CATAC Report to the CASCA and ACURA Boards

May 11, 2020

Membership

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Meetings and Reports

CATAC continues to meet approximately biweekly via telecon. A record of selected meetings is on our web page http://casca.ca/?page_id=8347 and, where possible, reports are shared publicly. Updates are provided in every issue of eCassiopeia.

In early 2020 CATAC prepared a confidential report which stressed the importance of securing Canadian access to a Very Large Optical Telescope (VLOT). Starting from what we considered to be the most important high-level considerations, we concluded that at this time TMT remains the preferred means for access to such a capability for Canada. Given the uncertainty and significant challenges facing the project, we also considered it prudent to broadly consider other potential opportunities for securing VLOT access. The report, with recommendations, was shared with the CASCA and ACURA Boards, NRC-HAA leadership, and the LRP panel on Feb 18, 2020. While this report reflects our best advice at this time, it also notes clearly that broader consultation and input will be needed to take these considerations further.

Project update

It has now been almost a year since protests halted the restart of construction on Maunakea. This has left the project in a state of uncertainty at a particularly inopportune time, as the Canadian LRP and US Decadal plans are being developed. Canadian astronomers are among the many stakeholders who are anxious for new information, and are perhaps disappointed at the apparent lack of progress and consultation toward finding a viable way forward. This is understandable, but CATAC would like to convey that progress is being made, and that appropriate sharing of information as well as consultation will take place at

such time as it can be most constructive. In particular, the TMT Board, TMT International Observatory (TIO) Members, and others are actively working toward finding a solution for constructing TMT in a way that has support from all stakeholders. A Working Group has been established by the State of Hawaii to engage the stakeholders in Hawaii in discussions on broad issues such as land use, housing, health and education and explore whether a form of reconciliation is possible. Astronomy on Maunakea is part of these discussions, which are following a process well aligned with some of the publicly available whitepapers submitted to the LRP panel, including *Maunakea Indigenous Rights* and *Indigenizing Astronomy*. As those involved work to build the trust needed to proceed, it is important that they be allowed to speak freely, frankly and honestly with each other; this is best done, initially, in a confidential setting.

At this point, more time is needed. The continued delay is disappointing for all, and the project is certainly aware of the many competing timelines, including for the Canadian LRP and US Decadal surveys, NSF funding, and ELT construction. There will come a point when a decision needs to be made, and at that time CATAC will facilitate a community-wide discussion to provide information and solicit input.

The TMT Science Advisory Committee has struck a subcommittee to consider the latest and most complete information available on site quality at Observatorio del Roque de los Muchachos (ORM), Canary Islands, to ensure the TIO Members are fully informed. They are using the previous CATAC report as input, as well as a new report being prepared by the Japanese partner which considers additional (historical) site testing data. As noted in previous reports, there are also significant political, financial, environmental and social challenges associated with building on ORM that mean it is not straightforward to move to this alternate site.

The project will be undergoing a full Cost Review in late summer / early fall. This had been planned to take place last year, but was delayed as resources were diverted to provide information to the US Decadal process. Until this full cost review is complete, it is premature to speculate on the final cost of the project, or the effect of any revisions to previous estimates on Canada's share.

In late March, there was a virtual TMT-GMT Joint Science Advisory Committee meeting (https://www.tmt.org/news/462). This is an important milestone as the projects work together toward establishing a US Extremely Large Telescope Project that will attract strong support from the US Decadal planning process.

COVID-19 is having an impact on the project, as it is on nearly all aspects of life. In the short term it means TMT will likely not have the full attention of governments. In the longer term, it is certain that the environment within which TMT will have to operate to secure funding will have changed.

Instrumentation

Steady progress on the instrumentation suite is being made, notably with advances in the design of WFOS and refinement of MODHIS specifications. The India TMT Optical Fabrication Facility (ITOFF) at the Indian Institute of Astrophysics campus near Bengaluru recently completed construction. Construction is also underway at HAA in Victoria on a new instrumentation integration and testing facility. The first occupant of this building will be NFIRAOS, where it will be coupled with IRIS. The structure is large enough to accommodate the largest instruments envisioned for ELT-class telescopes. Some of these future instrument concepts are nearly as large as an 8-m class telescope.

Community Engagement

We had hoped that the next TMT Science Forum would be held in May, 2021 in Vancouver. However, given the likelihood that travel and gatherings are still likely to be severely restricted at that time, it is probable that this meeting will be postponed until 2022. Unfortunately, this year's TMT Early Careers Workshop at HAA also had to be cancelled.

Although the lunch discussion at this year's CASCA meeting has been cancelled, CATAC has requested a 30 minute slot to provide an update on the project. We anticipate holding an online discussion at a later time, as the available options become clearer.