



TMT

THIRTY METER TELESCOPE

The **THIRTY METER TELESCOPE** will be the largest optical telescope in the northern hemisphere. It will be equipped with a state-of-the-art laser guide star adaptive optics system that will provide unparalleled imaging and spectroscopic capabilities to scientists worldwide.



FAST FACTS

- ✦ The **30-meter** primary mirror array is composed of **492 hexagonal segments, each 1.44 meters across**. Its surface area will be larger than a standard baseball infield.
- ✦ TMT will have more light gathering power than the largest 10 existing ground-based telescopes combined, and its images will be **12 times sharper** than those from the Hubble Space Telescope and **more than four times sharper** than those from the James Webb Space Telescope.
- ✦ The **50-meter-tall telescope weighs 2,650 tons** and is enclosed within a very compact **56-meter-tall dome**.

SCIENCE & TECHNOLOGY

TMT is an extraordinary scientific endeavor that has the potential to revolutionize our understanding of the universe and our place within it, including the exploration of black holes, dark matter, and the possibility of life outside the solar system. Among the questions TMT will help answer are:

- What is the nature and composition of the universe?
- When did the first galaxies form and how did they evolve?
- What is the relationship between black holes and galaxies?
- How do stars and planets form?
- What is the nature of extrasolar planets?
- Is there life elsewhere in the universe?

TMT builds on a rich heritage of technical innovation and scientific exploration in astronomy, and represents a huge leap in capability.

COMMUNITY-BASED ASTRONOMY

TMT embraces a community-based astronomy model that promotes respect, inclusion, and community stewardship. Current and planned activities include:

- Mobile STEM labs to provide hands-on learning opportunities for under-resourced remote schools
- Vocational training and scholarships for underserved students at a local community college
- Teacher training and externships
- In-person, face-to-face K-12 student tutoring
- Classroom and online astronomy education program for local students
- Hands-on aquaculture learning and training
- Traditional Hawaiian canoe carving
- Indigenous cultural exchange program
- Stargazing program emphasizing 'Ike Hawai'i (Hawaiian traditional knowledge)
- Maunakea reforestation

MAUNAKEA

Maunakea belongs to the people of Hawai'i and is sacred to many Native Hawaiians and communities. It is also one of the best places in the world for astronomy.

TMT has fundamentally changed its approach to community outreach and engagement. We are meeting regularly with many local, Native Hawaiian, and underserved communities to find ways to work together to build a better future for everyone in Hawai'i. We are listening to address their needs, heal divisions and build relationships.

We are always willing to learn more.



ABOUT TMT

The Thirty Meter Telescope project is a non-profit collaboration among the University of California, the California Institute of Technology, the National Institutes of Natural Sciences of Japan, the National Research Council of Canada, and the Department of Science and Technology of India. Significant funding has been provided by the Gordon and Betty Moore Foundation.

LEARN MORE AT [TMT.ORG](https://www.tmt.org).

