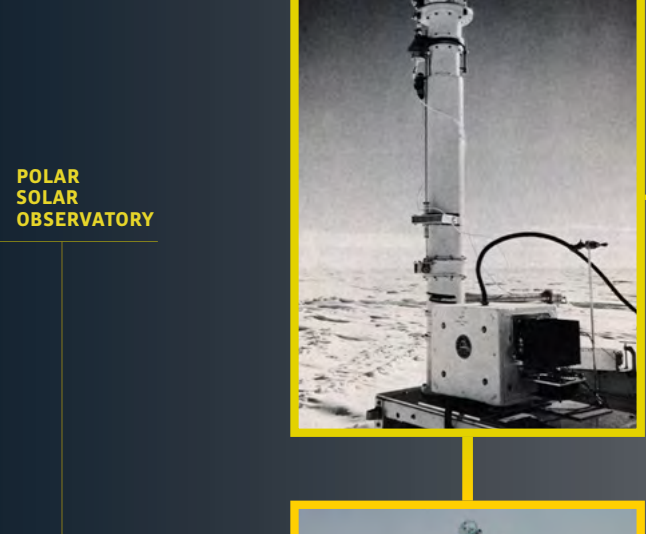


TELESCOPES OF THE SOUTH POLE

The South Pole is one of the premier sites for astronomy. At more than 9,000 feet elevation, the thin, dry air and six months of darkness during the polar winter make for ideal observing conditions. For more than forty years, astronomers have trekked to the bottom of the world to study the cosmos above.

Numerous telescopes over the years have found a home at the South Pole. With them, astronomers have peered deep into space and back in time to when the universe was young. The harsh Antarctic climate can be tough on equipment, but despite sub-zero temperatures and winter storms, researchers working at the South Pole continue to conduct cutting edge research from one of the most isolated places on Earth.

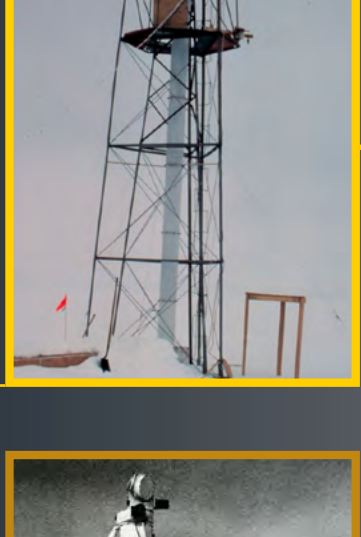


POLAR SOLAR OBSERVATORY

1978-1982

POLAR SOLAR OBSERVATORY | Type: **Optical**

The first funded telescope at the South Pole. After a successful proof of concept run its first season, it was used to study seismic oscillations on the Sun during the 24 hours of daylight at the South Pole.
Built: Late 1978 | **Decommissioned: Late 1982**
 Image Credit: Martin A. Pomerantz

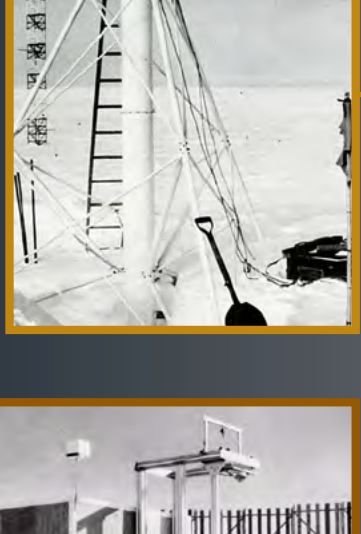


POLAR SOLAR OBSERVATORY-II

1980-1981

POLAR SOLAR OBSERVATORY-II | Type: **Optical**

The second Polar solar observatory improved on the original test version and focused on collecting data from the Sun's chromosphere.
Built: Late 1980 | **Decommissioned: Early 1981**
 Image Credit: Lieutenant Cindy McFee, NOAA

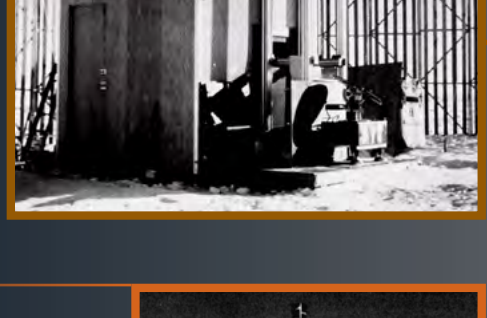


SOLAR OSCILLATION TELESCOPE

1980-1985

SOLAR OSCILLATION TELESCOPE | Type: **Optical**

Another tower-type solar telescope at the South Pole. This one focused on studying sunquakes and wobbles from the helioseismology of the Sun.
Built: Late 1980 | **Decommissioned: Early 1985**
 Image Credit: National Solar Observatory Association of Universities for Research in Astronomy, Inc.



EMILIE

1984-1986

EMILIE | Type: **Microwave**

Short for "Emission Millimetricque," EMILIE was a collaboration with the French to test if microwave astronomy was possible in the thin, dry atmosphere at the South Pole. Their success turned Pole into one of the premier sites for these observations.
Built: Late 1984 | **Decommissioned: Early 1986**
 Image Credit: Martin A. Pomerantz



SOUTH POLE OPTICAL TELESCOPE-1

1984-1986

SOUTH POLE OPTICAL TELESCOPE-1 | Type: **Optical**

"SPOT-1" was the first test of an automated optical telescope system to observe stars during the South Pole's long winter darkness.
Built: Late 1984 | **Decommissioned: Early 1986**
 Image Credit: University of Florida



SOUTH POLE OPTICAL TELESCOPE-2

1986-1988

SOUTH POLE OPTICAL TELESCOPE-2 | Type: **Optical**

"SPOT-2" improved on the design of SPOT-1 to test the feasibility of an automated optical telescope to observe the night sky.
Built: Early 1986 | **Decommissioned: Early 1988**
 Image Credit: University of Florida



BELL LABS PROJECT SERIES

1986-1992

BELL LABS PROJECT SERIES | Type: **Microwave**

Over several summers, a rotating team of astronomers and their instruments led by researchers at Bell Labs tested out different systems to observe the Cosmic Microwave Background Radiation, the oldest light in the universe.
Built: Late 1986 | **Decommissioned: Early 1992**
 Image Credit: Center for Astrophysical Research in Antarctica



WHITE DISH

1988-1993

WHITE DISH | Type: **Microwave**

Though only operated during summers, White Dish was one of the first to take detailed measurements of the Cosmic Microwave Background from the South Pole.
Built: Late 1988 | **Decommissioned: Early 1993**
 Image Credit: Gregory Tucker

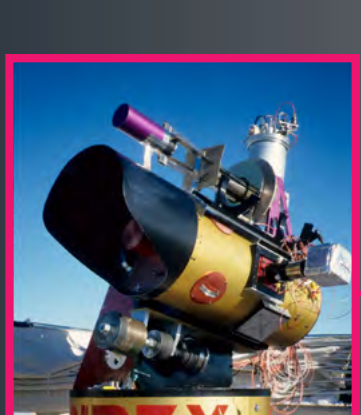


PYTHON

1992-1997

PYTHON | Type: **Microwave**

PYTHON was the first CMB telescope to operate during the winter at the South Pole, taking full advantage of the site's dark skies, high elevation, and dry thin air.
Built: Late 1992 | **Decommissioned: Late 1997**
 Image Credit: NSF

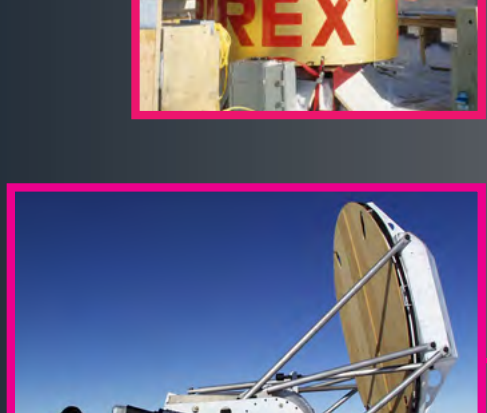


SPIREX

1993-1999

SPIREX | Type: **Infrared**

The South Pole Infrared Explorer Telescope was used to map the sky in infrared, and in 1994, it had the most continuous view in the world when fragments from the comet Shoemaker-Levi 9 collided with Jupiter.
Built: Late 1993 | **Decommissioned: Late 1999**
 Image Credit: Joe Rottman

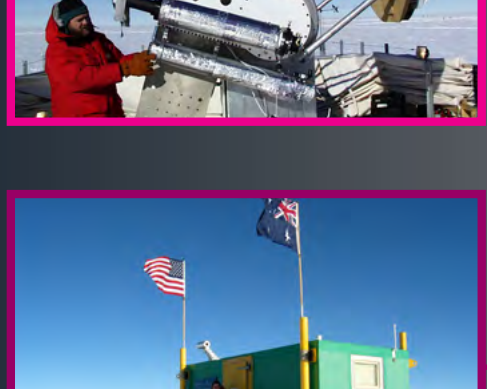


AST/RO

1995-2005

AST/RO | Type: **Microwave**

The Antarctic Submillimeter Telescope/Remote Observatory studied interstellar dust and produced data for more than 100 papers on star formation.
Built: Early 1995 | **Decommissioned: Early 2005**
 Image Credit: Ginny Figlar, NSF



AASTO

1996-2004

AASTO | Type: **Various**

The Automated Astrophysical Site Testing Observatory was an Australian collaboration to test a variety of different small automated telescopes and instruments at the South Pole.
Built: Late 1996 | **Decommissioned: Early 2004**
 Image Credit: Douglas Caldwell

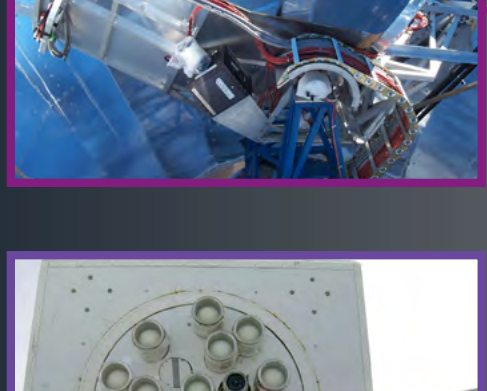


VIPER

1998-2005

VIPER | Type: **Microwave**

The most powerful CMB telescope of its time, VIPER helped prove that the universe will go on expanding forever, disproving the theory the cosmos would collapse in a "Big Crunch."
Built: Early 1998 | **Decommissioned: Late 2005**
 Image Credit: William Holzappel



DASI

1999-2003

DASI | Type: **Microwave**

The Degree Angular Scale Interferometer, or "DASI," was the first telescope to measure polarization in the Cosmic Microwave Background Radiation.
Built: Late 1999 | **Decommissioned: Late 2003**
 Image Credit: Brien Barnett, NSF



VULCAN SOUTH

2004-2006

VULCAN SOUTH | Type: **Optical**

Operated by SETI, the Search for Extraterrestrial Intelligence, VULCAN South searched for planets by looking for a tell-tale dip in a star's brightness when their planets passed in front of them.
Built: Early 2004 | **Decommissioned: Early 2006**
 Image Credit: Douglas Caldwell



QUAD

2004-2008

QUAD | Type: **Microwave**

The QUAD telescope further measured the polarization of the Cosmic Microwave Background.
Built: Late 2004 | **Decommissioned: Early 2008**
 Image Credit: Rriedmanns



BICEP 1

2005-2009

BICEP 1 | Type: **Microwave**

Short for "Background Imaging of Cosmic Extragalactic Polarization," the first BICEP telescope began the hunt for B-mode polarizations in the CMB that might be leftover from moments after the Big Bang.
Built: Late 2005 | **Decommissioned: Early 2009**
 Image Credit: Steve Marshall, NSF

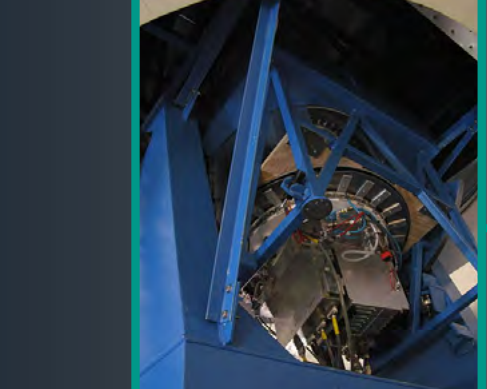


BICEP 2

2009-2012

BICEP 2 | Type: **Microwave**

An upgrade over the first BICEP, adding more detectors making it more sensitive in the hunt for evidence in the CMB of inflation, when moments after the Big Bang the universe expanded very quickly.
Built: Late 2009 | **Decommissioned: Late 2012**
 Image Credit: Kellinout



BICEP 3

2015-PRESENT

BICEP 3 | Type: **Microwave**

Another BICEP upgrade further increasing its power and sensitivity by an order of magnitude over BICEP 2.
Built: Early 2015
 Image Credit: Mike Lucibella



SOUTH POLE TELESCOPE SPT-SZ

2006-2012

SOUTH POLE TELESCOPE SPT-SZ

At 10 meters in diameter, the South Pole Telescope, or "SPT," is the largest telescope ever built in Antarctica. The versatile telescope's first task was mapping distant galaxy clusters.
Built: Late 2006 | **Decommissioned: Early 2012**
 Image Credit: Peter Rejcek, NSF

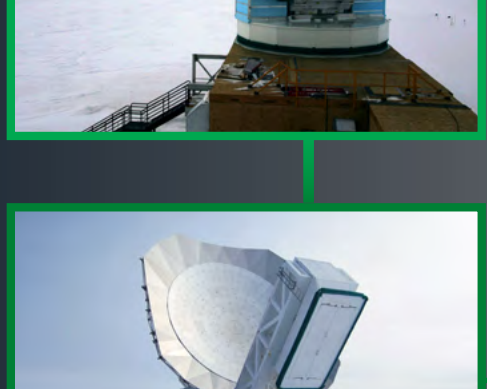


SOUTH POLE TELESCOPE SPTpol

2012-2017

SOUTH POLE TELESCOPE SPTpol

After an update to its sensors to measure polarization, the SPT mapped a wide part of the southern sky, producing the most detailed microwave maps of such a broad area.
Built: Early 2012 | **Decommissioned: Early 2017**
 Image Credit: John Mallon III



SOUTH POLE TELESCOPE SPT-3G

2017-PRESENT

SOUTH POLE TELESCOPE SPT-3G

The SPT's third upgrade further increased its sensitivity. Its current sky survey overlaps with BICEP's area of observation, helping in the hunt for evidence of cosmic inflation.
Built: Early 2017
 Image Credit: Mike Lucibella



KECK ARRAY

2011-2019

KECK ARRAY | Type: **Microwave**

Made up of five versions of the BICEP2 telescope on a single mount, the array aids in the hunt for inflation by observing the CMB while also taking measurements of dust in the foreground that could affect results.
Built: Early 2011 | **Decommissioned: Late 2019**
 Image Credit: Mike Lucibella



BICEP ARRAY

2019-PRESENT

BICEP ARRAY | Type: **Microwave**

Made up of four connected BICEP3 telescopes, the BICEP Array is furthering the search for evidence of inflation embedded in the CMB.
Built: Late 2019
 Image Credit: Nathan Precup