ATUC Open Day Session 1

Australia’s National Science Agency

ATUC Chair’s welcome

Australia Telescope Users Committee
SEP2025

I would like to begin by acknowledging the Wallamuttagil People as the Traditional Owners of the lands that we're meeting on today, and pay my respect to their Elders past and present.

'Eternal Wisdom, Infinite Innovation'
artwork by Rachael Sarra, working with Gilimbaa.

ATUC Terms of Reference

- **To provide advice to the Director on operational and developmental issues relating to the facilities provided by the ATNF**. These include ASKAP, the Australia Telescope Compact Array, the Parkes Murriyang radio telescope, the Long Baseline Array, the Tidbinbilla radio telescopes, and all aspects of National Facility support.

- **To make recommendations to the Director that seek to maximise the scientific productivity and maintain the international competitiveness** of the ATNF, taking into account the likely resource availability.

- **To consult widely with the national and international community**, liaising where necessary with the national time assignment groups, to make informed recommendations to the Director on priorities for both operations and future developments.

- To meet twice a year in both open and closed sessions, with appropriate input on developments and responses to issues from the ATNF.

ATUC Meeting Code of Conduct

The organisers of this meeting are dedicated to providing a **harassment-free experience for everyone**, regardless of age, gender, gender identity and expression, sexual orientation, disability, physical appearance, body size, nationality, race or religion. We expect our attendees to contribute to a **professional and respectful atmosphere**. All attendees, speakers and organisers are required to comply with the Code of Conduct. Organisers will enforce this code throughout the meeting to ensure a safe, inclusive and welcoming environment for everyone.

In practical terms:

- Treat each other with respect and consideration
- Behave in a professional manner
- Critique ideas, not individuals
- Be kind

https://www.atnf.csiro.au/about-atnf/governance/atuc/atuc-code-of-conduct/

ATNF Director's Update (Douglas Bock)


ASTRONOMY
DECADAL PLAN
2026-2035
Australian
Academy of
Science

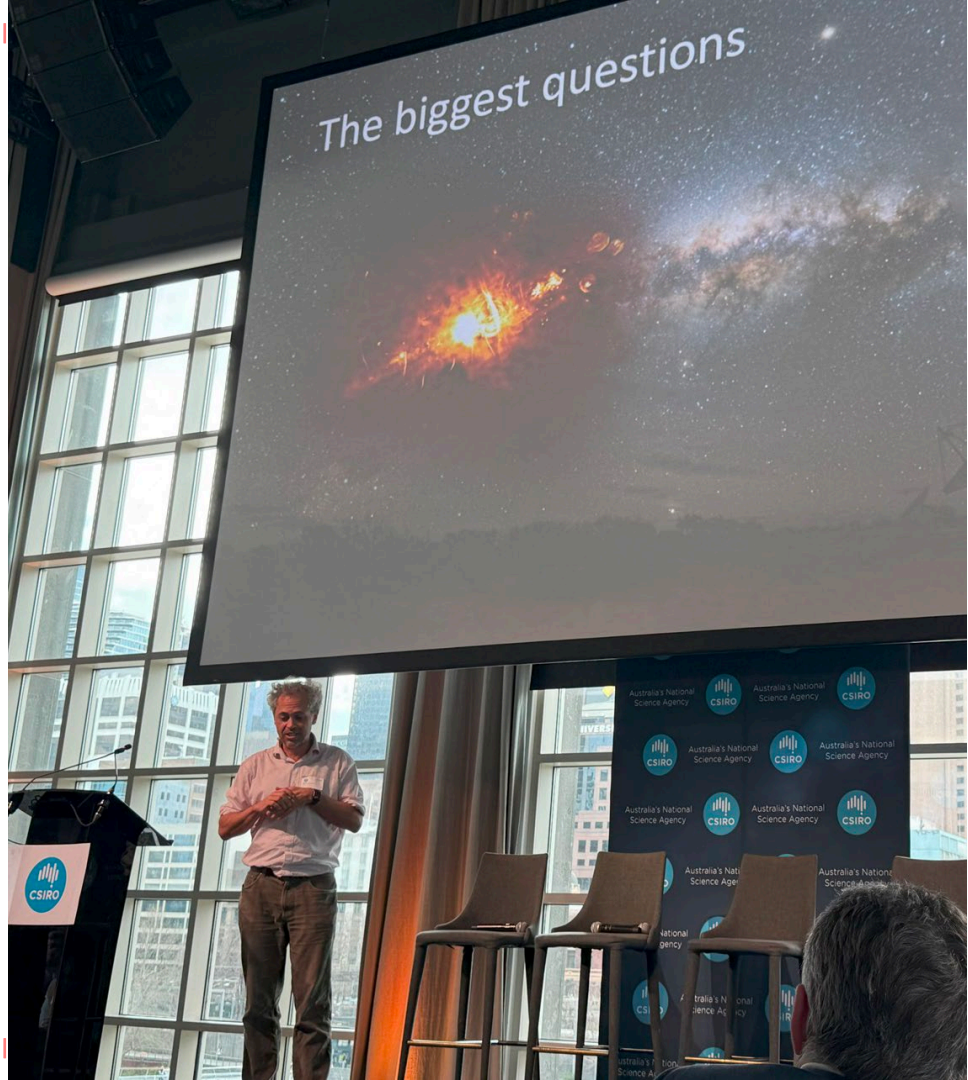
The decadal plan

- “Continue investment in SKAO to ensure SKA telescopes are constructed successfully and to maintain Australia’s influence in international science programs”
- “Establish long-term, sustainable funding to ensure Australian instrumentation programs continue to innovate, lead discoveries, and translate technologies in the era of next-generation telescopes”
- “Maintain and develop the domestic ecosystem of national and university advanced astrophysics facilities”
- “ATCA is likely to remain an essential instrument at least until SKA band 5 becomes operational towards the end of this decade….ATCA will move to a new operational and funding model”
- “ASKAP’s future contributions as part of the national facility suite beyond the existing survey science programs will depend on potential upgrade possibilities, complementary alignment with the international radio telescope landscape, and extending its unique scientific and technical capabilities”
- “With a continued technology development and upgrade path, Murriyang will continue to be attractive to external paid users while developing technology for future pathways for SKA telescopes and others”
- “The SKA VLBI science case is strong, both for SKA-Mid and SKA-Low”

The future of our existing facilities

- We acknowledge community concern around the future of all our facilities.
- We regularly review options with the ATNF Steering Committee.
- For ATCA:
  - We are in discussion with various astronomy stakeholders around funding options (note no solution found yet that would resolve all budgetary constraints).
  - LIEF grants etc. are an excellent approach and we will support them (and other funding opportunities) as much as possible.
  - We are supporting recruitment related to further sale-of-telescope time and the development of the ATCA rapid-response mode.

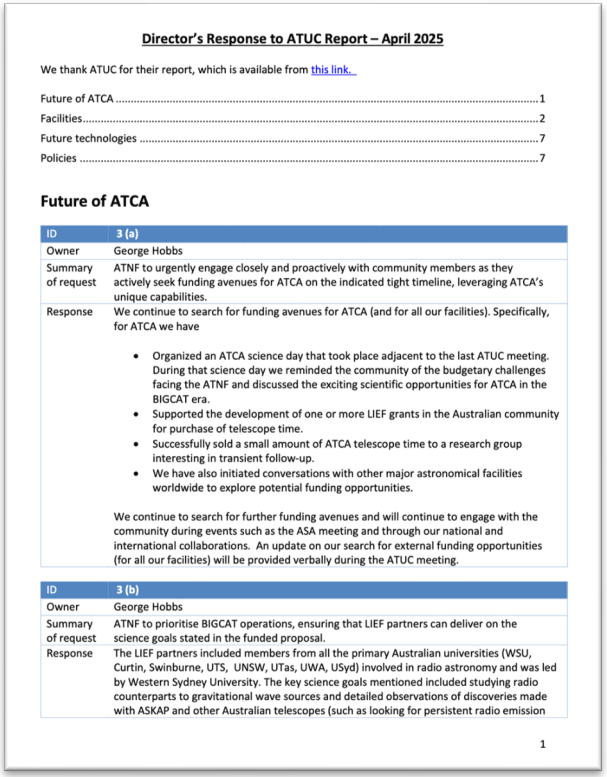
The wider CSIRO context



Current focus

- The new ATNF leadership team has now been in place for 6 months
- Big picture ATNF goals for 2025-2026:
  - Commission BIGCAT and cryoPAF
  - Provide a 5-year forecast to the ASKAP survey teams
  - Continue exploring avenues to ensure financial sustainability post-2027

Response to ATUC recommendations



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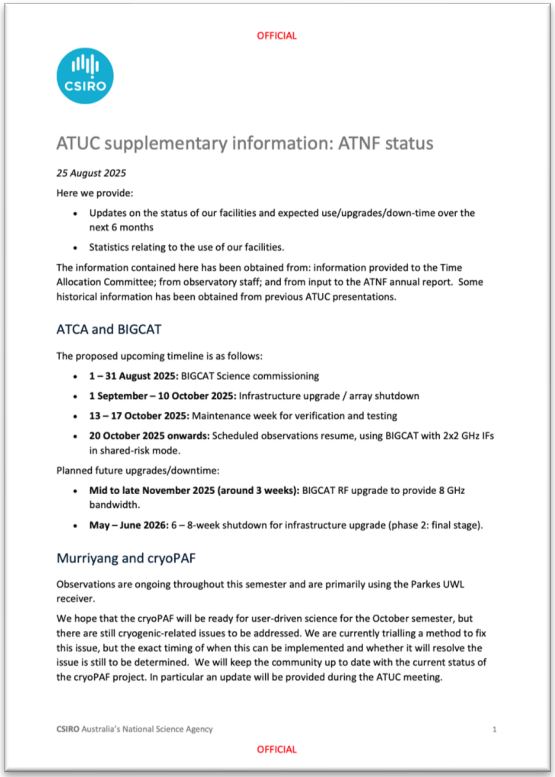

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CSIRO

ATUC supplementary information: ATNF status

25 August 2025

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ATCA and BIGCAT

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Murriyang and cryoPAF

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We hope that the cryoPAF will be ready for user-driven science for the October semester, but there are still cryogenic-related issues to be addressed. We are currently trialling a method to fix this issue, but the exact timing of when this can be implemented and whether it will resolve the issue is still to be determined. We will keep the community up to date with the current status of the cryoPAF project. In particular an update will be provided during the ATUC meeting.

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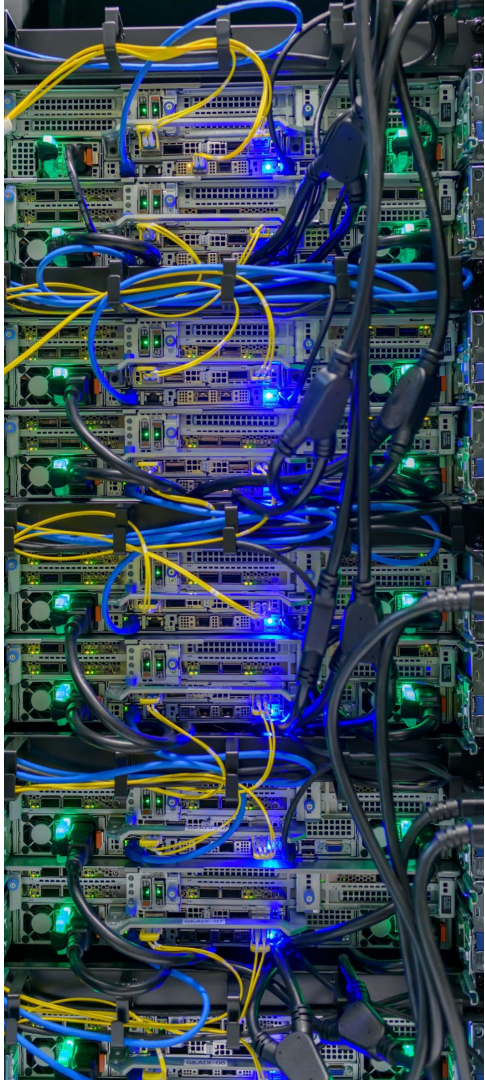
Supplementary information provides:

- Facility timelines
- Statistics on:
  - Proposals
  - Publications
  - Students

Response highlights

- **ASKAP:** significant improvements in firmware, software and timelines
- **ATCA funding:** several avenues are being investigated
- **Student cohort**
- **Community consultation:** ATNF Town Hall at ASA; all-sky monitor workshop held in August; ASKAP Futures Workshop to be held in Feb 2026

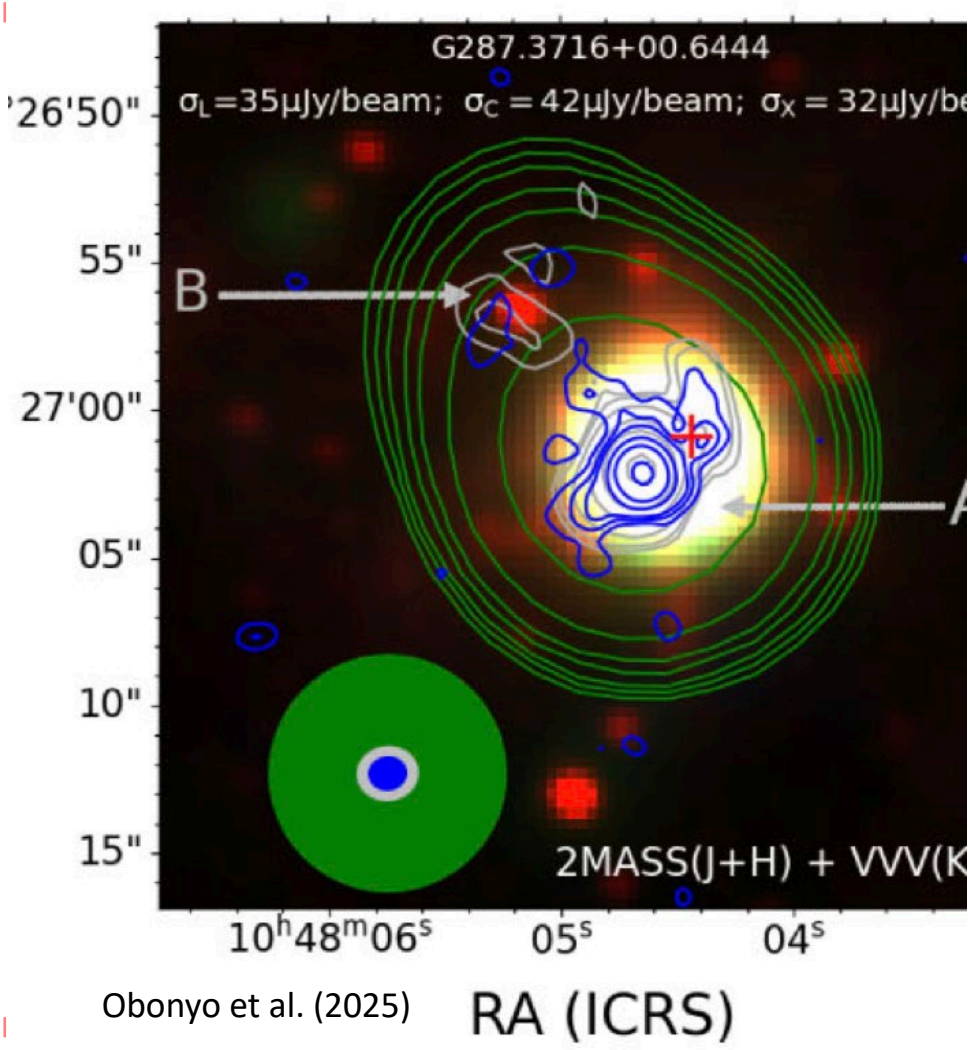


Staffing changes relevant to users

- **Shi Dai**, Parkes Lead Scientist
- **Andrew Zic**, Executive Officer for ATUC
- **Tim Galvin**, Executive Officer for TAC
- **Jonghwan Rhee**, supporting the ASKAP and cryoPAF spectral line teams.
- **Kelly Gourdji**, supporting the student program with Rob Hollow

Science highlights from **ATCA**

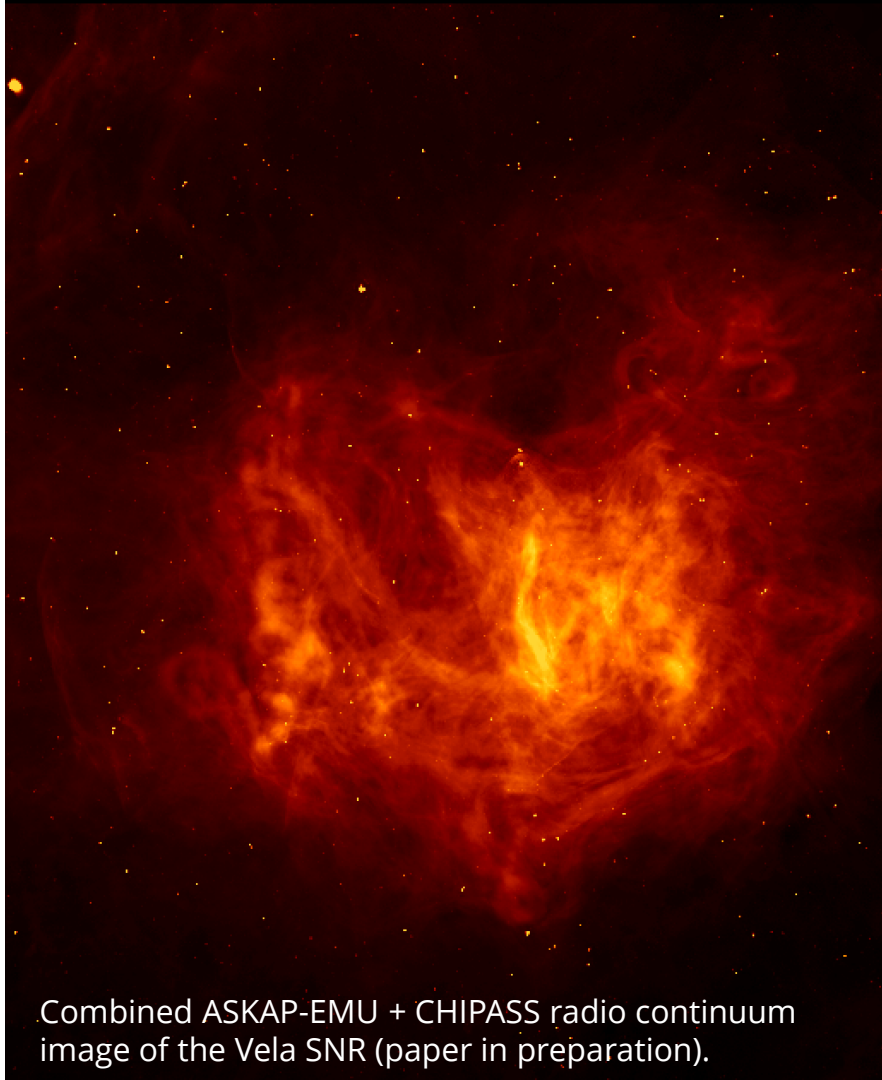
- **BIGCAT:** wait for Elizabeth Mahony's talk
- Highly-cited papers in 2025 dominated by **transient studies**, but a variety of science was published including ATCA observations of 28 protostars.



Obonyo et al. (2025)

Science highlights from **ASKAP**

- Detection of X-ray emission from a bright long period radio transient discovered by ASKAP
- Beautiful continuum images (image on right)
- RACS-high catalogue (1655.5 MHz) released



Combined ASKAP-EMU + CHIPASS radio continuum image of the Vela SNR (paper in preparation).

Science highlights from the ATNF: **Murriyang**

A broad range of research topics:

- Zhao et al. used the PPTA data release to search for individual sources of gravitational waves
- Liu et al. carried out the first search for pulsed CH Maser Emission stimulated by a pulsar
- Sun et al. presented a 20-cm, all-sky polarisation survey

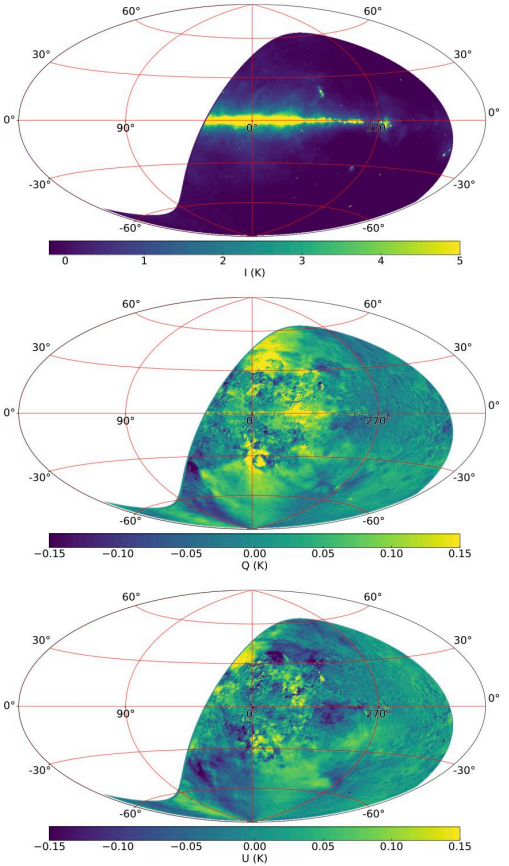


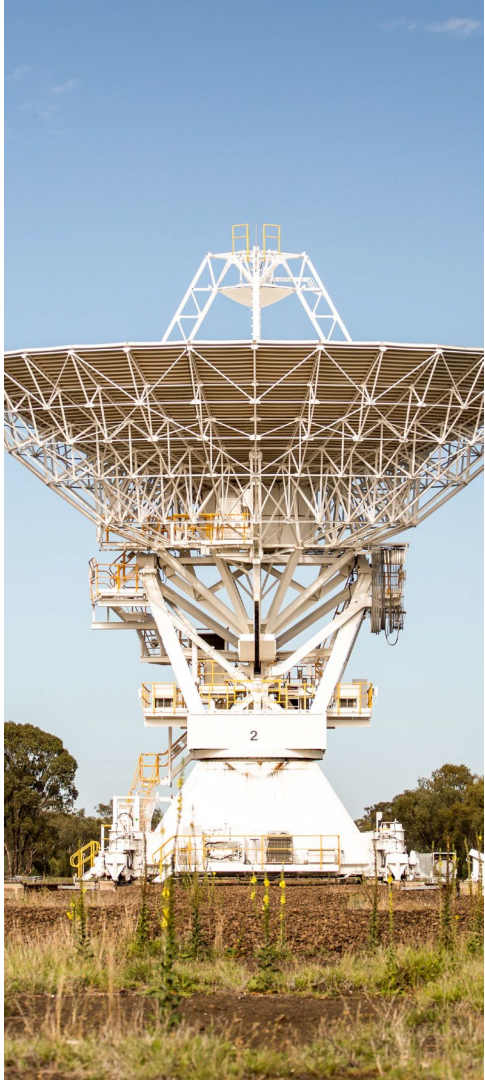
Fig. 6. *I*, *Q*, and *U* maps at 1.45 GHz from STAPS. The resolution is 20′.

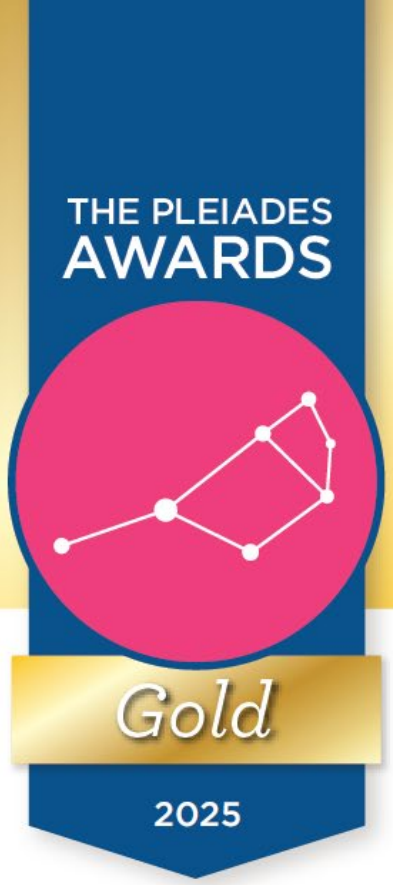
Image from Sun et al. (2025)

Highest redshift object detected with the LBA

- Ighina et al. report the LBA detection of the recently discovered z=6.13 radio-powerful quasar RACS J032021.44−352104.1

Catalogued in the ASKAP RACS survey





Announced at the ASA Meeting in Adelaide in July

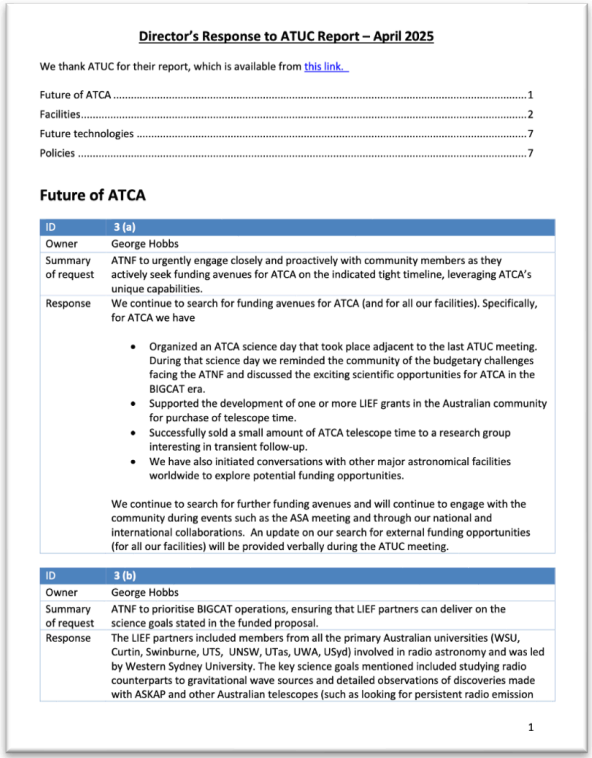
Status update on ATNF and current projects

George Hobbs

Content

- **Facilities**
- Impact
- Ticketing systems
- What next?

(note: this talk is a bit of a grab-bag)



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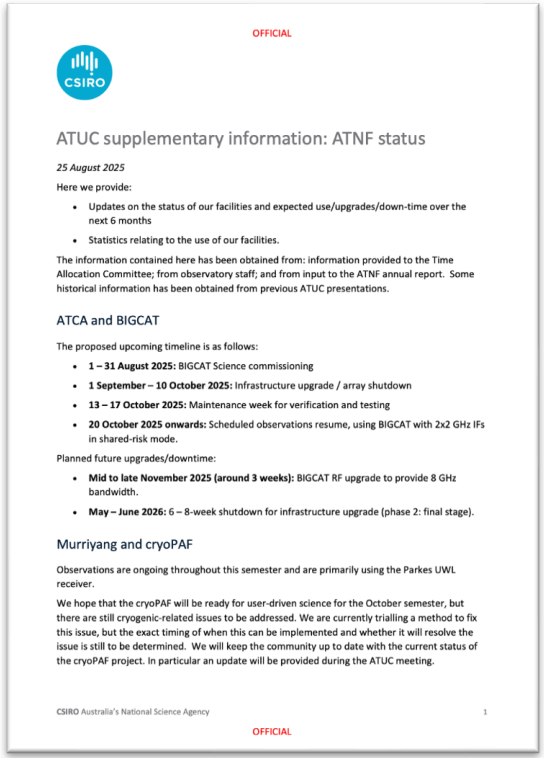

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ATNF Summary: Facilities

- **ASKAP:** No planned major shut-downs in the next 6-months.
  - Cath's talk will provide details on science expectations.
  - Steve's talk will discuss software and firmware updates.
- **ATCA:** there are significant upgrades and shut-downs planned (see next slide)
- **Murriyang:** No expected long-term shut-downs planned.
  - Details on cryoPAF provided in Shi's talk.
  - RFI is more problematic than it previously has been in the top band. Shi's talk.
- **LBA:** co-observing with the EVN in early November. LBA blocks for the 2025OCT semester will be planned soon
  - addressing backlog of proposals that couldn't be observed in the last 18 months.
  - Recently carried out VLBI tests combining LBA, MeerKAT and NARIT (extending our L-band VLBI capability).

See Liz's talk for updates to this

ATNF Summary: ATCA

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  - We may be unable to change the array configuration (from 750m array) until some transformers on site are replaced. We are expecting an end-of-October installation, but this is a potential risk.
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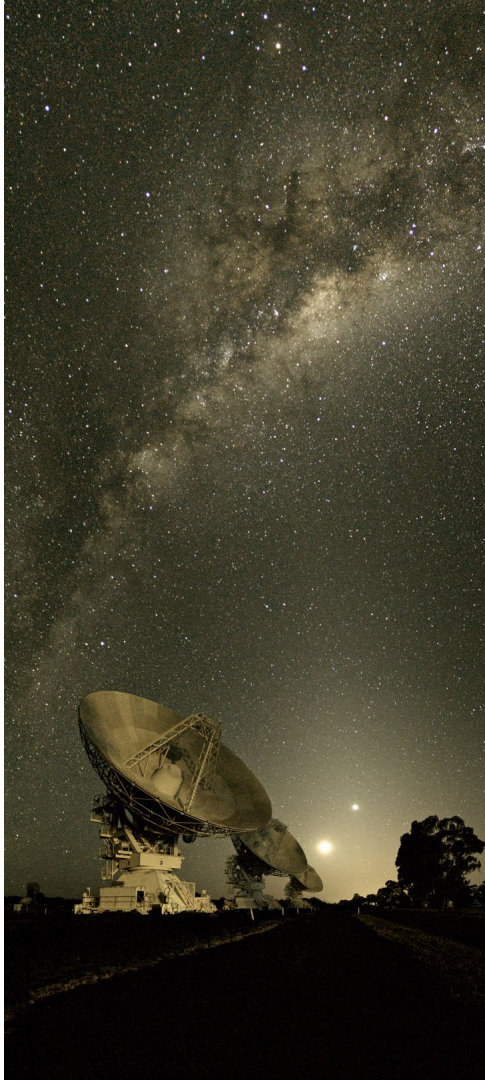

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- Facilities
- **Impact**
- Ticketing systems
- What next?

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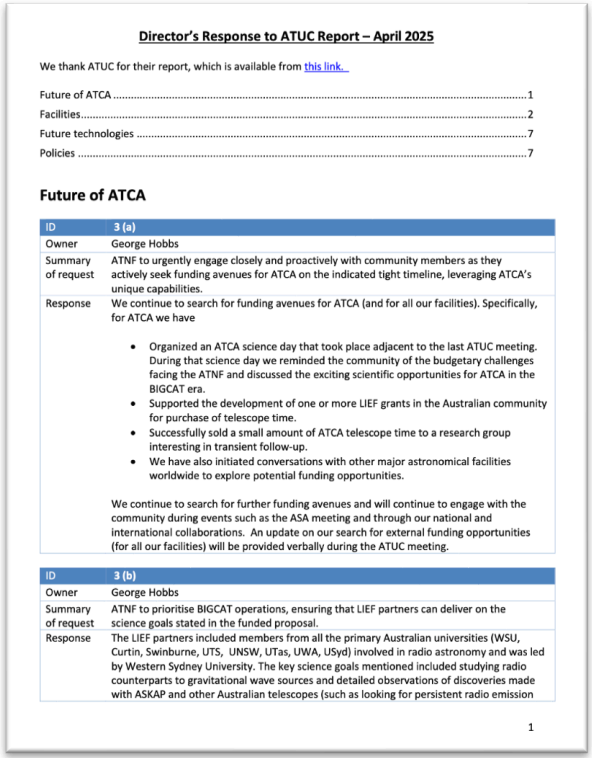

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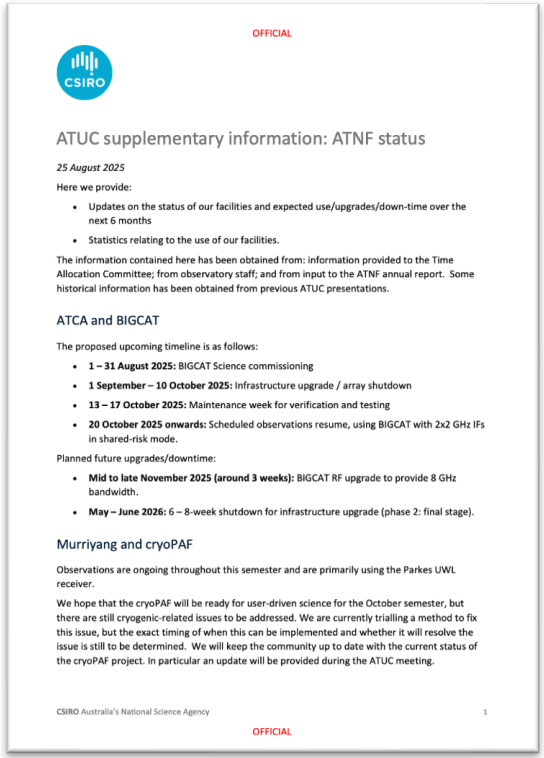

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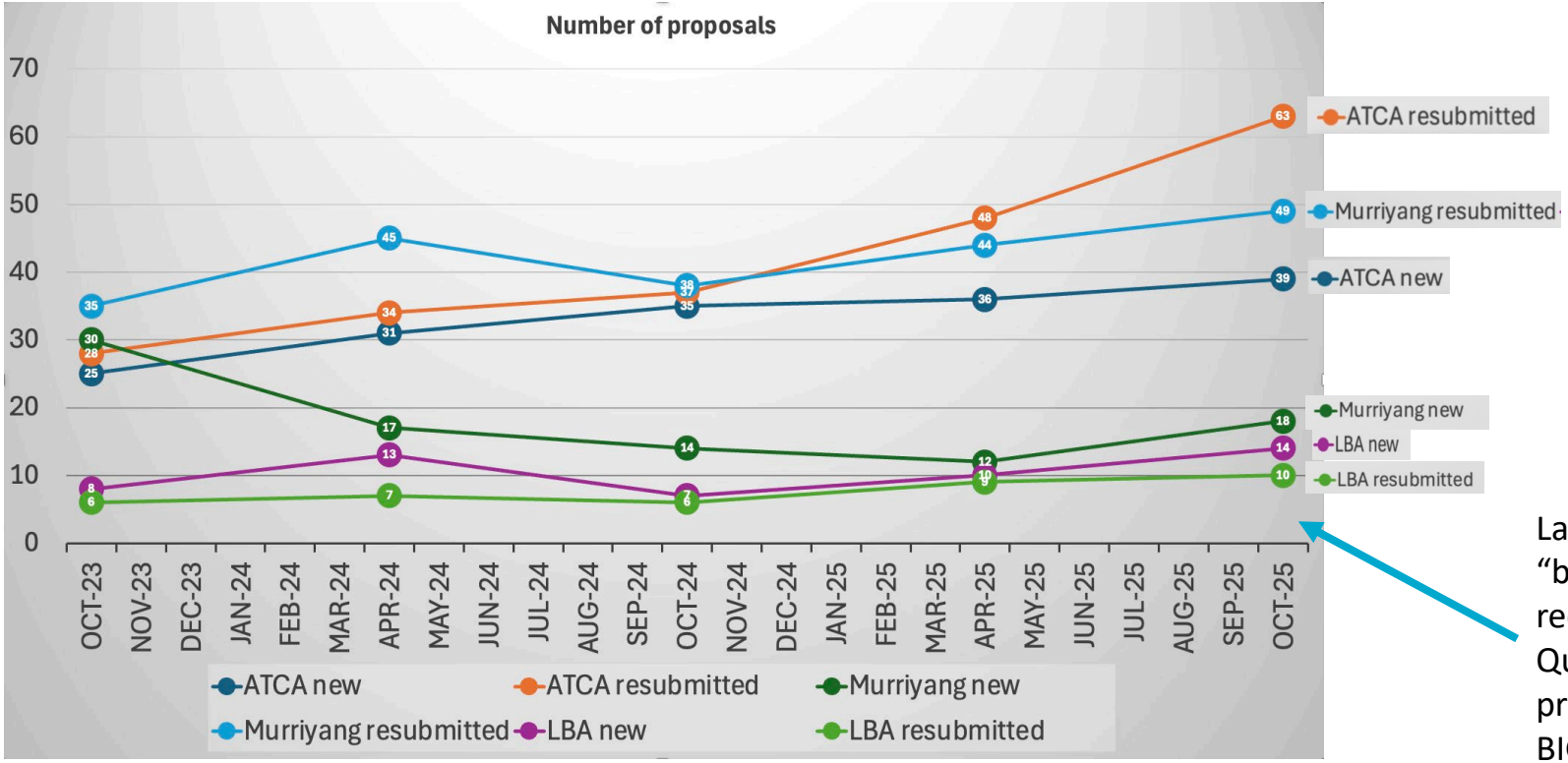
ATNF Impact

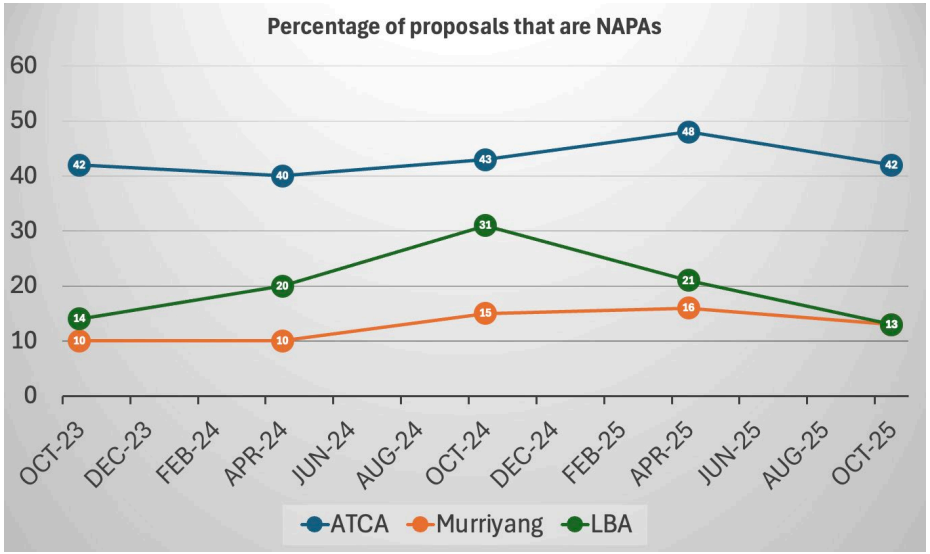
- Would like to ensure that the **impact** from the ATNF remains high and competitive with other facilities.
- **Impact** is hard to measure.
  - Number of papers
    - mentioning the facility,
    - using the data from the facility
    - describing recent observations from the facility
  - Citations to those papers
  - Number of users (national, international, diversity, …)
  - Number of students trained to use the facilities
  - Oversubscription factors
  - Amount of Nobel-prize winning science
  - Number of new discoveries
  - Usage statistics of data archives
  - Technology innovation
  - Telescope up-time (but including commissioning, calibration, slewing, or …)
  - …

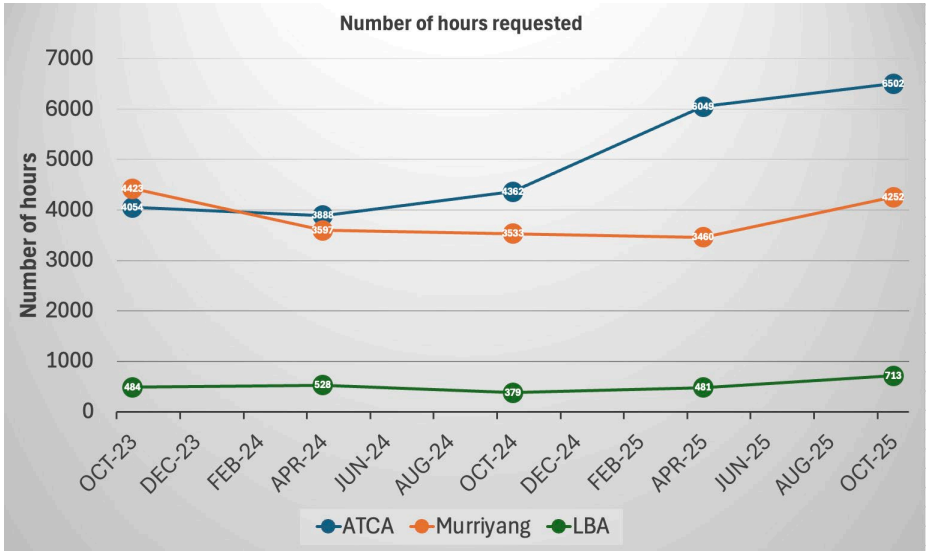
Proposal numbers



Last semester: "biggest ever" in recent times. Quite a few proposals for BIGCAT or CryoPAF

Proposals: NAPAs and total number of hours





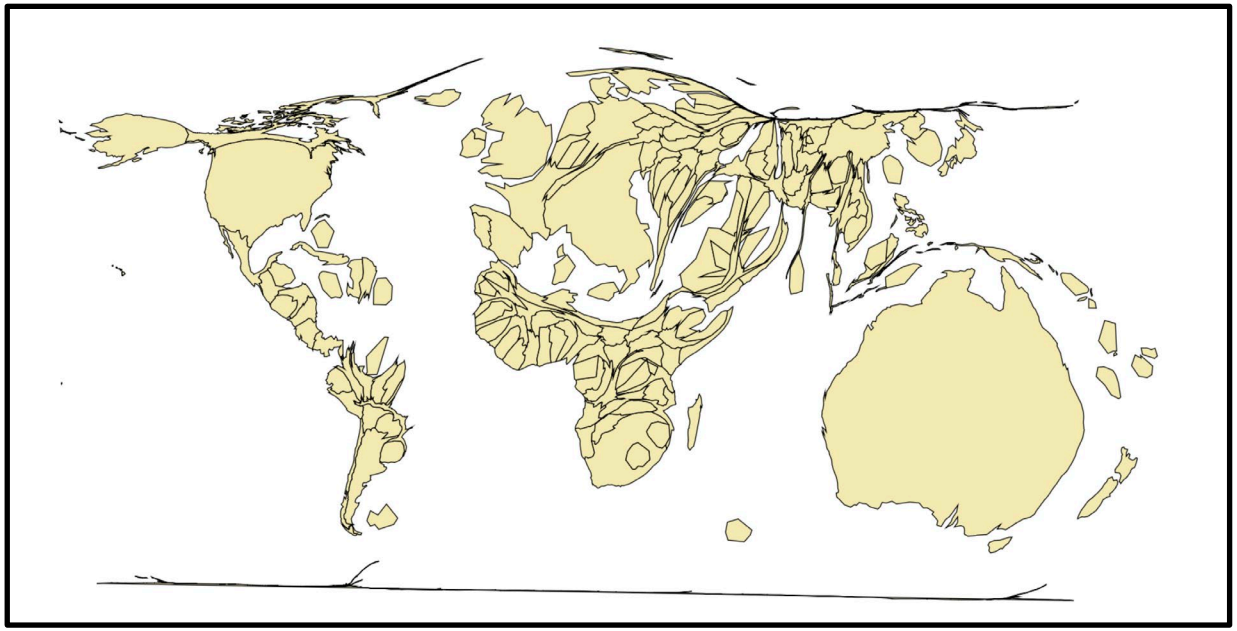
ATCA around 40% NAPAs
Murriyang/LBA, a handful of NAPAs

Corresponding to OCT-25 oversubscription rates of ~3 for ATCA/LBA/ASKAP GSP and ~2 for Murriyang

Where are the proposers from?

Country of the PI, area of country proportional to the number of proposals from that country

October **2015** Semester



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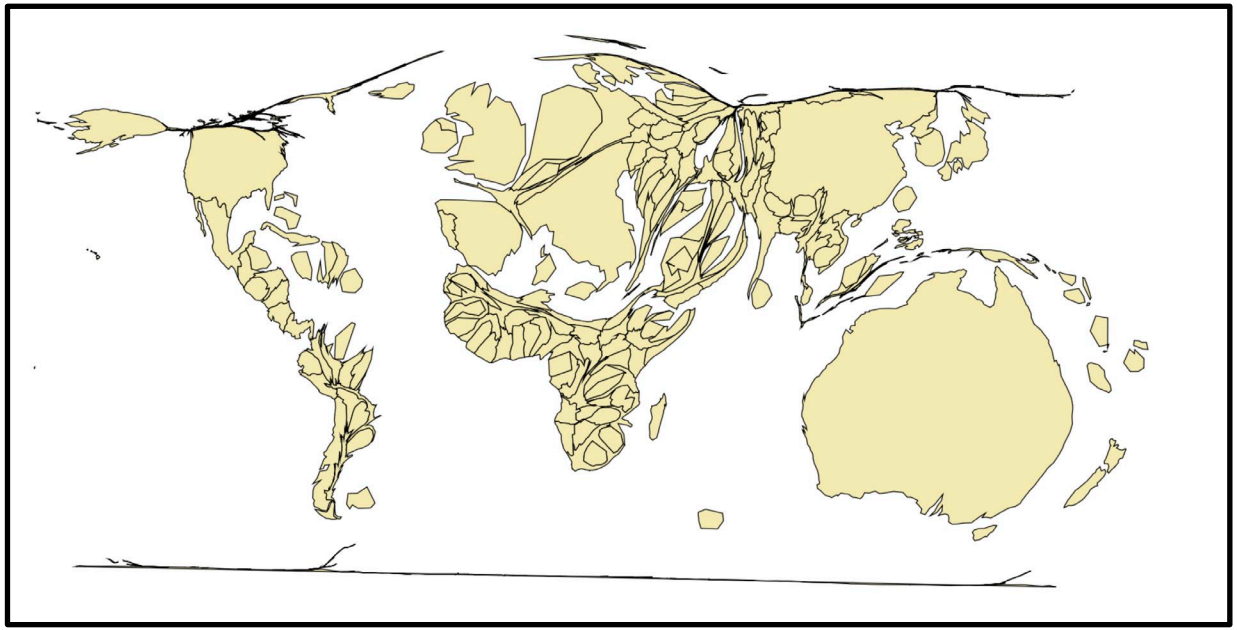
October **2020** Semester



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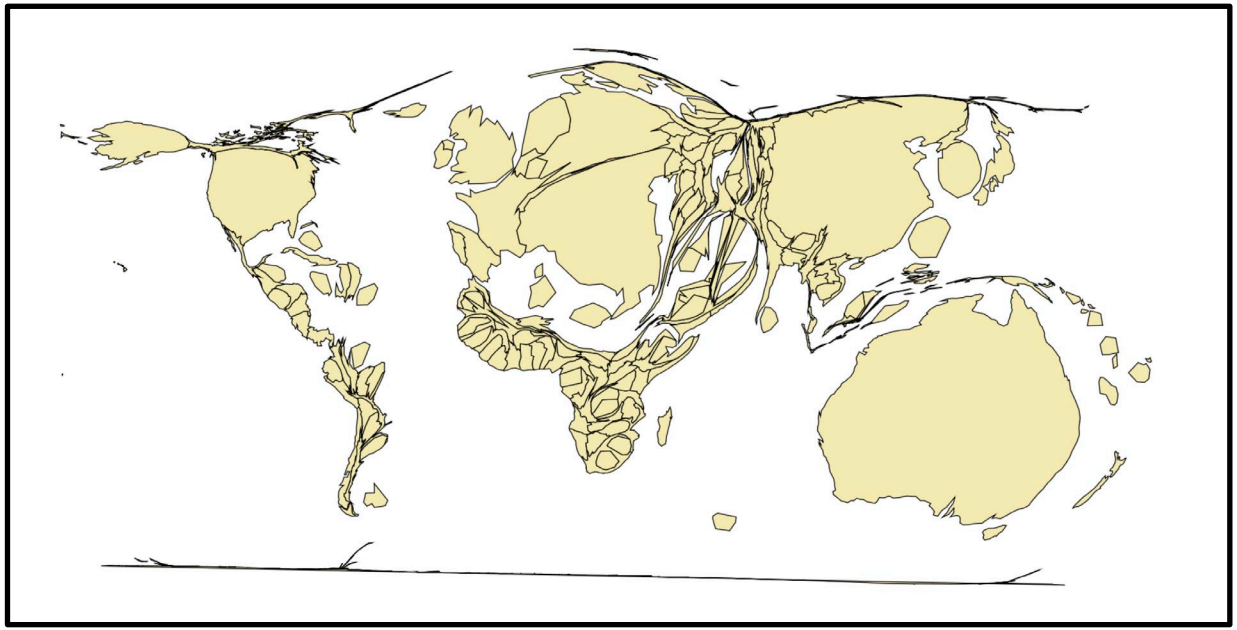
October **2025** Semester



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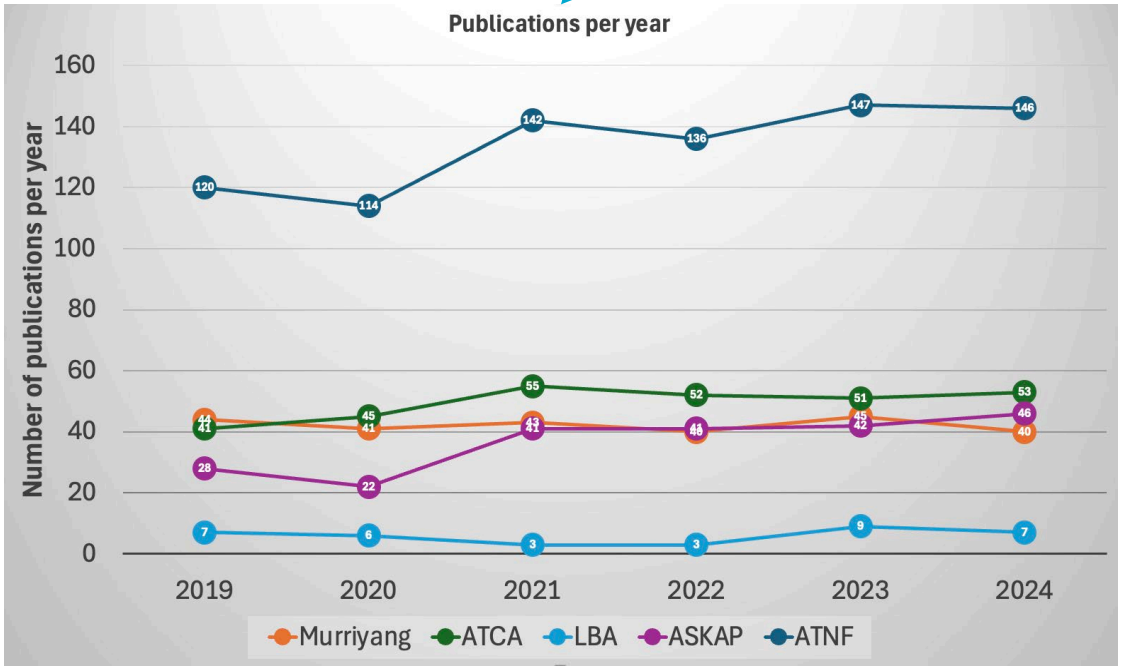
Publication statistics

Publications that reported on direct use of data from our facilities. i.e., “in this paper we carried out observations with Murriyang to do ….”, not “We used the RACS catalogue to do …”



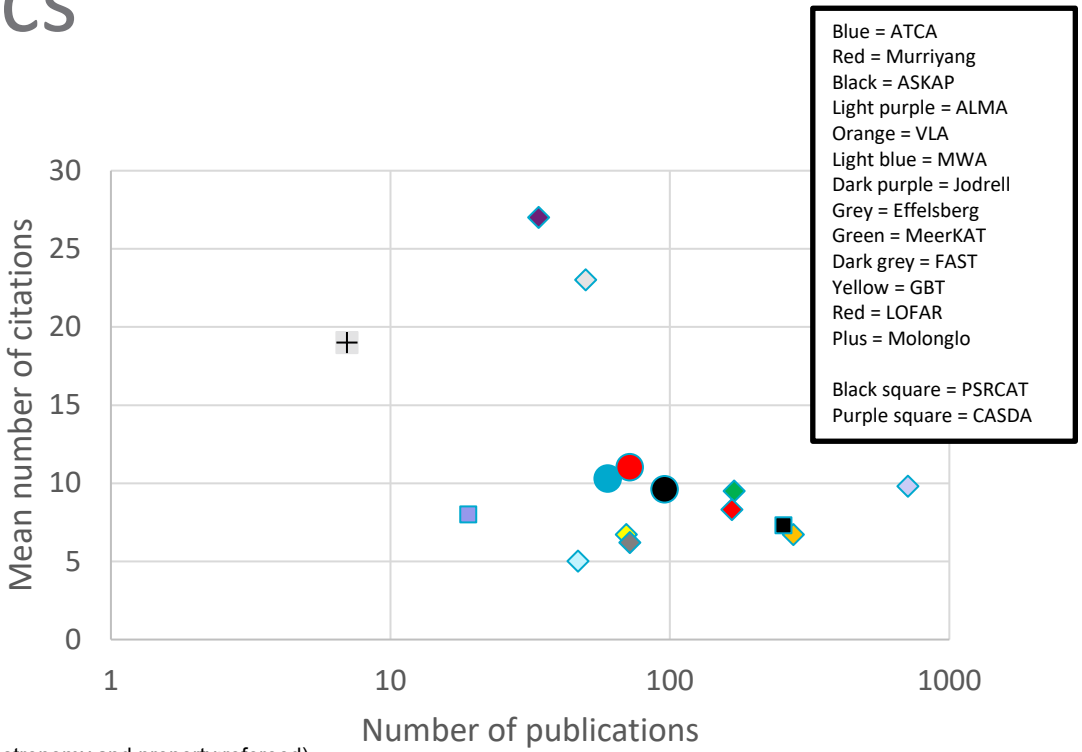
Hard to do a like-for-like comparison with other facilities

Publication statistics

1) How impactful, in 2024, were direct results from Parkes? (#1)
2) How many 2024 papers mentioned Parkes 2024 results? (#2)
3) How many 2024 papers mentioned Parkes at all? (e.g., mentioning the GASS survey, or early multibeam surveys etc.)

How do those results compare to previous years?

I don't have the answers. Getting reliable statistics seems almost impossible!



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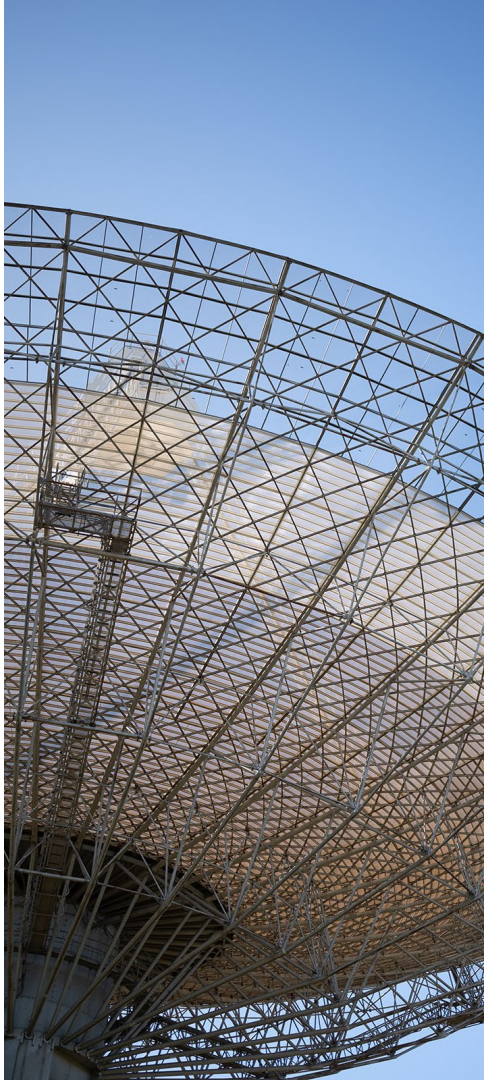
citations((abstract:("Effelsberg") or ack:("Effelsberg")) and collection:astronomy) and year:2024 and property:refereed

Facility	What is being highly cited from 2024?	What work is still being highly cited in 2024?
ATCA	Transients	LIGO/Virgo result from 2017
Murriyang	Pulsars/gravitational waves	Pulsar timing arrays (PPTA from 2013++) HI4PI (HI survey from 2016)
ASKAP	FRBs/long-period transients, galaxies	LIGO/Virgo result from 2017
Effelsberg	European and International pulsar timing arrays	Pulsar timing arrays and HI4PI.
ALMA	Black holes, galaxies, JWST links	LIGO/Virgo result from 2017 High redshift galaxies

Measuring impact

- We report some of these statistics in the annual report and reported some in the supplementary material.
- We could produce more stats/plots etc., but everything takes time, what's most useful?

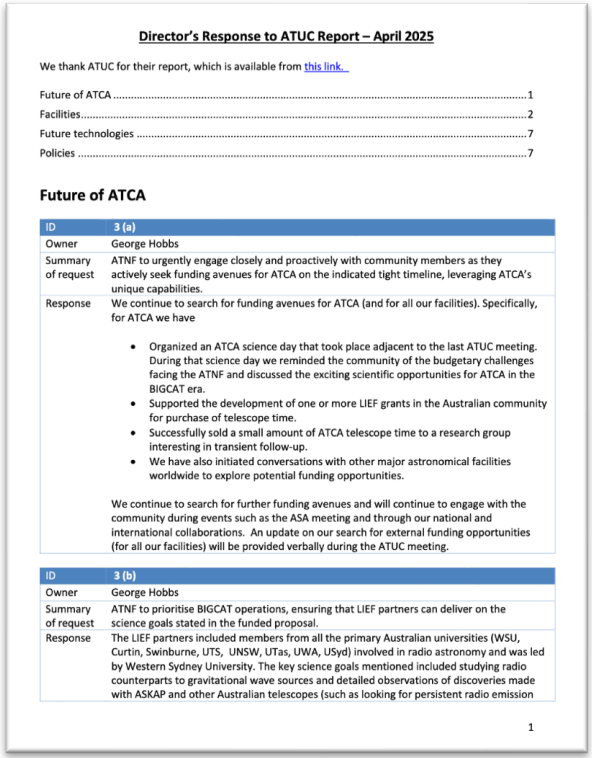
- One statistic that we **cannot** easily provide is "how quickly do we respond to user requests" ...



Content

- Facilities
- Impact
- **Ticketing systems**
- What next?

(note: a bit of a grab-bag)



Director's Response to ATUC Report – April 2025

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Future of ATCA

ID	3 (a)
Owner	George Hobbs
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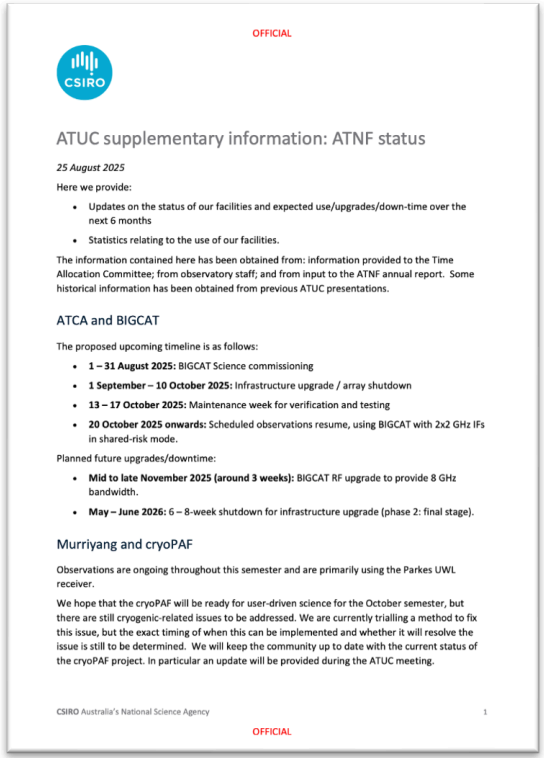

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ATUC supplementary information: ATNF status

25 August 2025

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ATCA and BIGCAT

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Murriyang and cryoPAF

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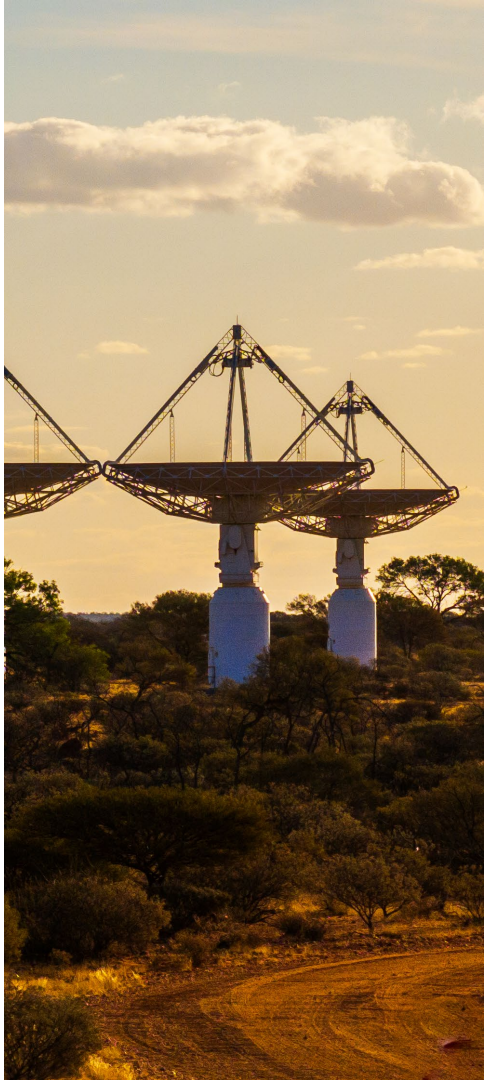
Ticketing systems

- ATUC reported:
  - Users want a single place for reporting feedback, issues etc.
  - Users want to know if their feedback is being dealt with.
- Have explored the possibility of various ticketing systems (see Director Response for details)
- Now have: ATNF.feedback@csiro.au
  - Currently updating webpages etc. to advertise.
  - Have not switched off other reporting methods (e.g., from the observing portal etc. – will monitor usage)
- We note that there was an issue in the ATCA Jira system and we understand that this would have led to user frustration. This has now been resolved and linked from the observing portal.
- We would like to be able to provide statistics such as “For facility X, we had Y submissions, the histogram for the time taken to resolve the issue is shown in Z.” – but currently can’t do this (but likely can track feedback to ATNF.feedback@csiro.au).



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- Impact
- Ticketing systems
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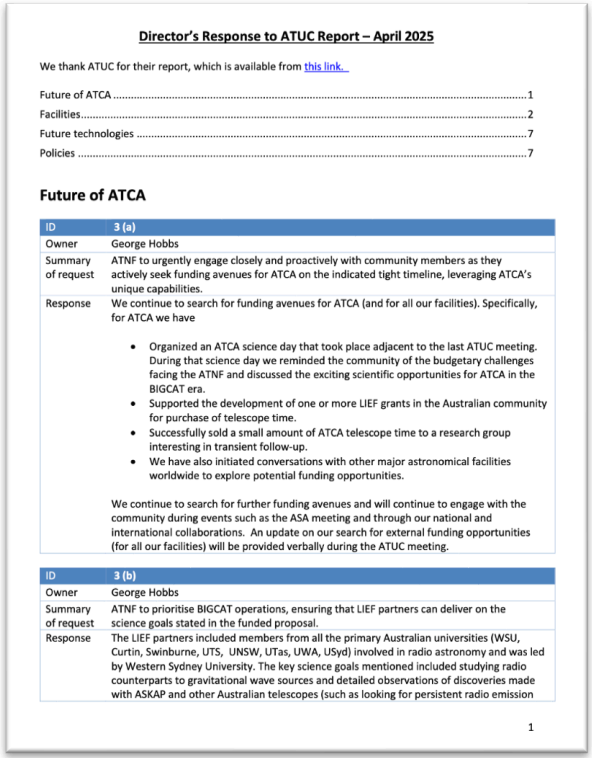

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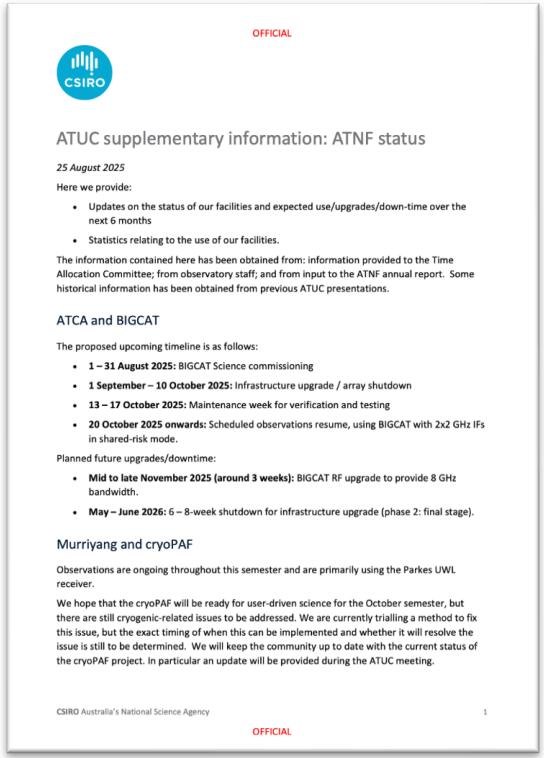

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What next?

- Coming soon:
  - Commissioning of BIGCAT (Elizabeth Mahony) and cryoPAF (Shi Dai)
- For current facilities
  - Parkes UWM-H (Shi Dai)
  - ASKAP upgraded PAF (Alex Dunning)
  - No formal plan, but: ASKAP VLBI? (Kelly Gourdji)
- The next generation
  - LAMBDA: low-frequency VLBI (demonstrator being developed at Narrabri)
  - CASATTA/all-sky monitors: demonstrators in progress (Paul Roberts)
  - GINAN: cosmic dawn, calibration (testbed demonstrator)

Towards an Australian radio transients network

James Miller-Jones

International Centre for Radio Astronomy Research

Towards an Australian radio transients network

Curtin University

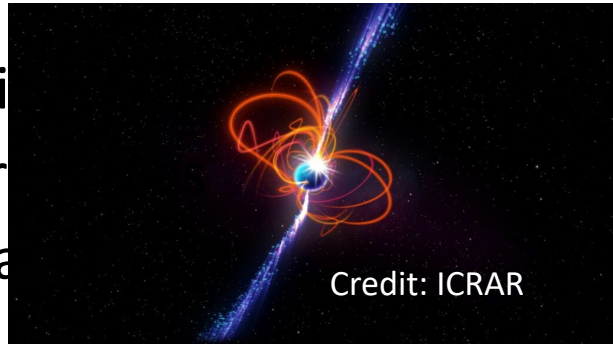
GOVERNMENT OF WESTERN AUSTRALIA

THE UNIVERSITY OF WESTERN AUSTRALIA

ICRAR is a joint venture between Curtin University and The University of Western Australia and receives support from the Western Australian and Australian Governments.

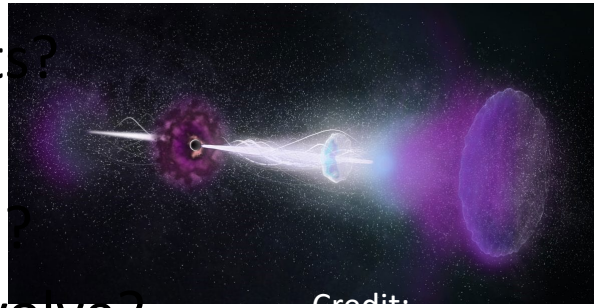
Radio transients

- Probing physics under the most extreme condi
- Tracer of particle acceleration and coherent pr
- Determine the budget of kinetic energy feedba

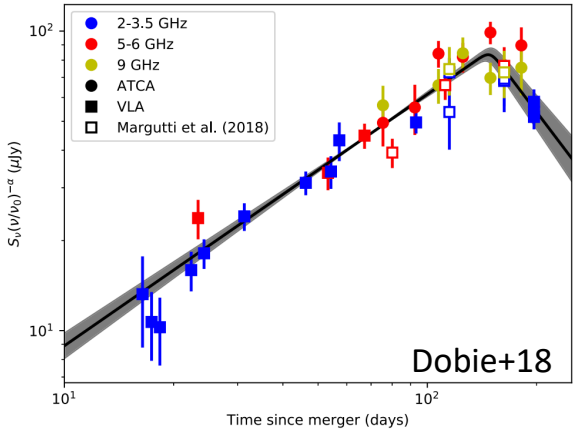


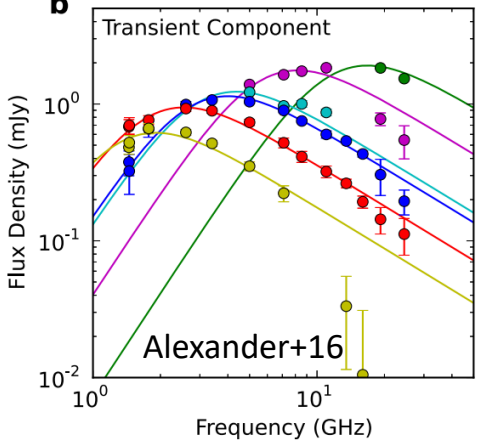
Key questions:

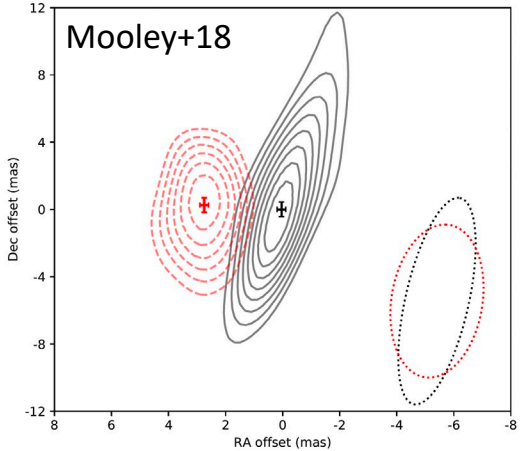
- What populations produce energetic transients?
- What kinds of transients produce jets?
- What can we learn about particle acceleration?
- How do compact stellar remnants form and evolve?

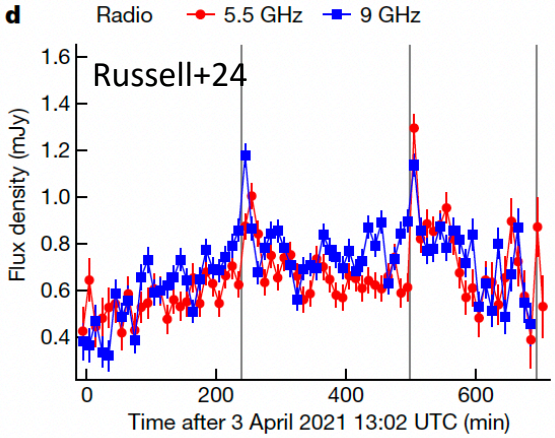


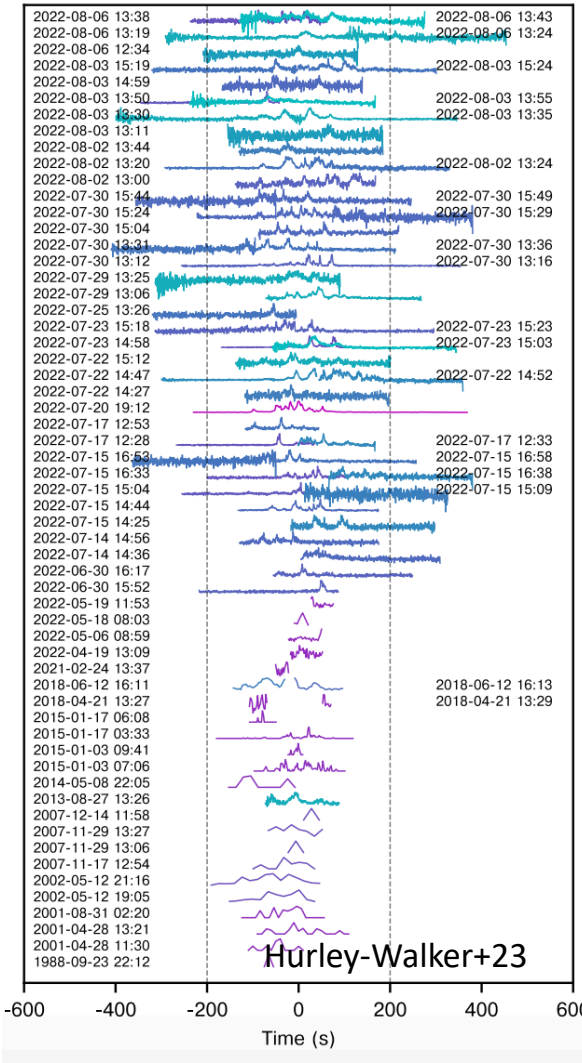
High-impact transient science



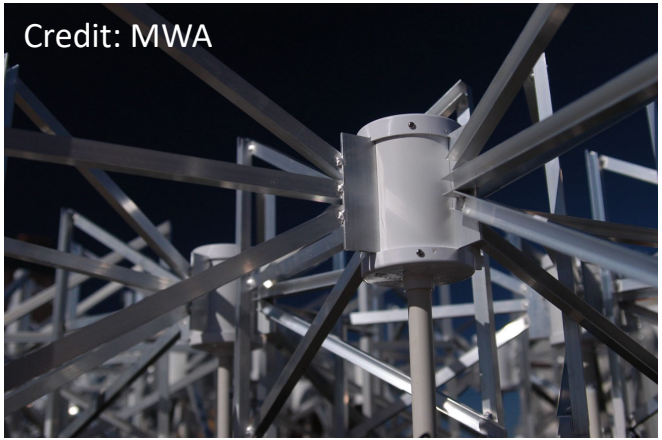


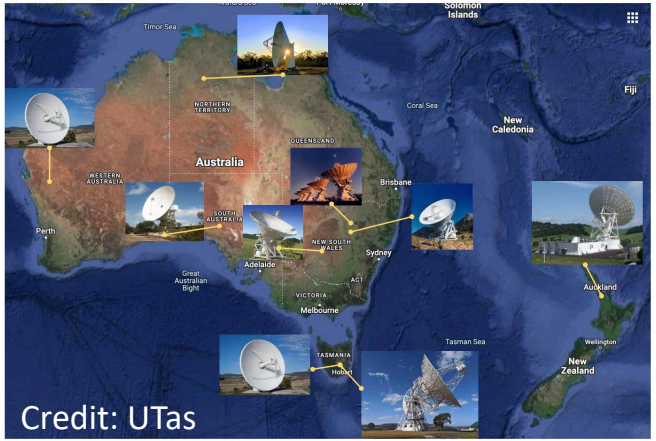






Australia’s unique radio capabilities





LIEF proposal for a transients network

- Unrealised potential to optimise radio transient science
- Network our existing suite of facilities
- Detection -> Localisation -> Evolution
- Set aside guaranteed time for transient response / follow up
- Co-ordinated observations of high-impact events
- Unique access to the southern sky
- Consortium of domestic/international partners
- 3-year timeline

ASKAP status update and planning for survey completion (Cath Trott)

ASKAP Progress and Plans

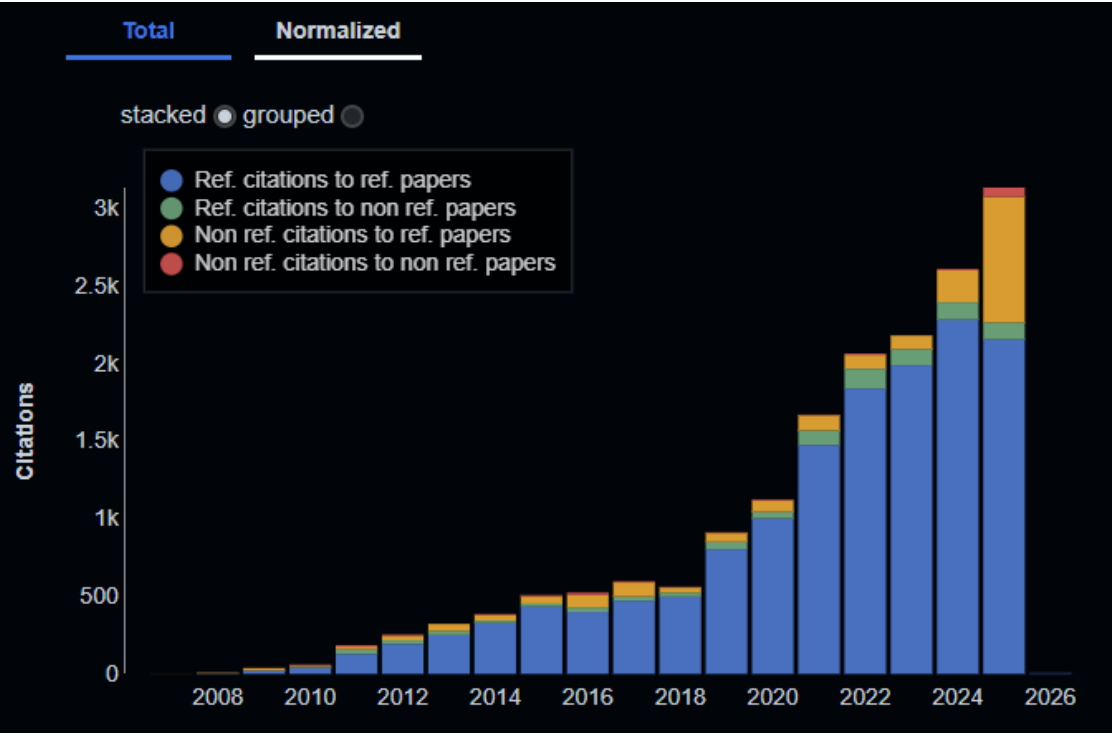
ATUC | Sept 2025

ASKAP leadership team

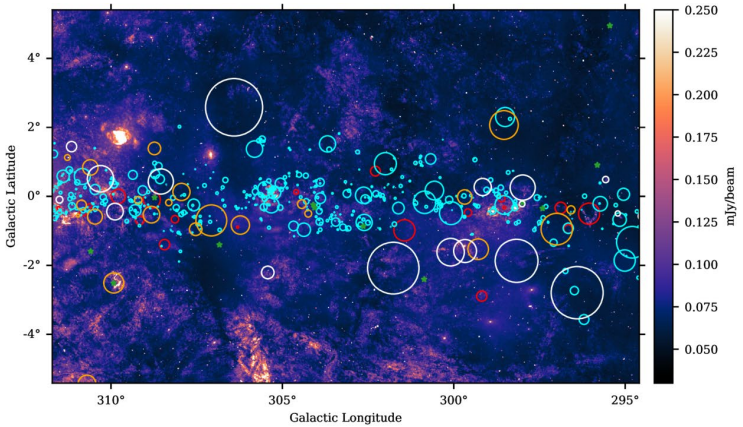
- Interim team spans Operations, Science, Computing to deliver ASKAP science
  - Cath Trott
  - George Hobbs
  - Daleen Koch
  - Steve Ord
  - Aidan Hotan
- Process to appoint new leadership late 2025

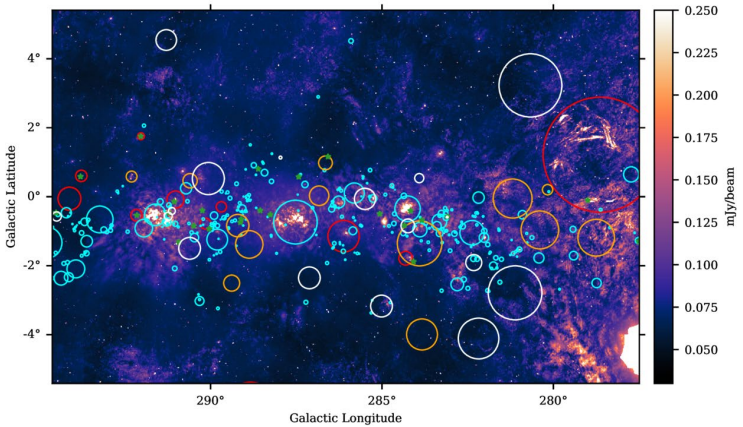
ASKAP publications

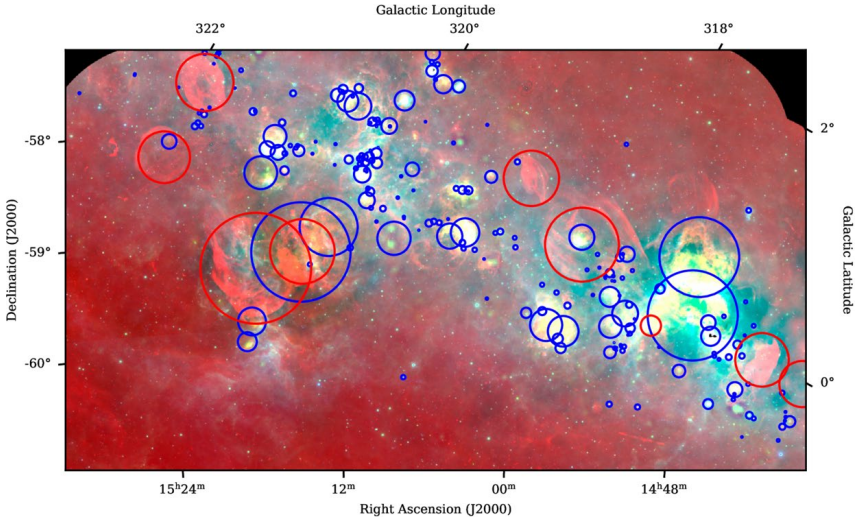
	Totals	Refereed
Number of citing papers	9714	9410
Total citations	17141	16135
Number of self-citations	2864	2563
Average citations	19.8	42.9
Median citations	1	16
Normalized citations	2372.4	1997.4
Refereed citations	15151	14309
Average refereed citations	17.5	38.1
Median refereed citations	1	13
Normalized refereed citations	2081.2	1767.5



ASKAP Science – 2025 captain's picks







A Catalog of Galactic Supernova Remnants and Supernova Remnant Candidates from the EMU/POSSUM Radio Sky Surveys. I.

B. D. Ball, R. Kothes, E. Rosolowsky, C. Burger-Scheidlin, M. D. Filipović, S. Lazarević, Z. J. Smeaton, W. Becker, E. Carretti, B. M. Gaensler

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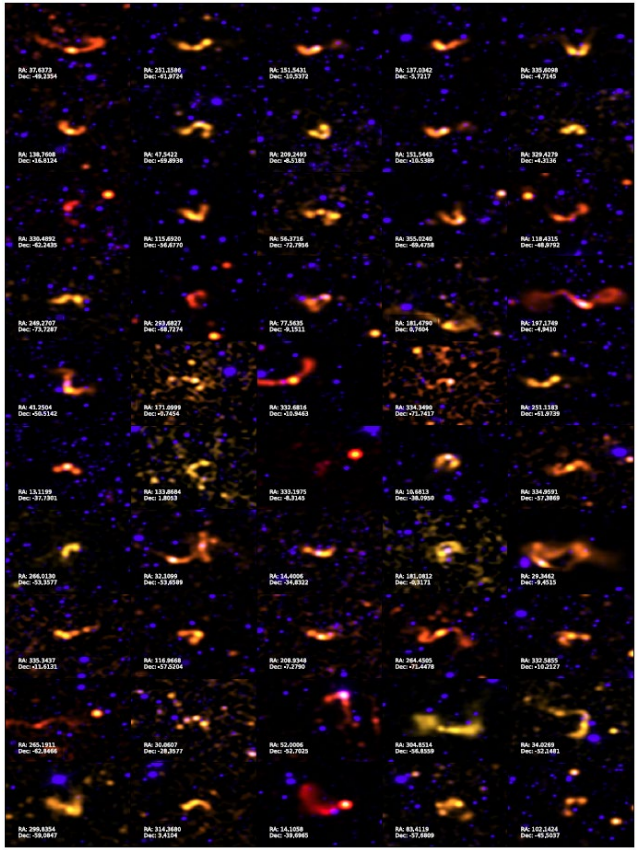
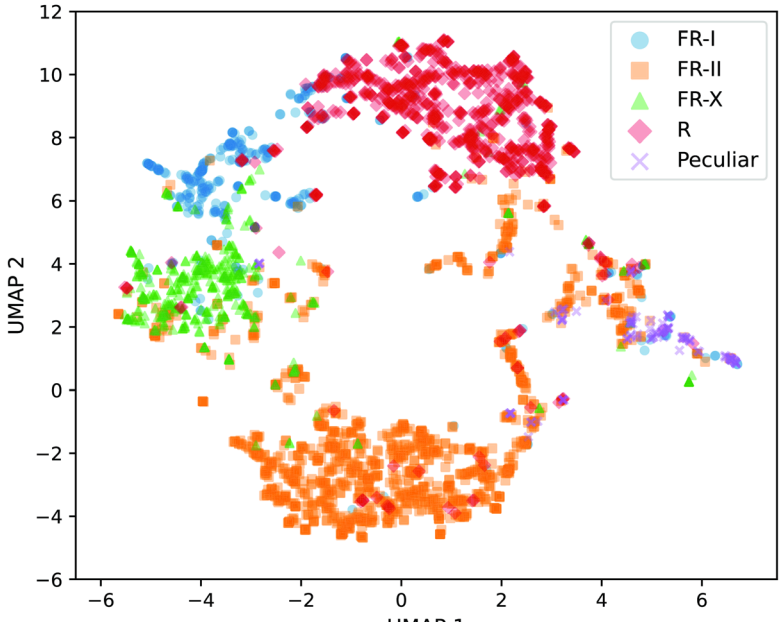


EMUSE: Evolutionary Map of the Universe search engine

Nikhel Gupta, Zeeshan Hayder, Minh Huynh, Ray Norris, Lars Petersson, Andrew Hopkins, Simone Riggi, Bärbel Silvia Koribalski, Miroslav D. Filipović



CSIRO-SSP links

- Be the primary contact for your project team members to report technical issues, request test observations, report data issues, etc, and liaise with them for complete and actionable information
- Triage project issues/feedback via Jira tickets
- Provide regular updates on progress of issues/feedback to project PIs
- Advocate for, and "own", project within ATNF, ensuring their concerns and voices are heard and providing effective updates
- Work within broader Project Interface Team, led by Aidan, to share information with other survey projects
- Where possible, address issues with data etc via data analysis and testing, and propose solutions
- Elevate key science results from the project to Aidan Hotan.

Survey	Primary CSIRO Contact
EMU	Tessa Vernstrom
WALLABY	Jonghwan Rhee
DINGO	Jonghwan Rhee
FLASH	Liz Mahony
GASKAP-OH	Jo Dawson
GASKAP-HI	Jo Dawson
VAST	Emil Lenc
POSSUM	Tessa Vernstrom
CRAFT/CRACO	Kelly Gourdji

Planned test observations (examples)

Survey	Request	Expectation	Requirements
DINGO	Test data to demonstrate that 24 MHz correlator steps have been fixed	August 2025	Firmware team will work with Jonghwan Rhee to test outcome
DINGO	Day-time DINGO high-Z test observation	TBD	*Does not need to actually be the DINGO field*
GASKAP-HI	Day-time GASKAP-HI observations	September 2025	Ready to go
GASKAP-HI	Spectral feature issues test		Time allowing
GASKAP-OH	Test high-band observations using reference field calibration	Prior to next scheduled full survey observations	
LOTRUN	First 20 hours will test data acquisition and allow further work on archiving strategy	September 2025	Allocated storage space on Acacia

Guest Science Proposals + Observatory Projects (LOTRUN)

- GSPs are needed to keep ASKAP versatile and involved in the newest science
- However, the SSPs must take priority
  - => GSPs need to fit in the unallocated time
  - => should ensure the GSP proposers know the timeline and what would best fit into given semesters
  - => even if high TAC grade there's no guarantee that the observations will fit in.

- LOTRUN will ensure CRACO becomes a national facility instrument by retiring shared risk
  - It explores an emerging and high-impact area of research not covered by the SSPs
  - It will not displace SSP observations

Community comms survey

- People want PI weekly updates, new status page, and also a direct ATNF contact who is working quickly to solve problems
- Aidan's newsletter and Mattermost are popular
- Mostly people want their data to be delivered and high-quality. Promoting science is secondary
- Desire for timelines on new features, and lessons learned from previous issues.

Community comms survey

Australia Telescope National Facility

About | Telescopes & Sites | Data & Software | Projects | Resources | News & Events

This page will be updated monthly to report the current conditions of the Observatory, and current expectations for data delivery.

Progress of some of the ASKAP Survey Science Projects has been slower than expected due to a range of issues, not limited to delays due to the Setonix system and other upgrades, competing resource allocation, time-consuming calibration, increased solar activity, lower than expected science quality of some data, and inefficient communications between the ATNF and Survey Science Teams. In response, the new ASKAP leadership team paused the existing meetings and communications to the SSTs, temporarily simplified the observing pool to only include those surveys reporting sufficient data quality in the low-band, and commenced a process to meet with the Principal Investigators of teams, and define a path forward to address the current concerns. This path was communicated to the SSTs in June 2025.

ASKAP RADIO TELESCOPE

- About ASKAP
- ASKAP Scheduling and Survey Science Project Status – September 2025
- ASKAP Users
- ASKAP Publications
- ASKAP News

ASKAP Key Capabilities Project++

Automated Reference Field Calibration greatly improves efficiency while maintaining calibration quality. Eventually we should be able to calibrate on the science field itself.

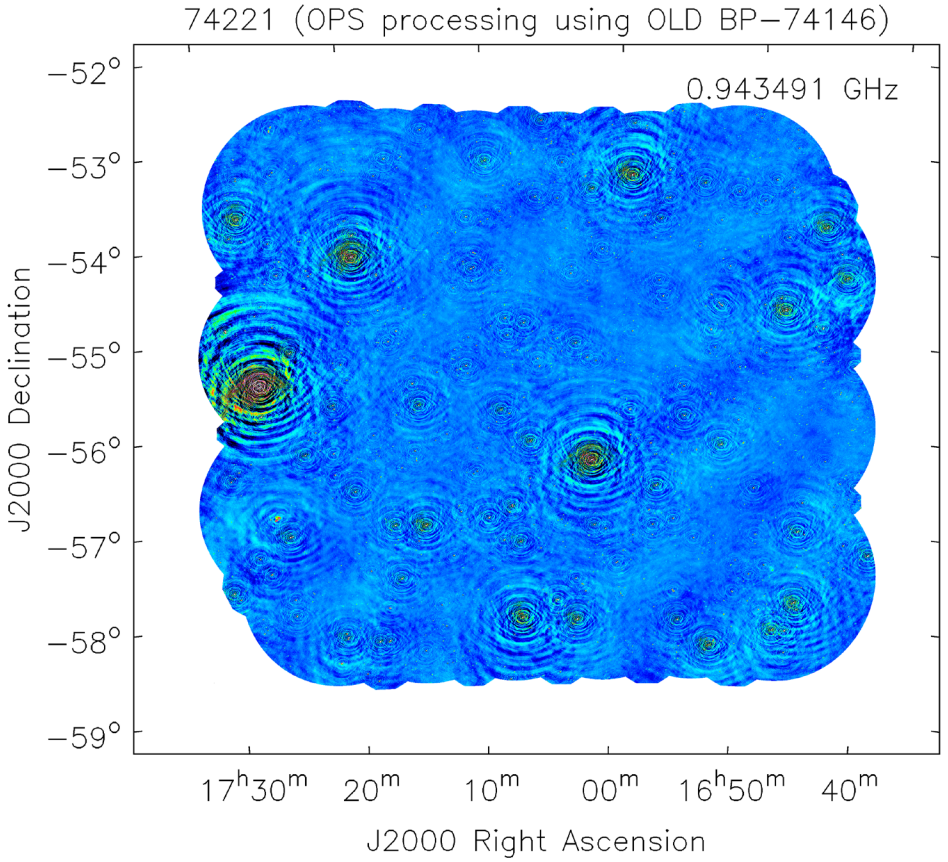


Image credit: Wasim Raja

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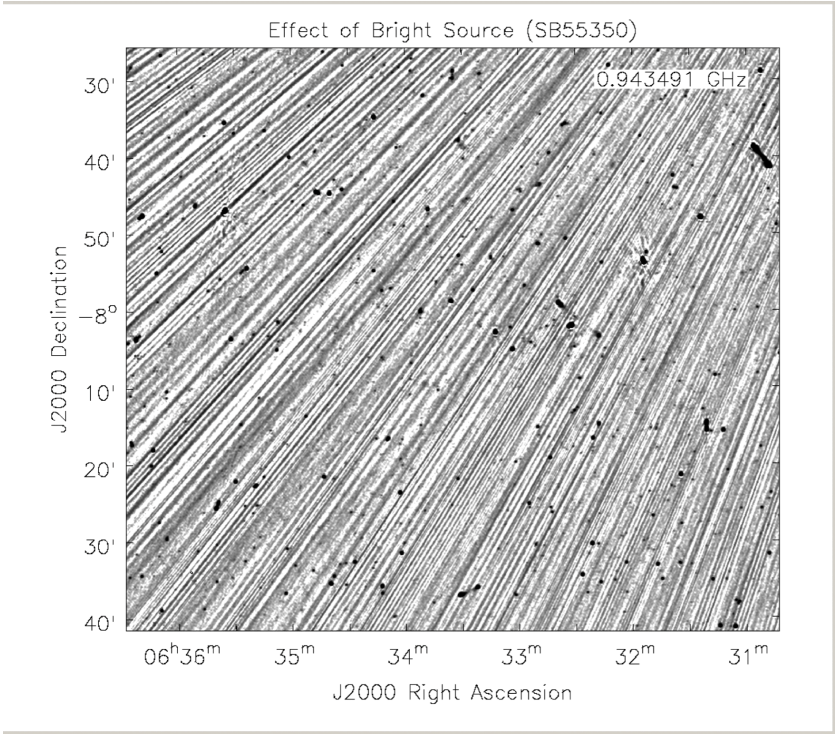

Image credit: Wasim Raja

Amplitude self-cal to further improve removal of bright in-field sources using RACS sky model (WALLABY) - this year

Modeling and removal of bright out of beam sources – DONE*

Firmware Updates to minimise correlator drop-outs and other issues with spectral line observing modes – DONE*

Pipeline Development – New pipelines (FLINT) for algorithm development, SSP-driven post-processing and potential inclusion in operations

Survey	Next data	(+1/4 of survey) more data from 01/06/25	Complete
EMU	Sept 2025	mid 2026	mid 2027
WALLABY	Aug 2025	early 2028	late 2029
FLASH	Aug 2025	late 2025	early 2026
VAST_EXGAL	July 2025	late 2025	early 2027
VAST_GAL	Sept 2025	late 2026	mid 2027
HI_MAG	Oct 2025	late 2026	early 2029
HI_GAL_PLANE	Apr 2026	late 2027	early 2029
HI_MAG_STREAM	Oct 2026	late 2027	mid 2029
HI_GC	June 2027	mid 2028	late 2029
DINGO_LOW_Z	Aug 2025	mid 2026	late 2028
DINGO_HIGH_Z	Dec 2027	early 2029	early 2030
OH_GAL_PLANE	Mar 2027	early 2027	mid 2027
OH_GAL_CENTRE	June 2026	mid 2027	mid 2029
OH_LMC	Oct 2026	late 2026	early 2028
OH_BULGE	July 2026	mid 2026	mid 2028

Hours observed over time (George H)

Hours

Big picture plans

- September 2025
  - Continue key capabilities project to push forward remaining calibration/pipeline work
  - Finalise v0.4 of the schedule with input from SSPs
- October 2025
  - Present survey completion plan to ATSC for comment and feedback
  - Draft new leadership structure
  - Produce a detailed study based on that draft plan to determining survey completion rates for various scenarios
- Coming months:
  - Present finalised plan to SSPs and community (and continue to report on progress)