

Apache Point Observatory

Latitude $32^{\circ} 46' 49''$ N Longitude $105^{\circ} 49' 13''$ W

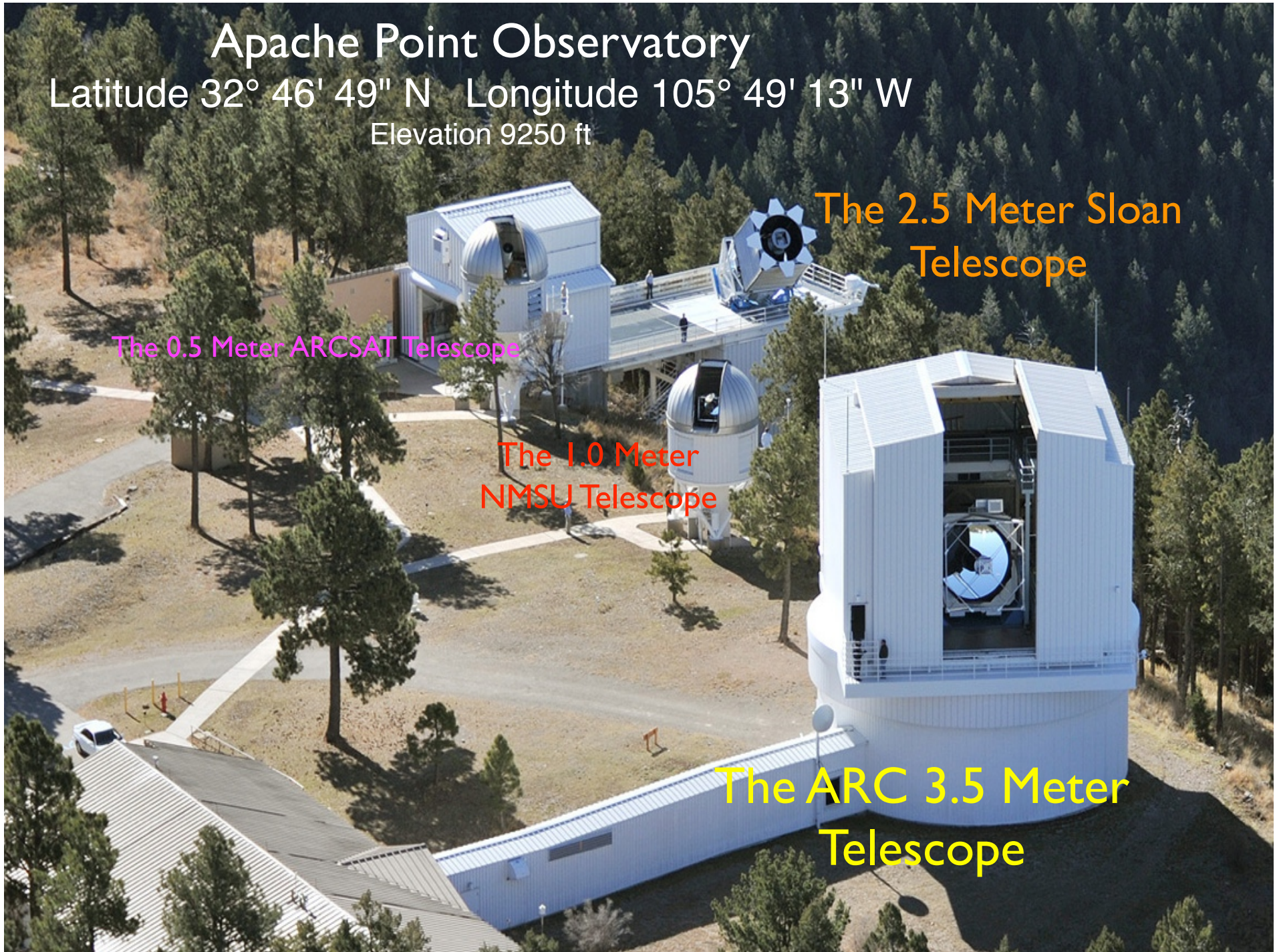
Elevation 9250 ft

The 0.5 Meter ARCSAT Telescope

The 1.0 Meter
NMSU Telescope

The 2.5 Meter Sloan
Telescope

The ARC 3.5 Meter
Telescope



Apache Point Observatory

Now and Then

May 2014

4 Telescopes

(all operational)

1 Lab Building

3 Office Buildings

1 Machine Shop/Garage

2 Dormitory Buildings (17 beds)

1 3 bedroom House Trailer

10,000 sq ft storage rented

May 1994

4 Telescopes

(1 operational)

1 Lab Building

1 Office Building

1 Shop/Garage

2 Dormitory Buildings (12 beds)

1 NSO house rental

Apache Point Observatory Staff

Now and Then

(does not include ARC/SDSS institutional support)

May 2014

3 Administration

2 Programming - IT

6 Engineering

4 Technicians

14 Observers (8 PhD's)

29 Total staff (includes SDSS)

May 1994

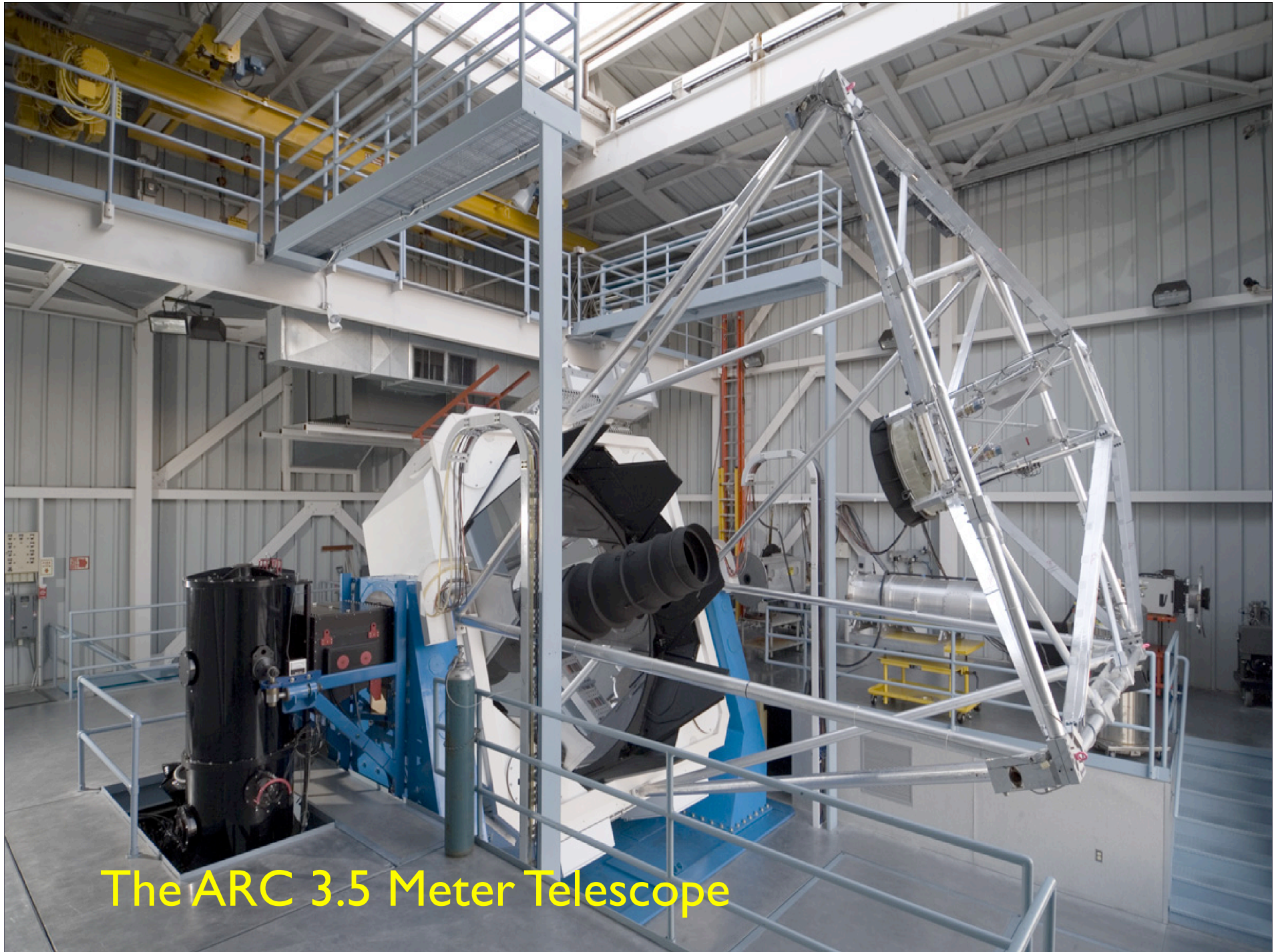
2 Administration

1 Programming -IT

1 Engineering

1 Observer

5 Total Staff



The ARC 3.5 Meter Telescope

ARC 3.5m Telescope

Now and Then

Last Year (2013)

First Year of Operation (94/95)

Observing hours

Scheduled : 4047 hours

2850 hours

Observed : 2796 hours

1585 hours

Equip loss : 29 hours

275 hours

Engineering : 310 hours

395 hours

Instrument Suite

DIS, ARCES, SPICam, NICFPS, Agile, TSpec, GIFS

DSC, GRIM, DIS*

(ARCTIC in Development)

+ 4 guide cameras, wavefront sensor, engineering camera

and APOLLO

ARC 3.5m Telescope (2)

Now and Then

Last Year (2013)

First Year of Operation (94/95)

Image Quality

Visible : Median 1.1" Best 0.6"

Median 1.7" Best 1.1"

NIR : Median 1.0" Best 0.5"

Median 1.4" Best 0.9"

3.5m Staff

8.5 FTE + 1.5 external

7 FTEs + 2 external

Operations Budget (2014 Dollars)

\$1,160,000

\$656,707

(\$415 per Obs Hour)

(\$416 per Obs Hour)

ARC 3.5m Telescope Staff

Mark Klaene – APO Site Manager

Bill Ketzeback – 3.5m Chief Telescope Engineer

Gretchen Van Doren – Program Manager

Fritz Stauffer, Jon Brinkmann – Software Engineers

Ed Leon – Electronics Technologist

Ben Harris – Facilities Supervisor

Russet McMillan – 3.5m Night Ops Mgr, Telescope
Scheduler

Jack Dembicky, Alaina Bradley, Alysha Shugart
– Observing Specialists

Remote (at U. Washington)

Russell Owen, Conor Sayres – Software Engineers

Nick MacDonald, Joe Huehnerhoff – Mechanical Engineers

ARC 3.5m Telescope Improvements

There have been numerous improvements and additions over the past two decades. See poster in back of room for details!

Major improvement projects

New Graphical Telescope User Interface (TUI)

Modern Axis Control System

New Direct Drive Motors on all axes

New Mirror Support, Control and Actuators

New Light Baffles

New Top End Assembly

New Telescope Control System software (in progress)

ARC 3.5m Instruments

Dual Imaging Spectrograph (DIS, Princeton, Jim Gunn)

ARC Echelle Spectrograph (ARCES, Chicago, Don York)

Optical Imaging Camera (SPICam, Washington, Chris Stubbs)

NIR Imaging Camera (NICFPS, Colorado, John Bally)

High Speed Imaging Camera (Agile, Washington, Anjum Mukadam)

Triplespec NIR Spectrograph (TSpec, Virginia, Mike Skrutskie)

Goddard Integral Field Spectrograph (GIFS, NASA/GSFC, Bruce Woodgate/Michael McElwain)

ARC Telescope Imaging Camera under development (ARCTIC, APO, Joe Huehnerhoff/Bill Ketzbeck)

ARC Small Aperture Telescope (ARCSAT, 0.5m)



Originally from JHU for SDSS photometric calibrations

Upgrade project just completed, led by APO staff Joe Huehnerhoff and Bill Ketzeback.

Now in shared-risk operations with remote user interface, two imaging cameras

High interest and usage from ARC partners!