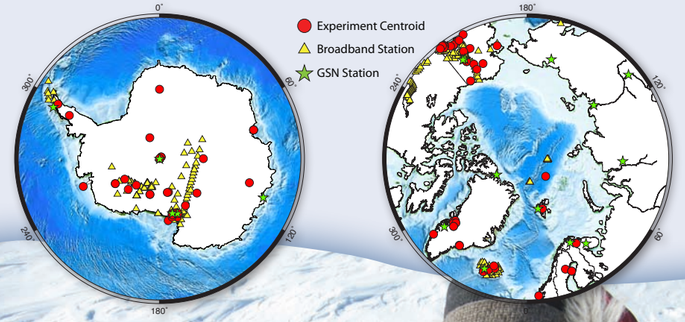
Background

IRIS PASSCAL has over 25 years of experience supporting seismic research and 20 years of experience on the ice. In 2006, support from NSF allowed PASSCAL to enhance and improve its Polar support capabilities.

- Collaborative development MRI with UNAVCO funded by NSF
- Cold-rated equipment pool and test equipment provided by NSF
- Data recovery rates for continuous, year-round recording exceeds 90%
- Designs are freely available to anyone and adaptable to non-seismic experiments
- GSN stations provide a fiducial reference for PASSCAL Polar experiments



For more information visit www.passcal.nmt.edu
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Founded in 1984 with support from the National Science Foundation, IRIS is a consortium of over 100 US universities dedicated to the operation of science facilities for the acquisition, management, and distribution of seismological data. IRIS programs contribute to scholarly research, education, earthquake hazard mitigation, and the verification of a Comprehensive Test Ban Treaty.

IRIS is a 501 (c) (3) nonprofit organization incorporated in the state of Delaware with its headquarters in Washington, DC.

UNAVCO

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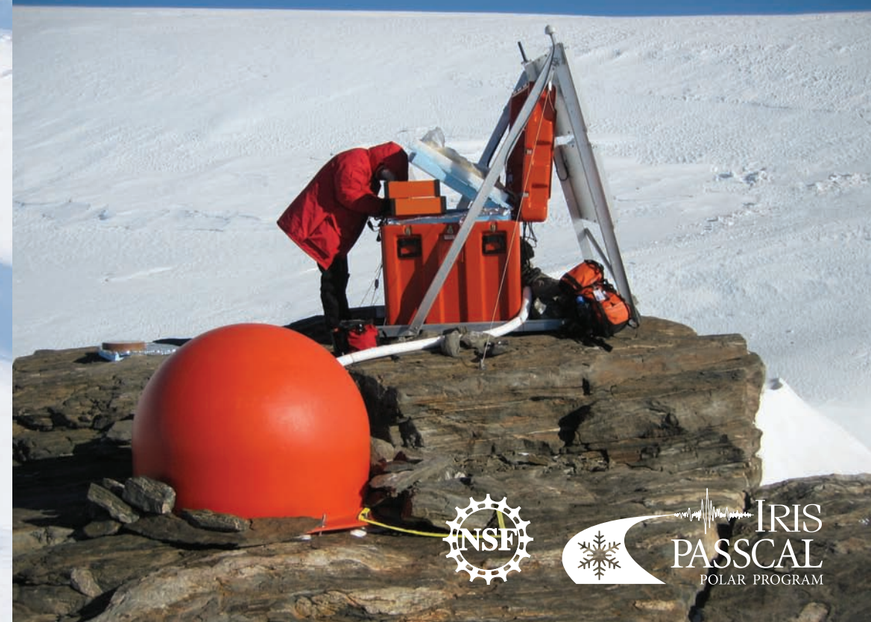
IRIS PASSCAL Polar Program

Autonomous seismic stations recording continuously in polar environments.



NSF

IRIS PASSCAL POLAR PROGRAM

Challenges

With temperatures that drop to -85°C, up to 6 months of darkness, winds up to 130 mph, and high altitudes, operating year-round polar geophysical observatories pushes the limits of batteries, electronics, logistics support and field personnel.

Objective

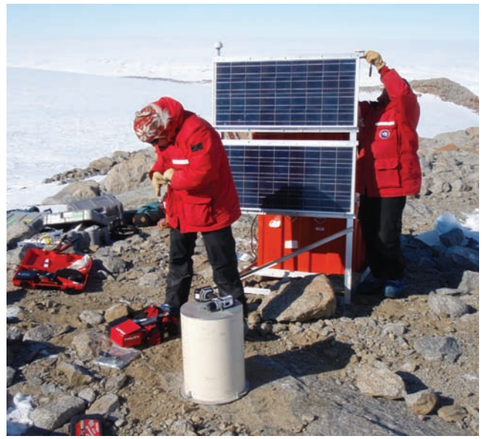
To design and deploy robust, autonomous geophysical instrumentation in extreme polar environments with the goal of achieving the highest quality and quantity of data with minimized logistics.

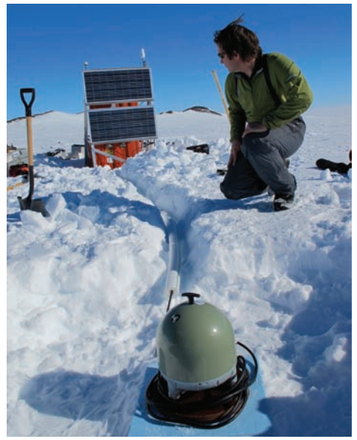
Facility

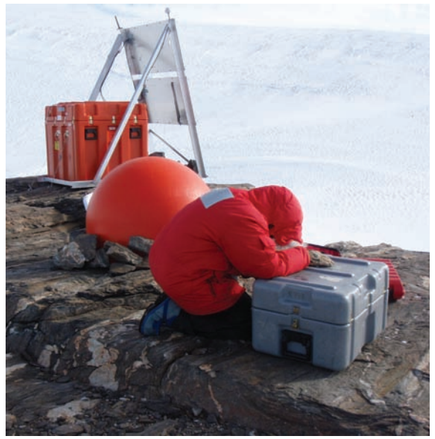
The IRIS PASSCAL Polar Program has been established to provide specialized support and instrumentation for deployments in the extreme polar environment. Utilizing an equipment pool acquired through funding from NSF's Office of Polar Programs (OPP), the PASSCAL Polar Program can support a variety of experiments from short-term active source projects to long-term passive monitoring. The designs and developments are in direct response to the needs of the scientific community and the facility leverages the resources of the NSF-funded IRIS PASSCAL Instrument Center at New Mexico Tech.

Experience

PASSCAL personnel have accumulated extensive experience working on the ice. OPP funds specialized staff dedicated to keeping the equipment pool state-of-the-art and to working with the community to incorporate new scientific observatory needs into robust recording platforms.







Resources

- Cold-hardened equipment pool for short-, mid- and broadband seismology
- Rugged, low power, GPS-timed 24-bit 3- and 6-channel digitizers
- Multi-channel active source recording equipment with 60-channel snow-streamer
- Low power Iridium-based satellite telemetry for state-of-health, control and data recovery
- Rapidly deployed, ultra-insulated station enclosures and power systems
- Cold-rated primary and secondary power systems
- Quick deploy stations for short duration experiments
- Design and engineering expertise and an accessible repository for open-design information
- Dedicated staff to support experiments in polar environments
- Testing with environmental chambers and precision electronic test equipment
- Packing and logistics expertise to ensure equipment is transported safely
- Training on-site or at the IRIS PASSCAL Instrument Center