

## Building the Australian Earth Science Grid, AuScope



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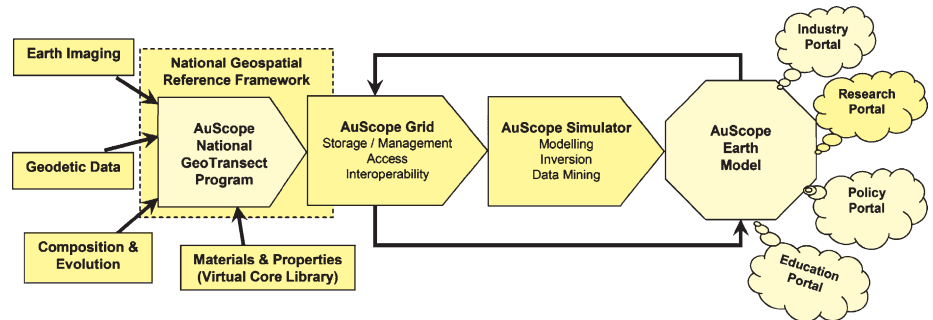


Fig. 1. The AuScope system provides access and interoperability mechanisms to ensure ease of information flow throughout all components of the Auscope infrastructure. Much as Google Earth™ provides a portal for integrating geospatial information, the Auscope research portal will provide a mechanism for integrating scientific data and services for geoscience research.

In 2006, the Australian Government announced a new ~\$542 million (over 7 years) funding initiative, the National Collaborative Research Infrastructure Strategy (NCRIS). NCRIS aims to provide Australian researchers from industry, government and academia, with access to major research facilities and supporting infrastructure necessary for world-class research. As a component of this strategy, \$42.8 million was allocated to the Australian Earth Science Research community to build an integrated, broadly accessible, national geoscience infrastructure system called AuScope. AuScope is designed to put Australia at the forefront of geoscience research and of geoscience applications for a generation, and thereby enhancing Australia's wealth through improved and sustainable discovery, development and management of its minerals, energy and groundwater assets.

AuScope comprises several components which are linked into a coherent system spanning data acquisition, delivery,

simulation, modelling, access to facilities and web publication (Figure 1). Each of these has substantial co-investment from universities, geological surveys, state government agencies, the CSIRO and Geoscience Australia, bringing the total investment to over \$100 million (Table 1). Although this investment will allow the core research infrastructure to be built, additional participation and comment from the broader geoscience community is welcomed.

The first four components, Earth Imaging, Composition and Age, Virtual Core Library and Geospatial, are principally about data acquisition to enable an increasingly clear and rich picture of the subsurface to be created. They are linked by a National Geotransects Program (Figure 2) and will result in the acquisition and publication of seismic, magneto-telluric, geochemical, and hyperspectral core logging data and products along the proposed transects. This program is being coordinated with acquisition programs in Geological Surveys and other organizations. All of this data will be underpinned by an enhanced National Geospatial Reference System from the

Geospatial component, which will allow for very accurate positioning applications including the monitoring of the deformation of the Australian land mass.

To draw together information from this new national infrastructure and from other existing sources in academia, industry and government, the AuScope funding will also be used to develop a world-leading Geoscience geoinformatics network. This cyber infrastructure (or Grid) network will provide access to data and computing facilities distributed around Australia. The Grid will use open geospatial standards to allow real time access to data, information and knowledge stored in distributed repositories. A key objective for the Grid is that it will be built on 'end-to-end' science principles (aka open access principles) providing access to the highly processed information and knowledge as well as the original raw data and the processing programs used to generate the results. All of this information and the services will be made accessible via the AuScope Research Portal.

The Simulation and Modelling component facilitates quantitative Geoscience analysis by providing an infrastructure and tools for advanced data mining and online computational modeling and simulation. Computationally demanding Geoscience programs, ranging from earthquake and tsunami simulation through to ore formation and block caving, will be made available as services, and distributed across computing and storage resources in a manner that requires only limited knowledge of the physical infrastructure.

There are no obvious technological barriers to what has been proposed in building the AuScope Grid. Nearly all

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Table 1. AuScope investment summary over 7 years, NCRIS money is from Australian Government, co-investment money is from AuScope partners			
AuScope	NCRIS	Co-investment	Totals
Earth Imaging	\$8.37M	\$3.53M	\$11.90M
Composition & Age	\$3.00M	\$2.80M	\$5.80M
Virtual Core Library	\$2.88M	\$8.03M	\$10.91M
Geospatial	\$16.99M	\$48.33M	\$65.31M
Simulation & Modelling	\$8.00M	\$11.29M	\$19.29M
Cyber Infrastructure	\$6.38M	\$3.10M	\$9.48M
AuScope Administration	\$1.00M	\$1.50M	\$2.50M
<b>Totals</b>	<b>\$46.62M</b>	<b>\$78.58M</b>	<b>\$126.20M</b>

## New data from Queensland added to the Australian National Gravity Database

Gravity data from the Geological Survey of Queensland and company surveys in the State have recently been incorporated into the Australian National Gravity Database.

A total of 23 618 stations from 32 surveys are now open file and have been entered into the Australian National Gravity Database. Data were provided to Geoscience Australia by the Geological

Survey of Queensland. The surveys centre on the Mt Isa Region and south east Queensland. The surveys mostly date from 1991 to 2002. All data in the Australian National Gravity Database, can be obtained free-of-charge using the Geophysical Archive Data Delivery System 'GADDS'.

Figure 6 shows the locations of the surveys. They are mostly small and detailed, but ~24 000 new stations is a significant addition to the ANGD.

For further information, please email Mario Bacchin; or phone +61 (0)2 6249 9308.

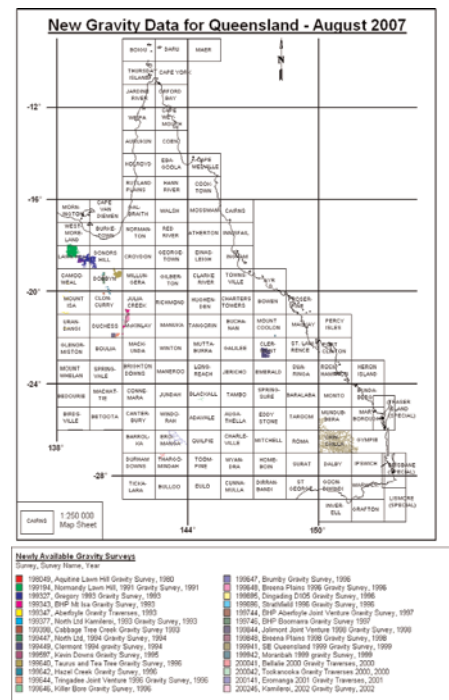


Fig. 6. Location of Queensland gravity data added to the Australian National Gravity Database. The surveys mostly took place from 1991 to 2002.

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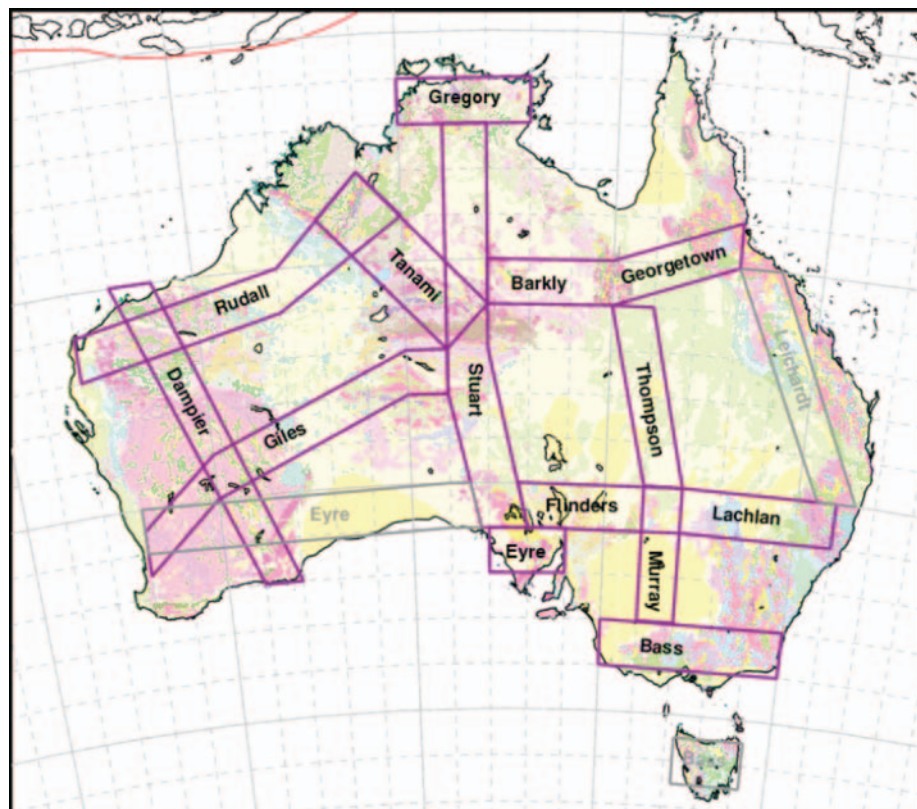


Fig. 2. Possible configuration of the transect corridors. The transect program seeks to coordinate and make accessible both new and existing Seismic, MT, geochemical and drill hole data sets within these priority corridors. The Georgetown seismic survey has already been completed.

technical elements of it have been trialled in recent years in a series of test bed projects (*Preview*, June 2006, 'Towards Service Oriented Geoscience: SEE Grid and APAC Grid'). The principle challenge will be to achieve sufficient participation and open access to enable a thriving community of practice to develop and use the infrastructure, and more importantly, to contribute to our understanding of the structure and evolution of the Australian continent.

Further information on AuScope and its investment plan can be found on the AuScope website at [www.auscope.org.au](http://www.auscope.org.au). AuScope Ltd is funded under the National Collaborative Research Infrastructure Strategy (NCRIS) an Australian Commonwealth Government Program.