ASKAP Update

ATUC Open Forum, March 28 2023

Matthew Whiting

Survey trial – observing + processing

Survey trial began mid-November	•Setonix was released after upgrade only the week before •Various issues with software & networking meant we focused on using Galaxy for operations
Dedicated unattended observing over the summer break	•Largely worked well, with some small interventions •Galaxy offline for a week over New Year leading to backlog in processing •Lessons learned about scheduling of jobs for improved efficiency
EMU/POSSUM and VAST the main focus	•VAST Galactic epochs every two weeks (on-going) •Spectral-line (WALLABY, FLASH) observed prior to the break and processed afterwards •Processing now working well for all these surveys

Survey progress

Survey	Total Observed and processed	Telescope Hours	Validated	Released
EMU/POSSUM	43	430	37/0	30/0
WALLABY	10	80	10	5
FLASH	9	18	2	0
VAST	516	~110	516	485
GASKAP-OH	2 (<1)	24*	0	0

Numbers count scheduling blocks
GASKAP-OH data taken as test but will count to full survey if all good

Setonix status

Setonix

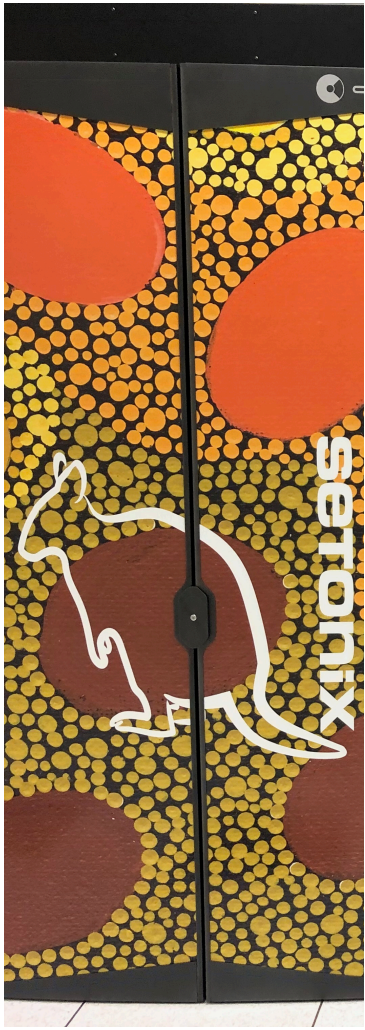
- Pawsey's new-generation Cray EX supercomputer
- Replacement for magnus, galaxy, topaz
- Energy-efficient 'green' computing

Installation, upgrades and issues

- Seen numerous issues with networking, MPI, I/O since setonix began
- Recent I/O issues fixed and we are able to run full-scale detailed tests
- Some MPI issues still present, but we have work-arounds in place

Performance gains to support ASKAP processing

- See noticeable improvement in processing speeds
- Get a greater throughput in processing entire datasets



Telescope status

- This week – high-voltage maintenance work with power outage
- Some issues with different antennas:
  - Drives work needed on AK36
  - Domino replacements needed for several antennas
  - Water leak investigations continue in control building
- The MRO – Geraldton optical fibre needs maintenance over next few months
  - There will be short outages at regular intervals – scheduled during normal maintenance days
- Need to validate recent firmware updates made to support CRACO commissioning

Plan for recommencement of Surveys

- Need to complete current HV maintenance, along with other antenna work, prior to restarting
- Want to restart full survey observing using Setonix for processing
- Requires rounds of testing:
  - Do all planned processing templates work?
  - Are they efficient in their use of resources?
  - Does the end-to-end workflow function on setonix?
- Will consider further processing on Galaxy if we see further delays
  - Consider that another short-term survey trial period
  - Not a long-term solution
- Require data to be validated by SSTs prior to further observations

Processing capability development

A number of features are in development but not yet available
Priorities governed by SSP requirements, impact, and resources

Feature	Description
“Peeling”	Removal of out-of-field continuum sources prior to imaging
Joint imaging	Simultaneous imaging of all beams for spectral-line (GASKAP-HI)
UV-grid export improvements	New approaches to improve efficiency & speed of UV-grid storage (DINGO)
Polarisation imaging for spectral datasets	Leakage-calibration and multi-Stokes imaging at full spectral resolution – pipeline development only (GASKAP-OH)
Sky Model integration	Use of Global Sky Model for calibration and imaging
“Fast imaging”	Imaging at short cadences within a long-track observation (VAST)

Guest Science Projects for 2023OCT

- Guest Science Projects (GSPs) for ASKAP are programs that:
  - Take advantage of ASKAP's capabilities to enable scientifically-interesting experiments
  - Require modest amounts of time
  - Do not overlap unduly with approved Survey Science Projects
- We will offer GSP time from 2023OCT, up to 150 hours per semester
  - Only well-established modes of ASKAP will be offered
  - Will use dynamic scheduling and operational processing using established templates
- The ASKAP Senior System Scientist will
  - Lead a technical assessment of proposals
  - Make recommendations to TAC about the overlap with SSPs or other proposals
- Proposals can:
  - Be of single objects (but should make use of some unique ASKAP capability)
  - Be NAPA proposals
  - Request a 12 month proprietary period, but *only* in exceptional circumstances
  - Be led by SSP members

Thank you

CSIRO Astronomy & Space Science
Matthew Whiting
Head, ASKAP Data Operations

+61 2 9372 4683
matthew.whiting@csiro.au
csiro.au/cass