

ATUC Report to the Director - October 2011

This meeting of the AT Users Committee was held at the ATNF Headquarters on 25 & 26 October 2011.

Attendance: Sarah Maddison (Chair), Chris Phillips (Secretary), Hayley Bignall, John Dickey, James Allison, Virginia Kilborn, Ryan Shannon, Stephen Ord (online from UWA), Kathrin Wolfinger (student representative) and Giovanna Zanardo (student representative). Also attending was Ken Kellermann (NRAO) as an international representative.

Apologies: Chris Springob (Observing at AAT)

Date and Format of the next meeting:

An extraordinary meeting is expected to be called for sometime in the first quarter of 2012.

Thanks:

The committee thanks Sarah Maddison, the outgoing Chair, for her services to ATUC over the past 6 years.

Commendations and Successes

- We congratulate the ASKAP engineering team for getting the first phased array feed (PAF) on one of the Murchison Radio-Astronomy Observatory antennas.
- ATUC and ATNF users are delighted to hear about revised Science Operations Centre (SOC) plans which mean that on-site visits to Narrabri will remain available for users. While users appreciate the flexibility of remote observing, all users - and particularly students - greatly value their time at Narrabri working with observatory staff.

Note:

The discussions at this ATUC meeting were taken up almost entirely with the proposed changes to ATNF operations. As such, we shall carry over all recommendations from the May and October meetings until the next "normal" ATUC meeting.

Comments on the proposed changes to operations

Of the three options presented in the ATNF "Further information" document dated 14 October 2011 regarding the Operations Plan for the National Facility, ATUC is in favour of option #1 over the other two options presented. It is clear that option #1 will have the least scientific impact while still offering the widest range of observing options to users. We understand and support the fact that ASKAP is the number one priority of ATNF and that funding is required to complete construction and for operations.

MOPRA

Mopra users are obviously very concerned with the plans to close Mopra, which is in all three proposed options. The timing is extremely unfortunate, as the

scientific output and impact of Mopra is clearly increasing. The closure of Mopra will have a significant impact on the Australian (and international) interstellar medium and star formation community. The proposed timescale of closure of Mopra - just one winter season away - is unacceptable as it is not enough time for users to complete their existing projects nor does it provide enough time to find external funding. Had this announcement been made 8 months ago as initially planned, Mopra users would have had a more reasonable amount of time to prepare their final two winters of observations with Mopra, as well as try to secure external funding to run Mopra beyond October 2012.

ATUC is very concerned about the proposed timing of the closure of Mopra for the following reasons:

1. We have concerns about PhD students whose existing projects rely heavily of Mopra. We are currently aware of 12 Australian students and a number of international students for whom Mopra data makes up the core component of their thesis. ATNF needs to ensure that these students and their supervisors are fully aware of the closure of Mopra so that they can plan for the final winter 2012 semester. Hopefully the November "ATNF roadshow" which is visiting key states will ensure that all Mopra users are fully informed of the situation.
2. Twelve months is simply too short a time frame to seek external funding to run Mopra, both nationally and internationally. Funding cycles are generally longer than this and more time is needed to secure external partners. Furthermore, we are concerned that the CSIRO Call for Expressions of Interest to operate/fund Mopra (dated 18 November 2011) closes on 16 January 2012. This timing is unfortunate as it straddles the Christmas/New Year period, effectively allowing less than 2 months for people to secure potential funds and submit Eols.
3. The timing of this announcement has serious implications for existing Mopra projects. One winter will not allow for the completion of approved legacy projects (along with existing PhD projects and other small Mopra projects). These legacy projects are producing finder charts for both ALMA and Herschel and thus are invaluable to the entire astronomical community and will result in very high impact science. Two winter seasons would allow users to realistically plan for the completion of their projects.
4. There are users with existing and recently approved ARC-funded projects that rely heavily on Mopra. For approved Mopra large projects this can have serious ramifications. For users with ARC grants, ATNF should help them bridge the gap to other facilities were possible. The timing of this announcement makes it very difficult for users to renegotiate with their funding agencies.

Recommendations:

- i. *Recommendation 1a:* ATUC urges CASS to retain Mopra as a National Facility telescope for two more winters to allow people to complete projects and potentially find external partners for continued operation of the facility.
- ii. *Recommendation 1b:* ATUC urges CASS to determine all PhD students who will be adversely affected by the closure of Mopra and ensure that these students and their supervisors are fully aware of the imminent closure so that they can make alternate plans. (Keeping Mopra operating as a National Facility for two more winters would help alleviate this problem as well.)

Long Baseline Array (LBA)

The closure of Mopra will also significantly degrade the LBA network and VLBI observations in a number of ways:

1. The loss of the two shortest baselines affect calibration, imaging and sensitivity to large-scale structure.
2. The LBA currently operates with the minimal number of antennas. Calibration relies on phase and amplitude closure. Reducing the number of antennas significantly degrades the outcome of the observations, affecting both astrometric and imaging results.
3. The short baselines of the LBA are often very useful for Galactic studies. The Mopra-ATCA e-VLBI “quick-look” capability is invaluable in checking if a source is compact enough to be worth observing with the full LBA.
4. eVLBI investment in optical fibres to Mopra has just begun to pay off with real-time correlation. The closure of Mopra will have a dramatic effect on eVLBI capabilities. Mopra has been a critical part of rapid response transient follow-up with eVLBI.
5. While the loss of Mopra from the LBA could be partially compensated by including new antennas from ASKAP, AUT or AuScope, none of these currently have the sensitivity nor the receiver suite that Mopra does.

Recommendations:

- i. *Recommendation 2a:* ATUC urges CASS to continue supporting VLBI observations with Mopra.
- ii. *Recommendation 2b:* ATUC urges CASS to ensure that all LBA users are informed that 2012 will likely be the last winter semester with Mopra in the array.

The proposed reduction in receiver changes at Parkes will also effect LBA operations, which we comment on below.

PARKES

We understand the need to cut Parkes operational costs and that this will be done by the introduction of remote observations and the reduction of the instrument suite. We commend the progress made by CASS staff towards the Parkes remote operations and in principle support the proposed plans for future operations of Parkes. There are, however, several issues of concern:

1. Parkes is a unique facility in terms of its frequency coverage, sensitivity and location. This versatile cm-wave single dish telescope is needed by radio astronomers worldwide. A reduction in the number of receiver changes will preclude some high impact science as receivers with low demand are unlikely to ever be installed. A policy of limited receiver changes should be flexible.
2. Users need to see a strategic plan for both the short term and long term changes of the instrument suite, both receivers and backends. Such a plan can be used as a basis for consultation with the community over the next few months.
3. In terms of the front ends, we strongly endorse the medium-to-long term goal of having a small number of sensitive broadband receivers that will satisfy the needs of the entire community. This will clearly require capital expenditure. In the interim, users must be consulted about the receiver

rationalisation plans to ensure there are no gaps in required scientific capabilities.

4. The LBA is an instrument in its own right, of which Parkes is a component. For Parkes to be an effective part of the LBA, it may require more receiver changes than needed for single dish operations. The current flexibility of the LBA is one of its advantages over other VLBI arrays. In a typical LBA session observations are made at 3-4 frequencies to cover a range of science projects. Significantly reducing the number of receivers available and/or the flexibility will adversely impact a number of LBA projects. Trigonometric parallax measurements towards star formation regions and pulsars, which are some of the highest impact science to come out of the VLBA, require multiple observations per year. Reducing the number of LBA sessions will negatively impact the LBA science capability, and therefore the VLBI science in the southern hemisphere.
5. The flexibility offered by remote observing capabilities at Parkes is welcomed by users. CASS does, however, need to carefully consider the student experience and student training with Parkes. Users are also concerned about Parkes staff morale once the telescope is fully remote. Continuing student workshops and science meetings at Parkes are important to maintain staff enthusiasm for the telescope and allow students to visit the observatory.
6. Users were interested in the proposal for a new 600 MHz to 4 GHz receiver. Such an approach would suit the new operational model for Parkes. A similar receiver covering 4-25 GHz which could be installed simultaneously would increase the flexibility of Parkes and reduce the required staffing needs for receiver support.

Recommendations:

- i. *Recommendation 3a.* ATUC recommends that CASS commence an extensive period of consultation with users in the context of the long term strategic plan before decisions about changes are made. We recommend that CASS prepare a “strawman model” for the community to discuss over the next few months.
- ii. *Recommendation 3b.* ATUC encourages CASS to be mindful of the effects of minimal receiver changes on LBA requirements.
- iii. *Recommendation 3c.* ATUC recommends that CASS host student workshops and occasional science meetings at Parkes to ensure that observatory staff remain engaged in the science being conducted with Parkes and allow students to visit the telescope.
- iv. *Recommendation 3d.* ATUC recommends that CASS investigate the feasibility of wideband, low frequency receivers for Parkes including both 600 MHz - 4 GHz and 4 - 25 GHz bands.

ASKAP

ATUC was pleased to hear about the progress being made in developing the Murchison Radio-Astronomy Observatory (MRO) and especially the procurement of the antennas, which appear to more than meet the design specifications. We were disappointed, however, to learn of the expected delays in the completion of ASKAP and the full start of the eagerly awaited science survey observations. The results of the receiver temperature tests above 1.2 MHz are alarming and the Mk II redesign will clearly further delay the project. The 10 survey science projects include hundreds of scientists who have been working hard to prepare for ASKAP

and meet the CASS milestones as required. In view of the expected delay in the startup of full ASKAP operations, we are concerned about the impact to the many postdoctoral fellows who have contributed to the science survey programs. We hope that it might be possible to extend their appointments so that they can participate in the science survey programs for which they have prepared and are needed to fully exploit the data.

Recommendations:

- i. *Recommendation 4a.* ATUC strongly recommends that CASS complete the 36 antenna system with PAFs installed, as most projects cannot operate without all 36 PAF-installed antennas.
- ii. *Recommendation 4b.* ATUC recommends that CASS ensure that the telescope rapidly reach the stage of early science, with a reduced system temperature of the first 6 PAFs, so that the survey science teams can really test the system and publications can start to flow.

APR-2012 Time Assignment

It needs to be made absolutely clear to all users that winter 2012 is currently slated as the last semester that Mopra will be part of the National Facility. This will effect both Mopra users (obviously) and LBA users. There is a very strong push from the millimetre community that the large legacy projects should be completed to reap the maximum benefits from the Mopra time already invested.

Recommendations:

- i. *Recommendation 5a.* ATUC strongly supports the CASS suggestions that the Mopra proposal deadline be extended by a month to encompass the end of the consultation period and to allow more time for Mopra users to plan their proposals assuming that it is the last Mopra semester.
- ii. *Recommendation 5b.* ATUC also recommend that the TAC be sensitive to commenced PhD student projects that rely on Mopra to assist students to complete their science if possible.
- iii. *Recommendation 5c.* ATUC recommends that the TAC consider very carefully the Mopra legacy projects, which are extremely important for a wide range of ALMA and Herschel projects.
- iv. *Recommendation 5d.* ATUC strongly recommends that CASS invite an external international millimetre expert to the TAC specifically to help rank Mopra proposals.

ATCA

During the open meeting it was noted that many users were still not being informed of significant Miriad software upgrades. It is important that major changes (and bug fixes) are quickly and clearly communicated to users.

During Graeme Carrad's presentation the issue was raised that the 4-12 GHz CX upgrade is progressing well for 5-11 GHz, but that getting to 12 GHz is proving more complicated than initially anticipated. CASS requested user feedback on the importance of 12 GHz and asked that users contact the project scientist, Naomi McClure-Griffiths, with their feedback.

Recommendations:

- i. *Recommendation 6a.* ATUC requests that CASS review how information about Miriad is distributed and ensure better communication in the future.

In closing, ATUC would like to commend the CASS staff for the dedication and hard work which ensure that the existing telescopes run so well, and those staff who are contributing to development of the SKA through ASKAP engineering breakthroughs. Without these people the users could not conduct their excellent scientific projects.