CATAC report to CASCA Board

Dec 5, 2022

CATAC activities

CATAC continues to meet regularly (every 2-4 weeks) to receive updates from our TMT Board and SAC representatives. We are looking forward to the outcome of the ongoing NSF-led reviews (see more detail in this report) to provide clarity on the future of the project, including the important issues of schedule and cost. In the meantime, there is little more we can do than wait.

Over the summer of 2022 several CATAC members participated in a GAC (Ground-based Astronomy Committee) led Tiger Team, with a charge to provide GAC with information and guidance about the capabilities of the different Very Large Optical Telescopes, how they align with the LRP priorities, and how this might be impacted by different modes of access. This led to an internal report to GAC as part of an ongoing process - please see the GAC report for more information.

TMT Project update

Bob Kirschner succeeded Ed Stone as the Executive Director of TIO earlier this year. For more information, see https://www.tmt.org/news/robert-p-kirshner-named-tio-executive-director-edward-c-stone-announces-retirement-from-tio

The process following Astro2020

On July 16, the National Science Foundation (NSF) issued a notice of intent to proceed with the Environmental Impact Statement (EIS) and Section 106 processes. Four scoping meetings were held on the Big Island, to receive feedback on the process. Both written and oral testimony was provided to the visiting panel. More information about this process can be found here: https://beta.nsf.gov/funding/environmental-compliance/thirty-meter-telescope.

The NSF's Preliminary Design Review (PDR) of the US Extremely Large Telescope Program (US-ELTP) is expected to take place in two phases. The first phase, focused on technical readiness of TMT, may be completed by the end of 2022. In early January 2023, the programmatics (governance, operations etc) will be reviewed, together with the GMT and NOIRLab component of the US ELTP. The PDR is an important gate that must be passed if the project is to proceed to the Final Design phase. The Final Design Review (FDR) would take place about 1-1.5 years after the PDR, and would include a Final Cost Review, for which a firm governance model and site selection would be required.

Site Developments

Maunakea

- On July 7, with Act 255 the Governor of the State of Hawai'i signed bill HB2024 into law, establishing a new Authority responsible for managing Mauna Kea lands. There will now be a transition period of up to five years, before authority is fully transferred from the University of Hawaii to this new body. The Authority consists of 11 voting members, listed here. The selected representative of the Mauna Kea Observatories is Rich Matsuda of Keck Observatories.
- In October 2022, the Department of the Interior announced that it will require formal consultation with the Native Hawaiian Community, and is developing new policies and procedures to "further affirm and honour the special political and trust relationship between the United States and the Native Hawaiian Community".
- Following the elections of Nov 2022, the Democratic representative Josh Green was elected the new governor of Hawaii, replacing David Ige.

Roque de los Muchachos Observatory (ORM)

In our last report we noted that the TMT construction permit on ORM had been revoked, following a successful appeal by the environmental group Ben Magec. The TMT International Observatory (TIO), Instituto de Astrofisica (IAC) and the Cabildo (local government body) appealed this decision. This appeal was successful, meaning TMT has legal right to construct on ORM.

Technical Developments

In preparation for the NSF review, the SAC was asked to assess an evaluation of 59 possible descope options, that together amount to about 10% of the project cost. The identification of descopes is an NSF requirement and part of good project management - it does not mean that there is a current expectation that any of these will need to be realised. The most significant of these proposed descopes is a decrease of the primary mirror diameter to 25m, either permanently or with an upgrade path. The SAC agreed with the evaluation that this would be the most negatively impactful descope, and should only be used as a last resort. It would be strongly detrimental to adaptive optics performance and long-term competitiveness with ELT.

Although much of the technical development work has slowed across the partnership, significant work is ongoing. At HAA, key components of the TMT AO system NFIRAOS (the CMOS sensor that will be used for the wavefront sensor, and the real-time controller) were demonstrated on sky using the DAO 1.2m telescope. The results were impressive, achieving a 0.30" FWHM with 36% Strehl. HAA is also testing new deformable mirrors and other components useful for GIRMOS (Gemini), which is a pathfinder for a similar IRMOS instrument on TMT.

Meetings and consultations

- Just over 50 people attended the CATAC webinar discussion on May 12, 2022. The slides that CATAC presented are available at https://casca.ca/wp-content/uploads/2022/05/TMT-CASCA-2022.pdf. This was followed by a presentation by the Project Manager, Fengchuan Liu, that included a thorough and frank description of dialogue and outreach activities underway in Hawaii.
- For several years we have been looking forward to hosting the next TMT Science forum in Canada. However, it became clear that due to both lingering COVID travel restrictions and partner funding limitations, such a meeting held in person would not likely achieve a broad participation from across the partnership. This means the meeting would be unlikely to achieve one of its most important goals, which is to establish and build international teams especially around instrumentation. CATAC therefore recommended that Canada should not host an in-person Forum until this situation changes, and after there is more clarity about the future of the project following the NSF review.
- Although we are disappointed to not be hosting the science meeting, we note that Canada will host the August 2023 TIO Board meeting.
- The TMT International Observatory and the TMT Science Advisory Committee recently announced a webinar series starting this December. The first webinar will be "Thirty Meter Telescope: project updates and call for ISDT membership". There will be a 50 minute presentation describing the project status, including site updates and a 10 min presentation from the SAC on the call for ISDT membership. The total time, including a Q&A session, will be 1.5h. The webinar will be held at two times: Monday Dec 19 at 21:00 PST and Jan 18, Wednesday at 14:00 PST. Registration is required, via https://forms.gle/r4PPxyfDs2ooYyX6A

Membership

Michael Balogh (University of Waterloo), Chair	Jan 2017 - Dec 2022 (2 terms)

CASCA appointees

Bob Abraham (University of Toronto; TIO SAC)	Nov 2018 - Oct 2024 (2 terms)
Laura Ferrarese (NRC)	Nov 2018 - Oct 2024 (2 terms)
Jason Rowe (Bishop's University)	Dec 2022 - Nov 2025

ACURA appointees

Stefi Baum (University of Manitoba)	Jan 2017 - Dec 2022 (2 terms)
Harvey Richer (UBC)	Jan 2017 - Dec 2022 (2 terms)
TBD	

Ex-officio members

Luc Simard (Director General of NRC-HAA)
Don Brooks (Executive Director of ACURA)
Chris Wilson (Interim CASCA President)

Stan Metchev (TIO SAC)
Tim Davidge (TIO SAC Canadian co-chair; NRC, observer)
Greg Fahlman (NRC, observer)

According to the ToR for this committee, term limits are three years, renewable. The second term of Balogh, Baum and Richer are all due to expire at the end of this year. We are still waiting for ACURA to nominate a replacement for Kristine Spekkens, who left the committee in May 2022.