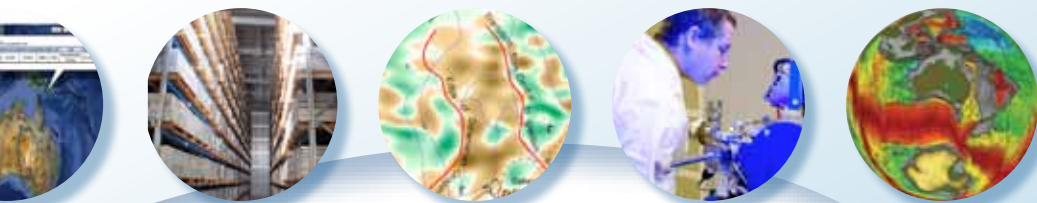
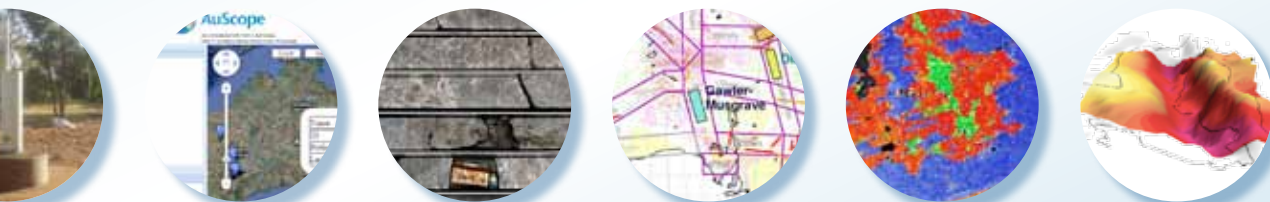


Highlights Year 4

1 July 2009 – 30 June 2010



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AuScope is an initiative of the Australian Government being conducted as part of the National Collaborative Research Infrastructure Strategy (NCRIS).

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AuScope Limited is an organisation established to implement a national geoscience and geospatial infrastructure program, funded from the Commonwealth Government's National Collaborative Research Infrastructure Strategy (NCRIS).

Summary

Year 4 of the AuScope Program saw substantial components of the planned infrastructure delivered and in turn these achievements were promoted to the earth science and geospatial community. As well, AuScope coordinated a successful bid, through the Educational Investment Fund Round 3 (EIF3), to enhance parts of the AuScope NCRIS infrastructure which secured \$23 million for the Australian Geophysical Observing System (AGOS).

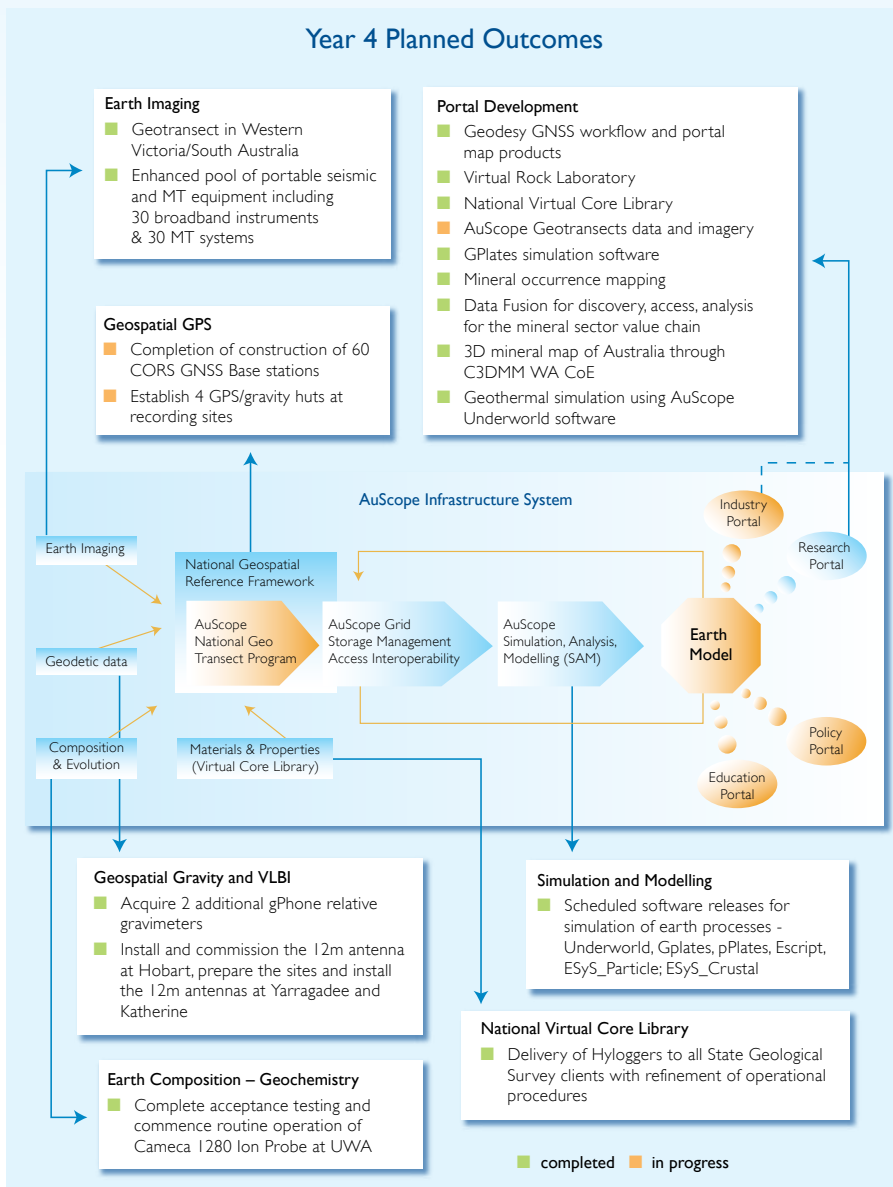
The delivery of much of the remaining physical infrastructure in Year 4 has allowed significant parts of the data infrastructure to be built resulting in the majority of planned Year 4 outcomes to be achieved. The development of computing infrastructure through the AuScope Grid has also progressed to plan, providing interoperable access to key national data sets via the grid. Key achievements have been made across the program:

- The Official opening of the radio telescope at Mt Pleasant near Hobart by the Governor of Tasmania and the construction of the remaining 2 radio telescopes at Yarragadee in Western Australia and Katherine in the Northern Territory.
- Global Navigation Satellite Systems (GNSS), ground stations and receivers, have been rolled out across Australia. 96 stations are now planned with 38 currently operational and 27 under construction by the year's end.
- The geospatial gravity observation program is now underway and the Reynolds Dome at Mt Stromlo has been renovated to allow for the collocation of multiple gravity instruments.
- Infrastructure for Earth Imaging and structure component has progressed according to plan with the 5 data infrastructure programs and capital acquisitions completed.
- Six Hyloggers have been delivered and are operational, as planned, in Geological Surveys at: Geological Survey of NSW at Londonderry, Department of Primary Industries and Resources South Australia (PIRSA) at Glenside, Geological Survey of Western Australia at Carlisle, Geological Survey of Queensland at Zillmere in Brisbane, Mineral Resources Tasmania at Mornington in Hobart and Northern Territory Geological Survey at Winnellie in Darwin.

AuScope's achievements this year include the official opening of the radio telescope at Mt Pleasant near Hobart by the Governor of Tasmania.



Progress towards completing Year 4 Planned Outcomes (Annual Business Plan Financial Year 2010).



- The Cameca Ion Probe facility at the Centre for Microscopy, Characterisation and Analysis (CMCA) at the University of Western Australia, is operational.
- The Grid and Interoperability component's National Web Roadshow for the promotion of the Spatial Information Services Stack (SISS) and usage within the AuScope Geosciences that began last year was completed with a final event at Geoscience Australia.
- A feature-complete SISS which includes the ability for Geoserver to support the AuScope/Australian applications was delivered. Major updates were made to the Portal and associated infrastructure including a v2.5 release. The impact of the Grid infrastructure continues to be widely acknowledged inside and outside of the AuScope community, resulting in considerable interest in deployment to a range of organisations.
- Software packages, developed by the individual nodes of the Simulation, Analysis and Modelling (SAM) component have all reached substantial capacity as stand-alone applications with quarterly release cycles for new features and bug fixes.

AuScope Highlights Year 4

Although the AuScope NCRIS Project remains unchanged some parts of the program have been delayed resulting in a carry-over of funds into FY2011. In particular the complex GNSS program, involving a coordinated effort with State jurisdictions to construct GNSS sites at remote locations across the nation, is behind schedule. Gravity hut construction is tied to this delayed program, therefore leaving the gravity observation program behind schedule.

AuScope can report a good track record for planned milestone delivery. In relation to the 61 milestones which were marked for completion this year, 51 have been reached and all but 5 will be reached by the end of the second Quarter 2011 (December 2010).

AuScope is performing well against most of the organisation's overarching Strategic Goals. The organisation is financially strong and holds a large component of carried-over funds due in large part some lag in the Geospatial Component.

Already there have been substantial advances in the sophistication of the available framework and as well as genuine additions to the National Innovation System. However this is just a beginning. A lot of work is still required to weld together the developing technology, data streams, expertise and software systems to form a mature framework.

Six Hyloggers have been delivered and are operational, as planned, in Geological Surveys at: GS NSW at Londonderry NSW, PIRSA at Glenside in South Australia, GSWA at Carlisle in Western Australia, GSQ at Zillmere in Brisbane. MRT at Mornington in Hobart and NTGS at Winnellie in Darwin.



1. Establish AuScope Limited

- A Financial Audit was completed by KPMG without qualification.
- Promotional activities were increased with monthly website traffic now consistently strong at 35,000 - 45,000 hits.

2. Provide AuScope Infrastructure

- 6 of 7 HyLoggers are completed, delivered and operational.
- The Cameca 1280 Ion Probe is operational.
- All imaging instrumentation, broadband, short period, magnetotellurics (MT) is fully available.
- The 3 contracted 12m Very Long Baseline Interferometry (VLBI) telescopes have been constructed and the Mt Pleasant instrument is operational.
- Simulation software releases have been on schedule.
- Global Positioning System (GPS) infrastructure deployment has continued with 65 of the 96 sites either operational (38) or under construction (27).

3. Transform Research Capability

- Seismic/MT equipment utilisation is at 75-100% of capacity.
- 6 HyLoggers are in use acquiring data with 200,000m having been scanned to date.
- Access policies are in place.
- Continued strong uptake of key software – 50 new registered users.
- Geospatial GNSS RealTime data is being widely used.

4. Seamless Access through Interoperable Grid

- 22 web services (portals and SISS deployments) have been delivered through developments and services of the AuScope Grid infrastructure.
- There is growing recognition of the value of the Grid infrastructure as seen through the requests for deployment of the infrastructure to the wider science community.
- Strong formal support from the Government Geologists Information Committee and uptake by Australian Geological Surveys.

5. Building a Collaborative Climate

- There have been major national and international collaborations in establishing the Grid interoperations – particularly with the Geoserver and Geotools communities.
- Strong relationships with State Jurisdictions for NVCL and GNSS have been built and are continuing.
- In addition to AuScope's NCRIS contracted partners, collaborations have grown to include 3 CSIRO Divisions, Geoscience Australia, 1 Centre of Excellence, 1 Special 3D Centre, Australian Research Council (ARC) and Australian National Data Service (ANDs).

6. World Class Outcomes of National Benefit

- AuScope has a strong Simulation, Analysis and Modelling (SAM) grants/applications record with 5 international grants and strong ARC cofunding.
- There have been 82 high-impact peer-reviewed publications recorded and numerous additional abstracts.

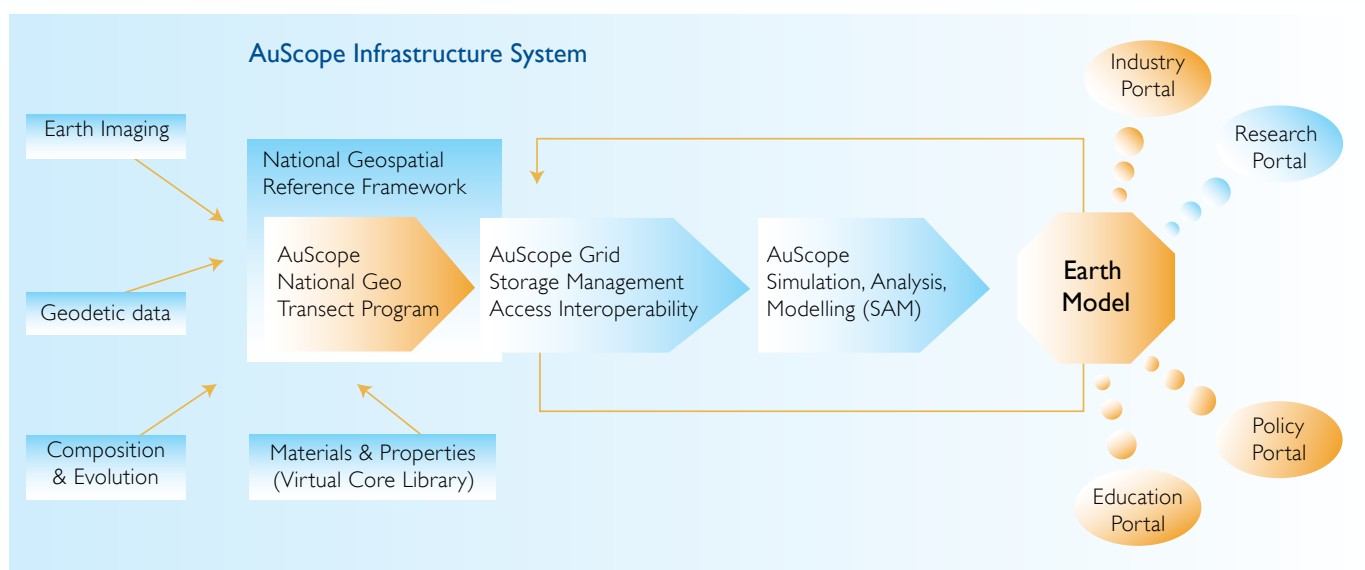
AuScope's Key Performance Indicators

The continuing success of the delivery of the AuScope Program can be demonstrated by reports against the six Key Performance Indicators.

AuScope background and vision

The objective of the AuScope NCRIS Project is to establish the AuScope Infrastructure System – a Geoscience and Geospatial Infrastructure System that combines traditional research infrastructure with applied science infrastructure. The AuScope Infrastructure System is a seamless, broadly accessible, fully integrated blend of technology, data and knowledge infrastructure that will transform the practice of and outcomes from geoscience for researchers, industry and the wider community.

The AuScope Infrastructure System is ultimately designed to enable the progressive construction, refinement and ongoing enrichment of an online live, four-dimensional Earth Model for the Australian Continent and its immediate environs (below). AuScope is built from the five functional components enabled by the AuScope Grid and supported by AuScope Headquarters.



AuScope Infrastructure System and the Earth Model for the Australian Continent. The blue shaded components are investments in infrastructure under the NCRIS Program. Gold shaded components are activities outside but related to AuScope.

The success of AuScope lies in transformation of our research capability through:

- A nationwide upgrade of the geospatial reference frame (through the Geospatial Framework & Earth Dynamics component).
- Providing a clear and rich picture of Australia's subsurface (through the Earth Imaging and Structure component).
- Unlocking the composition of the top 1 Km of Australia's crust (through the Earth Materials and Properties component).
- Characterising the nature of the deeper crust (through the Earth Composition and Evolution component).
- Developing a toolkit for data interrogation, simulation and modelling (through SAM component).
- Providing seamless access to data via an Interoperable Grid (through the AuScope Grid).

Future Impact and Outcomes

AuScope's NCRIS program is taking a major step towards providing a capability to map changes in the evolution of the Australian continent. The impact from this infrastructure will inform our understanding of environmental change and our ability to make measured predictions that effect sustainable use of Australia's earth resources.

Our infrastructure will provide unique tools that will integrate geology and geophysics in a global tectonic context to understand the evolution of the surface of the planet in a context of deep earth processes. The AuScope infrastructure system will help harness Australia's intellectual capacity to new physical and data infrastructure. This will help direct critical components of earth and geospatial science at Australia and Australian issues in a context of the dynamics of the continent on which we live.

AuScope participants

The scientific content (data, services and information) of the AuScope Infrastructure System will be delivered through the AuScope partnerships - 23 participants including CSIRO, Geoscience Australia, 11 universities, and state government agencies.

Universities

Australian National University/Research School of Earth Sciences
 Macquarie University
 University of Western Australia
 The University of Adelaide
 Curtin University of Technology
 The University of Melbourne
 Monash University
 The University of Sydney
 University of Tasmania
 The University of Queensland

Geological Surveys and State Government Agencies

Department of Primary Industries and Resources South Australia (PIRSA)
 GSWA Geological Survey of Western Australia (GSWA)
 Northern Territory Geological Survey (NTGS)
 Geological Survey of New South Wales (GS NSW)
 Geoscience Victoria
 Mineral Resources Tasmania (MRT)
 Geological Survey of Queensland (GSQ)
 QLD Environment and Resource Management
 NSW Land and Property Management Authority
 Tasmanian Department of Primary Industries, Parks, Water and Environment
 Western Australia Landgate
 Other State Government agencies participate through Geoscience Australia

Federal Government Agencies

Geoscience Australia
 CSIRO Division of Earth Science and Resource Engineering

The AuScope Vision

A national geoscience and geospatial infrastructure system providing access and data Interrogation and modelling to transform our understanding of the structure and evolution of the Australian continent.

Governance & Management

The Board of AuScope was appointed on a skills basis, and the majority of Directors are independent from Members/Participants.

AuScope limited is a company formed to manage the NCRIS Infrastructure Program. The AuScope Board is responsible for the oversight of all fiscal and operational activities of AuScope Ltd. Participants are invited to be Members of the AuScope Ltd.

The Board's responsibilities are aimed at:

- Enhancing performance of the organisation.
- Reassuring stakeholders of the integrity and efficiency of the organisation.
- Enhancing the organisation's reputation.
- Managing the organisation's risks.
- Establishing the effectiveness of the organisation's performance against objectives.

AuScope Board

Bob Haydon, Managing Director & CEO, AuScope Ltd

Don Pridmore, Director, Intierra Ltd

John Trinder, Director, University of NSW

Linda Kristjanson, Chairperson, Curtin University of Technology

Paul Heithersay, Director, PIRSA

Warwick Watkins, Director, Department of Lands, NSW

Richard Hillis, Director, CRC DET

Lisa Norden, Executive Director & Company Secretary, HEARing CRC Ltd

AuScope Committees

Science Advisory Committee

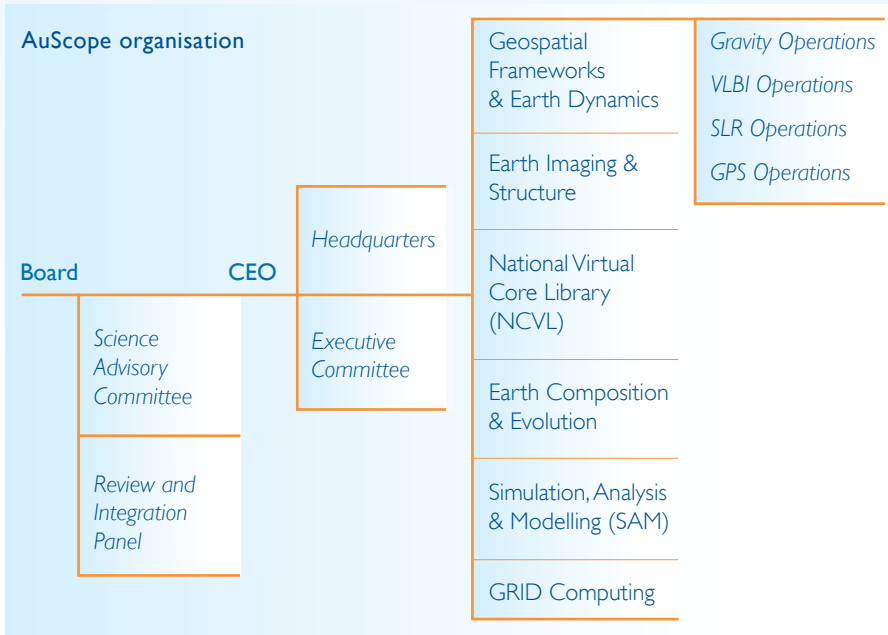
Professor Mike Sandiford of The University of Melbourne chairs the Science Advisory Committee and the Research and Integration Panel, which through its membership of early career scientists and researchers provides important input to the component reviews. The main activity of these committees during year 4 has been to provide feedback on parts of the EIF3 Application for an Australian Geophysical Observing System (AGOS) to enhance the AuScope NCRIS Infrastructure.

Executive Committee

Chaired by the CEO, the Executive Committee has responsibility and accountability for monitoring progress against plan and reviewing all operations. Members are component managers plus the Chair of the Geospatial Steering Committee, Professor Chris Rizos.

The status of membership is currently:

- The AuScope Grid - Robert Woodcock.
- Earth Material & Properties (NVCL) - Jon Huntington.
- Geospatial Framework & Earth Dynamics - Gary Johnston and Chris Rizos.
- AuScope Simulation, Analysis and Modelling (SAM) - Louis Moresi.
- Earth Composition & Evolution - Bruce Schaefer.
- Earth Imaging and Structure - Brian Kennett.



The AuScope organisation structure.

AuScope funds from Commonwealth

		Year 4, 2010	Term 2007-11
AuScope Grid and Interoperability		\$1.7M	\$5.8M
Earth Materials and Properties (NVCL)		\$1.4M	\$2.6M
Geospatial Framework and Earth Dynamics		\$3.7M	\$15.4M
Simulation, Analysis & Modelling (SAM)		\$2.2M	\$7.4M
Earth Composition & Evolution		\$0.3M	\$2.8M
Earth Imaging and Structure		\$3.9M	\$7.7M

* Excludes 1.1M HQ Funding

Program Funding

The AuScope NCRIS Program invests \$42.8 million together with coinvestment of \$81.6 million over the 5 year project term. AuScope is financially strong and holds a large component of carried-over funds mainly due to some lag in the Geospatial Components.

Total AuScope investment including Partner co-investment

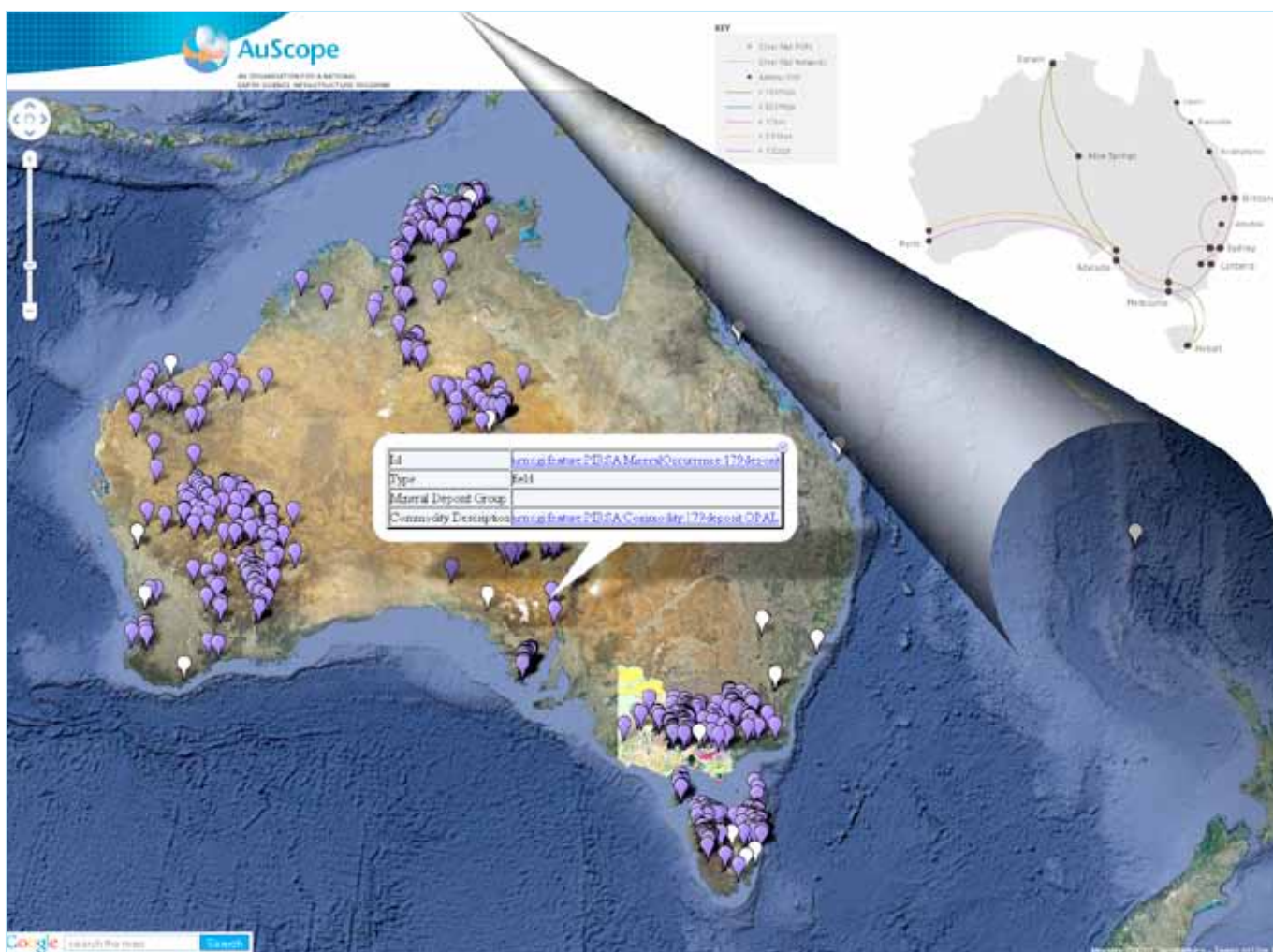
		Year 4, 2010	Term 2007-11
AuScope Grid and Interoperability		\$0.8M	\$8.8M
Earth Materials and Properties (NVCL)		\$1.2M	\$10M
Geospatial Framework and Earth Dynamics		\$3.9M	\$48.1M
Simulation, Analysis & Modelling (SAM)		\$3.8M	\$21.9M
Earth Composition & Evolution		\$3.5M	\$25.7M
Earth Imaging and Structure		\$0.3M	\$9.9M

AuScope Grid and Interoperability

The AuScope Grid project has had a very successful year which has included promotional activities and deployment of key infrastructure to various data custodians. Additionally, supplementary funding from the Australian National Data Services (ANDs) was secured in Year 4 to further AuScope's work with the Spatial Information Services Stack (SISS) and to deploy it into science domains beyond the geosciences.

Year 4 progress

- A feature complete SISS which included the ability for Geoserver to support the AuScope/Australian use case was delivered.
- The National Roadshow for the promotion of SISS and usage within the Geosciences (AuScope) was completed.
- Major updates were made to the Portal and associated infrastructure including a v2.5 release (available at <http://portal.auscope.org>).
- Infrastructure was established to support the information technology data requirements of other AuScope components: Earth Imaging (Geotransects), SAM, Geospatial and the National Virtual Core Library.
- Working Relationships with all Australian Government Geological Surveys were strengthened with Memorandums of Understanding (MOUs) being established between



AuScope Grid and each Survey for the deployment of SISS. Relationships with Victorian Partnership for Advanced Computing (VPAC), Monash University, Australian National University, Curtin University, and the University of Tasmania were established and maintained.

- Integration, between AuScope Grid, ARC and ANDs was completed.
- Links with other NCRIS communities; Integrated Marine Observing System (IMOS,) Terrestrial Ecosystem Research Network (TERN) and Atlas of Living Australia (ALA), were established and developed.
- Additional funding opportunities were identified and awarded:
 - \$37,000 was awarded by the Australian Access Federation (AAF) for Integration of AuScope Grid Services and the AAF.
 - \$4.1M was awarded by ANDs for the Australian Spatial Research Data Commons (ASRDC) project to take the SISS into other science disciplines.

AuScope Grid and ASRDC also negotiated a deployment strategy for SISS with Geoscience Australia. SISS will be deployed through a series of activities with Geoscience Australia over the coming financial year and hosted at the National Compute Infrastructure as official mirrors and services.

The impact of the Grid infrastructure is now widely acknowledged inside and outside the AuScope community resulting in considerable interest in deployment to a range of organisations.

AuScope Grid Promotions

AuScope Grid continued its efforts to promote its developments and deployments to various custodians. The team has been heavily involved in the continued business development for both the AuScope Grid and ASRDC projects, bedding down the various deployments and ensuring delivery over this financial year and for the next.

AuScope Grid ran a highly successful National Web Services Road show which was completed in August. The Roadshow resulted in increased awareness of AuScope and the SISS and secured commitment from each of the Geological Surveys to deploy the technology.

AuScope Grid was represented at various conferences and workshops and meetings this financial year, including:

- eResearch 2009.
- European Geosciences Union (EGU) General Assembly 2010 conference.
- XXIV FIG International Congress 2010.
- Western Australia Land Information System (WALIS) 2010.
- Workshops were held with CSIRO Information Management & Technology (IM&T) to get greater uptake of SISS within CSIRO. AuScope Grid hosted a workshop for representatives from Geoscience Australia, AuScope Earthbyte and Bureau of Meteorology on the usage on SISS.
- IMOS Workshop for the exchange of ideas and technology.
- Presentations and reporting at each of the Government Geoscience Information Committee (GGIC) meetings in 2009/2010.

The National Web Roadshow for the promotion of SISS and usage within the Geosciences (AuScope) was completed in Year 4.

Earth Materials and Properties

National Virtual Core Library (NVCL)

Human infrastructure is a critical part of the AuScope NVCL project in each of the state or territory surveys.

The infrastructure to be built and deployed consists of seven robotic, automated spectroscopic machines, HyLoggers, in each of seven nodes housed in each State and Territory Geological Survey.

Hardware Infrastructure and Upgrades

Eight new HyLogger-2 systems (2 prototypes and 6 operational systems) have been constructed. Six have been delivered and are operational, as planned, in Geological Surveys at: Geological Survey of NSW at Londonderry, Department of Primary Industries and Resources (PIRSA) South Australia at Glenside, Geological Survey of Western Australia at Carlisle, Geological Survey of Queensland at Zillmere in Brisbane, Mineral Resources Tasmania at Mornington in Hobart and Northern Territory Geological Survey at Winnellie in Darwin. Training in operation and data interpretation has been given during commissioning and geological interpretation training has been repeated several times at each node during the year.

Each Survey's HyLogger-2 instrument will be upgraded in Phase 2 of the NVCL roll out to HyLogger-3 status allowing a wider range of anhydrous silicate mineral to be recognised. Development of this capability has been demonstrated with an operational prototype and upgrade components are being assembled to permit the full roll out.

Human Infrastructure

HyLogging teams comprising an instrument operator, HyLogging geologist and project manager have generally been recruited or appointed in each of the operational geological surveys. In each Survey additional personnel have been involved on the data management and IT side of the project readying databases and web connectivity in collaboration with the AuScope Grid team.



Infrastructure Operations

As of 30 June 2010 all NVCL nodes had collectively scanned in excess of 200,000 metres of core. While this is less than initially anticipated it is globally unique. Initial expectations of higher throughput were not achieved due to given workflow issues and human capabilities and a change in focus from quantity to quality research outputs. These new data have been turned into preliminary products and is all available to, and much used by, researchers within the Geological Surveys and by request by outside students and researchers at large.



Outcomes and progress to date of the NVCL program were showcased at numerous events during the year.

Software and Database Infrastructure

CSIRO has developed an Oracle relational database for the NVCL data and made this available to all Surveys. At the request of GSWA an Microsoft SQL server version has also been developed and delivered and is under test. The Oracle database is in internal operation in NSW, Tasmania and South Australia, and nearing operation in the Northern Territory. The implementation of the data management side of the project, and thus external web access, has been severely impacted by delays in getting Information Technology infrastructure and bore hole databases in place. These issues are expected to be adequately addressed in Financial Year 2011.

Several updates to the TSG-Core interpretation software have been released during the year increasing its functionality.

Geospatial Framework and Earth Dynamics

Year 4 has seen the capital procurement in 3 of the 4 Geospatial components nearing completion.

Very Long Baseline Interferometry (VLBI) systems

Progress has been made in line with the business plan in the VLBI component including:

- The radio telescope at Mt Pleasant near Hobart was officially opened by the Governor of Tasmania on 9 February, 2010.
- The construction of the radio telescopes at Yarragadee in Western Australia and Katherine in the Northern Territory has been completed.
- The VLBI and Satellite Laser Ranging facilities (SLR) observers' building at Yarragadee was built.
- The operational sites, Hobart and Yarragadee, took delivery and installed two of the three Hydrogen Maser time and frequency standards.
- The telescope receiver on the Hobart telescope was installed and delivered subsequent successful observations with overseas telescopes.
- Signal digitisers and data recording systems were delivered.

AuScope's efforts now will revolve around ensuring the telescopes operate at design specifications, including any remedial repairs / alterations for which the supplier is responsible under the procurement contracts. It is anticipated that full operations of the telescope array will occur late 2010.

The construction of the radio telescope at Yarragadee in Western Australia has been completed.



Satellite Laser Ranging facilities (SLR)

The SLR systems at Mt Stromlo and Yarragadee continue to operate very well. NASA has been funded to commence construction of a batch of ten SLR systems for distribution globally to replace the Moblas systems of which one of these systems will be installed at Yarragadee. This element of the program is behind schedule as it is controlled by NASA protocols. This represents a very significant investment in global geodesy by the US government.



The GNSS site at Lord Howe Island is one of the stations being built across Australia.

Global Navigation Satellite Systems (GNSS) ground stations and receivers

The GNSS component is now gathering good traction with the research community and the broader Geospatial and Geoscience communities. Although there have been significant delays in the deployment of remote instrumentation, good progress towards completing the NCRIS component is being made. Matching funds from the states have been secured and, where feasible, deployment of those stations is being scheduled after the completion of the NCRIS funded sites. A total of 96 stations are now planned with 38 currently operational and by the year ends a further 27 will be under construction. Additional achievements include:

- The refinement of the Network Management and Data Access Policy allows for continued operation by state governments beyond the end of NCRIS funding (June 2011).
- GNSS Data from non-AuScope state and private networks is being archived by Geoscience Australia.

Gravity Measurement Instruments

The gravity program is now underway delivering the following achievements:

- The FG5 absolute gravimeter has been used for observations at Mt Stromlo and Tidbinbilla (ACT), Sydney, Melbourne, Mt Pleasant (Hobart), Perth Observatory, Yarragadee, Ceduna, Alice Springs, Darwin and Townsville.
- The gPhone Earth Tide gravity meters have been used at Yarragadee and are currently observing at Katherine, Tennant Creek (Waramanga seismic station) and Jabiru.
- The Reynolds Dome at Mt Stromlo has been renovated to allow for collocation of multiple gravity instruments at once.
- The observed data is now publicly available on Geoscience Australia's ftp servers.

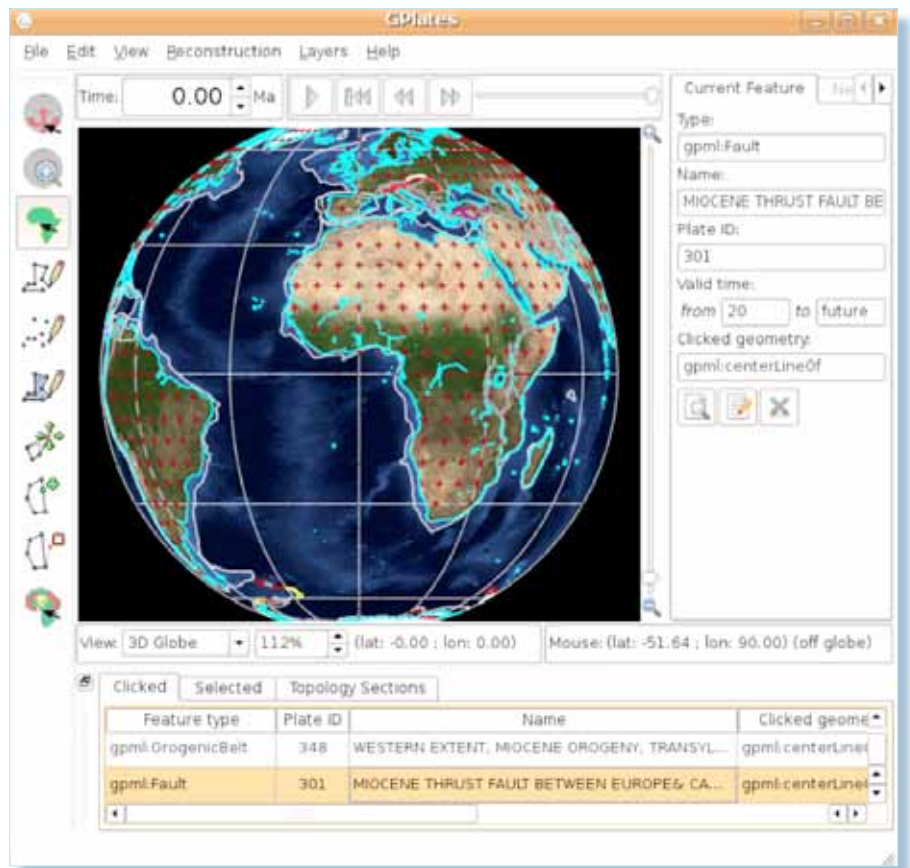
The remote gravity huts that are being built by state participants using AuScope GNSS program funds are progressing slowly.

Simulation, Analysis and Modelling (SAM)

EarthByte is an international e-research project aimed at implementing interoperability of plate tectonic data and geodynamic computing services for applied and fundamental research purposes. EarthByte is currently funded through the AuScope NCRIS Program. GPlates is a free-software open-source plate-tectonics visualisation package developed at the University of Sydney and California Institute of Technology.

The AuScope “simulator” is developing a toolkit of simulation and modelling software and data mining tools. The infrastructure will enhance deployment, maintenance and stability of software previously developed. SAM is making it possible to draw together the AuScope data and data-products to develop framework models of the Australian crust and its dynamic processes. Five nodes, Monash University, University of Queensland, University of Western Australia/CSIRO, The University of Sydney and the Australian National University, each contribute to the component. Each node is responsible for development of unique software infrastructure.

The software packages developed by the individual nodes of the SAM component have all reached substantial capacity as stand-alone applications with quarterly release cycles for new features and bug fixes.



Members of SAM have been collaborating to integrate the software packages into workflows and portals for our most important application domains: geodynamics, mining, energy, natural hazards and exploration, and on engaging with end-users groups.

Demonstrators illustrating modelling capabilities and applications have been developed to promote awareness.

SAM Promotions

SAM had a strong presence at 3 major conferences aimed at lifting community awareness. This included: providing updated material for brochures and posters at booths organised by AuScope at various conferences and meetings, a presence at the American Geophysical

Union Fall Annual Meeting 2009, and the European Geophysical Union Meeting in Vienna, 2010, as well as a number of smaller, specialised meetings including:

- 11th International Workshop on Modelling of Mantle Convection; Braunwald, Switzerland; July 2009.
- eResearch Australasia 2009; Sydney; November 2009.
- SC09; Portland, Oregon, USA; November 2009.
- 2009 Australian Geothermal Energy Conference; Brisbane; November 2009.
- OzViz 2009; Monash University; December 2009.
- World University Network (WUN) Geomagnetism workshop; Leeds UK.

Individual software packages are available through links to the AuScope website and directly via their websites and distribution infrastructure:

- Pplates Virtual Earth: <http://rses.anu.edu.au/tectonics/projects/virtual-earth/>.
- Underworld: <http://www.underworldproject.org>.
- Earthbyte: <http://www.earthbyte.org>.

The Monash University node coordinated the building and the launch of facility in immersive visualization (3D-Alive) jointly funded by CSIRO, Monash University and AuScope. This launch focused on the theme of computation and visualisation in Earth and Environmental Science.



Dr Margarete Jadamec of Monash University demonstrating the 3D-Alive technology which was jointly funded by CSIRO and Monash with coinvestment from AuScope.

Earth Composition and Evolution

Access and pricing of the three existing facilities is well established and remains unchanged. Access to the Cameca 1280 is managed by the Western Australia Ion Probe Management Committee which ensures that AMMRF access and charging policies are implemented.

This component has provided new geochemical instrumentation and improved access to existing quality geochemical infrastructure. The major infrastructure is the acquisition of a new-generation Cameca ion probe housed at Centre for Microscopy, Characterisation and Analysis in Perth. The acquisition of the instrument was jointly funded by AuScope, Australian Microscopy & Microanalysis Research Facility (AMMRF), University of Western Australia and the Western Australian Government and is now complete and operational. In addition, other technical and operational support for the provision of national access to existing instruments at John de Laeter Centre for Isotope Research (JDLC) and the University of Melbourne Thermochronology facility and Macquarie University's TerraneChron® facility forms part of this infrastructure development and has progressed to plan.





Friday the 28th of August 2009 saw the official opening the Cameca 1280 ion microprobe, the first of its kind in the southern hemisphere, by the Hon Kim Carr, Minister for Innovation, Industry, Science and Research. The Cameca represents the state-of-the-art in SIMS technology, and is a capability which was jointly funded by AuScope with the Australian Microscopy and Microanalysis Research Facility, the University of Western Australia and the Western Australian government. This new instrument allows high sensitivity chemical and isotopic analysis of geological materials, particularly of the light elements such as C and O. New analytical protocols for particularly stable isotope analysis are continually being developed, but applications for S isotopes in ore genesis, C isotopes in the earliest fossils and O isotopes in silicates are immediate applications which have direct relevance to geosciences. Potential exists for a swathe of non-traditional applications, such as B and Mg isotopes and ultra-low level trace element and volatile in situ analysis, offering new insights into the internal structure of our planet and how it has evolved.

Earth Imaging and Structure

Infrastructure for Earth Imaging and Structure has advanced according to plan with capital investment in equipment and in data infrastructure. Investments include the upgrade of existing passive seismic and magnetotellurics (MT) equipment and the nearing completion of data acquisition in 5 major programs.

Capital Investment

Capital investments for Earth Imaging are now complete with the refurbishment of L4 seismometers to support experiments in South Australia with the Department of Primary Industries and Resources South Australia (PIRSA), and the completion of MT equipment development at the University of Adelaide.

Data Infrastructure

GOMA (Gawler-Officer-Musgrave-Amadeus) Transect 2008

AuScope investment (200km) joined with Geoscience Australia and PIRSA to complete a total of 580 km of reflection seismic work starting in the Northern Territory and finishing near Tarcoola in South Australia alongside the Alice Springs to Darwin railway. The interpretation is complete.

Curnamona passive seismic

35 stations were deployed across in the Curnamona craton from April 2009 to March 2010, to supplement reflection profiles in the area. The stations linked with concurrent Australian National University instruments in northwest New South Wales. The long-term aim is to generate a single composite image of 3-D structure from over 500 separate stations.

Mt. Isa – Coast passive seismic

Passive seismic coverage of the reflection seismic lines in northern Queensland to provide 3-D structural linkage remains in place. An initial deployment of 21 stations started in June 2009, and is now supplemented by a further 10 stations released from the completion of South Australian work.

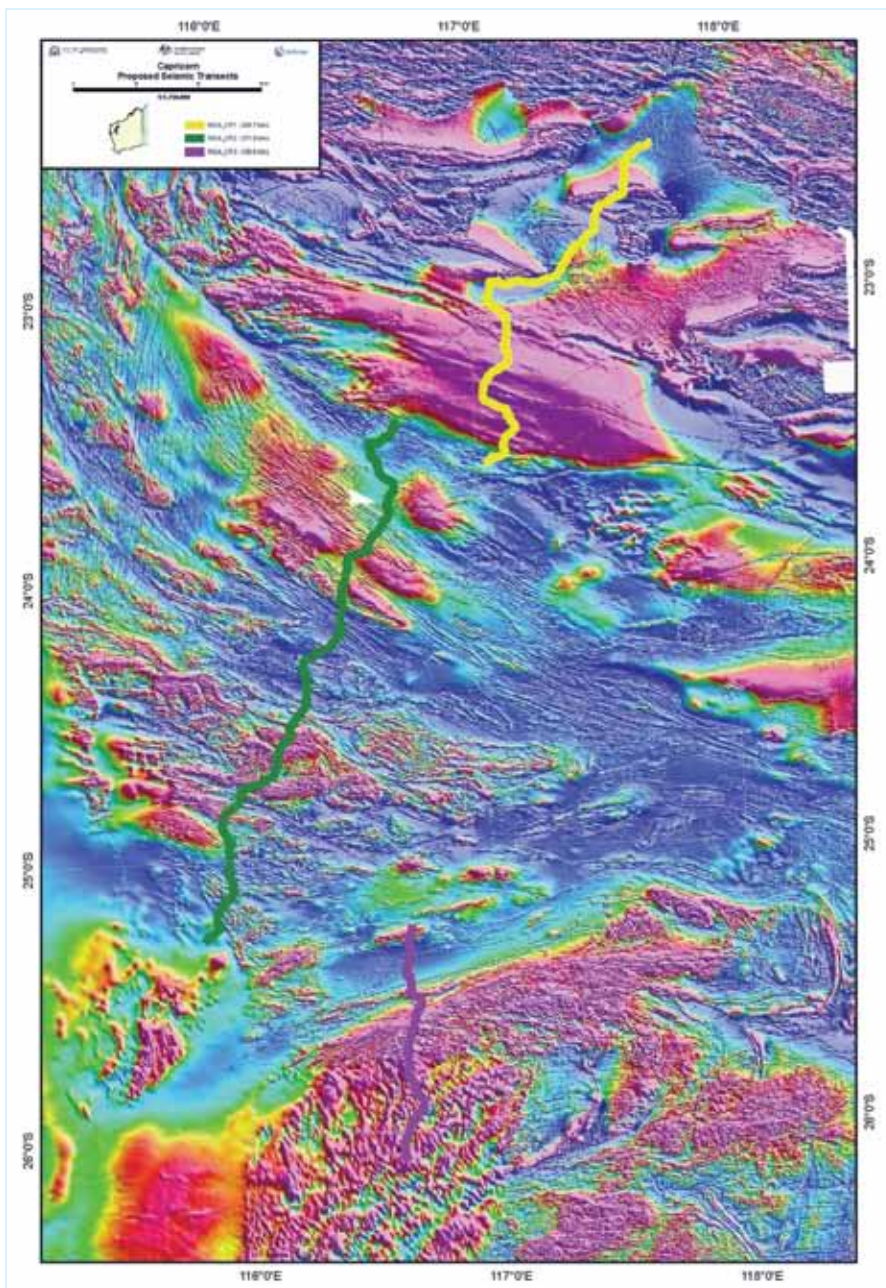
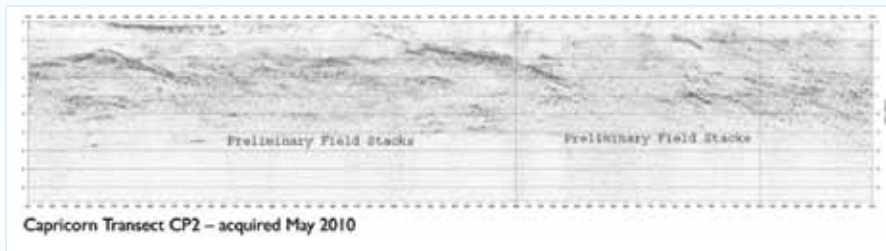
Delamarian transect 2009

190 km of reflection survey with a spur line to link to earlier surveys was completed. Geoscience Victoria provided logistic help and 10% of funding. The data was processed by June 2010 and the first interpretation workshop was held in Melbourne. MT data has been acquired along the transect.



Capricorn transect 2010

A cooperative venture was established with the Geological Survey of Western Australia for 580 km of reflection traverse, from the Pilbara Craton to the northern Yilgarn, with a 50:50 funding split. The transect was brought forward due to the availability of the seismic crew and the work completed in May 2010 with good quality data.



Presentations based on experiments supported by AuScope were made at a number of conferences including the American Geophysical Union, San Francisco, December 2009 and the European Geosciences Union, Vienna, April 2010.



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