



ASKAP update for November 2024

This month we report on survey progress, mid-band observing priority, the next call for ATNF observing proposals and ASKAP’s presence at the Perth Astrofest.

Survey science progress update

Over the past month we have prioritised mid-band observations with the goal of verifying ASKAP’s capability to promptly deliver high-quality data for spectral line science (especially WALLABY and GASKAP-HI). With constraints in place to avoid solar interference (by observing at night) and fields near bright continuum sources (by excluding parts of the survey region) we recently observed a set of 10 WALLABY fields, most of which were processed and uploaded to CASDA within a few days. At last count, the WALLABY team have validated 6 of the 10 fields as having “good” data quality, sufficient to meet their science goals (see Figure 1).

SST	Deposited	Awaiting Validation	Released	Rejected
EMU	318	0	254	67
WALLABY	75	3	32	40
POSSUM	392	7	269	121
VAST	4583	65	4477	42
FLASH	271	17	136	117
GASKAP-HI	1	0	1	0
GASKAP-OH	1	1	0	0
DINGO	24	2	19	3

Table 1: Survey progress as of 14-11-2024

The GASKAP-HI survey strategy currently involves two regions with different observing constraints. Scheduling GASKAP-HI’s preferred observing strategy is becoming increasingly difficult for the fields that must be observed at night as we progress into the summer months, so we have reduced the integration time from 10 hours to 7 hours, with a corresponding increase in the number of repeats. The region that is not constrained to night-only is currently in one of the solar exclusion zones but should become available before the end of the year.

With the recently demonstrated throughput and sufficient computing capacity on Setonix to process several fields at once, performance may now be sufficient to keep up with regular spectral line observations. We have also improved the rate at which data can be copied between the observing and processing disks using parallel streams, which should increase our overall throughput. We will be closely monitoring disk space and processing latency as spectral line observations continue.

Over the past 18 months of full survey operations, we have mostly been restricted to observing in continuum modes. This means that continuum surveys have received proportionally more science data than most of the spectral line surveys. Our short-term goal is to balance the fraction of received data across projects by staying in ASKAP’s mid-band configuration and observing a combination of WALLABY, GASKAP-HI and RACS-mid2 for several weeks. The exact duration of this mid-band priority period will depend on the sidereal time distribution of active WALLABY fields and may extend over the end of year holidays. In the new year we plan to resume dynamically scheduled observations with all Survey Science Projects active.

Updates to Guest Science advice

The next call for ATNF proposals is now open, with a closing date of Monday the 16th of December. This year we have revised the wording of our advice to allow some flexibility in selecting hybrid combinations of established processing modes, though we still request that GSPs use the same sky frequencies and beam footprints as SSPs for observational efficiency. We are also offering the new coherent fast transient instrument CRACO in shared-risk mode. ASKAP was significantly over-subscribed for the small amount of GSP time available last semester, so we encourage all proposals to clearly state why ASKAP’s unique capabilities will be important to your science goal, and how the Guest Science Project is different to

observations already planned as part of the ongoing Survey Science Projects.

ASKAP at Perth Astrofest

On the 9th of November, ASKAP made an appearance at Perth's largest astronomy event, Astrofest. This yearly festival includes exhibition booths, public lectures and telescope viewing sessions among other events. It is held on the grounds of Curtin University's Bentley campus and was attended by about 6000 people this year.

ATNF staff set up a live demonstration of ASKAP, with the intention to track progress on RACS-mid2 over the course of 5 hours during the event. However, a target of opportunity request meant that we were observing an ultra-long period transient source instead! We were still able to demonstrate ASKAP's survey tiling strategy using a printed map of the RACS-mid2 fields, show recent data using CARTA and HIPS maps and explain ASKAP's Phased Array Feed technology with the aid of hardware samples.

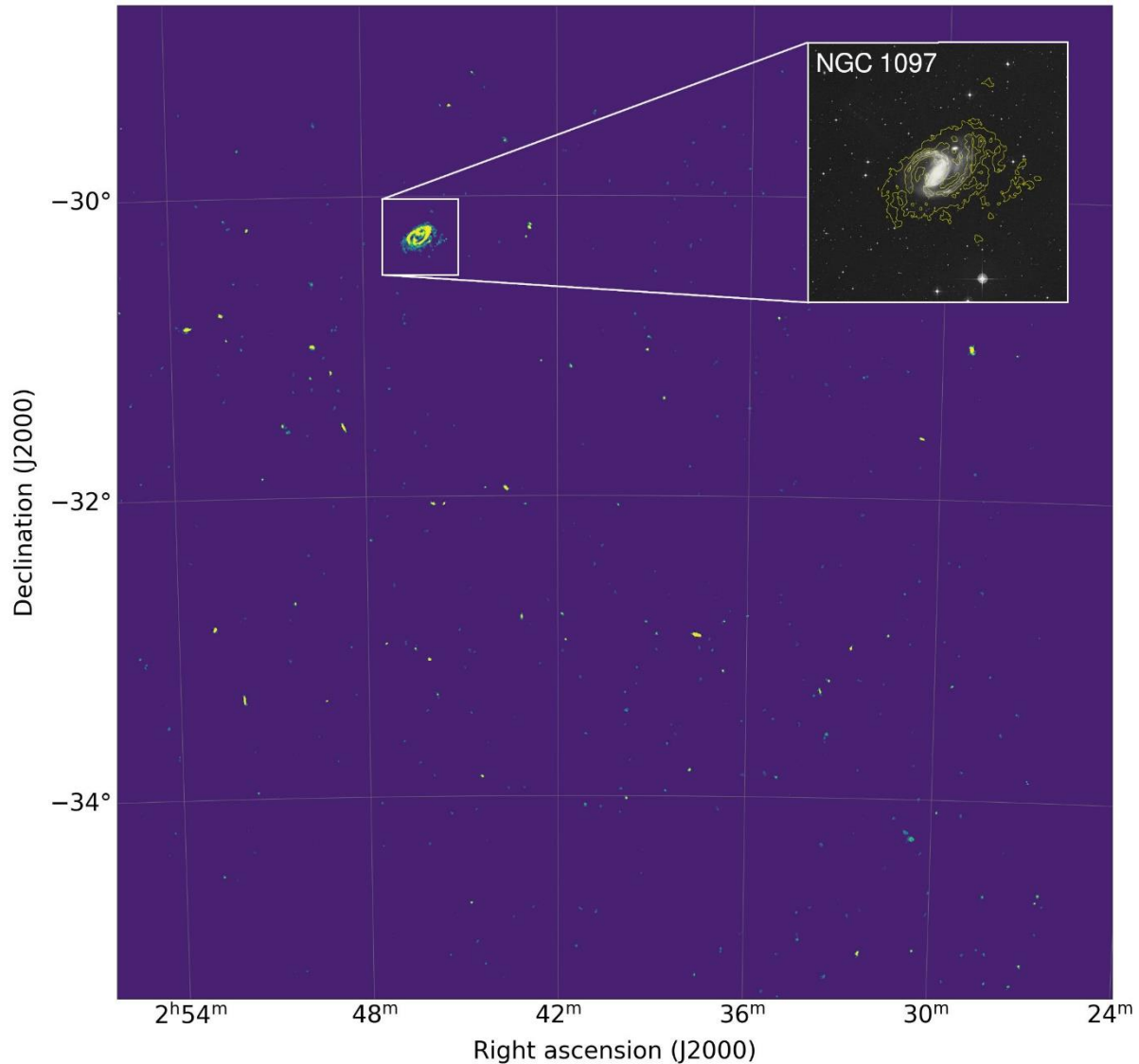


Figure 1: The integrated HI flux image of one of the most recent WALLABY footprints (SBID 67392) is shown above. Each blob in this image is an HI detection of a galaxy (apart from a few faint false detections which have not yet been manually removed). The image was produced by the SoFiA source finding pipeline which is being run on all new footprints for the purpose of data validation. The HI emission from many galaxies in the local Universe can be seen, including a nearby spiral galaxy, NGC 1097, near the top-left corner. The inset shows an optical image of NGC 1097 from the Digitized Sky Survey with WALLABY HI contours overlaid and reveals the presence of gas beyond the stellar disc, possibly from a recent interaction. Image provided by Tobias Westmeier.

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