

# ATUC Report (April 2020)

## **1. ATUC members in attendance (all remote):**

Ramesh Bhat (Chair), Joanne Dawson, Miroslav Filipovic, Bi-Qing For, Catherine Hale, Cherie Day, Chikaedu Ogbodo, Michelle Cluver, Cormac Reynolds (Secretary)

## **2. Commendations for CASS:**

- Excellent and timely response to the serious challenges arising from COVID-19
- Robin Wark for CSIRO medal for Lifetime Achievement for decades of service
- Karen Lee-Waddell for John Phillip Young Scientist of the year
- Sarah Pearce for the Telstra Business Woman of the year award
- Rob Hollow for award from the Science Teachers Association, NSW
- Douglas Bock for election as a Fellow of the Academy of Technological Sciences and Engineering in recognition of the work done in radio telescopes
- LIEF success on both Cryo-PAF and BIGCAT bids
- Tasso and his R&D team for the continued development of cutting edge new instruments for radio astronomy, with broader digital technology significance

## **3. Covid-19 Response**

ATUC notes the positive response of CASS towards managing the difficult issues arising from the COVID-19 situation nationally and internationally. The presentations on this issue in the ATUC Open Session demonstrated an effective plan for continuing operations and support, and maintaining staff productivity and safety in difficult circumstances. At least in the short term, it is clear that CASS is handling this situation effectively. ATUC is encouraged by the steps taken to operate within the constraints of social distancing while ensuring that critical laboratory access is not greatly impacted for, e.g., the R&D teams. ATUC also acknowledges that all ATNF science facilities/telescopes are operational and continue to produce scientific data and results in these very challenging times.

ATUC encourages CASS to maintain regular communication with the user community regarding the ongoing situation and any contingency plans in the event of a potentially extended period of interruption that may arise from COVID-19. This information will be important for individual researchers to make their own contingency plans. Infrequent users of the facilities are likely to be less aware of current restrictions than CASS employees, and the lack of a prominent statement on the various observing information pages is an oversight that should be remedied. Likewise, a monthly status update -- with interim updates in the case of new, critical information

-- will ensure that all users (both frequent and infrequent) will remain informed about the current response and how it impacts them.

**Recommendation:** CASS to maintain a prominent and regularly updated webpage, accompanied by regular emails, detailing current responses to the COVID-19 challenges.

**Recommendation:** CASS to continuously evaluate the likely impact of a longer shutdown on telescope operations and advertise contingency planning to the community.

#### **4. LIEF success and Technology developments**

ATUC congratulates CASS on the two successful LIEF bids: the Parkes Cryo-PAF and the ATCA BIGCAT correlator. Regarding the potential need to prioritise the use of shared resources stretched over both projects, ATUC supports the prioritisation of BIGCAT over Cryo-PAF on the grounds of the potential threat of a catastrophic CABB failure (which would impact the entire facility), while acknowledging that the timescale for failure is difficult to predict. That said, the committee appreciates the big-picture strategic considerations that must inform CASS's resource allocation and recognise that the development of the Cryo-PAF will have benefits beyond the immediate scientific impact for the Parkes facility.

With the two major projects funded and the LIEF bid for a coherent FRB detector (CRACO) going in this year, ATUC sees the next logical step as pursuing the plans toward a potential LIEF bid around the development of the UWB-M/H receiver for submission in the 2021 round. ATUC looks forward to CASS organising a (virtual) science workshop to facilitate community engagement and seek participation in this LIEF application. The development of UWB-M/H receiver is justified also from the perspective of proposed plans for receiver rationalisation at Parkes.

A high-level technology roadmap was presented at the meeting, outlining the path forward in ultra-wide band and digital instrumentation, including tentative timelines for their development and deployment. ATUC clearly sees the importance of having such a visionary plan and looks forward to the opportunity to comment on a more detailed roadmap for future technologies development, including the further development and potential use of RFSoc technology for, e.g., the SKA, given its merits in terms of scalability and a low carbon footprint. The committee recognises the importance of instrumentation and the fact that long-term R&D programs will lead to developments that will inform the upgrade path for ASKAP, as well as other facilities.

ATUC would also like to see some details presented at the next meeting on plans for the next 5-10 years, including plans for the next stage of ASKAP and potential upgrade paths. The high-level technology roadmap also outlines the natural progression of the wide-band and phased-array technologies that are currently being developed, and ATUC would be interested in CASS considering the organisation of a dual science and instrumentation day at a future ATUC meeting to engage all members of the community in the related discussions that will guide the

direction of future instrumentation development -- both motivated by and helping to shape future science.

**Recommendation:** *CASS to consider prioritising the development of BIGCAT over other upgrade plans, particularly if the choice is driven by shared resources.*

**Recommendation:** *Actively pursue plans around UWB-M/H to develop a 2021 LIEF proposal, and seek broader community engagement.*

## **5. ASKAP**

ATUC was pleased to see that ASKAP continues to make steady progress, with the pilot observations for many SSPs now complete, and the completion of all pilot surveys prioritised over the next couple of months (COVID-19 site-access issues permitting). ATUC acknowledges the bottleneck issue of disk space for new observations and data processing, particularly for spectral line modes, and the importance of sufficient disk space to enable pilot data to be stored even if processing lags behind data collection. The 2-3 PB of tape storage provided by Pawsey to address this issue seems like a promising interim solution, though the committee acknowledges that some testing remains to be done to ensure all observing and processing tasks can proceed while data are written to tapes.

ATUC recognises the time and resource pressures faced by staff involved in the operations and commissioning of ASKAP, and understands the reasoning behind the suspension of ASKAP-X, the re-evaluation of the formal structure of ASKAP operations, and the plans for a short (~a few to several months) consolidation period. While the committee understands that the delays and de-prioritisation of certain upgrades may be inevitable, there are some concerns about the impacts of further delayed timelines on the science outcomes of some of the SSPs. A key example is the implementation of the split frequency mode, which has been de-prioritised, or removed from the immediate items to be done, during the upcoming consolidation/maintenance period. The split frequency mode has been requested and continued to be pushed for by the SSTs, specifically DINGO and GASKAP, whose survey execution is directly and substantially impacted without its availability; this functionality is important for the efficient execution of these surveys.

With the suspension of the ASKAP-X program and the move of the CRAFT Coherent upgrade to the CRACO project, ATUC seeks clarity on which projects/upgrades will be delayed, and which will form separate projects.

**Recommendation:** *Advertise contingency plans to continue ASKAP operations in the case of any delays in procurement or commissioning of the new supercomputer at Pawsey.*

**Recommendation:** *ATUC would like more clarity on what the re-evaluation of the ASKAP-X project will mean going forward and any impacts on the users and their science outcomes, particularly the evaluation of cost (FTE) vs. scientific merit for the projects. ATUC would also like*

to see a list of capabilities that will no longer be prioritised and a list of now separated projects communicated to the user community.

**Recommendation:** Delays in the commissioning of a split-frequency mode have a substantial impact on the execution and feasibility of some SSPs. ATUC requests that CASS investigates what options and timescales may be available (weighing required resources against overall benefit) and to provide clarity on the likelihood and timeframe of this implementation such that impacted SSTs can plan accordingly.

### **Additional Pilot Surveys and Survey Project Review**

There is currently a contingency plan to call for a second round of pilot surveys for ASKAP before the full survey-mode can commence. ATUC notes that the intention of this second round of surveys will be to have SSTs work more closely together towards commensality, in order to ensure that all full-survey observations are able to be completed within the lifetime of the instrument, and to explore the feasibility of such an observing strategy. Here, the current round of pilot surveys will be invaluable in the teams' efforts to explore commensality and optimisation. While this second round has been proposed to occur sometime after the consolidation period, ATUC notes that the survey teams would benefit from communication of a more detailed timeline going forward, including when the second round of survey proposals would be required to be submitted and considered. This will likely be a lengthy process for the SSTs, as it will involve significant preparatory work toward preparing the proposals, including for example, selecting the targets, evaluating the scientific impact, and consultation with the other SSTs in order to achieve commensality. An early notification of a proposed timeline will therefore be critical to this effort.

ATUC also supports the initiation of the Survey Project Review. The external review process is important and will have the benefits for reassessing and reorienting key science goals around ASKAP developments over the past decade. This represents an opportunity for a refresh amongst SSPs, as well as in their engagement with the broader astronomical community. Updated science cases and survey modes will be of particular benefit in support of and planning for the transition to SKA science and operations.

**Recommendation:** ATUC recommends that CASS communicates and consults with the SSTs as soon as a plan is formalised for a second round of pilot surveys and this process be undertaken well in advance of the proposal submission deadline, with details including the format, timeline, any external review process, etc.

**Recommendation:** CASS to provide sufficient lead time for the SSTs to prepare for the Survey Project Review. ATUC recommends that all SSTs obtain their 100 hours of pilot survey observations, and are in a position to validate the data prior to this process.

## **6. ATCA**

ATUC was pleased to note the recovery of subscription pressure for ATCA, with about 50% increase in the number of proposals coming in and a wealth of science emerging from the NAPA proposals. One question was raised as to how much of this constitutes direct follow-ups from the ongoing ASKAP surveys. Given the importance of monitoring how ATCA is supporting ASKAP (through prompt follow-up observations etc.) and also more broadly to help (re)-evaluate the importance of the ATCA, ATUC requests that detailed statistics of this component be included in future reports regarding subscription and time allocation. This will help ascertain if there is a case to consider reserving a fraction of ATCA time exclusively for ASKAP-related science follow-ups.

In the broader context, ATUC was pleased to hear that a Future Science Case document is being drafted, outlining an updated science case for the ATCA. Given the changing scientific and technological landscape and the upcoming Decadal Plan Midterm Review, this is clearly timely. The committee's position has always been that the ATCA is an important facility with unique capabilities not fulfilled by other instruments, and it is essential that it remains fully operational -- certainly until such time that the SKA can reasonably fulfil the same scientific and community needs and ideally further into the future. The committee looks forward to the opportunity to provide feedback on this draft document when it is released prior to submission to the ATSC, with the understanding that a formal sign-off will not be requested from ATUC at this stage.

ATUC recommends that CASS formally seek broad community input in this process (including from the high-frequency community, legacy survey PIs, and the BIGCAT LIEF team) prior to finalising the future science case. While we expect CASS leadership and staff to have an excellent grasp of the areas in which the ATCA will have the highest future impact, we also recognise that broader expertise exists in the community that could likely be drawn on to strengthen the document yet further, in order to deliver the strongest case possible for the continuance of the ATCA. Should a formal community response be sought via ATUC, the committee requests that the document is made available in advance and that ample time is provided in order to allow the committee to consult with the user base.

***Recommendation:*** ATUC requests a separate line item in the ATCA subscription statistics for tracking ASKAP-related follow-up observations.

***Recommendation:*** CASS to seek wider community input as the draft document on the future science case for ATCA evolves.

## **7. Parkes**

ATUC was pleased to note that the operation of Parkes has been relatively smooth in recent times and has so far been only minimally impacted by COVID-19. The recent increase in user

demand for the facility is indeed an encouraging development. ATUC commends the team for undertaking successful observer training sessions in Perth (in person), Sydney, and Melbourne (virtually). The committee looks forward to seeing the draft document outlining the longer-term science that is being envisioned for the facility in the upcoming decade to exploit current and planned state-of-the-art instrumentation (e.g. the UWL). The combination of the UWL and the Cryo-PAF (under development) will certainly help ensure that the facility remains world-leading in the coming decade.

A number of future development options and feature enhancements were outlined for the UWL; the ATUC feels that the development of RFI mitigation tools and strategies probably deserves the highest priority, given the inherent complexity in the analysis of such wide-band data. ATUC also notes that a significant amount of effort has been invested in revising user documentation and appreciates the amount of effort in keeping the documentation up-to-date.

### **Receiver rationalisation**

A detailed plan was presented for rationalising / decommissioning the fleet of Legacy receivers. ATUC strongly recommends wider community consultation before implementing any of these plans and welcomes the proposal to put forward the decommissioning plans of some of the receivers in the upcoming proposal call (OCTS2020). This will allow time for feedback from users before implementation. ATUC would appreciate being consulted on this feedback and the resultant plans before any final decisions are made.

In addition, the proposed workshop in September could be a suitable forum to discuss this in detail, as well as any further upgrade plans that would benefit from wider community input and consultation. ATUC further suggests that plans regarding, for example, the prioritisation of UWB-L upgrades and the UWB-M/H band split would also greatly benefit from inclusion in discussions at a virtual workshop and/or wider community consultation prior to September. Given the likely resultant updates to the science case and solidification of plans for the development details of the UWB-M/H, wider community consultation should be pursued prior to developing a LIEF application for 2021.

***Recommendation:*** *Wider consultation of the user community regarding receiver rationalisation, including further consultation with ATUC before finalising plans.*

***Recommendation:*** *Wider consultation of the user community regarding prioritisation of UWL upgrades and UWB-M/H science cases and band split.*

### **8. LBA**

The LBA did not feature heavily in the presentations at this meeting, which is understandable given the additional emphasis on Parkes receiver changes and the BIGCAT project. However, ATUC would like more detailed updates on the LBA to feature in the next meeting. In particular,

ATUC is interested to learn of plans for future operations at Mopra (LIEF grants, external support from, e.g., Korea), and plans for the LBA-Low.

As noted in the previous report, ATUC continues to be supportive of the low frequency station testbed at Narrabri and the suggested expansion of that program to realise the LBA-Low concept. The testbed developments are likely to have important, positive implications for SKA-Low and are clearly worth pursuing. The LBA-Low project in turn would appear to provide a useful springboard to realising long baseline science with SKA-Low. While acknowledging that LBA-Low is still at an early stage of development, we would like to see a more detailed plan for the execution of this project, its science case, and the likely impact of this on other aspects of the National Facility, perhaps on the timescale of the next ATUC meeting.

***Recommendation:*** *Include an LBA update at the next ATUC meeting.*

***Recommendation:*** *Advertise a timeline for developing a science case and development plan for the LBA-Low (including a consideration of the likely impact on National Facility operations).*

## **9. Diversity and Inclusion**

ATUC welcomes the appointment of the new Diversity Champion, Kevin Ferguson, and thanks the outgoing Diversity Champion, Jane Kaczmarek, for her hard work within the role. We look forward to seeing continued improvements with the new appointment and trust that the new appointee's experience will help in developing a path towards positive change. The laying out of a formal framework for the functioning and remit of the Diversity Committee is a welcome development, as well as the plans for a Diversity and Inclusion Annual Plan with a timeline and reportable targets. ATUC looks forward to seeing a continuation of the annual progress reports and recommends that these continue to include a breakdown of key D&I related metrics.

ATUC is pleased to see the rollout of the new proposal system, which places author names at the end of the science case and removes information on the identity of the PI. The committee looks forward to hearing more about the impacts of these changes in future meetings.

ATUC welcomes the appointment of the first ever female site manager at CASS, Suzy Jackson, the New Norcia OiC.

***Recommendation:*** *CASS to continue to include D&I related metrics in annual progress reports.*

***Recommendation:*** *CASS to assess the impact of the new proposal layout on equity outcomes via appropriate statistical analysis and report back to ATUC.*

## **10. Financial Reporting**

ATUC notes that no financial reports were presented on any of the core ATNF activities, either in this meeting or the previous couple. While we acknowledge that perhaps no significant

budgetary change has occurred, the committee would like to suggest that for the sake of greater transparency ATNF consider showing basic headline figures (costings) for the various groups/facilities (Parkes, ATCA, ASKAP, LBA, R&D) at least once per year.

**Recommendation:** *CASS to consider presenting headline figures (costings) for various groups/facilities (Parkes, ATCA, ASKAP, LBA, R&D) in the next ATUC meeting, and annually thereafter.*

## **12. User Feedback**

### *ATCA remote training*

ATUC notes that, as a part of the ATCA response to the COVID-19 pandemic and the travel restrictions that it has imposed, the retraining requirements will be waived for a period of time. Some clarity on the feasible length of this period would be useful.

ATUC notes the excellent reception of Vanessa Moss's institutional visits (most recently to Swinburne University of Technology) for training observers of varying experience levels. In particular the users noted the benefits in terms of financial cost and impact, of sending one person to the institution over several people visiting Marsfield. ATUC recommends further development of such a program with the intention of fully transitioning to remote training when available, in order to minimise the associated impact to the climate and financial costs incurred by the CASS trainer and any trainees.

ATUC further notes that efforts to remotely train Duty Astronomers have recently been made. While we are cognisant of the similar benefits to the environment and the reduced financial burden, we stress these must be weighed against the benefits of in-person training for trainees, in particular students. The intricacies of the DA role, and the benefit of a continued period of interaction between the trainer and trainee, make it less suitable for remote training than normal observer training. Moreover, DAs -- especially students -- greatly benefit from the opportunity to network with those in Marsfield, Narrabri, and Perth, so ATUC would encourage the continuance of both in-person training at Marsfield and the ability to DA from the multiple, currently approved sites.

**Recommendation:** *Clarify the length of time that a lack of retraining is sustainable.*

**Recommendation:** *Develop capability to train observers remotely, noting the benefits to the climate of reduced air travel and flexibility for those who have travel constraints.*

**Recommendation:** *Continue successful institutional visits for observer training where appropriate (e.g. this may be a better option than remote training for large groups).*

**Recommendation:** *Consider maintaining in-person DA training and allow DAs to perform their duties from the currently approved sites.*

### *Pre-grading requests*



A suggestion was made, which is endorsed by ATUC, that it be permitted to request pre-graded status from the TAC for periods of maternity leave (or similarly short, foreseeable career interruptions). This would reduce the impact of short-term career gaps on scientific productivity, in particular for scientific programs based on NAPAs. The possibility of requesting pre-graded status in such circumstances should be clearly advertised in the call for proposals. For requests of this nature, the requirement to re-submit a cover sheet at the following deadline should also be waived to allow the affected project to continue without action during the period of leave.

**Recommendation:** *Personal/special circumstances leading to short, foreseeable career gaps, such as maternity leave, to be advertised as acceptable reasons for requesting pre-graded status from the TAC. The requirement to submit a cover sheet in the following semester should also be waived.*

#### *RFI in the X band (ATCA)*

There are reports of new and prominent RFI at X-band. This appears as picket-fence-like spikes (across ~1 GHz) in the X band (9-10 GHz) and is currently present approximately 15% of the time in GLASS observations. There does not appear to be a strong direction dependence, suggesting that it is unlikely to be of satellite origin, but CASS is requested to investigate the source and take any possible mitigating actions. The implications for BIGCAT and planned RFI mitigation in that system should also be considered.

**Recommendation:** *Investigate the source of newly reported RFI at 9-10 GHz and mitigate if possible.*

#### *Public use of ASKAP data from CASDA*

A query about potential conflicts between the ASKAP public data release policy and the publication policies of the ASKAP Survey Science Teams has been forwarded to CASS management for consideration.

**Recommendation:** *ATNF to mediate the issue forwarded by ATUC.*

#### *Availability of the pulsar backend at Tidbinbilla*

A question was raised during the meeting about whether or not the pulsar backend at Tidbinbilla is available for use. Previously, the owner of the instrument (Walid Majid) has said they are open to collaboration, but the policy may have changed in the couple of years since that notification. ATUC notes that the Tid 70m is offline for refurbishment for the remainder of 2020.

**Recommendation:** *CASS to clarify the situation with regard to use of the Tid pulsar backend.*

### **13. The role of ATUC**

As per *Term 3* in the *ATUC Terms of Reference*, in order to widely consult with the national and international community, and thereby provide informed recommendations on priorities for both operations and future developments, ATUC desires more advanced notice with regards to solicitation of ATUC advice or assessments of major plans (e.g., the Parkes receiver rationalisation or UWB-M/H band split) or changes to the facilities prior to the ATUC meetings when these assessments are formalised. This will provide increased opportunities to engage with the user community and solicit opinions from a broad range of users within the community in order to allow for more effective representation as well as further meaningful discussions and recommendations in our reports.

***Recommendation:*** *ATUC strongly supports a proposal to be notified by CASS throughout the year when issues or future plans arise for which a wider community consultation would be of benefit, or necessary for effective representation and informed recommendations such that this consultation can occur throughout the year and be reflected in our biannual reports.*