

## W22: Discovering and Accessing Geophysical Data in the 21st Century

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**Date(s)** Fri, Sep 06

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**Time** 08:45 - 16:45

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**Location** Crown Perth

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**Summary** This workshop will cover; Geoscience Australia's new data delivery pipelines for geophysical data, Efficient data discovery and access techniques using data standards, Case studies involving magnetotellurics, gravity, magnetic, radiometric & AEM data, Integrating new formats and web services into your workflows, and establishing new geophysical data conventions.

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### Schedule\*

#### **Session 1 - Geophysical Data in the age of HPC, the Cloud, AI and Big Data**

Welcome and introduction (GA speaker TBC)

Drivers for Change: Rationale for and description of GA's new open data delivery solutions

- Limitations of legacy formats and traditional download-based workflows for geophysical data in the era of AI (Why ASEG-GDF can't cut it any more)
- Overview of the netCDF open data format and its application to gridded, line and point geophysical data

Web Services: A (very) brief overview of some standard web services (e.g. CSW, WMS, WCS, NCS, OPeNDAP) and what they do

Building on web services: A showcase of GA's new geophysical data portals

- The EFTF and replacement GADDS portals
- New portal functionality, including Dynamic colour ramps, On the fly gridding, Raster Maths, 3D visualisation of AusAEM and reflection seismic

Questions and Discussion - what does all this mean for geophysical data producers and consumers?

#### **Session 2 - Beyond Portals - GA's machine-to-machine geophysical data delivery pipelines. Use Cases and Live Demonstrations**

Automated data discovery of available geophysical data from GA's catalogue using CSW

- Gravity point data example

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#### Terms and conditions

\* Schedule subject to change

Workshops will proceed only if minimum numbers are reached, should a workshop be cancelled that you have paid and registered for, you will be notified and refunded the full amount. Should you wish to cancel a workshop, standard registration cancellation policy applies. Please refer to the AEGC conference website for registration cancellation policy and for further details on registration information <https://2019.aegc.com.au/>

### W22: Discovering and Accessing Geophysical Data in the 21st Century

Programmatically discovering and accessing GA's geophysical datasets using web services in Python & MatLab

- Gridded magnetic, radiometric and gravity data examples
- Magnetic & radiometric line data examples

AEM Use Cases

- Conductivity inversions accessing raw time-domain AEM data via web services in C
- Analysis & visualisation of subsurface conductivity from AEM inversions in Python.

Questions and Discussion - what other kinds of data discovery & access functionality will people need?

#### **Session 3 - New Data Types and Future Directions**

Future Directions - Dealing with new data types of higher dimensionality using open data formats and web services

- Data Fusion: Combining multiple 2D & 3D geophysical data types for analysis using netCDF in Python
- Potential application: Airborne Gravity Tensor Data

Community Input - The need for structural and naming conventions for interoperability

- Geophysics-specific metadata: Establishing conventions for interoperability
- Community-agreed geophysics vocabularies and how GA can help

Invitation to join working groups to further develop geophysical data & metadata conventions

Open discussion on proposed geophysical data & metadata conventions

#### **Session 4 – Open discussion, ad-hoc demonstrations and exploration of GA's geophysical data holdings**

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