

UNCOVER – Progress in the vision for exploration geosciences and mineral discovery in Australia

This month *Preview* has published online sixty presentations from the UNCOVER Summit and post-Summit Workshop, held in Adelaide between 31 March and 2 April. A list of these presentations is appended to this summary of progress in the UNCOVER initiative.

The UNCOVER initiative in our national mineral exploration endeavours, formulated under the aegis of the Australian Academy of Science (see *Preview* February 2014, p. 14), aims to build a strategy that will find new Tier 1 mineral deposits under the 80% of Australia where favourable geology lies below regolith or other barren cover. This outcome will be facilitated by increasing the national conversation between industry, research providers (academia and CSIRO), government surveys, and policy-development arms of government, in order to enhance the communication, direction and focus of new technologies, models and exploration programs.

Last April the UNCOVER Executive Committee welcomed The Honourable Martin Ferguson AM (a past Minister for Resources and Energy in the Rudd–Gillard governments) as Patron. In this role we believe Mr Ferguson will greatly assist in our liaison with policy-makers in government.

The UNCOVER initiative has progressed on four fronts this year. Firstly, publication of the Summit presentations by the ASEG, at request of the

UNCOVER Executive, meets the need for archiving the Summit material in a citeable, discoverable and downloadable form. We have achieved this by use of the *Preview* format, which ensures that CSIRO Publishing will host this resource as a permanent archive, accessible through standard databases and web searches. Two summary documents, which appear at the head of the list of presentations, are vital reading for all explorationists; the first summarises strategy and emerging geosciences priorities as identified in the Summit, while the second summarises the findings of the post-Summit cover thickness mapping workshop. The synergies of airborne gravity gradiometry with airborne EM (AEM) for determining regolith thickness, and of both active and passive seismic methods with ground EM data are points well made in this review.

Secondly, an UNCOVER Geoscience Committee has been formed under chairmanship of Steve Beresford, Chief Geologist of First Quantum Minerals Ltd. One of the roles of the Geoscience Committee will be to identify and recommend endorsement of projects, in particular ‘headline projects’ which may become the focus of the UNCOVER initiative.

Thirdly, AMIRA International has launched a Road-Map initiative as part of Project *P1162: Unlocking Australia’s Hidden Potential*, under the leadership of Robbie Rowe of NextGen Geological Pty Ltd. This initiative will provide an opportunity for industry to contribute to a blueprint for addressing the challenges

and gaps in knowledge, technology capability together with an assessment of the research capacity (human resources and infrastructure) required to improve the exploration success rate in areas of post mineral cover. Further details are at <http://www.amira.com.au/web/documents/newsletter/amiranewsletter37.pdf>. AMIRA advises that Project *P1162* has now received the necessary threshold funding and has commenced with an impressive total of 34 companies and government agencies signed up.

Fourthly, Geoscience Australia and the Australian state and Northern Territory geological surveys have embraced the UNCOVER initiative as a major part of their support for the mineral exploration industry. Richard Blewett, Group Leader Mineral Systems for Geoscience Australia, gives an overview of current efforts, beginning with studies in the Stavely area under Murray Basin cover of western Victoria and continuing with studies in the Thomson Orogen of northern NSW, Queensland and Northern Territory. These projects have the involvement of a number of geoscientists within Geoscience Australia, plus additional input from state surveys and universities. See more at <http://www.ga.gov.au/news-events/news/latest-news/uncover-unlocking-australias-hidden-mineral-potential>.

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Australian Society of
Exploration Geophysicists

Searching the deep earth

A vision for exploration geosciences in Australia

Presentations and summaries from the UNCOVER Summit and UNCOVER Workshop, Adelaide Convention Centre 31 March to 2 April 2014. Presentations should be referenced by author, title, *Preview 172*, The Australian Society of Exploration Geophysicists, October 2014.

SUMMARY DOCUMENTS

- [UNCOVER \(2014\)](#), UNCOVER Summit: unfolding the vision for exploration Geoscience towards a brighter mining future in Australia, Summit 2014 and Next Steps
- [Geoscience Australia \(2014\)](#), UNCOVER: cover-thickness mapping technical workshop summary and outcomes

PRESENTATIONS

Monday 31 March 2014

Session 1

- [Paul Heithersay](#) (DMITRE) What is the future for government geoscience initiatives in Australia?
- [Jonathan Law](#) (CSIRO) Minerals down under flagship
- [Stephen McIntosh](#) (Rio Tinto) Leveraging investment in the Earth sciences to meet future mineral discovery challenges
- [Chris Pigram](#) (Geoscience Australia) Making Australia competitive: undercover mineral discovery
- [Sue O'Reilly](#) (Macquarie University) A national trajectory for geoscience research in Australia and some historical perspectives towards UNCOVER

Session 2

- [Charles Funk](#) (Newcrest) Industry requirements for undercover exploration
- [Joe Cucuzza](#) (AMIRA) Minerals industry challenges: unlocking Australia's potential through collaboration
- [Richard Schodde](#) (Minex Consulting) Challenges and opportunities for undercover exploration in Australia
- [John Holliday](#) (Independent) What's needed, and what's not

Session 3

- [James Cleverley](#) (CSIRO) Innovation to support the UNCOVER business
- [Steve Hill](#) (DMITRE) The cover: love thy enemy
- [Ravi Anand](#) (CSIRO) Transported cover: friend not an enemy

Quickfire session 1 – geological surveys

- [Andy Barnicoat](#) (Geoscience Australia) Unlocking Australia's hidden mineral resource potential: GA's national projects
- [Steve Hill and Miles Davies](#) (GSQ) Mineral system 'haystacks' in South Australia's deep cover exploration frontiers: from impediment comes opportunity
- [Paul McDonald](#) (GSV) Victoria's Earth resources under cover
- [Jamie Robinson](#) (GS NSW) Constraining thickness of transported cover and basement geology: tasmanides undercover in NSW
- [Vladimir Lisitsin](#) (GSQ) Intrusion-related mineral systems of north-east Queensland
- [Vladimir Lisitsin](#) (GSQ) Metallogenic analysis: defining and mapping mineral systems
- [Adrian Fabris](#) (GS SA) Mapping mineral systems under cover; using drill rigs instead of geological hammers
- [Tania Dhu](#) (NT GS) Uncovering the Greater McArthur Basin, Northern Territory
- [\(a\) Dr Ian Tyler](#) (GS WA) The Geological Survey of Western Australia: what does a state geological survey do in 2014?
- [\(b\) Dr Ian Tyler](#) (GS WA) Western Australia's Exploration Incentive Scheme
- [Dr Mark Duffett](#) (MRT) The Tasmanian UNCOVER perspective

Tuesday 1 April 2014

Session 4

- [Richard Blewett](#) (Geoscience Australia) Australia's lithospheric architecture:

imaging for under cover mineral discovery

- [Bill Griffin](#) (Macquarie University) Archean SCLM: what do we (think we) know?
- [Mark Jessell](#) (UWA-CET) Next generation 3D modelling and inversion: what you don't know can help you

Session 5

- [Steve Beresford](#) (First Quantum) Theory of constraints applied to mineral systems
- [Chris Kirkland](#) (GSWA) Isotope geology through space and time: a tool for understanding crustal evolution
- [John Miller](#) (UWA-CET) Resolving the 4D geodynamic and metallogenic evolution of (west) Australia: towards better prediction

Session 6

- [Peter Winterburn](#) (UBC) Sizing up the footprint: concepts in regional scale undercover geochemistry
- [Peter Bewick](#) (Encounter Resources) Footprints in the Great Sandy Desert
- [Matt Greenwood](#) (GSQ) Regional 3D mineral potential modelling using geology and geophysics
- [Bruce Gemmill](#) (CODES) Metal dispersion around porphyry Cu-Mo-Au deposits: implications for fluid flow and exploration
- [Shaun Barker](#) (University of Waikato) Teaching and old dog new tricks: stable isotopes in mineral exploration

Quickfire session 2 – innovations in technology

- [Mathew Murphy](#) (Bluestem P/L) Trace element chemistry of sulphides and its potential as an indicator in gold deposit exploration
- [Kim Frankcombe](#) (ExploreGeo) Chasing Volkswagons at 2 km with IP
- [Lynn Pryer, Timothy Debacker, Karen Connors and Jane Blevin](#) (FrogTech) OZSEEBASE™: basement uncovered



- [Elena Belousova](#), [William Griffin](#), [Norman Pearson](#), [Suzanne O'Reilly](#) and [Yoann Greau](#) (GEMOC, Macquarie Univ) TerraneChron®: remote sensing with detrital samples
- [Don Pridmore & Greg Turner](#) (HiSeis Pty Ltd) Seismic and mineral exploration under cover? Time for a new relationship
- [Graham Heinson](#) (Univ Adelaide) Deep imaging and monitoring with magnetotellurics
- [Ivan Belouov](#), [Sebastien Meffre](#), [Dan Gregory](#), [Jeffrey Steadman](#) and [Ross Large](#) (CODES Univ Tas) Pyrite geochemistry as a proven vector to ore

- [Zhen-Xiang Li](#) (Curtin University) Greenfield identification: big picture matters
- [Helen Williams](#) (MMG) Overcoming ground disturbance issues with alternative electrical imaging techniques
- [Nick Smith](#) (OZ Minerals) Passive seismic for mineral exploration under cover
- [Theo Aravanis](#) (Rio Tinto) The regolith – a proposal for regional airborne EM surveys to supplement gravity gradiometer surveys
- [Dave Giles](#) (Univ Adelaide) Mineral Systems Drilling – DET CRC's strategy to UNCOVER deep prospectivity

Wednesday 2 April 2014 Session 7

- [Joe Cucuzza](#) (AMIRA) What exploration companies want from UNCOVER
- [Richard Hillis](#) (DETCRC) Round table summary and grand challenge

Session 8 – The need for a Geoscience Committee and a Communications Committee

- [Michael Asten](#) (Monash University) UNCOVER stakeholders
- [Theo Aravanis](#) (Rio Tinto) Priorities in UNCOVER initiatives

UNCOVER: cover-thickness technical workshop

Aim of the workshop

Develop practical solutions for mineral explorers to determine the depth of cover at the tenement scale by identifying the optimal trade-off between accuracy and data acquisition costs for the range of Australian cover materials.

SUMMARY DOCUMENT

- [Geoscience Australia \(2014\)](#), UNCOVER: cover-thickness mapping

technical workshop summary and outcomes

PRESENTATIONS

- [Andy Barnicoat](#) (Geoscience Australia) Introduction
- [Steve Hill](#) (Geological Survey SA) Nature of Australian Regolith
- [John Wilford](#) (Geoscience Australia) Remote sensing and radiometric
- [Clive Foss](#) (CSIRO) Magnetics

- [Des FitzGerald](#) (Intrepid Geophysics) Gravity
- [Kim Frankcombe](#) (ExploreGeo) Ground electric (IP/resistivity)
- [Graham Heinson](#) (University of Adelaide) Magnetotellurics
- [Jim Macnae](#) (RMIT University) Airborne electromagnetic
- [Michael Asten](#) (Monash University) Passive shallow seismic
- [Milovan Urosevic](#) (Curtin University) Active source shallow seismic

