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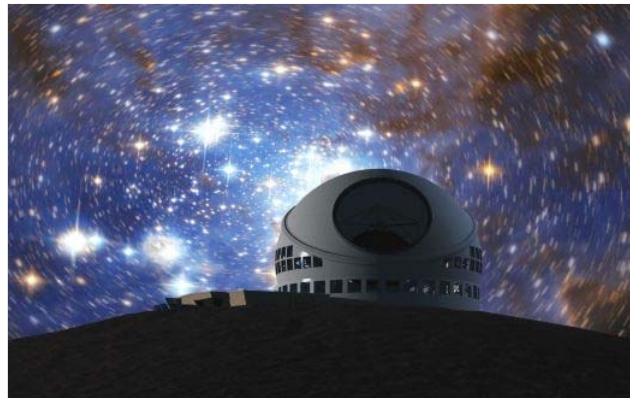


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Biggest, Baddest Optical Telescope Finds Home Atop a Hawaiian Volcano

By [Jeremy Hsu](#) Posted 07.22.2009 at 4:25 pm



Prim Stargazer: The Thirty Meter Telescope will be the world's largest optical telescope upon its completion in 2018. *TMT Observatory Corporation*

Hawaii's cluster of telescopes on the dormant volcano of Mauna Kea will have to make room for a new big sibling. The world's largest optical telescope is designed to have nine times the collecting area of any existing optical telescope, upon its completion in 2018.

The Thirty Meter Telescope will allow astronomers to study light from early stars and galaxies, as well as check out planet formation around nearby stars and test fundamental laws of physics.



Dome Home: The 66-meter diameter "Calotte" style dome protects the TMT from high winds atop Mauna Kea, while also allowing full range of motion. *TMT Observatory Corporation*

TMT's technological edge comes from its 30-meter primary mirror, composed of 492 segments. Its light collection area is almost 10 times more than that of the current Keck telescopes sitting on Mauna Kea, or 144 times the collecting area of NASA's venerable [Hubble Space Telescope](#).

Of course, Hubble has the advantage of a clearer view from Earth orbit, without atmospheric interference. But the new telescope will also make unprecedented use of adaptive optics to correct for atmospheric turbulence in real time, to get a clearer picture than ever before from the ground.

Another site, at Cerro Armazones in Chile, just lost out as an alternative site for TMT. The TMT Observatory Corporation praised both sites, but ended up favoring Mauna Kea.

"The atmospheric conditions, low average temperatures, and very low humidity will open an exciting new discovery space using

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adaptive optics and infrared observations," said Edward Stone, a Caltech physicist and vice chairman of the TMT board.

The \$300 million telescope is just now entering the early construction phase. But until that glorious addition for astronomy arrives, check out PopSci's current [favorite stargazers](#).



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Military, Aviation & Space, Jeremy Hsu, astronomy, hawaii, mauna kea, observatories, Telescopes, Thirty Meter Telescope

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2 COMMENTS

[hershko](#)

07/25/09 at 8:36 am

The new thirty meter Optical telescope atop a Hawaiian Volcano is a very important research tool that will help us to solve the universe mysteries. Aircraft electrical systems technician
dordor77@netvision.net.il

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07/27/09 at 3:33 am

A true star is born! Very excited to add this to my list of visited/visiting/want to visit observatories! Can't wait to see first light out of this scope, truly great things are happening in late 2010's. Keep it up everyone!

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