



NSF GLOBAL FACILITIES WITH VIRTUAL ACCESS



The National Science Foundation invests in world-class scientific facilities that explore everything from the subatomic to black holes. These facilities support the entire science and engineering enterprise as shared-use infrastructure, instrumentation and equipment that are accessible to a broad community of researchers, educators and students. Located around the globe, NSF has supported such diverse projects as particle accelerators, optical and radio telescopes, research stations in the Arctic and Antarctic, research vessels, aircraft and a continental-scale ecological observatory.

This fact sheet offers a glimpse into several NSF global facilities. The sites profiled below provide virtual tours or webcams to allow students and researchers around the globe to see science at work without leaving home. For more information:

- [Comprehensive map of NSF facilities](#)
- [Additional NSF resources](#)

Antarctic Facilities and Operations

The U.S. Antarctic Program provides the infrastructure needed to support all U.S. research conducted in Antarctica. This includes research funded by NSF and by U.S. mission agencies; for year-round work at three U.S. stations; on two research ships; and at a variety of remote field camps. The research stations are located on Ross Island (McMurdo Station), at the geographic South Pole (Amundsen-Scott South Pole Station), and on Anvers Island in the Antarctic Peninsula region (Palmer Station). Explore USAP:

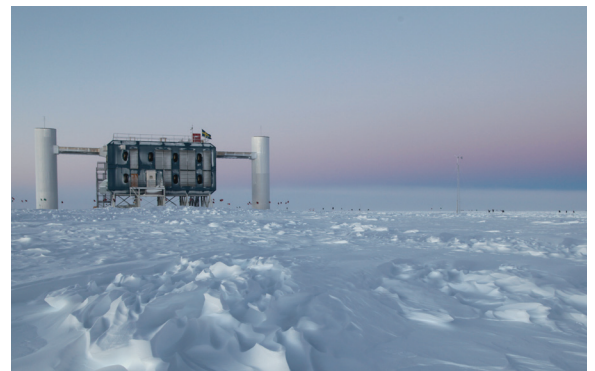
- [McMurdo Station webcams](#)
- [Amundsen-Scott South Pole Station webcams](#)
- [Palmer Station webcam](#)



IceCube Neutrino Observatory

The IceCube Neutrino Observatory is the world's first high-energy neutrino observatory and is located deep within the ice under Amundsen-Scott South Pole Station in Antarctica. The observatory represents a new window on the universe, providing unique data on the engines that power active galactic nuclei; the origin of high-energy cosmic rays; the nature of gamma-ray bursts; the activities surrounding supermassive black holes; and other violent and energetic astrophysical phenomena. ICNO is presently led by the University of Wisconsin, Madison, and was constructed with support from four countries: the U.S., Belgium, Germany and Sweden. Explore IceCube:

- [IceCube explained](#)

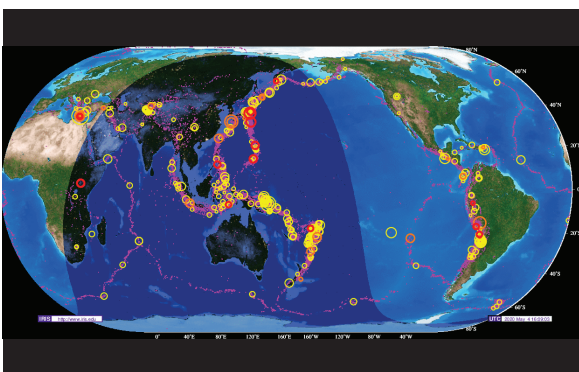




International Ocean Discovery Program

The International Ocean Discovery Program is an international marine research collaboration made up of scientists, research institutions and funding organizations from 23 nations that explores the evolution, structure and behavior of Earth, as recorded in the ocean basins. The research vessel *JOIDES Resolution* is a 143-meter drillship in the IODP fleet funded by NSF and run through a cooperative agreement with Texas A&M University. Explore the *JOIDES Resolution*:

- [Virtual tour of the JOIDES Resolution](#)



Seismological Facility for the Advancement of Geoscience

The Seismological Facility for the Advancement of Geoscience is a distributed, multi-user national facility for the support of modern digital seismic instrumentation and serves national goals in basic research and education in the earth sciences, earthquake research, global real-time earthquake monitoring, and nuclear test ban verification. The facility is managed and operated for NSF by the Incorporated Research Institutions for Seismology, a consortium of 125 U.S. universities and nonprofit institutions with research and teaching programs in seismology, 21 educational affiliates, three U.S. affiliates and 128 foreign affiliates. Explore SAGE:

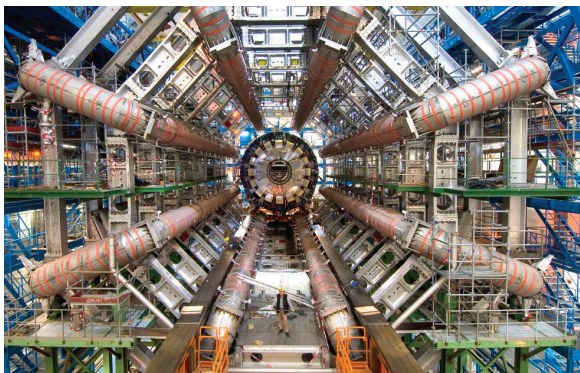
- [IRIS Global Seismic Monitor](#)



National Ecological Observatory Network

The most persistent challenges facing the ecological sciences today result from a limited understanding of the complex interactions between living and non-living systems operating over large spatial and temporal scales. A lack of long-term and large-scale infrastructure has hindered a thorough assessment of complex ecological issues. The National Ecological Observatory Network was designed to address this issue, as well as revolutionize ecological research and promote the use of open data. NEON consists of 81 strategically located field sites (47 terrestrial and 34 aquatic) across 20 eco-climatic domains. Construction of NEON was completed in May 2019. Explore NEON:

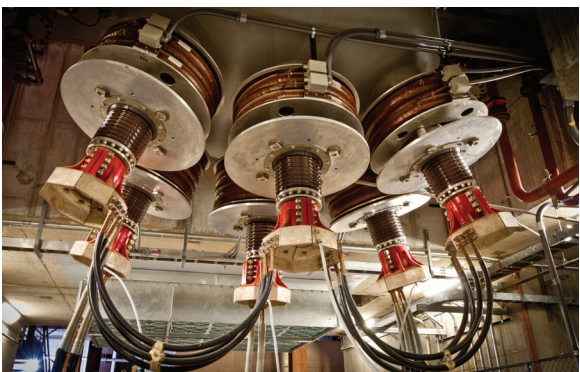
- [NEON field sites interactive map](#)
- [NEON YouTube page](#)



Large Hadron Collider

The Large Hadron Collider, an international project at the European Organization for Nuclear Research, or CERN, a laboratory in Geneva, Switzerland, is the most powerful particle accelerator ever constructed. It produces the highest energy particle beams ever created at a laboratory, making it the premier facility in the world for research in elementary particle physics. More than 45 international funding agencies provide support for scientists to participate in experiments at LHC. The U.S., through a partnership between the U.S. Department of Energy and NSF, made major contributions to the construction and operation of the ATLAS and CMS detectors, two large, general purpose particle detectors at LHC. NSF also supports operation of the LHC beauty experiment, a special purpose detector that investigates matter/antimatter differences by studying “beauty quark” particles. Explore LHC:

- [CERN virtual tour](#)



National High Magnetic Field Laboratory

The National High Magnetic Field Laboratory, or MagLab, develops and operates high magnetic field facilities that scientists and engineers use for research in condensed matter and material physics, materials science and engineering, chemistry, biology, biochemistry, neuroscience, energy and the environment. The laboratory is managed by Florida State University and consists of facilities at FSU, the University of Florida and Los Alamos National Laboratory. It is the world's premier high magnetic field laboratory with a comprehensive collection of high-performing magnet systems and extensive support services. MagLab is an internationally recognized leader in magnet design, development and construction. It is also a key player in the development of new superconducting materials. Approximately 2,000 users use the MagLab every year for crucial research experiments. Explore the MagLab:

- [MagLab virtual tour](#)



National Radio Astronomy Observatory

The National Radio Astronomy Observatory conceives, designs, builds, operates and maintains state-of-the-art radio telescopes used by scientists from around the world. This essential infrastructure enables modern astrophysicists to make discoveries that reach from within our solar system to the most distant galaxies in the universe. As a Federally Funded Research and Development Center, headquartered in Charlottesville, Virginia, NRAO operates the Karl G. Jansky Very Large Array near Socorro, New Mexico; the Very Long Baseline Array, with 10 sites throughout the continental U.S., Hawaii and the U.S. Virgin Islands; and is the North American implementing organization for the international Atacama Large Millimeter/submillimeter Array in Chile. In support of these radio telescopes, NRAO also operates the Central Development Laboratory in Charlottesville, which develops next generation electronics and detectors for radio astronomy. Explore NRAO:

- [NRAO Explore](#)
- [VLA virtual tour](#)



National Optical-Infrared Astronomy Research Laboratory

At the start of fiscal year 2020, NSF launched the National Optical-Infrared Astronomy Research Laboratory, a Federally Funded Research and Development Center that will be the foundational hub of U.S. ground-based, optical-infrared astronomy in the era of the Vera Rubin Observatory, multi-messenger astrophysics, data intensive science and extremely large telescopes. Over the last two decades, NSF has been a leading partner in operations of the two 8.1-meter Gemini Telescopes, located on Maunakea in Hawaii at an altitude of 4,200 meters and on the 2,700-meter summit of Cerro Pachón in Chile. Technological advances incorporated into the design of the twin Gemini Telescopes optimize their imaging capabilities and infrared performance, as well as their ability to quickly swap instruments in response to changing atmospheric conditions. Explore Gemini:

- [Virtual tour of Gemini Observatory](#)

The Vera Rubin Observatory, which is under construction until 2022 on Cerro Pachón in Chile, is an 8-meter-class telescope coupled to a 3.2-gigapixel camera – the world’s largest digital camera ever fabricated for optical astronomy. Explore the Vera Rubin Observatory:

- [Vera Rubin gallery and YouTube page](#)