

# Deep Imaging and Monitoring with Magnetotellurics



**UNCOVER Summit**  
**Wednesday 26<sup>th</sup> March, 2014**



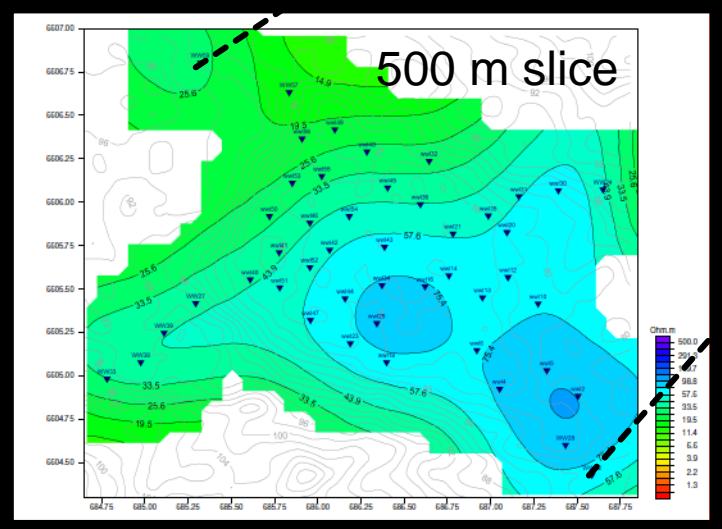
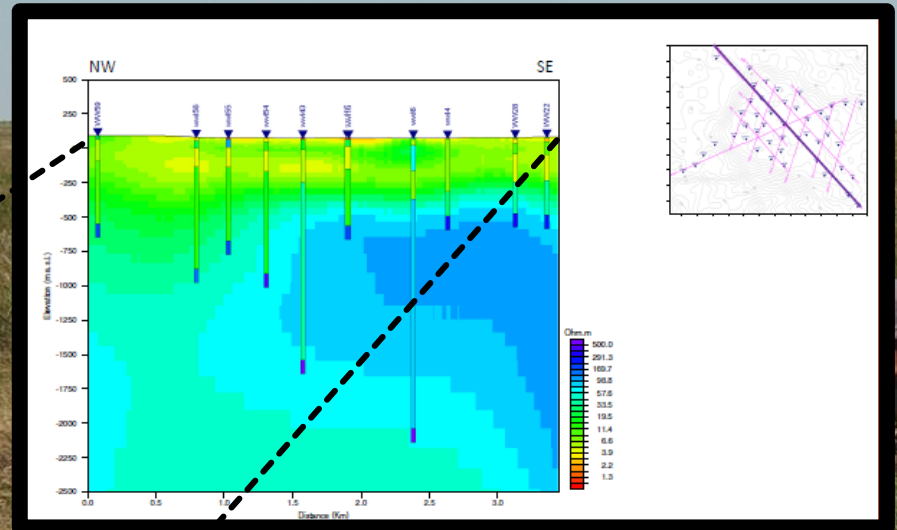
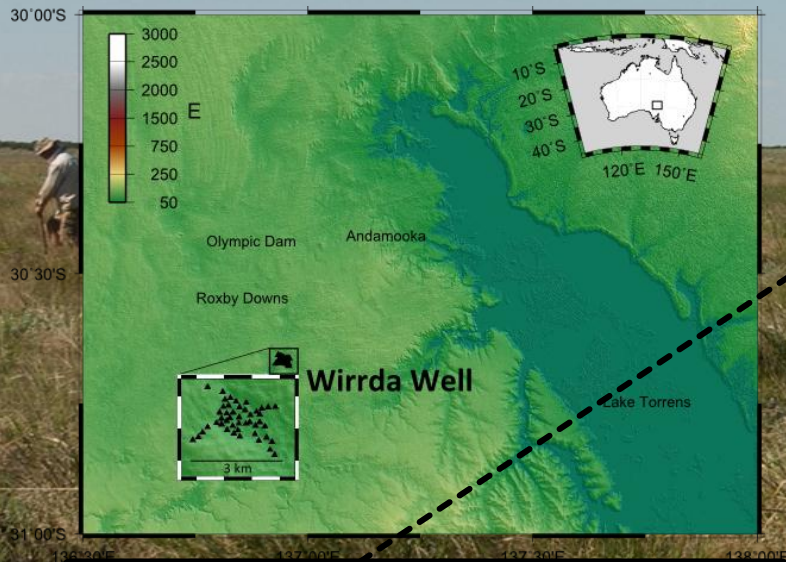
# Summary

MT can be used as an imaging tool to determine deep electrical resistivity structure in 3D over depth ranges of tens of metres to hundreds of kilometres.

Over the last decade, MT has developed rapidly with better instrumentation and modelling software.



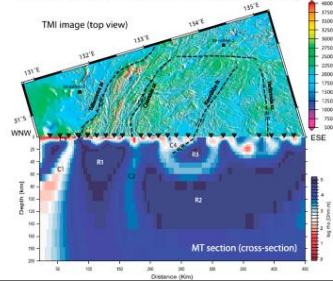
# Imaging mineral systems beneath thick regolith cover



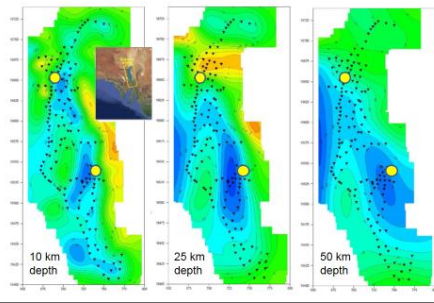
**Conclusion: MT good for regolith thickness, but not for imaging of mineralised zone**

# 3D crust and mantle resistivity for lithospheric-scale fluid pathways

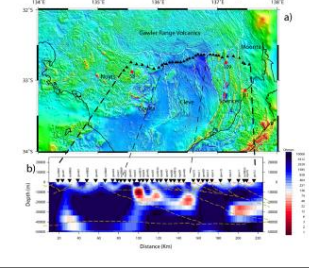
## 1. Do mantle-scale resistivity variations map fluid and melt pathways?



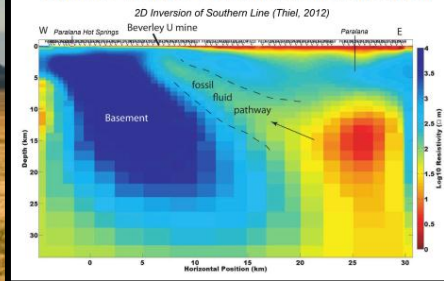
## 2. Low-resistivity lower-crust: high-strain and fluids?



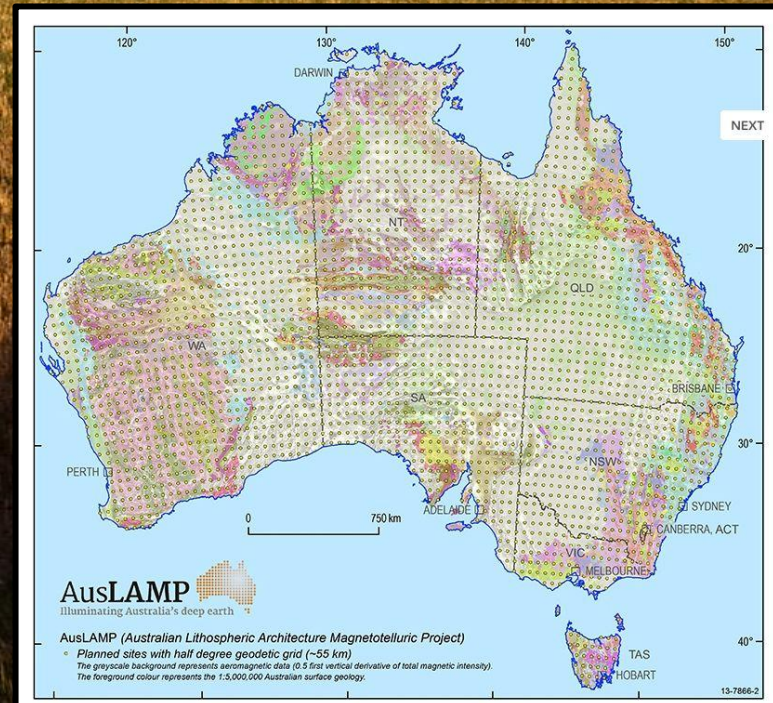
## 3. Very Low Resistivity at the Brittle-Ductile Boundary



## 4. Low Resistivity Pathways: Near-Surface Fluids Flow and Mineralisation

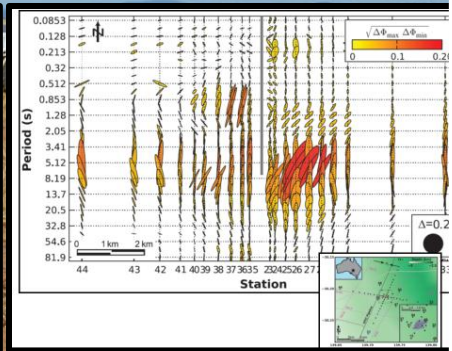
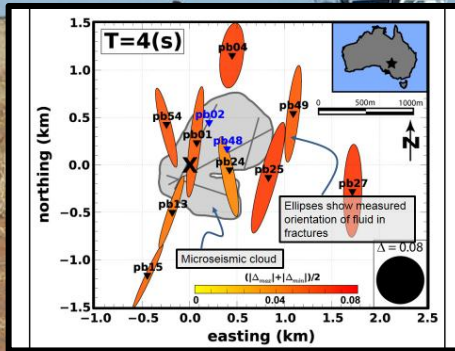
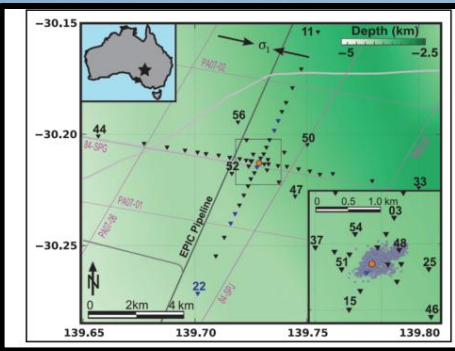


**Conclusion: MT images lithospheric-scale resistivity anomalies that reflect fluid pathways though the mantle, and from the lower to upper crust**





# MT as a 4D monitoring for unconventional energy



**Conclusion: By applying MT before (as a baseline), during and after fluid injection, we can show where and how fluids propagate**