ATNF Operations

ATUC November 2018

John Reynolds

ATNF Operations update

ASKAP status

ATNF – overview

The ATNF

WESTERN AUSTRALIA
BOOLARDY STATION
GERALDTON
PERTH
NEW SOUTH WALES
NARRABRI
MOPRA
PARKES
SYDNEY

Radiophysics Laboratory

ARRC Kensington Pawsey HPC Centre

CSIRO

Parkes Update (more detail in Jimi Greens' talk)

- Second wave of UWL commissioning (Oct-Nov 18) successful
- Voyager 2 – tracking partnership with NASA
  ~800 hours of observing time, Nov 18 – Feb 19
  NASA funds to be earmarked for ATNF instrumentation
- Sale-of-Telescope Time
  25% of time to BL 2016-2021
  16% of time to NAOC 2017-2020
- LIEF grant submitted for cooled PAF – awaiting outcome
- Continued role at forefront of pulsar and FRB research and as technology test-bed

ATCA Update

- Continues to produce high-impact science as flexible, versatile S-H instrument

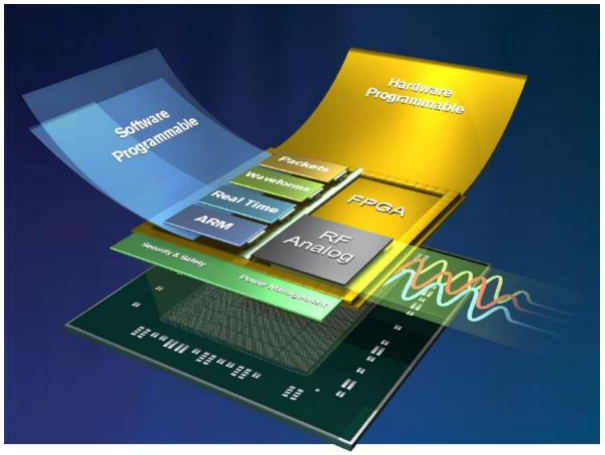
- Modest reduction of technical staff; cryogenics and receiver support from Marsfield

- Limited success with Sale-of-Telescope time to date, but efforts continue

- CABB replacement in initial phase
  GPU solution with RF on chip
  But as yet unfunded

17 Oct 2017

Gravitational waves world-first discovery Down Under

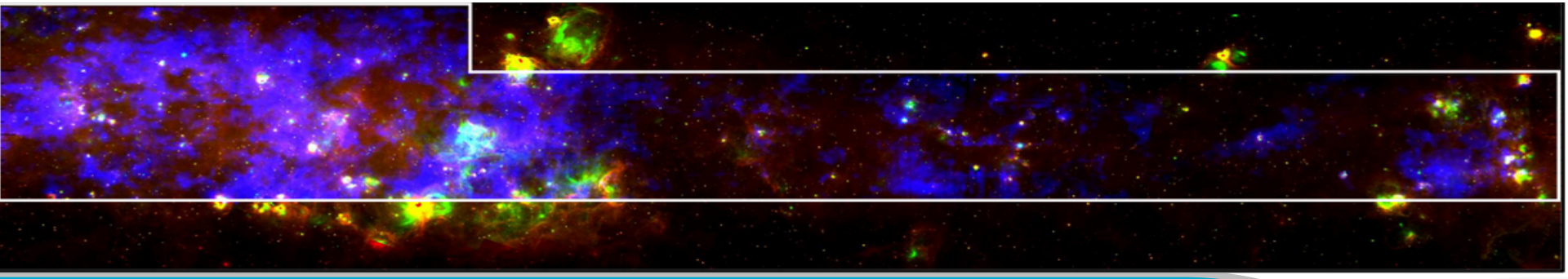


Mopra Update

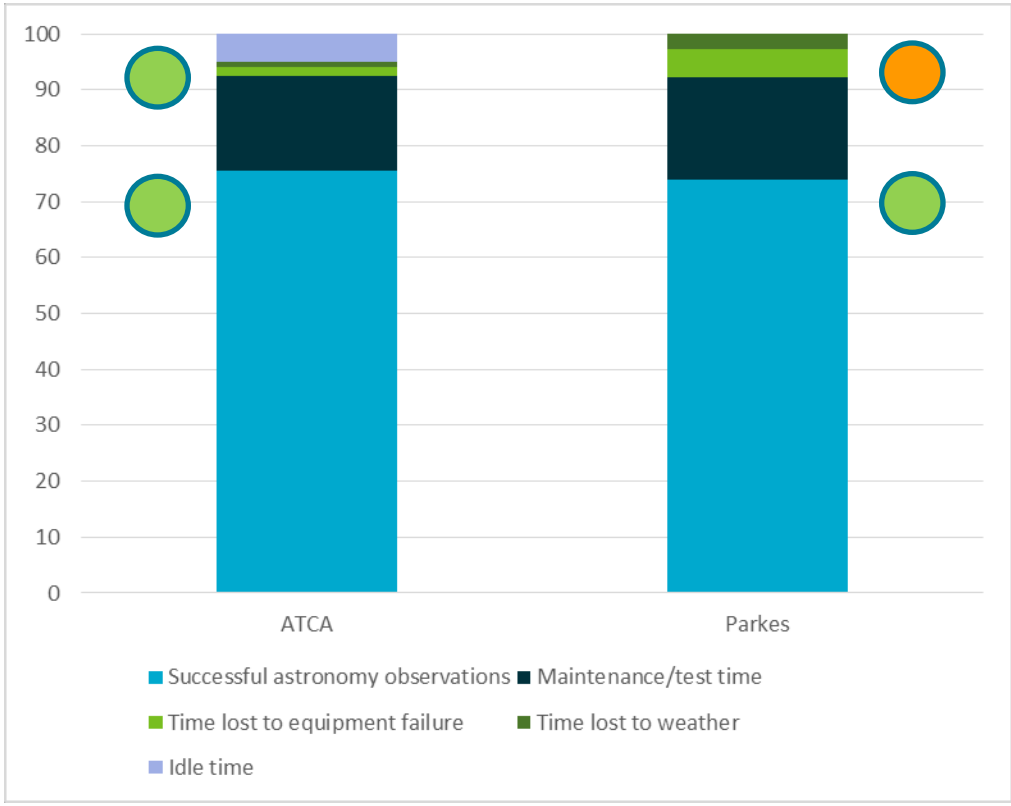
- Operated by 3rd party on cost-recovery basis

- Contract for 2018 winter season in place with U. Adel. Team Mopra has now finished CO survey this year

- KVN funding application for $US2.5M to incorporate Mopra as regular element at 13/7/3mm



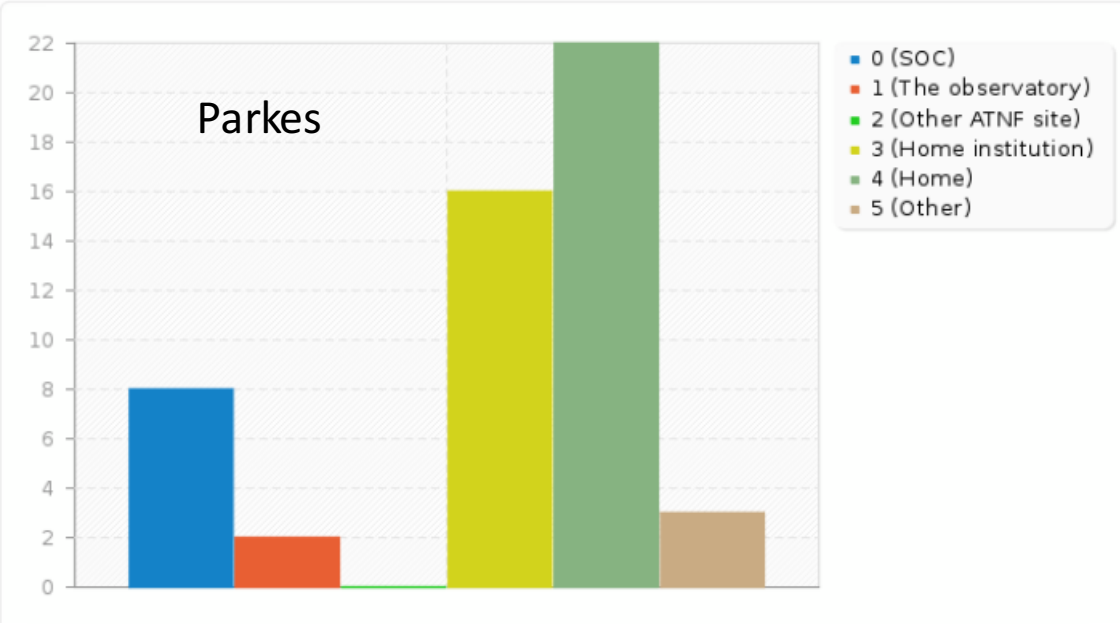
KPIs: Telescope usage

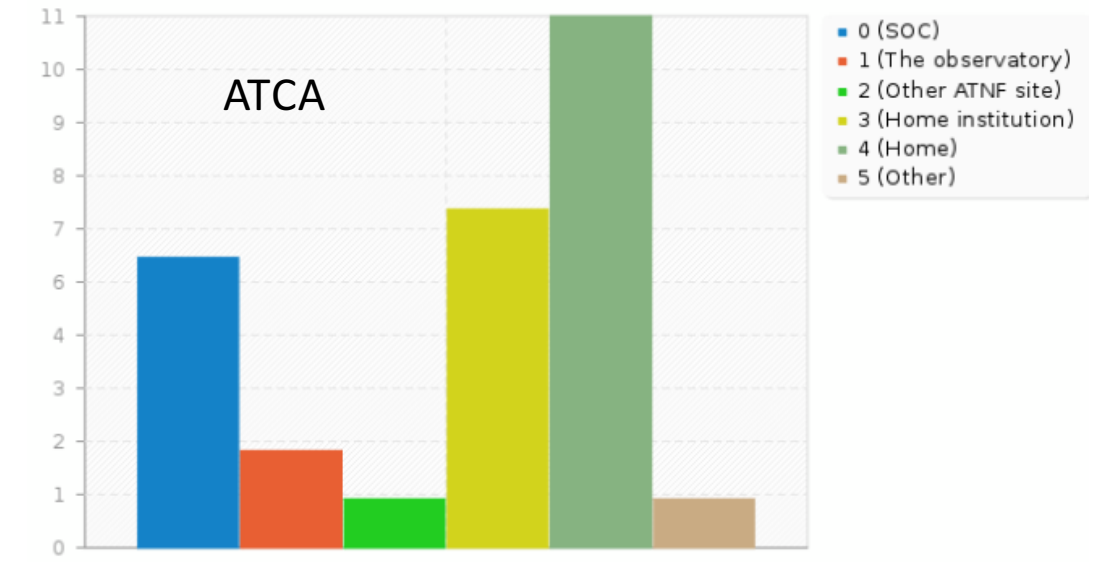


< 5% downtime to faults

> 70% availability

User Feedback





Responses for last 12 months:

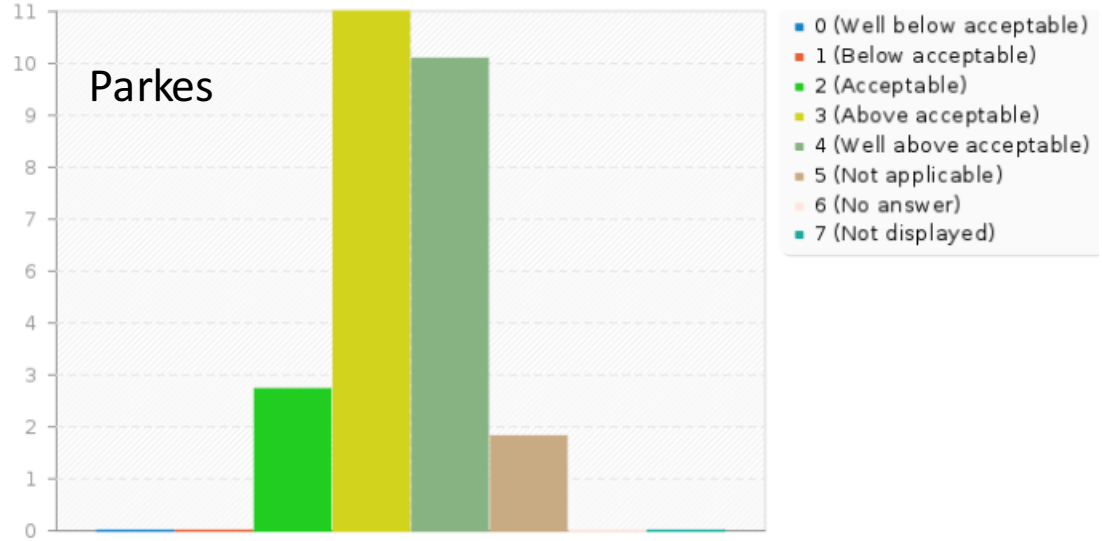
26 Parkes
18 ATCA

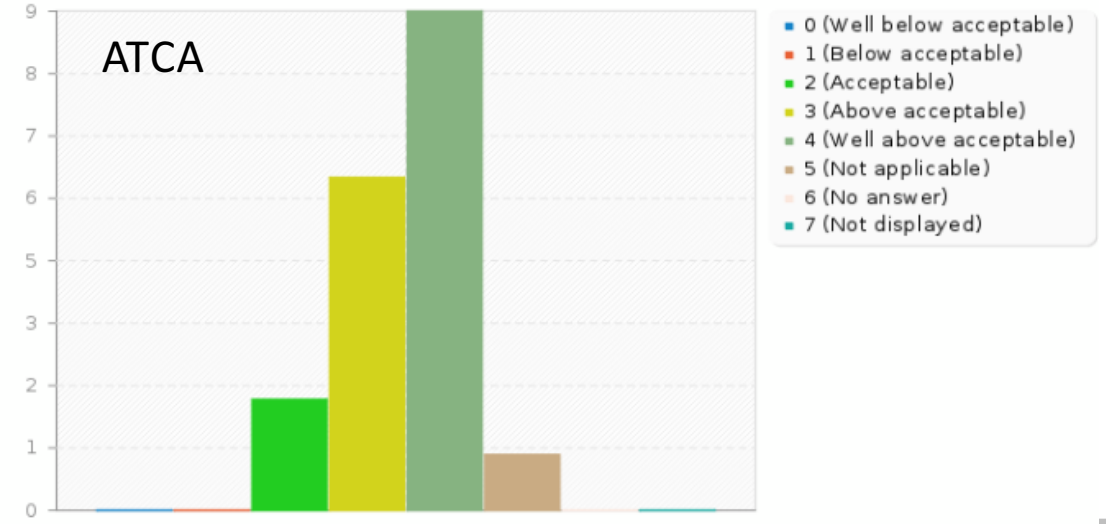
Prodding still required!

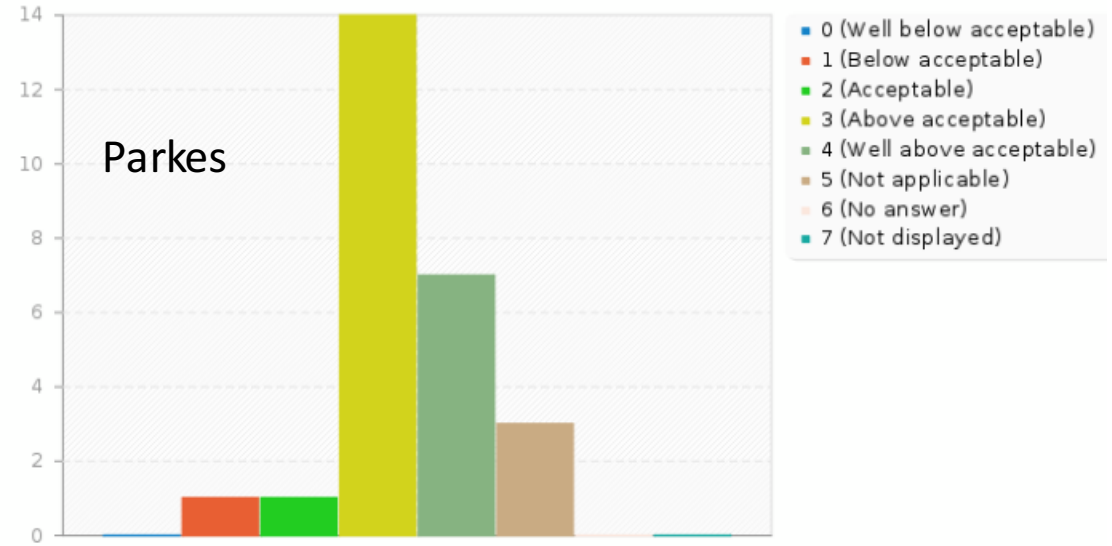
← Breakdown by observer location

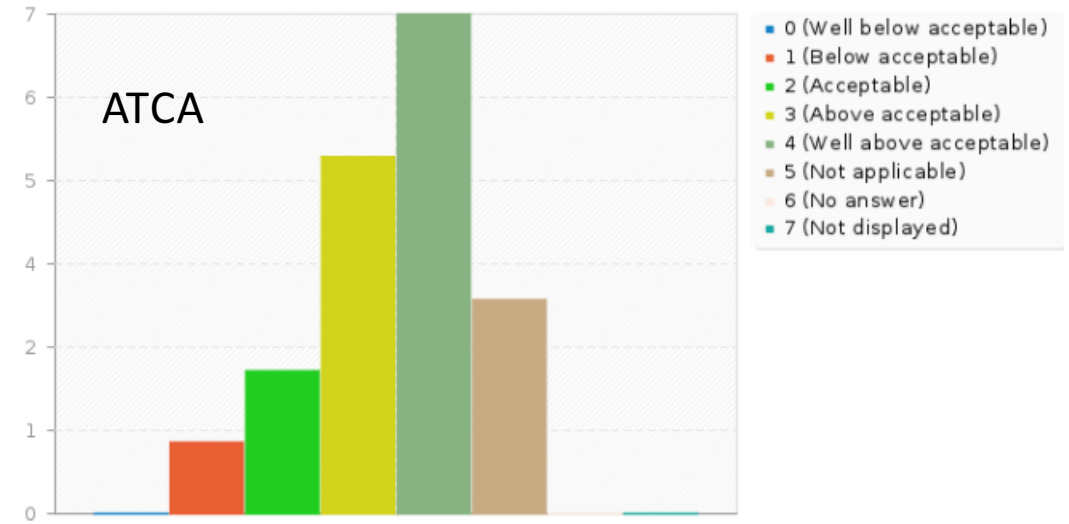
User Feedback:

Support during observation (includes ATCA D/A)



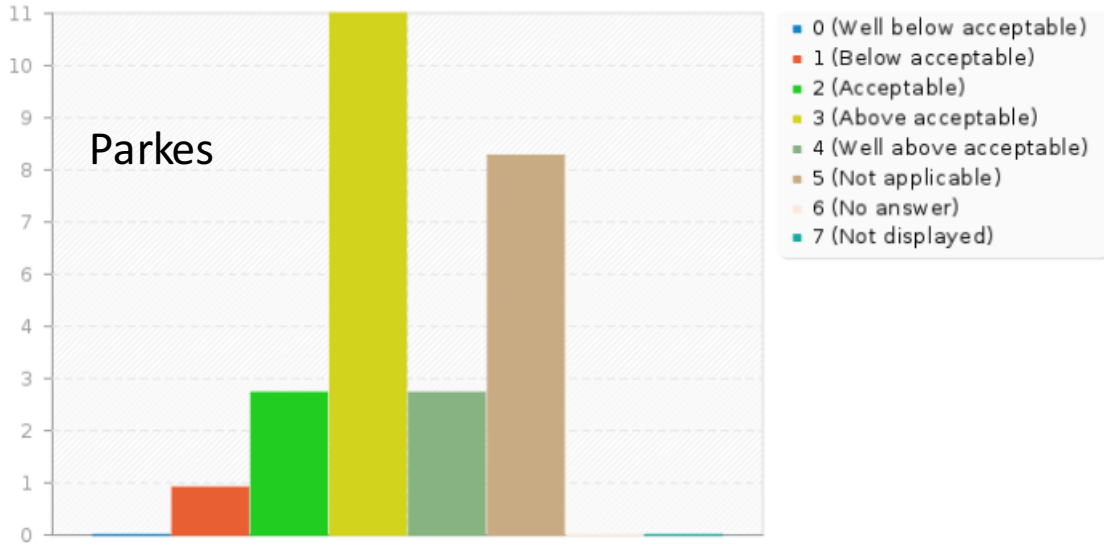


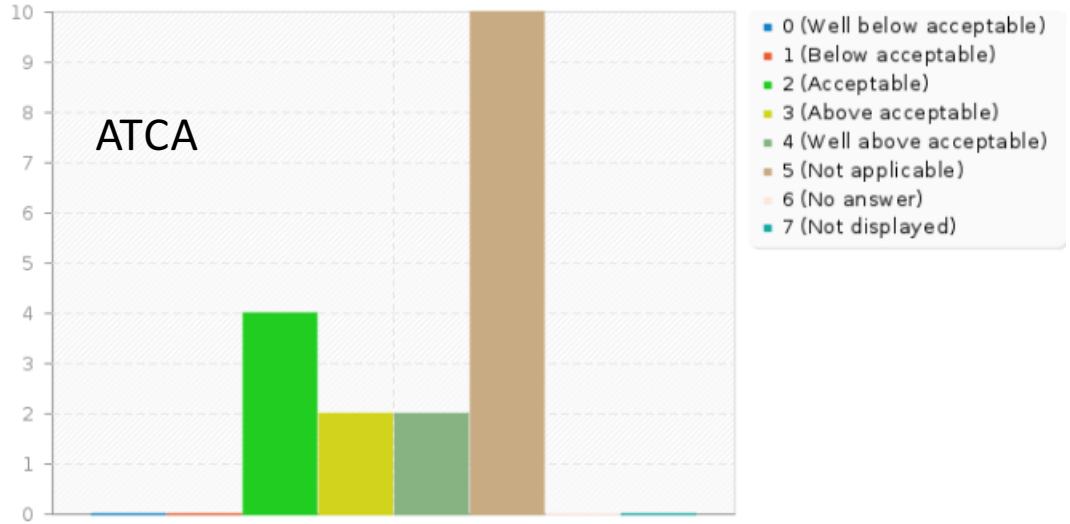




User Feedback:

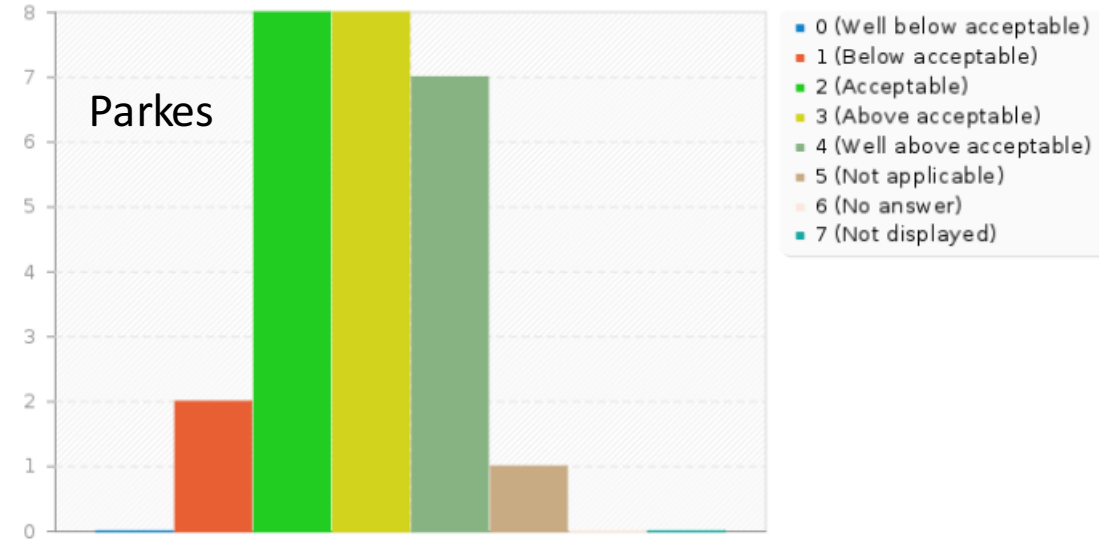
Pre-observation support / training

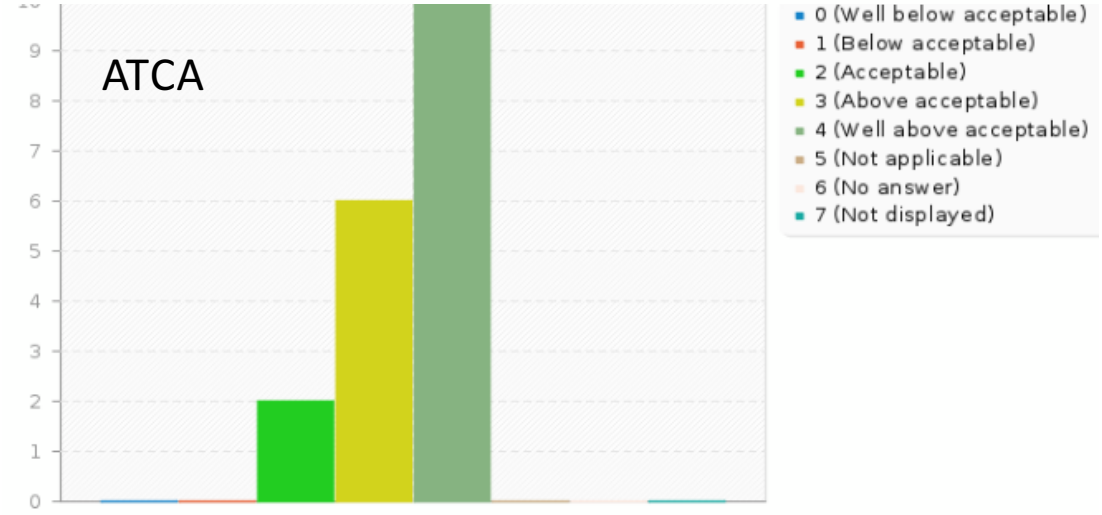




User Feedback:

Post-observation Support





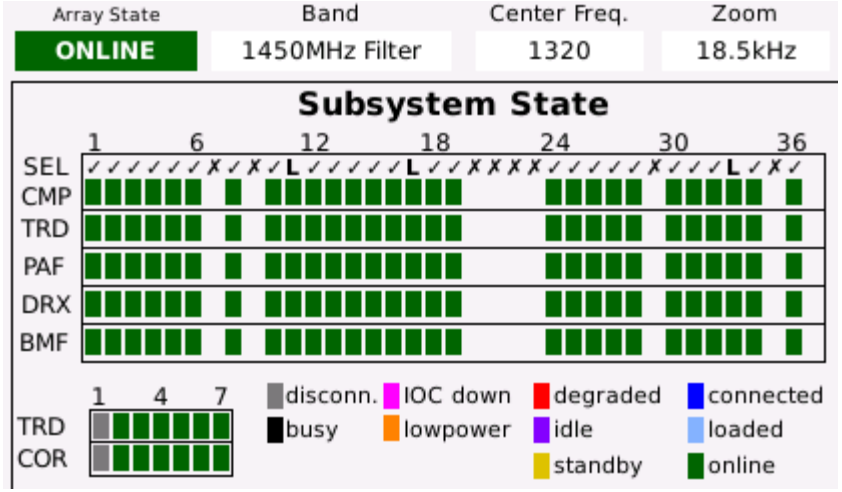
User Feedback:

User Guide

ASKAP status

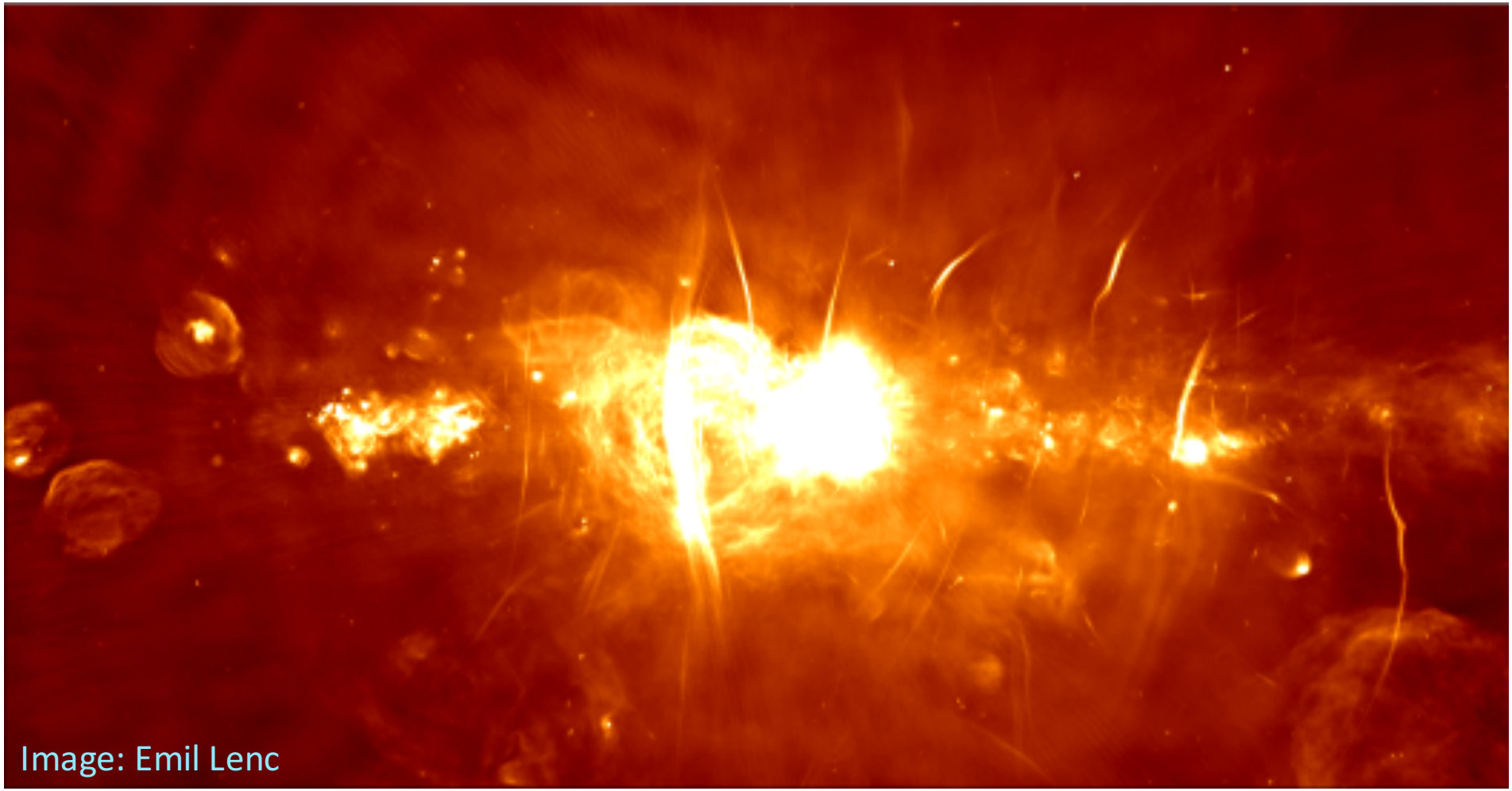
ASKAP Update

- Commissioning proceeding well
- FRB localisation survey commenced
- Demonstration of 28-antenna, 36-beam 288MHz ingest

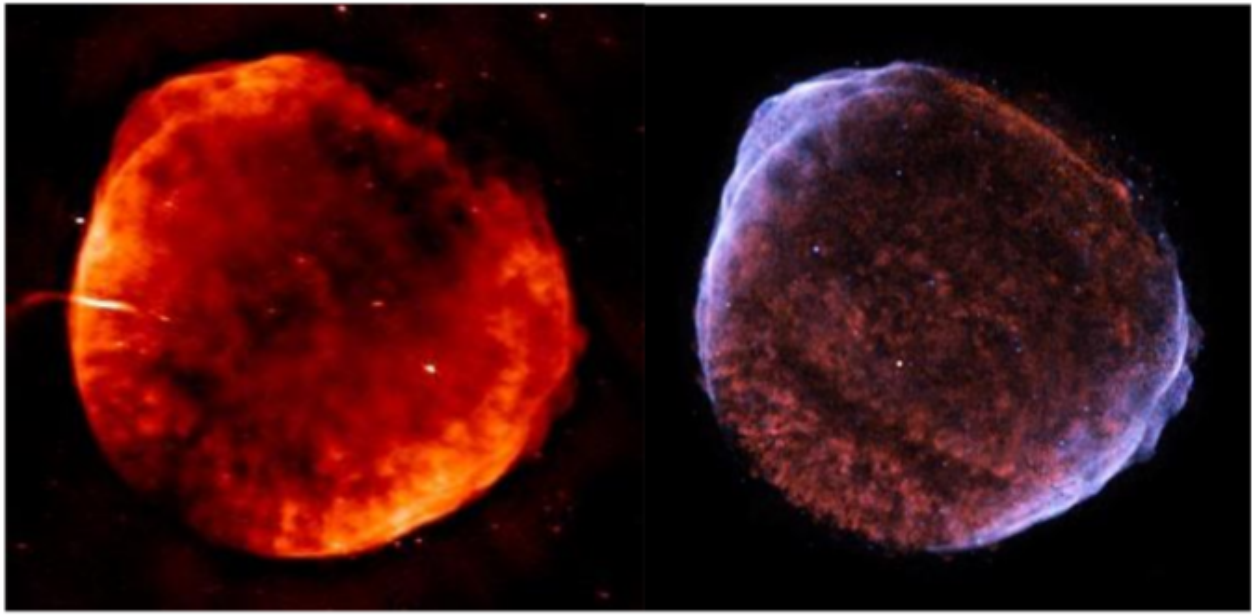


- ***Delivery of h/w for full 36-antenna system completed Sep 2018***
- Pawsey
  - Request for 5~6 PB of disk space in hand, with delivery in Jan~Feb 2019
  - Replacement of Galaxy computer looking like Q3 2020.
  - Exporting ASKAPsoft to other locations – discussions on funding with AAL

ASKAP - GC with 28 antennas

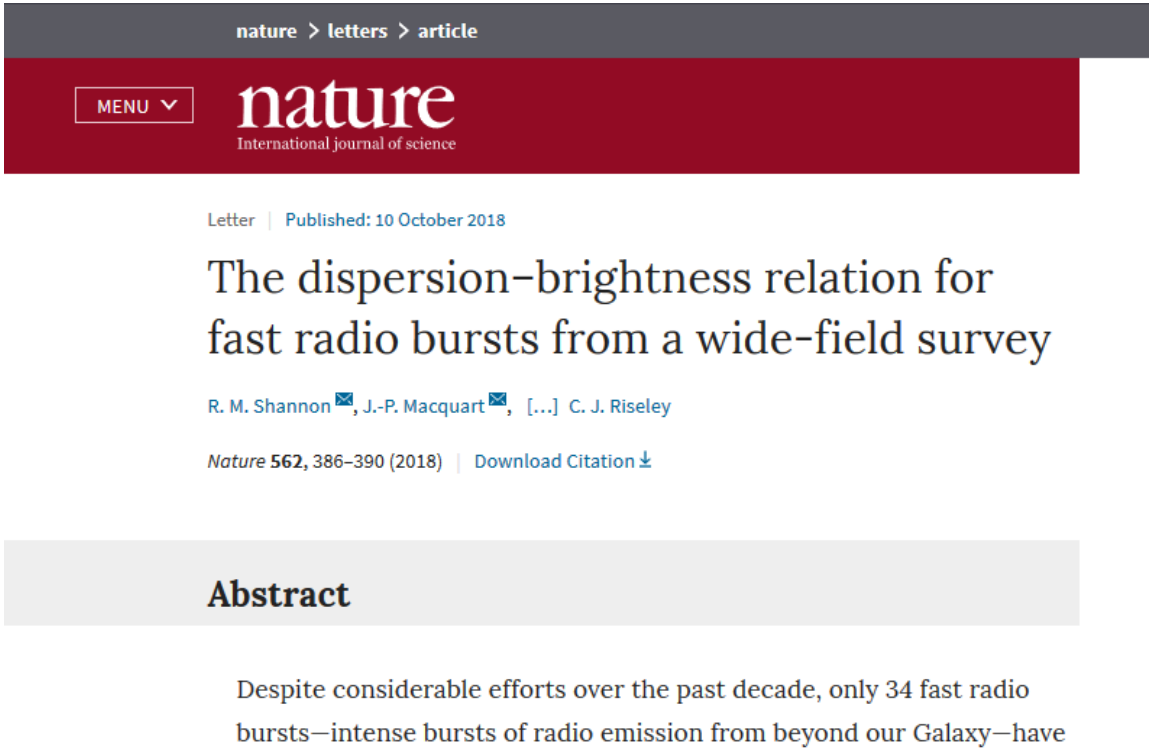


And from Aidan's commissioning update…



SN 1006 imaged with ASKAP at 912 MHz (left) and the Chandra X-ray observatory (right). Aside from what is likely a background radio galaxy jet on the left of the ASKAP image, the two show remarkably similar structures. The ASKAP image was made by Emil Lenc.

ASKAP – custom made for FRBs



nature > letters > article

MENU

nature
International journal of science

Letter | Published: 10 October 2018

The dispersion–brightness relation for fast radio bursts from a wide-field survey

R. M. Shannon, J.-P. Macquart, […] C. J. Riseley

Nature **562**, 386–390 (2018) | Download Citation

Abstract

Despite considerable efforts over the past decade, only 34 fast radio bursts—intense bursts of radio emission from beyond our Galaxy—have

ATSC has endorsed major campaign of order ~1 month to localise an FRB.

Survey has recently started.

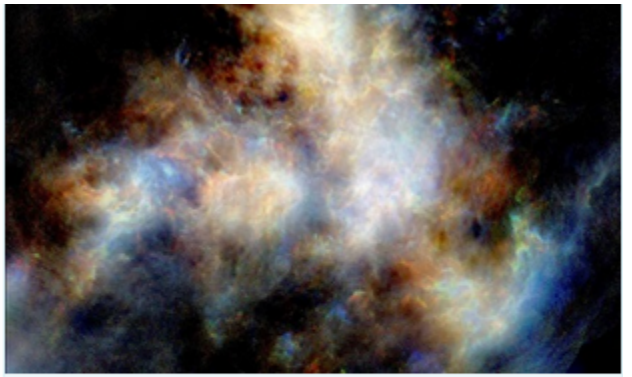
Some modest impact on schedule is likely.

ASKAP pubs list

ASKAP Publications

This page lists papers that report the results of observations made with ASKAP antennas
planned Survey Science Projects. The link to each paper is to the ADS (SAO/NASA Astroph
from which the paper or its preprint can usually be accessed.

1. McClure-Griffiths, N. et al., 2018, Nature Astronomy, 2, 901,
   Cold gas outflows from the Small Magellanic Cloud traced with ASKAP
2. Shannon, R. et al., 2018, Nature, 562, 386,
   The dispersion–brightness relation for fast radio bursts from a wide-field survey
3. Miller-Jones, J.C.A., et al. 2018, MNRAS, 479, 4849
   The geometric distance and binary orbit of PSR B1259-63
4. Bhandari, S. et al., 2018, MNRAS, 478, 1784
   A pilot survey for transients and variables with the Australian Square Kilometre Array Path
5. Chapman, J.M., et al. 2018, Astronomical Data Analysis Software and Systems XXV, ASF
   CASDA: The CSIRO ASKAP Science Data Archive
6. Whiting, M., et al. 2018, Astronomical Data Analysis Software and Systems XXV, ASP Co
   Early Science Pipelines for ASKAP
7. Indermuehle, B., et al. 2018, SPIE, 10704, 107042S
   RFI mitigation through prediction and avoidance
8. Indermuehle, B., et al 2018 SPIE 10704, 107041W
   Using near real-time satellite data for severe weather protection of remote telescope facilit
9. Collier, J., et al. 2018, MNRAS, 477, 578
   High-resolution observations of low-luminosity gigahertz-peaked spectrum and compact st
10. Madrid, J. P. et al., 2018, ApJ, 854, 6
    Gemini Follow-up of Two Massive HI Clouds Discovered with the Australian Square Kilome



30 Oct 2018

Astronomers witness slow death of nearby galaxy

11 Oct 2018

CSIRO telescope almost doubles known number of mysterious 'fast radio bursts'

Hardware rollout complete – 27 Sep 2018

ASKAP engineers install the final digital chassis

In-between tours, MRO staff have squeezed in a pretty major milestone by completing the ASKAP digital hardware installation.

The final delivery included ten crates of digital chassis plus PAF 40, which was the final hardware needed to complete the backend installation for ASKAP. We now have all the hardware installed, including 432 digitiser chassis, 252 beamformer chassis, 72 correlator chassis, 72 timing chassis and 36 front end controllers.

Suzy Jackson

ASKAP Commissioning Schedule Overview

Array Release 3 (18 ASKAP antennas)

- Jun 2018 - Demonstration of 288 MHz, 36 Beam, 18 ant operation
- Oct 2018 - Completion of Fringe Rotator integration
- Oct 2018 - Demo of basic Zoom mode (1 window) in all 3 bands

Array Release "3.5"

- Aug 2018 Demo of 28 antenna, 288MHz imaging

Array Release 4 (all 36 antennas)

- Mar 2019 - Readiness for Survey Pilot Observations , 36 ant, 36 beams, 288MHz
  At this point we aim to commence the SSP pilot surveys as discussed at previous meeting(s), as per the draft *ASKAP Pilot Survey Plan*

ASTRONOMY AND SPACE SCIENCE
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ASKAP Pilot Survey Plan

Aidan Hotan
ASKAP lead scientist
21 September 2018

A description of the ASKAP operations model for 2018 – 2020
Version 1.0

SSP Review Timeline - proposed

- **Oct 2018: Technical workshop to study pilot survey feasibility**
- Nov 2018: Early Science phase-2 commences

- Jan 2019: Pilot survey proposals received
- Feb 2019: Sky model survey commences,
  extra disk space commissioned
- Mar 2019: Pilot surveys commence
- ~Q3 2019: Pilot survey assessment process
- ~Q4 2019: Full survey time allocation external review
- ~Q4 2019: Transition to full surveys

- ~Q3/4 2020: Pawsey upgrade completed, capability review

MRO Open Day Event

Two-day event 5-6 October 2018

Major logistical undertaking

Booked-ticket event, with 200 members of the public over the two days.

Very positive feedback!

Also: Radio School tour on 4 Oct.

Open Days supported by CASS, MWA and DIIS staff

ATNF – overview

2017 BU Review recommendations

12. **ATNF Facilities:** The other ATNF facilities, ATCA, Parkes and LBA, are not only producing excellent science, but are highly relevant for ASKAP and transient follow-up.

The Panel emphasizes that this capability should be retained and endorses the stated CASS goal to keep these facilities operating for the next 10 years.

ATNF Operations funding

FY18/19 income for ATNF Operations:

- $9.5M direct appropriation
- $5.3M external revenue, incl.;
  - $2.3M from sale of telescope time
  - $1.55M from AAL (incl. one-off $200k for antenna fixes)
  - $0.3M reimbursement for MRO costs
  - + additional income from NASA for VGR-2 tracking

External revenue critical in maintaining existing observatories, and giving stability to “bumpy” technologies income

We acknowledge the Wajarri Yamatji people as the traditional owners of the Murchison Radio-astronomy Observatory site

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