

Radio Astronomy Committee (RAC) Report to the CASCA Board
March, 2004

The CASCA Radio Astronomy Committee met via telecon on
March 8, 2004. In attendance via telecon were:

Judith Irwin (Chair, Queen's, Term: 2003 - 2006)
Peter Dewdney (HIA, Past Chair and backup chair, Term: 2003 - 2006)
Ingrid Stairs (UBC, Term: 2003 - 2006)
James Di Francesco (HIA, Term: 2003 - 2006)
Gary Welch (St. Mary's, Term: 2003 - 2006)
Ken Tapping (HIA, Spectrum Management, Continuing appointment)

1. Action Items from the November 19, 2003 meeting were discussed as follows:

The RAC had recommended to the board that a special session celebrating the JCMT be included in the upcoming CASCA meeting in Winnipeg. The board indicated that this recommendation came too late and didn't fit well into the plan of the Winnipeg meeting. It was felt that we should try again for the Montreal meeting in 2005. The RAC will contact the Montreal LOC as well as Rene Plume to see whether this can be put into the agenda for 2005.

The RAC noted that Meyer Nahon has accepted its invitation to be on the Canadian SKA Science Steering Committee and that the CASCA board has approved his appointment.

The RAC discussed the possibility of the feasibility of including all major radio telescopes in the HIA student travel fund. The RAC will make some enquiries to understand whether this could be possible.

The RAC has suggested several names to Vicki Kaspi for potential SOC members at the upcoming Montreal meeting.

The RAC is looking into developing a web page for Canadian Radio Astronomy to be linked from the CASCA page.

2. Report on the JCMT

The JCMT report is included in this report as Appendix A. Discussion focussed mainly on the revitalization of the JCMT - SMA link and some concerns were expressed about the possible draining of resources away from other projects and the possible down time for the telescope. The RAC has been assured by the Director, JCMT, that these concerns have been considered by the JCMT Board.

3. Report on ALMA

Since the ground-breaking ceremony, the development of infrastructure is continuing in Chile. A significant development is the strong possibility that Japan will join in the project. Although still requiring parliamentary approval, there is optimism that Japan will

indeed take part, providing a compact array of 8 smaller antennas into ALMA to assist with the assisting with zero-spacing flux problems, and also providing 3 additional frequency bands to all 80 antennas. This could be a contribution of approximately \$US 240 million. Notice of an upcoming ALMA science meeting in Maryland has been sent out on the CASCA exploder. Design studies on prototype antennas at the VLA test site are continuing. Current estimates put early science results in late 2007.

4. Report on CGPS/IGPS

A proposal is being prepared for a Special Research Opportunities (SRO) grant to complete this project and to collaborate, in the process, with Herschel and Planck if possible.

5. Report on SKA/CLAR

A meeting of the ISSC was held in South Africa in January and new developments include having convergence sessions in which attempts are made to see how various designs from the different countries mesh and also how they fare in meeting the science goals. The Canadian LAR was discussed at some length and is the only technology capable of meeting all level 0 science requirements. In particular, it is the only design capable of satisfying the requirement of the broad frequency band. The concept of "pathfinder" telescopes has also been discussed, that is, telescopes of order one-tenth the size of the SKA and capable of doing ground-breaking research in their own right. The need for a CLAR pathfinder was presented to the HIA advisory board at their meeting in January. and the SKA steering committee unanimously and strongly backs the pathfinder concept. There is also encouraging news from AMEC on the design and cost of the actuators for a 300 m class antenna. Note that Canada is not vying for the SKA site, whereas other countries, such as Australia, are.

6. Report on Education/Outreach

There was discussion about a possible summer school in radio astronomy. Since BIMA and NRAO both hold summer schools in radio interferometry, it was felt that a full scale school is probably superfluous, yet some need for information about ALMA, in particular, is needed and especially in a directed, "how to" fashion. A one-day session in connection with the CASCA meeting in Montreal was thought to be a good idea and the RAC is approaching the Montreal people about this possibility.

7. Report on Spectrum Management

As noted in the previous report to the board, there is still much pressure on the radio bands, especially from ultra-wide-band technologies. Note that when a telescope is built, considerable care must be taken to ensure that there is some protection in that geographical area first, since

nothing can be done later if it is found that some interference exists. In Canada, Industry Canada is supportive of radio astronomy concerns and there are also some attempts now to consolidate the regulations which are currently a patchwork internationally. Some feedback on important bands up to 3000 GHz (currently it's up to 1000 GHz) will be needed from the Canadian community in the near future. The idea of radio quiet zones has not received support from the Americans and it was felt that the RAC should provide some active support in pushing for spectrum protection, and in particular, at the radio frequencies which are important to current and new radio astronomy facilities in which Canada has a direct concern. The RAC is currently drafting a letter to Industry Canada to emphasize the need for continued protection of the radio bands and is also preparing a draft proposal to be presented to the ITU.

8. LRP Mid-Course Review

The RAC is pleased that the LRP mid-course review process is now active and will be closely monitoring and available for consultation during this process.

APPENDIX A: JCMT REPORT

Existing operations

The year 2003 saw an overall improvement in weather, compared to the previous 2-3 years, and also a decline in the fault rate. The bottom line seems to be that more projects are being completed.

Present Equipment

The workhorses continue to be SCUBA, RxA3 and RxB3. To our knowledge, there have been no disastrous failures. RxA3 remains the poor-weather instrument of choice; it's performance is stable except for a slight increase in the amplitude of the well-known noise hump near 250 GHz.

Future Equipment

The new multichannel heterodyne backend ASCIS (developed at DRAO), which will eventually replace the DAS, is still scheduled for delivery in May 2004. The actual delivery date, however, appears to be slipping towards late summer 2004.

ASCIS will be the backend for the new 16-channel HARP-B receiver, whose appearance in Hawaii is expected in December 2004. So perhaps 12 months from now JCMT will be sending energy into the first of its "next-gen" instruments.

SCUBA-2 continues to make good technical progress, although there is concern about funding. The total money committed so far is about 85% of what is needed to build the complete instrument with its 4 detector sub-arrays as originally envisioned. There is talk of invoking something called

"descoping" of the project, whose meaning is clear enough. Aggressive efforts are underway to locate the remaining funds.

The SMA Link

An MoU was signed with the SMA in 2002; since that event the CSO has joined the collaboration. At its November 2003 meeting (summarized on the JCMT web site) the JCMT Board reaffirmed its commitment to the project after receiving a highly positive external review. The scientific potential of operating at higher (B-band) frequencies was emphasized by the Board; to my knowledge there would be no competition in B-band before ALMA.

The Board has asked the JCMT Director to develop a plan for implementing the necessary engineering and support work. The MoU specifies that a pilot observing program be undertaken in 2005. That will comprise 6 one-week time slots, spaced roughly 2 months apart. A joint TAG will adjudicate proposals from the community. Details remain to be addressed.

Semester 04B

Proposals are being accepted until 15 March. They will be ranked by CTAG at its May meeting, to be held this year at Laval.