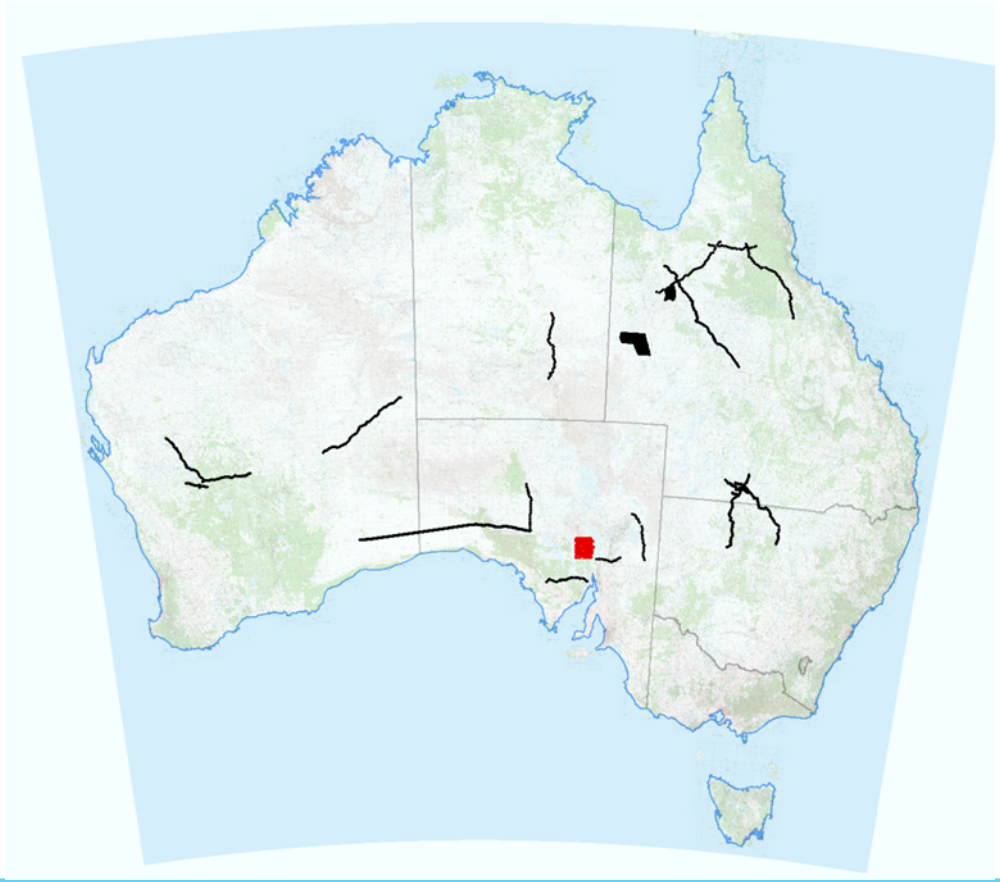
Australian Government
Geoscience Australia

Illuminating the Australian Lithosphere

Jingming Duan on behalf of the Magnetotelluric team

Resources Division, Geoscience Australia

Geoscience Australia's MT program

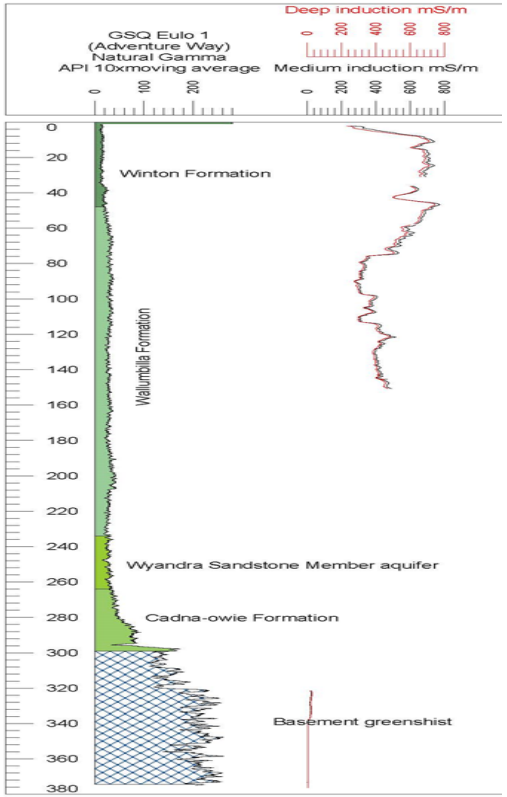


Large-scale regional and national MT surveys to investigate cover thickness, crustal and lithospheric architectures in Australia (~4000 sites)

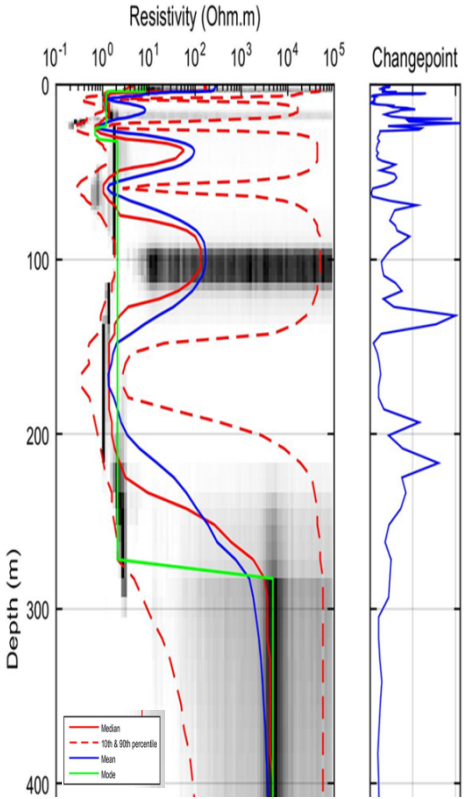
Regional surveys across potential mineral provinces and frontier sedimentary basins

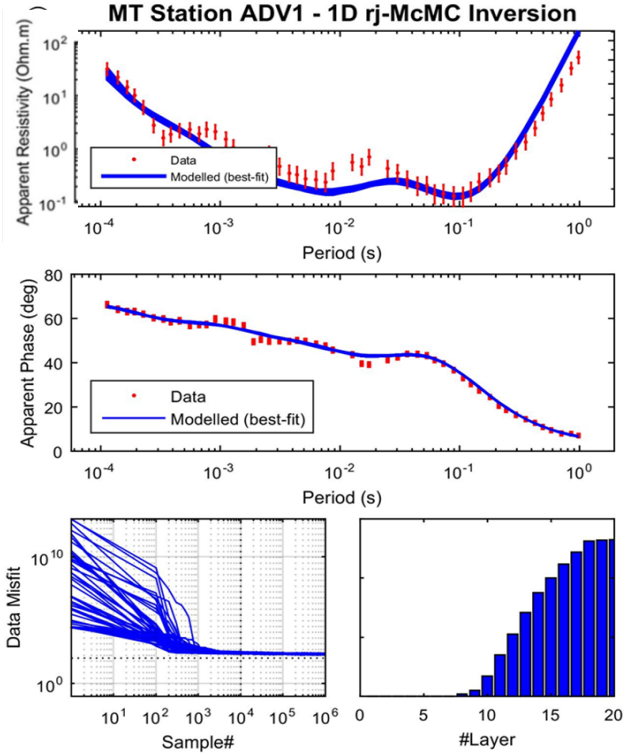
The Australian Lithospheric Architecture Magnetotelluric Project (AusLAMP) – a national-scale survey

Depth to Basement

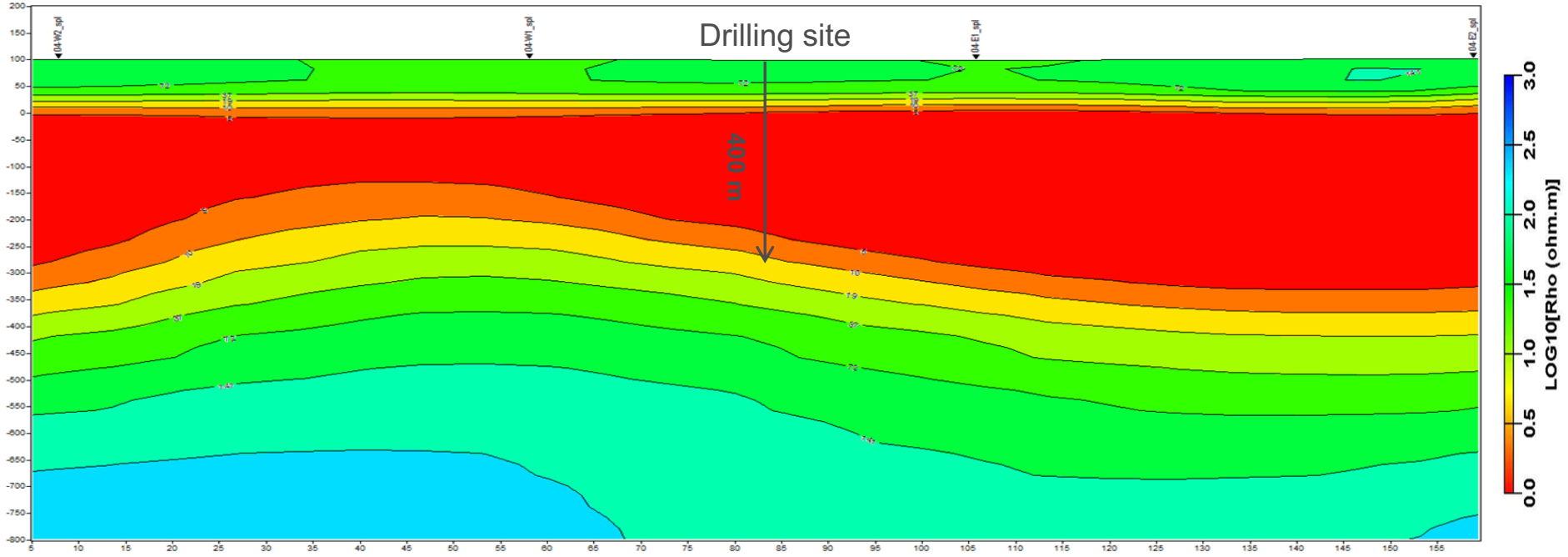


1D models of the stochastic inversion (reversible jump Markov chain Monte Carlo)

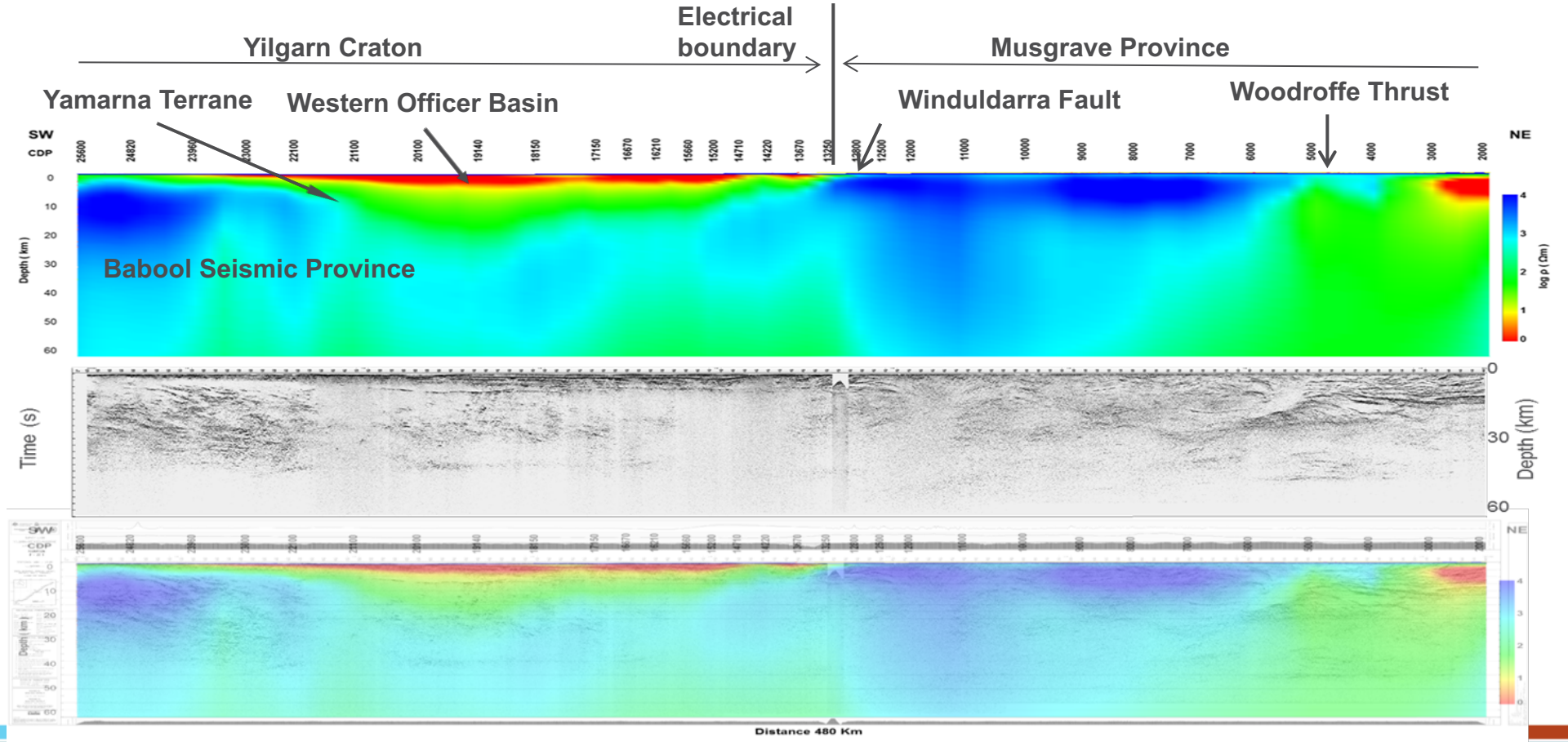




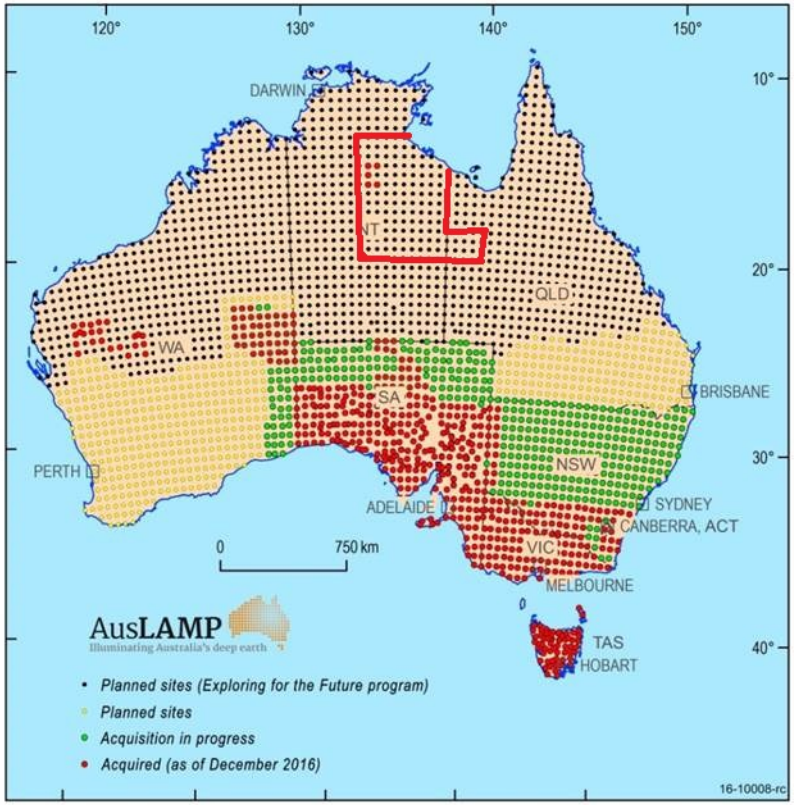
Depth to Basement



Regional MT survey (crustal architecture)



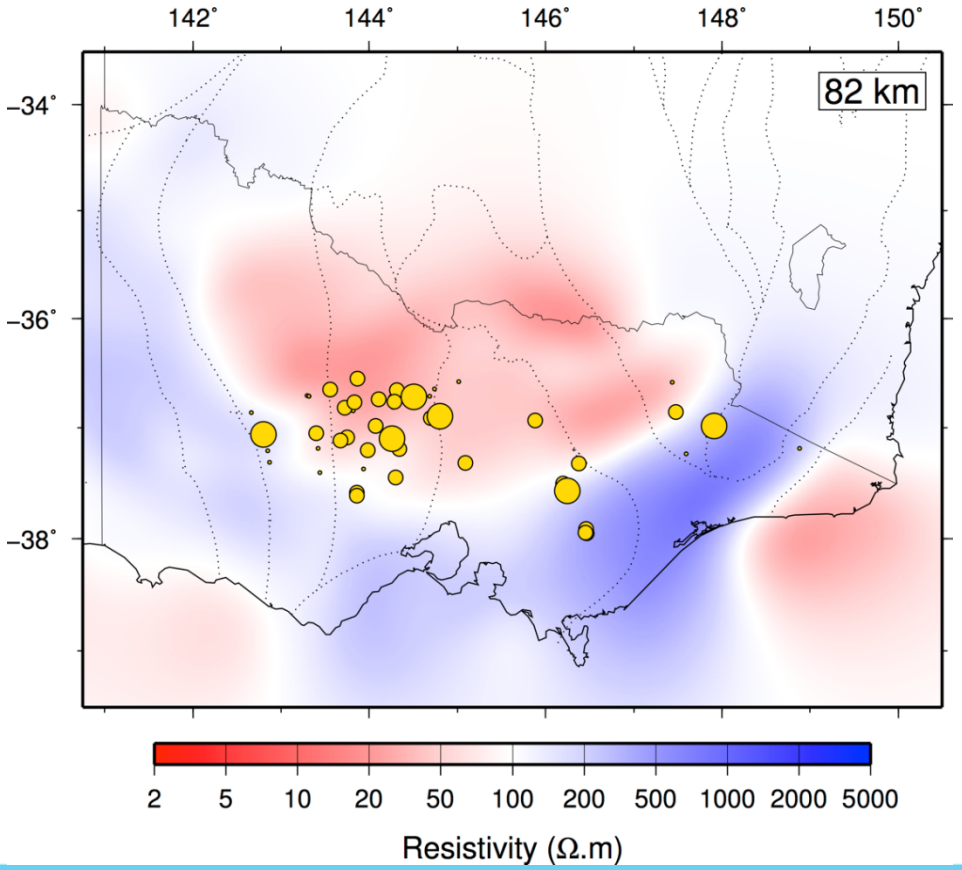
AusLAMP: survey progress

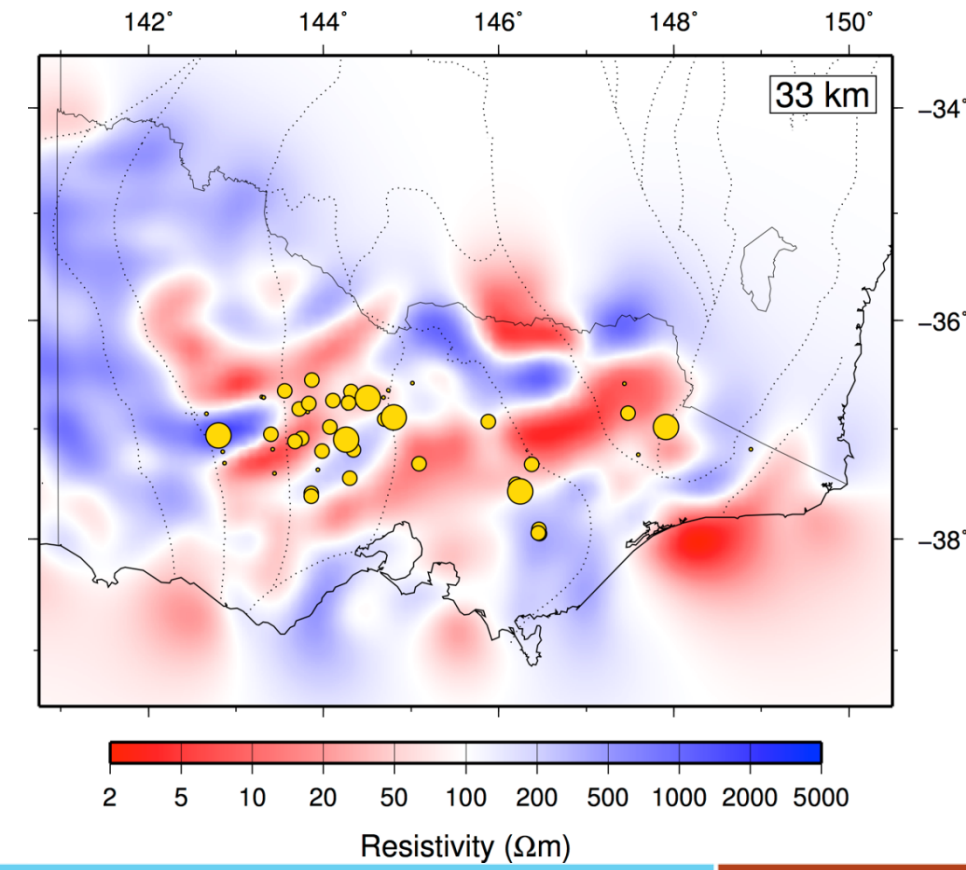


- Produce 3D conductivity map and study Geoelectric hazards
- Acquire data at approximately 3000 sites with half degree grid spacing
- Acquired data: ~800 sites (~26% of total sites)

Architecture: Gold deposits

Gold deposits: · <1 t ○ 1-10 t ● >10 t





Discussions

- MT shows the success of mapping basement and lithospheric architecture
- Interpretation requires knowledge of multi-disciplines
- Lack sophisticated tools to extract meaningful information rapidly
- The limitations of current 3D inversion codes for solving large-scale problem