The Sydney Basin record of the Permian-Triassic extinction event

PREREQUISITES
GEOS710 or GEOS920

SUPERVISORS / RESEARCH GROUP / PROJECT PARTNERS
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RESEARCH PROJECT (Suitable for 2nd Year MRes or GEOS891)
The Permian-Triassic mass extinction (PTME) is known as the time of greatest disruption to the Earth’s biosphere, with as many as 95% of marine species becoming extinct. The cause(s) are still debated, and may include a combination of volcanic eruptions leading to oceanic stagnation. Much of the organic geochemical work on the boundary has focussed on marine systems, and relatively little is known about the variation of organic inputs and depositional conditions over the boundary in terrestrial settings. The Sydney Basin contains well preserved sediments across the boundary, including the stratigraphically highest Permian coals, which get replaced by monotonous Triassic mudstones. Initial work on boreholes in the Wyong and Bulli areas have shown significant changes in biomarkers across the boundary, including changes in oxicity of the environment and varying inputs of pyrolytically-derived carbon. More rocks remain to be analysed to ascertain these biomarker variations further, with the aim of establishing the environmental changes associated with the mass extinction.

This project will involve fieldwork and sampling of cores, and will build on the work by Justine Wheeler (GEOS891, 2014) and GEOS710 cohorts.

Figure: Map of the world at the time of the PTME event showing the position of the continents and palaeocoastline with marine and terrestrial sections previously studied.