

# Abstracts (continue)

## 206 - The SLaCT deep reflection seismic transect of SE Australia – spectacular data that constrains a spectacular Lachlan Orocline geological narrative.

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**Session: SGTSG Micro- to plate- scale structural geology 2, Lake Room 1 & 2, February 3, 2026, 2:00 PM - 3:20 PM**

SLaCT (Southern Lachlan Crustal Transect) is an east-west oriented deep seismic reflection survey and other geophysical data acquisitions totalling 629km long. Conceived over 2012-2016 as a collaboration between the GSV, Geoscience Australia, GSNSW, AuScope, SLaCT was designed to test key aspects of the Lachlan Orocline hypothesis, and to image the full width and depth of the Tabberabbera, Omeo, Deddick, Kuark and Mallacoota/Narooma zones and the Buchan Rift and Boyd Volcanic Complex. SLaCT comprises three overlapping lines spanning from near Swanpool (Victoria) in the west, over Australian Alps to the east coast near Eden (NSW). SLaCT completes a continuous transect of modern 2D deep seismic and complementary potential field geophysics across the full width of SE Australian Lachlan Fold Belt geology.

To reduce interpretation ambiguity the survey imaged regions with existing high quality geological control and measured rock petrophysical attributes. It produced a transect of well-constrained, crustal-scale, density-attributed geological interpretations, forward-modelled against detailed gravity data and able to be extrapolated laterally with confidence using potential field geophysics and geological mapping.

SLaCT has truly advanced understanding of Lachlan Fold Belt geology. This talk showcases some spectacular results. Migmatite/granite/gneiss zones exposed around the Omeo Zone periphery are shown to be parts of a zone-spanning, systematically layered, dish-shaped, extensional shear-zone-hosted metamorphic complex, enabling complete reappraisal of the temporal relationships between Omeo Zone low- and high-grade rocks, rift and intrusive complexes and mineralisation. The Governor Fault is confirmed as an east-dipping lithospheric-scale megathrust. It comprises a 5-km thick zone of alternately highly reflective and unreflective rocks with Cambrian-Silurian accretionary wedge crust of the Tabberabbera Zone to the east thrust over, and systematically fault-intercalated with, Proterozoic-Cambrian Selwyn Block crust in the footwall, part of a microcontinental crustal block drawn progressively into the accretionary wedge toe to congest the Lachlan Orocline subduction zone in the Silurian-Early Devonian.