

## **ATUC Report to the Director - June 2013**

This meeting of the Australia Telescope Users' Committee was held at the ATNF Headquarters on 11-12 June 2013.

Attendance: John Dickey (Chair), Chris Phillips (Secretary), James Allison, Virginia Kilborn, Ryan Shannon, Steve Ord, Minh Huynh, Tobias Westmeier and Vikram Ravi & Sarah Reeves (student representatives).

### **Commendations and Successes**

ATUC wishes to commend ATNF on:

- dramatic progress on ASKAP hardware and software, notably building construction and the first three-field, three-PAF map,
- establishment of the Marsfield **Science Operations Centre**,
- new opportunities for remote observing with the Parkes Telescope,
- submission of proposals for SKA work packages that put CSIRO in a leadership position internationally on several critical technologies,
- successful resumption of observations with the Mopra telescope after the January 2013 fires, and
- successful negotiation of external funding agreements which enable 30% open-access time for Mopra observations.

### **Recommendations and Discussion**

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

#### **1. External funding for ATNF facilities**

We appreciate the overview provided regarding the ATNF operations funding status for 2015/16 and beyond. We acknowledge the constrained operational funding in the era of ASKAP. We seek clarification from CASS about external funding that may be sought to operate Australia Telescope facilities from 2015 and beyond. **If this is the case, the ATUC requests that the wider user community be provided with sufficient notice of this decision. We further request that a document outlining CASS management's vision for external funding be circulated.** The ATUC considers it important that an open skies policy be maintained to the fullest possible extent. It is also essential that current student projects which require data from ATNF facilities will not be compromised.

## 2. ASKAP

ATUC appreciates the considerable progress that has been achieved with regards to ASKAP technology.

ATUC recognises the significant challenges to funding ASKAP to its full capabilities, and it is a positive sign that funding has been secured for an additional six MKII PAFs with the potential for a further six.

ATUC also recognises that external funding could result in the efficacious completion of ASKAP. We however stress that considerable effort and investment has been made by the Survey Science Team (SST) members in designing the surveys and meeting goals set out by ATNF over the past four years. It is particularly important that completion of the Survey Science Projects (SSPs) is not compromised by an external funding agreement for ASKAP. **ATUC seeks assurance from CASS that this will not be the case. ATUC suggests that this be included in a more general policy on external funding agreements for ATNF facilities (see Section 1).**

### Early science proposal

The optimum science programme for a 12-antenna ASKAP array may be quite different from that for the 36 antenna array. **Consideration should be made of projects that might have great scientific potential for a reduced array, but lie outside Wallaby/Emu science goals.**

Antenna locations should be decided in conjunction with the strongest science priorities. **We propose that all antennas (including BETA antennas) should be considered for possible use in the early science (12 MKII PAF) array to maximize science outcomes.** There appear to be some shortcomings with the currently proposed array, which was optimised for a declination of -60 degrees. **Alternative configurations optimised at several declinations should be considered, that would greatly improve UV coverage at both short and intermediate baselines.**

### Impact of the SKA

ASKAP is expected to begin early science operations by the end of 2015 or beginning of 2016 and SKA construction is currently scheduled to begin in 2017 or 2018.

While ATUC appreciates that the details have not been finalised, ASKAP infrastructure will be subsumed into the SKA1-Survey array at some point and this has the potential to impact ASKAP operations and the completion of the SSPs. The SKA pre-construction

activities also have the potential to use up already scant resources in CSIRO and elsewhere in Australian radio astronomy. **ATUC recommends that ATNF have a public strategy in place to minimise the disruption to ASKAP completion, commissioning and operations. At the last meeting we asked for more clarity on the SKA timelines with regards to impact on ASKAP – have the timelines become more clear since then?**

### Communication

- ATUC flagged the need for continued dialog with the SSTs on ASKAP progress in the last report – the ATNF replied that there would be a monthly newsletter which hasn't happened. **We strongly encourage such a newsletter to keep all ASKAP scientists informed.**
- **ATUC suggests that the early science proposal should be more widely distributed to the general astronomy community (e.g. via the ASA exploder).**
- ATNF shouldn't necessarily rely on the SST PIs to disseminate the information on ASKAP. Recognising the importance of the telescope to the community as a whole, **ATUC requests that the ATNF supply regular communication with the scientific community, of a realistic nature.**

## 3. Parkes

### Parkes Receiver Development

ATUC congratulates the ATNF on its good progress toward a suite of wideband, general purpose receivers to become the next generation workhorse instruments on the Parkes telescope. The design study that was reported by the ATNF Engineering group is not finished, but the fundamental questions have been posed in a way that can lead to a world-class receiver design. Meanwhile, a memo submitted to the ATUC and included on the web page puts forward a compelling science case in favour of building a receiver with frequency range from approximately 0.7 to 4.2 GHz. There are various applications of this receiver concept, but the pulsar timing array is one with particular significance. The other options that have high priority, after the discussion at the science day in October, 2012, include an L-band PAF, similar to the ASKAP Mk II receivers, and a high frequency package, with cooled receivers covering at least 5-12 GHz and 19-25 GHz. The long-term goal is to have all three of these available simultaneously in the focal cabin.

To make a decision on which of the three new receivers to build first, the ATUC would be happy to continue to organize a process to ensure community participation. All three receiver options should be studied carefully. ATUC believes that a decision on priorities

should be made, as soon as practical, following a public forum where proponents of each receiver present a case.

**We recommend that the process should begin with straw-man specifications and costings for all three receivers being provided by the ATNF engineering group.** The provided costings do not need great accuracy, but if there were order-of-magnitude differences in cost, that would clearly influence the decision. **In parallel, members of the user community with scientific interests in each of the three receiving systems should prepare coordinated whitepaper reports to justify building their preferred receiver first.** The specifications and costings provided by the ATNF for each receiver will serve as terms of reference for the whitepaper reports. The ATUC will coordinate this process.

**At a public science-day discussion, coordinated with the next ATUC meeting, each group will present their case.** On this basis, the ATNF management, with advice from the ATUC, could make an informed decision.

### **Remote Observations with the Parkes Telescope**

ATUC commends the ATNF for the continued progress of the Remote Access to the Parkes Telescope (RAPT) project and looks forward to hearing the outcome of the June 2013 project review. The committee notes that the telescope protection system possesses the promise to diagnose system faults prior to any major disruptions to telescope operations, and that the online chat system has already enabled strong levels of communication between observers and the telescope staff. The committee recognises that the remote access program brings cost savings to both the observatory and the users.

The users **request regular updates on the status of the project (and future projects of this nature from all of the ATNF facilities)** from the scientific operations team, in particular so that appropriate travel arrangements can be made.

The users were happy to hear that, after qualification, observers would be able to remotely observe from beyond the Science Operations Centre. **As requested in the October 2012 ATUC report (and promised for the June 2013 meeting), the users would appreciate clarification on the remote observations policy, and observer training and support, as it is fully developed.**

The users commend the ATNF on the high scheduling efficiency of the Parkes telescope, with less than 3% of time lost in 2012 due to equipment failure. The users hope that limited after-hours assistance will not cause a decrease in productivity of the telescope.

**At future meetings, ATUC would appreciate updates on telescope efficiency in the remote observation era. In the event of a decrease of efficiency, ATUC recommends that discretionary time be allocated to enable re-scheduling of time lost by high-priority projects.**

#### **Parke Spectral-line observations**

The Multibeam correlator is showing signs of its age and users have reported issues causing significant amounts of lost time due to hardware and software failures. **ATUC requests that priority be given to developing high spectral resolution modes on HIPSR as a replacement of MBCORR.** CASS needs to ensure that HIPSR's high spectral resolution modes are incorporated into normal observing programs (e.g., TCS) and that there is a documented calibration and reduction path for users.

#### **4. Australia Telescope Compact Array**

ATUC was happy to hear that progress has been made on the 16 MHz CABB modes and that they are expected to be completed by the end of the year. The users have identified the scientific value of 4 MHz zoom bands with the CABB correlator. **ATUC requests that the ATNF completes the 4 MHz zoom band modes with CABB.**

Users have noted that the excellent mm capabilities of ATCA have been highlighted at international conferences. Even though we are in the "ALMA era", there is a specific niche for ATCA 7mm observations, and the 3mm capability is also important.

Water Vapour Radiometers (WVRs) have been on antennas and taking data since June 2011, and initial results have suggested that they can be of considerable benefit to millimetre observing. **The ATUC is concerned that general millimetre observers are not aware of this capability and suggest that the existence of the WVRs and instructions regarding their use be communicated to the millimetre observing community.** The observatory should make an effort to provide an easier-to-use common user interface for the WVR corrections.

The ATUC would like to congratulate CASS on the development and success of CABB in recent years. However, we note that there are still significant issues in the reliability of CABB. This, in combination with insufficient Duty Astronomer (DA) knowledge, has been known to result in lost time for observers. In particular, reprogramming the correlator is a frequent source of problems, and the DAs have become very reliant on the expertise of a few local staff members to intervene when any problems arise with the reprogramming.

We recognise that ATNF staff are working on these issues, and we encourage them to

get CABB into a state of reliability as soon as possible. We also see a need for a more rigorous training procedure for DAs. **In particular we recommend that there should be a dedicated DA training manual that contains all of the up-to-date information that DAs are required to know.** In addition, we note that the ATCA user documentation may also be in need of updating.

ATUC was encouraged by the progress and plans for the processing of CABB data with a combination of Miriad and CASA. ATUC would welcome an ATNF-lead CABB-CASA data reduction tutorial and we encourage the ATNF to ensure up-to-date documentation is available to users.

#### **5. Matters arising from the October 2012 report:**

“A regular (monthly or more frequent as material dictates) informal, more ‘applied’ newsletter on ASKAP with significant detail on specific technical developments relevant to the engaged astronomer will be produced starting in January.” (See Director’s response and, as noted in Section 2 in this report).

#### **6. Date and Format of the next meeting:**