

# Thirty meter telescope

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**Context:** New front emerges in battle to build giant telescope in Hawaii



- The Thirty Meter Telescope is a new class of extremely large telescopes
- With its 30 m prime mirror diameter, TMT will be three times as wide, with nine times more area, than the largest currently existing visible-light telescope in the world
- A large diameter telescope provides two new basic capabilities that are not available with existing ground based telescopes and that cannot be delivered by the small telescopes in space or planned for the future:
  1. Improved spatial resolution, as long as the distorting effects of the Earth's atmosphere are corrected for with an adaptive optics system; and
  2. Increased sensitivity
- TMT images are more than 12 times sharper than those from the Hubble Space Telescope.
- The TMT is one of the new class of telescopes called Extremely Large Telescopes (ELT). Telescope mirrors are limited in size because they can become so heavy they warp. Currently, the largest telescope mirror in the world belongs to the Gran Telescopio Canarias (GTC). But a new class of telescopes using segmented mirrors are breaking new ground in mirror sizes. The TMT will have a 30 meter primary mirror in 492 segments, making it much more powerful than the GTC.
- India is one of the partners in the TMT consortium, and they're also manufacturing mirror segments.
- The Thirty Meter Telescope is being designed and

developed by the TMT International Observatory LLC (TIO). The TIO is a non-profit international partnership between the California Institute of Technology, the University of California, the National Institutes of Natural Sciences of Japan, the National Astronomical Observatories of the Chinese Academy of Sciences, the Department of Science and Technology of India, and the National Research Council (Canada).

- Maunakea was selected as a site, Over the last few years, TMT has experienced several unforeseen challenges, starting with the halting of its official groundbreaking ceremony by protestors in October 2014.
- Japan has suspended its funding contribution to the controversial Thirty Meter Telescope (TMT) in Hawaii.
- **Areas explored include**
  - DARK MATTER AND DARK ENERGY:
  - The Evolution of the Structures in the Universe
  - Supermassive Black Holes In Galaxies
  - Their Birth and Their Relationship With Galaxies:
  - The Formation of Stars and Planets
  - The Characteristics of Exoplanets and Whether There Is Life Elsewhere in the Universe