

Report to CASCA of Ground-based Astronomy committee (GAC)

The committee was convened in November 2009 to merge the functions of the OIRAC and RAC. The committee membership and terms as assigned by CASCA are given below. The chair and co-chair were decided subsequently with CASCA agreement.

Jo-Anne Brown (U Calgary)	2009-2012
Tim Davidge (HIA Vic)	2009-2013
Gil Holder (McGill)	2009-2011 (co-chair)
John Hutchings (HIA Vic)	2009-2011 (chair)
Roland Kothes (HIA Pen)	2009-2013
Ken Tapping (HIA Pen)	continuing, spectrum management
Kim Venn (UVIC)	2009-2010
Tracy Webb (McGill)	2009-2012
Chris Willott (HIA VIC)	2009-2010

The exact term dates are not clear, but we assume that the two members whose term ends in 2010 will act until November 2010. We note that Willott is our member also on the Gemini SAC, so we suggest that whoever replaces him should be on the Gemini SAC. However, there are rumours of changing the Gemini committee, so we might wait for that before deciding. Chris is also willing to stay on GAC if that is useful.

The board may want to decide if there are parts of this report not suitable for general reading. We do not have any such recommendation.

1. Activities.

The committee communicates principally via a mailer. It was established early on that this is preferred to telecons, partly to avoid the difficulty of finding times when all are free, in different timezones. It is planned to hold a face-to-face meeting between those who are present at CASCA. The 4 Victoria members do occasionally have discussions as we see each other in the course of normal work activities.

The committee was charged with submitting a 'white paper' for the LRP panel, which gave us a quick start on all business, as we were to address all ground-based facilities over the next decade. That report is attached to this one, and serves as our basic work for the period to date. However, as many of the new telescope projects are evolving rapidly, we include in this report, updates and new opinions, where applicable.

2. Updated comments on facilities

- a) For JCMT, the delays in Scuba2 commissioning continue to be a problem. The time available for the planned surveys is limited before the existing operational agreement expires. The issue of credibility generally is serious for the expected transfer of support funds from JCMT to ALMA. We suggest that a leaner

- operational scenario be developed, with support from the survey scientists and possible use of CFI funds, plus serious work on possible survey descoping, to address these problems.
- b) For Gemini, the UK withdrawal implies a renormalized Canada share of 19%, plus increased share of operations costs. Our current 15% share is less subscribed than the time of the other partners, although that may well change when the new instruments come into use. The US will nominally become a 66% partner, but the US plans will have to await the decadal planning report, later this year. It seems best for the moment to ride this out for the rest of the year before making any new decisions.
 - c) SKA has had some review in which it was suggested that it appears very ambitious and should have reduced science drivers. These are likely to be HI cosmic history and pulsar physics (of course allowing lots else, but not as drivers), and this is expected to be presented at the meeting in Crete this month (May). Noting that the schedule is likely to extend the design phase to 2016, with a phase 1 build (costing 350m Euros) to 2019, and full completion thereafter, this is definitely an LRP issue for Canada. The forerunner programs in both Australia and South Africa are proceeding aggressively and competitively, likely involving off-axis dish designs such as those studied in Canada, so we should remain as involved as possible with all aspects of the program.
 - d) The TMT now has Japan, China, and India as observers, with hardware and software development participation. It is expected that a formal MOU and letters of intent will be drawn up to reflect this, in the coming months. This adds significant impetus to the project, and has implications for EELT partnership. The Canadian team needs to stay engaged to maintain its participation level. It seems clear that Canada needs to look at a new approach for funding, and also to set up a proper TMT office that can receive and spend funds and participate with other partners. The TMT technical team cannot work on both TMT and EELT, although they could transfer their efforts if needed, and funded. The current TMT construction schedule would begin in mid-2012, following preliminary surveys, and assuming funding is in place.
 - e) China and India are interested in 4m class observing access, and Taiwan already has CFHT associations. These may be potential partners in plans for CFHT upgrading.
 - f) We note that the EVLA is a very powerful new capability that perhaps has not had the recognition and scientific interest that it warrants.
 - g) DAO telescope statistics now available show that they spawn some 10 papers per year, run 35 different programs, and serve 24 graduate students at present. They are also of considerable value in outreach and training. The operations costs amount to 1.8FTEs and some \$40K in maintainance and operations.

3. ACURA study on VLOT options

We have been given this report, which does a very thorough job of documenting the options and costs for Canadian participation in the next generation of large OIR telescope. We have two notes on this.

- a) The report deals with fiscal and political issues but does not get into any discussion of the scientific pros and cons of the choices, and hence the potential importance for Canadian astronomy. The Canadian community has been a big user of workhorse instruments, particularly wide-field imaging and spectroscopy. Thus, if the preferred path of joining TMT fails, we should pay much attention to the science capability of any plan B. While the initial EELT instruments are not yet selected (and will not be public immediately), it appears that they are fairly similar to those proposed for TMT. The capability of GMT or any other smaller such telescope will be significantly different, so would need careful consideration on that basis.
- b) The ACURA report contains comparisons of costs and notes on site properties that may be subject to different views or uncertainties, so we feel they need to be viewed with some uncertainty. In particular, the costs for EELT are yet unknown, and there may be some design changes as a result. These will become clearer later this year, and we will continue to follow them closely.