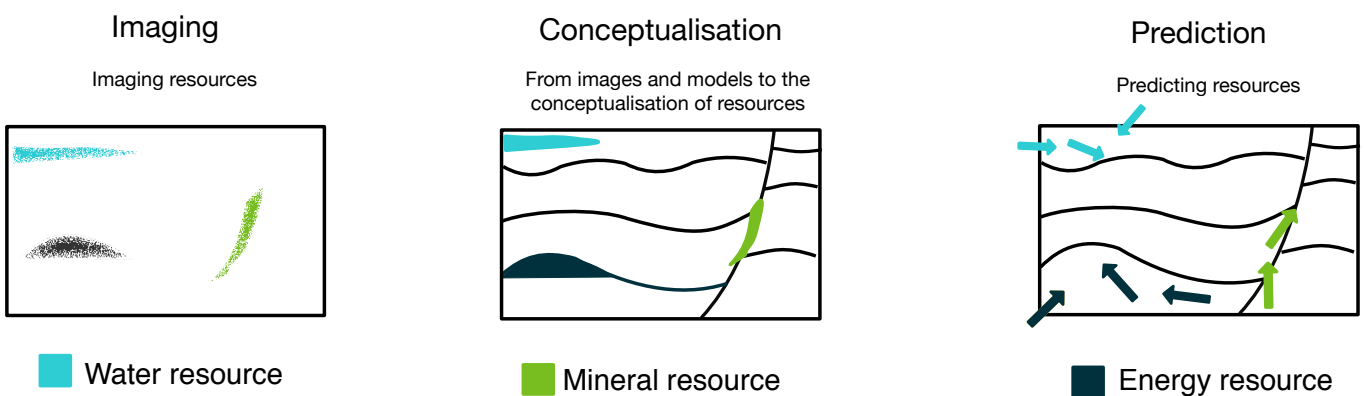# Sub 20 – Inaugural Deep Earth Imaging Conference

Wednesday 12th and Thursday 13th February 2020 at the Optus Stadium, Perth

CSIRO's Deep Earth Imaging Future Science Platform is organising an interdisciplinary subsurface conference around the themes of imaging, conceptualisation and prediction of water, energy and mineral resources. Over two days, we will focus on the science required, developed and deployed by academia, industry and government to prospect today for the resources that will underpin our low energy future. The conference will include a combination of keynotes, panel discussions, presentations and networking opportunities. Particular emphasis will be placed on the next generation of techniques to acquire knowledge about the subsurface; by for example combining machine learning, forward modelling, inverse theory and predictive applications.

Imaging	Conceptualisation	Prediction
Imaging resources	From images and models to the conceptualisation of resources	Predicting resources

▆ Water resource	▆ Mineral resource	▆ Energy resource

Imaging, conceptualisation and prediction form a triad that is required to gain knowledge about the subsurface and its hidden treasures.

The Deep Earth Imaging Future Science Platform is holding its inaugural conference that will focus on the scientific advancements required to progress the understanding of the systems behind the formation of water, mineral and energy resources. To unlock challenging-to-recover resources situated at depth requires improving the predictive power of geoscience tools to enable the capture and integration of subsurface, deep earth information for resource modelling. Key to this is to develop knowledge through inference from often incomplete, sparse, indirect and irregularly distributed measurements of the subsurface. The conference will serve as a platform to showcase current developments and to identify challenges and opportunities.

The Three Pillars

Imaging – An ever-increasing volume of geo-data drives the development of novel techniques that are able to produce snapshots of resource systems. Future breakthroughs will be based on advances in sensor networks and computational techniques to extract the maximum amount of information from our observations.

Conceptualisation – Our understanding of mineral, energy and ground water systems only increases when we combine images of the subsurface with geological knowledge. Confidence in predictions will increase if they are underpinned by formal interpretations of images and transparent conceptualisations of geological processes

Prediction – Robust predictions are the key to de-risking exploration in geological complex settings and managing water and hydrocarbon resources. Improving prediction will require advancing inference capabilities so we can turn images and conceptualisations into insight and understanding.

Program highlights

- Sessions dedicated to imaging, conceptualisation and prediction with keynote presentations that identify the challenges and opportunities in these spaces and knowledge development through inference.
- Panel discussions by experts in industry, government and academy focused on the roles of imaging, conceptualisation and prediction, and the synergies between these activities.
- A stream focused on the relevance and value of imaging, conceptualisation and prediction in the social license to operate context.
- An introduction to the current and planned research initiatives by government and academia to aid prospecting for the resources that will underpin a low energy future.
- Prizes for:
    - Best presentation by an early career researcher (less than 3 years relevant experience post PhD),
    - Demonstrated excellence achieved through interdisciplinary research (presentation); and
    - Best poster.

Why you should attend?

- Gain an understanding of the challenges and opportunities shared between imaging, conceptualisation and prediction for energy, mineral and water resources.
- Learn about new developments in inversion of geophysical data by academia, industry and government agencies.
- Familiarise yourself with CSIRO's role in the Deep Earth Imaging innovation space.

Abstracts

- 100 to 500 words abstract with a maximum of one figure.
- No abstract submission fee.

Registration

- Opens November 2019.
- The first 25 registrations will be covered by CSIRO's Deep Earth Imaging Future Science Platform.