



# ASKAP update for April 2025

This month we report on survey progress, ASKAP topics presented at the Australia Telescope Users Committee open session and survey projections.

## Survey science progress update

Observations continued this month with minor interruptions for upgrades to key systems at the Pawsey Supercomputing Research Centre on April 7<sup>th</sup>. We used the fortnightly development and testing time allocation to continue our investigation into data quality issues with the latest pre-production beamformer firmware build. Narrowing down the problem has proved challenging, but we have found some evidence that resetting an internal memory controller can change the pattern of data corruption and are now looking to isolate the auxiliary data products used for beam weight updates. Note that the firmware in operational use does not have this problem, but it does exhibit a higher rate of spectral channel loss than the latest build which was originally made alongside development of CRACO support with the goal of improving signal integrity overall.

SST	Deposited	Awaiting Validation	Released	Rejected
EMU	398	11	307	83
WALLABY	106	4	66	40
POSSUM	503	16	346	146
VAST	5135	0	5095	42
FLASH	287	7	158	122
GASKAP-HI	12	3	15	1
GASKAP-OH	1	1	0	0
DINGO	24	2	19	3

Table 1: Survey progress as of 10-04-2025

## ASKAP at ATUC

The Australia Telescope Users Committee meets twice a year to present collected feedback gathered from the user community. The most recent meeting consisted of an open session on the 9<sup>th</sup> of April and a closed session on the 10<sup>th</sup> of April, with an attached science day aimed at

discussing the future of the Australia Telescope Compact Array on the 8<sup>th</sup> of April. During the open session, ATNF staff presented several updates on our facilities, plans and projects. Each meeting, ATUC prepares a report summarising key feedback. The ATNF prepares a subsequent response describing how the feedback has been addressed and presents this to the committee in preparation for the next meeting. Both the ATUC report and the ATNF Director's responses are made [available online](#) once the cycle is complete.

We received a few ASKAP-specific requests from ATUC in their previous report. These included a request for estimated survey completion timelines, which led to the simulations described later in this newsletter. We also received a specific request for insight into the likely progress of WALLABY. Our response highlighted that the main technical blocker to progressing all surveys (especially those with high data rates) was resolved by changes made to Setonix in September 2024. Working with the platform vendor, the Pawsey Supercomputing Research Centre rectified previous issues with slow and unreliable filesystem access that had been having a major impact on ASKAP's data throughput. We proved our capacity to run continuously in WALLABY mode during a dedicated trial period in November 2024, which was processed with no data backlog developing. The remaining constraint on WALLABY's rate of progress is the impact of solar interference. All daytime observations during the extended period of WALLABY observing in November 2024 were rejected by the Survey Science Team and we have restricted scheduling of WALLABY to nighttime only as a result. This restriction may be lifted when solar activity declines in a few years.

There was also a question about assessing the feasibility of using alternative imaging tools and pipeline frameworks on ASKAP data. We have internally been developing an experimental pipeline called Flint. The Flint pipeline utilises python-based workflow management tools and the general-purpose WSCLEAN imager. In contrast, ASKAPsoft was designed specifically for

supercomputing using MPI in a controlled operational environment. Flint should be more accessible, providing a tested and verified way for Survey Science Teams to process (or re-process) ASKAP data on a variety of platforms. Most time-critical operational processing of science-ready data products by the observatory will still be done using ASKAPsoft for the foreseeable future, but we are intending to make Flint available as a selectable option via processing parameters should some of the Survey Science Teams wish to use the modes it supports. We expect to run more side-by-side comparisons of the two pipelines in future and focus development on their respective strengths, such as the potential for highly optimised and energy-efficient use of high-performance computing resources in the case of ASKAPsoft, while retaining the core functionality developed over the last few years to support all the Survey Science Projects.

## Survey Progress Projections

Any forward projection of ASKAP survey progress is inherently uncertain due to the unpredictable impact of factors such as equipment failure, solar activity, ducted RFI and so on. However, to assist with planning for funding and resources, some of the SSTs have requested to know roughly how their surveys will progress and when they will have access to all associated data products. The main factor influencing the rate of progress of any survey is the set of constraints that the associated Survey Science Team has chosen to impose, but we acknowledge that the

interplay of these constraints in the context of jointly scheduling active projects may not be obvious.

To provide our best possible estimate of near-term progression rates and demonstrate the impact of scheduling constraints, we have further developed an existing scheduling simulation mode that realistically accounts for constraints while assuming idealised telescope availability which can be adjusted according to our Key Performance Indicator of 70% on-sky time. We have also developed a new visualisation that shows usage of telescope time over a specified window, which can be from past records or future simulations. Figure 1 shows an example of this visualisation for March 2025.

To address community questions around the timeline for completing ASKAP surveys, the Operations team used a combination of past progress and future simulation to estimate completion timelines under a variety of conditions, which we labelled as Minimum, Likely and Maximum. The “likely” scenarios show most surveys completing within the expected 5-year timeline, if we assume a start date closer to today. EMU (and therefore POSSUM) and VAST are likely to complete by 2028, but higher data rate surveys such as WALLABY were more impacted by past issues and are more likely to finish around 2030. These projections do not yet take the improvements being developed as part of the Key Capabilities Project into account. After a strong start, we aim to demonstrate sustained progress throughout 2025.

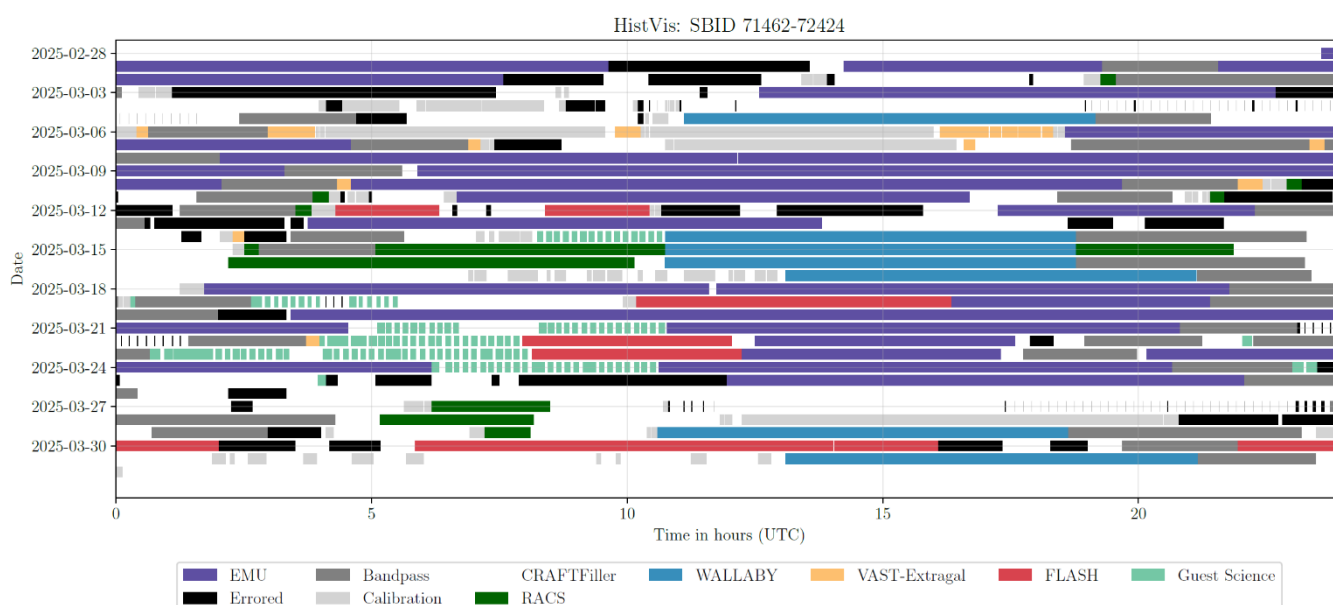


Figure 1: Visualisation of ASKAP activity throughout March 2025, showing the time used by different Survey Science Projects. Figure provided by Vanessa Moss.

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