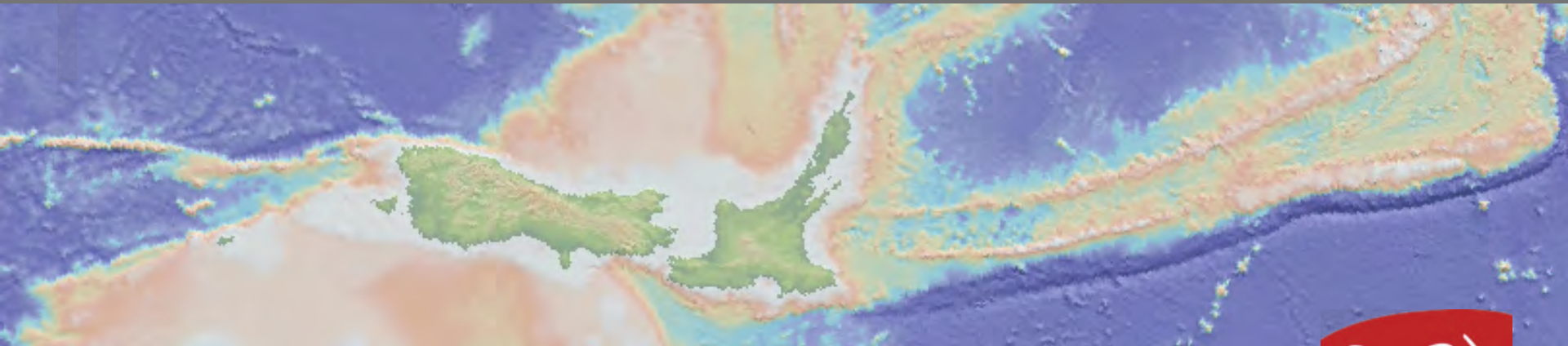


Tonga-Kermadec subduction initiation IODP proposal

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Subduction Initiation and Paleogene Climate (SIPC) in the Tasman Frontier, southwest Pacific

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[7] ANU, Australia

[8] Tohoku Uni., Japan

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[10] Sydney Uni., Australia

[11] IFREMER, France

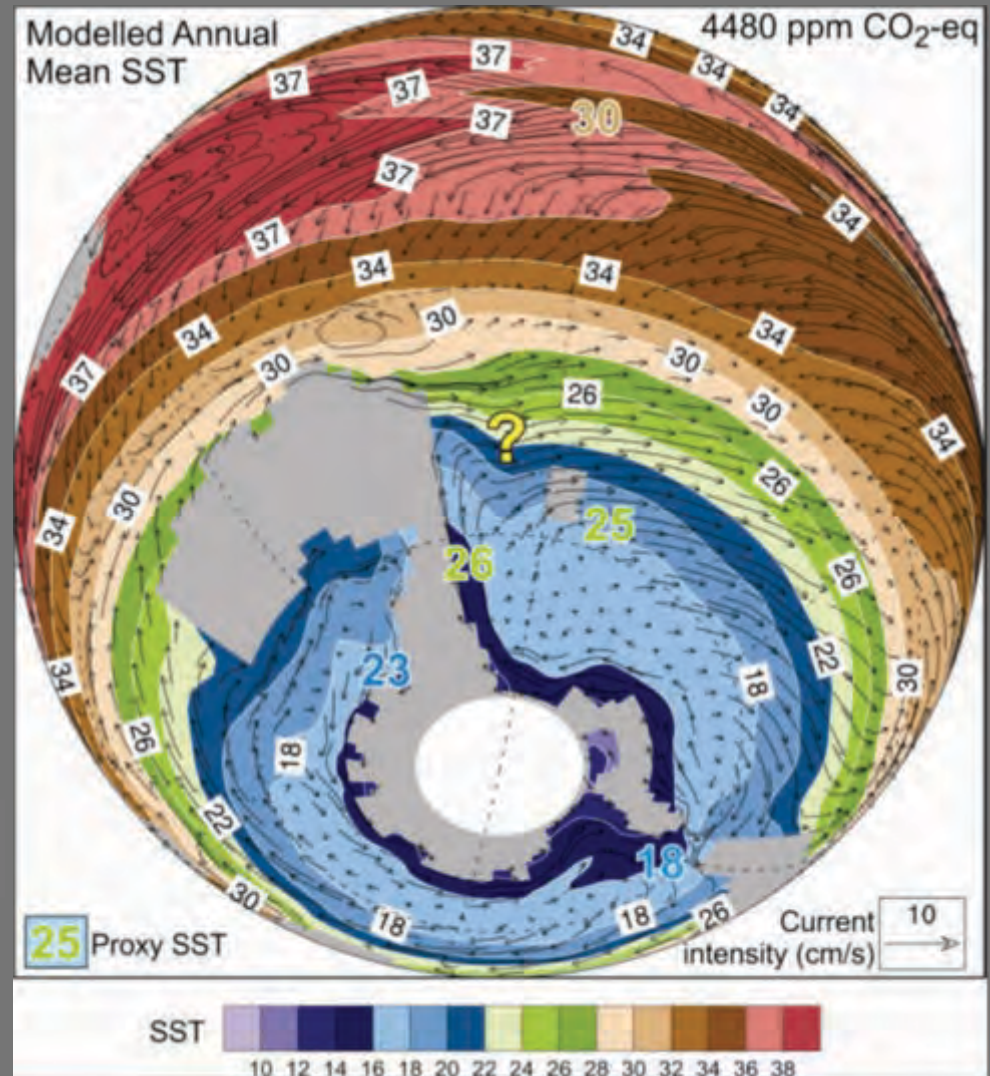
Subduction initiation changed paleogeography

- Ocean currents
- Temperatures
- Species dispersal

Global models don't fit
paleoclimate observations

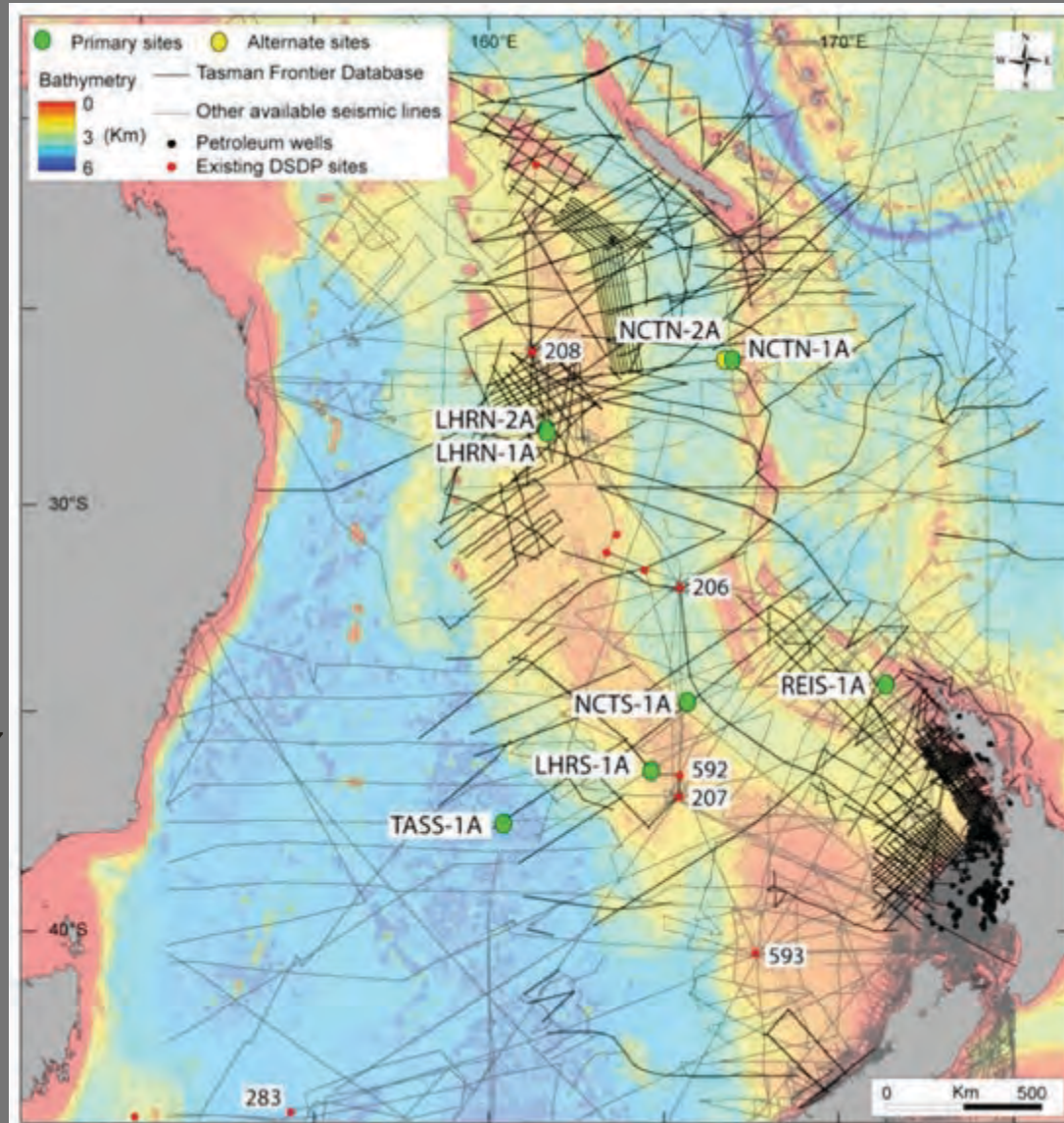
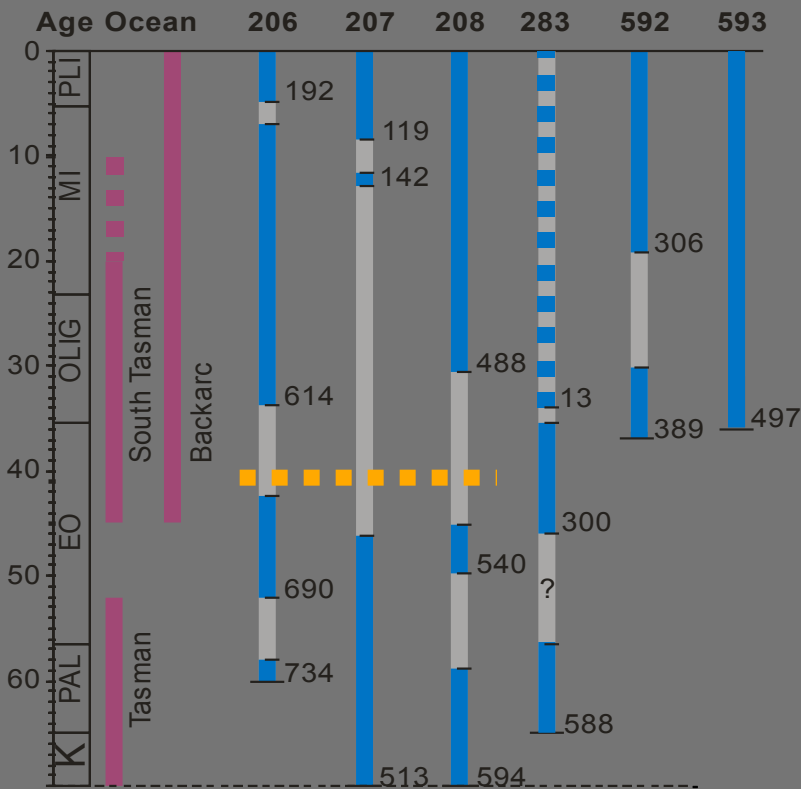
More/better data needed.
Tectonics may be regional
explanation.

IBM-TKH subduction initiation
may also explain long-term
climate cooling



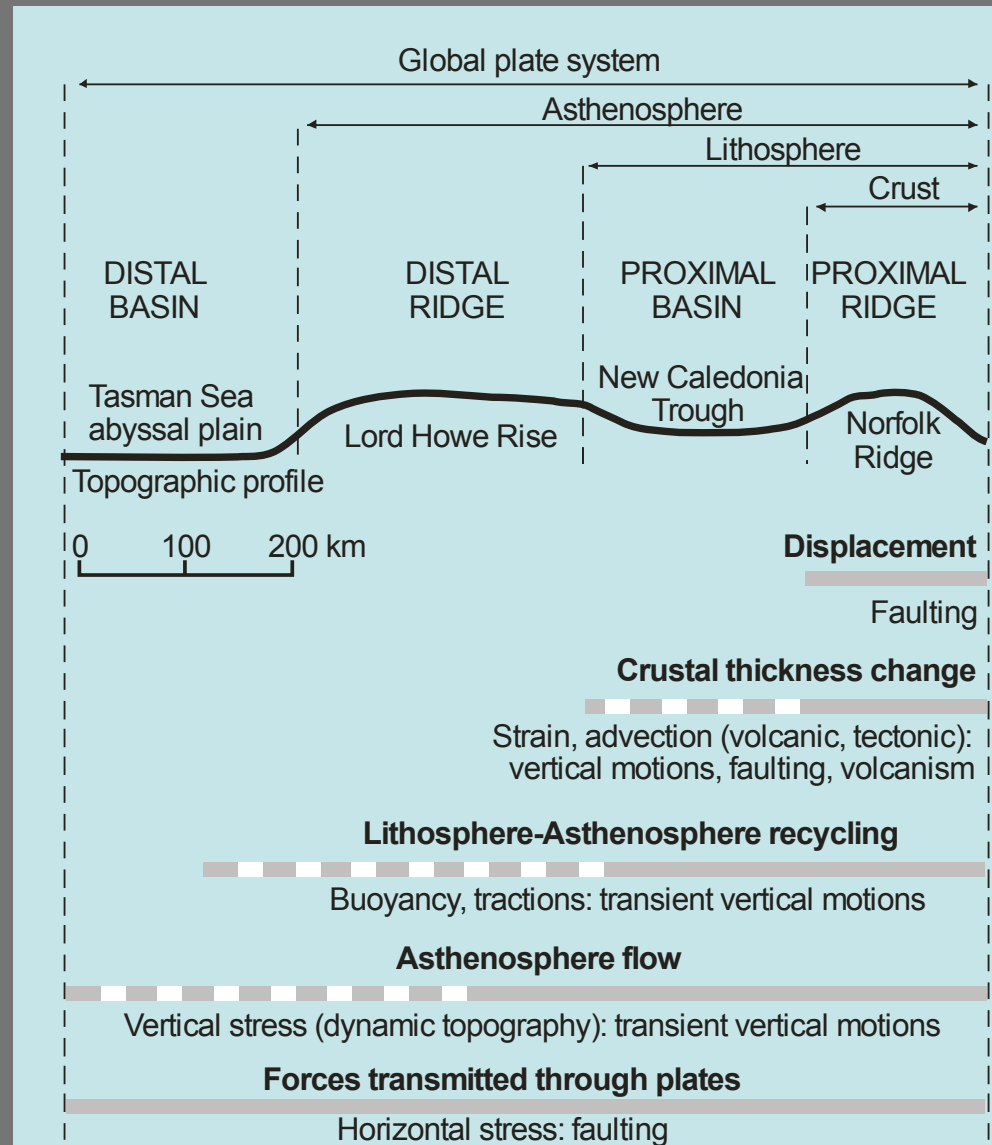
New data, new hypotheses to drill

Stratigraphic records



Range of processes, length scales

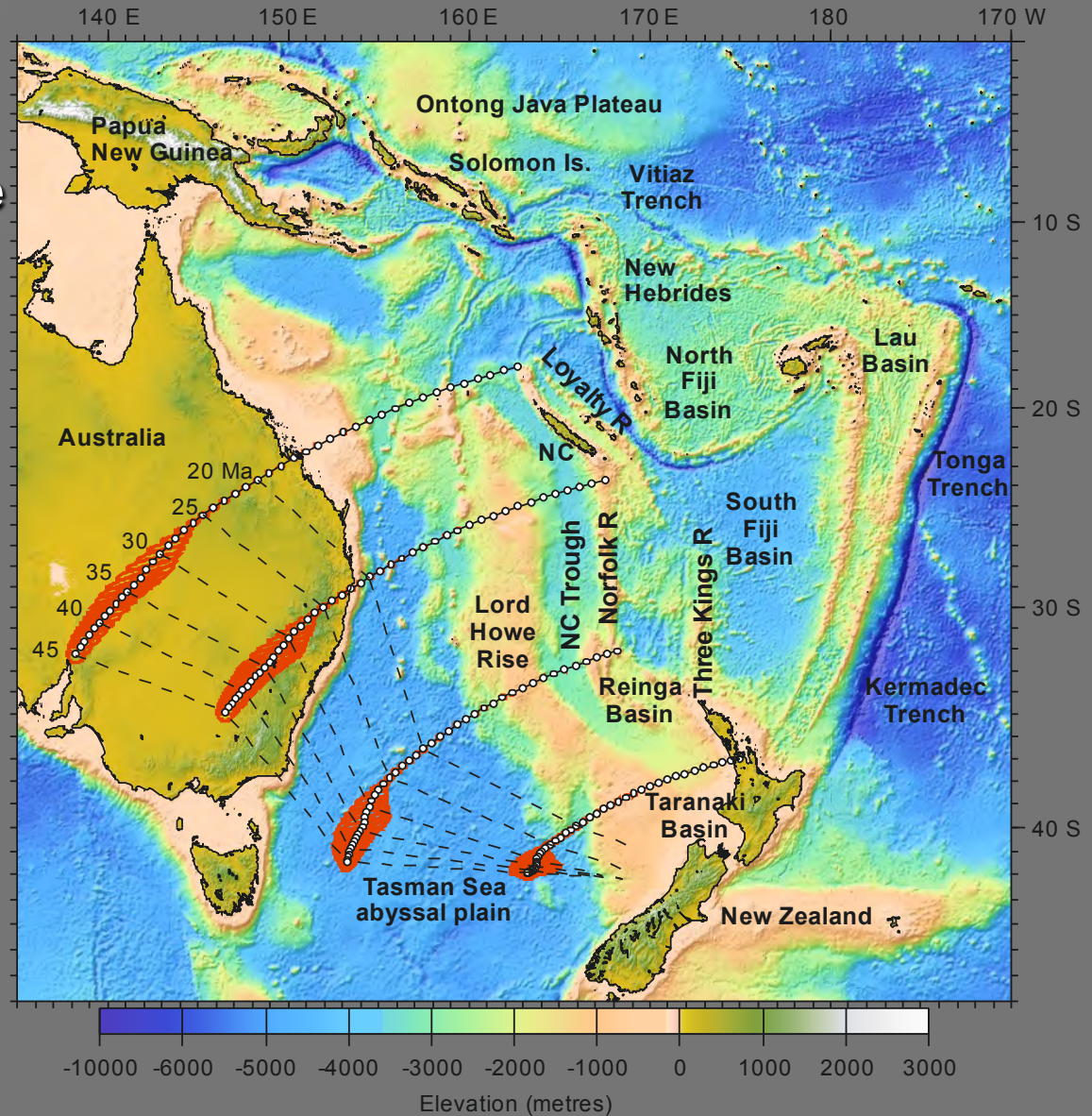
Proximal and distal sites needed



Precise age control - a key constraint

52-43 Ma global change

Precisely-known
AUS-PAC since 43 Ma

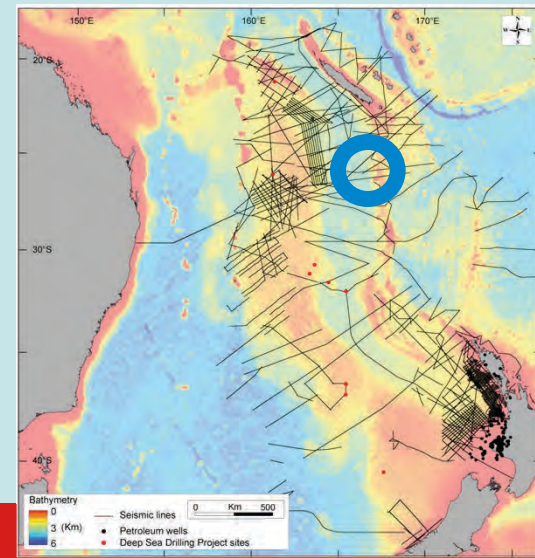
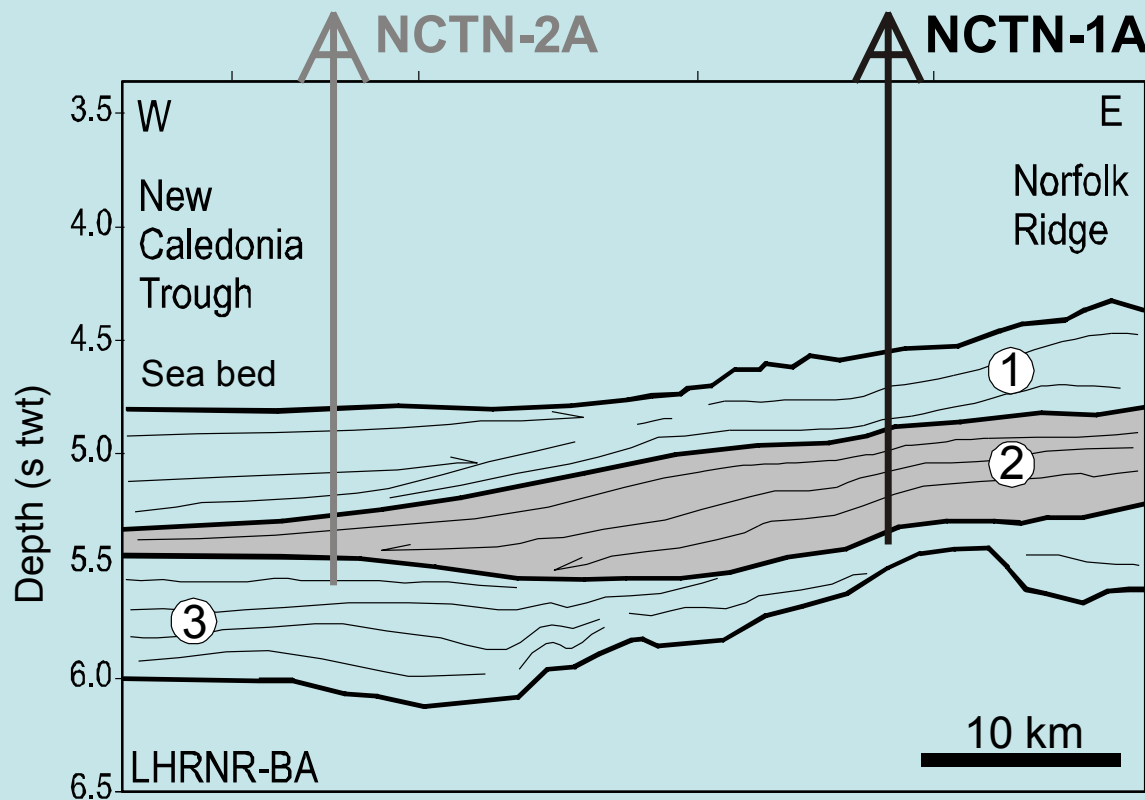


NCTN, Proximal basin, North

Evidence for transient uplift then subsidence, Norfolk Ridge

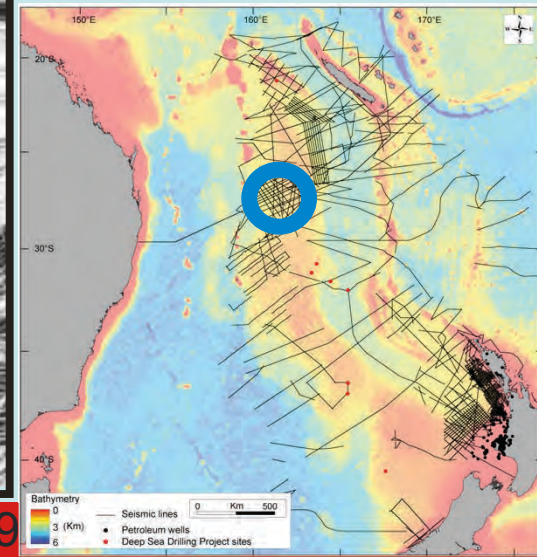
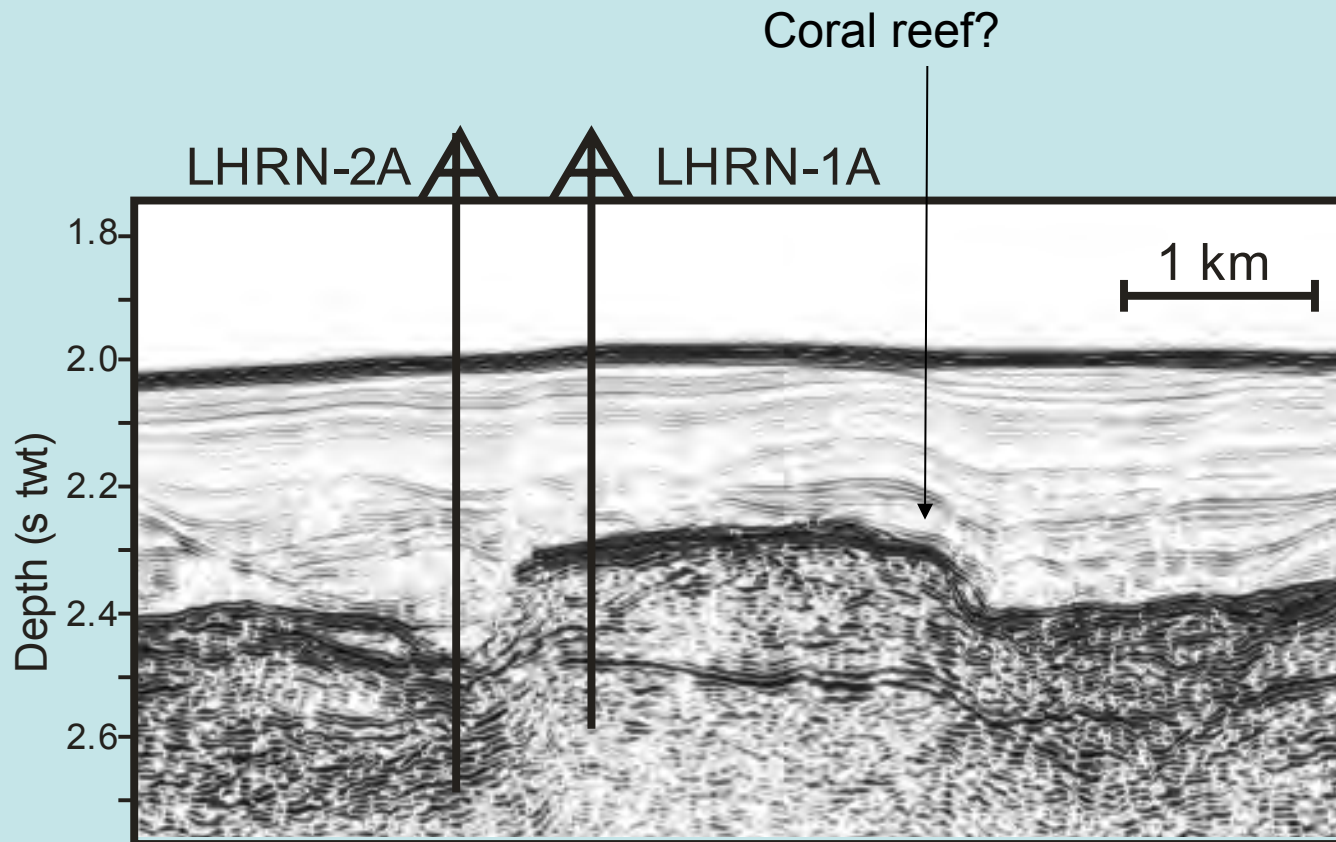
Evidence for permanent subsidence, New Caledonia Trough

Timing of deformation, vertical motions?



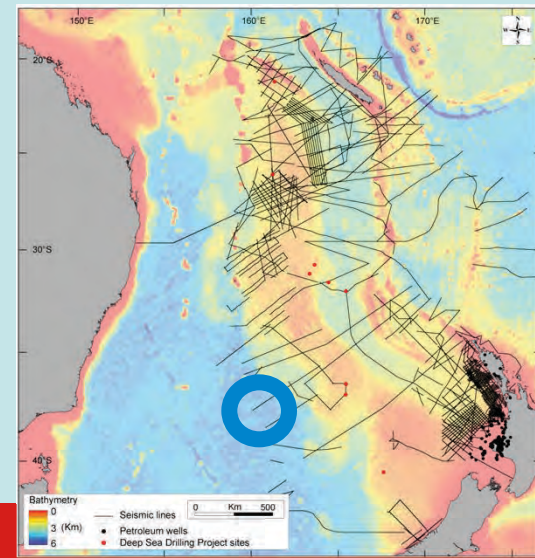
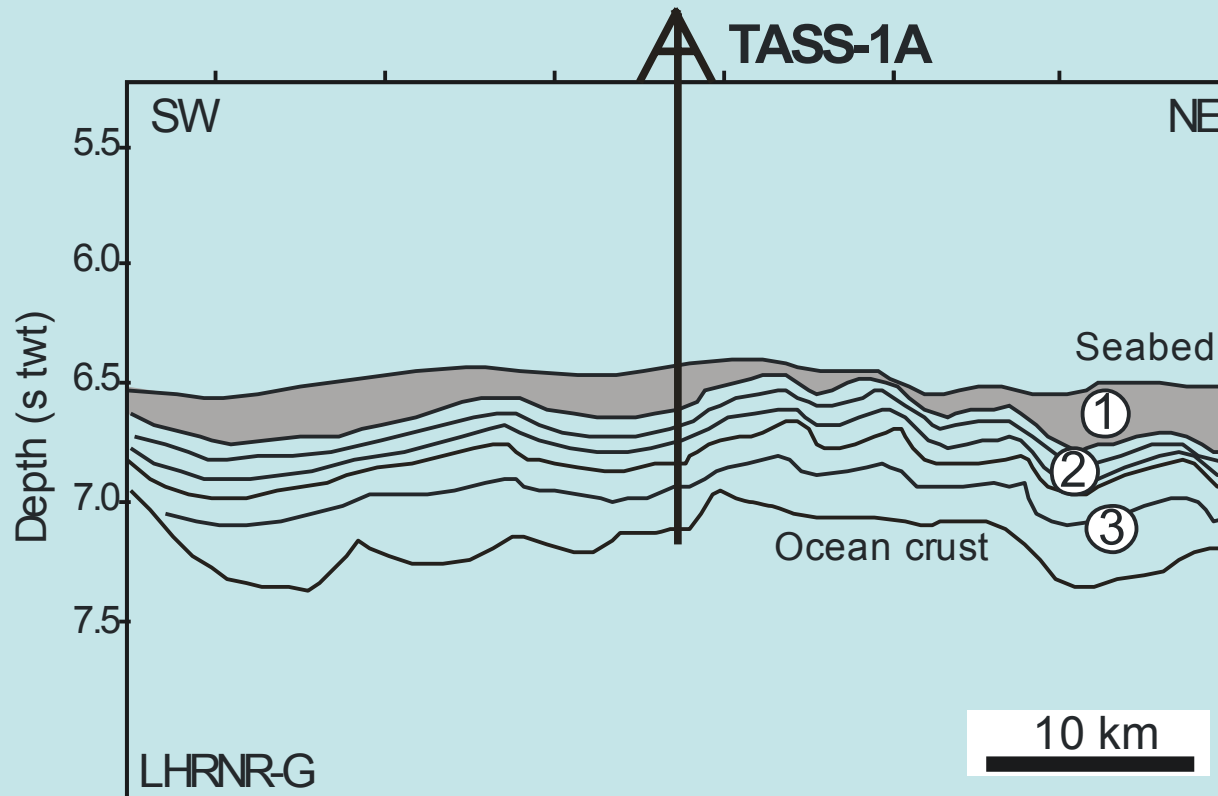
LHRN, Distal ridge, North

Evidence for transient uplift then subsidence c. 1800 m.
Timing, rate?



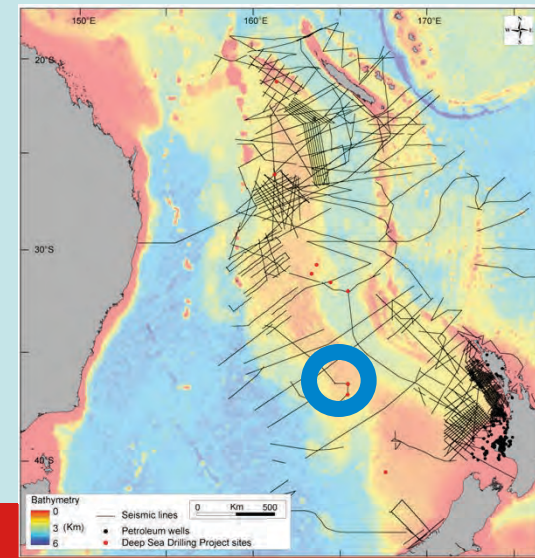
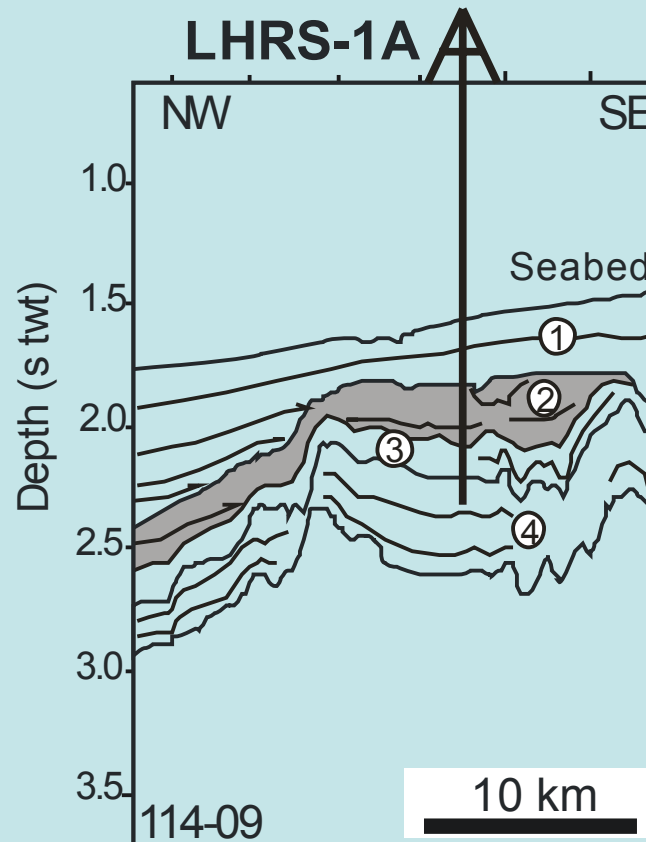
TASS, Distal basin, South

Evidence for far-field oceanic lithospheric failure.
When?



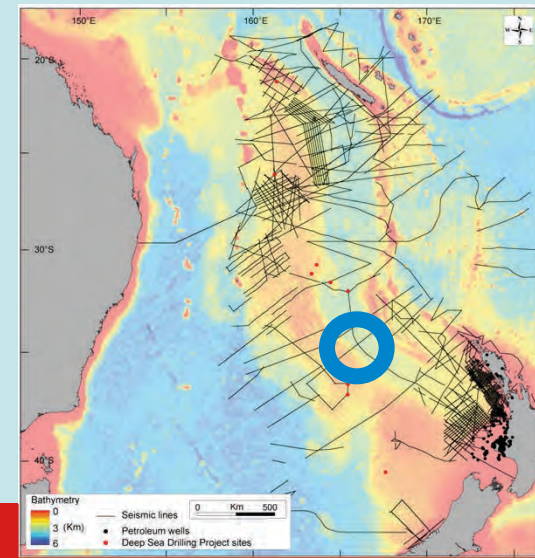
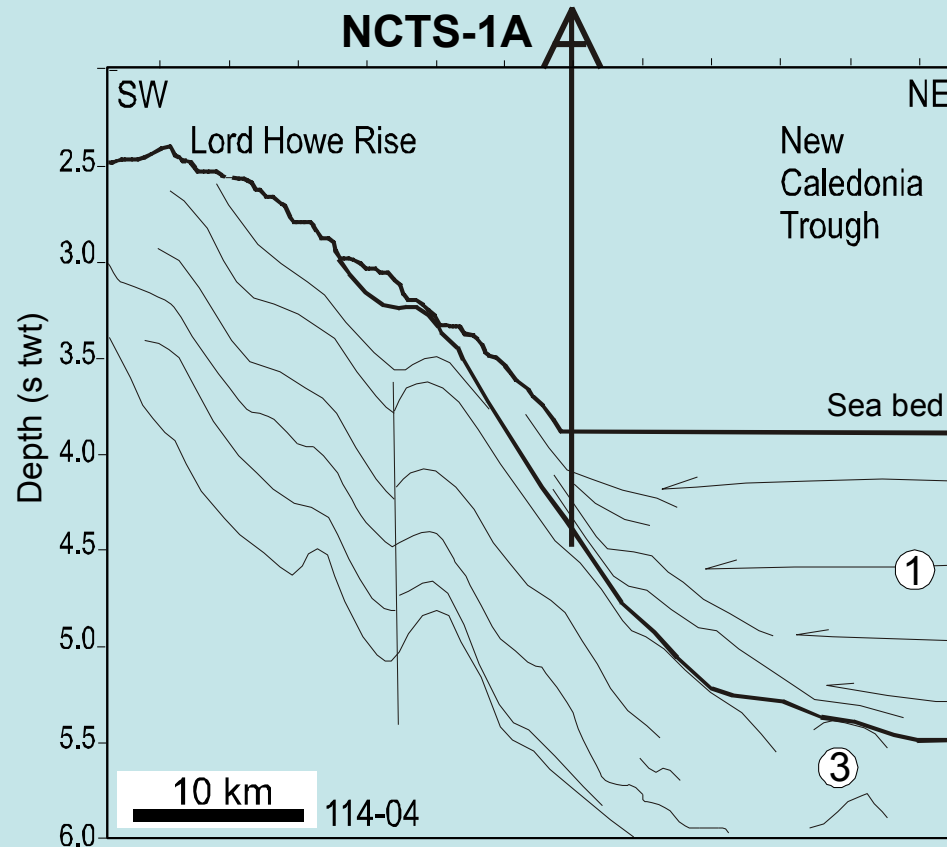
LHRS, Distal ridge, South

Evidence for deformation and transient uplift then subsidence



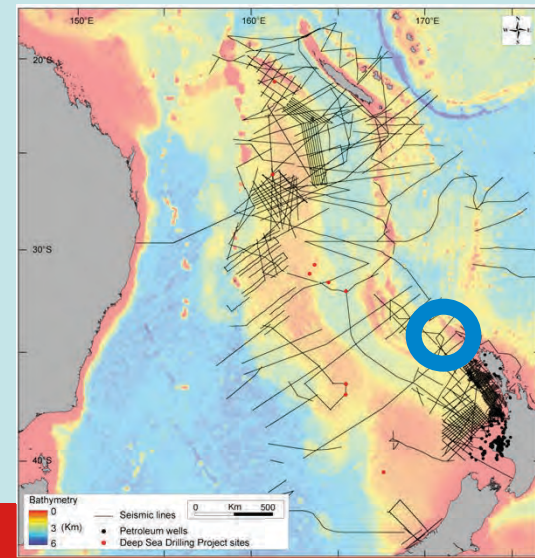
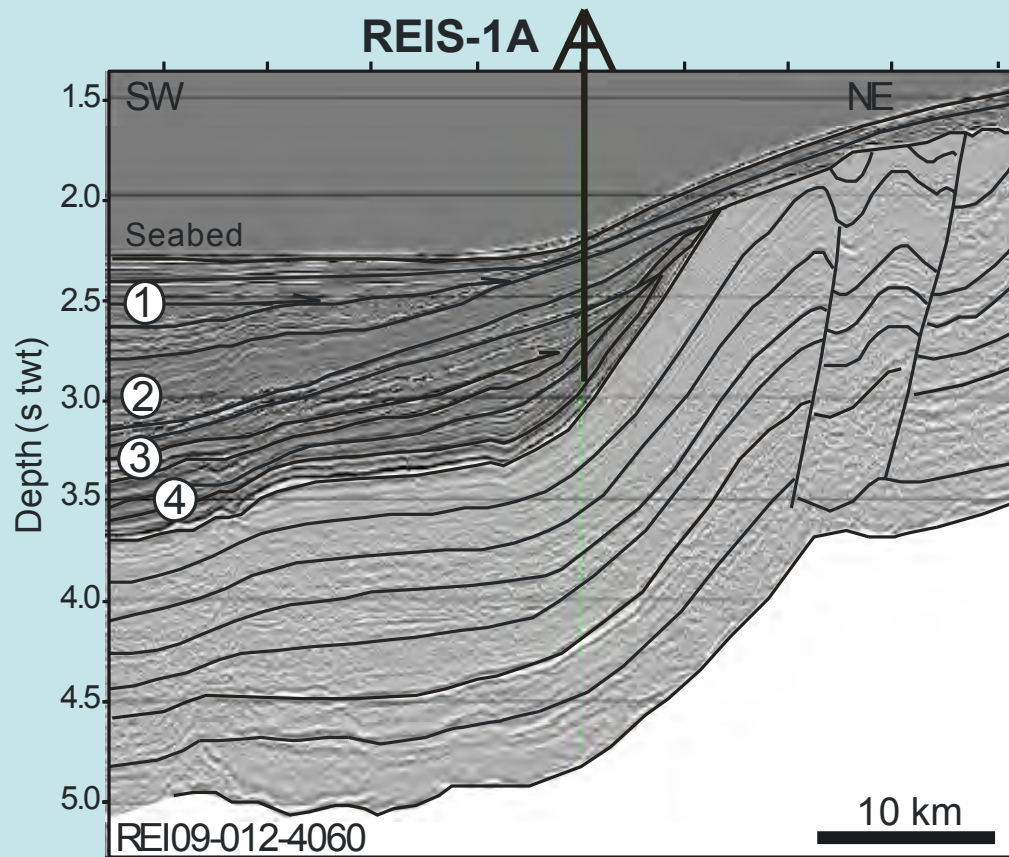
NCTS, Proximal basin, South

Evidence for deformation, subsidence of New Caledonia Trough



REIS, Reinga Basin, Proximal, South

Proximal deformation, uplift, then subsidence



Conclusions

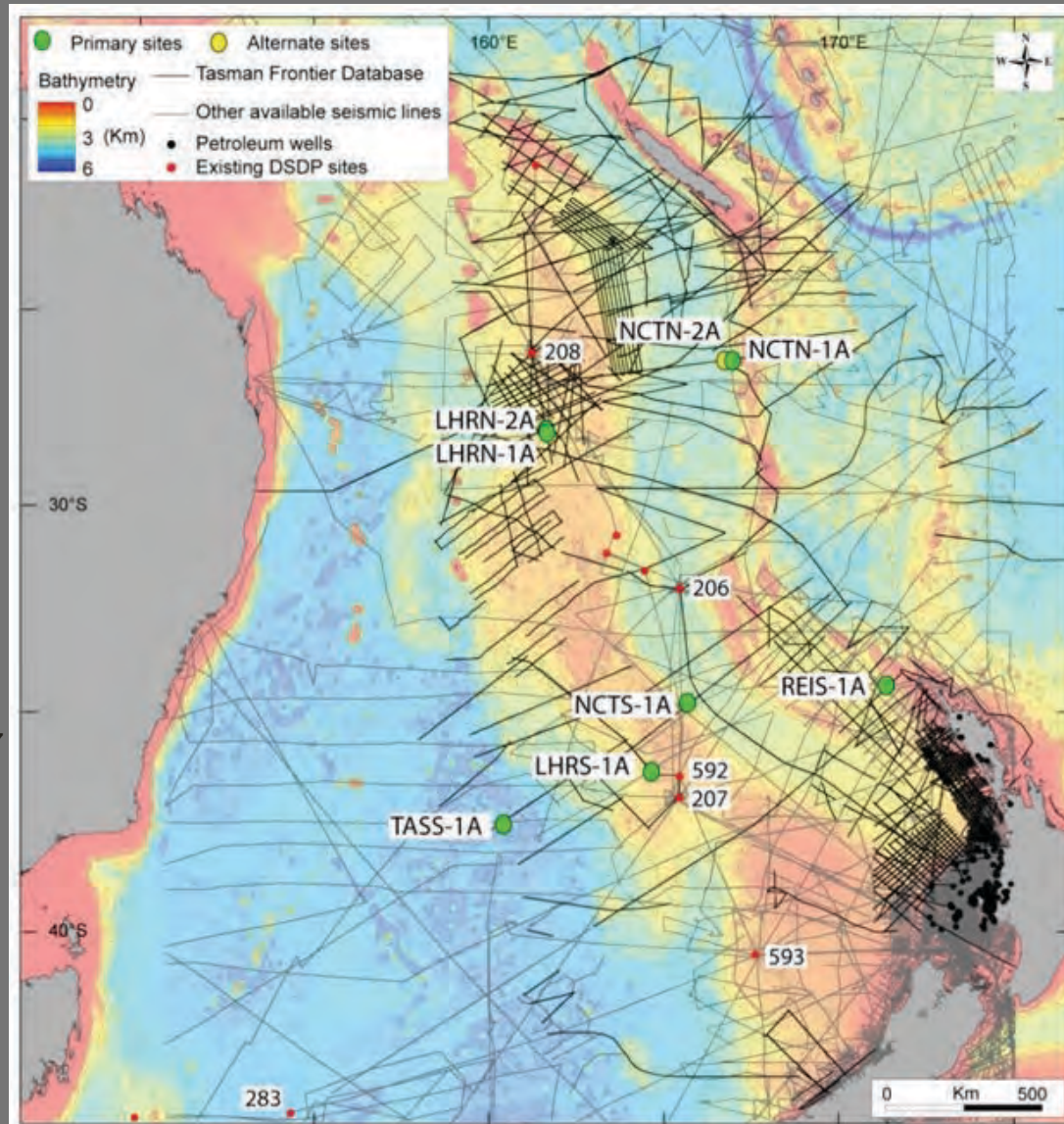
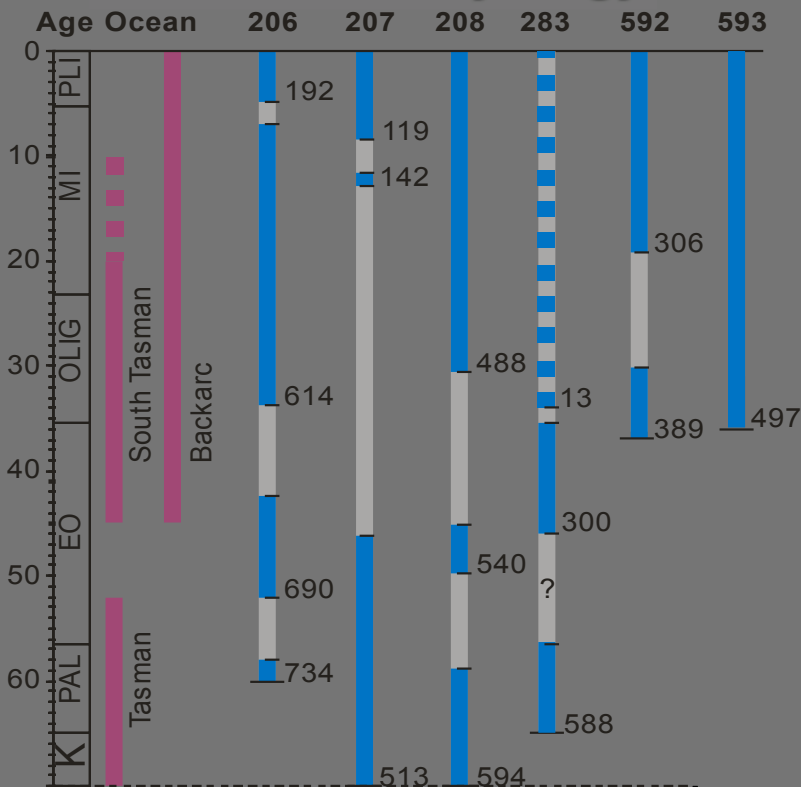
Age ties to seismic strat.

Vertical motions

Only 3 useful sites (1972)

Propose 6 new sites

Paleoclimate synergy



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