The Giant Magellan Telescope. Status

By Dr. Mauricio Pilleux
Head of Administration (Chile)
GMTO Corporation

mpilleux@gmto.org

April 17, 2019
Observatories in Chile: The beginnings … a successful experiment

Cerro Tololo
Interamerican Observatory
AURA, 1962

Las Campanas
Carnegie Institution of Washington, 1968

La Silla
ESO, 1969

Magellan telescopes, 2000
Observatories in Chile: “Second stage”

- **Very Large Telescope (VLT)**
  - Cerro Paranal, ESO, 1999

- **Gemini South**
  - Cerro Pachón, 2002
  - (AURA)

- **ALMA**
  - NRAO-ESO-NAOJ, 2013
Giant Magellan Telescope (GMT)
Cerro Las Campanas, 2023
(GMTO Corporation)

European-Extremely Large Telescope (EELT)
Cerro Armazones, 2026
(ESO)

Large Synoptic Survey Telescope (LSST)
Cerro Pachón, 2022
(NSF/AURA-DOE/SLAC)
What next?
Size (physical)
Observatories in Chile: Where?

- ALMA
- CCAT*
- Nanten 2
- ASTE
- ACT
- TAO*
- Apex
- Polar Bear
- Simons Obs.

Map:
- Paranal
- La Silla
- Tololo
- SOAR
- Gemini
- GMT*
- E-ELT*
- CTA*
- Las Campanas
- Vista
Giant Magellan Telescope (GMT):
Will be the largest in the world in 2022

- 25 meters in diameter
- “Price”: US$1340 million
- First light: 2023
- Enclosure is 62 m high

Groundbreaking research in:
- Exoplanets and their atmospheres
- Dark matter
- Distant objects
- Unknown unknowns
Just how tall is the GMT?

46 meters
Giant Magellan Telescope (GMT): The world’s largest optical telescope

New partners are welcome!
Central mirror casting – Sep 2015

Ohara glass, Japan

Photo by Ray Bertram
Casting of Mirror #5 – Nov 2017
Las Campanas Observatory

Meteorological towers

Summit offices

Enclosure diameter GMT – 56 m

Telescope foundation – 22 m
Excavation of the telescope enclosure
August 2018-January 2019
GMT Enclosure

Altura: 60.5 m

- Catwalk 50.0m
- Catwalk 45.9m
- Catwalk 36.2m
- Catwalk 26.5m
- OSS Elevation Axis 22.5m
- Ring Girder 16.8m
- Observing Level 11.8m
- Telescope Utility Level 8.1m
- Grade Level 0.0m
Safety first
- Residence with 92 rooms – maximum capacity: 228
  - Large kitchen and dining room
  - Recreation area
- Wide road ready – allows access to wide loads
- Hard-rock excavation for telescope enclose and auxiliary buildings is ready
- Water and telescope/enclosure cooling system utilities

IT
- Datacenter: AWS
- Chile backup (Las Campanas & Santiago)
Water & Utilities Package Construction