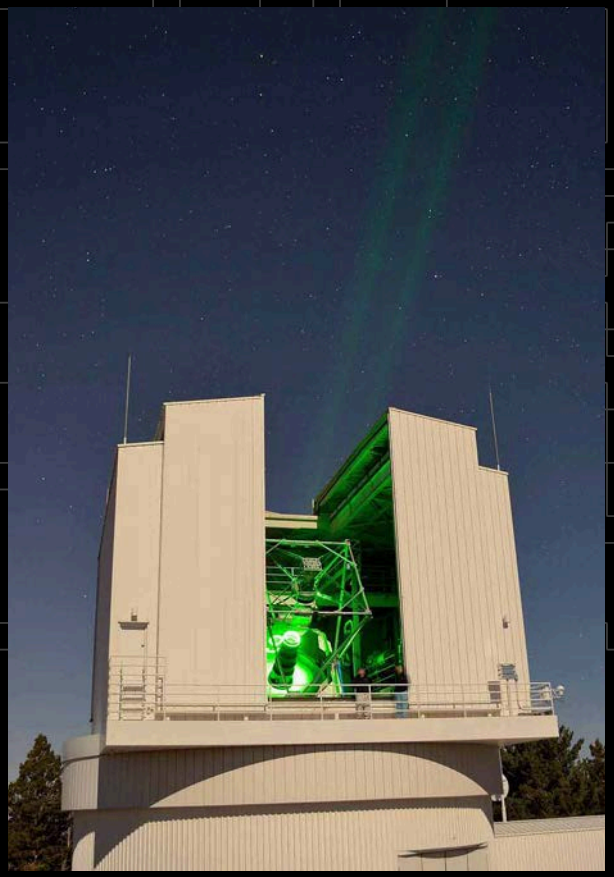


APOLLO and 3.5-m Observations

One synoptic study is the APOLLO (Apache Point Observatory Lunar-ranging Laser Operations) project which measures the distance from the Earth to the Moon (within 2-millimeters) in support of the study of Einstein's Theory of Relativity and Gravitation.

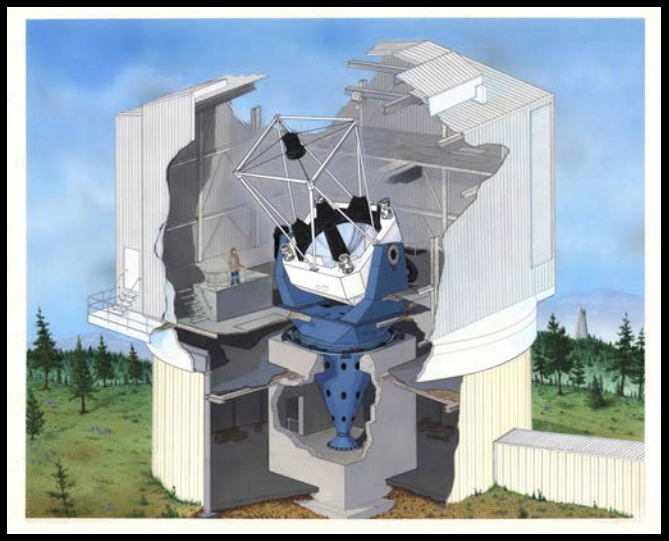
The laser projects a beam to retro-reflectors left on the Moon's surface by the APOLLO and Russian moon missions which reflect the beam back to ARC's 3.5-m mirror.

Phtoto: Dawid Mozdsierski

Astrophysical Research Consortium
To design, construct, and operate the Apache Point Observatory

ARC

SDSS



Architect's Drawing: ARC 3.5-mTelescope

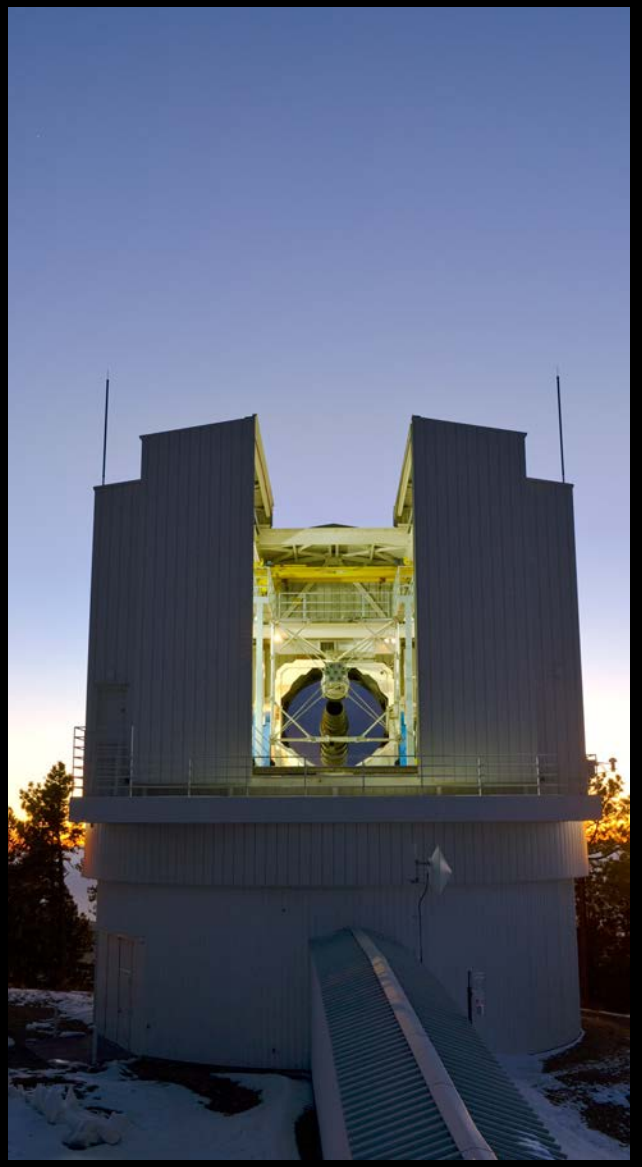
This year we celebrate the 20th anniversary of the Astrophysical Research Consortium's (ARC) 3.5-m Telescope (1994 - 2014) dedication. ARC, whose mission is to further astronomical research by the scientists and students from its member institutions, privately owns and operates the Apache Point Observatory.

The night sky observatory's largest telescope is the versatile ARC 3.5-m, which studies a variety of astronomical objects using synoptic programs requiring many short observations over long periods, as well as responding quickly to targets of opportunity. It was a pioneer telescope in remotely operating the telescope and instruments. And, in conjunction with the Sloan Digital Sky Survey's 2.5-m telescope, the ARC telescope's observations aided in discovering some of the furthest objects from Earth and helped to create one of the largest catalogs of cosmic objects.

We also celebrate the 30th anniversary of the Astrophysical Research Consortium's success in science and service to its member institutions (1984 - 2014).

For additional information:
APO - www.apo.nmsu.edu
ARC - www.arc.apo.nmsu.edu
Sloan Digital Sky Surveys - www.sdss.org
SDSS Data Releases - http://cas.sdss.org/dr9/en/

Photo: ARC 3.5-M Telescope, Dan Long/APO

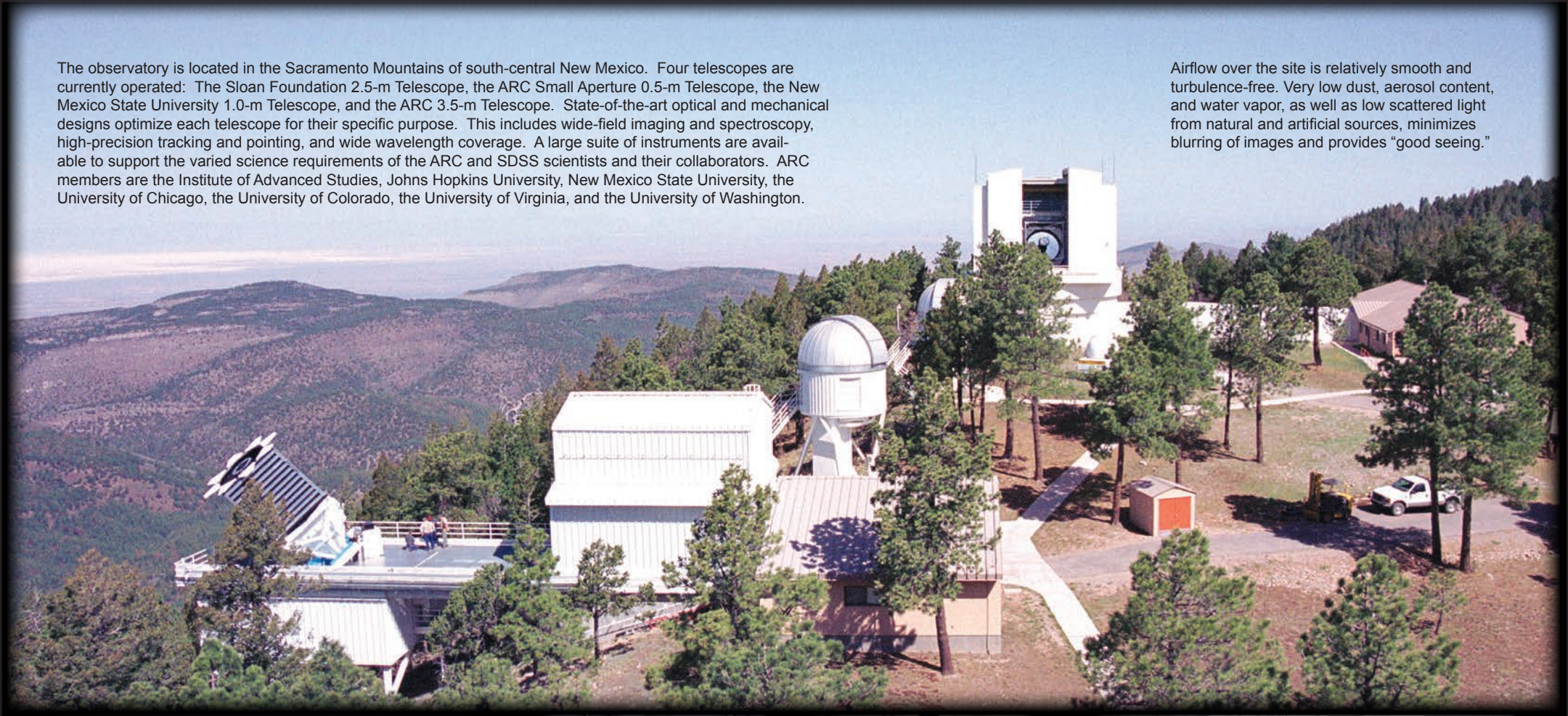


ARC 3.5-mTelescope

# Apache Point Observatory

The observatory is located in the Sacramento Mountains of south-central New Mexico. Four telescopes are currently operated: The Sloan Foundation 2.5-m Telescope, the ARC Small Aperture 0.5-m Telescope, the New Mexico State University 1.0-m Telescope, and the ARC 3.5-m Telescope. State-of-the-art optical and mechanical designs optimize each telescope for their specific purpose. This includes wide-field imaging and spectroscopy, high-precision tracking and pointing, and wide wavelength coverage. A large suite of instruments are available to support the varied science requirements of the ARC and SDSS scientists and their collaborators. ARC members are the Institute of Advanced Studies, Johns Hopkins University, New Mexico State University, the University of Chicago, the University of Colorado, the University of Virginia, and the University of Washington.

Airflow over the site is relatively smooth and turbulence-free. Very low dust, aerosol content, and water vapor, as well as low scattered light from natural and artificial sources, minimizes blurring of images and provides “good seeing.”



Operating since 2000, the Sloan Foundation 2.5-m Telescope conducts astronomical surveys using instruments to accurately measure distances and composition of the cosmos. With a field of view six times greater than our full Moon, we collect light photons from 3-billion light years away. To-date, the SDSS projects have catalogued 932 million objects and provided spectroscopy on over 2.5-million stars and galaxies.

Originally used for photometric calibrations on SDSS, the ARC Small Aperture 0.5-m Telescope is now configured for remote observations with two wide field cameras that can be used by members, faculty, and students on a host of nearby objects.

Utilizing many of the successful design technology of the ARC 3.5-m telescope, New Mexico State University’s 1.0-m Telescope is robotically operated for faculty and student research including a fiber optic feed to the SDSS infrared spectrograph.

Beginning in 1994, the ARC 3.5-m Telescope’s innovative software, mechanical, and optical designs provided users with high quality data and user-friendly operations. Light is collected by the 11.4-ft., spin-cast glass, primary mirror and fed to any one of the multiple instruments mounted on the telescope. Observing programs are remotely conducted from locations around the globe by astronomers using the Internet and a unique software program.