



ASKAP update for July 2024

This month we highlight progress on the new ASKAPsoft bright source subtraction feature and plans for an ASKAP symposium in November 2024.

Survey science progress update

This month we have primarily been observing FLASH and VAST fields, while attempting to address technical issues with a few individual antennas. Preliminary reports from the FLASH team indicate that we are still seeing plenty of ducted RFI in recent observations, so we have adjusted the ducting alert threshold from the RFI monitoring system to a higher level of sensitivity.

Given the constraints on the number of inner and outer antennas required by some of the Survey Science Teams, we prioritise maintenance on ak01--ak06 and ak31--ak36 to ensure short and long baselines are available. However, we currently have an intermittent issue on Bundara (ak03) impacting beam weight calibration and have also had to replace an azimuth gearbox on Bimba (ak04) this month. In addition, we experienced a central building cooling issue and a mains power cut on different occasions in early July, necessitating full system restarts both times. We have also reinstated the validation-based scheduling lockout to ensure we do not end up with a backlog of unreleased data products.

SST	Deposited	Awaiting Validation	Released	Rejected
EMU	285	1	230	56
WALLABY	53	0	25	28
POSSUM	337	2	247	92
VAST	3770	0	3701	40
FLASH	238	89	88	61
GASKAP-HI	1	1	0	0
GASKAP-OH	1	1	0	0
DINGO	2	2	0	0

Table 1: Survey progress as of 11-07-2024

Although we have a commitment from the Pawsey Supercomputing Research Centre to allocate 15 PB of Acacia storage to CASDA, our current quota is set to about half of this. We are rapidly approaching the point where

the allocated storage will be completely full, so it is important to keep processing and validation backlogs small for improved visibility. We also ask that the Survey Science Teams consider whether all the data products currently being archived (including models and residuals) are strictly necessary to meet their science goals. Any savings that can be made would reduce pressure on our limited resources.

Our goal for the rest of this month is to resume EMU and POSSUM observations (pending completion of outstanding validation tasks) and observe a full WALLABY scheduling block to test the overall data throughput on Setonix in its current state.

Bright source subtraction

One of the highest priority features requested by the Survey Science Teams is the ability to remove artefacts from bright sources outside the imaging region. Earlier this year we updated ASKAPsoft to allow simultaneous imaging of additional offset regions and we have now updated the processing pipeline to include this feature in the science workflow if requested. The development team is busy testing and debugging the new pipeline mode using previously observed EMU fields which were rejected due to artefacts from bright sources outside the field. Figure 1 shows the typical improvement that can be achieved, roughly a factor of 3 in dynamic range within the region of interest.

Our focus now is to ensure that the bright source subtraction process can run automatically and robustly on any observed field. The feature is being developed for continuum imaging initially but should also improve the quality of continuum subtraction for spectral line data.

ASKAP in the community

ASKAP was mentioned many times at the recent Annual Science Meeting of the Astronomical Society of Australia, with topics ranging from the discovery of an ultra-long-

period transient source to the latest Rapid ASKAP Continuum Survey data release.

Preparations for the 2026-2035 Decadal Plan for Astronomy are ongoing within Australia. While national in focus, the impact and relevance of facilities internationally is of critical importance. We thus encourage the global ASKAP community to engage with this process both via the Working Groups and via the [Community Input Form](https://forms.gle/Ks4WwTMjMupNo6M48) of WG 2.2 on National and University Facilities:

<https://forms.gle/Ks4WwTMjMupNo6M48>

We'd also like to highlight the recent launch of a new citizen science project aimed at classifying sources in the EMU pilot survey: [Radio Galaxy Zoo: EMU](#). Alongside human classification efforts aimed at providing a training set for future machine learning models, this project represents one way to manage the data deluge from surveys such as EMU. Astronomers are already finding that established classification systems may not be sufficient to capture the wide variety of sources revealed in the latest generation of radio surveys with ASKAP.

ASKAP cutting edge science symposium

In November this year, ATNF will host a CSIRO Cutting Edge Science Symposium on topics related to ASKAP. Feedback from the recent Survey Science Project progress workshop suggests two key themes for the symposium:

- 1) Raising awareness of ASKAP and its public data to encourage widespread use of RACS and CASDA
- 2) Improving community engagement with ASKAPsoft, including priorities, testing and portability

Funding for the symposium was obtained based on a fully online format due to ASKAP's international community and our desire to maximise accessibility and minimise environmental impact from travel. We are carefully considering how to design the most effective program for the ASKAP symposium with the stated goals in mind.

Our current thinking is to focus on active participation during live sessions using workshops, panels and hackathons with a small foundation of passive contributed content. We want the ASKAP symposium to offer an experience that distinguishes it from other science meetings by giving attendees the knowledge required to begin using ASKAP data in their research immediately, and spark ideas for new use cases or collaborations. We are also hoping to experiment with a more extended and low-density program that avoids meeting fatigue, improves compatibility with a wide range of international time zones, and gives attendees time to apply their knowledge between sessions.

A first announcement of the symposium will be circulated at the end of July with more details about the proposed format. We plan to open registration by the end of August.

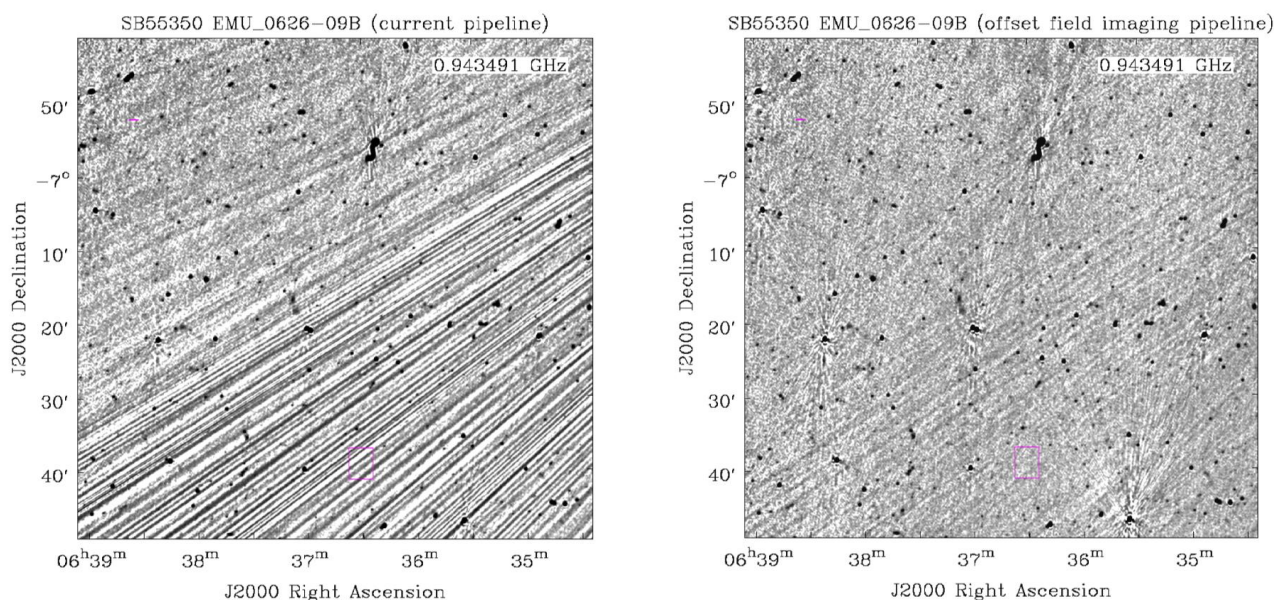


Figure 1: Part of an EMU field used to test the new bright source subtraction mode, with the original image shown on the left, and the post-subtraction version on the right. Dynamic range has improved by a factor of three and the visible artefacts are significantly reduced. Figure provided by Wasim Raja.

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For further information

CSIRO Space & Astronomy
Aidan Hotan
+61 8 6436 8543
aidan.hotan@csiro.au
csiro.au/astronomy