ASKAP Commissioning Update #4
August-September 2013

Welcome to the fourth edition of the ASKAP Commissioning Update. This is a regular informal e-mail report on the progress of ASKAP commissioning including new results and challenges, bugs, releases of new software and availability of test data files.

If this edition has been forwarded to you, please sign up to the exploder by sending an e-mail to 'askap-commissioning-request@atnf.csiro.au' with the message text: 'subscribe'. We hope you enjoy receiving this regular update on the progress of ASKAP commissioning. Do not hesitate to contact us if you have any questions about the project.

Ant Schinckel
ASKAP Project Director

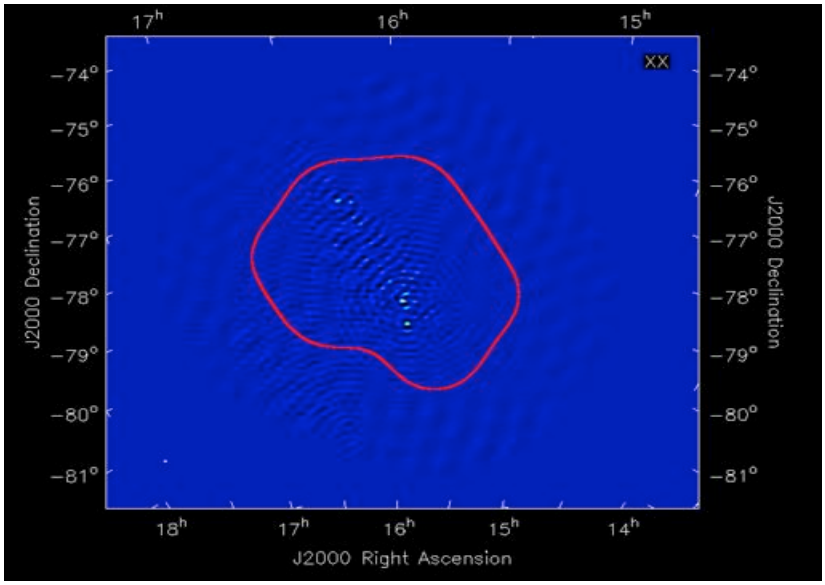
Lisa Harvey-Smith
ASKAP Project Scientist

First 9-beam image demonstrated

During August the commissioning team continued their excellent progress by testing and verifying the performance of the Mk I systems on ASKAP antennas 1, 3 and 6.

Some of the achievements of the commissioning team included significantly improving the efficiency of the beamforming method (using the Sun to find beam weights rather than Virgo A); making several fixes to the newly-installed BETA firmware correlator and producing the first continuum image using 9 beams with the Mk I phased array feeds.

Although this first image was made from data of restricted quality (the data were taken before several significant fixes were made to beamformer firmware), it serves to demonstrate that the system is now working end-to-end with the BETA firmware correlator and that multi-beam capability can readily be extended from the previous three-beam capability that was limited by the software correlator. Firmware fixes are expected to lead to significant improvements in image quality over the coming weeks.



A preliminary nine-beam image using ASKAP antennas 1, 3 and 6 with Mk I phased array feeds. The beams were pointed towards the known positions of bright sources in the field. The red line signifies the half power sensitivity contour of the nine beams.

BETA phased array feeds fitted

The Boolardy Engineering Test Array (BETA) installation team has been working almost non-stop at the MRO to complete the installation of the remaining three BETA systems. In that time they have:

· Lifted the three remaining BETA PAFs onto antennas 8, 9 and 15

· Completed the fibre splicing to all six antennas

· Installed and cabled the beamformers and correlator chassis

· Demonstrated basic end-to-end functionality of all six BETA systems

All six BETA antennas (pointed) are now fitted with Mk I phased array feeds.

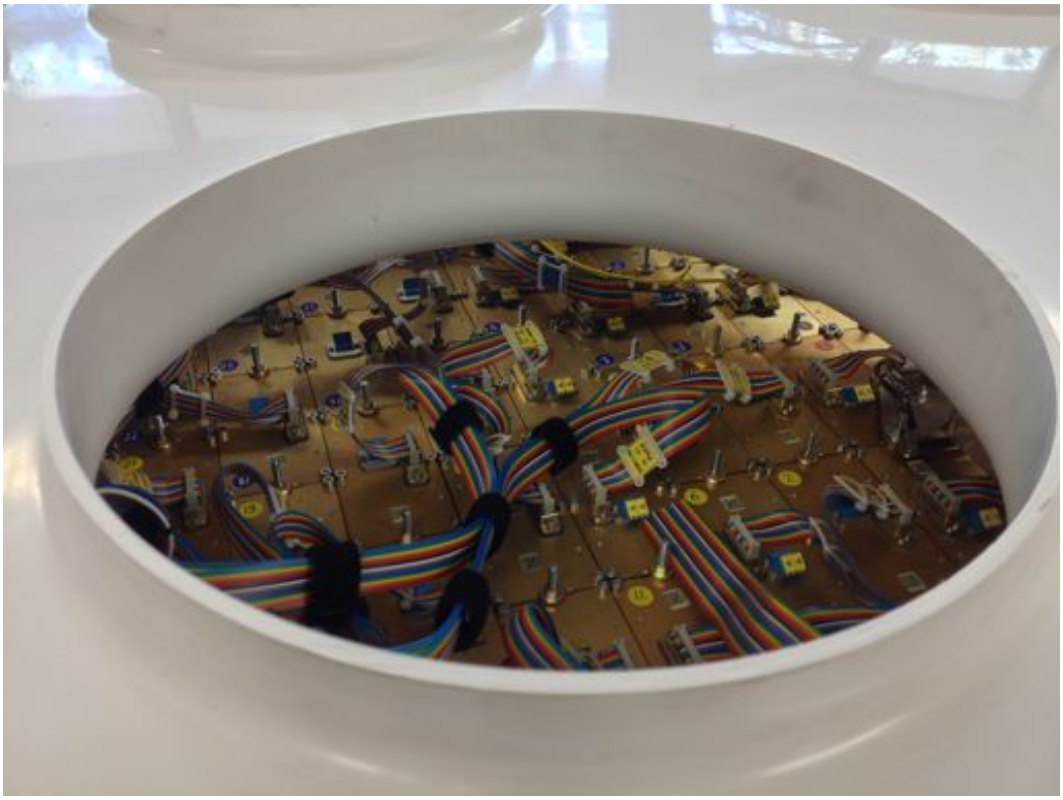
The commissioning team has carried out extensive testing of BETA and resolved a number of minor issues with hardware and firmware. Although there is still a significant amount of work to do, the commissioning team is now working towards stabilising the system and making the first images with BETA.

ASKAP Mk II Phased Array Feed Prototypes

ASKAP's design enhancements program is continuing apace, with a full-sized Mk II phased array feed now under construction and a smaller prototype currently being tested in a radio-frequency shielded room at the CSIRO labs in Marsfield.

Tests of the smaller prototype focus on the performance of RF electronics and electromagnetic compatibility of the Mk II PAF design. The full-sized Mk II PAF model is being used as a testbed for the physical assembly and interfaces.

Meanwhile, beamforming and other capability tests are continuing with the prototype PAF on the 12-metre antenna at Parkes.



The first ASKAP Mk II phased array feed under construction and testing at the CASS laboratories in Marsfield. Credit: CSIRO

Field tests of the first full-sized Mk II phased array feed at the Murchison Radio-astronomy Observatory are expected to begin in December 2013.

ASKAP Early Science Workshop

In May 2013, CSIRO announced that there would be a program of early science observations conducted with the first twelve antennas of ASKAP. The astronomy community was asked for input on the design of this program.

The first step in the consultation and planning process was a community workshop, held on Monday August 5th at CSIRO's Astronomy & Space Science Division in Marsfield.

There was a good response to this opportunity to discuss early science programs for ASKAP, with 71 registered participants from 14 institutes in 5 countries taking part.

Astronomers with a broad range of scientific interests gave talks describing some of the scientific questions that could be addressed using ASKAP's 12-antenna array. Presentations were followed by group discussions on scientific and technical issues including survey planning, data acquisition, data access and distribution to science team. The discussion sessions were chaired by Brian Schmidt from ANU and Anne Green from the University of Sydney.

CASS is now formulating an early science plan based upon input from the ASKAP user community and technical performance analyses for ASKAP-12 being carried out by CASS staff. A consultation document on ASKAP early science will be made available on the ASKAP webpages on September 25th 2013

Right: Astronomers met at Marsfield last month to discuss an early science program for ASKAP. Left: Brian Schmidt leads a discussion during the workshop.

National Science Week Activities

Several ASKAP staff members were involved in outreach activities during Australian National Science Week.

One of the biggest and best was the Murchison Astrofest – a one-day astronomy festival held at the Murchison Settlement on Saturday 17 August.

The Murchison Astrofest attracted more than 300 people to celebrate astronomy in the remote community settlement.

This year, over 300 participants were treated to keynote speeches from ASKAP Project Scientist Lisa Harvey-Smith and winner of the 2012 Prime Minister's Prize for Science, Ken Freeman.

Throughout the day, activities also included guided walks with Wajarri Bush Professor Mr Alan Egan; a selection of Aboriginal bush foods, including an Emu egg omelette; and an exhibition of local artworks from Wajarri and non-Aboriginal artists.

In the evening a night viewing session was held with 18 telescopes set up from the Geraldton Astronomy Group, the Geraldton Grammar School, ICRAR and the Astronomy Group of Western Australia. CSIRO's Education Officer Rob Hollow also led a celestial tour of the sky, interpreting the Murchison skies to the haunting sounds of the didgeridoo.

The Murchison Shire Council hosted the Murchison Astrofest with support from CSIRO and a variety of other sponsors.

ASKAP Indigenous Mentoring Program

In late August, CSIRO staff kicked off a mentoring program in partnership with the Pia Wadjarri Remote Community School, which is located approximately one hour's drive from the Murchison Radio-Astronomy Observatory.

The scheme is a structured program to offer guidance, support and encouragement to students in a remote community and will consist of several mentoring sessions at the school and educational visits to the MRO.

The mentoring program is part of the ASKAP Indigenous Land Use Agreement and has been designed in collaboration with the Geraldton Regional Community Education Centre.

CSIRO's ASKAP Aboriginal Liaison Officer Robin Boddington (seated, front left) and mentors Lisa Harvey-Smith and Yanett Contreras (front right) with students at the Pia Wadjarri Remote Community School in Western Australia. The third mentor in the scheme, CSIRO's Robert Hollow, took the photograph.