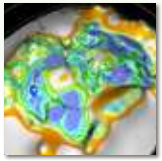
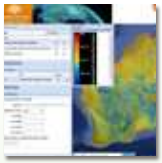
AuScope

AuScope

Building the Australian Earth Observatory

Hyatt Canberra
Tuesday 30 July 2013



Session 1 8.30am – 10.15am

Perspectives, capabilities & collaboration

8.30 Introduction

- Chair - Dr Bob Haydon, AuScope CEO

Welcome to country

- Mr Craig Bell, Ngunnawal Elder

Symposium opening

- Dr Rob Porteous, Head Science and Research Division, DIICCSRTE

9.00 Overview

- Professor Linda Kristjanson, AuScope Chair

9.20 Keynote address

- Professor Göran Roos, Intellectual Capital Services Ltd, Warwick Business School

9.55 Earth Science and its role in meeting national challenges

- Dr Paul Heithersay, SA DMITRE & AuScope Director

10.15am - Morning Tea

Session 2 10.45am – 12.15pm

An Earth Science infrastructure system for the Australian continent (NCRIS Program)

Theme

Summary of achievements to illustrate the "AuScope Infrastructure System"

10.45 Introduction to NCRIS National Strategic Capability

- Chair - Dr Mike Etheridge

10.55 AuScope in the Cloud: Lifting the data fog in solid earth science

- Dr Rob Woodcock, CSIRO

11.15 AuScope Geospatial: Providing unique insights into the Earth while supporting societal requirements for reliable spatial information

- Dr John Dawson, Geoscience Australia

11.35 National Virtual Core Library: An innovation to unlock mineralogical data from millions of meters of core

- Dr Ian Scrimgeour, Northern Territory Geological Survey

11.55 The grand challenge of understanding Earth evolution: Connecting big data to high-resolution computer simulations and machine learning

- Professor Louis Moresi, Monash University

12.15pm - Lunch

Session 3 1.30pm – 2.50pm

Science challenges and infrastructure for earth observation and monitoring (AGOS Program)

Theme
Earth Observation and Monitoring to meet some immediate challenges

1.30 Introduction to earth monitoring and crustal services

- Chair - Professor Mike Sandiford, University of Melbourne

1.40 AuScope-AGOS: From data to knowledge

- Professor Malcolm Sambridge, ANU

2.00 Monitoring the shallow crust: Our first step towards sustainable earth resource management

- A/Professor Tim Rawling, University of Melbourne

2.20 The Australian Seismometers in Schools Network: Benefits of community engagement in real geoscience experiments

- Dr Natalie Balfour, ANU
- Geoff McNamara, Melrose High School

2.50pm - Afternoon tea

Session 4 3.10pm – 5.15pm

Applications and future directions

Theme
Challenges for industry, government initiatives and future infrastructure for the next decade

3.10 Introduction

- Chair - Professor Mary O'Kane, NSW Chief Scientist and Engineer

3.20 Leveraging investment in Earth Science infrastructure to help meet industry challenges

- Mr Stephen McIntosh, Head of Exploration Rio Tinto

3.40 Fluids, fraccing & faults from La Fenice to future infrastructure

- Professor Richard Hillis, DET CRC and AuScope Director

4.00 Positioning Australia for the future: Data, resources and positioning

- Dr Chris Pigram, CEO Geoscience Australia

4.20 The AuScope Australian Earth Observatory Infrastructure Roadmap

- Professor Mike Sandiford, University of Melbourne

4.40 Closing panel session: Towards an Australian Earth Observatory

- Professor Mary O'Kane Chair, Professor Linda Kristjanson, Professor Göran Roos, Mr Stephen McIntosh, Professor Mike Sandiford, Dr Chris Pigram, Professor Richard Hillis, and Dr Mike Etheridge

6.00pm - Drinks followed by dinner to end the symposium

Speaker biographies

Dr Bob Haydon, AuScope CEO

Dr Haydon has been Managing Director and CEO of AuScope Ltd since 2008. Prior to that he was CEO for the newly formed CRC for Predictive Mineral Discovery (*pmd*CRC*) following a career of 25 years as a geologist in a wide range of roles in the minerals industry from mining to mineral exploration.

Professor Linda Kristjanson, AuScope Chair

Professor Kristjanson is Chair of AuScope Ltd and Vice-Chancellor of Swinburne University. She was a board member for the International Centre for Radioastronomy Research and has served on a number of CRC Boards. In 2002, Linda was named the Australian Telstra Business Woman of the Year in recognition of her entrepreneurial work in health, science and innovation.

Professor Göran Roos

Professor Roos is one of the founders of the modern field of Intellectual Capital Science and a recognised world expert in innovation management and strategy. He has advised many governments on issues relating to research and development, strategy, national and regional innovation systems issues, knowledge management and intellectual capital.

Dr Paul Heithersay, SA DMITRE & AuScope Director

Dr Heithersay was appointed to the position of Chief Executive of the Olympic Dam Task Force in December 2010. He also holds the position of Deputy Chief Executive, Resources and Energy. Before joining the Public Service in 2002, Dr Heithersay spent more than 20 years in the mining industry in Australia, Southeast Asia and China.

Dr Mike Etheridge

Dr Etheridge is a geologist with a varied career in research, teaching and the minerals industry. Mike was Chairman of SRK Australasia, prior to pursuing a career as a company director in the resources industries and science & technology organisations. He was the Facilitator for the planning process that led to the formation of Auscope.

Dr Rob Woodcock, CSIRO

Dr Woodcock is the Stream Leader National Geoscience Data Infrastructure and Integration for the CSIRO's Minerals Down Under Flagship. Since joining CSIRO, Robert has continued his interest in open standards based spatial information exchange, Service Oriented Architectures and e-Research, and leads the national AuScope Grid.

Dr John Dawson, Geoscience Australia

Dr Dawson leads the National Geodesy Program at Geoscience Australia and is responsible for Australia's geospatial coordinate system. John is Chair of the Asia-Pacific Reference Frame, an initiative of the United Nations Global Geospatial Information Management (UN-GGIM). He is the Program Manager (Positioning) at the Collaborative Research Centre for Spatial Information (CRCSI).

Dr Ian Scrimgeour, NT Geological Survey

Dr Scrimgeour has a PhD in geology from the University of Adelaide, and nearly twenty years experience in industry and government geoscience in the Northern Territory. Since 2006, Ian has been responsible for leading the Northern Territory Government's geoscience initiatives to stimulate resource exploration.

Professor Louis Moresi, Monash University

Professor Louis Moresi is an expert in computational geodynamics based at Monash University. His research focuses on understanding the basic workings of plate tectonics and on the evolution of the Earth. He leads AuScope's Simulation, Analysis and Modelling component and is a member of the Australia Research Council's college of experts.

Professor Mike Sandiford, University of Melbourne

Professor Sandiford is an acclaimed expert in continental geodynamics. In 2010, he developed the AuScope Australian Geophysical Observing System (AGOS) initiative to augment existing NCRIS AuScope infrastructure with new capability that focuses particularly on emerging geophysical energy issues such as geothermal.

Professor Malcolm Sambridge, ANU

Professor Sambridge is currently Professor and Associate Director at the Research School of Earth Sciences at ANU. His research contributions have been in geophysical inverse problems across seismology and geophysics. He was awarded the Price medal of the Royal astronomical Society in 2009 and elected a Fellow of the American Geophysical Union in 2010.

A/Professor Tim Rawling, University of Melbourne

Associate Professor Rawling is the Director of Infrastructure Development with AGOS. His recent research has involved the development of regional/crustal-scale 3D and 4D geological models as well as new exploration methodologies involving 3D modelling and finite element simulation. Tim's background is in structural geology and IT.

Dr Natalie Balfour, ANU

Dr Balfour, a postdoctoral fellow at ANU, coordinates the AuScope Australian Seismometers in Schools Network (AuSIS), which installs research-quality earthquake recorders in schools. Her research interests include improving earthquake source parameters used for seismic hazard assessment. She has worked for Geoscience Australia and the Pacific Geoscience Centre.

Mr Geoff McNamara, Melrose High School

Mr McNamara is a Science teacher at Melrose High School. He has been involved in education in the TAFE and School sectors for 26 years, having taught in Sydney and Canberra in areas as diverse as Ophthalmic Optics, Design and Technology and Science. In 2012 he won the Australian Museum Eureka Prize for Eureka Prize for Science or Mathematics Teaching.

Professor Mary O'Kane, NSW Chief Scientist and Engineer

Professor O'Kane was appointed NSW Chief Scientist & Engineer in 2008. She is also Executive Chairman of Mary O'Kane & Associates Pty Ltd, a Sydney-based consulting practice specialising in innovation and major reviews.

Mr Stephen McIntosh, Head of Exploration Rio Tinto

Mr McIntosh is global Head of Exploration for Rio Tinto where he leads a 500-strong global team operating in some 20 countries. Stephen is a geologist by training and has more than 25 years' service with Rio Tinto. He has worked in more than 45 countries covering a broad range of commodities during his career.

Professor Richard Hillis, DET CRC & AuScope Director

Professor Hillis is CEO of the Deep Exploration Technologies CRC. He graduated BSc (Hons) from Imperial College (London) and PhD from the University of Edinburgh. Richard was previously Head of the Australian School of Petroleum at the University of Adelaide. He is a non-executive director of ASX-listed Petratherm and of AuScope, and a Fellow of ATSE.

Dr Chris Pigram, Geoscience Australia CEO

Dr Pigram has over 35 years experience in geoscience covering minerals, petroleum, basin analysis and marine geoscience with over 100 publications and is member of several professional geological societies. He has worked in Southeast Asia and the West Pacific as well as extensively in Australia. Dr Pigram currently holds the position of Chief Executive Officer in Geoscience Australia.

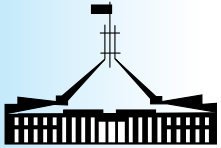
AuScope is a company set up to manage major Commonwealth funded programs to establish infrastructure and scientific equipment in universities and government agencies to support Earth Science research and other public-good investigations in fields of geology, geophysics and spatial science.

Our symposium is intended to publicise some of the achievements from an investment of more than $100 million which was started in 2007 to establish equipment and infrastructure that will keep our researchers amongst the best in their field and ensure government is receiving scientific advice based on world class research.

The Earth and Spatial Sciences provide crucial information which underpins the knowledge required to meet many challenges that face Australia and with which to build Australia's economy.

Through its capability building programs, AuScope is adding value to the delivery of world-class research and science-based activities in Australia, that will give government and industry the tools to make improved decisions surrounding the sustainability of the continent on which we live.

In harnessing previous investments within an integrated management system, the AuScope Earth Observatory aims to establish Australia as the world's leading platform for continental observations.



$70M
investment

AuScope

$34M cash
$128M in kind

Partnerships between commonwealth research organisations, universities and state and federal agencies have built the infrastructure platform.

The NCRIS Program

AuScope Grid and Interoperability
Earth Composition and Evolution
National Virtual Core Library (NVCL)
Earth Imaging and Structure
Earth Simulation, Analysis and Modelling
Geospatial Framework and Earth Dynamics

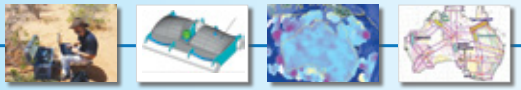
The AGOS Program

Geospatial Observatory
Earth Sounding Network
Subsurface Observatory
Geohistory Laboratory
Inversion Laboratory
Geophysical Education Observatory

Earth and Geospatial Science Research sector to conduct research and scientific investigations to help advise government and industry with the knowledge to make better choices in the future.

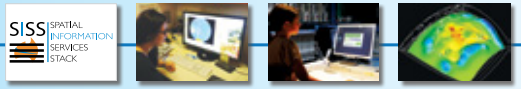
Positioning infrastructure including three telescopes, upgraded Satellite Laser Ranging facilities, 100 new stations for the National Global Navigation Satellite System network, updated Gravity measurement facilities, provided deployable GNSS stations together with a robotic calibration facility.

Aids the construction, mining, and civil industries by creating more accurate surveying data and equipment positioning. This will also help the agricultural industry manage Australia's farming assets better. AuScope is also providing a platform to study critical phenomena such as crustal motion, tides, and polar motion, which help understand the effects of climate change on sea level changes.

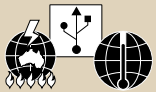


New Seismic and Magnetotelluric equipment to upgrade and expand the existing pool researchers have to use. We also funded seismic work to be carried out in important regions across Australia to add to national datasets.

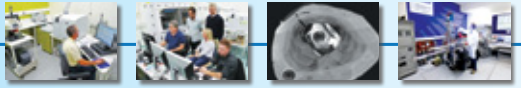
Provides data from many tens of kilometres below the earth's surface so we can produce images to help understand the way our continent has formed. This will help monitor natural hazards like earthquakes in order to identify the location of potential geological hazards and help plan safer and more stable community infrastructure projects in important regions. AuScope also developed a unique program to help educate school students in the earth and spatial sciences by including them in an international earthquake monitoring science experiment (AuSIS).



e-research/e-science infrastructure – IT infrastructure for data exchange (SISS) and developed a suite of robust geodynamic modelling, analysis and simulation software codes. We also upgraded the Supercomputing facility (Terrawulf 2 & 3) at ANU to provide capacity to deal with data intensive problems.

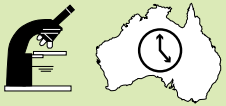


Creates open and cost effective access to earth science and geospatial data and information. We developed a suite of robust geodynamic modelling and simulation software codes that can be used to understand complex earth systems to help decision making around environmental issues and location and use of our natural resources including groundwater. It also makes simulations that could help unlock mineral and energy resources for a sustainable future.

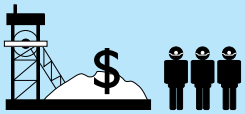


Geohistory laboratories in Melbourne and Perth, contributed to a new ion probe facility in Western Australia, and funded technical expertise required to operate facilities at Melbourne, Perth and Sydney.

Allows us to analyse mineral, fluid and rock samples to help refine our knowledge about how Australia changes over time and help understand the timing and composition of fluids and materials moving in the shallow crust.



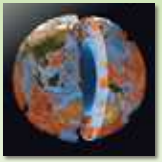
Hyperspectral core logging facilities (NVCL) in each State and Territory to create a virtual library of the mineral content of parts of the top kilometer of the crust of our Continent; information accessible from a personal computer.



This will help the mining and exploration industry have more efficient access to information that will help identify resources and create investment which will build the economy and create jobs across Australia in the future.

Petrophysical laboratory at the University of Melbourne to provide equipment to conduct subsurface observations and monitoring of the top few kilometres of the crust of the continent.

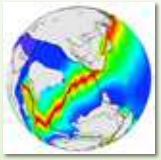
Allow monitoring of sensitive areas to understand natural and man-made impacts in areas that are being developed or may develop in the future.

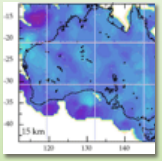












AuScope Partners

AuScope Partners for the NCRIS Program

- Australian National University (ANU)
- Curtin University of Technology
- Macquarie University
- Monash University
- University of Adelaide
- University of Melbourne
- University of Queensland
- University of Sydney
- University of Tasmania
- University of Western Australia
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)
- Geoscience Australia (GA)
- West Australian Government (Geological Survey of Western Australia; Landgate WA)
- Victorian Government (Geoscience Victoria)
- Queensland Government (Department of Natural Resources and Mines)
- New South Wales Government (Geological Survey of New South Wales; New South Wales Department of Lands)
- Tasmanian Government (Mineral Resources Tasmania; Tasmanian Department of Primary Industries, Water & Environment)
- Northern Territory Government (Department of Planning, Infrastructure & Environment; Department of Primary Industries, Fisheries and Mines)
- South Australian Government (Department for Manufacturing, Innovation, Trade, Resources and Energy)

AuScope Partners for the EIF AGOS Program

- Australian National University (ANU)
- Curtin University of Technology
- Macquarie University
- University of Adelaide
- University of Melbourne
- University of Queensland
- Geoscience Australia (GA)

In collaboration with:

- DMITRE South Australia
- DPI Victoria
- DNRM Queensland
- Petratherm Ltd

Australian Government
Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education

NCRIS and EIF programs are initiatives of the Commonwealth Government