AuScope
AN ORGANISATION FOR A NATIONAL EARTH SCIENCE INFRASTRUCTURE PROGRAM

AUSCOPE EMAIL UPDATE NO.9 – APRIL 2011

As AuScope approaches the end of the original NCRIS term in June 2011, most components are now focused on delivering the remaining parts of the AuScope infrastructure, and entering a period of continued operations of the majority of the equipment and facilities. Some additional funding has been contributed to support ongoing operations for the next two years.

The development of the **AuScope II** plan for infrastructure requirements for the decade ahead commenced again in earnest in late January and has made good progress. A Forum was held in Melbourne on 20 April to discuss a roadmapping document arising from this work to develop an Australian Earth Observatory. The Forum was attended by 30 representatives from AuScope's partners and other organisations who contributed to the preparation of the roadmap. Further information on the outcomes of the Forum will be posted on AuScope's website in coming weeks.

AuScope participants involved in establishing the **EIF-funded Australian Geophysical Observing System (AGOS)** have completed the first Quarter of the program which has focused largely on equipment design and procurement.

Bob Haydon
CEO, AuScope Ltd

AuScope Grid and Interoperability
Program Director
Robert Woodcock

Information regarding Australia's geography will now be available at the click of a button thanks to a national online network of geospatial data, jointly established by AuScope, CSIRO, and the Department of Innovation, Industry Science and Research (DIISR) in collaboration with geological surveys and research organisations around the country.

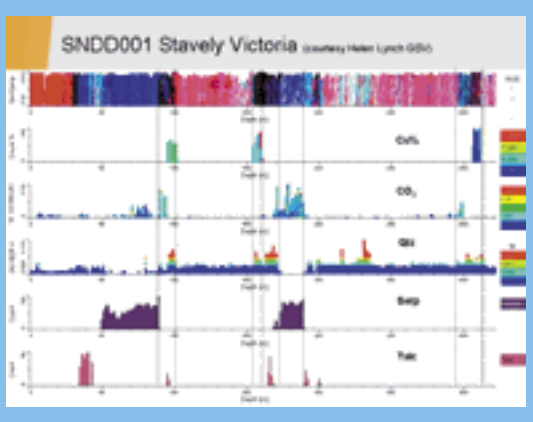
The online network or grid is supported by an open standards based data infrastructure – the **Spatial Information Services Stack (SISS).** SISS was promoted at a three-day workshop held at Geoscience Australia. The first day talks can be accessed by visiting **AuScope** or the **SISS** websites.

Rob Woodcock speaking at the SISS Workshop.

National Virtual Core Library
Program Director
Jon Huntington

World-first integrated HyLogger delivered - AuScope NVCL technology development partner CSIRO recently delivered its latest and most advanced HyLogging System to National Virtual Core Library partner Geoscience Victoria at their Werribee Core Library in Victoria. The HyLogger-3, the first of seven upgrades to all State and Territory Geological Survey nodes, provides a world-first in fully integrated wavelength core logging. The new instrument offers spatially co-registered reflectance spectroscopy in the visible, near and short wavelength infrared, plus newly added, the thermal infrared region, for detecting anhydrous silicates, such as feldspars, quartz, garnets, pyroxenes, olivines and many other minerals. The new data collection opportunities opening up for Australia's Geological Surveys are considerable and already bringing to light important new knowledge and helping geologists re-think conventional interpretations. The new instrument will open up many new avenues for research as the physics of the thermal infrared is different to traditional wavelengths, while the increased number of minerals requiring unravelling also poses research challenges and experience building.

For more details of these and other studies resulting from use of the infrastructure at the **AuScope NVCL nodes,** or to talk about research opportunities, please contact the **NVCL custodians in each State/Territory** or **Jon Huntington.**



This figure, from the Stavely region in western Victoria and courtesy of Helen Lynch at Geoscience Victoria, shows a combination of logs from a variety of wavelengths. The thermal infrared in particular is mapping smaller proportions of carbonates than previously possible, as well as highlighting a number of quartz vein systems.

Earth Composition and Evolution
Program Director
Bruce Schaefer

Dr Matt Kilburn from UWA's Centre for Microscopy, Characterisation and Analysis has recently attended the **European Union-Australia Workshop on Research Infrastructure in Brussels** with a contingent from AMMRF representing infrastructure in Microscopy and Microanalysis. Australia's representation at the workshop was organised by DIISR. Dr Kilburn gave a brief presentation highlighting the partnership between AuScope and the AMMRF in providing the ion probe infrastructure, and making it available to all Australian researchers.

Dr Matt Kilburn with the CAMECA IMS 1280

Earth Imaging and Structure
Program Director
Brian Kennett

An interpretation workshop was held at the **Geological Survey of Western Australia on April14-15 for the Capricorn reflection transect** jointly funded by AuScope and GSWA. This group of reflection lines crosses from the Pilbara to the northern Yilgarn across the Capricorn Orogen through the Glenburgh terrane. The data suggest that Pilbara crust extends beneath at least part of the Capricorn Orogen and helps to resolve long-standing issues about the nature of the suture that produced the Western Australian Craton.

Earth Simulation, Analysis and Modelling (SAM)
Program Director
Louis Moresi

Louis Moresi and Patrice Rey will be teaching a workshop in the use of the underworld software at the **Geological Society of America annual meeting in Minnesota** this October. The workshop will be held in conjunction with the Computational Infrastructure in Geodynamics organisation which supports development of Underworld. Louis Moresi will give a related keynote talk at the meeting on the applications of numerical modelling to geology.

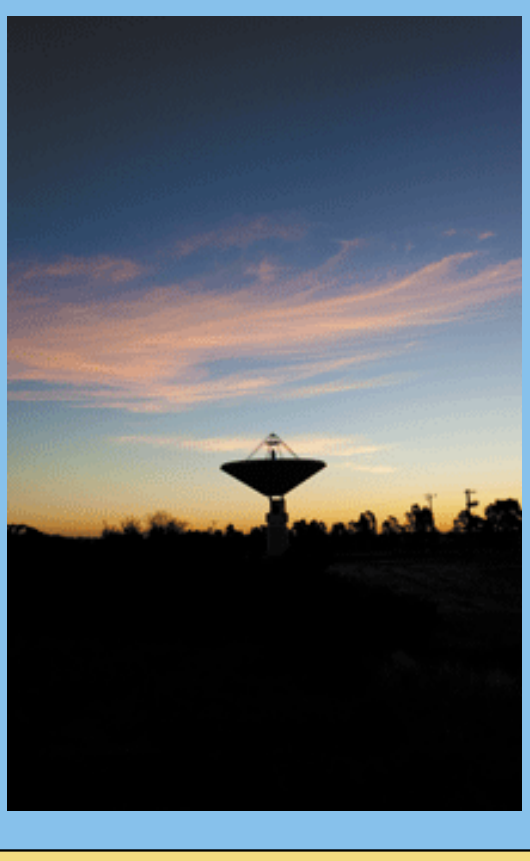
This image shows the GA cooper 3D model embedded within a topography map of Australia, from approximately the Queensland-North Territory border facing Tasmania. The model, which is vertically exaggerated by x10, shows an isotherm, the granite bodies coloured to temperature, and the drill hole locations of a study looking at geothermal modelling sensitivities and uncertainty using Underworld-GT.

Geospatial Framework and Earth Dynamics
Program Director
Gary Johnston

First interferometric fringes to the AuScope VLBI 12m telescope at Yarragadee (WA). Observations of the quasar PKS 1921-293 were made on Monday May 18 at the AuScope VLBI Yarragadee and Hobart 12m antennas, and at the University of Tasmania Hobart 26m antenna. The data were then transferred electronically for correlation in DiFX at the Curtin University Parallel Processor for Astronomy (CUPPA) and good fringes were seen at both S and X-bands. Following this, the Yarragadee antenna participated in it1s first IVS observation, R1479, in tag-along mode on Tuesday April 19.

This achievement marks a significant milestone in the AuScope VLBI project with all three telescopes at Yarragadee, Katherine and Hobart now producing fringes. The Hobart 12m is now making IVS observations at a rate of typically three days per week, Katherine will join following some maser repair work in June and Yarragadee will ramp up to a three day per week rate over the next two months. Yarragadee is a key site in the AuScope VLBI array as it represents a co-location of many geodetic techniques, including VLBI, GNSS, SLR and gravity

AuScope would like to thank everyone who has contributed to achieving this milestone: our partners at the University of Tasmania, Curtin University, Geoscience Australia, staff at the MOBLAS-5 facility in Yarragadee, and colleagues at CSIRO and in the international geodetic VLBI community.



This update will be issued every three months to the Australian geoscience research community, keeping you up to date with the latest developments and progress of each of the six AuScope infrastructure components. Please forward the update to anyone in the wider research community who would be interested in finding out more about the investment in earth science infrastructure in Australia.

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