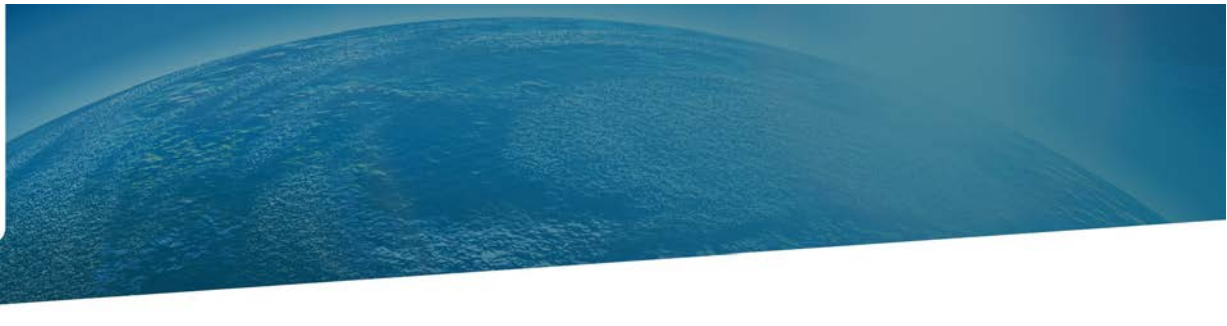


SKA Organisation Monthly Bulletin

5th Issue, August 2014

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From the Desk of the Director-General

Although many of us took some well-deserved time off in August, other colleagues have continued to work hard on the SKA. As a result, there has been significant progress in various areas.

The most significant has been the accession of NCRA representing India to Full Membership of SKA Organisation. This was announced as a news item on the [SKA website](#). At present, India is represented on the SKA Board by the National Centre for Radio Astrophysics (NCRA), which is headquartered in Pune and is part of the Tata Institute for Fundamental Research; however, it is hoped that the membership will transition to the Indian government in due course. India is well represented within the SKA design efforts with Prof. Yashwant Gupta of NCRA leading the Telescope Manager consortium, which is working with other partners to design the hardware and software necessary for real-time control of the SKA. NCRA is also participating in the Signal and Data Transport Consortium and the Central Signal Processing Consortium. As a result of becoming a Full Member, India will be asked to nominate people to serve on various SKA committees.

In the middle of August the XXXIst triennial URSI General Assembly and Scientific Symposium was held in Beijing. SKA was highly visible at the meeting, which was attended by more than 1000 radio scientists from around the world. The SKA comms team set up the portable SKA booth (more on that in the Communications section below). There were many excellent talks on various developments in radio astronomy, technology and science, including a good number related to the SKA. Finally, I was honoured to be invited to give one of four General Lectures in a plenary session.

On a personal note, I was disappointed with two aspects of this URSI GA: first, there was only a small number of female engineers and scientists present, especially for Commission J, the radio astronomy commission; secondly, the majority of attendees were the veterans of radio astronomy, there was a dearth of younger people. This point was discussed within the Commission J business meetings. It is clearly not a radio astronomy issue, since we are seeing a significant influx of younger people and female engineers and scientists as a result of projects such as LOFAR, MWA, ASKAP, MeerKAT and the SKA itself. It does appear to be an URSI problem and I hope that the new Chair of Commission J, Willem Baan, will seek ideas on how to redress the balance before the next General Assembly in Montreal in 2017.

While in China, I took the opportunity to visit CETC54, a Chinese company specialising in antenna construction, to see progress on the prototype SKA antenna they are building. CETC54 is based in Shijiazhuang, about 300km south west of Beijing. After just over an hour on the high-speed bullet train (very smooth) I, and some colleagues, were whisked off to CETC54 for presentations on the status and then, to my surprise, to see the completed antenna. The CETC54 crew had worked night and day for weeks to complete the antenna for my visit, and I was personally overwhelmed that they had worked so hard and completely impressed by what they had achieved.

The DISH consortium is developing three offset Gregorian SKA prototypes, one based on the MeerKAT antenna, a panelled aluminium surface, and two with carbon-fibre reflector surfaces. The Canadian prototype (so-called DVA-1) is currently under test and I will be visiting Penticton in September to see the current status. The Chinese prototype (DVA-C), shown in the accompanying photograph, has a single piece 15 x 18 m metallised carbon fibre reflector surface weighing less than 2000 kg; indeed the whole structure weighs approximately 25 tonnes. Neither the sub-

reflector, nor the main reflector have yet been painted, that will come shortly. Measurements are under way for the main reflector surface; however, the 6m-diameter sub-reflector has been measured to have an rms surface accuracy of 0.19 mm, which exceeds the specification of 0.2 mm. It will be interesting to see how these developments progress as we down-select for the formal SKA prototype in the near future.



Prototype SKA antenna developed by CETC54

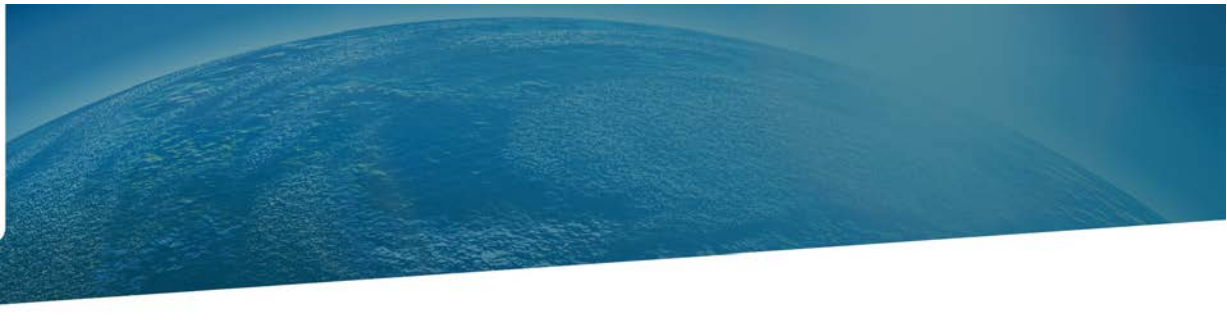
A few weeks ago I signed a contract with NRAO to assist us in developing the SKA operations plan. NRAO have moved quickly and the kick-off meeting with NRAO staff for the 4-month contract occurred at SKA HQ on August 26/27. At the end of the four months I am hoping we have the firm outline of an operations plan, which can then be developed in detail by the new Head of Operations Planning once that person is on-board.

Below, in Simon Berry's section on Policy Development you will see a request for assistance in identifying areas where radio astronomy has had a positive influence on new areas of technology or innovation. Please read and respond to his request; this is vital as we work to 'sell' the SKA to governments.



Finally, I am pleased to announce that NenuFAR, the low-frequency extension to the Nançay LOFAR station in France has been granted SKA Pathfinder status. A detailed description of NenuFAR can be found [here](#).

Philip Diamond
SKAO Director-General



Project

By Alistair McPherson, Head of Project

The preparations for the [SKA Engineering Meeting](#) in Fremantle (29th September – 2nd October) are moving ahead and I thought it would be useful to cover some of the background on what we hope to achieve over the time together. I realise that several consortia have arranged a variety of meetings, some consortia meetings, some workshops and some board meetings. It will be good to network and get business done whilst all in one place.

The Monday and Tuesday are fairly self-evident. They will include a series of updates from both the office and the consortia and this should be a good opportunity for everyone to see what great progress has been made on the project over the past twelve months. We have also invited the three Precursor Projects to give updates focusing on the lessons they have learned to date. This should be very useful for our planning. I always find it better to learn from someone else's experience rather than duplicating an error.

The Wednesday, starts with two parallel sessions on Architecture led by Tim Cornwell and on RFI led by Peter Dewdney. Following that we will have some sessions with the consortia to clarify the re-baselining submissions. I will lead one group of meetings and Tim Stevenson the other. In parallel, there is a session of Interface meetings coordinated by the System Engineers and a session on Maintainability run by Corrie Taljaard.

Thursday is a workshop session where, following a central briefing, the conference will split into random groups to discuss some re-baselining options. I will suggest some options, although each group can add one if they choose. Each group will be provided with a facilitator and one member of the office to assist. The outcome of the session will be for the groups to present to the conference a SWOT analysis of each option they have discussed. This will be extremely useful input into the re-baselining study that the office will then continue. It is the intention to ensure that the groups are made up of a variety of consortium members.

You will all be aware that the [visit to the MRO](#) has been filled, but feel free to add your name to the waiting list in case spaces appear.

The remainder of this month has been filled with planning the work of the conference and re-baselining. In addition, we have been investigating new configuration and documentation management systems to see what will be suitable to the project as it progresses. No decisions yet.



System Engineering

by *Tim Stevenson, SKA Chief System Engineer*

Alongside the development of the Roll-Out Plans and the accelerating definition of 'steady-state' Operations, plans for logistics support are maturing. This means that the Office RAM-ILS Engineer, Corrie Taljaard, is developing an Integrated Logistics Support Plan using industrial principles and standards and based upon our current understanding of the system. A major part of that understanding is a structural model in SysML ([see July Bulletin](#)), but it will shortly begin to demand knowledge of the failure modes and effects of the current design at Element level and below and the criticality of those effects ('FMECA').

Consortia are required, as part of their Stage 1 review submission (PDR), to deliver a preliminary maintenance plan. The development of that plan will have involved FMECA or something very like it. It is these analyses that are useful to the Office in formulating support plans, and therefore guidance is available to Consortia to help develop them. The [SKA Engineering Meeting](#) in Fremantle will have a dedicated session on support issues, run by Corrie.

Interface Control documentation across the Project continues to develop, although many issues that would benefit from a standards based approach have not done so. The Office further encourages Consortia to try to require the use of industrial standards at interfaces to reduce and control risk and cost.

Several Interface Control documents are nearing baselining, which is a very satisfactory state of affairs, particularly in view of the imminent Preliminary Design Reviews where Panel members will be happy to see appropriately mature interface definition.

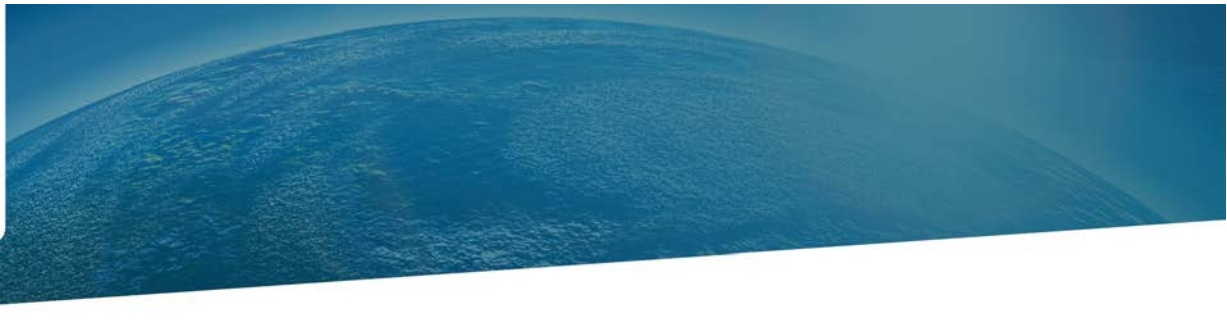
Architecture

by *Tim Cornwell, SKA Architect*

The Telescope Architecture Teams are starting to take account of the top-level issues to be addressed in determining the telescope architecture. The SKA-1 LOW Architecture team will be visiting ASTRON to discuss a range of issues including calibration, RF over Fibre and the configuration of the telescope. The Architecture of the telescope is expected to be fully defined by the beginning of March 2015.

SKA Office have contracted NRAO to further develop the concept of operations model for SKA-1 to be used for future planning. On 26th and 27th August a kick-off meeting was held at SKA Headquarters. Lory Wingate, Peggy Perley and Carol Lonsdale attending the meeting on behalf of NRAO and Gene Cole and David Husted joined by videoconference. SKA Office staff gave presentations on the current status of the SKA project and there was a useful discussion to outline the workplan. The NRAO team will now engage with project stakeholders and visit the two telescope sites. The concept of operations model will be completed by the end of 2014.

Work on developing Functional Analysis documentation for the project continues. The documentation is being reviewed and Functional Analysis work is being expanded to include SKA Enterprise and understand what services and functions within the organisation are required at the enterprise level.



Science

by **Robert Braun, SKA Science Director**

The Science Prioritisation Review process is ongoing and the Science Review Panel, chaired by Dr Chris Carilli met on 2nd September via videoconference to discuss the science prioritisations for SKA-1. An update on outcome of the meeting will be available in a forthcoming bulletin.

SKA Project Scientists continue with their science and outreach work. Jeff Wagg attended the URSI General Assembly in Beijing. He also gave talks at Peking University/Kavli Institute for Astronomy and Astrophysics (KIAA), Purple Mountain Observatory in Nanjing, and the Shanghai Observatory. It was excellent to see the level of enthusiasm and interest in the SKA at these institutes, especially among the students and postdocs.

Here are the talk titles and links:

20th August (URSI General Assembly - commission J09)
Science Drivers for Phase 1 of the SKA
<http://www.aps-ursi.org/ursigass/program/> (click on J09)

25th August (KIAA/Peking University)
Surveying the Evolution of Galaxies and Structure formation with the Square Kilometre Array
<http://kiaa.pku.edu.cn/lunchtalks/2014aprthu>

27th August (Purple Mountain Observatory, Nanjing)
From Exoplanets to Cosmic Dawn with the Square Kilometre Array
http://www.pmo.ac.cn/xwzx/xsjl/201408/t20140822_4190899.html

29th August (Shanghai Observatory)
The Square Kilometre Array
http://english.shao.cas.cn/rh/sems/201408/t20140826_126692.html

Policy Development

by **Simon Berry, SKA Director of Policy Development**

For the policy team, the coming few weeks will be about preparing for a meeting of the Strategy Committee in Rome at the end of September and then October's Board meeting in China. At both of these, the focus will be on the future governance of the project, where we are hard at work on developing the details of what we hope will be the establishment of a new Organisation ready for construction and operation of SKA1 and also the details and rules for how the project will be funded. As I've written before, understanding how the procurement or 'work assignment' process will work will be critical. I'll be talking about our current thinking on this at the Engineering Meeting at the end of the month.

The other major area for us is the development of the business case, or what we are calling the 'Prospectus' for the project. This will be a critical document for all of us over the coming months as it will describe a summary of the science case and the overall terms of engagement for a country in the project. Perhaps most critically of all, the



prospectus would also describe how a member country may benefit in terms of scientific and industrial return for its participation. In the language of governments and policy makers: what will the 'impact' of SKA be?

In this area, we would really appreciate the help of everyone in the global SKA community. Stories of early successes, good news, and positive achievement are sought, perhaps associated with industry involvement, right through to areas of potential second order spinoffs where radio astronomy more generally has been influential in new areas of technology or innovation. We all know (and so do the various governments) some of the high profile cases such as the development of Wi-Fi from radio astronomy; what we need now are other stories so that we can help to create the strongest possible case for investment to be presented to all of the SKA Member governments (and as a sales pitch to potential new members). Please contact us (s.berry@skatelescope.org and p.crosby@skatelescope.org) with ideas or to get involved.

In Perth, Phil Crosby has been developing a tool for mapping member country capability, and of course helping to organise logistics for the SKA Engineering meeting and site visit, including support and guidance for industry Consortia members who are attending the various sessions and post-meeting workshops. See you there!

SKA Board Matters and Administration

by Colin Greenwood, SKA Head of Administration and Legal

Board of Directors

Preparations are underway for the SKA-BD-15 meeting of the SKA Board of Directors being held in Guiyang, China on 14th-15th October.

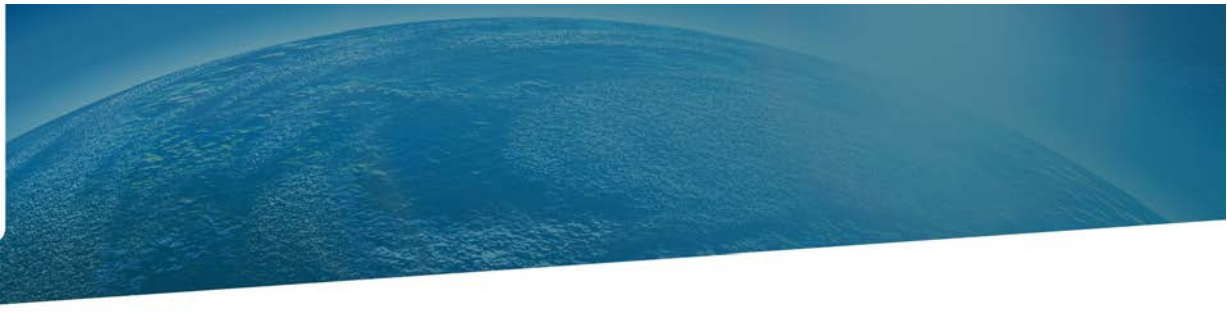
Staff Update

On 29th August we said farewell to Nathan Cunningham (IT Intern) who is returning to Manchester University for the final year of his Bachelor's degree. Vipin Gungaram, who joined the organisation in July as IT intern for 2014-15, has taken over Nathan's responsibilities.

Three new positions are currently being advertised: Head of Operations Planning an SKA Project Scientist and a temporary Project Officer. Details of the vacancies can be found on the [vacancies page](#) of the SKA Organisation website:

IT

A reminder that if you would like to try out Vidyo videoconference software in preparation for meetings with the SKA Office, please contact the IT department (skao-it@skatelescope.org) at SKA Headquarters to arrange a test.



Communications and Outreach

by William Garnier, SKA Communications and Outreach Manager

Mini-sites

The SKA Comms Team launched the national mini-sites in early August. There are now four mini-sites up, for [Italy](#), [the UK](#), [Sweden](#), and [Spain](#) as a non-member country. The mini-sites, managed by our communications colleagues in the respective country organisations, are an initiative to provide SKA-related content in other languages as well as a way for countries to provide more information on their contribution to and interest in the SKA. More information is available in [the July bulletin](#).

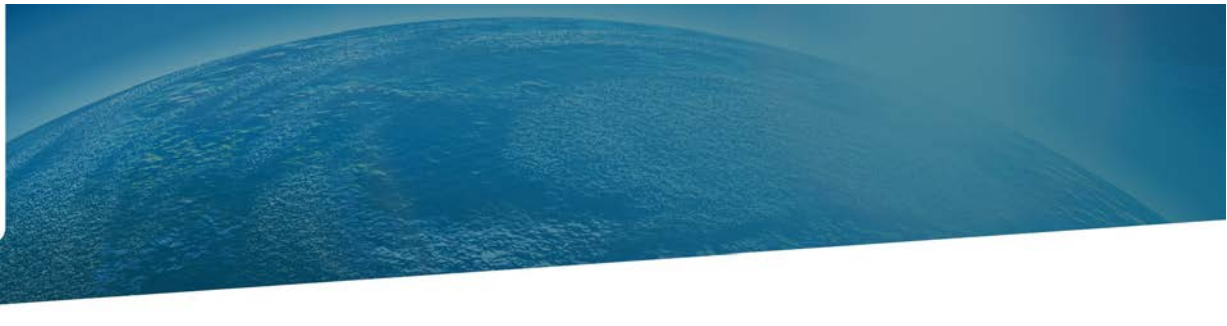
Other SKA countries are also working actively on having their own mini-site available shortly.



Homepage of the Sweden mini site

International Union of Radio Science

The SKA Comms Team took part in the General Assembly and Scientific Symposium (GASS) of the International Union of Radio Science (URSI), held in Beijing, China, from 16th August until 23rd August. Over 1000 scientists took part. The SKA was the only non-Chinese organisation represented in the exhibition area, and attracted a lot of interest. In particular, we received the visit of the Chairman of the Chinese Institute of Electronics and Governor of the Shaanxi Province, Mr. Qinjian Lou, accompanied by Mr. Xiaolan Xu, Secretary General of the Chinese Institute of Electronics, as well as other high-ranking Chinese officials.



SKA booth at URSI conference

Meeting with the SKA China Office

Our time in China was also a great opportunity to discuss outreach initiatives with our Chinese colleagues from the SKA China Office. In particular, work should start shortly on a Chinese SKA mini-site in Mandarin. We also discussed the SKA presence on social media channels in China, and are working towards establishing SKA accounts on popular Chinese social media channels such as Weibo.

Visit to NCRA in India

Following URSI, we headed to India for talks with our colleagues from the National Centre for Radio Astrophysics (NCRA), who recently became full members of the SKA Organisation. Similar discussions were held on establishing an Indian mini-site, which should be ready in a few months' time. The mini-site will have a limited number of pages translated in Hindi. Other important outreach initiatives were also discussed.

Engineering Meeting Update

Following our visit at NCRA, we travelled to Fremantle in Australia to put the final touches to the organisation of this year's SKA Engineering Meeting. We are now less than one month away from the Meeting. We are pleased to say we are on track for a successful event with an excellent venue for the conference in Fremantle, as well as a range of diverse social events in the evenings.

Attendance is expected to be high with over 270 participants registered for the conference. Registration will be extended and will remain open until 15th September. We encourage you to book your hotel quickly as from Wednesday 3rd September, the Esplanade hotel no longer guarantees the current SKA discount on room prices.

If you have not applied for a visa yet, we strongly recommend doing so as soon as possible as the visa process can take some weeks. Do not forget to ask for an invitation letter if you need one (details [here](#)).

Finally, if you have registered for the conference dinner, please remember to pay before the start of the conference, (details [here](#)).

If you have any questions or problems, feel free to write the LOC at engcon14@skatelescope.org.

Women in Engineering initiative

While in Fremantle for the Engineering Meeting, we will be launching a new outreach initiative with the women engineers attending the meeting to celebrate their contribution to the project, promote women in engineering and science and encourage girls to study STEM (Science, Technology, Engineering and Mathematics) fields at school and university. More details will be available in next month's bulletin.

Art/astronomy Exhibition

The art/astronomy 'Shared Sky' exhibition coordinated by the SKA Organisation in collaboration with Australian and South African partners is coming together and the launch in Perth on 30th September promises to be a memorable event. This exhibition aims to be a celebration of humanity's most ancient cultural wisdom, alongside one of the world's greatest scientific and engineering endeavours. South African artists, descendants of ancient cultures that lived for thousands of generations in the landscape that cradled the origin of our species, join Australian Aboriginal artists, descendants of one of the oldest surviving cultures on earth beneath a *Shared Sky*. Final details for the launch event are being worked out with the John Curtin Gallery in Perth, which will host the exhibition for more than a month. In *preview* for our readers find below two artworks to be featured in the 'Shared Sky' exhibition.



Large collaborative painting worked on by the Yamaji Arts artists in Australia



Large tapestry from the Bethesda Arts Centre First People Quilters, exploring the moon, the Milky Way and the sun, accompanied by translated stories.

SKA Communications and Outreach Working Group (SKACOWG)

The SKACOWG will have its 2nd face-to-face meeting in Perth at the end of September, partly overlapping the Engineering meeting. Preparations for the meeting are ongoing and discussions will range from an assessment of the 2013-2017 global communications strategy after two years, the SKA Branding, the world tour of the art/astronomy exhibition after the Perth launch (including the launch in South Africa in early 2015), and setting up an SKA Ambassadors Program, to the preparation of the 2015 Communications Implementation Plan including the draft communications plan for the re-baselining announcement. All SKACOWG members confirmed their attendance to this critical meeting, most of us in person and some by videoconference. The SKA Communications and Outreach Network (SKACON) members have been invited to provide inputs and comments prior to the meeting to feed the discussions.

Update on SKACON membership

The SKACON group has gone through a deep re-structuring recently and we are pleased to welcome several new colleagues. Recent changes include:

- Flornes Yuen, SKA Information Officer at CSIRO, taking over from Tony Crawshaw in this post.
- Anthony Teston, Communications Officer at CNRS-INSU, taking over from Loic Bommersbach.
- J.K. Solanki, Administrative Officer at NCRA, in charge of media relations. Solanki and Ishwar Chandra are now both SKACON representatives in India
- Roy van der Werp, Junior Communications Officer at ASTRON, temporarily taking over from Femke Boekhorst, currently on maternity leave.
- Lorenzo Raynard, newly appointed SKA SA Science Communications Manager. Lorenzo is also now the SA Representative in the SKACOWG.
- Tommy Makhode, Communications Manager at the South African Department of Science and Technology.

On behalf of the SKACON, welcome to all of you and we certainly look forward to working with you.



A complete list of SKACON members including contact information is available [here](#).

Media coverage

The news this month included an article on the University of Cape Town's role in the SKA and in the Big Data revolution ([here](#)).

The Economist published an article on the rise of scientific research in Africa, citing the SKA as being "at the forefront of a blossoming of scientific research in Africa" (article [here](#)).

On the visual side, here's a stunning time-lapse featuring some of Australia's astronomical observatories, including ASKAP at the Murchison Radio astronomy Observatory, the Australian SKA site (video [here](#)).

As usual, a selection of media articles of interest is featured on the [press coverage page of the SKA website](#).

Connect with us

For any enquiries, requests or feedback please write to ska-outreach@skatelescope.org

You can also find the SKA Organisation on [Facebook](#), [Twitter](#), [Google+](#) and [YouTube](#).