

Lord Howe Rise Drilling: Deep stratigraphic record for the Cretaceous eastern Gondwana margin

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The Lord Howe Rise (LHR) is an elongate ribbon of submerged and extended continental crust that separated from Australia during the Late Cretaceous. Current knowledge of the LHR is based only on widely-distributed marine and satellite geophysical data, limited dredge samples, and sparse shallow drilling into Cenozoic pelagic sediments. Building more detailed knowledge of LHR geology and the evolution of the eastern Gondwana margin requires drilling into rocks that record the tectonic and climatic history of the region.

Geoscience Australia and JAMSTEC are leading an international effort to promote an IODP project (871-CPP) to drill a deep stratigraphic hole through a LHR rift basin using D/V CHIKYU that will recover Cretaceous and older sediments and basement rocks. The objectives of this proposal are to: 1) define the role and importance of continental crustal ribbons, like the LHR, in plate tectonic cycles and continental evolution; 2) recover new high-latitude data in the southwest Pacific to better constrain Cretaceous paleoclimate and linked changes in ocean biogeochemistry; and 3) test fundamental evolutionary concepts for sub-seafloor microbial life over a 100-million-year timeframe.

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