M | Balloon-borne Experiment with a Superconducting Spectrometer (BESS) |
| Morin, Paul | T-434-M | The Antarctic Geospatial Information Center: Collecting, creating, |

| | | |
|-----------------------|------------------|---|
| | | delivering and archiving for the community |
| Neill, Christopher | Y-609-P | IPY: Improving the public's understanding of polar research through hands-on fellowships for science journalists in the Arctic and Antarctic |
| Nitsche, Frank-Oliver | G-059-O | Cross-shelf troughs as indicators of ice sheet dynamics along the West Antarctic continental margin |
| Nowacek, Douglas P | B-249-N | Collaborative research: The ecological role of a poorly studied Antarctic krill predator, the humpback whale (<i>Megaptera novaeangliae</i>) |
| Nyblade, Andy | G-055-M | Collaborative Research: A broadband seismic experiment to image the lithosphere beneath the Gamburtsev Mountains, East Antarctica |
| Orsi, Alejandro H | O-403-O | Collaborative Research: Atmosphere-Ice-Ocean Interactions in the Eastern Ross Sea |
| Palo, Scott | A-284-S | Collaborative study of the Antarctic mesosphere and lower thermosphere |
| Parker, Timothy | T-299-M | IRIS/PASSCAL seismic support |
| Pettit, Erin | C-514-E/N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multi-disciplinary Approach -- Cryosphere and Oceans (LARISSA) |
| Priscu, John | B-422-M | The Role of Resource Legacy on Contemporary Linkages Between Biodiversity and Ecosystem Processes in a Cold Desert Ecosystem: The McMurdo Dry Valley LTER Program |
| Pryke, Clement | A-039-S | Collaborative Research: BICEP2 and SPUD - A search for inflation with degree-scale polarimetry from the South Pole |
| Saito, Mak | B-243-M | Comparative Genomic and Proteomic Survey of Major Antarctic |

| | | |
|--------------------|------------------|---|
| | | Marine Phytoplankton: A Foundation for Polar Phytoplankton Genomics |
| Scambos, Theodore | C-514-E/N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multi-disciplinary Approach -- Cryosphere and Oceans (LARISSA) |
| Seo, Eun-Suk | A-137-M | Cosmic Ray Energetics And Mass (CREAM) |
| Simms, Alexander R | G-116-E | Constraining the deglaciation of the Antarctic Peninsula using OSL dated beach deposits |
| Sivjee, Gulamabas | A-129-S | Observation of upper-atmospheric energetics, dynamics, and long-term variations over South Pole Station |
| Skidmore, Mark | B-236-M | Biogeochemistry and geomicrobiology of Taylor Glacier basal ice |
| Soreghan, Gerilyn | G-082-M | Development of Quantitative Weathering Indicators in Proximal Alluvial Sediments to Assess Glacial Activity in the Rock Record |
| Sprintall, Janet | O-260-L | The Drake Passage high-density XBT/XCTD program |
| Steffen, Konrad | I-077-E | IPY: Stability of Larsen C Ice Shelf in a warming climate |
| Steinberg, Deborah | B-020-L/P | Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, zooplankton component |
| Stepp, Bill | A-145-M | NASA Long Duration Balloon (LDB) support program |
| Sweeney, Colm | O-214-L | Processes driving spatial and temporal variability of surface pCO ₂ in the Drake Passage |
| Szuberla, Curt | T-396-M | Operation and maintenance of a CTBT class infrasound array at Windless Bight |
| Taylor, Kendrick | I-477-M | Investigation of climate, ice dynamics, and biology using a deep ice core from the West Antarctic Ice Sheet |

| | | |
|--------------------|-------------------------|---|
| Taylor, Michael | A-119-S | Investigating wave-driven mesospheric dynamics over South Pole using an advanced mesospheric temperature mapper |
| Torres, Joseph J | B-258-N | Collaborative research: Possible climate-induced change in the distribution of <i>Pleuragramma antarcticum</i> on the Western Antarctic Peninsula shelf |
| Trivelpiece, Wayne | B-040-E | Penguins as monitors of the krill-centric Southern Ocean marine ecosystem |
| Vernet, Maria | C-246-N | Title: Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multidisciplinary Approach-Marine Ecosystems |
| Virginia, Ross | B-423-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program |
| Wall, Diana | B-424-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program |
| Warren, Stephen | C-516-M | Ocean surfaces on snowball Earth |
| Wu, Norbert | Y-608-P | IPY: Poles Apart: Visual Documentation of the Marine Ecosystems of the Polar Regions |
| Zesta, Eftyhia | A-357-M | South American Meridional B-Field Array (SAMBA): An American-Chilean chain |

Science Program Indexes: 2009-2010

Institution Index

[Return to Index](#)

| Institution ▾ | Event No. | Principal Investigator |
|---|---------------------------|------------------------|
| Alabama Birmingham, University of | B-022-P | Amsler, Charles |
| Alaska Fairbanks, University of | C-514-E/N | Pettit, Erin |
| Alaska Fairbanks, University of | A-369-M | Bristow, William |
| Alaska Fairbanks, University of | T-396-M | Szuberla, Curt |
| Brigham Young University | B-321-M | Adams, Byron |
| California Berkeley, University of | I-347-M | Bay, Ryan |
| California Berkeley, University of | A-104-S | Mende, Stephen |
| California Institute of Technology | G-436-E | Kirschvink, Joseph |
| California Los Angeles, University of | A-357-M | Zesta, Eftyhia |
| California Santa Barbara, University of | G-116-E | Simms, Alexander |
| California Santa Cruz, University of | B-232-M | Costa, Daniel |
| Chicago, University of | A-039-S | Pryke, Clement |
| Chicago, University of | A-370-S | Carlstrom, John |
| Chicago, University of | A-379-S | Carlstrom, John |
| Colorado Boulder, University of | I-077-E | Steffen, Konrad |
| Colorado Boulder, University of | A-284-S | Palo, Scott |
| Colorado Boulder, University of | C-514-E/N | Scambos, Theodore |
| Colorado Boulder, University of | O-400-M | Cassano, John |
| Colorado State University | B-424-M | Wall, Diana |
| Columbia Scientific Balloon Facility | A-145-M | Stepp, Bill |
| Columbia University | O-241-L | Martinson, Doug |
| Columbia University | B-021-L | Martinson, Doug |
| Columbia University | G-059-O | Nitsche, Frank-Oliver |
| Dartmouth College | A-128-S | LaBelle, James |



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

| | | |
|---|----------------|----------------------|
| Dartmouth College | A-144-M | Millan, Robyn |
| Dartmouth College | B-423-M | Virginia, Ross |
| Delaware, University of | A-333-S | Evenson, Paul |
| Delaware, University of | A-120-M | Bieber, John |
| Delaware, University of | A-120-M | Evenson, Paul |
| Delaware, University of | A-118-S | Evenson, Paul |
| Desert Research Institute | G-167-M | Gillies, John |
| Desert Research Institute | I-477-M | Taylor, Kendrick |
| Duke University | B-249-N | Nowacek, Douglas |
| Embry Riddle Aeronautical University | A-129-S | Sivjee, Gulamabas |
| H.T. Harvey & Associates | B-031-M | Ainley, David |
| Hamilton College | C-515-N | Domack, Eugene |
| Harvard University | A-039-S | Kovac, John |
| Illinois Chicago, University of | B-426-M | Doran, Peter |
| Kansas Lawrence, University of | A-123-S | Besson, Dave |
| Kansas Lawrence, University of | I-189-M | Gogineni, Prasad |
| Kansas Lawrence, University of | I-188-M | Gogineni, Prasad |
| Kansas Lawrence, University of | I-185-M | Gogineni, Prasad |
| Marine Biological Laboratory (MBL) | Y-609-P | Neill, Christopher |
| Maryland, University of | A-137-M | Seo, Eun-Suk |
| Miami University | B-256-P | Lee, Richard |
| Minnesota, University of | T-434-M | Morin, Paul |
| Montana State University Bozeman | B-422-M | Priscu, John |
| Montana State University Bozeman | B-009-M | Garrott, Robert |
| Montana State University Bozeman | B-236-M | Skidmore, Mark |
| Montana State University Bozeman | B-046-M | Foreman, Christine |
| National Aeronautics and Space Administration | C-407-M | Bindschadler, Robert |
| National Aeronautics and Space Administration | T-966-M | Comberiate, Mike |
| National Aeronautics and Space Administration | A-140-M | Mitchell, John |

| | | |
|--|------------------|--------------------|
| National Oceanic and Atmospheric Administration | B-040-E | Trivelpiece, Wayne |
| National Oceanic and Atmospheric Administration | O-257-S | Butler, James |
| National Oceanic and Atmospheric Administration | O-214-L | Sweeney, Colm |
| New Hampshire, University of | A-105-M | Lessard, Marc |
| New Mexico Institute of Mining and Technology | G-081-M | Kyle, Phillip |
| Northwest Research Associates, Inc. | A-113-E | Fritts, David |
| Ohio State University | B-420-M | Lyons, W. Berry |
| Pennsylvania State University | I-168-M | Alley, Richard |
| Pennsylvania State University | G-055-M | Nyblade, Andy |
| Polar Oceans Research Group | B-013-L/P | Fraser, Bill |
| Portland State University | B-425-M | Fountain, Andrew |
| Princeton University | G-070-M | Bender, Michael |
| Rice University | G-083-O | Anderson, John |
| San Francisco State University | B-305-M | Carpenter, Edward |
| San Francisco, University of | B-301-M | Karentz, Deneb |
| San Jose State University | B-174-M | Kim, Stacy |
| Scripps Institution of Oceanography | O-260-L | Sprintall, Janet |
| Scripps Institution of Oceanography | C-246-N | Vernet, Maria |
| SETI Institute, Center for the Study of Life in the Universe | G-441-M | Andersen, Dale |
| South Carolina, University of | G-432-E | Barbeau, David |
| South Florida, University of | B-258-N | Torres, Joseph |
| Southern California, University of | B-301-M | Manahan, Donal |
| Stanford University | A-336-P | Inan, Umran |
| Stanford University | A-327-N | Inan, Umran |
| Stanford University | A-108-S | Inan, Umran |
| Texas A & M University | B-017-M | Davis, Randall |
| Texas A & M University | B-518-M | Kennicutt, Mahlon |
| Texas A & M University | O-403-O | Orsi, Alejandro |

| | | |
|---|------------------|----------------------|
| Texas Austin, University of | G-098-M | Blankenship, Donald |
| The University of Maine | I-349-M | Kurbatov, Andrei |
| The University of Maine | G-082-M | Hall, Brenda |
| UNAVCO | T-295-M | Johns, Bjorn |
| United States Air Force | G-078-M | Kemerait, Robert |
| United States Geological Survey | I-478-M | Hargreaves, Geoffrey |
| University Corporation for Atmospheric Research, UCAR/NCAR | O-363-M | Cohn, Stephen |
| Utah State University | A-119-S | Taylor, Michael |
| Virginia Institute of Marine Sciences | B-020-L/P | Steinberg, Deborah |
| Washington, University of | I-157-M | Conway, Howard |
| Washington, University of | I-157-M | Joughin, Ian |
| Washington, University of | A-110-M/S | Hernandez, Gonzalo |
| Washington, University of | C-516-M | Warren, Stephen |
| Wisconsin Madison, University of | O-283-M/S | Lazzara, Matt |
| Woods Hole Oceanographic Institution | B-243-M | Saito, Mak |
| Woods Hole Oceanographic Institution | O-288-L/N | Buesseler, Kenneth |
| Wyoming, University of | O-131-M | Deshler, Terry |

[Return to Index](#)

Science Program Indexes: 2009-2010

Event Number Index

[Return to Index](#)

| Root No. ▼ | Event No. | Principal Investigator |
|------------|---------------------------|------------------------|
| 009 | B-009-M | Garrott, Robert |
| 013 | B-013-L/P | Fraser, Bill |
| 017 | B-017-M | Davis, Randall |
| 020 | B-020-L/P | Steinberg, Deborah |
| 021 | B-021-L | Martinson, Doug |
| 022 | B-022-P | Amsler, Charles |
| 031 | B-031-M | Ainley, David |
| 034 | B-034-E/M | Emslie, Steven |
| 039 | A-039-S | Kovac, John |
| 039 | A-039-S | Pryke, Clement |
| 040 | B-040-E | Trivelpiece, Wayne |
| 046 | B-046-M | Foreman, Christine |
| 055 | G-055-M | Nyblade, Andy |
| 059 | G-059-O | Nitsche, Frank-Oliver |
| 070 | G-070-M | Bender, Michael |
| 077 | I-077-E | Steffen, Konrad |
| 078 | G-078-M | Kemerait, Robert |
| 081 | G-081-M | Kyle, Phillip |
| 082 | G-082-M | Hall, Brenda |
| 082 | G-082-M | Soreghan, Gerilyn |
| 083 | G-083-O | Anderson, John |
| 098 | G-098-M | Blankenship, Donald |
| 104 | A-104-S | Mende, Stephen |
| 105 | A-105-M | Lessard, Marc |



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

| | | |
|-----|-----------|--------------------|
| 108 | A-108-S | Inan, Umran |
| 110 | A-110-M/S | Hernandez, Gonzalo |
| 113 | A-113-E | Fritts, David |
| 116 | G-116-E | Simms, Alexander |
| 118 | A-118-S | Evenson, Paul |
| 119 | A-119-S | Taylor, Michael |
| 120 | A-120-M | Bieber, John |
| 120 | A-120-M | Evenson, Paul |
| 123 | A-123-S | Besson, Dave |
| 128 | A-128-S | LaBelle, James |
| 129 | A-129-S | Sivjee, Gulamabas |
| 131 | O-131-M | Deshler, Terry |
| 137 | A-137-M | Seo, Eun-Suk |
| 140 | A-140-M | Mitchell, John |
| 144 | A-144-M | Millan, Robyn |
| 145 | A-145-M | Stepp, Bill |
| 157 | I-157-M | Conway, Howard |
| 157 | I-157-M | Joughin, Ian |
| 167 | G-167-M | Gillies, John |
| 168 | I-168-M | Alley, Richard |
| 170 | G-170-E | MacPhee, Ross |
| 174 | B-174-M | Kim, Stacy |
| 185 | I-185-M | Gogineni, Prasad |
| 188 | I-188-M | Gogineni, Prasad |
| 189 | I-189-M | Gogineni, Prasad |
| 214 | O-214-L | Sweeney, Colm |
| 217 | W-217-M | McKee, Anna |
| 218 | W-218-M | Linder, Chris |
| 219 | W-219-M | Engler, Elise |
| 220 | W-220-S | Greenberg, Stanley |
| 232 | B-232-M | Costa, Daniel |

| | | |
|-----|------------------|--------------------|
| 236 | B-236-M | Skidmore, Mark |
| 241 | O-241-L | Martinson, Doug |
| 243 | B-243-M | Saito, Mak |
| 246 | C-246-N | Vernet, Maria |
| 249 | B-249-N | Nowacek, Douglas |
| 256 | B-256-P | Lee, Richard |
| 257 | O-257-S | Butler, James |
| 258 | B-258-N | Torres, Joseph |
| 260 | O-260-L | Sprintall, Janet |
| 283 | O-283-M/S | Lazzara, Matt |
| 284 | A-284-S | Palo, Scott |
| 288 | O-288-L/N | Buesseler, Kenneth |
| 295 | T-295-M | Johns, Bjorn |
| 299 | T-299-M | Parker, Timothy |
| 301 | B-301-M | Karentz, Deneb |
| 301 | B-301-M | Manahan, Donal |
| 305 | B-305-M | Carpenter, Edward |
| 321 | B-321-M | Adams, Byron |
| 327 | A-327-N | Inan, Umran |
| 333 | A-333-S | Evenson, Paul |
| 336 | A-336-P | Inan, Umran |
| 347 | I-347-M | Bay, Ryan |
| 349 | I-349-M | Kurbatov, Andrei |
| 357 | A-357-M | Zesta, Eftyhia |
| 363 | O-363-M | Cohn, Stephen |
| 369 | A-369-M | Bristow, William |
| 370 | A-370-S | Carlstrom, John |
| 379 | A-379-S | Carlstrom, John |
| 396 | T-396-M | Szuberla, Curt |
| 400 | O-400-M | Cassano, John |
| 403 | O-403-O | Orsi, Alejandro |

| | | |
|-----|---------------------------|----------------------|
| 407 | C-407-M | Bindschadler, Robert |
| 420 | B-420-M | Lyons, W. Berry |
| 422 | B-422-M | Priscu, John |
| 423 | B-423-M | Virginia, Ross |
| 424 | B-424-M | Wall, Diana |
| 425 | B-425-M | Fountain, Andrew |
| 426 | B-426-M | Doran, Peter |
| 432 | G-432-E | Barbeau, David |
| 434 | T-434-M | Morin, Paul |
| 436 | G-436-E | Kirschvink, Joseph |
| 437 | G-437-M | Huerta, Audrey |
| 441 | G-441-M | Andersen, Dale |
| 477 | I-477-M | Taylor, Kendrick |
| 478 | I-478-M | Hargreaves, Geoffrey |
| 514 | C-514-E/N | Pettit, Erin |
| 514 | C-514-E/N | Scambos, Theodore |
| 515 | C-515-N | Balco, Gregory |
| 515 | C-515-N | Domack, Eugene |
| 516 | C-516-M | Warren, Stephen |
| 518 | B-518-M | Kennicutt, Mahlon |
| 602 | Y-602-M/S | Gutierrez, Carlos |
| 608 | Y-608-P | Wu, Norbert |
| 609 | Y-609-P | Neill, Christopher |
| 966 | T-966-M | Comberiate, Mike |

Science Program Indexes: 2009-2010

Deploying Team Members Index

[Return to Index](#)

| Team Members ▼ | Event No. | Principal Investigator |
|-------------------------|---------------------------|------------------------|
| Aboltins, Derek | A-370-S | John Carlstrom |
| Abreau, Neyda | G-058-M | |
| Achberger, Amanda | B-236-M | Mark Skidmore |
| Adams, Byron | B-424-M | Diana Wall |
| Ahn, Hoseok | A-137-M | Eun-Suk Seo |
| Aikin, Randol | A-039-S | John Kovac |
| Aird, Ken | A-379-S | John Carlstrom |
| Aitchison, John | Y-602-M/S | Carlos Gutierrez |
| Albershardt, Lou | T-350-M | |
| Allan, Douglas | Y-602-M/S | Carlos Gutierrez |
| Alpert, Alice | B-045-L/P | |
| Altrichter, Adam | B-023-M | |
| Amandusson, Sarah | A-333-S | Paul Evenson |
| Amsler, Margaret | B-022-P | Charles Amsler |
| Anandakrishnan, Sridhar | I-188-M | Prasad Gogineni |
| Anandakrishnan, Sridhar | G-079-M | |
| Andeen, Karen | A-333-S | Paul Evenson |
| Anderson, Brett | A-144-M | Robyn Millan |
| Anderson, Doug | Y-602-M/S | Carlos Gutierrez |
| Anderson, Drew | A-273-O | |
| Anderson, John | G-083-O | John B. Anderson |
| Ashford, Julian R | B-258-N | Joseph J Torres |
| Asplund, Walter | T-966-M | Mike Comberiate |
| Aster, Rick | G-079-M | |



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

| | | |
|-------------------------|-----------|---------------------|
| Attenborough, Sir David | Y-602-M/S | Carlos Gutierrez |
| Attwood, Misty | A-333-S | Paul Evenson |
| Auer, Ralf | A-333-S | Paul Evenson |
| Azeem, S. | A-129-S | Gulamabas Sivjee |
| Baggenstos, Daniel | I-169-M | |
| Bagshaw, Elizabeth | B-425-M | Andrew Fountain |
| Bailard, Jennifer | B-423-M | Ross Virginia |
| Baker, Bill | B-022-P | Charles Amsler |
| Ball, Rebecca | B-423-M | Ross Virginia |
| Banks, Maria | I-477-M | Kendrick Taylor |
| Banta, John | I-477-M | Kendrick Taylor |
| Baran, Leslie | O-131-M | Terry Deshler |
| Barbeau, David | G-432-E | David L. Barbeau |
| Barlow, Stephen | A-110-M/S | Gonzalo Hernandez |
| Barnet, Steven | A-333-S | Paul Evenson |
| Basagic, Hassan | B-425-M | Andrew Fountain |
| Bauska, Thomas | I-477-M | Kendrick Taylor |
| Bay, Ryan | I-347-M | Ryan Bay |
| Bay, Ryan | A-333-S | Paul Evenson |
| Bazo Alba, Jose Luis | A-333-S | Paul Evenson |
| Beange, Alexander | A-145-M | Bill Stepp |
| Bechet, Sabrina | A-333-S | Paul Evenson |
| Becker, Michael | B-421-M | |
| Beem, Lucas | I-345-M | |
| Behar, Alberto | C-407-M | Robert Bindschadler |
| Bencivengo, Brian | I-478-M | Geoffrey Hargreaves |
| Benham, Michael | A-145-M | Bill Stepp |
| Benischek, Benjamin | A-333-S | Paul Evenson |
| Benson, Bradford | A-379-S | John Carlstrom |
| Benson, Terry | A-333-S | Paul Evenson |
| Berlowitz, Vanessa | Y-602-M/S | Carlos Gutierrez |

| | | |
|-------------------------|------------------|-------------------|
| Bernard, Kim | B-020-L/P | Deborah Steinberg |
| Bertrand, Erin | B-243-M | Mak Saito |
| Besson, Dave | A-123-S | Dave Besson |
| Besson, David | A-333-S | Paul Evenson |
| Blum, Jennifer | B-013-L/P | Bill Fraser |
| Bocconcelli, Alessandro | B-249-N | Douglas P Nowacek |
| Bock, Jamie | A-039-S | John Kovac |
| Boichu, Marie | G-081-M | Phillip Kyle |
| Boldt, Brandon | G-070-M | Michael Bender |
| Bonifacie, Magali | G-436-E | Joseph Kirschvink |
| Bontognali, Tomaso | G-436-E | Joseph Kirschvink |
| Boon, Rebecca | I-188-M | Prasad Gogineni |
| Boone, Dries | C-515-N | Eugene Domack |
| Boris, Mark | G-078-M | Robert Kemerait |
| Bortolotto, Erica | B-258-N | Joseph J Torres |
| Bowker, Nathan | A-333-S | Paul Evenson |
| Brachfeld, Stefanie | C-515-N | Eugene Domack |
| Braddock, Peter | G-079-M | |
| Bradford, Charles | T-927-M | |
| Bradley-Cook, Julia | B-423-M | Ross Virginia |
| Brandt, Richard | C-516-M | Stephen Warren |
| Brasfield, Paul | A-145-M | Bill Stepp |
| Braucher, Jeffrey | G-079-M | |
| Brevik, Justus | A-039-S | John Kovac |
| Brissac, Isabelle | B-174-M | Stacy Kim |
| Broadbent, Heather | B-258-N | Joseph J Torres |
| Brox, Tim | B-236-M | Mark Skidmore |
| Brunk, Michael | G-078-M | Robert Kemerait |
| Buchinger, Nicholas | A-333-S | Paul Evenson |
| Buitendyk, Willem | B-017-M | Randall Davis |
| Bunch, Nicholas | A-128-S | James LaBelle |

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| Bunt, Malcolm | A-145-M | Bill Stepp |
| Burghart, Scott | B-258-N | Joseph J Torres |
| Burns, Jennifer | B-232-M | Daniel Costa |
| Burns, Robert | I-185-M | Prasad Gogineni |
| Byrd, Don | T-396-M | Curt Szuberla |
| Caldwell, Ryan | Y-608-P | Norbert Wu |
| Canon, Scott | Y-609-P | Christopher Neill |
| Cape, Mattias | C-246-N | Maria Vernet |
| Carns, Regina | C-516-M | Stephen Warren |
| Carpenter, Chad | A-333-S | Paul Evenson |
| Carpenter, Kevan | A-105-M | Marc Lessard |
| Carroll, Dustin | B-174-M | Stacy Kim |
| Casanovas-Garcia, Paula | B-044-E | |
| Casassa, Gino | I-077-E | Konrad Steffen |
| Cass, Christine | B-258-N | Joseph J Torres |
| Cassano, John | O-400-M | John Cassano |
| Cassidy, Patrick | T-350-M | |
| Castendyk, Devin | B-420-M | W. Berry Lyons |
| Cathey, Jr., Henry | A-145-M | Bill Stepp |
| Cazenave, Francois | B-174-M | Stacy Kim |
| Chaplin, Gerard | O-313-N | |
| Chaput, Julien | G-079-M | |
| Chin, Yo | B-046-M | Christine Foreman |
| Chiuchiolo, Amy | B-422-M | John Priscu |
| Christianson, Knut | I-188-M | Prasad Gogineni |
| Christner, Brent | B-236-M | Mark Skidmore |
| Cimino, Megan | B-019-L/P | |
| Clark, Paul | O-403-O | Alejandro H Orsi |
| Coats, Larry | B-034-E/M | Steven D Emslie |
| Cohen, Jonathan | B-020-L/P | Deborah Steinberg |

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| Coleman, Kaycee | B-019-L/P | |
| Comess, Max | A-144-M | Robyn Millan |
| Condon, Michael | T-927-M | |
| Connor, Judith | B-301-M | Donal Manahan |
| Constible, Juanita | B-256-P | Richard Lee |
| Conway, Thomas | O-214-L | Colm Sweeney |
| Coon, Clint | T-396-M | Curt Szuberla |
| Cotten, Rex | T-927-M | |
| Cox, Thomas | I-477-M | Kendrick Taylor |
| Coyac, Addie | B-021-L | Doug Martinson |
| Crawford, Thomas | A-379-S | John Carlstrom |
| Criscitiello, Alison | I-157-M | Ian Joughin |
| Crites, Abigail | A-379-S | John Carlstrom |
| Cross, Michele | B-174-M | Stacy Kim |
| Cuce, Jason | B-022-P | Charles Amsler |
| Cullis, Patrick | O-257-S | James Butler |
| Curtis, Aaron | G-081-M | Phillip Kyle |
| Dahnert, Kristina | T-350-M | |
| Davidson, Seth | B-421-M | |
| Davila, Alfonso | G-441-M | Dale Andersen |
| Davis, Georgina | B-017-M | Randall Davis |
| Davis, Ian | B-017-M | Randall Davis |
| Davis, Justin Tyler | G-432-E | David L. Barbeau |
| Day, Andrew | Y-608-P | Norbert Wu |
| Denef, Vincent | B-301-M | Donal Manahan |
| Denlinger, David | B-256-P | Richard Lee |
| Denny, Mark | B-301-M | Donal Manahan |
| Descamps, Freija | A-333-S | Paul Evenson |
| DeVries, Art | B-258-N | Joseph J Torres |
| Dickson, Jay | | Michael Wyatt |
| Diers, Sarah | B-046-M | Christine Foreman |

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| Disterhoft, Patrick | O-257-S | James Butler |
| Domack, Eugene | C-515-N | Eugene Domack |
| Donohue, Kathleen | O-313-N | |
| Donovan, William | I-185-M | Prasad Gogineni |
| Dowd, William | B-301-M | Donal Manahan |
| Dowdeswell, Julian | G-098-M | Donald Blankenship |
| Dowell, Charles | A-039-S | John Kovac |
| Doyle, Shawn | B-236-M | Mark Skidmore |
| Duling, Dennis | A-333-S | Paul Evenson |
| Dunham, Nicole | B-258-N | Joseph J Torres |
| Ebihara, Yusuke | A-111-M/S | |
| Echeverry, Gonzalo | G-098-M | Donald Blankenship |
| Elliott, Christopher | A-333-S | Paul Evenson |
| Enander, Jonas | A-333-S | Paul Evenson |
| Engler, Elise | W-219-M | Elise Engler |
| Escher, Sharon | O-313-N | |
| Euler, Sebastian | A-333-S | Paul Evenson |
| Eveland, Jeffery | B-023-M | |
| Fairbrother, Debora | A-145-M | Bill Stepp |
| Farrell, Edward | B-017-M | Randall Davis |
| Farrer, Jessica | B-009-M | Robert Garrott |
| Farry, Shawn | B-009-M | Robert Garrott |
| Fearing, Amy | O-313-N | |
| Fegyveresi, John | I-168-M | Richard Alley |
| Ferguson, Jason | B-258-N | Joseph J Torres |
| Fernandes, Vera | G-058-M | |
| Fernandez, Rodrigo | G-083-O | John B. Anderson |
| Ferris, David | T-350-M | |
| Feusals, Tom | A-333-S | Paul Evenson |
| Field, Chris | A-145-M | Bill Stepp |
| Filimonov, Kirill | A-333-S | Paul Evenson |

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| Filippi, Roberto | C-514-E/N | Theodore Scambos |
| Firing, Yvonne | O-313-N | |
| Flagg, Marco | B-174-M | Stacy Kim |
| Flesher, Chris | B-211-M | |
| Forrest, Steve | B-044-E | |
| Fors, Erik | A-333-S | Paul Evenson |
| Fox, Brian | G-078-M | Robert Kemerait |
| Fox, Douglas | C-515-N | Eugene Domack |
| Fraser, Bill | B-258-N | Joseph J Torres |
| Frazier, Curtis | A-145-M | Bill Stepp |
| Frechette, Jedediah | G-081-M | Phillip Kyle |
| Friedlaender, Ari | B-249-N | Douglas P Nowacek |
| Fries, Marc | G-058-M | |
| Fuiman, Lee | B-017-M | Randall Davis |
| Gaas, Brian | B-019-L/P | |
| Garzio, Michael | B-019-L/P | |
| Gealy, James | A-105-M | Marc Lessard |
| George, Elizabeth | A-379-S | John Carlstrom |
| Geyer, Kevin | B-023-M | |
| Gibson, Dar | A-333-S | Paul Evenson |
| Gillies, John | G-167-M | John Gillies |
| Gils, Christian | A-333-S | Paul Evenson |
| Giltz, Sarah | B-020-L/P | Deborah Steinberg |
| Ginsberg, David | B-301-M | Donal Manahan |
| Gladstone, Laura | A-333-S | Paul Evenson |
| Glowacki, David | A-333-S | Paul Evenson |
| Goetz, Kim | B-232-M | Daniel Costa |
| Golden, Daniel | A-108-S | Umran Inan |
| Gooseff, Michael | B-023-M | |
| Gorman, Kristin | B-013-L/P | Bill Fraser |

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| Gorman, Kristin | B-258-N | Joseph J Torres |
| Grange, Laura | C-246-N | Maria Vernet |
| Grant, Darren | A-333-S | Paul Evenson |
| Greenbaum, Jamin | G-098-M | Donald Blankenship |
| Greenberg, Stanley | W-220-S | Stanley Greenberg |
| Gregg, Gerald | A-145-M | Bill Stepp |
| Gross, Benjamin | T-350-M | |
| Gruber, Eva | B-034-E/M | Steven D Emslie |
| Gulati, Shilpa | B-211-M | |
| Gunderson, Troy | B-305-M | Edward Carpenter |
| Hackett, Brian | Y-608-P | Norbert Wu |
| Haggart, James | G-436-E | Joseph Kirschvink |
| Hale, Richard | I-185-M | Prasad Gogineni |
| Halpin, Patrick | B-249-N | Douglas P Nowacek |
| Ham, Tom | A-333-S | Paul Evenson |
| Hamilton, Darrell | A-333-S | Paul Evenson |
| Hammerstrom, Kamille | B-174-M | Stacy Kim |
| Hams, Thomas | A-140-M | John Mitchell |
| Hannaford, Terry | A-333-S | Paul Evenson |
| Hansen, Samantha | G-079-M | |
| Hansen, Samantha | G-055-M | Andy Nyblade |
| Hanson, Paul | B-426-M | Peter Doran |
| Haran, Terence | C-514-E/N | Theodore Scambos |
| Harrison, Christopher | G-081-M | Phillip Kyle |
| Haskins, Tina | B-019-L/P | |
| Haugen, James | A-333-S | Paul Evenson |
| Hawes, Ian | G-441-M | Dale Andersen |
| Hays, Jack | A-145-M | Bill Stepp |
| Hazen, Elliott | B-249-N | Douglas P Nowacek |
| Head, James | | Michael Wyatt |
| Heckler, Greg | T-966-M | Mike Comberiate |

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| Heirman, Katrien | C-515-N | Eugene Domack |
| Heldmann, Jennifer | B-302-M | |
| Hemming, Sidney | G-432-E | David L. Barbeau |
| Henry, Lara V. | B-258-N | Joseph J Torres |
| Hernandez, Gonzalo | A-110-M/S | Gonzalo Hernandez |
| Herried, Bradley | T-434-M | Paul Morin |
| Herrmann, Paul | O-400-M | John Cassano |
| Higgins, John | I-349-M | Andrei Kurbatov |
| Hill, Gary | A-333-S | Paul Evenson |
| Hines, Barry | A-379-S | John Carlstrom |
| Hjelmsten, Rickard | A-333-S | Paul Evenson |
| Hobby, David | O-400-M | John Cassano |
| Hocking, Anna M. | A-113-E | David Fritts |
| Hocking, Wayne K. | A-113-E | David Fritts |
| Hoffman, Jeffrey | B-243-M | Mak Saito |
| Hofmann, Eileen E | B-258-N | Joseph J Torres |
| Hogan, Bart | B-211-M | |
| Hogg, Ian | B-321-M | Byron J Adams |
| Holloway, Daniel | O-313-N | |
| Holly, Lance | I-185-M | Prasad Gogineni |
| Holt, John | G-098-M | Donald Blankenship |
| Holzapel, Bill | A-379-S | John Carlstrom |
| Honig, David | C-246-N | Maria Vernet |
| Hothem, Larry | G-079-M | |
| Hrubes, James | A-379-S | John Carlstrom |
| Hudson, Erica | B-258-N | Joseph J Torres |
| Huerta, Audrey | G-079-M | |
| Huerta, Audrey | G-437-M | Audrey Huerta |
| Hughes, Timothy | A-379-S | John Carlstrom |
| Hummon, Julia | O-317-L/N | |
| Humphrey, Jim | A-145-M | Bill Stepp |

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| Hunter, Chadden | Y-602-M/S | Carlos Gutierrez |
| Hutchings, Thomas | A-333-S | Paul Evenson |
| Huybers, Kathleen | I-477-M | Kendrick Taylor |
| Hyde, Larry | B-518-M | Mahlon Kennicutt |
| Hynek, Brian | G-058-M | |
| Ishihara, Aya | A-333-S | Paul Evenson |
| Ishman, Scott | C-515-N | Eugene Domack |
| Jacobsen, John | A-333-S | Paul Evenson |
| Jakel, Samantha | A-273-O | |
| Janches, Diego | A-113-E | David Fritts |
| Jaynes, Allison | A-105-M | Marc Lessard |
| Jefts, Kathryn | Y-602-M/S | Carlos Gutierrez |
| Jenouvrier, Stephanie | B-031-M | David Ainley |
| Jeong, Sun Mi | C-515-N | Eugene Domack |
| Jero, Kyle | A-273-O | |
| Jin, George | A-108-S | Umrans Inan |
| Johnson, Jay | T-350-M | |
| Johnson, Phillip | A-333-S | Paul Evenson |
| Jones, Laura | G-081-M | Phillip Kyle |
| Kahl, Leonard | B-019-L/P | |
| Kalin, Jonas | A-333-S | Paul Evenson |
| Kammerer, Melissa | G-081-M | Phillip Kyle |
| Kanao, Masaki | G-055-M | Andy Nyblade |
| Karg, Timo | A-333-S | Paul Evenson |
| Karner, James | G-058-M | |
| Kaufman, Jonathan | A-039-S | John Kovac |
| Kawarasaki, Yuta | B-256-P | Richard Lee |
| Keledjian, Amanda | B-045-L/P | |
| Kelem, Michael | Y-602-M/S | Carlos Gutierrez |
| Keller, Lindsay | G-058-M | |

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| Kempf, Scott | G-098-M | Donald Blankenship |
| Kerber, Laura | | Michael Wyatt |
| Kernebone, Peter | O-400-M | John Cassano |
| Keshmiri, Shah | I-185-M | Prasad Gogineni |
| Keys, Harry | G-081-M | Phillip Kyle |
| Kilduff, James | B-046-M | Christine Foreman |
| Kim, Hae-Chol | B-518-M | Mahlon Kennicutt |
| Kim, Stacy | B-174-M | Stacy Kim |
| Kirshner, Alexandra | G-083-O | John B. Anderson |
| Kislat, Fabian | A-333-S | Paul Evenson |
| Klein, Andrew | B-518-M | Mahlon Kennicutt |
| Klein, Spencer | A-127-M | |
| Knippenberg, Lindsay | B-236-M | Mark Skidmore |
| Koch, Joshua | B-421-M | |
| Koffman, Bess | I-477-M | Kendrick Taylor |
| Kolanoski, Hermann | A-333-S | Paul Evenson |
| Koplan, Renee | B-040-E | Wayne Trivelpiece |
| Koskinen, David | A-333-S | Paul Evenson |
| Kovac, John | A-039-S | John Kovac |
| Kowalewski, Doug | G-070-M | Michael Bender |
| Krasberg, Mark | A-333-S | Paul Evenson |
| Kravchenko, Ilya | A-333-S | Paul Evenson |
| Kravchenko, Ilya | A-123-S | Dave Besson |
| Kroll, Goesta | A-333-S | Paul Evenson |
| Kulin, Robb | T-350-M | |
| Lacelle, Denis | B-302-M | |
| Laitsch, Denise | A-333-S | Paul Evenson |
| Lamanna, Matthew | G-170-E | Ross MacPhee |
| Lamp, Jennifer | G-070-M | Michael Bender |
| Larsen, Elise | B-044-E | |
| LaRue, Michelle | T-434-M | Paul Morin |

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| Laundrie, Andrew | A-333-S | Paul Evenson |
| Lavoie, Caroline | C-515-N | Eugene Domack |
| Lawson, Kathleen | T-396-M | Curt Szuberla |
| Lebar, Don | T-350-M | |
| Lee, James | I-169-M | |
| Lee, Jimmy | B-301-M | Donal Manahan |
| Lee, Moo Hyun | A-137-M | Eun-Suk Seo |
| Lee, Sang Eun | A-137-M | Eun-Suk Seo |
| Lefens, Mark S. | B-258-N | Joseph J Torres |
| Lehigh, Keith | I-189-M | Prasad Gogineni |
| Leichter, James | B-301-M | Donal Manahan |
| Leitch, Erik | A-379-S | John Carlstrom |
| LeMoigne, Nicolas | G-079-M | |
| Leppo, Damien | G-078-M | Robert Kemerait |
| Lescroel, Amelie | B-031-M | David Ainley |
| Leuschen, Carlton | I-189-M | Prasad Gogineni |
| Leventer, Amy | C-515-N | Eugene Domack |
| Lewis, Cameron | I-157-M | Ian Joughin |
| Liang, Xinqing | A-144-M | Robyn Millan |
| Linder, Chris | W-218-M | Chris Linder |
| Lindsley, Amy | B-040-E | Wayne Trivelpiece |
| Linfield, Mark | Y-602-M/S | Carlos Gutierrez |
| Liu, XiaoDong | B-034-E/M | Steven D Emslie |
| Lloyd, Andrew | G-055-M | Andy Nyblade |
| Logan, Nickolas | O-400-M | John Cassano |
| Logan, Nickolas | O-400-M | John Cassano |
| Lough, Amanda | G-055-M | Andy Nyblade |
| Luberda, Stephanie | O-131-M | Terry Deshler |
| Lueker, Martin | A-379-S | John Carlstrom |
| Lunau, Mirko | B-045-L/P | |
| Makarov, Nikolai | A-284-S | Scott Palo |

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| Makida, Yasuhiro | A-140-M | John Mitchell |
| Malinine, Alexandre | A-137-M | Eun-Suk Seo |
| Malolepszy, Ziggy | T-434-M | Paul Morin |
| Manahan, Donal | B-301-M | Donal Manahan |
| Mankoff, Harriet | O-214-L | Colm Sweeney |
| Mannas, Jen | B-009-M | Robert Garrott |
| Marinova, Margarita | B-302-M | |
| Marra, Kristen | G-082-M | Gerilyn Soreghan |
| Marriott, Duncan | T-396-M | Curt Szuberla |
| Martinez, Eloy | B-258-N | Joseph J Torres |
| Maruyama, Reina | A-333-S | Paul Evenson |
| Maschek, John | B-022-P | Charles Amsler |
| Maslanik, James | O-400-M | John Cassano |
| Masters, Otto | A-145-M | Bill Stepp |
| Matney, Anders | O-214-L | Colm Sweeney |
| Matt, Terry | A-333-S | Paul Evenson |
| Matthews, Jaret | C-407-M | Robert Bindschadler |
| McBrearty, Rob | G-079-M | |
| McCabe, Nathan | A-145-M | Bill Stepp |
| McCarthy, Forrest | G-437-M | Audrey Huerta |
| McCarthy, Michael | A-110-M/S | Gonzalo Hernandez |
| McCarthy, Michael | A-144-M | Robyn Millan |
| McCormick, Michael | C-246-N | Maria Vernet |
| McCormick, William | A-333-S | Paul Evenson |
| McDowell, Ruth | B-022-P | Charles Amsler |
| McEwen, Donald | A-129-S | Gulamabas Sivjee |
| McGaw, David | A-144-M | Robyn Millan |
| McGuire, Paul | A-333-S | Paul Evenson |
| McKay, Christopher | B-302-M | |
| McKee, Anna | W-217-M | Anna McKee |

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| McMahon, Jeffrey | A-379-S | John Carlstrom |
| McPike, David | B-174-M | Stacy Kim |
| McQuaid, Jeff | B-243-M | Mak Saito |
| Medley, Brooke | I-157-M | Ian Joughin |
| Mehl, Jared | A-379-S | John Carlstrom |
| Melville, Bob | A-111-M/S | |
| Melville, Bob | A-112-M | |
| Menze, Michael | B-258-N | Joseph J Torres |
| Miao, Bingkui | G-058-M | |
| Michaud, Alexander | B-422-M | John Priscu |
| Michaud, Luigi | B-420-M | W. Berry Lyons |
| Mikhailenko, Vladimir | C-514-E/N | Theodore Scambos |
| Millan, Robyn | A-144-M | Robyn Millan |
| Miller, Aileen | B-044-E | |
| Miller, Hugh | Y-602-M/S | Carlos Gutierrez |
| Miller, Pnina | T-299-M | Timothy Parker |
| Miller, Pnina | G-079-M | |
| Minzoni, Rebecca | G-083-O | John B. Anderson |
| Mitchell, John | A-140-M | John Mitchell |
| Mitchell, John | A-137-M | Eun-Suk Seo |
| Monday, Barbara | B-421-M | |
| Montross, Scott | B-236-M | Mark Skidmore |
| Moore, Curtis | A-333-S | Paul Evenson |
| Moran, Dawn | B-243-M | Mak Saito |
| Morgan, Gareth | G-070-M | Michael Bender |
| Morgan, Gareth | G-070-M | Michael Bender |
| Morgan, Nicholas | O-257-S | James Butler |
| Mortensen, Nicolai | T-350-M | |
| Mortensen, Nicolai | I-188-M | Prasad Gogineni |
| Morton, Elizabeth | T-350-M | |
| Murphy, Christin | B-258-N | Joseph J Torres |

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| Murray, Alison | B-301-M | Donal Manahan |
| Murray, Timothy | A-333-S | Paul Evenson |
| Naudts, Lieven | C-515-N | Eugene Domack |
| Neff, Peter | I-477-M | Kendrick Taylor |
| Neilsen, Uffe | B-424-M | Diana Wall |
| Newberger, Tim | O-214-L | Colm Sweeney |
| Newcomb, Matthew | A-333-S | Paul Evenson |
| Nickling, William | G-167-M | John Gillies |
| Niederberger, Thomas | B-305-M | Edward Carpenter |
| Nilsson, Anders | A-333-S | Paul Evenson |
| Nitsche, Frank | G-059-O | Frank-Oliver Nitsche |
| Noble, Abigail | B-243-M | Mak Saito |
| Nordin, Christian | A-333-S | Paul Evenson |
| Nowacek, Doug | B-249-N | Douglas P Nowacek |
| Nyblade, Andy | G-079-M | |
| Nylen, Thomas | G-079-M | |
| O'Hara, Casey | A-333-S | Paul Evenson |
| Obryk, Maciej | B-426-M | Peter Doran |
| Odrowski, Sirin | A-333-S | Paul Evenson |
| Ogburn, Walter | A-039-S | John Kovac |
| Ogden, Fred | B-420-M | W. Berry Lyons |
| Okal, Marianne | T-295-M | Bjorn Johns |
| Olech, James | B-426-M | Peter Doran |
| Oppenheimer, Clive | G-081-M | Phillip Kyle |
| Orfanon, Jason | Y-609-P | Christopher Neill |
| Orlando, Angiola | A-039-S | John Kovac |
| Orsi, Alejandro | O-403-O | Alejandro H Orsi |
| Orsi, Anais | I-477-M | Kendrick Taylor |
| Osburn, Glenn | G-055-M | Andy Nyblade |
| Owens, Stephanie | O-288-L/N | Kenneth O Buesseler |
| Padin, Stephen | A-379-S | John Carlstrom |

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| Palmer, Terence | B-518-M | Mahlon Kennicutt |
| Parisel, Camille | A-333-S | Paul Evenson |
| Park, Sarah | C-515-N | Eugene Domack |
| Parker, Alexander | B-305-M | Edward Carpenter |
| Parker, Melanie | B-258-N | Joseph J Torres |
| Parris, Richard | A-369-M | William Bristow |
| Patterson, Michael | A-333-S | Paul Evenson |
| Patterson, William | B-034-E/M | Steven D Emslie |
| Pautet, Pierre-Dominique | A-119-S | Michael Taylor |
| Pearson, Linnea | B-232-M | Daniel Costa |
| Peavey, Lindsey | B-249-N | Douglas P Nowacek |
| Pellinen, Brent | T-434-M | Paul Morin |
| Pennycook, Jean | B-031-M | David Ainley |
| Perez Lara, Juan | A-145-M | Bill Stepp |
| Peters, Leo | I-188-M | Prasad Gogineni |
| Pettit, Joe | T-295-M | Bjorn Johns |
| Pickering, Brett C | B-258-N | Joseph J Torres |
| Pierce, Elizabeth Lane | G-432-E | David L. Barbeau |
| Pike, Steve | O-288-L/N | Kenneth O Buesseler |
| Piwowski, Thomas | A-333-S | Paul Evenson |
| Plagge, Tom | A-379-S | John Carlstrom |
| Poinar, Kristin | I-345-M | |
| Polishinski, Steven | T-350-M | |
| Pollard, Anne | B-031-M | David Ainley |
| Pomraning, Dale | C-407-M | Robert Bindschadler |
| Porter, Claire | T-434-M | Paul Morin |
| Posada-Swafford, Angela | Y-609-P | Christopher Neill |
| Potts, Nicholas | O-363-M | Stephen Cohn |
| Powell, Je'iamie | I-189-M | Prasad Gogineni |
| Price, Lori | B-020-L/P | Deborah Steinberg |

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|-----------------------------|-----------|--------------------|
| Price, Rachel | B-211-M | |
| Pritchard, Andy | I-185-M | Prasad Gogineni |
| Read, Andrew | B-249-N | Douglas P Nowacek |
| Rees, Dan | Y-602-M/S | Carlos Gutierrez |
| Reguero, Marcelo | G-170-E | Ross MacPhee |
| Rhodes, Mike | O-214-L | Colm Sweeney |
| Richards, John | A-333-S | Paul Evenson |
| Richmond, Kristof | B-211-M | |
| Richter, Beau | B-017-M | Randall Davis |
| Richter, Steffen | A-039-S | John Kovac |
| Richter, Thomas | G-098-M | Donald Blankenship |
| Roberts, J.R. | G-079-M | |
| Roberts, Michael | G-437-M | Audrey Huerta |
| Robinson, Patrick | B-232-M | Daniel Costa |
| Robison, Amanda | A-144-M | Robyn Millan |
| Rodríguez Lagos, José | I-077-E | Konrad Steffen |
| Rodriguez-Morales, Fernando | I-189-M | Prasad Gogineni |
| Roe, Kimberly | C-515-N | Eugene Domack |
| Rogister, Yves | G-079-M | |
| Roop, Heidi | I-477-M | Kendrick Taylor |
| Rose, Paul | I-169-M | |
| Ross, Ronald | C-514-E/N | Theodore Scambos |
| Roth, James | A-333-S | Paul Evenson |
| Roussin, Trent | B-009-M | Robert Garrott |
| Royer, David | I-185-M | Prasad Gogineni |
| Ruck, Kate | B-020-L/P | Deborah Steinberg |
| Rush, Kurt | T-966-M | Mike Comberiate |
| Ryan, Lorelee | B-422-M | John Priscu |
| Saito, Mak | B-243-M | Mak Saito |
| Salvatore, Mark | | Michael Wyatt |
| Sandstrom, Perry | A-333-S | Paul Evenson |

| | | |
|------------------------|-----------|--------------------|
| Santovito, Gianfranco | B-258-N | Joseph J Torres |
| Saxer, Iris | B-044-E | |
| Scambos, Ted | C-514-E/N | Theodore Scambos |
| Schaefer, Hinrich | I-169-M | |
| Schild, Kristin | I-349-M | Andrei Kurbatov |
| Schmitt, William | T-966-M | Mike Comberiate |
| Schoenrock, Kathryn | B-022-P | Charles Amsler |
| Schoepfer, Shane | G-436-E | Joseph Kirschvink |
| Schroeder, Dustin | G-098-M | Donald Blankenship |
| Schroeder, Nicole | O-283-M/S | Matt Lazzara |
| Schutt, John | G-058-M | |
| Scordilis, Jean-Pierre | A-137-M | Eun-Suk Seo |
| Seo, Eun-Suk | A-137-M | Eun-Suk Seo |
| Sheehy, Chris | A-039-S | John Kovac |
| Sherrell, Robert | B-019-L/P | |
| Shirokoff, Erik | A-379-S | John Carlstrom |
| Siegel, Vickie | B-211-M | |
| Simmons, Beth | B-020-L/P | Deborah Steinberg |
| Simms, Alexander R | G-116-E | Alexander R Simms |
| Sinkola, Nickolas | T-927-M | |
| Sjunneskog, Maria | G-083-O | John B. Anderson |
| Skidmore, Mark | B-236-M | Mark Skidmore |
| Slovak, Mark | O-214-L | Colm Sweeney |
| Smalley, Bob | G-079-M | |
| Smaniotto, Rick | B-013-L/P | Bill Fraser |
| Smith, Craig | C-246-N | Maria Vernet |
| Smith, David | G-436-E | Joseph Kirschvink |
| Smith, Heidi | B-046-M | Christine Foreman |
| Smith, Mark | Y-602-M/S | Carlos Gutierrez |
| Smykla, Jerzy | B-034-E/M | Steven D Emslie |
| Sohm, Jill | B-305-M | Edward Carpenter |

| | | |
|--------------------------|---------|---------------------|
| Somero, George | B-301-M | Donal Manahan |
| Soreghan, Gerilyn | G-082-M | Gerilyn Soreghan |
| Soundarapandian, Karthik | A-333-S | Paul Evenson |
| Souney Jr., Joseph | I-477-M | Kendrick Taylor |
| Sousa, James | O-313-N | |
| Sovie, Adia | B-009-M | Robert Garrott |
| Spaleta, Jeff | A-369-M | William Bristow |
| Spaulding, Nicole | I-349-M | Andrei Kurbatov |
| Stanish, Lee | B-421-M | |
| Stanton, Timothy | C-407-M | Robert Bindschadler |
| Stapf, Fritz | A-145-M | Bill Stepp |
| Stauffer, Glenn | B-009-M | Robert Garrott |
| Steger, Emma | B-211-M | |
| Stenzel, Maria | C-515-N | Eugene Domack |
| Sterner, Nathan | A-357-M | Eftyhia Zesta |
| Steven, Blaire | B-301-M | Donal Manahan |
| Stezelberger, Thorsten | A-127-M | |
| Stillinger, Andrew | A-112-M | |
| Stimpert, Alison | B-249-N | Douglas P Nowacek |
| Stockel, James | C-407-M | Robert Bindschadler |
| Stolp, Michael | G-078-M | Robert Kemerait |
| Stone, Bill | B-211-M | |
| Strahler, Erik | A-333-S | Paul Evenson |
| Strganac, Christopher | G-170-E | Ross MacPhee |
| Stumpf, Allison | G-082-M | Gerilyn Soreghan |
| Stutz, James | G-079-M | |
| Sudiwala, Rashmi | A-039-S | John Kovac |
| Sumner, Dawn | G-441-M | Dale Andersen |
| Suprenand, Paul | B-258-N | Joseph J Torres |
| Swanson-Hysell, Nicholas | G-170-E | Ross MacPhee |

| | | |
|--------------------------|-----------|---------------------|
| Sweeney, Colm | O-214-L | Colm Sweeney |
| Sweet, Stephen | B-518-M | Mahlon Kennicutt |
| Switzer, Eric | A-379-S | John Carlstrom |
| Sylvain, Zachary Adam | B-424-M | Diana Wall |
| Takacs-Vesbach, Cristina | B-023-M | |
| Taylor, Michael | A-119-S | Michael Taylor |
| Teets, Nicholas | B-256-P | Richard Lee |
| Thoma, Mark | A-333-S | Paul Evenson |
| Thomas, Thomas | A-145-M | Bill Stepp |
| Thompson, Ellen | C-514-E/N | Theodore Scambos |
| Thompson, Lonnie | C-514-E/N | Theodore Scambos |
| Tilbury, Graham | A-333-S | Paul Evenson |
| Tillinger, Debra Kate | C-514-E/N | Theodore Scambos |
| Tobin, Thomas | G-436-E | Joseph Kirschvink |
| Tom, Jonathan | I-185-M | Prasad Gogineni |
| Torres, Joseph J | B-258-N | Joseph J Torres |
| Tosi, Delia | A-333-S | Paul Evenson |
| Tracey, Karen | O-313-N | |
| Trivelpiece, Susan | B-040-E | Wayne Trivelpiece |
| Trivelpiece, Wayne | B-040-E | Wayne Trivelpiece |
| Truffer, Martin | C-407-M | Robert Bindschadler |
| Truffer, Martin | C-514-E/N | Theodore Scambos |
| Tulaczyk, Slawek | I-345-M | |
| Tyson, Reny | B-249-N | Douglas P Nowacek |
| Vaage, Selina | B-249-N | Douglas P Nowacek |
| Valdes, James | O-288-L/N | Kenneth O Buesseler |
| Van Horn, David | B-023-M | |
| VandeRiet, Mark | O-257-S | James Butler |
| VanOverloop, Arne | A-333-S | Paul Evenson |
| Vaudrin, Cody | A-284-S | Scott Palo |
| Vaughn, Bruce | I-477-M | Kendrick Taylor |

| | | |
|----------------------|-----------|-------------------|
| Venema, Bryan | A-110-M/S | Gonzalo Hernandez |
| Verhagen, Erik | A-333-S | Paul Evenson |
| Vernet, Maria | C-246-N | Maria Vernet |
| Vick, Trista | B-422-M | John Priscu |
| Vinbladh, Jimmy | A-333-S | Paul Evenson |
| Vinther, Bo | I-477-M | Kendrick Taylor |
| Voigt, Don | I-168-M | Richard Alley |
| Voigt, Don | I-188-M | Prasad Gogineni |
| Waldenmaier, Tilo | A-333-S | Paul Evenson |
| Waldher, Kara | A-333-S | Paul Evenson |
| Waldron, Margaret | B-045-L/P | |
| Walker, Kenneth | A-333-S | Paul Evenson |
| Waples, Danielle | B-249-N | Douglas P Nowacek |
| Ward, Collin | B-046-M | Christine Foreman |
| Ward, Peter | G-436-E | Joseph Kirschvink |
| Ware, Colin | B-249-N | Douglas P Nowacek |
| Warren, Stephen | C-516-M | Stephen Warren |
| Waszkiewicz, Michael | I-349-M | Andrei Kurbatov |
| Watanabe, Atsushi | G-055-M | Andy Nyblade |
| Watts, Randolph | O-313-N | |
| Weekley, Marc | O-257-S | James Butler |
| Weidner, George | O-283-M/S | Matt Lazzara |
| Welch, Kathy | B-420-M | W. Berry Lyons |
| Welhouse, Lee | O-283-M/S | Matt Lazzara |
| Wellner, Julia | C-515-N | Eugene Domack |
| Wendell, Edward | T-927-M | |
| Wendricks, Tony | T-350-M | |
| Wesche, Gary | I-189-M | Prasad Gogineni |
| Westgate, Andrew | B-249-N | Douglas P Nowacek |
| Weygand, James | A-357-M | Eftyhia Zesta |
| Whelchel, Bradley | A-333-S | Paul Evenson |

| | | |
|------------------------|-----------|--------------------|
| White, Seth | G-079-M | |
| Whitehorn, Nathan | A-333-S | Paul Evenson |
| Whiteley, Daniel | B-045-L/P | |
| Wiederwohl, Christina | O-403-O | Alejandro H Orsi |
| Wiens, Doug | G-079-M | |
| Will, Alexis | B-040-E | Wayne Trivelpiece |
| Williams, David | B-017-M | Randall Davis |
| Williams, Terrie | B-017-M | Randall Davis |
| Williamson, Ross | A-379-S | John Carlstrom |
| Wilson, Corey | B-421-M | |
| Wilson, Jeffery | Y-602-M/S | Carlos Gutierrez |
| Wilson, Philip | A-039-S | John Kovac |
| Wipperfurth, Richard | A-333-S | Paul Evenson |
| Wipperfurth, Terri | A-333-S | Paul Evenson |
| Wisniewski, Paul | A-333-S | Paul Evenson |
| Withoff, David | T-396-M | Curt Szuberla |
| Wolter, Sonja | O-214-L | Colm Sweeney |
| Woods, Susan | B-040-E | Wayne Trivelpiece |
| Woodward, John | I-345-M | |
| Woschnagg, Kurt | A-333-S | Paul Evenson |
| Wray, Donald | A-333-S | Paul Evenson |
| Wright, Andrew | G-098-M | Donald Blankenship |
| Wu, Norb | Y-608-P | Norbert Wu |
| Yando, Karl | A-144-M | Robyn Millan |
| Yang, Jong Mann | A-137-M | Eun-Suk Seo |
| Yeager, Kirstie Lorene | B-013-L/P | Bill Fraser |
| Yeck, James | A-333-S | Paul Evenson |
| Yoo, Kyu-Chul | C-515-N | Eugene Domack |
| Yoshimura, Koji | A-140-M | John Mitchell |
| Young, Duncan | G-098-M | Donald Blankenship |

| | | |
|--------------------|---------------------------|-------------------|
| Young, Robert | A-123-S | Dave Besson |
| Zagorodnov, Victor | C-514-E/N | Theodore Scambos |
| Zarzhitsky, Pavel | A-333-S | Paul Evenson |
| Zernick, Michael | A-333-S | Paul Evenson |
| Zhou, Meng | B-249-N | Douglas P Nowacek |
| Zhu, Yiwu | B-249-N | Douglas P Nowacek |
| Zimmerman, Melany | A-333-S | Paul Evenson |
| Zipkin, Elise | B-044-E | |
| Zoet, Lucas | I-188-M | Prasad Gogineni |
| Zook, Bob | B-174-M | Stacy Kim |

[Return to Index](#)

Science Program Indexes: 2009-2010

USAP Program Index:

Astrophysics and Geospace Sciences

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|---------------------------|--|
| Besson, Dave | A-123-S | Neutrino Array Radio Calibration |
| Bieber, John | A-120-M | Cosmic ray observations at McMurdo Station |
| Bristow, William | A-369-M | Southpole (McMurdo) SuperDARN |
| Carlstrom, John | A-379-S | Cosmological Research with the 10-meter South Pole Telescope |
| Carlstrom, John | A-370-S | Science Coordination Office for Astrophysical Research in Antarctica (SCOARA-II) |
| Evenson, Paul | A-118-S | Element composition of high-energy solar particles |
| Evenson, Paul | A-120-M | Cosmic ray observations at McMurdo Station |
| Evenson, Paul | A-333-S | IceCube operations and maintenance |
| Fritts, David | A-113-E | Radar measurements of large- and small-scale dynamics of the MLT on the Antarctic Peninsula with an existing MF radar and a new generation meteor radar at British and Brazilian bases |
| Hernandez, Gonzalo | A-110-M/S | Austral high-latitude atmospheric dynamics |
| Inan, Umran | A-108-S | A VLF beacon transmitter at South Pole |
| Inan, Umran | A-336-P | ELF/VLF observation of whistler-mode waves, lightning discharge, and gamma-ray events from Palmer Station |
| Inan, Umran | A-327-N | ELF/VLF observation in the southern Pacific Ocean |
| Kovac, John | A-039-S | Collaborative Research: BICEP2 and |



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

| | | |
|-------------------|-------------------------|---|
| | | SPUD - A search for inflation with degree-scale polarimetry from the South Pole |
| LaBelle, James | A-128-S | Collaborative Research: Multi-instrument studies of auroral plasma radiation |
| Lessard, Marc | A-105-M | Collaborative Research: Polar Experiment Network for Geospace Upper atmosphere Investigations (PENGUIn) - Advancing the vision for global studies |
| Mende, Stephen | A-104-S | Antarctic auroral imaging |
| Millan, Robyn | A-144-M | Balloon Array for RBSP Relativistic Electron Losses (BARREL) |
| Mitchell, John | A-140-M | Balloon-borne Experiment with a Superconducting Spectrometer (BESS) |
| Palo, Scott | A-284-S | Collaborative study of the Antarctic mesosphere and lower thermosphere |
| Pryke, Clement | A-039-S | Collaborative Research: BICEP2 and SPUD - A search for inflation with degree-scale polarimetry from the South Pole |
| Seo, Eun-Suk | A-137-M | Cosmic Ray Energetics And Mass (CREAM) |
| Sivjee, Gulamabas | A-129-S | Observation of upper-atmospheric energetics, dynamics, and long-term variations over South Pole Station |
| Stepp, Bill | A-145-M | NASA Long Duration Balloon (LDB) support program |
| Taylor, Michael | A-119-S | Investigating wave-driven mesospheric dynamics over South Pole using an advanced mesospheric temperature mapper |
| Zesta, Eftyhia | A-357-M | South American Meridional B-Field Array (SAMBA): An American-Chilean chain |

Science Program Indexes: 2009-2010

USAP Program Index:

Organisms and Ecosystems

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|---------------------------|---|
| Adams, Byron | B-321-M | Collaborative Research: Limits and Drivers of Metazoan Distributions in the TAM (A Small Grants for Exploratory Research Proposal) |
| Ainley, David | B-031-M | Adelie Penguin response to climate change at the individual, colony and metapopulation levels |
| Amsler, Charles | B-022-P | Collaborative Research: The chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula |
| Carpenter, Edward | B-305-M | Collaborative Research: Biogeochemistry of cyanobacterial mats and hyporheic zone microbes in McMurdo Dry Valley glacial meltwater streams |
| Costa, Daniel | B-232-M | Collaborative Research: Weddell seals as autonomous sensors of the winter oceanography of the Ross Sea |
| Davis, Randall | B-017-M | Collaborative Research: Hunting in darkness: Behavioral and energetic strategies of Weddell seals in winter |
| Doran, Peter | B-426-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program |
| Emslie, Steven | B-034-E/M | Stable isotope analyses of pygoscelid penguin remains from active and abandoned colonies in Antarctica |
| Foreman, Christine | B-046-M | The biogeochemical evolution of |



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

| | | |
|-------------------|------------------|--|
| | | dissolved organic matter in a fluvial system on the Cotton Glacier, Antarctica |
| Fountain, Andrew | B-425-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valleys LTER program |
| Fraser, Bill | B-013-L/P | Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, apex predator component |
| Garrott, Robert | B-009-M | The demographic consequences of environmental variability and individual heterogeneity in life-history tactics of a long-lived Antarctic marine predator |
| Karentz, Deneb | B-301-M | A graduate training program in Antarctica: Integrative biology and adaptation of antarctic marine organisms |
| Kennicutt, Mahlon | B-518-M | Temporal variability in natural and anthropogenic disturbance of McMurdo Station |
| Kim, Stacy | B-174-M | Development of a remotely operated vehicle for under-ice research in polar environments |
| Lee, Richard | B-256-P | Role of dehydration and photoperiodism in preparing an Antarctic insect for the polar night |
| Lyons, W. Berry | B-420-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valleys LTER program |
| Manahan, Donal | B-301-M | A graduate training program in Antarctica: Integrative biology and adaptation of antarctic marine organisms |
| Martinson, Doug | B-021-L | Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, physical oceanography |

| | | |
|--------------------|------------------|---|
| | | component |
| Nowacek, Douglas | B-249-N | Collaborative research: The ecological role of a poorly studied Antarctic krill predator, the humpback whale (<i>Megaptera novaeangliae</i>) |
| Priscu, John | B-422-M | The Role of Resource Legacy on Contemporary Linkages Between Biodiversity and Ecosystem Processes in a Cold Desert Ecosystem: The McMurdo Dry Valley LTER Program |
| Saito, Mak | B-243-M | Comparative Genomic and Proteomic Survey of Major Antarctic Marine Phytoplankton: A Foundation for Polar Phytoplankton Genomics |
| Skidmore, Mark | B-236-M | Biogeochemistry and geomicrobiology of Taylor Glacier basal ice |
| Steinberg, Deborah | B-020-L/P | Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, zooplankton component |
| Torres, Joseph | B-258-N | Collaborative research: Possible climate-induced change in the distribution of <i>Pleuragramma antarcticum</i> on the Western Antarctic Peninsula shelf |
| Trivelpiece, Wayne | B-040-E | Penguins as monitors of the krill-centric Southern Ocean marine ecosystem |
| Virginia, Ross | B-423-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program |
| Wall, Diana | B-424-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program |

Science Program Indexes: 2009-2010

USAP Program Index:

Earth Sciences

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|-------------------------|--|
| Andersen, Dale | G-441-M | Lake Joyce microbialites resubmittal |
| Anderson, John | G-083-O | History of, and Mechanisms Leading to, Post-LGM Retreat of the West Antarctic Ice Sheet |
| Barbeau, David | G-432-E | COLLABORATIVE RESEARCH: Testing the Polar Gateway Glaciation Hypothesis: the Kinematic, Sedimentary, Water-Mass, and Ice-Volume Record of Drake Passage Opening |
| Bender, Michael | G-070-M | Collaborative Research: Dating and paleoenvironmental studies on ancient ice in the Dry Valleys, Antarctica |
| Blankenship, Donald | G-098-M | IPY Research: Investigating the cryospheric evolution of the central Antarctic plate (ICECAP) |
| Gillies, John | G-167-M | Dynamics of aeolian processes in the McMurdo Dry Valleys, Antarctica |
| Hall, Brenda | G-082-M | Development of Quantitative Weathering Indicators in Proximal Alluvial Sediments to Assess Glacial Activity in the Rock Record |
| Huerta, Audrey | G-437-M | Byrd Glacier: Evidence for plateau collapse |
| Kemerait, Robert | G-078-M | Dry Valley seismic project |
| Kirschvink, Joseph | G-436-E | Collaborative Research: Upper Cretaceous-lower Paleocene strata from the James Ross Island region: Chemo-, Magneto-, and biomarker tests of intercontinental correlation and extinction hypotheses |
| Kyle, Phillip | G-081-M | Mount Erebus Volcano Observatory III (MEVO III): Conduit processes |



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

and surveillance

MacPhee, Ross

G-170-E

Vertebrate paleontology of Livingston Island, South Shetlands, Antarctica

Nitsche, Frank-Oliver

G-059-O

Cross-shelf troughs as indicators of ice sheet dynamics along the West Antarctic continental margin

Nyblade, Andy

G-055-M

Collaborative Research: A broadband seismic experiment to image the lithosphere beneath the Gamburtsev Mountains, East Antarctica

Simms, Alexander

G-116-E

Constraining the deglaciation of the Antarctic Peninsula using OSL dated beach deposits

Soreghan, Gerilyn

G-082-M

Development of Quantitative Weathering Indicators in Proximal Alluvial Sediments to Assess Glacial Activity in the Rock Record

[Return to Index](#)

Science Program Indexes: 2009-2010

USAP Program Index:

Glaciology

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|-------------------------|---|
| Alley, Richard | I-168-M | Collaborative research: Physical properties of the WAIS Divide deep core |
| Bay, Ryan | I-347-M | Dust Logging at Dome C for Abrupt Climate Changes, Large Volcanic Eruptions and Bolide Impacts |
| Conway, Howard | I-157-M | IPY collaborative research: Constraining the mass balance deficit of the Amundsen Coast's glaciers |
| Gogineni, Prasad | I-188-M | Center for Remote Sensing of Ice Sheets (CReSIS) - ground radar and seismic operations |
| Gogineni, Prasad | I-189-M | Center for Remote Sensing of Ice Sheets (CReSIS) - Basler airborne radar survey |
| Gogineni, Prasad | I-185-M | Center for Remote Sensing of Ice Sheets (CReSIS) - Unmanned Aerial System (UAS) operations |
| Hargreaves, Geoffrey | I-478-M | National Ice Core Laboratory (NICL) core-handling and data recording |
| Joughin, Ian | I-157-M | IPY collaborative research: Constraining the mass balance deficit of the Amundsen Coast's glaciers |
| Kurbatov, Andrei | I-349-M | Collaborative Research: Exploring a 2 million-year-plus ice climate archive-Allan Hills blue ice area (2MBIA) |
| Steffen, Konrad | I-077-E | IPY: Stability of Larsen C Ice Shelf in a warming climate |
| Taylor, Kendrick | I-477-M | Investigation of climate, ice dynamics, and biology using a deep ice core from the West Antarctic Ice |



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

[Return to Index](#)

Science Program Indexes: 2009-2010

USAP Program Index:

Ocean and Atmospheric Sciences

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|---------------------------|---|
| Buesseler, Kenneth | O-288-L/N | WAP-flux: New Tools to Study the Fate of Phytoplankton Production in the West Antarctic Peninsula |
| Butler, James | O-257-S | South Pole monitoring for climatic change |
| Cassano, John | O-400-M | Collaborative Research: Atmosphere-Ocean-Ice Interaction in a Coastal Polynya |
| Cohn, Stephen | O-363-M | IPY: NCAR facility support, scientific contributions and collaborative research to understand environmental change in Antarctica through participation in the international CONCORDIASI project |
| Deshler, Terry | O-131-M | Measurements of Antarctic ozone and polar stratospheric cloud profiles in a time of decreasing atmospheric chlorine, climate change, and fluctuations in polar vortex strength |
| Lazzara, Matt | O-283-M/S | Collaborative research: Antarctic Automatic Weather Station Program (AWS), 2007-2010 |
| Martinson, Doug | O-241-L | SASSI Mooring Array in the Western Antarctic Peninsula |
| Orsi, Alejandro | O-403-O | Collaborative Research: Atmosphere-Ice-Ocean Interactions in the Eastern Ross Sea |
| Sprintall, Janet | O-260-L | The Drake Passage high-density XBT/XCTD program |
| Sweeney, Colm | O-214-L | Processes driving spatial and temporal variability of surface pCO ₂ in the Drake Passage |

[Return to Index](#)



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)



Science Program Indexes: 2009-2010

USAP Program Index:

Artists and Writers

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|-------------------------|--|
| Engler, Elise | W-219-M | Unpacking Antarctica |
| Greenberg, Stanley | W-220-S | Photographs of the IceCube Neutrino Observatory |
| Linder, Chris | W-218-M | Raptor of the South |
| McKee, Anna | W-217-M | Ice Cores, Translucent Truths from the Antarctic Ice Sheet |

[Return to Index](#)



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Science Program Indexes: 2009-2010

USAP Program Index:

Education and Outreach

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|---------------------------|--|
| Gutierrez, Carlos | Y-602-M/S | Frozen Planet |
| Neill, Christopher | Y-609-P | IPY: Improving the public's understanding of polar research through hands-on fellowships for science journalists in the Arctic and Antarctic |
| Wu, Norbert | Y-608-P | IPY: Poles Apart: Visual Documentation of the Marine Ecosystems of the Polar Regions |

[Return to Index](#)



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Science Program Indexes: 2009-2010

USAP Program Index:

Integrated System Science

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|---------------------------|--|
| Balco, Gregory | C-515-N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multidisciplinary Approach - Marine and Quaternary Geosciences |
| Bindschadler, Robert | C-407-M | IPY: Collaborative Research: Ocean- ice sheet interaction in the Amundsen Sea: The keystone of West Antarctic stability |
| Domack, Eugene | C-515-N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multidisciplinary Approach - Marine and Quaternary Geosciences |
| Pettit, Erin | C-514-E/N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multi- disciplinary Approach -- Cryosphere and Oceans (LARISSA) |
| Scambos, Theodore | C-514-E/N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multi- disciplinary Approach -- Cryosphere and Oceans (LARISSA) |
| Vernet, Maria | C-246-N | Title: Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multidisciplinary Approach-Marine Ecosystems |
| Warren, Stephen | C-516-M | Ocean surfaces on snowball Earth |

[Return to Index](#)



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Science Program Indexes: 2009-2010

USAP Station Index:

Amundsen-Scott South Pole Station

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|---------------------------|--|
| Besson, Dave | A-123-S | Neutrino Array Radio Calibration |
| Butler, James | O-257-S | South Pole monitoring for climatic change |
| Carlstrom, John | A-379-S | Cosmological Research with the 10-meter South Pole Telescope |
| Carlstrom, John | A-370-S | Science Coordination Office for Astrophysical Research in Antarctica (SCOARA-II) |
| Evenson, Paul | A-118-S | Element composition of high-energy solar particles |
| Evenson, Paul | A-333-S | IceCube operations and maintenance |
| Greenberg, Stanley | W-220-S | Photographs of the IceCube Neutrino Observatory |
| Gutierrez, Carlos | Y-602-M/S | Frozen Planet |
| Hernandez, Gonzalo | A-110-M/S | Austral high-latitude atmospheric dynamics |
| Inan, Umran | A-108-S | A VLF beacon transmitter at South Pole |
| Kovac, John | A-039-S | Collaborative Research: BICEP2 and SPUD - A search for inflation with degree-scale polarimetry from the South Pole |
| LaBelle, James | A-128-S | Collaborative Research: Multi-instrument studies of auroral plasma radiation |
| Lazzara, Matt | O-283-M/S | Collaborative research: Antarctic Automatic Weather Station Program (AWS), 2007-2010 |
| Mende, Stephen | A-104-S | Antarctic auroral imaging |
| Palo, Scott | A-284-S | Collaborative study of the Antarctic mesosphere and lower thermosphere |



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

| | | |
|-------------------|-------------------------|--|
| Pryke, Clement | A-039-S | Collaborative Research: BICEP2 and SPUD - A search for inflation with degree-scale polarimetry from the South Pole |
| Sivjee, Gulamabas | A-129-S | Observation of upper-atmospheric energetics, dynamics, and long-term variations over South Pole Station |
| Taylor, Michael | A-119-S | Investigating wave-driven mesospheric dynamics over South Pole using an advanced mesospheric temperature mapper |

[Return to Index](#)

Science Program Indexes: 2009-2010

USAP Station Index:

McMurdo Station

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|-------------------------|--|
| Adams, Byron | B-321-M | Collaborative Research: Limits and Drivers of Metazoan Distributions in the TAM (A Small Grants for Exploratory Research Proposal) |
| Ainley, David | B-031-M | Adelie Penguin response to climate change at the individual, colony and metapopulation levels |
| Alley, Richard | I-168-M | Collaborative research: Physical properties of the WAIS Divide deep core |
| Andersen, Dale | G-441-M | Lake Joyce microbialites resubmittal |
| Bay, Ryan | I-347-M | Dust Logging at Dome C for Abrupt Climate Changes, Large Volcanic Eruptions and Bolide Impacts |
| Bender, Michael | G-070-M | Collaborative Research: Dating and paleoenvironmental studies on ancient ice in the Dry Valleys, Antarctica |
| Bieber, John | A-120-M | Cosmic ray observations at McMurdo Station |
| Bindschadler, Robert | C-407-M | IPY: Collaborative Research: Ocean-ice sheet interaction in the Amundsen Sea: The keystone of West Antarctic stability |
| Blankenship, Donald | G-098-M | IPY Research: Investigating the cryospheric evolution of the central Antarctic plate (ICECAP) |
| Bristow, William | A-369-M | Southpole (McMurdo) SuperDARN |
| Carpenter, Edward | B-305-M | Collaborative Research: Biogeochemistry of cyanobacterial mats and hyporheic zone microbes in McMurdo Dry Valley glacial meltwater streams |
| Cassano, John | O-400-M | Collaborative Research: Atmosphere- |



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

| | | |
|--------------------|------------------|---|
| | | Ocean-Ice Interaction in a Coastal Polynya |
| Cohn, Stephen | O-363-M | IPY: NCAR facility support, scientific contributions and collaborative research to understand environmental change in Antarctica through participation in the international CONCORDIASI project |
| Comberiate, Mike | T-966-M | TDRSS and NAILS |
| Conway, Howard | I-157-M | IPY collaborative research: Constraining the mass balance deficit of the Amundsen Coast's glaciers |
| Costa, Daniel | B-232-M | Collaborative Research: Weddell seals as autonomous sensors of the winter oceanography of the Ross Sea |
| Davis, Randall | B-017-M | Collaborative Research: Hunting in darkness: Behavioral and energetic strategies of Weddell seals in winter |
| Deshler, Terry | O-131-M | Measurements of Antarctic ozone and polar stratospheric cloud profiles in a time of decreasing atmospheric chlorine, climate change, and fluctuations in polar vortex strength |
| Doran, Peter | B-426-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program |
| Emslie, Steven | B-034-E/M | Stable isotope analyses of pygoscelid penguin remains from active and abandoned colonies in Antarctica |
| Engler, Elise | W-219-M | Unpacking Antarctica |
| Evenson, Paul | A-120-M | Cosmic ray observations at McMurdo Station |
| Foreman, Christine | B-046-M | The biogeochemical evolution of dissolved organic matter in a fluvial system on the Cotton Glacier, Antarctica |
| Fountain, Andrew | B-425-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valleys LTER program |

| | | |
|----------------------|------------------|--|
| Garrott, Robert | B-009-M | The demographic consequences of environmental variability and individual heterogeneity in life-history tactics of a long-lived Antarctic marine predator |
| Gillies, John | G-167-M | Dynamics of aeolian processes in the McMurdo Dry Valleys, Antarctica |
| Gogineni, Prasad | I-188-M | Center for Remote Sensing of Ice Sheets (CReSIS) - ground radar and seismic operations |
| Gogineni, Prasad | I-189-M | Center for Remote Sensing of Ice Sheets (CReSIS) - Basler airborne radar survey |
| Gogineni, Prasad | I-185-M | Center for Remote Sensing of Ice Sheets (CReSIS) - Unmanned Aerial System (UAS) operations |
| Gutierrez, Carlos | Y-602-M/S | Frozen Planet |
| Hall, Brenda | G-082-M | Development of Quantitative Weathering Indicators in Proximal Alluvial Sediments to Assess Glacial Activity in the Rock Record |
| Hargreaves, Geoffrey | I-478-M | National Ice Core Laboratory (NICL) core-handling and data recording |
| Hernandez, Gonzalo | A-110-M/S | Austral high-latitude atmospheric dynamics |
| Huerta, Audrey | G-437-M | Byrd Glacier: Evidence for plateau collapse |
| Johns, Bjorn | T-295-M | UNAVCO GPS survey support |
| Joughin, Ian | I-157-M | IPY collaborative research: Constraining the mass balance deficit of the Amundsen Coast's glaciers |
| Karentz, Deneb | B-301-M | A graduate training program in Antarctica: Integrative biology and adaptation of antarctic marine organisms |
| Kemerait, Robert | G-078-M | Dry Valley seismic project |
| Kennicutt, Mahlon | B-518-M | Temporal variability in natural and anthropogenic disturbance of McMurdo Station |
| Kim, Stacy | B-174-M | Development of a remotely operated vehicle for under-ice research in polar environments |

| | | |
|------------------|------------------|--|
| Kurbatov, Andrei | I-349-M | Collaborative Research: Exploring a 2 million-year-plus ice climate archive- Allan Hills blue ice area (2MBIA) |
| Kyle, Phillip | G-081-M | Mount Erebus Volcano Observatory III (MEVO III): Conduit processes and surveillance |
| Lazzara, Matt | O-283-M/S | Collaborative research: Antarctic Automatic Weather Station Program (AWS), 2007-2010 |
| Lessard, Marc | A-105-M | Collaborative Research: Polar Experiment Network for Geospace Upper atmosphere Investigations (PENGUIn) - Advancing the vision for global studies |
| Linder, Chris | W-218-M | Raptor of the South |
| Lyons, W. Berry | B-420-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valleys LTER program |
| Manahan, Donal | B-301-M | A graduate training program in Antarctica: Integrative biology and adaptation of antarctic marine organisms |
| McKee, Anna | W-217-M | Ice Cores, Translucent Truths from the Antarctic Ice Sheet |
| Millan, Robyn | A-144-M | Balloon Array for RBSP Relativistic Electron Losses (BARREL) |
| Mitchell, John | A-140-M | Balloon-borne Experiment with a Superconducting Spectrometer (BESS) |
| Morin, Paul | T-434-M | The Antarctic Geospatial Information Center: Collecting, creating, delivering and archiving for the community |
| Nyblade, Andy | G-055-M | Collaborative Research: A broadband seismic experiment to image the lithosphere beneath the Gamburtsev Mountains, East Antarctica |
| Parker, Timothy | T-299-M | IRIS/PASSCAL seismic support |
| Priscu, John | B-422-M | The Role of Resource Legacy on Contemporary Linkages Between Biodiversity and Ecosystem Processes |

| | | |
|-------------------|----------------|---|
| | | in a Cold Desert Ecosystem: The McMurdo Dry Valley LTER Program |
| Saito, Mak | B-243-M | Comparative Genomic and Proteomic Survey of Major Antarctic Marine Phytoplankton: A Foundation for Polar Phytoplankton Genomics |
| Seo, Eun-Suk | A-137-M | Cosmic Ray Energetics And Mass (CREAM) |
| Skidmore, Mark | B-236-M | Biogeochemistry and geomicrobiology of Taylor Glacier basal ice |
| Soreghan, Gerilyn | G-082-M | Development of Quantitative Weathering Indicators in Proximal Alluvial Sediments to Assess Glacial Activity in the Rock Record |
| Stepp, Bill | A-145-M | NASA Long Duration Balloon (LDB) support program |
| Szuberla, Curt | T-396-M | Operation and maintenance of a CTBT class infrasound array at Windless Bight |
| Taylor, Kendrick | I-477-M | Investigation of climate, ice dynamics, and biology using a deep ice core from the West Antarctic Ice Sheet |
| Virginia, Ross | B-423-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program |
| Wall, Diana | B-424-M | Role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program |
| Warren, Stephen | C-516-M | Ocean surfaces on snowball Earth |
| Zesta, Eftyhia | A-357-M | South American Meridional B-Field Array (SAMBA): An American-Chilean chain |

Science Program Indexes: 2009-2010

USAP Station Index:

Palmer Station

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|---------------------------|--|
| Amsler, Charles | B-022-P | Collaborative Research: The chemical ecology of shallow-water marine macroalgae and invertebrates on the Antarctic Peninsula |
| Fraser, Bill | B-013-L/P | Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, apex predator component |
| Inan, Umran | A-336-P | ELF/VLF observation of whistler-mode waves, lightning discharge, and gamma-ray events from Palmer Station |
| Lee, Richard | B-256-P | Role of dehydration and photoperiodism in preparing an Antarctic insect for the polar night |
| Neill, Christopher | Y-609-P | IPY: Improving the public's understanding of polar research through hands-on fellowships for science journalists in the Arctic and Antarctic |
| Steinberg, Deborah | B-020-L/P | Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, zooplankton component |
| Wu, Norbert | Y-608-P | IPY: Poles Apart: Visual Documentation of the Marine Ecosystems of the Polar Regions |

[Return to Index](#)



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Science Program Indexes: 2009-2010

USAP Station Index:

RVIB Nathaniel B. Palmer

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|---------------------------|---|
| Balco, Gregory | C-515-N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multidisciplinary Approach - Marine and Quaternary Geosciences |
| Buesseler, Kenneth | O-288-L/N | WAP-flux: New Tools to Study the Fate of Phytoplankton Production in the West Antarctic Peninsula |
| Domack, Eugene | C-515-N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multidisciplinary Approach - Marine and Quaternary Geosciences |
| Inan, Umran | A-327-N | ELF/VLF observation in the southern Pacific Ocean |
| Nowacek, Douglas | B-249-N | Collaborative research: The ecological role of a poorly studied Antarctic krill predator, the humpback whale (<i>Megaptera novaeangliae</i>) |
| Pettit, Erin | C-514-E/N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multi-disciplinary Approach -- Cryosphere and Oceans (LARISSA) |
| Scambos, Theodore | C-514-E/N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multi-disciplinary Approach -- Cryosphere and Oceans (LARISSA) |
| Torres, Joseph | B-258-N | Collaborative research: Possible climate-induced change in the distribution of <i>Pleuragramma antarcticum</i> on the Western Antarctic Peninsula shelf |
| Vernet, Maria | C-246-N | Title: Collaborative Research in IPY: |



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Abrupt Environmental Change in the
Larsen Ice Shelf System, a
Multidisciplinary Approach-Marine
Ecosystems

[Return to Index](#)

Science Program Indexes: 2009-2010

USAP Station Index:

ARSV Laurence M. Gould

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|---------------------------|---|
| Buesseler, Kenneth | O-288-L/N | WAP-flux: New Tools to Study the Fate of Phytoplankton Production in the West Antarctic Peninsula |
| Fraser, Bill | B-013-L/P | Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, apex predator component |
| Martinson, Doug | O-241-L | SASSI Mooring Array in the Western Antarctic Peninsula |
| Martinson, Doug | B-021-L | Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, physical oceanography component |
| Sprintall, Janet | O-260-L | The Drake Passage high-density XBT/XCTD program |
| Steinberg, Deborah | B-020-L/P | Palmer Long Term Ecological Research (LTER): Looking back in time through marine ecosystem space, zooplankton component |
| Sweeney, Colm | O-214-L | Processes driving spatial and temporal variability of surface pCO ₂ in the Drake Passage |

[Return to Index](#)



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Science Program Indexes: 2009-2010

USAP Station Index:

Special Projects

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|---------------------------|--|
| Barbeau, David | G-432-E | COLLABORATIVE RESEARCH: Testing the Polar Gateway Glaciation Hypothesis: the Kinematic, Sedimentary, Water-Mass, and Ice-Volume Record of Drake Passage Opening |
| Emslie, Steven | B-034-E/M | Stable isotope analyses of pygoscelid penguin remains from active and abandoned colonies in Antarctica |
| Fritts, David | A-113-E | Radar measurements of large- and small-scale dynamics of the MLT on the Antarctic Peninsula with an existing MF radar and a new generation meteor radar at British and Brazilian bases |
| Kirschvink, Joseph | G-436-E | Collaborative Research: Upper Cretaceous-lower Paleocene strata from the James Ross Island region: Chemo-, Magneto-, and biomarker tests of intercontinental correlation and extinction hypotheses |
| MacPhee, Ross | G-170-E | Vertebrate paleontology of Livingston Island, South Shetlands, Antarctica |
| Pettit, Erin | C-514-E/N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multi-disciplinary Approach -- Cryosphere and Oceans (LARISSA) |
| Scambos, Theodore | C-514-E/N | Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multi-disciplinary Approach -- Cryosphere and Oceans (LARISSA) |
| Simms, Alexander | G-116-E | Constraining the deglaciation of the Antarctic Peninsula using OSL dated beach deposits |



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Steffen, Konrad

I-077-E

IPY: Stability of Larsen C Ice Shelf in a warming climate

Trivelpiece, Wayne

B-040-E

Penguins as monitors of the krill-centric Southern Ocean marine ecosystem

[Return to Index](#)

Science Program Indexes: 2009-2010

USAP Station Index:

ODEN Icebreaker

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|-------------------------|---|
| Anderson, John | G-083-O | History of, and Mechanisms Leading to, Post-LGM Retreat of the West Antarctic Ice Sheet |
| Nitsche, Frank-Oliver | G-059-O | Cross-shelf troughs as indicators of ice sheet dynamics along the West Antarctic continental margin |
| Orsi, Alejandro | O-403-O | Collaborative Research: Atmosphere-Ice-Ocean Interactions in the Eastern Ross Sea |

[Return to Index](#)



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Science Project Details: 2009-2010

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



Researcher adjusts the ID band worn by a penguin around its wing. Photo by Dena Rosenberger.

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

H.T. Harvey & Associates
Los Gatos, California

Supporting Stations: McMurdo Station

Research Locations: Cape Crozier, Cape Royds, Beaufort Island, Franklin Island, Inexpressible Island

Project Description:

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



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

education program, including webisodes and PenguinScience.com.

Field Season Overview:

Team members will travel via helicopter and tracked vehicle to establish field camps near penguin breeding colonies at Capes Crozier and Royds. If ice conditions and logistics permit, they will travel via icebreaker to visit the penguin colony on Beaufort Island. At each camp, the scientists will search for previously banded penguins and log their breeding status. They will investigate foraging effort by attaching time-depth recorders, satellite tags, and GLS tags to the birds. The researchers will also continue their operation of computerized weighbridges to track the arrival and departure from the nesting area of tagged birds, and to log their weight. The researchers also plan to continue work on an educational web site and DVD based on their field work. At the close of the Adélie penguin nesting season, the researchers will pull out their camps and return to McMurdo via helicopter or tracked vehicle.

Deploying Team Members:

- Stephanie Jenouvrier (Team Leader)
- Amelie Lescroel
- Jean Pennycook
- Anne Pollard (Team Leader)

[Return to Index](#)

Science Project Details: 2009-2010

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



Program Manager:

Dr. Roberta Marinelli

Event Number: B-022-P

ASC POC/Implementer:

Rob Edwards

Dr. Charles Amsler (Principal Investigator)

camsler@nsf.gov

<http://www.uab.edu/uabbio/s022/>

University of Alabama Birmingham

Department of Biology

Birmingham, Alabama

Supporting Stations: Palmer Station

Research Locations: On station, Palmer Station boating area, local islands

Project Description:

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

Field Season Overview:

Macroalgae, amphipods, sponges, tunicates, and other invertebrates will be collected from a variety of sites within small boat range of Palmer Station. After collection organisms will be used immediately for experiments or frozen. Macroalgae and invertebrates will be extracted in organic solvents for



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

bioassays at Palmer and subsequent structural determinations at researchers' home institutions. In addition to laboratory- and aquarium-based experiments at Palmer, team members will transplant macroalgae and invertebrates onto concrete substrates in subtidal areas. They will be similar to parking lot bumpers but somewhat smaller. Building bricks with invertebrates attached to them will be cable-tied onto these substrates. Since evidence exist that amphipods may move up off the sea bottom at night, researchers will test for this by deploying and recovering the experiments early as early after sunrise, and as late before sunset as practical.

Deploying Team Members:

- Margaret Amsler
- Bill Baker (Co-PI)
- Jason Cuce
- John Maschek
- Ruth McDowell
- Kathryn Schoenrock

[Return to Index](#)

Science Project Details: 2009-2010

Collaborative Research In IPY: Abrupt Environmental Change In The Larsen Ice Shelf System, A Multidisciplinary Approach - Marine And Quaternary Geosciences



The continuous GPS station installed at Duthier's point. This GPS station is part of a total of six such stations to be deployed as part of LARISSA project. Photo by Eugene Domack and B. Johns.

Dr. Gregory Balco (Principal Investigator)

balcs@bgc.org

<http://www.hamilton.edu/news/exp/LARISSA/index.html>

Berkeley, California

Supporting Stations: RV/IB Nathaniel B. Palmer

Research Locations: Weddell Sea

Project Description:

The LARsen Ice Shelf System, Antarctica (LARISSA) Project will bring together an international, interdisciplinary team of researchers to address the abrupt environmental change in Antarctica's Larsen Ice Shelf System. Ice core scientists, glaciologists, oceanographers, marine geologists and biologists are collaborating to characterize the affects of the 2002 ice shelf collapse on the marine ecosystem as well as on glacial dynamics and interactions between the ocean, ice, geology and biology. The project also aims to place these changes in the context of past changes in the region occurring on timescales ranging from decadal to the penultimate interglacial (125,000 years before present) when it is thought to have been warmer, and the sea level higher than today.

Field Season Overview:

The 2010 vessel-based components of the LARISSA project will be staged from the RV Nathaniel B. Palmer, which will sail from Punta Arenas, Chile to



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

the main research area in the Weddell Sea. Research activities will include: Land-based geomorphology and cosmogenic exposure age dating; sediment sampling; swath mapping of the entire Larsen B Embayment, the Larsen C Ice Shelf trough, and the edge of the ice shelf; physical and biological mooring deployments; Remotely Operated Vehicle (ROV) missions; still and video photography of the ocean floor; sidescan sonar; and conductivity temperature and depth (CTD) casts.

Deploying Team Members:

- Dries Boone
- Stefanie Brachfeld (Co-PI)
- Douglas Fox
- Katrien Heirman
- Scott Ishman (Co-PI)
- Sun Mi Jeong
- Caroline Lavoie
- Amy Leventer (Co-PI)
- Lieven Naudts
- Sarah Park
- Kimberly Roe
- Maria Stenzel
- Julia Wellner (Co-PI)
- Kyu-Chul Yoo

[Return to Index](#)

Science Project Details: 2009-2010

COLLABORATIVE RESEARCH: Testing The Polar Gateway Glaciation Hypothesis: The Kinematic, Sedimentary, Water-Mass, And Ice-Volume Record Of Drake Passage Opening



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. David L. Barbeau (Principal Investigator)
dbarbeau@geol.sc.edu
<http://www.geol.sc.edu/barbeau/ipy/index.asp>

University of South Carolina
Columbia, South Carolina

Supporting Stations: Special Project
Research Locations: Various Peninsula Area Sites

Project Description:

Researchers are studying the sedimentary record to gain a better understanding of the evolution of tectonic plates, mountain belts, climate and biogeography. To that end, they will conduct thermochronometry sampling from source metasedimentary rocks and granitoids in the southern Antarctic Peninsula (Palmer Land), and on Rothera & Alexander Islands. They will also conduct some reconnaissance geology of the southern Antarctic Peninsula for future research.

Field Season Overview:

The field team will sail on the AR/SV Laurence M. Gould to various research sites in the southern Antarctic Peninsula. Their project will entail both day trips and multi-day field camps ashore. At the end of the cruise, rock samples will be sent to the home institution.

Deploying Team Members:



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

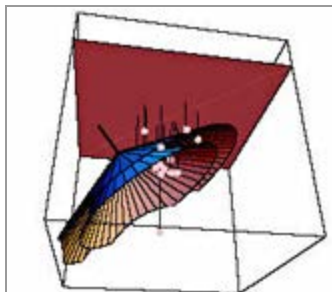
- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

- Justin Davis
- Sidney Hemming
- Elizabeth Pierce

[↶ Return to Index](#)

Science Project Details: 2009-2010

Neutrino Array Radio Calibration



Radio Ice Cherenkov Experiment (RICE)

Mr. Dave Besson (Principal Investigator)

dzbesson@gmail.com

<http://heplx3.phsx.ku.edu/~riceuser>

University of Kansas Lawrence

Physics (RICE)

Lawrence, Kansas

Supporting Stations: South Pole Station

Research Locations: Martin A. Pomerantz Observatory (MAPO)

Project Description:

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

Field Season Overview:

Team members will deploy to Amundsen-Scott South Pole Station where they will connect an air shower and above-ice antennas through the current South Pole Station optical fiber grid. They may also re-cable some existing antenna cables, depending on how much damage occurred to equipment during the de-commissioning of the AMANDA telescope. In addition, they will explore the possibility of using a previously drilled NOAA hole that was used in their 2003-04 studies.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Deploying Team Members:

- Ilya Kravchenko
- Robert Young

[↶ Return to Index](#)

Science Project Details: 2009-2010

Cosmic Ray Observations At McMurdo Station



Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-120-M

ASC POC/Implementer:
Leslie Blank

Inside the Cosmic Ray Lab. The neutron monitor is in three sections (white structures on floor) each containing six neutron detector tubes. Photo by L. Shulman.

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

University of Delaware

Bartol Research Institute
Newark, Delaware

Supporting Stations: McMurdo Station

Research Locations: Building 84

Project Description:

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

Field Season Overview:

In order to keep the active components of this experiment in their present



[Project Indexes](#)

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[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

McMurdo Station location in Building 84, and to reduce the McMurdo energy drain, efforts this season will focus on separately insulating and heating the active components, which will allow the entire building to go cold.

[Return to Index](#)

Science Project Details: 2009-2010

IPY: Collaborative Research: Ocean-Ice Sheet Interaction In The Amundsen Sea: The Keystone Of West Antarctic Stability



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Robert Bindschadler (Principal Investigator)

Robert.A.Bindschadler@nasa.gov

<http://pigiceshelf.nasa.gov>

Program Manager:

Dr. Sonia Esperanca

Event Number: C-407-M

ASC POC/Implementer:

Chad Naughton

National Aeronautics and Space Administration

Goddard Space Flight Center
Greenbelt, Maryland

Supporting Stations: McMurdo Station

Research Locations: Ross Ice Shelf

Project Description:

Rapid changes to the West Antarctic ice sheet (WAIS) where it flows into the Amundsen Sea may be caused by weakening of the floating ice shelf that helps hold the ice sheet in place. Researchers hypothesize that warm water is melting the undersides of these ice shelves decreasing the back pressure, allowing the ice sheet to flow faster and leading to a smaller ice sheet which eventually leads to higher sea levels and slow motion coastal flooding worldwide. Satellite observations can identify ice sheet changes but they cannot reveal conditions under the ice. This fieldwork will make direct observations of the ice beneath the Pine Island Glacier (PIG) including geophysical features of the sub-shelf cavity and cavity bed, water properties within the ice cavity, flow geometry, and visual appearance (using photography). These direct measurements will be fed into advanced computer models of ocean and ice characteristics to shed light on these changes.

Field Season Overview:



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

On the ice shelf at Windless Bight, researchers will test a new ice drill, deploy a borehole camera, and an ocean profiler. They will also perform maintenance on previously installed Pine Island Glacier instruments. At the end of the field season, the team will return to Byrd Field Camp, and then to McMurdo Station by Twin Otter aircraft.

Deploying Team Members:

- Alberto Behar (Co-PI)
- Jaret Matthews
- Dale Pomraning
- Timothy Stanton (Co-PI)
- James Stockel
- Martin Truffer (Co-PI)

[Return to Index](#)

Science Project Details: 2009-2010

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



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Donald Blankenship (Principal Investigator)

blank@ig.utexas.edu

<http://www.ig.utexas.edu/research/projects/icecap>

University of Texas Austin

Institute for Geophysics
Austin, Texas

Supporting Stations: McMurdo Station

Research Locations: McMurdo, Dumont D'Urville, and Casey stations

Project Description:

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

Field Season Overview:

This season researchers will primarily survey out of both McMurdo Station and Casey Station, using a Basler BT-67, C-GJKB aircraft. They will test the aircraft from mid-October to early November. During November, they plan to survey out of McMurdo Station. Once that survey is complete, they will transit the aircraft and seven people to Dumont D'Urville Station for several days, and then on to Casey Station. In early January, the Basler will return to McMurdo to deconfigure and unload cargo. Four science personnel and



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

three air crew (Kenn Borek Air personnel) will accompany the survey aircraft during this phase.

Deploying Team Members:

- Julian Dowdeswell
- Gonzalo Echeverry
- Jamin Greenbaum
- John Holt (Co-PI)
- Scott Kempf
- Thomas Richter
- Dustin Schroeder
- Andrew Wright
- Duncan Young

[↶ Return to Index](#)

Science Project Details: 2009-2010

Southpole (McMurdo) SuperDARN



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. William Bristow (Principal Investigator)

bill.bristow@gi.alaska.edu

<http://SuperDARN.jhuapl.edu>

University of Alaska Fairbanks

Geophysical Institute
Fairbanks, Alaska

Supporting Stations: McMurdo Station

Research Locations:

Project Description:

The objective of this project is to construct the Super Dual Auroral Radar Network (SuperDARN) McMurdo radar. The radar will be part of an international network for the study of the upper atmosphere.

Field Season Overview:

At McMurdo Station, deploying team members will erect the SuperDARN antenna array and install the radar electronics.

Deploying Team Members:

- Richard Parris
- Jeff Spaleta

[Return to Index](#)



[Project Indexes](#)

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

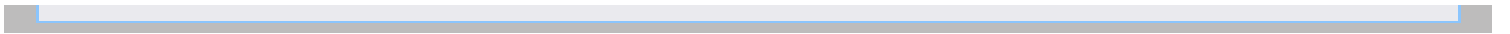


[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)



Science Project Details: 2009-2010

WAP-Flux: New Tools To Study The Fate Of Phytoplankton Production In The West Antarctic Peninsula

**Program Manager:**

Dr. Peter Milne

Event Number: O-288-L/N**ASC POC/Implementer:**

Addie Coyac

Dr. Kenneth O Buesseler (Principal Investigator)

kbuesseler@whoi.edu

<http://cafethorium.whoi.edu>

Woods Hole Oceanographic Institution

Marine Chemistry and Geochemistry

Woods Hole, Massachusetts

Supporting Stations: ARSV Laurence M. Gould, RV/IB Nathaniel B. Palmer**Research Locations:** LMG/NBP, (NBP Other site - not listed)**Project Description:**

The broad goal of this project is to understand the fate of phytoplankton production off the west Antarctic Peninsula (WAP). To reach that goal, researchers will look at time, space and depth resolved variability in the flux and remineralization of sinking particles. That in turn requires multiple tools applied at the same time (some of which are unique to this lab and new to this WAP study area), to better quantify particle fluxes, abundances, source characteristics and rates of remineralization.

Field Season Overview:

Researchers propose to work in context of the existing PAL (Palmer Long Term Ecological Research) program, which has overlapping goals and provides the biogeochemical, ecological and physical context for the proposed set of process study measurements and survey of flux and remineralization processes they will conduct as part of this new study.

Deploying Team Members:

- Stephanie Owens

**[Project Indexes](#)**

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

**[Project Web Sites](#)**

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

2009-2010 Field Season
Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

- Steve Pike
- James Valdes

[↶ Return to Index](#)

Science Project Details: 2009-2010

South Pole Monitoring For Climatic Change



National Oceanic and Atmospheric Administration (NOAA)/Global Monitoring Division (GMD) winter staff member Loreen Lock "commutes" to the Atmospheric Research Observatory (ARO) at sunrise September 2003.

Mr. James Butler (Principal Investigator)

john.booth@noaa.gov

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

Program Manager:

Dr. Peter Milne

Event Number: O-257-S

NOAA/NSF Agreement

ASC POC/Implementer:

Chad Naughton

National Oceanic and Atmospheric Administration

Global Monitoring Division (GMD)

Boulder, Colorado

Supporting Stations: South Pole Station

Research Locations: Atmospheric Research Observatory

Project Description:

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



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Field Season Overview:

A minimum of two field team members will staff the Atmospheric Research Observatory (ARO) throughout the austral summer and continuing through the winter, while other researchers will deploy for shorter periods. Team members will record meteorological variables and measure carbon dioxide, water vapor, surface and stratospheric ozone, solar and terrestrial radiation, and ozone-depleting compounds and other trace constituents in the atmosphere over South Pole. Field personnel will also perform routine maintenance and upgrades on the instruments. Data will be returned to the home institution for analysis.

Deploying Team Members:

- Patrick Cullis
- Patrick Disterhoft
- Nicholas Morgan
- Mark VandeRiet
- Marc Weekley

[Return to Index](#)

Science Project Details: 2009-2010

Cosmological Research With The 10-Meter South Pole Telescope



The 10-meter South Pole Telescope with the moon rising behind it. Photo by Keith Vanderlinde.

Dr. John Carlstrom (Principal Investigator)

jc@kicp.uchicago.edu

<http://pole.uchicago.edu>

University of Chicago

Astronomy and Astrophysics

Chicago, Illinois

Supporting Stations: South Pole Station

Research Locations:

Project Description:

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

Field Season Overview:

Project researchers will 1) inspect the telescope backing structure and cover-plates, and improve insulation; 2) make a holographic measurement and setting of the primary reflecting surface; 3) measure the far side lobes of the telescope and test methods to reduce them; 4) upgrade the SPT bolometer receiver; 5) service and maintain the telescope components and computer systems; 6) upgrade the vertex of the telescope drive servo system; 7) improve the optical pointing telescopes; 8) upgrade and test the telescope, receiver and observing software; 9) Train winterover personnel; 10) assist SCOARA (A-370) in battery upgrade to Dark Sector Lab/South Pole



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Telescope load leveler.

Deploying Team Members:

- Ken Aird
- Bradford Benson
- Thomas Crawford
- Abigail Crites
- Elizabeth George
- Barry Hines
- Bill Holzapfel (Co-PI)
- James Hrubes
- Timothy Hughes
- Erik Leitch
- Martin Lueker
- Jeffrey McMahon
- Jared Mehl
- Stephen Padin (Co-PI)
- Tom Plagge
- Erik Shirokoff
- Eric Switzer
- Ross Williamson

[Return to Index](#)

Science Project Details: 2009-2010

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



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

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

University of Chicago

Astronomy and Astrophysics
Chicago, Illinois

Supporting Stations: South Pole Station

Research Locations: Dark Sector

Project Description:

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

Field Season Overview:

Project team members will continue their operational support of astrophysical research at South Pole Station. This will include technical support for the following projects: IceCube, SPT, BiCEP-2, SPUD-Keck, the AMANDA decommission, as well as general MAPO shop and DSL spares resupply. In addition, SCOARA provides general machine shop support for the South Pole station, and performs oversight of test and measurement equipment for astrophysical research, including vacuum pumps, leak checkers, thermal imagers and other supplies.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Deploying Team Members:

- Derek Aboltins

[↶ Return to Index](#)

Science Project Details: 2009-2010

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



Kamb Ice Stream. Photo by Ian Joughin.

Dr. Howard Conway (Principal Investigator)

conway@ess.washington.edu

http://bigice.apl.washington.edu/projects_amundsencoast.html

University of Washington

Earth and Space Sciences

Seattle, Washington

Supporting Stations: McMurdo Station

Research Locations: Byrd camp; ground work in the area of WAIS Divide

Project Description:

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

Field Season Overview:

Researchers will collect radar data using the CRESIS airborne radar. They will also perform several shallow coring (sidewinder) and snow pit studies to determine density variations within a few hundred kilometers of the divide. This work will include two, multi-day snowmobile traverses originating from Byrd field camp. They will conduct similar daylong surveys 10-60 km from Byrd camp towards WAIS Divide, and will test their optical borehole logger at shallow coring study sites. Finally, they will conduct GPS surveys of velocities in the upper Thwaites basin, which will be used as control for



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

InSAR velocity estimates. Some frozen water samples in bottles will be returned to the researcher's home institution.

Deploying Team Members:

- Alison Criscitiello
- Cameron Lewis
- Brooke Medley

[Return to Index](#)

Science Project Details: 2009-2010

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



Releasing an instrument from McMurdo Station to measure polar stratospheric clouds. Photo by Philippe Cocquerez.

Dr. Terry Deshler (Principal Investigator)

deshler@uwyo.edu

<http://www-das.uwyo.edu/~deshler/>

University of Wyoming

Department of Atmospheric Science

Laramie, Wyoming

Supporting Stations: McMurdo Station

Research Locations:

Project Description:

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

Field Season Overview:

Researchers will work out of McMurdo Station where they will take stratospheric ozone profile measurements approximately every three days. Up to 24 ozone profiles are planned this year. These measurements extend measurements that began in 1986. Researchers will also make



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

measurements of PSCs using two balloon-borne aerosol counters released from McMurdo between mid-August and late September. LIDAR measurements will be completed under a long-term collaboration with Drs. Marcel Snels and Francesco Cairo, Institute of Atmospheric Sciences and Climate (ISAC) of the National Research Council, Rome. In addition, vertical profiles of the total aerosol concentration will be completed with two condensation nuclei instruments.

Deploying Team Members:

- Leslie Baran
- Stephanie Luberda

[Return to Index](#)

Science Project Details: 2009-2010

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



Making holes in the lake ice on Lake Fryxell to collect samples. Photo by Peter Doran.

Dr. Peter Doran (Principal Investigator)

pdoran@uic.edu

<http://tigger.uic.edu/~pdoran/home.htm>

University of Illinois Chicago

Dept of Earth and Environmental Sciences
Chicago, Illinois

Supporting Stations: McMurdo Station

Research Locations: Dry Valleys

Project Description:

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

Field Season Overview:

Field team members will travel by helicopter to the established Taylor Valley field camps at Lakes Fryxell, Hoare, and Bonney. At each camp, team members will survey ablation stakes on the ice surface with the assistance of the University NAVSTAR Consortium (UNAVCO). The researchers will also make day trips by helicopter to Wright Valley and Victoria Valley, where they



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

will carry out further hydrologic balance measurements. Samples will be processed and analyzed at field camps and at the Crary Lab. Some samples will be shipped to the home institution for further analysis.

Deploying Team Members:

- Paul Hanson
- Maciej Obryk (Team Leader)
- James Olech

[↶ Return to Index](#)

Science Project Details: 2009-2010

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



An abandoned penguin colony exposed by a retreating ice sheet on Beaufort Island, Ross Sea, in 2005 was excavated to recover organic remains (bone, feathers, eggshell) for radiocarbon and stable isotope analyses. These data help to provide information on past occupation history and diet of Adelie Penguins in this region. Photo by Steven Emslie.

Dr. Steven D Emslie (Principal Investigator)

emslies@uncw.edu

<http://www.uncw.edu/penguins>

Department of Biological Sciences

Wilmington, North Carolina

Supporting Stations: Special Project, McMurdo Station

Research Locations: Beaufort Island, Cape Bird, Cape Crozier, Depot Island, Dunlop Island, Franklin Island, Antarctic Peninsula

Project Description:

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



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

45,000 years in Antarctica.

Field Season Overview:

In the 2009-10 season, this research will be split into two separate parts: In the first part, three U.S. researchers will rendezvous with Chinese and Polish collaborators at McMurdo Station. From there, they will visit several sites, establishing temporary field camps at two sites: Capes Crozier and Bird. They will also visit Cape Royds on day trips from McMurdo Station. Time permitting, they hope to visit sites on the Scott Coast (e.g., Marble Point, Dunlop Island) as either day trips or camps. Late in January, they plan to travel by icebreaker to Beaufort Island. In the second part of the field season, researchers will deploy to the Antarctic Peninsula. Current plans are for them to travel on the tour ship, National Geographic Explorer. Samples collected will be transferred from the tour ship to Palmer Station during already scheduled station visits. In addition, through existing collaborations, samples will be collected at Copacabana Field Station and NOAA's Cape Sherriff field station. These samples will be shipped back to CONUS at the end of the season.

Deploying Team Members:

- Larry Coats
- Eva Gruber
- XiaoDong Liu
- William Patterson
- Jerzy Smykla

[Return to Index](#)

Science Project Details: 2009-2010

Unpacking Antarctica



Program Manager:

Ms. Jessie Crain

Event Number: W-219-M

ASC POC/Implementer:

Eric Pohlman

Undefined Elise Engler (Principal Investigator)

elise.engler@verizon.net

<http://eliseengler.com>

New York, New York

Supporting Stations: McMurdo Station

Research Locations: McMurdo area, Dry Valleys

Project Description:

Ms. Engler's work is often about revealing what is behind the scenes sometimes literally, other times more figuratively. Her work displays an endless and eclectic curiosity and a desire to understand and make connections through the material manifestations of human existence. This project will consist of drawing the objects, scientists and "framed" landscapes connected to the research and daily activity at McMurdo Station and in the field. The completed colored pencil drawings will give the viewer an understanding of what is necessary for specific Antarctic research as well as view of the setting itself.

Field Season Overview:

The artist will accompany and observe science project teams working in the field and in the lab. She will draw as opportunities present themselves and take photographs to record scenes and items for later drawing.

[Return to Index](#)



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Science Project Details: 2009-2010

Element Composition Of High-Energy Solar Particles



The neutron monitor at Pole will be relocated and enhanced to make measurements of solar energetic particles complementary to those made by the surface array of the IceCube Neutrino Observatory. Photo by Paul Evenson.

Dr. Paul Evenson (Principal Investigator)

evenson@udel.edu

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

University of Delaware

Physics and Astronomy
Newark, Delaware

Supporting Stations: South Pole Station

Research Locations: South Pole science lab

Project Description:

This project is part of the University of Delaware's Bartol Research Institute neutron monitor program. One of the program's 11 monitors is installed at the South Pole. This season, researchers will focus on enhancing the ability of IceTop—the surface component of the IceCube neutrino observatory—to determine element composition of solar energetic particles in the energy range of 1-10 Giga-electron-Volts (GeV). Using many components of the former South Pole neutron monitor, researchers will construct an enhanced suite of neutron detectors whose response functions (primarily due to hadrons) have a different dependence on energy and element composition from those of IceTop (primarily due to photons and leptons).

Field Season Overview:

Team members will install particle detectors outside the Amundsen-Scott South Pole Station in a free standing enclosure. Electronics to record the number of particles striking the detectors will be installed in the station.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

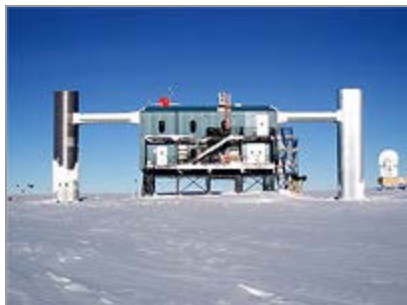
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

[↶ Return to Index](#)

Science Project Details: 2009-2010

IceCube Operations And Maintenance



The two towers of the IceCube Lab guide the cables from optical detectors deep in the ice to the IceCube data acquisition computers housed in the lab. Photo by Jay Sonderup.

Dr. Paul Evenson (Principal Investigator)

evenson@udel.edu

<http://icecube.wisc.edu>

University of Delaware

Physics and Astronomy

Newark, Delaware

Supporting Stations: South Pole Station

Research Locations: Dark Sector, IceCube Lab

Project Description:

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

Field Season Overview:

This season researchers plan to install 18-20 strings, and trench and install 14 IceTop stations at Amundsen-Scott South Pole Station. They will replace components of the Enhanced Hot Water Drill (EHWD) system; they will continue inspections and modifications of the MDS units from last season; and will perform sub system tests on electrical and plumbing systems. ICECUBE planners met with RPSC planners on March 25, 2009 in Madison WI, to provide a specific blueprint on how the FY09-10 season should proceed. The product of this meeting was the construction of a "resource-loaded schedule" specifying the details in scheduling of both heavy



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

equipment and heavy equipment operators, as well as the scheduling of the general assistants and the ICECUBE personnel. In addition to the above task, attendees at the March 25 meeting also identified a few longer term issues that should be addressed this season, specifically: Drift unloading cargo, delivery and storage of surface cables, surface to DOM Cables, DOMS, and IceTop Tanks in McMurdo and/or the South Pole Station.

Deploying Team Members:

- Sarah Amandusson
- Karen Andeen
- Misty Attwood
- Ralf Auer
- Steven Barnet
- Ryan Bay
- Jose Luis Bazo Alba
- Sabrina Bechet
- Benjamin Benischek
- Terry Benson
- David Besson
- Nathan Bowker
- Nicholas Buchinger
- Chad Carpenter
- Freija Descamps
- Dennis Duling
- Christopher Elliott
- Jonas Enander
- Sebastian Euler
- Tom Feusals
- Kirill Filimonov
- Erik Fors
- Dar Gibson
- Christian Gils
- Laura Gladstone
- David Glowacki
- Darren Grant
- Tom Ham
- Darrell Hamilton
- Terry Hannaford
- James Haugen

- Gary Hill
- Rickard Hjelmsten
- Thomas Hutchings
- Aya Ishihara
- John Jacobsen
- Phillip Johnson
- Jonas Kalin
- Timo Karg
- Fabian Kislak
- Hermann Kolanoski
- David Koskinen
- Mark Krasberg
- Ilya Kravchenko
- Goesta Kroll

- Denise Laitsch
- Andrew Laudrie
- Reina Maruyama
- Terry Matt
- William McCormick
- Paul McGuire
- Curtis Moore
- Timothy Murray
- Matthew Newcomb
- Anders Nilsson
- Christian Nordin
- Casey O'Hara
- Sirin Odrowski
- Camille Parise
- Michael Patterson
- Thomas Piwowarski
- John Richards
- James Roth
- Perry Sandstrom
- Karthik Soundarapandian
- Erik Strahler
- Mark Thoma
- Graham Tilbury

- Delia Tosi
- Arne VanOverloop
- Erik Verhagen
- Jimmy Vinbladh
- Tilo Waldenmaier
- Kara Waldher
- Kenneth Walker
- Bradley Whelchel
- Nathan Whitehorn
- Richard Wipperfurth
- Terri Wipperfurth
- Paul Wisniewski
- Kurt Woschnagg
- Donald Wray
- James Yeck
- Pavel Zarzhitsky
- Michael Zernick
- Melany Zimmerman

[Return to Index](#)

Science Project Details: 2009-2010

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



Supraglacial stream on the Cotton Glacier. Photo by Christine Foreman.

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

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

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

Project Description:

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

Field Season Overview:



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Researchers will establish a working base field camp at Lake Fryxell. From there they can study the streams in the Fryxell basin, specifically Canada Stream and Aiken Creek, in comparison to the Cotton Glacier supraglacial stream. They will make four day trips to the Cotton Glacier from Lake Fryxell, collecting water into 20L carboys and returning these to Lake Fryxell and Crary Lab. Periodically they will send samples back to McMurdo. At the end of the season, some samples will be returned to the home institution.

Deploying Team Members:

- Yo Chin (Co-PI)
- Sarah Diers
- James Kilduff
- Heidi Smith
- Collin Ward

[Return to Index](#)

Science Project Details: 2009-2010

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



The role of resource legacy on contemporary linkages between biodiversity and ecosystem processes in a cold desert ecosystem: The McMurdo Dry Valley LTER program.

Dr. Andrew Fountain (Principal Investigator)

andrew@pdx.edu

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

Portland State University

Geology

Portland, Oregon

Supporting Stations: McMurdo Station

Research Locations: Dry Valleys

Project Description:

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

Field Season Overview:

The field team will travel via helicopter to the established field camp at Lake Hoare, which team members will use as their base of operations for the season. The researchers will make day trips via helicopter to the Commonwealth, Howard, Canada, and Taylor glaciers to make mass



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

balance measurements. Ice, water, and sediment samples will be collected on the Commonwealth, Canada, and Taylor glaciers. Team members will also make day trips to various meteorological stations in the Taylor, Beacon, Wright, and Victoria Valleys, where they will replace sensors and dataloggers. A new AWS meteorological station will be installed in McKelvey Valley. LiDAR measurements will continue at Canada Glacier, Don Juan Pond, and Rock Glacier to capture winter ablation and movement.

Deploying Team Members:

- Elizabeth Bagshaw
- Hassan Basagic (Team Leader)

[Return to Index](#)

Science Project Details: 2009-2010

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



Deploying a satellite transmitter on a nesting Southern Giant Petrel near Palmer Station, Antarctica. Photo by William Fraser.

Dr. Bill Fraser (Principal Investigator)

bfraser@3rivers.net

<http://pal.lternet.edu/>

Program Manager:

Dr. Lisa Clough

Event Number: B-013-L/P

NSF/PLR Award 0823101

ASC POC/Implementer:

Addie Coyac

Polar Oceans Research Group

Sheridan, Montana

Supporting Stations: ARSV Laurence M. Gould, Palmer Station

Research Locations: West Antarctic Peninsula, Charcot Island

Project Description:

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

Field Season Overview:

Field research will include work in the vicinity of Palmer Station and aboard the R/V Laurence M. Gould as part of the annual January LTER cruise. While onboard the research vessel, researchers will focus on seabird and marine mammal censuses to determine how oceanographic conditions,



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

including sea ice and prey availability, influence their abundance and distribution. Part of this effort will also involve day excursions by Zodiac inflatable boats to Renaud and nearby islands to census and diet sample penguins and other seabirds. They will also spend several days at a field camp on Avian Island to census and map Adélie Penguin colonies, obtain diet samples, and instrument birds with satellite transmitters and dive-depth recorders. Work in the vicinity of Palmer Station will complement that aboard the research vessel but the focus will be on the larger seabird community, especially the three breeding species of Pygoscelid penguins, and will be timed to coincide with the entire October-March breeding season. Although most work will be accomplished using Zodiacs for daily travel to nearby seabird colonies, researchers will also establish multi-day field camps at more remote locations to meet some program objectives. Palmer Station's laboratory facilities will be used to house and process GIS and telemetry data, and to analyze diet samples.

Deploying Team Members:

- Jennifer Blum
- Kristin Gorman
- Rick Smaniotto
- Kirstie Yeager

[Return to Index](#)

Science Project Details: 2009-2010

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



Weddell seal mother and pup at the Big Razorback colony. Photo by Jennifer Mannas.

Dr. Robert Garrott (Principal Investigator)

rgarrott@montana.edu

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

Montana State University Bozeman

Ecology

Bozeman, Montana

Supporting Stations: McMurdo Station

Research Locations: Big Razorback Island

Project Description:

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

Field Season Overview:

Field team members will travel by tracked vehicle and snowmobile to their field camp at Big Razorback Island. Teams of researchers will make day trips from camp to tag new pups and census the seals of Erebus Bay. Team members will also photograph and weigh a number of seals. Once the pupping season is over, the researchers will travel by helicopter to survey the study area and search for tagged seals farther afield.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Deploying Team Members:

- Jessica Farrer
- Shawn Farry
- Jen Mannas (Co-PI)
- Trent Roussin
- Adia Sovie
- Glenn Stauffer

[Return to Index](#)

Science Project Details: 2009-2010

Center For Remote Sensing Of Ice Sheets (CReSIS) - Ground Radar And Seismic Operations



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Prasad Gogineni (Principal Investigator)
gogineni@cresis.ku.edu
<https://www.cresis.ku.edu/>

University of Kansas Lawrence

Lawrence, Kansas

Supporting Stations: McMurdo Station

Research Locations: West Antarctic Ice Sheet (WAIS)

Project Description:

The Center for Remote Sensing of Ice Sheets (CReSIS) researchers will measure the melt rate beneath the Ross Ice Shelf at a number of locations using a phase-sensitive ground-based radar system. By accurately measuring the change in thickness of the ice shelf at two or more times (separated by a few weeks), researchers can estimate the basal melt rate, which is important for glacier-flow modeling, ice-sheet stability, and ocean-water circulation beneath ice shelves. In the time between flight periods, researchers will conduct ground-based seismic and radar measurements on and around the main CReSIS camp.

Field Season Overview:

Field team members will travel by LC-130 aircraft to WAIS Divide camp where they will prepare for their oversnow traverse along Thwaites Glacier. The traverse will be by snowmobiles, which will be towing sleds containing camp and science equipment; and by Tucker Snocats, which will be towing sleds, a shothole drill and compressors. Fuel for the project will be cached at the site in advance. The field site is approximately 350 kilometers from WAIS Divide camp, and team members at the field site will conducted their work



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

using snowmobiles and Tuckers. When finished, they will traverse back to the WAIS Divide camp and then return to McMurdo Station by LC-130.

Deploying Team Members:

- Sridhar Anandkrishnan (Team Leader)
- Rebecca Boon
- Knut Christianson
- Nicolai Mortensen
- Leo Peters
- Don Voigt (Team Leader)
- Lucas Zoet

[Return to Index](#)

Science Project Details: 2009-2010

Center For Remote Sensing Of Ice Sheets (CReSIS) - Basler Airborne Radar Survey



CReSIS is an NSF-funded Science and Technology Center headquartered at the University of Kansas. Its focus is the potential contribution of the Greenland and Antarctic ice sheets to sea level rise. Graphic courtesy of Prasad Gogenini.

Dr. Prasad Gogenini (Principal Investigator)

gogenini@cresis.ku.edu

<https://www.cresis.ku.edu/>

University of Kansas Lawrence

Lawrence, Kansas

Supporting Stations: McMurdo Station

Research Locations: Byrd Camp

Project Description:

The Center for Remote Sensing of Ice Sheets (CReSIS) will focus the 2013-14 airborne-radar survey mission on Whillans (B) and Bindschadler (D) ice streams on the Siple Coast of West Antarctica. By flying new lines that cross historical survey lines, the reliability of the historical data can be improved and the effective survey area can therefore be expanded by combining both datasets. Researchers also plan to collect survey data over ice-core drilling sites and sites sounded by their surface-based accumulation radar being used this season by the I-188-M (Gogenini) team, so that internal layers mapped by the different radars can be cross-correlated and validated.

Field Season Overview:

The aerial radar survey and data processing teams will spend two weeks at McMurdo outfitting a science platform on a Twin Otter aircraft. They will then travel by Twin Otter to Byrd Camp, where the aerial survey work will



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

commence and integrate with the traverse-based work of Ian Joughin (I-157). Team members will return to McMurdo, where they will remove their modifications from the Twin Otter.

Deploying Team Members:

- Keith Lehigh
- Carlton Leuschen (Co-PI)
- Je'iamé Powell
- Fernando Rodriguez-Morales
- Gary Wesche

[Return to Index](#)

Science Project Details: 2009-2010

Center For Remote Sensing Of Ice Sheets (CReSIS) - Unmanned Aerial System (UAS) Operations



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Prasad Gogineni (Principal Investigator)
gogineni@cresis.ku.edu
<https://www.cresis.ku.edu/>

University of Kansas Lawrence

Lawrence, Kansas

Supporting Stations: McMurdo Station

Research Locations: Williams Field

Project Description:

Fine-resolution, Unmanned Aerial System (UAS) ice-penetrating radar surveys of the Siple Coast ice streams, most notably Whillans (B), are the focus of the Center for Remote Sensing of Ice Sheets (CReSIS) airborne missions in 2013. The goal of these measurements is to improve bed and surface topographic maps, leading to a more accurate assessment of the hypopotential field. Previous airborne-radar surveys from which bed conditions were measured years ago likely have large uncertainties because of the less accurate navigational data available at that time. By flying new lines with closer spacing that also cross these historic survey lines, researchers can examine important bed features in great detail and use the old data to expand our analysis.

Field Season Overview:

The eight-person team will work out of McMurdo Station, conducting a three-week flight test program. The program has three major objectives: 1) to conduct basic performance flight tests within line-of-sight (LOS) in order to confirm proper operation of the basic aircraft system; 2) to conduct science payload verification flights (these will also be accomplished within line-of-



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

sight and will test the ice penetrating radar); 3) to conduct over-the-horizon (OTH) testing for both the platform and science payload.

Deploying Team Members:

- Robert Burns
- William Donovan
- Richard Hale (Co-PI)
- Lance Holly
- Shah Keshmiri (Co-PI)
- Andy Pritchard
- David Royer
- Jonathan Tom

[Return to Index](#)

Science Project Details: 2009-2010

Austral High-Latitude Atmospheric Dynamics



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Gonzalo Hernandez (Principal Investigator)

hernandez@uw.edu

<http://cedarweb.hao.ucar.edu/>

University of Washington

Earth and Space Sciences
Seattle, Washington

Supporting Stations: McMurdo Station, South Pole Station

Research Locations: Arrival Heights, Atmospheric Research Observatory

Project Description:

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

Field Season Overview:

During the austral summer, field team members will deploy first to McMurdo Station to perform calibration and maintenance on equipment currently in place at Arrival Heights. From there they will proceed to Amundsen-Scott South Pole Station to complete the calibration and maintenance of



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

equipment currently in place at the Atmospheric Research Observatory. In both locations, they will use high-resolution Fabry-Perot spectrometers to make simultaneous azimuthal observations of the individual line spectra of several upper-atmospheric trace species, specifically the hydroxyl radical and atomic oxygen. The observed Doppler shift of the emission lines provides a direct measure of line-of-sight wind speed; wind field structure can also be derived from these measurements. Simultaneously observed line widths provide a direct measurement of kinetic temperature. The goal is to observe, characterize, and understand high-latitude mesospheric and thermospheric motions, as well as the thermal structure of these regions. During the austral winter, the instruments at both locations operate in 24-hour data acquisition mode. During that time, USAP station technicians perform routine maintenance and monitor operations.

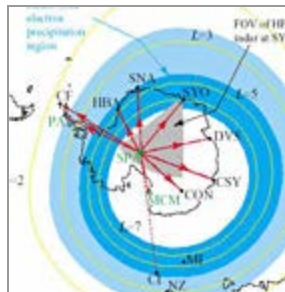
Deploying Team Members:

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

[Return to Index](#)

Science Project Details: 2009-2010

A VLF Beacon Transmitter At South Pole



Program Manager:

Dr. Vladimir Papitashvili

Event Number: A-108-S

ASC POC/Implementer:

Chad Naughton

Dr. Umran Inan (Principal Investigator)

inan@nova.stanford.edu

http://www-star.stanford.edu/~vlf/south_pole/south%20pole.htm

Stanford University

Department of Electrical Engineering
Stanford, California

Supporting Stations: South Pole Station

Research Locations: South Pole science lab (B2)

Project Description:

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

Field Season Overview:

This season, researchers plan to improve the hardware and software of the VLF beacon transmitter, prepare new hardware for the transmitter amplifiers, change out components on the transmission line, and repair the transmitter antenna. Team members will fly to Amundsen-Scott South Pole Station to complete their work, perform system tests, and to make comprehensive diagnostic measurements.

Deploying Team Members:



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

- Daniel Golden
- George Jin

[↶ Return to Index](#)

Science Project Details: 2009-2010

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



ELF/VLF observations of lightning discharges, whistler-mode waves and electron precipitation at Palmer Station.

Dr. Umran Inan (Principal Investigator)

inan@nova.stanford.edu

<http://vlf.stanford.edu/research/whistler-mode-wave-studies-palmer-station-antarctica>

Stanford University

Department of Electrical Engineering
Stanford, California

Supporting Stations: Palmer Station

Research Locations: Terra Lab / Glacier antenna

Project Description:

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



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Field Season Overview:

Field Team Members will deploy to Palmer Station where they will perform annual maintenance and calibration of the VLF antenna and receiver. They are also planning to upgrade the portable hard drives to accommodate continuous data recording.

[Return to Index](#)

Science Project Details: 2009-2010

ELF/VLF Observation In The Southern Pacific Ocean



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Umran Inan (Principal Investigator)

inan@nova.stanford.edu

<http://www-star.stanford.edu/~vlf/pars/pars.htm>

Stanford University

Department of Electrical Engineering
Stanford, California

Supporting Stations: RV/IB Nathaniel B. Palmer

Research Locations:

Project Description:

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

Field Season Overview:

The researchers plan to continue collecting data while the RVIB Nathaniel B Palmer is underway. USAP vessel technicians will schedule regular data acquisitions and archive the data onto external hard drives. The hard drives will be shipped to the home institution at the end of the cruise.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

[↶ Return to Index](#)

Science Project Details: 2009-2010

UNAVCO GPS Survey Support



UNAVCO engineer Marianne Okal lays out navigation grid for the ROV SCINI using precision GPS. Photo by Joe Pettit.

Mr. Bjorn Johns (Principal Investigator)

johns@unavco.org

http://facility.unavco.org/project_support/polar/

UNAVCO

Wellington, Undefined

Supporting Stations: McMurdo Station

Research Locations:

Project Description:

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

Field Season Overview:

The field team will work out of the Crary Lab to provide sub-centimeter GPS support to science projects. Field team members will occasionally travel to field locations as support requirements dictate. They are also planning a brief visit to the Major Research Infrastructure (MRI) site at South Pole Station to perform maintenance on the Continuous GPS (CGPS) testbed site. In



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

addition, UNAVCO will work closely with POLENET (G-079-M) at Byrd Field Camp this season for the GPS portion of the POLENET network sites.

Deploying Team Members:

- Marianne Okal
- Joe Pettit

[Return to Index](#)

Science Project Details: 2009-2010

A Graduate Training Program In Antarctica: Integrative Biology And Adaptation Of Antarctic Marine Organisms



2008 course participants outside Scott's 1902 Discovery Hut at McMurdo Station. Photo by Deneb Karentz.

Dr. Deneb Karentz (Principal Investigator)
karentzd@usfca.edu
<http://antarctica.usc.edu/>

University of San Francisco

Department of Biology
San Francisco, California

Supporting Stations: McMurdo Station

Research Locations: Dry Valleys and McMurdo local area

Project Description:

This project is an international, advanced level, graduate training course that will be taught at McMurdo Station for one month during the austral summer. The goals of the course are to introduce students to the diversity of biological organisms in Antarctica, to study unique aspects of biology that permit life in extreme environments, and to provide the opportunity for scientists new to Antarctica to learn about and appreciate the logistical possibilities and constraints of working there.

Field Season Overview:

This is a large project with most participants new to Antarctic field research. The course provides special training sessions for laboratory and field safety. Students will take trips by helicopter to Cape Evans, some sea ice locations, and to the ice edge.

Deploying Team Members:

- Judith Connor



[Project Indexes](#)

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




[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

- Vincent Deneff
- Mark Denny
- William Dowd
- David Ginsberg
- Jimmy Lee
- James Leichter
- Alison Murray
- George Somero
- Blaire Steven

 [Return to Index](#)

Science Project Details: 2009-2010

Dry Valley Seismic Project



Ray Himmelsbach, Kevin Filiatrault and Will Burk installing a new seismic data digitizing system in a borehole close to Bull Pass in the Wright Valley. Photo by Jimmy Jackson.

Dr. Robert Kemerait (Principal Investigator)

kemerait@tt.aftac.gov

<http://www.afisr.af.mil/units/aftac/index.asp>

United States Air Force

AFTAC

Patrick AFB, Florida

Supporting Stations: McMurdo Station

Research Locations: Dry Valleys

Project Description:

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

Field Season Overview:

The field team initially will make a day trip by helicopter to Bull Pass and Mount Newall to refuel diesel generators, and to perform annual engine, electrical, and technical, maintenance and inspections. Afterward, the team members will travel again by helicopter to establish temporary field camps at each station, where they will refuel the diesel generators and perform battery checks and general maintenance. When the work is finished, the team members will strike camp and return to McMurdo by helicopter.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Deploying Team Members:

- Mark Boris (Team Leader)
- Michael Brunk
- Brian Fox
- Damien Leppo
- Michael Stolp

[Return to Index](#)

Science Project Details: 2009-2010

Temporal Variability In Natural And Anthropogenic Disturbance Of McMurdo Station



The terrestrial sampling team (from left to right) Terry Palmer, Steve Sweet, Andrew Klein, and April Gossman. Photo by Ann Linsley.

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

Texas A & M University

Oceanography
College Station, Texas

Supporting Stations: McMurdo Station

Research Locations: On station and local sea ice

Project Description:

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



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:


- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Field Season Overview:

Project team members plan to continue their environmental monitoring program. McMurdo Station will serve as their base of operations for the season. Team members will travel by Piston Bully to dive sites where they will collect marine sediment samples. They will travel by pickup truck to collect terrestrial samples in the McMurdo Station vicinity. Samples will be processed and analyzed in the Crary Lab, and some samples may be shipped to the home institution for further analysis.

Deploying Team Members:

- Larry Hyde
- Hae-Chol Kim
- Andrew Klein (Co-PI)
- Terence Palmer
- Stephen Sweet

 [Return to Index](#)

Science Project Details: 2009-2010

Development Of A Remotely Operated Vehicle For Under-Ice Research In Polar Environments



Bob Zook and Francois Cazenave launch the remotely operated vehicle SCINI through a 20 cm hole in the sea ice. The control center is set up in the Pisten Bully passenger compartment. Photo by Stacy Kim.

Dr. Stacy Kim (Principal Investigator)

skim@mlml.calstate.edu

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

San Jose State University

Moss Landing Marine Laboratories

Moss Landing, California

Supporting Stations: McMurdo Station

Research Locations: Explorers Cove, Hut Point, Turtle Rock

Project Description:

In marine habitats worldwide, the zone between scuba-diving depths (to 40 meters) and surge-free depths (below 200 meters) is poorly studied. Remotely Operated Vehicles (ROVs) are often limited to deeper depths by wave surge that hampers the ability to maintain a fixed station. Under ice-covered seas, wave motion ranges from minimal to nonexistent. Sea ice also provides a stable platform from which to deploy and operate the ROV. ROVs previously needed a one-meter-diameter ice hole, requiring substantial logistical support. This project will deploy a ROV that fits through a 15-centimeter hole drilled with a hand-held power head, providing access to sites previously inaccessible to divers or standard ROVs. Using the ROV, researchers hope to map and measure historical, submerged structures; survey and photograph two deep, benthic communities; and to conduct general sonar mapping.

Field Season Overview:



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Researchers will be based out of McMurdo Station-- a three person engineering team going in at WinFly joined later by a three person science team. A PolarTREC teacher will join the team for six weeks. Some team members will redeploy during the austral winter. Researchers will establish one 2-week field camp near White Island, one 2-week field camp at Bay of Sails, an overnight at New Harbor, a day trip to Granite Harbor, helicopter reconnaissance flights over the sea ice and Ross Ice Shelf to scope out locations for day trips in the vicinity of Heald Island, Bratina Island, Dailey Islands, and any other sea-ice crack areas. They will conduct local sea ice work at Cape Armitage (south and north sides, and offshore), the Jetty, WQB, Hut Point, Cinder Cones, Cape Evans, Turtle Rock, the Erebus Glacier Tongue, Turks Head, the Razorbacks, Tent Island, Inaccessible Island, Cape Royds, and several areas directly in front of the station including the sewer outfall. The team will dive with scuba and surface supply to test and observe the performance of the ROV. Team members will travel by Pisten Bully and snowmobile to and from outlying locations. They will use Crary Lab facilities, including the aquarium, refrigerators, freezers, hoods, tool and staging areas to assemble, test and modify the ROV, and to process science payloads.

Deploying Team Members:

- Isabelle Brissac
- Dustin Carroll
- Francois Cazenave
- Michele Cross
- Marco Flagg
- Kamille Hammerstrom
- David McPike
- Bob Zook (Co-PI)

[Return to Index](#)

Science Project Details: 2009-2010

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



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. John Kovac (Principal Investigator)

jmkovac@cfa.harvard.edu

<http://www.cfa.harvard.edu/CMB/bicep2/>

Harvard University

Cambridge, Massachusetts

Supporting Stations: South Pole Station

Research Locations: Dark Sector Lab

Project Description:

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

Field Season Overview:

Some of the Background Imaging of Cosmic Extragalactic Polarization (BICEP2) team will fly to Amundsen-Scott South Pole Station in mid-November to prepare Dark Sector Lab (DSL) space for the assembly and



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

testing of the BICEP2 receiver, scheduled to arrive later that month, with additional team members. While preparations for the receiver are being made, parallel tasking will include installation of upgraded computers for BICEP control and data acquisition, and mechanical upgrades and maintenance to the BICEP telescope mount and brush seals. In late November, The BICEP2 receiver will be unpacked and brought into this DSL workspace where it can be opened for removal of shipping restraints and preparations for initial cooldown, to begin in the first week of December. Each cooldown requires 150 L of liquid nitrogen, 300 L of liquid helium, and seven to eight days. The receiver will be closed, cooled, and tested in the BICEP lab area by mid-December, and shortly thereafter will be installed on the BICEP telescope mount. The integrated BICEP2 telescope will then be tested for mechanical, cryogenic, and electronic noise performance in simulated observing conditions. This will be followed by calibrations using sources mounted on the rooftop mast of DSL and astronomical sources.

Deploying Team Members:

- Randol Aikin
- Jamie Bock
- Justus Brevik
- Charles Dowell
- Jonathan Kaufman
- Walter Ogburn
- Angiola Orlando
- Steffen Richter
- Chris Sheehy
- Rashmi Sudiwala
- Philip Wilson

[Return to Index](#)

Science Project Details: 2009-2010

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



Leigh Stearns mapping the Allan Hills Blue Ice Area in February 2004. Photo by Andrei Kurbatov.

Dr. Andrei Kurbatov (Principal Investigator)

akurbatov@maine.edu

<http://cci.um.maine.edu/2MBIA/>

The University of Maine

Orono, Maine

Supporting Stations: McMurdo Station

Research Locations: Allan Hills

Project Description:

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

Field Season Overview:

Researchers will travel from McMurdo Station to their field camp site by Twin Otter aircraft. Field work will be focused on the collection of three 100+ meter cores and sampling of ice along several horizontal trenches that



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

provide surface expression of the core material. The first core will be taken from a site of presumed 110-140 ka ice. The second will target 1.0 Ma old ice. The third will be near the location of a 2.5 Ma meteorite layer. Researchers will also collect an array of twelve ice cores, 15 m long, along the ice flow line, and will resurvey GPS stakes from previous seasons. At the end of their season they will return to McMurdo Station with their collected samples, which will then be transported to their home institution.

Deploying Team Members:

- John Higgins
- Kristin Schild
- Nicole Spaulding
- Michael Waszkiewicz

[Return to Index](#)

Science Project Details: 2009-2010

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



Seismologist Pnina Miller from New Mexico Tech services a seismometer near the summit of the active volcano, Mount Erebus. Photo by Philip Kyle.

Dr. Phillip Kyle (Principal Investigator)

kyle@nmt.edu

<http://erebus.nmt.edu>

Program Manager:

Dr. Alexandra Isern

Event Number: G-081-M

ASC POC/Implementer:

John Rand

New Mexico Institute of Mining and Technology

Department of Earth & Environmental Science

Socorro, New Mexico

Supporting Stations: McMurdo Station

Research Locations: Mount Erebus

Project Description:

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

Field Season Overview:



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Team members will be transported by helicopter to an acclimitization camp at Fang Glacier. A few days later they will travel by snowmobile or helicopter to occupy their base of operations at the Lower Erebus Hut. During the austral summer months, field-based observations will include measuring emission rates of various gas species including CO₂, SO₂, radionuclides, trace gases and metals. These data will be used to evaluate the potential impact of gas emission from Erebus on the snow chemistry on the Antarctic Ice Sheets. Researchers will re-occupy a GPS network on the flanks and summit to examine any deformation that may have occurred. They will also use ground-based light detection and ranging (LIDAR) observations to map the interior of the crater, and to look at the dynamics of the lava lake.

Deploying Team Members:

- Marie Boichu
- Aaron Curtis
- Jedediah Frechette
- Christopher Harrison
- Laura Jones
- Melissa Kammerer
- Harry Keys
- Clive Oppenheimer

[Return to Index](#)

Science Project Details: 2009-2010

Collaborative Research: Multi-Instrument Studies Of Auroral Plasma Radiation



Direction-finding measurements of LF/MF/HF auroral radio emissions at South Pole.

Dr. James LaBelle (Principal Investigator)

jlabelle@einstein.dartmouth.edu

<http://www.dartmouth.edu/~spacephy/>

Dartmouth College

Department of Physics & Astronomy
Hanover, New Hampshire

Supporting Stations: South Pole Station

Research Locations: B2/V8 vault

Project Description:

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

Field Season Overview:

This season, researchers will perform routine maintenance on existing antennas by raising them above the accumulating snow and then updating the software on all computers. They will focus on collecting data from two of the receivers; the imaging receiver, and the swept programmable receiver. They will upgrade the direction finding receiver system to enable it to take on the function of the VIEW receiver and more extended capabilities. This



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

upgrade will involve: 1) installation of a new antenna with coaxial cables leading from it to the science vault; 2) replacement of the direction finding receiver computer in the science vault; and 3) addition of disk capacity to the VIEW computer in the B2 science lab. The instruments will continue to operate year-round, and data will be sent to the home institution for analysis.

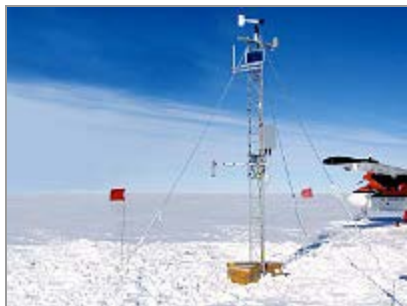
Deploying Team Members:

- Nicholas Bunch

[Return to Index](#)

Science Project Details: 2009-2010

Collaborative Research: Antarctic Automatic Weather Station Program (AWS), 2007-2010



Margaret Automatic Weather Station installed on the Ross Ice Shelf, 79.99 degrees South 165.00 degrees West at 67.5 meters elevation. Photo by Jonathan Thom.

Dr. Matt Lazzara (Principal Investigator)

mattl@ssec.wisc.edu

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

University of Wisconsin Madison

Space Science and Engineering Center/AMRC
Madison, Wisconsin

Supporting Stations: McMurdo Station, South Pole Station

Research Locations: McMurdo Station, South Pole Station, WSD

Project Description:

This continuing project has established a network of automatic weather stations (AWS) on the antarctic continent and several surrounding islands. These facilities measure surface wind, pressure, temperature, and humidity. Some also track other atmospheric variables, such as snow accumulation and incident solar radiation. The data are transmitted by satellite to a number of ground stations and used for weather forecasting, climatology, general research, and support of the USAP, especially the Long Term Ecological Research programs at McMurdo and Palmer stations. The AWS network has grown from a small-scale program in 1980 into a significant and reliable data collection and retrieval system that is now indispensable for forecasting and research.

Field Season Overview:

Field team members will travel by helicopter and Twin Otter to install new and service existing weather stations on the Ross Ice Shelf and in West Antarctica. At the South Pole they will install a prototype AWS and service



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

existing AWS in the area. If resources are available, and depending on discussions with other researchers and with the NSF, team members will place new AWS on the East Antarctic Plateau, including along the International Trans Antarctic Scientific Expedition route. This group also works with the French, Japanese, Chinese, and British antarctic programs to install and service AWSs at sites around the continent. The data are made available to weather forecasters, Antarctic researchers, and climatologists worldwide.

Deploying Team Members:

- Nicole Schroeder
- George Weidner (Co-PI)
- Lee Welhouse

[Return to Index](#)

Science Project Details: 2009-2010

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



Rick Lee, Luke Sandro, Dave Denlinger, Joe Rinehart, and Scott Hayward on the bow of the ARSV Laurence M. Gould, January 1, 2005. Photo courtesy of Rick Lee.

Dr. Richard Lee (Principal Investigator)

leere@muohio.edu

<http://www.units.muohio.edu/cryolab/education/antarctic.htm>

Miami University

Oxford, Ohio

Supporting Stations: Palmer Station

Research Locations: Palmer local islands

Project Description:

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

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



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

they will study: 1. The role of aquaporins, dehydrins and cryoprotective dehydration in seasonal survival; and 2. the role of photoperiodism in preparing for winter.

Field Season Overview:

In this, the first of three field seasons, researchers will deploy to Palmer Station on the ARSV Laurence M. Gould. On island near station they will collect and conduct experimentation on larvae of the locally abundant midge species, the *Belgica antarctica*. At the end of their season, researchers will return to their home laboratories to begin cloning and sequencing of larval aquaporins, dehydrins and clock genes that will provide them with tools necessary for extended field studies during subsequent reseache seasons.

Deploying Team Members:

- Juanita Constible
- David Denlinger (Co-PI)
- Yuta Kawarasaki
- Nicholas Teets

[Return to Index](#)

Science Project Details: 2009-2010

Raptor Of The South



Chris Linder. Photo by Mike Carlowicz.

Mr. Chris Linder (Principal Investigator)

chris@chrislinder.com

<http://www.chrislinder.com>

Seattle, Washington

Supporting Stations: McMurdo Station

Research Locations: Cape Crozier

Project Description:

This project seeks to increase public awareness and understanding of a historically misunderstood Antarctic bird, the South Polar Skua (*Catharacta maccormicki*). South Polar Skuas are powerful, stocky, gull-like seabirds. Although they spend most of their lives at sea, during the brief austral summer they raise their young on Antarctica's rocky shores. Some skuas nest near Adélie penguin colonies to take advantage of the abundant supply of penguin eggs and chicks from November to mid January. These skuas often use elaborate cooperative tactics to outsmart the nesting penguins. This predatory behavior, and the skuas' reputation for aggressively defending their own nests, has earned them the nickname "raptor of the south."

Field Season Overview:

Although countless popular books and movies have been devoted to penguins, the complete story of the South Polar Skua is relatively unknown to the public. This project will use still photographs and audio recordings to document the natural history of the birds nesting at several locations near McMurdo Station. Cape Bird is regarded as the classic location to study penguin-skuas interactions, and researchers from NSF and Antarctica New Zealand (ANZ) have recently initiated a new study of how South Polar skua predation can limit the size of penguin subcolonies. Chris will spend several weeks in field camps with scientists studying this species.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

[↶ Return to Index](#)

Science Project Details: 2009-2010

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



Kelly Deuerling collects a sample of wind-blown material in the Wright Valley. Photo by Kathy Welch.

Dr. W. Berry Lyons (Principal Investigator)

lyons.142@osu.edu

<http://www.mcmlter.org>

Ohio State University

Byrd Polar Research Center
Columbus, Ohio

Supporting Stations: McMurdo Station

Research Locations: Dry Valleys

Project Description:

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

Field Season Overview:

During the upcoming LTER field season researchers will travel to various sites within the Dry Valleys to collect water, snow, and sediment samples. They will travel by foot, or will make day trips by helicopter from McMurdo Station or Lake Hoare to the sampling sites. In addition to their routine sample collections, they will work in the moats of Lakes Fryxell and Hoare to



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

study the movement of water under the ice cover, and lake surface circulation. At Lakes Hoare, Bonney, Fryxell and F6 they will collaborate with the limno and stream teams. In addition, they will travel to upland pond sites within the Dry Valleys to collect additional water samples. The chemical analysis of lake, stream, glacier, and other samples will be done at the Crary Lab using the Dionex IC and Shimadzu instruments. After processing, samples will be stored at Crary Lab until they are either disposed of or returned to researchers home institutions in the U.S. Most samples and equipment will be shipped back to the U.S. on the resupply vessel.

Deploying Team Members:

- Devin Castendyk
- Luigi Michaud
- Fred Ogden
- Kathy Welch (Team Leader)

[Return to Index](#)

Science Project Details: 2009-2010

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



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Doug Martinson (Principal Investigator)

dgm@ldeo.columbia.edu

<http://www.lternet.edu/sites/pal/>

Columbia University

Lamont-Doherty Earth Observatory
Palisades, New York

Supporting Stations: ARSV Laurence M. Gould

Research Locations: West Antarctic Peninsula, Charcot Island

Project Description:

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

Field Season Overview:

The ARSV Laurence M. Gould will serve as the platform for the austral summer LTER cruise. Gould science support technicians will assist science team members with the deployment of nets, trawls, acoustic samplers, and hydrographic gear, including XBTs, XCTDs. In addition, five physical oceanographic moorings will be serviced on the cruise. Samples and data will be returned to the home institution for analysis.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Deploying Team Members:

- Addie Coyac

[↶ Return to Index](#)

Science Project Details: 2009-2010

Ice Cores, Translucent Truths From The Antarctic Ice Sheet



Anna McKee printing in her studio. Photo courtesy of Paul McKee.

Ms. Anna McKee (Principal Investigator)

annak@drizzle.com

<http://www.annamckee.com>

Seattle, Washington

Supporting Stations: McMurdo Station

Research Locations: WAIS Divide Field Camp

Project Description:

The artist will observe the land and glacier environment, the camp infrastructure, and the science and coring operations at the USAP field camp supporting the WAIS Divide ice core project. She will collect source materials to create a suite of etchings and multi-media prints back home in her studio. The artwork will be exhibited, documented in a catalog, and shared with the public and middle school classrooms through a series of artist talks and presentations.

Field Season Overview:

Anna will travel from McMurdo Station to the WAIS Divide field camp. While there she will sketch and take photographs and video footage as weather allows. She plans to take a three kilometre walk from the camp to mark the length of the ice core, which she will document through photos and video. She will interview science and support personnel and will participate in field experiments.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Science Project Details: 2009-2010

Antarctic Auroral Imaging



Dayside auroral imaging at South Pole. Photo by Charles Kaminski.

Dr. Stephen Mende (Principal Investigator)

mende@ssl.berkeley.edu

<http://sprg.ssl.berkeley.edu:80/atmos/>

University of California Berkeley

Space Sciences Laboratory
Berkeley, California

Supporting Stations: South Pole Station

Research Locations:

Project Description:

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

Field Season Overview:

A USAP research associate will monitor and maintain the instrument during the winter. Data are transmitted daily to the home institution for analysis.

[Return to Index](#)



[Project Indexes](#)

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



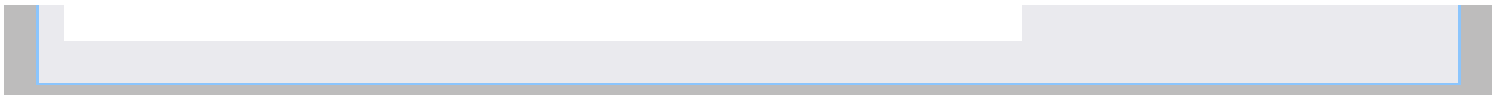
[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)



Science Project Details: 2009-2010

Balloon Array For RBSP Relativistic Electron Losses (BARREL)



Hand launch of small balloon payload at SANAE in January 2005.
Photo by John Sample.

Dr. Robyn Millan (Principal Investigator)

robyn.millan@dartmouth.edu

<http://www.dartmouth.edu/~barrel>

Dartmouth College

Physics and Astronomy

Hanover, New Hampshire

Supporting Stations: McMurdo Station

Research Locations: Williams Field

Project Description:

Balloon Array for RBSP Relativistic Electron Losses (BARREL) is a multiple-balloon investigation that will study electron losses from Earth's Van Allen Radiation Belts. Atmospheric losses of relativistic electrons play an important role in radiation belt dynamics. Precipitation into the atmosphere may even completely deplete the radiation belts during the main phase of some geomagnetic storms. BARREL is the first "Living with a Star Geospace Mission of Opportunity" and will support NASA's Radiation Belt Storm Probes (RBSP) mission. Researchers will address the following science objectives: (1) Determine the total electron loss rate by simultaneously measuring relativistic electron precipitation over a range of local times; (2) Directly test models of wave-particle interactions by combining precipitation measurements with simultaneous RBSP in situ wave and energetic particle measurements; (3) Determine the relative importance of different classes of precipitation and their associated precipitation mechanisms for different magnetic activity levels; and (4) Determine the spatial extent and spatial structure of precipitation.

Field Season Overview:



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

The project team will be housed at McMurdo and commute to the Williams Field launch facility. With support from Nasa's launch contractor (CSBF, Columbia Scientific Balloon Facility, A-145), they will conduct a test campaign launching five small balloon payloads to demonstrate the instrument design, operations and launch procedures.

Deploying Team Members:

- Brett Anderson
- Max Comess
- Xinqing Liang
- Michael McCarthy (Co-PI)
- David McGaw
- Amanda Robison
- Karl Yando

[Return to Index](#)

Science Project Details: 2009-2010

Balloon-Borne Experiment With A Superconducting Spectrometer (BESS)



Shrouded in solar panels, the BESS payload dangles from the "Boss" launch vehicle. The balloon is being filled in the background. Photo courtesy of John Mitchell.

Dr. John Mitchell (Principal Investigator)

john.w.mitchell@nasa.gov

<http://heawww.gsfc.nasa.gov/docs/gamcosray/hecr/BESS/BESS.html>

National Aeronautics and Space Administration

Goddard Space Flight Center
Greenbelt, Maryland

Supporting Stations: McMurdo Station

Research Locations: Long Duration Balloon Facility, Williams Field

Project Description:

BESS is a joint Japanese-U.S. project to search for antimatter in cosmic radiation. BESS measures the energy spectra of cosmic-ray antiprotons, searches for anti-nuclei, and provides fundamental data on light cosmic-ray elements and isotopes. The antimatter search may provide answers to questions of cosmological significance regarding the nature of the Universe. BESS-Polar I flew for 8.5 days in 2004. BESS-Polar II flew for 30 days in 2007-08 and returned its primary science data for 24.5 days with the superconducting magnet energized. Cosmic-ray antiprotons will be measured more precisely than during the previous solar minimum, and the search for cosmic antimatter will be three times more sensitive.

Field Season Overview:

This season, researchers and Nasa launch contractor CSBF (Columbia Scientific Ballooning Facility, A-145) will attempt to recover the BESS-Polar II. Its flight in 2007-08 was terminated over the West Antarctic Ice Sheet (WAIS). The descent was tracked from balloon termination to landing. The



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

instrument landed upright with very little lateral motion, evidence of low surface winds, and the parachute released automatically. The chase plane made two passes over the landing site to obtain the exact location and to facilitate photographs of the site and payload. Project team members will accompany CSBF and RPSC field camp staff to the WAIS Divide camp where recovery efforts will be staged.

Deploying Team Members:

- Thomas Hams
- Yasuhiro Makida
- Koji Yoshimura (Co-PI)

[Return to Index](#)

Science Project Details: 2009-2010

The Antarctic Geospatial Information Center: Collecting, Creating, Delivering And Archiving For The Community



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Mr. Paul Morin (Principal Investigator)
lpaul@umn.edu
<http://www.agic.umn.edu>

University of Minnesota

Geology & Geophysics
St. Paul, Minnesota

Supporting Stations: McMurdo Station

Research Locations: Taylor Valley

Project Description:

The Antarctic Geospatial Information Center (AGIC) team will collect high-resolution GPS points for use in georeferencing existing air photography in the McMurdo Dry Valleys. The resulting photos will be used to create a mosaic and support science and operations activities.

Field Season Overview:

A geographic information system (GIS) student will arrive at McMurdo Station in mid-December to provide GIS support to science and operations activities. A GIS analyst will arrive later that month to assist the student and to prepare for field work. Other team members will arrive at McMurdo in early January. They will break into three teams of two people. Each team will spend about ten days at the fixed field camps in Taylor Valley, traveling by helicopter to locations around the southern Dry Valleys to collect ground control. Team members will also spend about five days making day trips around Ross Island collecting GPS ground control points.

Deploying Team Members:



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

- Bradley Herried
- Michelle LaRue
- Ziggy Malolepszy
- Brent Pellinen
- Claire Porter

[↶ Return to Index](#)

Science Project Details: 2009-2010

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



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Christopher Neill (Principal Investigator)

cneill@mbi.edu

<http://www.mbl.edu/sjp>

Marine Biological Laboratory (MBL)

The Ecosystems Center

Woods Hole, Massachusetts

Supporting Stations: Palmer Station

Research Locations: Antarctic Peninsula

Project Description:

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

Field Season Overview:

Field team members will travel on the ARSV Laurence M. Gould to Palmer Station for a period of two to four weeks during the austral summer. They will work with LTER scientists studying the effects of climate change and ecosystem function on the Antarctic Peninsula. Team members will participate in censuses and other studies of breeding penguins, and in sampling of plankton and water column optical, chemical and physical properties with marine ecologists working at Palmer Station. In the lab, they



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

will assist scientists and students with analyses of samples for properties such as bacterial abundance, chlorophyll, nutrients and zooplankton.

Deploying Team Members:

- Scott Canon
- Jason Orfanon
- Angela Posada-Swofford

[Return to Index](#)

Science Project Details: 2009-2010

Collaborative Research: The Ecological Role Of A Poorly Studied Antarctic Krill Predator, The Humpback Whale (*Megaptera Novaeangliae*)



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Douglas P Nowacek (Principal Investigator)

dpn3@duke.edu

<http://www.nicholas.duke.edu/antarctica/>

Duke University

Duke University Marine Laboratory
Beaufort, North Carolina

Supporting Stations: RV/IB Nathaniel B. Palmer

Research Locations: Bransfield Strait, Dallman Bay, Gerlache Strait, Neumayer Channel, Vernadsky and Argentine Islands

Project Description:

The near extirpation of baleen whales from Antarctic waters during much the 20th century led to increased availability of krill for other predators in the Antarctic marine ecosystem. Several krill-dependant seal and penguin populations increased dramatically as a result. Over the past decade however, overall krill abundance has decreased significantly in the Peninsula, Krill predators are especially vulnerable to variability in prey populations and have been shown to alter their demography in response to changes in prey availability. How these changes cascade to other ecosystem components such as apex predators remain poorly understood. This project will use novel non-invasive tagging technology combined with traditional fisheries acoustics methods to quantify the types and frequency of prey consumed and daily consumption rates of a poorly understood yet ecologically integral and recovering krill predator in the Antarctic, the humpback whale.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Field Season Overview:

Researchers will travel on the ARSV Laurence M. Gould (LMG) where they will conduct ship-based surveys to find humpback whales in the nearshore waters off the Western Antarctic Peninsula. During the day, five teams will be organized: one team will conduct whale visual observations from bridge of the LMG; a second team will conduct hydrographic and krill patch surveys using the Acoustic Doppler Current Profiler (ADCP), the Multiple Open/Closing Net and Environmental Sampling System (MOCNESS) and the Conductivity Temperature Depth (CTD) rosette. The other three teams will use Zodiac inflatable boats to conduct DTag deployment and retrieval, photo identification, and focal follows of humpback whales. In addition they will conduct fine-scale acoustic krill patch studies using towed hydro-acoustic gear, and will use multi-beam echosounders to measure the size and shape of krill patches. At night a survey team will continue surveys of currents, hydrography and krill patches; and will continue to track any tagged whales via the VHF beacon.

Deploying Team Members:

- Alessandro Bocconcelli
- Ari Friedlaender (Co-PI)
- Patrick Halpin (Co-PI)
- Elliott Hazen
- Lindsey Peavey
- Andrew Read
- Alison Stimpert
- Reny Tyson
- Selina Vaage
- Danielle Waples
- Colin Ware
- Andrew Westgate
- Meng Zhou (Co-PI)
- Yiwu Zhu

[Return to Index](#)

Science Project Details: 2009-2010

Collaborative Research: A Broadband Seismic Experiment To Image The Lithosphere Beneath The Gamburtsev Mountains, East Antarctica



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Andy Nyblade (Principal Investigator)

andy@geosc.psu.edu

<http://epsc.wustl.edu/seismology/GAMSEIS/index.html>

Pennsylvania State University

Dept. of Geosciences

University Park, Pennsylvania

Supporting Stations: McMurdo Station

Research Locations: Acclimitization (ACK) camp, AGAP South

Project Description:

This project seeks to collect detailed, passive seismic data on the Gamburtsev Mountains. Analysis of the data is expected to clarify the seismic constraints on crustal and upper mantle structure beneath and surrounding these mountains, processes that support the high elevation of this region, regional distribution of heat flow, and the tectonic framework of the interior of the East Antarctic shield. The information will help address four, fundamental geophysical questions regarding this region: 1) How have the Gamburtsev Mountains formed at an intraplate location, without a straightforward plate-tectonic mechanism? 2) What is the role of topography and heat flow in the formation of continental ice sheets in East Antarctica? 3) What is the geologic and tectonic history of the East Antarctic craton? 4) How do tectonics and regional heat flow control the formation, distribution, and stability of subglacial lakes in East Antarctica?

Field Season Overview:

Field work began during the 2007-08 season with the deployment of ten



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

stations, and continued during the 2008-09 season with the servicing of these stations and the deployment of 16 additional stations including two seismic stations (GM06 and GM07) operated by Nippon Institute of Polar Research (NIPR). This season researchers plan to: 1) Service six USAP stations (P061, P090, N140, N215, GM05, AGO1); 2) service the two NIPR stations (GM06, GM07); 3) move two USAP stations to new locations (AGO3 and N100); and 4) demobilize 16 stations. These last 16 stations, and all ancillary equipment, will need to be transported to BYRD camp prior to their being used for the POLENET (G-079) project.

Deploying Team Members:

- Samantha Hansen
- Masaki Kanao
- Andrew Lloyd
- Amanda Lough
- Glenn Osburn
- Atsushi Watanabe

[Return to Index](#)

Science Project Details: 2009-2010

IRIS/PASSCAL Seismic Support



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Program Manager:

Dr. Alexandra Isern

Event Number: T-299-M

NSF/EAR Award 1261681

ASC POC/Implementer:

Chad Naughton

Undefined Timothy Parker (Principal Investigator)

tparker@passcal.nmt.edu

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

Socorro, New Mexico

Supporting Stations: McMurdo Station

Research Locations: Varies with science projects this group assists

Project Description:

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

Field Season Overview:

This year, PASSCAL field team members will support Andy Nyblade's East Antarctica project (G-055), Prasad Gogineni's two projects on the West Antarctic Ice Sheet (I-188, I-189), the vessel-based LARISSA project (Ted Scambos C-514, Maria Vernet C-246, and Gene Domack C-515), Terry Wilson's POLENET project (G-079) based at Byrd Field Camp, as well as other events that request support.

Deploying Team Members:

- Pnina Miller



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

[↶ Return to Index](#)

Science Project Details: 2009-2010

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



Mapple Glacier flowing into the Larsen B embayment, an area formerly covered by a thick shelf of ice that disintegrated in 2002. Photo by Ted Scambos.

Dr. Erin Pettit (Principal Investigator)

pettit@gi.alaska.edu

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

University of Alaska Fairbanks

Fairbanks, Alaska

Supporting Stations: Special Project, RV/IB Nathaniel B. Palmer

Research Locations: Bruce Plateau, Antarctic Peninsula

Project Description:

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



[Project Indexes](#)

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[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

the Antarctic Peninsula in order to measure ice thickness, topography, and accumulation variations across a ~8 km x 8 km site. The data acquired will provide information to the ice core researchers on the best sites to drill for high-quality ice core.

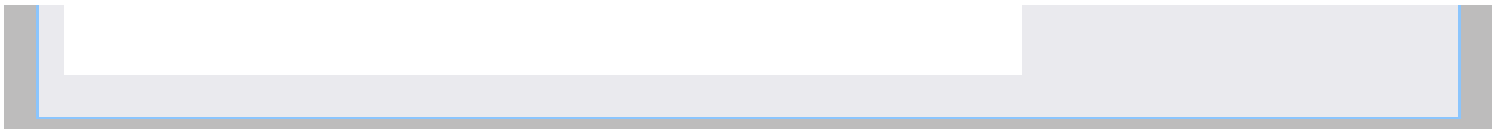
Field Season Overview:

C-514-N Researchers plan to instrument glaciers in both sections of the Larsen B embayment, and the remnant shelf, to observe ongoing, continuing responses. A series of ocean buoy installations will track the interaction of ocean currents and the ice shelf and glacial fronts, and will examine changes in temperature and salinity in the continental shelf regions distal from the Larsen B. Lastly, researchers will obtain an ice core at the ice ridge above the Larsen B and C shelves for an analysis of the past several millennia of climate change, and for comparison of past responses of the ice shelf (from Marine Geology) with past climate events recorded in the ice core.

C-514-E In phase one, a three-person team will depart from Port Stanley, Falkland Islands, aboard a Dash-7 aircraft to Rothera Station. There, they will collect their equipment, delivered earlier by the R/V Nathaniel B. Palmer (NBP), and will travel by Twin Otter to their field site on the Bruce Plateau. They will establish a field camp with Scott Tents, a small generator, one snowmobile and a nansen sled. They plan to conduct ~30 km of detailed radio-echo sounding, ground penetrating radar, and GPS surveys, and set up a bamboo stake system to guide the ice core camp personnel to the best drill site(s). They will return to Rothera by Twin Otter, and will subsequently fly to Punta Arenas, Chile. In phase two, a separate five-person ice core drilling team will depart from Punta Arenas, Chile, aboard a Dash-7 aircraft to Rothera Station. There, this team will consolidate equipment also delivered by the NBP, and will travel to the Bruce Plateau field site by Twin Otter. This group will establish a field camp which will focus around a geodesic dome housing an ice core drill. The team will retrieve up to 500 meters of ice core from this location then close the camp and return all equipment to Rothera Station. The team will depart Antarctica via Port Stanley, Falkland Islands, aboard Dash-7 aircraft.

Deploying Team Members:

- Roberto Filippi
- Terence Haran
- Vladimir Mikhaleenko
- Ronald Ross
- Ellen Thompson
- Lonnie Thompson
- Debra Tillinger
- Martin Truffer (Co-PI)
- Victor Zagorodnov



Science Project Details: 2009-2010

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



Helicopter putting in the field team at Lake Vida when the temperature was -48 C.

Dr. John Priscu (Principal Investigator)

jpriscu@montana.edu

<http://www.homepage.montana.edu/~lkbonney/>

Montana State University Bozeman

Land Resources and Environmental Sciences
Bozeman, Montana

Supporting Stations: McMurdo Station

Research Locations: McMurdo Station, Dry Valleys

Project Description:

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

Field Season Overview:

The field team members will begin operations in the Crary Laboratory. After an initial set-up period, the team will travel via helicopter to the McMurdo Dry Valleys, where they will periodically occupy the field camps at Lakes Fryxell, Hoare, and Bonney. The team's field season will consist of two sampling rotations between these camps. The first rotation will begin at Lake Fryxell in early November, move via helicopter to Lake Hoare the third week of November, and again via helicopter to Lake Bonney the fourth week of November. The second round of sampling will follow the same lake rotation.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Members of the field team will travel on foot or take day trips via helicopter from their field camps to other sampling sites in the Dry Valleys, including Lake Vanda and Don Juan Pond to collect water samples, the Canada Stream to collect water and particulate matter samples, and the ice edge to calibrate a Seabird CTD instrument. Samples will be processed and analyzed at the field camps and at the Crary Laboratory at the end of the field season. Some samples will be shipped to the home institution for further analysis.

Deploying Team Members:

- Amy Chiuchiolo (Team Leader)
- Alexander Michaud
- Lorelee Ryan
- Trista Vick

[Return to Index](#)

Science Project Details: 2009-2010

Cosmic Ray Energetics And Mass (CREAM)



The CREAM team with the ballooncraft while the balloon is being inflated for the launch in December 2007. Photo by Eun-Suk Seo.

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

University of Maryland

Institute for Physical Science and Technology
College Park, Maryland

Supporting Stations: McMurdo Station

Research Locations: Williams Field

Project Description:

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

Field Season Overview:

The CREAM project will be based out of McMurdo Station and will stage operations at Willy Field. Following a successful flight, researchers hope to recover all or part of the ballooncraft.

Deploying Team Members:



[Project Indexes](#)

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[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

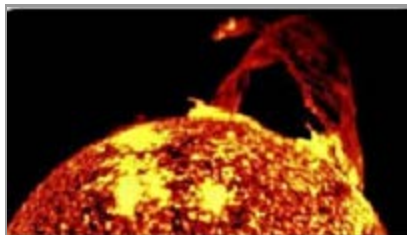
- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

- Hoseok Ahn
- Moo Hyun Lee
- Sang Eun Lee
- Alexandre Malinine
- John Mitchell
- Jean-Pierre Scordilis
- Jong Mann Yang

[Return to Index](#)

Science Project Details: 2009-2010

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



Effects of enhanced solar disturbances during the 2000-2002 solar-max period on the antarctic Mesosphere-Lower-Thermosphere (MLT) and F regions composition, thermodynamics and dynamics.

Dr. Gulamabas Sivjee (Principal Investigator)

sivjee@erau.edu

<http://www.spri.db.erau.edu/>

Program Manager:

Dr. Vladimir Papitashvili

Event Number: A-129-S

ASC POC/Implementer:

Chad Naughton

Embry Riddle Aeronautical University

Space Physics Research Laboratory
Daytona Beach, Florida

Supporting Stations: South Pole Station

Research Locations: Atmospheric Research Observatory

Project Description:

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

Field Season Overview:

Deploying field team members will troubleshoot equipment, modify the current mounting and pointing of research instruments, and make regular data transfer to their home institution. A trained, winter-over science



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[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

technician will operate the researcher's facility at South Pole Station during the austral winter.

Deploying Team Members:

- S. Azeem (Co-PI)
- Donald McEwen

[Return to Index](#)

Science Project Details: 2009-2010

The Drake Passage High-Density XBT/XCTD Program



Program Manager:

Dr. Peter Milne

Event Number: O-260-L

ASC POC/Implementer:

Patricia Jackson

Marine projects coordinator Skip Owen replaces an XBT probe on the back of the ARSV Laurence M Gould while crossing the Drake Passage. Photo by Kristan Hutchison, USAP Photo Library.

Dr. Janet Sprintall (Principal Investigator)

jsprintall@ucsd.edu

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

Scripps Institution of Oceanography

Physical Oceanography Research Division
La Jolla, California

Supporting Stations: ARSV Laurence M. Gould

Research Locations: Drake Passage

Project Description:

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

Field Season Overview:

Contractor (RPSC) marine support personnel will deploy approximately 70 XBTs (expendable bathythermographs) and 11 XCTDs (expendable conductivity-temperature-depth probes) on selected southbound cruises of the ARSV Laurence M Gould. The XBTs are loaded and launched using an automatic launcher and associated software that automatically collects the



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

profile data. The system drops an XBT probe at pre-specified locations, as prompted by the GPS location. RPSC personnel will also collect salinity samples for each XCTD deployment. At the end of each cruise, XBT and XCTD data, salinity samples, meteorological information, and data from the underway thermosalinograph will be sent to the principal investigator for processing and analysis.

[Return to Index](#)

Science Project Details: 2009-2010

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



Larsen C ice shelf at sunset in November 2008. Photo by Konrad Steffen.

Dr. Konrad Steffen (Principal Investigator)

konrad.steffen@colorado.edu

<http://cires.colorado.edu/science/groups/steffen/larsenC/index.html>

University of Colorado Boulder

CIRES

Boulder, Colorado

Supporting Stations: Special Project

Research Locations: East Antarctic Peninsula

Project Description:

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

Field Season Overview:

Field team members will travel Punta Arenas, Chile, by DASH-7 aircraft to Rothera Station (U.K.). From there, they will travel by Twin Otter aircraft to three previously installed Automatic Weather Station (AWS) sites on Larsen C ice shelf, and will spend approximately one week at each location. They will service instruments (GPS and climate) that were installed by British Antarctic Survey (BAS) field assistants, and will download the acquired data. They will also conduct ground penetrating radar (GPR) profiles, and collect several shallow firn cores (10-15m). At the camp sites, they will retrieve 10m



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

firn cores to analyze the density and precipitation rate on site. Firn cores will be analyzed in the field; no cores will be flown out.

Deploying Team Members:

- Gino Casassa
- José Rodríguez Lagos

[Return to Index](#)

Science Project Details: 2009-2010

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



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Deborah Steinberg (Principal Investigator)

debbies@vims.edu

<http://pal.lternet.edu/>

Virginia Institute of Marine Sciences

Department of Biological Sciences
Gloucester Point, Virginia

Supporting Stations: ARSV Laurence M. Gould, Palmer Station

Research Locations: West Antarctic Peninsula, Charcot Island

Project Description:

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

Field Season Overview:

Laurence M. Gould All work for the zooplankton component of the LTER will take place on the ARSV Laurence M. Gould. Researchers will use a net depth sensor to aid in a variety of net fishing, and will keep the live zooplankton in tanks in the Aquarium Room for further research. On-deck incubators will enable microzooplankton grazing experiments. They will use



[Project Indexes](#)

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[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

the 1 meter MOCNESS (Multiple Opening/Closing Net and Environmental Sampling System) to sample discrete depth horizons at the process study stations, and possibly a few of the regular grid stations.

Palmer Station The Palmer Station component of this project will involve field collection of benthic and planktonic amphipods, maintenance of amphipods in aquaria, and electrophysiological recording of amphipod visual systems in the laboratory. Researchers will use a small-boat to regularly deploy and retrieve benthic amphipod traps, and to conduct plankton tows with a 0.5M net of 200 microns to a depth of ~100 m. They hope to access Gamage Point in order to anchor some traps on land. On-station aquarium space will be used to keep live amphipods for experimentation.

Deploying Team Members:

- Kim Bernard
- Jonathan Cohen
- Sarah Giltz
- Lori Price
- Kate Ruck
- Beth Simmons

[Return to Index](#)

Science Project Details: 2009-2010

NASA Long Duration Balloon (LDB) Support Program



The CSBF crew launches a long duration balloon.

Mr. Bill Stepp (Principal Investigator)

Bill.Stepp@csbf.nasa.gov

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

Columbia Scientific Balloon Facility

Palestine, Texas

Supporting Stations: McMurdo Station

Research Locations: Williams Field

Project Description:

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

Field Season Overview:

This year CSBF will support two science projects, Eun-Suk Seo's CREAM (Cosmic Ray Energy And Mass, A-137), and Robyn Millan's BARREL (Balloon Array for RBSP Relativistic Electron Losses, A-144-M). The project team will be housed at McMurdo and commute to the Williams Field launch facility. The launch window usually opens in early December and balloons are launched as weather permits. Upon termination of the flight, recovery teams use fixed-wing and/or helicopter support to retrieve the instrument and its parachute. An RPSC camp manager, equipment operator, cook and



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

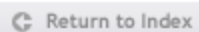
- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

GA are assigned to the facility.

CSBF will also attempt to recover the BESS-Polar II payload (John Mitchell, A-140). Its flight in 2007-08 was terminated over the West Antarctic Ice Sheet (WAIS). The descent was tracked from balloon termination to landing. The instrument landed upright with very little lateral motion, evidence of low surface winds, and the parachute released automatically. The chase plane made two passes over the landing site to obtain the exact location and to facilitate photographs of the site and payload. Project team members will accompany CSBF and RPSC field camp staff to the WAIS Divide camp where recovery efforts will be staged.

Deploying Team Members:

- Alexander Beange
- Michael Benham
- Paul Brasfield
- Malcolm Bunt
- Henry Cathey, Jr.
- Debora Fairbrother
- Chris Field
- Curtis Frazier
- Gerald Gregg
- Jack Hays
- Jim Humphrey
- Otto Masters
- Nathan McCabe
- Juan Perez Lara
- Fritz Stapf
- Thomas Thomas

 Return to Index

Science Project Details: 2009-2010

Processes Driving Spatial And Temporal Variability Of Surface PCO2 In The Drake Passage



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Colm Sweeney (Principal Investigator)
colm.sweeney@noaa.gov
<http://www.ldeo.columbia.edu/CO2>

National Oceanic and Atmospheric Administration

Global Monitoring Division (GMD)
Boulder, Colorado

Supporting Stations: ARSV Laurence M. Gould

Research Locations: Drake Passage

Project Description:

This project seeks to broaden and extend the existing time series of the hydrography of the Drake Passage from surface to bottom. This expansion will include the addition of an oxygen probe to the underway pCO₂ system and will include adding discrete surface nutrient and Carbon-13 measurements to the eight to ten XBT (eXpendable BathyThermographs) tracks. Two short cruises (four to five days in length) will be dedicated to making Carbon, nutrient, Oxygen and Carbon-13 measurements throughout the water column in the Drake Passage

Field Season Overview:

Onboard technicians will continue to collect surface measurements of the partial pressure of CO₂ (pCO₂), temperature, nutrients and salinity during each voyage of the ARSV Laurence M. Gould (LMG) and RV/IB Nathaniel B. Palmer. This year, science field team members will also sail on the LMG where they will conduct full ocean depth profiles of pCO₂, total CO₂, dissolved oxygen, temperature, salinity, carbon isotopes and nutrients.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Deploying Team Members:

- Thomas Conway
- Harriet Mankoff
- Matney
- Tim Newberger
- Mike Rhodes
- Mark Slovak
- Sonja Wolter

[Return to Index](#)

Science Project Details: 2009-2010

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



Program Manager:

Mr. Pat Smith

Event Number: T-396-M

NSF/CTBT MOA

ASC POC/Implementer:

John Rand

Dr. Curt Szuberla (Principal Investigator)

cas@gi.alaska.edu

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

University of Alaska Fairbanks

Geophysical Institute

Fairbanks, Alaska

Supporting Stations: McMurdo Station

Research Locations: Windless Bight

Project Description:

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

Field Season Overview:

Field team members will travel by Piston Bully and MatTrack to the location of their equipment at Windless Bight. There they will establish a small field camp.

Deploying Team Members:

- Don Byrd
- Clint Coon
- Kathleen Lawson (Team Leader)
- Duncan Marriott



[Project Indexes](#)

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[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

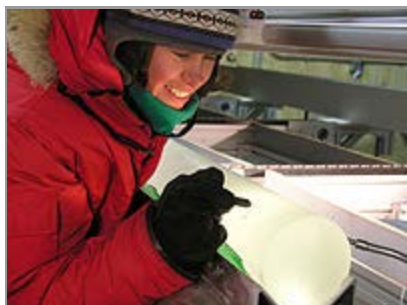
- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

● David Withoff

[↶ Return to Index](#)

Science Project Details: 2009-2010

Investigation Of Climate, Ice Dynamics, And Biology Using A Deep Ice Core From The West Antarctic Ice Sheet



A one meter section of the 3,450 meter WAIS Divide ice core is examined by Rebecca Anderson. Photo by Kendrick Taylor.

Dr. Kendrick Taylor (Principal Investigator)

kendrick@dri.edu

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

Desert Research Institute

Division of Hydrological Science
Reno, Nevada

Supporting Stations: McMurdo Station

Research Locations: West Antarctic Ice Sheet (WAIS) Divide camp

Project Description:

This project, part of a five-year collaborative effort of several research teams, will collect a 3,400-meter-deep ice core in West Antarctica. The main objectives are to: 1) develop the most detailed record of greenhouse gases possible for the last 100,000 years; 2) determine if the climate changes that occurred during the last 100,000 years were initiated by changes in the northern or southern hemisphere; 3) investigate the past and future stability of the West Antarctic Ice sheet; and 4) investigate the biology of deep ice.

Field Season Overview:

Field team members will pack the brittle ice collected last season and prepare it for transport back to McMurdo where it will be stored until it is shipped north on the resupply vessel. Once this is completed the field team will conduct the third year of deep ice-core drilling operations using a deep ice sheet coring drill.

Deploying Team Members:



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

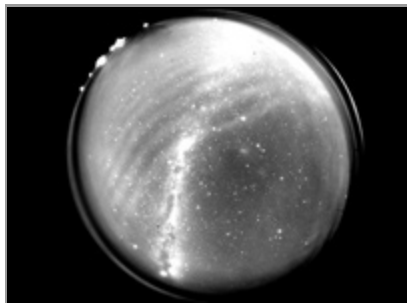
- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

- Maria Banks
- John Banta
- Thomas Bauska
- Thomas Cox
- Kathleen Huybers
- Bess Koffman (Team Leader)
- Peter Neff
- Anais Orsi (Team Leader)
- Heidi Roop
- Joseph Souney Jr.
- Bruce Vaughn (Team Leader)
- Bo Vinther

[Return to Index](#)

Science Project Details: 2009-2010

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



All-sky image of an unusual "mesospheric bore" wave event imaged from Halley Station as part of a collaborative research program between Utah State University and British Antarctic Survey (British Antarctic Survey). Photo courtesy of K. Nielsen, M. J. Taylor and M. Jarvis, Geophysical Research Letters, 2006.

Dr. Michael Taylor (Principal Investigator)

mike.taylor@usu.edu

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

Utah State University

Center for Atmospheric and Space Sciences

Logan, Utah

Supporting Stations: South Pole Station

Research Locations: South Pole science lab B2

Project Description:

The novel infrared Advanced Mesospheric Temperature Mapper (AMTM), operated at the South Pole Station over last few years, has advanced scientific exploration capabilities by enabling scientists to measure gravity waves in the high-latitude Antarctic Mesosphere and Lower Thermosphere (MLT, ~80-100 km altitude) region in a new spectral range that is not dominated by aurora, and with a much higher temporal resolution than was previously possible. This research will contribute to a greater understanding of the diversity and variability of gravity waves over the Antarctic continent and their associated momentum transport in the MLT region, and acquire new knowledge of the gravity waves most copious sources at the high-



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

latitudes. These data will contribute significantly to the ANtarctic Gravity Wave Imaging Network (ANGWIN) program that brings together multi-instrument measurements from eight key sites around the Antarctic continent, including South Pole.

Field Season Overview:

Project team members will fly to Amundsen-Scott South Pole Station in January and remain on station for two weeks. For optical observations during the Austral Winter 2010 they will deploy a full telecentric optical system with six-position filter wheel coupled to a thermoelectrically cooled InGaAS camera. The camera will be installed in the new B2 facility where the current test camera is operating. The new camera will operate automatically during the Austral Winter and data will be stored on the computer hard drive. Measurements will initiate in mid-April 2009 and continue until the end of August 2010.

Deploying Team Members:

- Pierre-Dominique Pautet

[Return to Index](#)

Science Project Details: 2009-2010

Collaborative Research: Possible Climate-Induced Change In The Distribution Of Pleuragramma antarcticum On The Western Antarctic Peninsula Shelf

**Program Manager:**

Dr. Roberta Marinelli

Event Number: B-258-N

ASC POC/Implementer:

Patricia Jackson

Dr. Joseph J Torres (Principal Investigator)

jtorres@marine.usf.edu

<http://www.marine.usf.edu/bio/physiolab>

University of South Florida

Department of Marine Science

St. Petersburg, Florida

Supporting Stations: RV/IB Nathaniel B. Palmer

Research Locations: Joinville Island, Croker Passage, Palmer Basin, Renaud Island, Crystal Sound, Marguerite Bay, Charcot Island

Project Description:

Objectives of this project include: 1) Sampling Pleuragramma antarcticum over the West Antarctic Peninsula shelf to compare present with past abundances and distributions; 2) describing the diel vertical distribution of Pleuragramma in fine detail, particularly within the upper 200 meters of the water column; and 3) obtaining diet samples of Adélie penguins for species composition and mass analyses

Field Season Overview:

Researchers will occupy five penguin population centers for about five days each, and two previously sampled locations for comparison with present conditions.

Activities on board the Laurence M. Gould will consist of ~ six tows with a ten meter Multiple Opening/Closing Net and Environmental Sensing System (MOCNESS) per station location, and three tows with the one meter MOCNESS per station. In addition to the data acquired by the suite of midwater trawls, researchers will conduct a grid of Conductivity Temperature Depth (CTD) casts at each of the study sites to characterize the



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

hydrography. They will also use the ship's fluorometry system to provide background data on ambient fluorescence for estimating highs and lows in chlorophyll biomass within the study area.

From station, team members will use Mark III or F470 Zodiac inflatable boats to access penguin rookeries for the purpose of capturing and lavaging penguins. Forty Adelle penguins will be captured at each of five known population centers. Captured birds will be lavaged using water off-loading methods and will be released unharmed. Diet samples will be processed in accordance with long established procedures to ensure compatibility between contemporary and historical data.

Deploying Team Members:

- Julian Ashford (Co-PI)
- Erica Bortolotto
- Heather Broadbent
- Scott Burghart
- Christine Cass
- Art DeVries
- Nicole Dunham
- Jason Ferguson
- Bill Fraser (Co-PI)
- Kristin Gorman
- Lara Henry
- Eileen Hofmann
- Erica Hudson
- Mark Lefens
- Eloy Martinez
- Michael Menze
- Christin Murphy
- Melanie Parker
- Brett Pickering
- Gianfranco Santovito
- Paul Suprenand

[Return to Index](#)

Science Project Details: 2009-2010

Title: Collaborative Research In IPY: Abrupt Environmental Change In The Larsen Ice Shelf System, A Multidisciplinary Approach-Marine Ecosystems



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Maria Vernet (Principal Investigator)

mvernet@ucsd.edu

<http://www.hamilton.edu/news/exp/LARISSA/index.html> ,

<http://uhmanoa?antarctic?research.blogspot.com/> ,

Scripps Institution of Oceanography

La Jolla, California

Supporting Stations: RV/IB Nathaniel B. Palmer

Research Locations: Weddell Sea

Project Description:

The LARsen Ice Shelf System, Antarctica (LARISSA) project will bring an international, interdisciplinary team together to address a significant regional problem with global change implications, the abrupt environmental change in Antarctica's Larsen Ice Shelf System. The research objectives for the LARISSA Ecosystems group are focused on understanding the main processes that shape ecological communities in the western Weddell Sea before and after the recent retreat of ice shelves. Researchers will conduct extensive sampling in order to: 1) characterize the physical, sedimentological, geophysical and biological properties; and the location, composition and function of the first Antarctic seep community, with emphasis on bacteria, macro and megafauna and sedimenting materia; 2) evaluate the composition, biomass and productivity of the newly open waters of the former Larsen B ice shelf; 3) estimate the contribution of sedimenting material from (phyto)plankton to benthic communities; and, 4) test the timing and composition of the invasion of benthic macro- and megafauna in the newly open areas. Researchers will conduct sampling in collaboration with



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

all groups on the Larissa project, Domack (C-515-N), Scambos/Huber (C-514-E/N) et al.

Field Season Overview:

Researchers will sail on the R/V Nathaniel B. Palmer and will collect data at six benthic stations. Sampling techniques employed during the cruise will include a combination of water column and sediment collection, as well as mooring deployments. Instruments used for sampling will include a benthic camera, video from a remotely operated vehicle (ROV), Blake and Otter trawls, and conductivity temperature depth (CTD) casts using a CTD rosette. Coring methods will include box, mega, and Kasten corers. Data will also be collected from cold-seep clam beds and bacterial mats located near the margins of the Larsen A, B, and C ice shelves. Samples will be analyzed on board the vessel; some samples will be shipped to the home institution at the end of the cruise.

Deploying Team Members:

- Mattias Cape
- Laura Grange
- David Honig
- Michael McCormick (Co-PI)
- Craig Smith (Co-PI)

[Return to Index](#)

Science Project Details: 2009-2010

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



Measuring soil carbon dioxide flux in experimental nutrient-addition plots near Lake Bonney in Taylor Valley. In the background, student Katie Moerlein preps the next plot. Photo by Becky Ball.

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

Dartmouth College

Environmental Studies Program
Hanover, New Hampshire

Supporting Stations: McMurdo Station

Research Locations: Dry Valleys

Project Description:

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

Field Season Overview:

In close collaboration with Wall (B-424), the field team will make one- to



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

seven-day trips via helicopter to study sites in the Taylor, Wright, Victoria, and Beacon Valleys to monitor long-term experiments and collect soil samples. Samples will be returned to the Crary Lab for processing, incubation, and analysis. Some samples will be shipped to the home institution for further analysis.

Deploying Team Members:

- Jennifer Bailard
- Rebecca Ball (Team Leader)
- Julia Bradley-Cook

[Return to Index](#)

Science Project Details: 2009-2010

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



Soil respiration being measured in situ to assess the impact of nutrient addition on below ground activity.

Photo by Uffe N. Nielsen.

Dr. Diana Wall (Principal Investigator)

diana.wall@colostate.edu

<http://www.nrel.colostate.edu/projects/soil/MCM/index.html>

Colorado State University

Natural Resource Ecology Laboratory
Fort Collins, Colorado

Supporting Stations: McMurdo Station

Research Locations: Dry Valleys

Project Description:

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

Field Season Overview:

Field team members will make day trips by helicopter from McMurdo Station to study sites in the Taylor, Wright and Victoria Valleys. They may also make



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

multi-day trips to established field camps in Taylor Valley. The researchers will monitor long-term experimental plots and collect soil samples to look for relationships between biodiversity and carbon, nitrogen, and hydrological cycles; and they will study the phylogeny of soil fauna (nematodes, tardigrades, and rotifers). The field team will set up processing and soil and sediment sampling operations in the Crary Lab. Some samples will be shipped to the home institution for further analysis.

Deploying Team Members:

- Byron Adams
- Uffe Neilsen
- Zachary Sylvain

[Return to Index](#)

Science Project Details: 2009-2010

South American Meridional B-Field Array (SAMBA): An American-Chilean Chain



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Eftyhia Zesta (Principal Investigator)
Eftyhia.Zesta@hanscom.af.mil
<http://samba.atmos.ucla.edu>

University of California Los Angeles

Los Angeles, California

Supporting Stations: McMurdo Station

Research Locations: West Antarctic Ice Sheet (WAIS) Divide

Project Description:

Through remote sensing, the South American Meridional B-field Array (SAMBA) studies ultra-low frequency (ULF) waves and mass density in the inner magnetosphere during geomagnetically active periods. Science objectives for SAMBA are: 1. Determining the effect solar wind dynamic pressure enhancements have on the asymmetric ring current; 2. Determining field-line resonances (FLR); 3. Investigating constraints on models used to derive equatorial mass density from FLRs; 4. Monitoring inner magnetospheric mass density during storms, in conjunction with the Time History of Events and Macroscale Interactions during Substorms (THEMIS) satellite mission; and 5. Making auroral conjugate observations of substorms, also in conjunction with THEMIS.

Field Season Overview:

Researchers will travel to WAIS Divide where they will install the repaired SAMBA system and make day trips by snowmobile to and from the magnetometer site.

Deploying Team Members:



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

- Nathan Sterner
- James Weygand

[↶ Return to Index](#)

Science Project Details: 2009-2010

TDRSS And NAILS

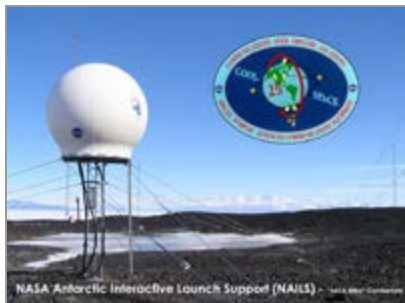


Photo by Mike Comberiate.

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

National Aeronautics and Space Administration

Goddard Space Flight Center
Greenbelt, Maryland

Supporting Stations: McMurdo Station

Research Locations: On station

Project Description:

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

Field Season Overview:

Project representatives will install two new RF Transmitters, as well as upgraded, remote control software for the NAILS satellite ground station. They will then test the new equipment with NOAA polar-orbiting satellites. In addition, they will configure a new system for autonomous operations, and will train a winter-over care taker. Additional RF equipment will be added to the NAILS satellite Ground station at the T-Site, along with routine maintenance and live testing with orbiting satellites.

Deploying Team Members:

- Walter Asplund
- Greg Heckler



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

- Kurt Rush
- William Schmitt

[↶ Return to Index](#)

Science Program Indexes: 2009-2010

USAP Program Index:

Ocean and Atmospheric Sciences

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|---------------------------|---|
| Buesseler, Kenneth | O-288-L/N | WAP-flux: New Tools to Study the Fate of Phytoplankton Production in the West Antarctic Peninsula |
| Butler, James | O-257-S | South Pole monitoring for climatic change |
| Cassano, John | O-400-M | Collaborative Research: Atmosphere-Ocean-Ice Interaction in a Coastal Polynya |
| Cohn, Stephen | O-363-M | IPY: NCAR facility support, scientific contributions and collaborative research to understand environmental change in Antarctica through participation in the international CONCORDIASI project |
| Deshler, Terry | O-131-M | Measurements of Antarctic ozone and polar stratospheric cloud profiles in a time of decreasing atmospheric chlorine, climate change, and fluctuations in polar vortex strength |
| Lazzara, Matt | O-283-M/S | Collaborative research: Antarctic Automatic Weather Station Program (AWS), 2007-2010 |
| Martinson, Doug | O-241-L | SASSI Mooring Array in the Western Antarctic Peninsula |
| Orsi, Alejandro | O-403-O | Collaborative Research: Atmosphere-Ice-Ocean Interactions in the Eastern Ross Sea |
| Sprintall, Janet | O-260-L | The Drake Passage high-density XBT/XCTD program |
| Sweeney, Colm | O-214-L | Processes driving spatial and temporal variability of surface pCO ₂ in the Drake Passage |

[Return to Index](#)



[Project Indexes](#)

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



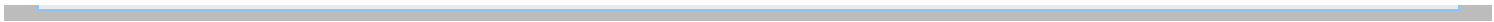
[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)



Science Program Indexes: 2009-2010

USAP Program Index:

Technical Event

[Return to Index](#)

| Principal Investigator ▼ | Event No. | Project Title |
|--------------------------|-------------------------|---|
| Comberiate, Mike | T-966-M | TDRSS and NAILS |
| Johns, Bjorn | T-295-M | UNAVCO GPS survey support |
| Morin, Paul | T-434-M | The Antarctic Geospatial Information Center: Collecting, creating, delivering and archiving for the community |
| Parker, Timothy | T-299-M | IRIS/PASSCAL seismic support |
| Szuberla, Curt | T-396-M | Operation and maintenance of a CTBT class infrasound array at Windless Bight |

[Return to Index](#)



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Science Project Details: 2009-2010

Collaborative Research: Limits And Drivers Of Metazoan Distributions In The TAM (A Small Grants For Exploratory Research Proposal)



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Byron J Adams (Principal Investigator)
bjadams@byu.edu

Brigham Young University

Provo, Utah

Supporting Stations: McMurdo Station

Research Locations: Beardmore Glacier

Project Description:

Researchers will sample the diversity of soils at three locations in the Beardmore region of the Transantarctic Mountains in order to get a preliminary estimate of animal biodiversity, abundance and community structure as it varies across soil provenance, and other geophysical gradients.

Field Season Overview:

The proposed sampling design is for four team members to collect diverse soils from three locations in the Beardmore Glacier region: Near Mount Kyffin, the Cloudmaker, and in the Meyer Desert. Team members will travel to the sampling sites by Twin Otter and Basler aircraft, and will venture to outlying sites by foot.

Deploying Team Members:

- Ian Hogg



[Project Indexes](#)

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[Project Web Sites](#)

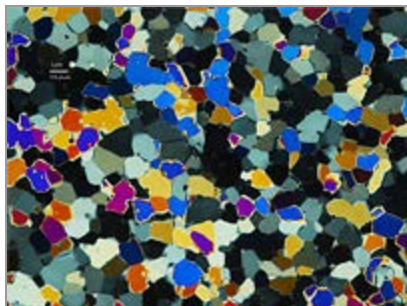
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2009-2010 Field Season
Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Science Project Details: 2009-2010

Collaborative Research: Physical Properties Of The WAIS Divide Deep Core



Thin section of ice, 120 m depth, WAIS Divide ice core, viewed between crossed polarizing filters.
Photo by Joan J. Fitzpatrick.

Dr. Richard Alley (Principal Investigator)
ralley@essc.psu.edu

Pennsylvania State University

Dept. of Geosciences & Earth System Science Center
University Park, Pennsylvania

Supporting Stations: McMurdo Station

Research Locations: West Antarctic Ice Sheet (WAIS) Divide

Project Description:

As part of the West Antarctic Ice Sheet (WAIS) Divide deep ice-coring program, this project seeks to acquire a high-resolution climate record from WAIS that will be commensurate in scope to the record provided from the Greenland Ice Sheet Project 2 (GISP2) ice core. Researchers will catalog ice core visible stratigraphy, the depth evolution of ice grain size and orientation, bubble sizes, and the size distributions and characteristics of specific, verified event depths such as the onset of enclathratization and the climate transition from the end of the last glacial period into the Holocene.

Field Season Overview:

Two team members will travel to WAIS Divide. Once there, one team member will work on processing and preparing core samples, the other will work on preparing samples from the backlog of stored core. A third team member will join this WAIS Divide coring crew in January and will assist in closing out the drilling project for the season. Samples will be returned to the National Ice Core Laboratory and the home institution for further analysis.

Deploying Team Members:



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

- John Fegyveresi
- Don Voigt (Team Leader)

[↶ Return to Index](#)

Science Project Details: 2009-2010

Lake Joyce Microbialites Resubmittal



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

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

SETI Institute, Center for the Study of Life in the Universe

Lake Placid, New York

Supporting Stations: McMurdo Station

Research Locations: Lakes Vanda and Joyce

Project Description:

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



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Field Season Overview:

Upon arrival at McMurdo Station, field team members will begin preparing for field work. They will attend safety trainings and make checkout dives in McMurdo Sound to ensure that divers, dive gear and science equipment are ready. All heavy/bulky items such as dive gear, hole melter, fuel etc. will be taken to Marble Point, or other staging areas, on the other side of McMurdo Sound by traverse, then transported to the field site by helicopter. Field team members will be transported to the Dry Valley lakes Vanda and Joyce by helicopter and will establish a field camp. Once their field work is complete, they will be transported back to McMurdo by helicopter.

Deploying Team Members:

- Alfonso Davila
- Ian Hawes (Co-PI)
- Dawn Sumner (Co-PI)

[Return to Index](#)

Science Project Details: 2009-2010

History Of, And Mechanisms Leading To, Post-LGM Retreat Of The West Antarctic Ice Sheet



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. John B. Anderson (Principal Investigator)
johna@rice.edu

Rice University

Earth Science Department
Houston, Texas

Supporting Stations: Icebreaker Oden

Research Locations:

Project Description:

Researchers will investigate mechanisms that led to the retreat of the ice sheet from the West Antarctic continental shelf since the Last Glacial Maximum (LGM). These mechanisms include sea-level rise, thinning due to rapid ice stream discharge, subglacial meltwater under-penning, and under-melting by warm deep water. Their ultimate goal is to construct maps that show grounding line positions through time for each of the major drainage outlets from Marguerite Bay to the Ross Sea, to constrain the age of these grounding lines, and to summarize these results and their implications.

Field Season Overview:

Field team members will sail on the Swedish Icebreaker Oden from McMurdo Station to Punta Arenas, Chile. They will conduct swath bathymetry and will collect gravity (Kasten) cores in areas where radiocarbon ages are needed to help constrain grounding line retreat.

Deploying Team Members:

- Rodrigo Fernandez



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

- Alexandra Kirshner
- Rebecca Minzoni
- Maria Sjunneskog

[Return to Index](#)

Science Project Details: 2009-2010

Dust Logging At Dome C For Abrupt Climate Changes, Large Volcanic Eruptions And Bolide Impacts



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Ryan Bay (Principal Investigator)
bay@berkeley.edu

University of California Berkeley

Physics
Berkeley, California

Supporting Stations: McMurdo Station

Research Locations: Dome C II (AWS)

Project Description:

This project will use an advanced version optical logging instrument (dust logger) to obtain a depth profile of dust and volcanic ash down to bedrock in the borehole at Dome C. A major goal will be to extend previous studies with European Project for Ice Coring in Antarctica (EPICA) collaborators in looking for evidence of a causal relationship between volcanic eruptions and abrupt climate change.

Field Season Overview:

Field team members will travel by Twin Otter aircraft from McMurdo Station to Concordia Station (France/Italy), where they will be provided with housing, meals, transportation to and from the field site, generators and power, and all mechanical equipment for logging the borehole including a winch. Concordia Station will refuel the Twin Otters for the field team's return flight to McMurdo Station.

[Return to Index](#)



[Project Indexes](#)

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



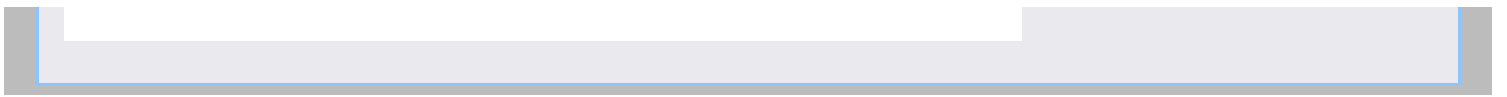
[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)



Science Project Details: 2009-2010

Collaborative Research: Dating And Paleoenvironmental Studies On Ancient Ice In The Dry Valleys, Antarctica



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Michael Bender (Principal Investigator)
bender@princeton.edu

Princeton University

Department of Geosciences
Princeton, New Jersey

Supporting Stations: McMurdo Station

Research Locations: Beacon and Mullins Valleys

Project Description:

The Mullins Valley debris-covered glacier forms at the headwall of Mullins Valley, Dry Valleys region of Antarctica. As it flows down this small valley, it enters a region of net ablation, and mass loss leads to the surface exposure of dirt and rocks that fell in at the headwall. The dirt/rock layer, which eventually reaches a thickness of about 1 m, insulates the ice and causes evaporation to be very slow. In addition, glacial flow alleviates thinning due to ablation, so that glacial ice is foreshortened laterally, rather than vertically. The consequence of these two features is that very old ice is preserved: $^{40}\text{Ar}/^{39}\text{Ar}$ ages of volcanic ashes found in the rock layer progressively increase down the length of the glacier, and reach nearly 10 Ma at the outer limit.

Field Season Overview:

Field team members will establish three separate field camps in Beacon and Mullins Valleys. They will use pre-existing campsite locations and pre-existing helicopter pads wherever possible. Throughout the field season, they will assist G-440 with sample collection and geomorphological



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

interpretation, and may initiate one or two personnel exchanges between groups. Researchers plan to drill and collect ice cores (each as much as 20-30 m deep) at five localities along the debris-covered glacier to determine the age of the ice by dating trapped gases held within. This will help reconstruct aspects of atmospheric greenhouse gas concentrations and regional climate in the past. Ice cores will be periodically retrograded to McMurdo Station and will be returned to CONUS at the end of the season.

Deploying Team Members:

- Brandon Boldt
- Doug Kowalewski
- Jennifer Lamp
- Gareth Morgan
- Gareth Morgan

[Return to Index](#)

Science Project Details: 2009-2010

Collaborative Research: Biogeochemistry Of Cyanobacterial Mats And Hyporheic Zone Microbes In McMurdo Dry Valley Glacial Meltwater Streams



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Edward Carpenter (Principal Investigator)
ecarpent@sfsu.edu

San Francisco State University

Romberg Tiburon Center
Tiburon, California

Supporting Stations: McMurdo Station

Research Locations: Miers Valley

Project Description:

Researchers will study the microbial ecology of the hyporheic (wetted) zone of dry-valley glacial melt-water streams. They will determine how carbon and nitrogen, fixed by cyanobacteria in microbial mats, affect bacterial activity, dissolved organic carbon, and dissolved organic nitrogen in these zones.

Field Season Overview:

Researchers plan to conduct their research in early December, when melt-water streams are most active. Their focus will be on a stream in Miers Valley. They will be flown by helicopter from McMurdo Station to the research site where they will establish a field camp and remain for 14-15 days. They will erect a tented lab to initially process groundwater and other microbial samples. They also plan a stream diversion experiment.

Deploying Team Members:

- Troy Gunderson
- Thomas Niederberger



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

- Alexander Parker
- Jill Sohm

[↶ Return to Index](#)

Science Project Details: 2009-2010

Collaborative Research: Atmosphere-Ocean-Ice Interaction In A Coastal Polynya



Aerosonde Unmanned Aircraft System flying over sea ice at Barrow, AK. Photo by Aerosonde Pty. Ltd.

Dr. John Cassano (Principal Investigator)
john.cassano@colorado.edu

University of Colorado Boulder
CIRES
Boulder, Colorado

Supporting Stations: McMurdo Station
Research Locations: Terra Nova Bay

Project Description:

Researchers with this project will make in-situ oceanic and atmospheric measurements of the oceanic response to mesoscale atmospheric circulations in Terra Nova Bay.

Field Season Overview:

Field team members will conduct Aerosonde flights to make measurements over Terra Nova Bay and in vicinity of McMurdo Station and the Pegasus ice runway.

Deploying Team Members:

- Paul Herrmann
- David Hobby
- Peter Kernebone
- Nickolas Logan
- Nickolas Logan



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

● James Maslanik (Co-PI)

[↶ Return to Index](#)

Science Project Details: 2009-2010

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



The launch of a driftsonde from Zinder, Niger, during the AMMA (African Monsoon Multidisciplinary Analyses) field project in 2006.

Photo by Terry Hock.

Dr. Stephen Cohn (Principal Investigator)

cohn@ucar.edu

**University Corporation for Atmospheric Research,
UCAR/NCAR**

Boulder, Colorado

Supporting Stations: McMurdo Station

Research Locations: McMurdo Station Sea ice

Project Description:

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

Field Season Overview:

Field team member will arrive at McMurdo Station during the first flights of Winfly. They will be based on station and will be transported daily to and from the balloon launch site.

Deploying Team Members:

- Nicholas Potts



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

[Return to Index](#)

Science Project Details: 2009-2010

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



A group of southern elephant seals.
Photo by Birgitte McDonald.

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

University of California Santa Cruz

Long Marine Lab
Santa Cruz, California

Supporting Stations: McMurdo Station

Research Locations: McMurdo sea ice, Terra Nova Bay

Project Description:

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

Field Season Overview:

Field team members will be based out of McMurdo Station and will work at various locations on the sea ice. They will capture and tag molted adult Weddell seals with conductivity-temperature-depth, satellite relay data logger (CTD-SRDL) tags. They also hope to collaborate with Italian colleagues to tag seals at Terra Nova Bay.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Deploying Team Members:

- Jennifer Burns (Co-PI)
- Kim Goetz
- Linnea Pearson
- Patrick Robinson

[Return to Index](#)

Science Project Details: 2009-2010

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



Weddell seal with video and data recorder. Photo by Terrie Williams.

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

Texas A & M University

Dept. of Marine Biology
Galveston, Texas

Supporting Stations: McMurdo Station

Research Locations: McMurdo Sound, Crary Lab

Project Description:

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

Field Season Overview:

Team members will live and work at McMurdo Station, and will access sea ice in a Piston Bully and skidoos. They will construct a Jamesway or a portable, inflatable dome as a shelter on the sea ice (with a hole beneath the structure) for weighing, sedating and instrumenting seals. Adult Weddell



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

seals will be captured with a purse-string net and transported to the Jamesway in a specially designed seal sled. Once morphological and resting metabolic measurements are completed, the video and data recorders will be attached, and the seals released for ca. two weeks. Researchers will use satellite transmitters and VHF radio transmitters glued to the seal's fur to track animals at the surface. When an instrumented seal hauls out on the ice, researchers will receive satellite-based locations (latitude and longitude) by email from Service Argos within 90 minutes. From those coordinates, they will determine the animal's location. Seals will be recaptured to recover the video and data recorder, or to exchange it for one with fresh batteries and full memory capacity. Once work is completed on a seal, the animal will be recaptured and all of the equipment and the attachment system will be removed.

Deploying Team Members:

- Willem Buitendyk
- Georgina Davis
- Edward Farrell
- Lee Fuiman (Co-PI)
- Beau Richter
- David Williams
- Terrie Williams (Co-PI)

[Return to Index](#)

Science Project Details: 2009-2010

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



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

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

Program Manager:
Dr. Vladimir Papitashvili

Event Number: A-113-E

ASC POC/Implementer:
Melissa Rider

Northwest Research Associates, Inc.
Boulder, Colorado

Supporting Stations: Special Project

Research Locations: Comandante Ferraz (Brazilian Antarctic Base)

Project Description:

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



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

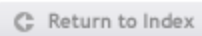
- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Field Season Overview:

Researchers will not need to rely on the U.S. Antarctic program for anything except transport of the radar hardware to Brazil and/or Punta Arenas, and transport of personnel to Punta Arenas to meet a Brazilian flight to King George Island.

Deploying Team Members:

- Anna Hocking
- Wayne Hocking
- Diego Janches (Co-PI)

 Return to Index

Science Project Details: 2009-2010

Dynamics Of Aeolian Processes In The McMurdo Dry Valleys, Antarctica



Victoria Valley measurement site, January 2009. Photo by Bill Nickling.

Dr. John Gillies (Principal Investigator)
jackg@dri.edu

Desert Research Institute

Reno, Nevada

Supporting Stations: McMurdo Station

Research Locations: Lake Fryxell; Taylor, Victoria and Wright valleys

Project Description:

The spatial and temporal patterns of aeolian transport in the McMurdo Dry Valleys are not well understood. In particular, the magnitude and frequency of sediment transport events, the differences between the summer and winter transport regimes, and the flux rates of wind-blown sand are not established. In addition, it is unknown whether the aeolian gravel ripple bedforms in the Dry Valleys are current or relict forms. This project will conduct two, process-based experiments and accompanying morphometric analyses to answer these questions. Researchers will establish sediment-transport measurement systems at four locations in the Victoria, Taylor, and Wright valleys to quantify sediment transport frequency and magnitude. The research team will begin a study designed to quantify the movement rate and form change of very coarse gravel megaripples in the Wright Valley.

Field Season Overview:

This season researchers will: 1) download the collected data and collect the sediment in the traps at each sediment transport measurement site; 2) remove instrumentation at each of the four sites and retrograde instruments and supporting hardware back to the U.S.; 3) map the tracer movements at the coarse gravel megaripples; and 4) collect sediment and then remove traction load samplers.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Deploying Team Members:

- William Nickling (Co-PI)

[↶ Return to Index](#)

Science Project Details: 2009-2010

Photographs Of The IceCube Neutrino Observatory



Program Manager:

Mr. Peter West

Event Number: W-220-S

ASC POC/Implementer:

Eric Pohlman

Mr. Stanley Greenberg (Principal Investigator)

greenbergphoto@gmail.com

Brooklyn, New York

Supporting Stations: South Pole Station

Research Locations: IceCube Neutrino Observatory

Project Description:

The purpose of this project is to photograph the IceCube Neutrino Observatory, the South Pole Telescope, the Degree Angular Scale Interferometer, and other astronomical and physics experiments as part of a larger project about high energy physics.

Field Season Overview:

The artist will live on station at the South Pole while photographing the infrastructure of the station and its scientific equipment.

[Return to Index](#)



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Science Project Details: 2009-2010

Frozen Planet



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Mr. Carlos Gutierrez (Principal Investigator)
carlos_gutierrez@discovery.com

Silver Spring, Maryland

Supporting Stations: McMurdo Station, South Pole Station

Research Locations: McMurdo Station; Capes Crozier, Evans, Washington; Dry Valleys; Mount Erebus; WAIS Divide; South Pole Station

Project Description:

Field team members with this project will film the lives of people living and working in Antarctica, documenting some of their ongoing scientific activities for the Discovery Channel/BBC series 'Frozen Planet'.

Field Season Overview:

Team 1 plans to film the early season arrival of adelic penguins at Cape Crozier, as well as conduct some underwater filming during the early season when the water clarity is best.

Team 2 will be land and air-based and will film on Mount Erebus, in the Dry Valleys, and at the sea-ice edge.

Team 3 will film various human activities at McMurdo Station (including tracked vehicle convoy and kite skiing), Cape Evans, WAIS Divide and South Pole.

Team 4 will film the Emperor Penguin colony, both topside and underwater, at Cape Washington.

Team 5 will be based in McMurdo, and will make daily trips over the sea ice to multiple underwater filming locations.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Deploying Team Members:

- John Aitchison
- Douglas Allan
- Doug Anderson
- Sir David Attenborough
- Vanessa Berlowitz
- Chadden Hunter (Team Leader)
- Kathryn Jeffs
- Michael Kelem
- Mark Linfield
- Hugh Miller
- Dan Rees (Team Leader)
- Mark Smith
- Jeffery Wilson (Team Leader)

[Return to Index](#)

Science Project Details: 2009-2010

Development Of Quantitative Weathering Indicators In Proximal Alluvial Sediments To Assess Glacial Activity In The Rock Record



South wall of Victoria Valley, Dry Valleys. Photo by Brenda Hall.

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

The University of Maine

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

Supporting Stations: McMurdo Station

Research Locations: Dry Valleys

Project Description:

This Dry Valleys project is part of a larger project aimed at assessing weathering in proximal alluvial systems across a variety of climates. Researchers will collect sediment samples and compare them to parent rock compositions to determine the effects of weathering within a cold arid climate system on the bulk chemistry of siliclastic sediments. They will also collect limited water samples to supplement their weathering studies.

Field Season Overview:

Field team members will travel by helicopter to a camp in Wright Valley. There, they will sample from the proximal Onyx River draining Wright glacier, and from the fans draining both Clark and Denton glaciers. They also plan to visit the established Taylor Valley field camp and make day trips from there to the fan draining Goldman Glacier in Taylor Valley.

Deploying Team Members:

- Kristen Marra
- Allison Stumpf



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

[↶ Return to Index](#)

Science Project Details: 2009-2010

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



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

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

United States Geological Survey

National Ice Core Laboratory
Denver, Colorado

Supporting Stations: McMurdo Station

Research Locations: West Antarctic Ice Sheet (WAIS) Divide

Project Description:

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

Field Season Overview:

Two NICL personnel will fly to WAIS Divide camp where they will re-install the components of the ice core processing equipment that were removed for winter. They will test all the systems in collaboration with the Ice Drilling Design and Operations group (IDDO), will provide training and quality assurance for the core handling team, and will assist with core processing operations.

Deploying Team Members:



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

● Brian Bencivengo (Co-PI)

[↶ Return to Index](#)

Science Project Details: 2009-2010

Byrd Glacier: Evidence For Plateau Collapse



Project team members traverse on foot to collect rock samples. Photo by Audrey Huerta.

Dr. Audrey Huerta (Principal Investigator)
ahuerta@cwu.edu

Department of Geological Sciences
Ellensburg, Washington

Supporting Stations: McMurdo Station
Research Locations: Byrd Glacier

Project Description:

Early theories on the formation of the Byrd outlet were based on the idea that the outlet developed during glacial times by the incision of ice over-topping the Trans-Antarctic Mountains (TAM). However, recent thermochronologic results indicate that the Byrd outlet was formed during the Cretaceous period by fluvial incision as streams flowed from West Antarctica to East Antarctica. These results are consistent with geodynamic models that predict a high-elevation plateau in West Antarctica during the Cretaceous. This project will collect rock samples for an in-depth, thermochronologic study along five vertical transects to further refine the thermal evolution of the region. These results will be used to constrain geodynamic models testing the hypothesis that the TAM are the abandoned margin of a collapsed Mesozoic West Antarctic Plateau.

Field Season Overview:

Field team members will travel with two Field Safety Training Program (FSTP) mountaineers by helicopter from McMurdo to Byrd Glacier. They will be dropped off for the day in three teams (two members per team) at the three sampling traverses along the margin of Byrd Glacier. They will traverse on foot, collecting rock samples, and be picked up approximately 12 hours later for a return flight to McMurdo. Samples will be returned to the home institution on the cargo vessel.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

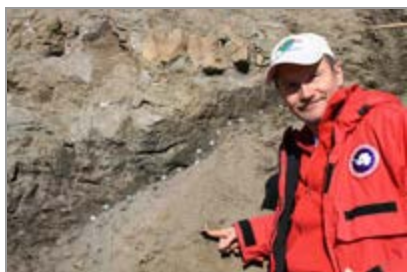
Deploying Team Members:

- Forrest McCarthy
- Michael Roberts

[↶ Return to Index](#)

Science Project Details: 2009-2010

Collaborative Research: Upper Cretaceous-Lower Paleocene Strata From The James Ross Island Region: Chemo-, Magneto-, And Biomarker Tests Of Intercontinental Correlation And Extinction Hypotheses



Dr. Kirschvink points to the Cretaceous/ Tertiary boundary marked by an aluminum stake. Photo by Ross Mitchell.

Dr. Joseph Kirschvink (Principal Investigator)
kirschvink@caltech.edu

California Institute of Technology

Geological and Planetary Sciences
Pasadena, California

Supporting Stations: Special Project

Research Locations: James Ross Island, Seymour Island

Project Description:

Researchers will address the causes of mass extinction based on evidence from stratigraphic sections of late Cretaceous age in Antarctica. While it is known that a sudden extinction occurred at the end of the Cretaceous, it has become increasingly clear that pre-Cretaceous Tertiary (KT) diversity decrease had already occurred in Antarctica. This indicates that significant cooling may have occurred in the Southern Hemisphere high latitudes during this period of time. However, at the same time flood basalts in India were exhaling large amounts of carbon dioxide into the atmosphere, a process that is also associated with mass extinction, and one that might provide an alternate explanation. Tests of these hypotheses on mass extinction have been conducted at sites in the Northern Hemisphere, but understanding of these events must also take into account effects in the Southern Hemisphere.

Researchers will seek to answer the questions of what biotic, climatic and tectonic events and trends occurred in the Southern Hemisphere during the late Cretaceous. They hope to determine if these events and trends can be



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

matched to those already known to have occurred in the Northern Hemisphere.

Field Season Overview:

Researchers will study and sample Upper Cretaceous to lower Paleocene strata on James Ross Island and Seymour Island. The field team will transit to and from their study sites on the ARSV Laurence M. Gould. Their work will entail both day trips and multi-day field camps ashore.

Deploying Team Members:

- Magali Bonifacie
- Tomaso Bontognali
- James Haggart
- Shane Schoepfer
- David Smith
- Thomas Tobin
- Peter Ward (Co-PI)

[Return to Index](#)

Science Project Details: 2009-2010

Collaborative Research: Polar Experiment Network For Geospace Upper Atmosphere Investigations (PENGUIn) - Advancing The Vision For Global Studies



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Marc Lessard (Principal Investigator)
marc.lessard@unh.edu

University of New Hampshire

Space Science Center
Durham, New Hampshire

Supporting Stations: McMurdo Station

Research Locations: Williams Field, WAIS Divide

Project Description:

The Polar Experiment Network for Geospace Upper-atmosphere Investigations (PENGUIn) uses Automatic Geophysical Observatories (AGOs) to study upper-atmospheric phenomena, including substorms, polar cap physics, cusp phenomena, and radiation belt particle precipitation. The project seeks to increase ground-based observations in Antarctica to coincide with a number of important satellite missions. Researchers also maximize scientific return by placing observatories in the auroral zone, extending to the outer radiation belt regions, as well as along the magnetic meridian that maps to the west coast of Greenland, where a conjugate chain already exists.

Field Season Overview:

A new and improved Autonomous Remote Real-time Observatory (ARRO) system is currently being tested at Williams Field. A team of four people will deploy during the 2009-2010 season and install the ARRO at WAIS Divide.

Deploying Team Members:



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

- Kevan Carpenter
- James Gealy
- Allison Jaynes

[↶ Return to Index](#)

Science Project Details: 2009-2010

Vertebrate Paleontology Of Livingston Island, South Shetlands, Antarctica



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Ross MacPhee (Principal Investigator)
macphee@amnh.org

American Museum of Natural History
New York, New York

Supporting Stations: Special Project

Research Locations: ARSV Laurence M. Gould, Seymour Island

Project Description:

The Antarctic Peninsula and islands in the Scotia Arc are tectonically related. Until about 40 million years ago (Ma), these terranes formed a closely-packed array, joining West Antarctica with southernmost South America. An intriguing possibility is that this array of terranes may have acted as a land bridge over which land vertebrates dispersed. If so, one would expect to see their fossils in appropriately aged deposits on the islands. Project researchers will search for late Mesozoic vertebrate fossils on Livingston Island in the South Shetland group, in deposits ranging in age from 112 Ma to about 84 Ma. Anticipated discoveries include reptiles (dinosaurs, mosasaurs, plesiosaurs), birds, and possibly mammals. The team will collect rock samples to analyze for stable isotopes of oxygen, carbon, and hydrogen to shed light on late Mesozoic climatic conditions in the South Shetlands area and to improve correlations with other areas.

Field Season Overview:

The field team members will be transported via the ARSV Laurence M. Gould (LMG09-11) to Seymour Island, where they will establish a temporary field camp. From there, the researchers will travel on foot to collect rock samples and search for late Mesozoic vertebrate fossils. The field team will



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

be retrieved by the LMG. Fossils and other samples will be returned to the home institution for classification and analysis.

Deploying Team Members:

- Matthew Lamanna
- Marcelo Reguero
- Christopher Strganac
- Nicholas Swanson-Hysell

[↶ Return to Index](#)

Science Project Details: 2009-2010

SASSI Mooring Array In The Western Antarctic Peninsula



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Doug Martinson (Principal Investigator)
dgm@ldeo.columbia.edu

Columbia University

Lamont-Doherty Earth Observatory
Palisades, New York

Supporting Stations: ARSV Laurence M. Gould

Research Locations: Peninsula Area LTER grid

Project Description:

The overall objective of this International Polar Year (IPY) project is to deploy a mooring array (four moorings) on standard Long Term Ecological Research (LTER) summer cruise stations. The purpose is to monitor flooding of the West Antarctic Peninsula (WAP) continental shelf by the Antarctic Circumpolar Current in order to determine the role of the ocean heat flux on WAP climate change.

Field Season Overview:

Four moorings will be recovered, serviced and redeployed by RPSC technicians aboard the annual LTER cruise in January 2010 with the assistance of LTER science personnel. A CTD cast will be performed at each station, which will coincide with regular LTER sampling.

[Return to Index](#)



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)



Science Project Details: 2009-2010

Cross-Shelf Troughs As Indicators Of Ice Sheet Dynamics Along The West Antarctic Continental Margin



Icebergs in front of Pine Island Ice Shelf. Photo by Frank Nitsche.

Dr. Frank-Oliver Nitsche (Principal Investigator)
fnitsche@ldeo.columbia.edu

Columbia University

Lamont-Doherty Earth Observatory
Palisades, New York

Supporting Stations: Icebreaker Oden

Research Locations: West Antarctic Continental Margin

Project Description:

The goal of this project is to map and analyze the distribution of cross-shelf troughs to aid in the understanding of paleo ice flow and related processes.

Field Season Overview:

One researcher will sail on the Icebreaker Oden from McMurdo Station to Punta Arenas, Chile. During this transect cruise he will collect swath bathymetry data along the West Antarctic continental margin.

[Return to Index](#)



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Science Project Details: 2009-2010

Collaborative Research: Atmosphere-Ice-Ocean Interactions In The Eastern Ross Sea



Program Manager:

Dr. Peter Milne

Event Number: O-403-O

ASC POC/Implementer:

Addie Coyac

Dr. Alejandro H Orsi (Principal Investigator)

aorsi@tamu.edu

Texas A & M University

Oceanography

College Station, Texas

Supporting Stations: Icebreaker Oden

Research Locations: Ross and Amundsen Seas

Project Description:

The goal of this study is to identify key mechanisms that control the onshore transport of warm circumpolar deep water (CDW) – or lack thereof– in the Eastern Ross Sea (ERS).

Researchers will address the following: 1) the spatial characteristics of the slope front, CDW intrusions, meltwater outflows and surface waters in the ERS in reference to those of neighboring regions in the Ross and Amundsen Seas; 2) the influences of the atmosphere, sea ice, bathymetry and ice shelves on the ocean circulation in this region; 3) the roles of model parameterizations and spatial resolution in providing realistic estimates of poleward mass, heat and freshwater in the ERS; 4) the annual cycle of water properties and circulation on the continental shelf of this region; and 5) climate scenarios that would enhance both basal melting and the risk of Ross Ice Shelf retreat.

Field Season Overview:

Researchers will profile the full water column for temperature, salinity, dissolved oxygen (T/S/DO) and currents using a SeaBird conductivity temperature depth (CTD) system and a lowered acoustic doppler profiler (LADCP) provided by Texas A&M University. Water samples will be periodically collected during the cruise to monitor CTD/rosette performance.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

In addition, researchers will acquire the first long-term (~1-year) records of current, temperature, salinity and pressure in the interior of the Sulzberger and Little America Troughs, using two, short-bottom moorings.

Deploying Team Members:

- Paul Clark
- Christina Wiederwohl

[Return to Index](#)

Science Project Details: 2009-2010

Collaborative Study Of The Antarctic Mesosphere And Lower Thermosphere



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Scott Palo (Principal Investigator)
scott.palo@colorado.edu

University of Colorado Boulder

Department of Aerospace Engineering Sciences
Boulder, Colorado

Supporting Stations: South Pole Station

Research Locations: Meteor Radar Building

Project Description:

Using a meteor radar (a very-high frequency VHF system capable of measuring the spatial structure and temporal evolution of the horizontal wind field), researchers will measure winds in the mesosphere and lower thermosphere (MLT) atmospheric region to understand the processes controlling the neutral dynamics and chemistry of the Antarctic MLT. They specifically seek to understand: 1. The space-time decomposition of wave motions; 2. Delineation of the spatial climatology over Antarctica with emphasis on the structure of the polar vortex; 3. Dynamical response to energetic events; and 4. Inter-annual variability.

Field Season Overview:

Team members will deploy to Amundsen-Scott South Pole Station to conduct annual maintenance and calibration on the all-sky camera and meteor radar system.

Deploying Team Members:

- Nikolai Makarov



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

● Cody Vaudrin

[↶ Return to Index](#)

Science Project Details: 2009-2010

Comparative Genomic And Proteomic Survey Of Major Antarctic Marine Phytoplankton: A Foundation For Polar Phytoplankton Genomics



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Mak Saito (Principal Investigator)
msaito@whoi.edu

Woods Hole Oceanographic Institution

Marine Chemistry and Geochemistry
Woods Hole, Massachusetts

Supporting Stations: McMurdo Station

Research Locations: McMurdo Sound

Project Description:

Researcher's goals are to create a foundation for polar marine phytoplankton genomics and proteomics by surveying primarily expressed sequence tags (EST) libraries of three major phytoplankton species found in Antarctic waters. Proteomic analyses will use the EST sequence data as a database for peptide mapping, for both cultures and field samples.

Field Season Overview:

Biomass samples of will be collected in McMurdo Sound and prepared in the Crary Science and Engineering Center (CSEC). During the 2009-10 field season, researchers will sample water chemistry as well as sea ice algae. They will obtain sea ice cores using Sipre corers, and will sample deeper water (500m) using a tripod-mounted winch system fitted with Kevlar line and a non-metallic, metering block. Ideally these samples will be collected during November and December when vehicle access to the sea ice and the use of a Reed drill is still possible. At the end of season, samples will be shipped to the home institution.



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

Deploying Team Members:

- Erin Bertrand
- Jeffrey Hoffman
- Jeff McQuaid
- Dawn Moran
- Abigail Noble

[Return to Index](#)

Science Project Details: 2009-2010

Constraining The Deglaciation Of The Antarctic Peninsula Using OSL Dated Beach Deposits



The aurora australis and Milky Way over the Elevated Station at Amundsen-Scott South Pole Station. Photo by Patrick Cullis.

Dr. Alexander R Simms (Principal Investigator)
asimms@geol.ucsb.edu

University of California Santa Barbara

Dept. of Geological Sciences
Santa Barbara, California

Supporting Stations: Special Project

Research Locations: Marguerite Bay, Seymour Island

Project Description:

The objective of this project is to reconstruct the sea level history of the Antarctic Peninsula during Holocene deglaciation. This will be done by taking samples of ancient beach cobbles and dating them by Optical Stimulated Luminescence (OSL) techniques.

Field Season Overview:

Field team members will sail on the RVIB Nathaniel B. Palmer (NBP) to their primary sampling sites in Marguerite Bay. There, they will establish a temporary field camp and will transport between sites by Zodiac inflatable boat. Once their research has concluded, team members will return to Punta Arenas, Chile on the NBP. Samples will be returned to the home institution.

[Return to Index](#)



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [Home Page](#)
- [Station Schedules](#)
- [Air Operations](#)
- [Staffed Field Camps](#)
- [Event Numbering System](#)

Science Project Details: 2009-2010

Biogeochemistry And Geomicrobiology Of Taylor Glacier Basal Ice



The Taylor Glacier margin on the north side of the glacier where team members will tunnel into the base of the glacier. Photo courtesy of Brent Christner.

Dr. Mark Skidmore (Principal Investigator)
skidmore@montana.edu

Montana State University Bozeman
Bozeman, Montana

Supporting Stations: McMurdo Station
Research Locations: Taylor Glacier

Project Description:

This project seeks to conduct a detailed geomicrobiological study of Taylor Glacier basal ice. Gas analysis of this ice has revealed elevated carbon dioxide and depleted oxygen concentrations. These anomalous values are concurrent with measurements of elevated biomass and heterotrophic activity. The simplest explanation for these data is that microbial respiration is occurring in the ice at -17 degrees C, a temperature not generally considered conducive to biologic activity. Project scientists will measure gas concentrations (N₂, O₂, CO₂, Ar) and isotopic composition of carbon dioxide in a five-meter profile of the Taylor Glacier basal ice. Experiments will be undertaken in parallel to determine the viability and physiology of the entrapped microbial assemblages.

Field Season Overview:

This season, researchers intend to reoccupy a tunnel made in 2007, if deemed safe by FSTP. Sampling will focus on getting a broader spatial set of samples of the ~ 1.2 m of laminated basal ice. If the 2007 tunnel is deemed unsafe to reoccupy researchers will excavate a new tunnel and shaft in close proximity (500m up or downstream of the 2007 site) in a safe



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

location, as determined by the Field Safety Training Program (FSTP). The laminated basal ice would still be the primary focus of the sampling in a new tunnel. Time in the field and equipment requests are based on the scenario that a new tunnel will need to be excavated. Seven field team members, including a high school teacher participating in the PolarTREC program, will travel by helicopter to and from the field camp at the terminus of the Taylor Glacier. Parties returning from the field to McMurdo Station during the field season will accompany ice samples, which will be transported to the Cray lab for processing.

Deploying Team Members:

- Amanda Achberger
- Tim Brox
- Brent Christner (Co-PI)
- Shawn Doyle
- Lindsay Knippenberg
- Scott Montross

[Return to Index](#)

Science Project Details: 2009-2010

Penguins As Monitors Of The Krill-Centric Southern Ocean Marine Ecosystem



COPA Field Hut. Photo courtesy of Wayne Trivelpiece.

Dr. Wayne Trivelpiece (Principal Investigator)
wayne.trivelpiece@noaa.gov

National Oceanic and Atmospheric Administration

AMLR - Antarctic Ecosystem Research Division (SW Fisheries Sci Ctr)
La Jolla, California

Supporting Stations: Special Project

Research Locations: Copacabana Field Camp, King George Island

Project Description:

This project continues a long-term study of the breeding biology and demography of Adelie, Chinstrap, and Gentoo penguins at Admiralty Bay, King George Island, in the South Shetland Islands. The primary objectives are to: 1) determine and compare the relationships of sex, age, and breeding experience to reproductive success and survival, clarifying how the demographic variables interact to affect changes in animal populations; and 2) investigate the relationships between population dynamics, prey availability, and environmental variability to clarify the mechanisms whereby environmental variation may influence predator dynamics via the prey field.

Field Season Overview:

Logistical support for the Copacabana field camp (Copa) is shared between the NSF/OPP and the Southwest Fisheries Science Center (SWFSC), part of the National Marine Fisheries Service (NMFS) of the National Oceanographic and Atmospheric Administration (NOAA). Four field team members and all supplies for the field season are scheduled to be transported to Copa aboard the ARSV Laurence M Gould (LMG09-10). Once there, the researchers will make scientific observations of the resident penguins, take measurements, and collect samples. Some field team members will cycle in and out during the season, via tour ships, with all members departing the field camp in mid-March aboard the AMLR (U.S. Antarctic Marine Living Resources) vessel



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season
Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

R/V Yuzhmorgeologiya (a NOAA-chartered vessel).

Deploying Team Members:

- Renee Koplan
- Amy Lindsley
- Susan Trivelpiece (Co-PI)
- Alexis Will
- Susan Woods

[Return to Index](#)

Science Project Details: 2009-2010

Ocean Surfaces On Snowball Earth



Blue ice near Mount Howe, Trans-Antarctic Mountains, November 1992. Photo by Stephen Warren.

Dr. Stephen Warren (Principal Investigator)
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University of Washington

Atmospheric Sciences Dept.
Seattle, Washington

Supporting Stations: McMurdo Station

Research Locations: McMurdo Sea Ice, Garwood Valley

Project Description:

According to the "snowball Earth" hypothesis, climatic changes of the Neoproterozoic time, 600-800 million years ago, included episodes of extreme glaciation, during which ice may have covered nearly the entire ocean for several million years. In tropical regions of net sublimation, ice surfaces may have included: 1) Bare, cold sea ice (perhaps cold enough that sodium chloride precipitated); 2) sea ice with a salt crust formed as a lag deposit; and 3) cold glacier ice exposed by sublimation of "sea-glaciers" (self-sustaining ice shelves) flowing from polar seas into the dry tropics. These ice types would have been widespread on the tropical ocean of "snowball earth" but they now exist only in Antarctica. Researchers will study processes that would have been important on an ice-covered ocean during such an event. Their albedos and surface properties will be investigated on naturally-occurring modern analogues: 1) Bare cold sea ice near the coast of Antarctica in early spring; 2) a salt-encrusted lake in the McMurdo Dry Valleys; 3) "blue-ice" areas of the Transantarctic Mountains that have not experienced melting.

Field Season Overview:

For the 2009-2010 season a field team of three will arrive at McMurdo Station during WINFLY so that they can work on the sea ice at temperatures



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

lower than -23C. They will be collaborating with an Antarctic New Zealand winterover sea ice group and will commute daily to their research sites by Piston Bully from McMurdo Station. They will also conduct a shared traverse to Garwood Valley where they will establish a small field camp for two weeks in order to measure the optical properties of lake ice containing the hydrated salt mirabilite.

Deploying Team Members:

- Richard Brandt
- Regina Carns

[↶ Return to Index](#)

Science Project Details: 2009-2010

IPY: Poles Apart: Visual Documentation Of The Marine Ecosystems Of The Polar Regions



Program Manager:

Ms. Valentine Kass

Event Number: Y-608-P

ASC POC/Implementer:

Addie Coyac

Mr. Norbert Wu (Principal Investigator)

office@norbertwu.com

Artist & Writers Program
Pacific Grove, California

Supporting Stations: Palmer Station

Research Locations: Palmer local boating area

Project Description:

Beneath Antarctic Seas: Visual Documentation of the Marine Ecosystem of the Antarctic Polar Region This is a collaborative effort by a team of documentary film makers, photographers, scientists and educators with the aim of instructing a wide audience on the critical importance of Antarctic polar marine ecosystems.

There will be collaboration with the BBC Natural History Unit, the Ocean Institute, and short format videos and video podcasts utilizing popular video and social networking websites including iTunes, YouTube, MySpace and Facebook.

Field Season Overview:

At Palmer Station on the Antarctic Peninsula, the team proposes to document the marine life of the Antarctic Peninsula in still photographs and high-definition television (HDTV). This visual documentation of higher-latitude Antarctica will serve to complement and complete the existing and new library of images from McMurdo Station, and will be invaluable for such projects as the Scripps Institution of Oceanography Library's web-based field guide to Antarctic marine life, which has been widely praised by researchers and the public as the best -- and indeed the only -- field guide available on this subject.

Deploying Team Members:



[Project Indexes](#)

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



[Project Web Sites](#)

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

2009-2010 Field Season

Other Information:

- [➤ Home Page](#)
- [➤ Station Schedules](#)
- [➤ Air Operations](#)
- [➤ Staffed Field Camps](#)
- [➤ Event Numbering System](#)

- Ryan Caldwell
- Andrew Day
- Brian Hackett

[↶ Return to Index](#)