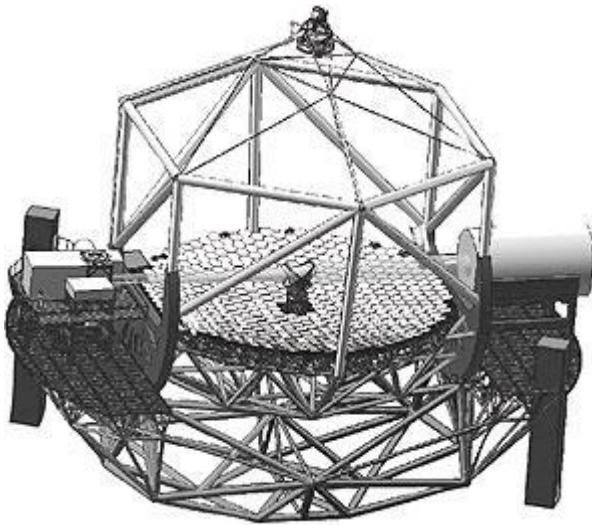


Local News

The biggest telescope, on the biggest mountain?



Proponents of the Thirty Meter Telescope meet in Hilo, tour Mauna Kea

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The backers of the world's biggest optical/infrared telescope would rather have people know it as the world's greatest telescope.

Either moniker would be right, since the proposed Thirty Meter Telescope would give astronomers the deepest, clearest view into the universe. With nine times the light-gathering capacity of either Keck telescope, and a resolving power 12 times that of the Hubble Space Telescope, the TMT promises to reinvent man's view of the cosmos and search for Earth-like planets around other stars.

The question now comes down to deciding where to build the telescope. A 30-meter primary mirror would be 98 feet across, with a large hemispherical enclosure. Even though this telescope has been proposed for Mauna Kea's northern slope, out of view of most residents, vocal opposition is expected to any construction on what is regarded as a sacred mountain.

Tuesday, a trio of TMT proponents gathered at the Tribune-Herald. Michael Bolte, a TMT board member, Sandra Dawson, TMT's site manager, and Charles Blue, TMT's media relations specialist, explained the approval process and the chances Mauna Kea might have in hosting the telescope.

"It's an outstanding site," Bolte said of Mauna Kea, adding that the world's best telescope should be built at the world's best site. Even though the search for the ideal mountain began with a worldwide analysis of satellite data, Mauna Kea was, "as we all expected, one of the absolute best sites in the globe for doing astronomy," Bolte said.

Bolte will have a vote in determining whether this telescope, estimated to cost \$1.1 billion, will be built in Hawaii. He said Mauna Kea stacked up favorably compared to Cerro Armazones in Chile, the other choice, in several categories.

Ground-based astronomy needs more than a giant telescope on a mountain. In ideal observing conditions, the atmosphere is thin, dry, stable, cold and clear.

Studies have found that the air above Mauna Kea is cold and stable, both pluses. While extensive support infrastructure exists at Mauna Kea, from Hale Pohaku to the network of roads, electricity, fiber-optic cable and water, none of that is available on Cerro Armazones. To get to this mountain, scientists would have to fly to the capital city of Santiago, then board a smaller plane to the northern coastal city of Antofagasta. From there it's a two-hour drive through the Atacama Desert, the driest spot on Earth.

The Chilean mountain is 10,500 feet high, while the Mauna Kea site is some 3,000 feet higher, another plus for Hawaii.

On the other hand, the desert climate works in Cerro Armazones' favor, since Mauna Kea records more cloudy days. More significantly, Cerro Armazones has no known historical, cultural or archaeological significance, and the Chilean government is actively promoting the development of astronomy.

"Chile, at the federal government level, they recognize astronomy as an industry," Bolte said.

If Mauna Kea is selected, and TMT receives a permit to begin construction, the mountain's northern plateau will become a hive of activity for heavy machinery and scores of workers.

"There will be heavy cranes. There will be trucks. There will be lots of stuff," Bolte said.

What hasn't been decided is the final design of the building. Although a widely circulated computer-generated image shows the telescope and its housing on a mountaintop, that design is specific to Cerro Armazones only.

Most telescopes on Mauna Kea, Bolte said, are designed and then brought to the Board of Land and Natural Resources for approval.

"We're doing it differently," he said. "We want to do it in ... the more acceptable way."

"Chile, we know exactly what we can do," Bolte said. "Mauna Kea, we don't."

For this reason, they don't know what the final design will be -- whether part of the telescope will be buried, whether the support building will be two stories to minimize the footprint, or where on the 36-acre plain the telescope will be located. They may have a better idea after

today's meetings with officials from the Office of Mauna Kea Management, and tour of Mauna Kea.

One of the major concerns of putting people on the mountain is the issue of water contamination, and to address this, Dawson said TMT would have a holding tank, and all wastes would be trucked down the mountain.

The seven years it would take to build the observatory would create many jobs, most of them local hires.

"There's a lot of impact during the construction phase," Bolte said.

While it would be built in either Hawaii or Chile, the manufacturer of the primary mirror -- the largest of three -- will grind out 492 six-sided segments off-site to be installed in the telescope. By comparison, Keck's design, a revolution when it was built, has only 36 segments.

In all, 580 segments will be made, including spares. TMT has not selected the vendor.

Key to getting the telescope built in Hawaii is acceptance by the community, and because the consortium that would build it is already involved separately in operating other telescopes on Mauna Kea, they are well aware of the issues.

Dawson emphasized the telescope would not be built on the summit, and would be out of view from most places on the Big Island.

They acknowledge that some people will never accept the TMT, but Bolte looked for common ground.

"The astronomy endeavor is not very different from the Native Hawaiian reverence for the mountain," he said. "I think telescopes are beneficial, and I think they represent something wonderful."

He disagreed with the notion that the telescopes are desecrating Mauna Kea.

Dawson has sent out a letter to a number of people whom she thought would be opposed to the project, and asked for their input in the project. She plans to set up a booth at the Hilo Farmers Market to talk with people about the project, and will be reachable at her office at 934-5910.

"We would have to have the draft EIS completed around April," Dawson said.

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Thirty Meter Telescope Timeline

PAST

- The search for sites begins with a global satellite survey.
- Five sites are identified for further study.
- Extensive, years-long site studies begin. TMT receives permission to test Mauna Kea's

conditions in April 2005.

-- Mauna Kea and Cerro Armazones are the named the finalists, one in each hemisphere, in May 2008.

PRESENT

-- The environmental assessment for Chilean site is wrapping up this week.

-- The environmental impact statement (EIS) process for Hawaii is about to start.

-- TMT principals meet today with the Office of Mauna Kea Management; visit to Mauna Kea scheduled today.

-- Site Studies Manager Sandra Dawson is setting up her office in the Subaru Telescope building in Hilo for a six-month stay.

FUTURE

-- EIS preparation notice to be published Sept. 8; a series of public meetings will be announced at this time and held in late September.

-- The EIS process must await the completion and approval of the Mauna Kea Comprehensive Management Plan. The Board of Land and Natural Resources will review and possibly approve the plan in December.

-- Draft EIS will be published in April 2009, followed by another public meeting in May.

-- Following publication of final EIS, University of Hawaii Board of Regents will decide whether to accept it.

-- If this happens, the TMT Board of Directors will decide whether to locate the observatory at Mauna Kea or Cerro Armazones.

-- If Mauna Kea is selected, TMT will submit a conservation district use application to the Board of Land and Natural Resources.

-- If the BLNR issues TMT a permit, and if TMT secures the money to build the project, construction can begin. It will involve building the telescope itself, an enclosure, an adjacent support structure and a headquarters in Hilo or Waimea.

-- Construction is expected to last seven or eight years, from groundbreaking to the start of science observations.

Telescope fast facts

Internet: <http://www.tmt.org>

Environmental impact: <http://www.tmt--hawaiiis.org>

Call the Hilo office: 934-5910