ATUC Report to the Director - June 2014

This meeting of the Australia Telescope Users' Committee was held at the ATNF Headquarters on 2-3 June 2014.

Attendance: John Dickey (Chair), Nick Seymour (Secretary), Virginia Kilborn, Ryan Shannon, Steve Ord, Minh Huynh, Tobias Westmeier and Craig Anderson & Emily Petroff (student representatives).

Apologies: James Allison

Commendations and Successes

ATUC wishes to commend ATNF on:

- impressive progress on BETA commissioning, and in particular the recent HI spectral line and continuum images;
- ASKAP/ACES team/Secondment programme, which has worked together enabling the BETA images to be produced;
- securing funding for 36 PAFs;
- progress on SKA work-packages, in particular leading the Dish Consortium, which is undergoing design review.
- continued efficient operation of the current ATNF telescopes
- research excellence of the astrophysics and engineering groups

The committee considered many issues relevant to ATNF operations and development, as detailed below.

Major Recommendations

CSIRO Budget Cuts

The committee recognises that reduced funding is available to CSIRO because of the recent Federal budget. The users were shocked by CSIRO's targeting of radio astronomy for funding cuts. As a subcommittee of the Ministerially-appointed Australia Telescope Steering Committee (ATSC), ATUC stands willing to assist the ATSC in its role of advising CSIRO on radio astronomy issues and regrets that the process leading to this announcement did not allow this to occur. The ATUC fears that these cuts will affect the ability of the ATNF to retain and attract talented researchers and engineers, particularly during the important commissioning activities of the ASKAP project and the pre-construction phase of the SKA project.

The Users Committee gives its strongest support to the ATNF astrophysics research group. Users confirm that it would be impossible for the observatories to operate efficiently and effectively without their frequent, in-depth use by the scientific staff of the ATNF. Users depend on the staff to find problems with the equipment and software, and to solve those problems and inform the community. Outside users, however competent and experienced, do not have the constant connection with the engineers and technicians needed to track the changes and upgrades, to debug new hardware and software, and to plan new innovations. It would be impossible to maintain the world-leading position of the ATNF instruments without the dedicated support of the astrophysics group, who push the telescopes to their limits, and find ways to do new things with them. Cutting the staff in the astrophysics group puts the research mission of the ATNF at risk.

The Users' committee also gives it strongest support to the ATNF engineering research group. The group develops the world's best receiving and back-end instrumentation. The unique Phased-Array Feed (PAF) development has won a national Astronomy and Engineering Excellence award from Engineers Australia (2013) and it has attracted the interest of observatories around the world. The Compact Array Broad-band receiver system was the first of its kind and a prototype for wideband radio astronomy receiver systems. Reduction in funding for this group just as the SKA systems are being designed will jeopardise ATNF's position as a leader in the field.

The ATCA and Parkes telescopes will be indispensable for follow-up of the discoveries that will be made by ASKAP. It is therefore critical to maintain the broad spectrum of observing capabilities currently supported on these telescopes. Specific examples include single-dish mapping of the ASKAP fields to provide the zero-spacing information that no interferometer can measure. At frequencies above the ASKAP upper limit of 1.8 GHz, it will be critical to have the Compact Array with its many high frequency bands ready to measure the spectra and make high resolution images of Galactic and extra-galactic objects. The LBA will also be able to provide VLBI resolution follow-up of ASKAP targets. These follow-ups will include continuum, spectral line, and polarization studies. There are no alternative telescopes in the Southern Hemisphere that can supply this critical information to supplement the ASKAP survey data. Thus the Users Committee encourages the ATNF to maintain the capabilities of the existing observatories at least through the ASKAP era and into the SKA1 observing years.

Recommendation: The committee strongly recommends that the ATNF continue its full support for the world-class existing observatories as a National Facility. The committee further recommends that the observing capabilities of the telescopes should be maintained even at the cost of other factors, that may include receiver availability and scheduling flexibility.

The committee is prepared to engage the community in the discussion of any options that ATNF may wish to consider to reduce expenditure. ATUC recognises that difficult decisions will need to be made for existing facilities, potentially impacting on capability, support or operational models. Such decisions may have significant impacts on AT users which are hard to foresee. ATUC therefore recommends that CSIRO rigorously consult with a full cross section of the AT user community prior to these decisions being made.

Recommendation: The community should be consulted and given ample notice (ideally at least a year) of any major changes to the telescopes, especially with regards to capabilities or time available.

Minor Recommendations

Parkes Training

Observers now receive training from Marsfield. Current training comprises short sessions addressing safe operation of the telescope. Oftentimes the users interact only briefly with other staff. Observers are required to observe from the SOC before being permitted to observe remotely. The committee continues to receive feedback from the community that displays dissatisfaction with the scope of training and the available level of interaction with staff at the SOC. The users' committee has a number of suggestions for improving the training procedures:

Recommendations :

1. Training should be provided "on-request" where possible. It would allow observers to obtain expertise well in advance of their observing sessions, perhaps at times that may be more convenient for them and when expert ATNF advice may be more readily available.

2. The visitors' service group should liaise with the Parkes SOC astronomer to identify visitors who are getting training. The SOC astronomer could then introduce the visitor to ATNF staff members with shared research interests.

3. Observing training should be provided by ATNF staff with expertise in the visitor's observing programme (e.g., a spectral-line expert should train a visitor observing spectral lines). For example, the ATCA observing "friend" policy could be extended to Parkes.

Parkes Remote Observing Requalification

Observers at Parkes are concerned about the yearly re-qualification requirements still in place for previously qualified observers. The expiry of observing qualification at the one-year mark after the last training session makes little sense if the observer has been consistently participating in remote observing throughout the year and is still up to date with the systems at Parkes. Overseas observers find it difficult, and sometimes impossible, to renew their training within a year of their last visit, at a detriment to Parkes science. We continue to recommend that the ATNF offer remote re-qualification to trained observers when travel to the ATNF is not possible.

Recommendation: The ATNF should take account of recent observing and number of hours since the last re-qualification in determining remote observing eligibility. Experienced and regular observers should be permitted to remotely re-qualify. Usage statistics are already being collected by the portal.

Parkes face-to-face induction

Currently, face-to-face induction for new Parkes observers occurs in the SOC's Parkes observing room via a dedicated video link, but this will potentially disturb ongoing observations.

Recommendation: Parkes face-to-face induction could be moved to a different location or be movable to any desk in the observers area that is available at the time, including the ATCA and Mopra areas.

ATCA Duty Astronomer Training

The committee recognises that substantial improvements in DA training and instrument documentation have been made since the last report, and congratulates staff on the significant level of positive feedback received by the committee in this regard. However, some first-time DAs continue to express concern that training is not as extensive as they would like it to be, specifically in regards to setting up observations and performing correlator reconfigurations. The committee understands that some level of anxiety is natural in first time DAs, and that observatory staff generally spend a great deal of time training them.

Recommendation: early in their DA training, students should be asked directly about their level of confidence in performing these procedures, and that if setup is required out of hours during this early period, staff should walk them through the process step-by-step prior to leaving for the day.

Notification of NAPA/ToO observations

Unlike PIs, Parkes observers are not explicitly made aware of NAPA/ToO projects that could potentially request the telescope during their observations.

Recommendation: Information on eligible NAPA/ToO projects is made available to observers, either through an e-mail message or by displaying that information prominently on the Parkes PORTAL, for example requiring the observer in charge to explicitly acknowledge having received that information. This will allow observers to react appropriately to any requests to hand over the telescope.

CABB 16 and 4 MHz zoom modes

The deployment of the two outstanding CABB zoom modes has been delayed due to the loss of staff. The 16 MHz zoom mode is expected to be completed by no earlier than September 2014, while development of the 4 MHz mode has been postponed. The gap between the currently implemented 1 MHz and 64 MHz modes is too large, making extragalactic HI observations difficult due to insufficient velocity resolution of the 64 MHz mode and the small overall bandwidth covered by the 1 MHz zoom bands. At least one additional mode is required to fill this gap. While the 16 MHz mode would benefit HI and maser observations, the 4 MHz mode would be desirable to achieve an optimal balance between bandwidth and frequency resolution for observations with the 4-12 GHz receiver.

Recommendation: Given the progress already made with the 16 MHz mode, ATUC recommends that the 16 MHz mode be rolled out as planned. Implementation of the 4 MHz mode would be desirable but not urgent.

Student Training at ATNF

The users committee notes the great benefit students have received from the ATNF support and training programs. Such support has proved invaluable to co-supervised students, especially those from smaller institutions with few experts in their field.

Recommendation: ATUC recommends continued support for students at the ATNF and a continued commitment to the co-supervised students.

ATCA off-axis polarisation calibration

Broadband polarimetry at cm wavelengths is an important, world-leading capability that ATCA possesses. The relative importance of this capability is expected to increase as we enter the ASKAP era, as multi-frequency followup and support of the POSSUM survey is anticipated. On axis, ATCA polarisation can be calibrated to very high levels of accuracy. However, widefield polarimetric science with ATCA is currently limited by the fact that off-axis polarisation leakage is difficult to estimate for a given set of observations, and that it cannot be calibrated out. Pre-

CABB, MIRIAD tasks existed that both estimated off axis leakage for a given set of observations (OFFPOL), and attempted to correct for it (OFFAXIS).

Recommendation: CSIRO staff should investigate the feasibility of either updating these MIRIAD tasks for the CABB era or otherwise developing methods for estimating or correcting off-axis instrumental polarisation.

Local Interference at Parkes

Observers have noticed that observations have been compromised by RFI near the 21-cm line in the protected band. Sources include office equipment and mobile phones of staff members. The committee appreciates the efforts by the staff to locate the interference sources.