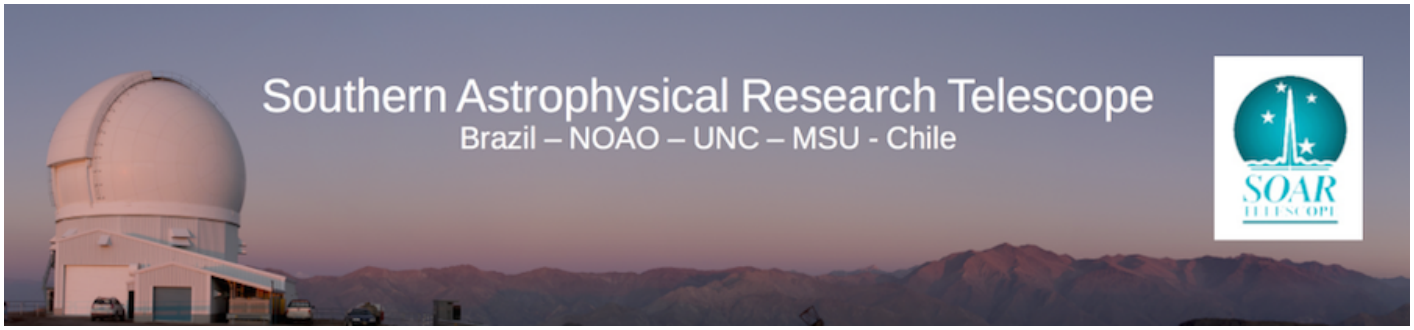
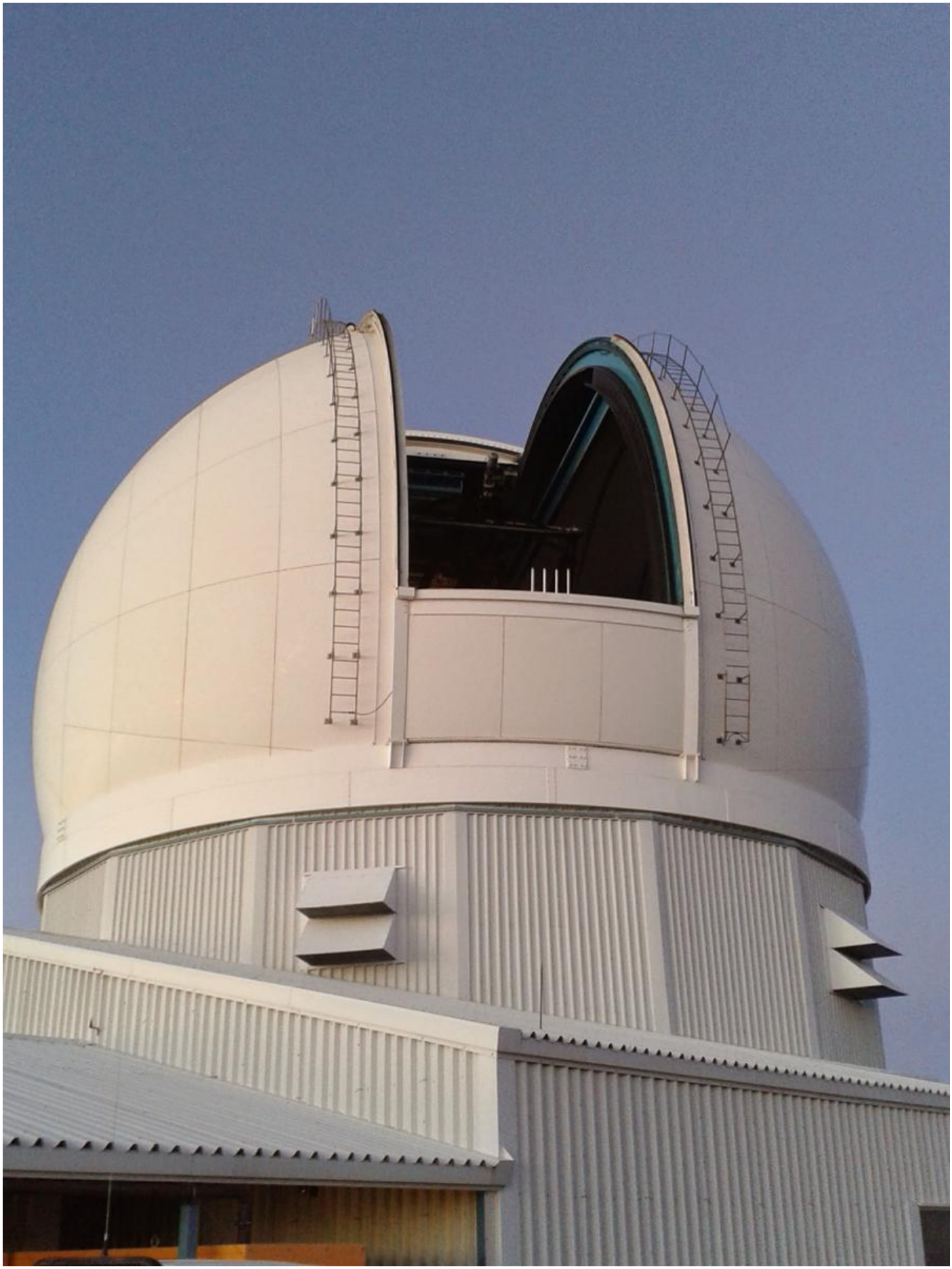


Published on *SOAR* (http://www.ctio.noao.edu/soar)

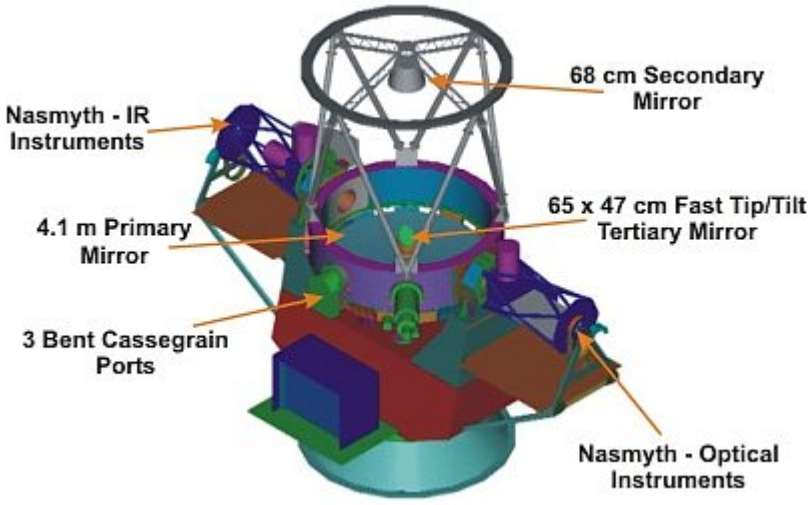
SOAR Technical Specs

Table with optical data for telescope and various instruments [1]

The Enclosure



- Achieves precise heat control by means of forced ventilation through a small dome area, set above a small building.
- Unusually enclosed design promotes highly accurate telescope tracking through its control of wind buffeting.
- The building was designed in the US and constructed by local Chilean contractors.
- The dome was built in Brazil, using fiberglass panels from a US firm.



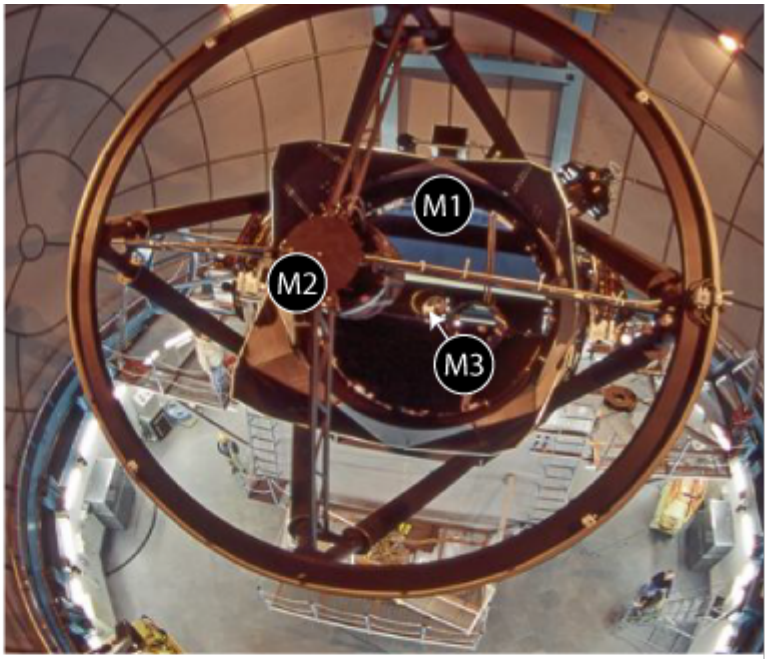
The mount and drives

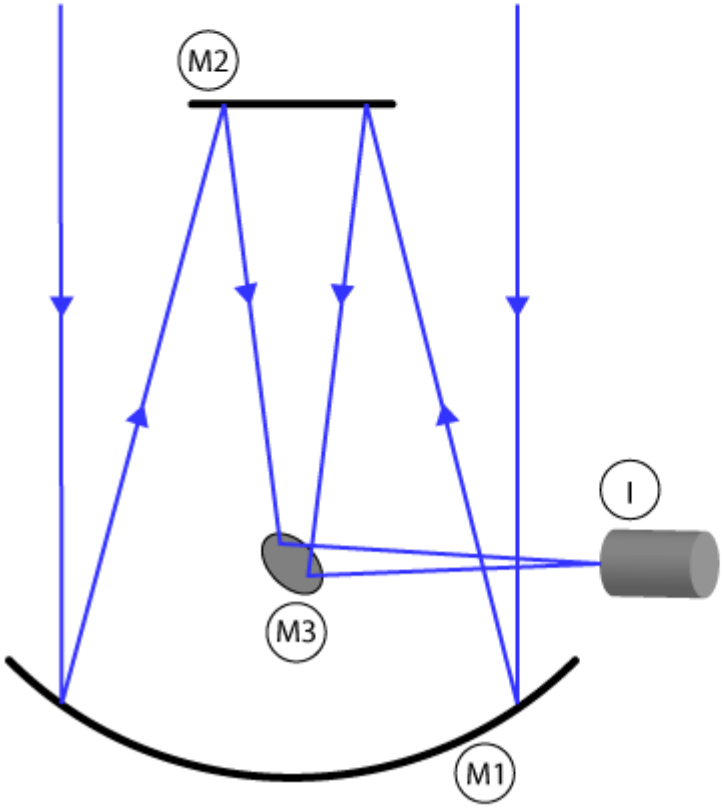
- Built by Vertex-RSI Corp. in Texas
- Uses rolling element bearings for both altitude and azimuth
- Achieves high pointing and tracking specs
- **Telescope elevation limits: max = 88.5 deg; min=15 deg** (we recommend working at elevations >20 deg. The ADC in the optical ISB can achieve 100% correction only down to 30 deg elevation. Below that, the correction will be only partial).

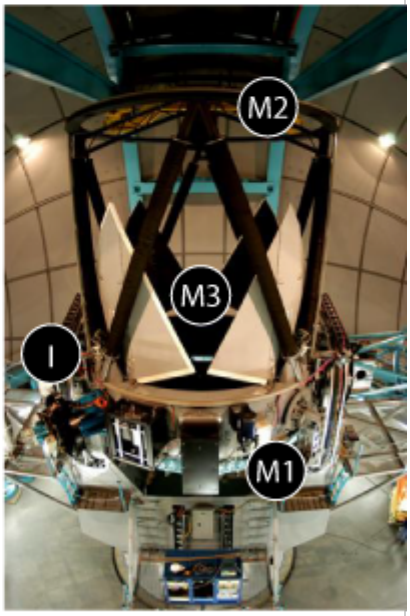
Optics

- 4.1m primary mirror

M1: primary mirror
M2: secondary mirror
M3: tertiary mirror
I: instrument







- Very high optical quality: 17 nm rms surface.
- Low thermal mass
- Primary mirror is 4 inches thick
- Plate scale 0.330mm/arcsec or 3.025arcsec/mm
- M1 curvature radius at vertex: -13.50970m
- M1 conic constant: -1.002667

- M2 curvature radius: -2.03265m
- M1-M2 distance: 5.83922m
- M2-M3 distance: 4.98922m
- M3 to focus: 4250.0m
- Effective focal length: 68.175m (F/16.63)
- Focal surface radius: 0.9656m (convex outside)
- Central obscuration: 0.228 (diameter 936.5mm)

Active optics system

- 120-actuator control of primary
- Secondary on active hexapod
- Image analyzer permanently mounted at one instrument port.

Tip-tilt tertiary mirror

- Rapid tip-tilt correction at all foci

Features
Most instruments are permanently mounted:

- 2 Nasmyth clusters, 3 instruments each
- 2 Folded-cassegrain foci
- Rapid selection between instruments: ~60 seconds to switch
- At least two instruments are always ready, if requested beforehand

Visitor Instruments
If you have an interest in proposing to bring a visitor instrument, please contact the observatory directly beforehand. Waiting until the TAC process starts may be too late! General policies for visitor instruments are described here [2]. A drawing of the Nasmyth instrument mounting locations is here [3]; at present only the IR Nasmyth "straight port" is easily available for small visiting instruments.

Links
[1] http://www.ctio.noao.edu/soar/content/optical-data-soar-telescope-and-instruments
[2] http://www.ctio.noao.edu/soar/sites/default/files/documents/Marcela/Board%20of%20Directors/Agreements%20%26%20Amendements/REV_RUI_policy_revision_10_2015.pdf
[3] http://www.ctio.noao.edu/soar/sites/default/files/documents/CH2925-E020%20-%20ISB.PDF