Extensive Basaltic Magmatism On The Naturaliste Plateau, Offshore SW Australia

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The large submarine Naturaliste Plateau (NP), lying off the southwestern tip of Australia, is a poorly known part of Australia's offshore jurisdiction. Only two dredges, one from the northern margin and one from the southern margin, have recovered rocks from this feature, which is approximately the size of Tasmania. Based on the presence of distinctive 130 m.y. old basalts at Bunbury, on the adjacent coast of Western Australia, it has been claimed that the NP may form the easternmost part of the massive Kerguelen Plateau Large Igneous Province (LIP). In this case, the NP would be underlain by thickened oceanic-type crust, and dredged rocks will provide substantial spatial and age constraints on one of the largest LIPs on Earth. However, a recent Geoscience Australia assessment suggested that much of the NP may be underlain by continental rocks.

A recently completed swath mapping and dredging cruise using *R/V Southern Surveyor* investigated the nature and origin of the NP. Pillowed, but often highly vesicular and autobrecciated basalts were sampled along the entire length of the S margin of the NP, and at several locations on its N and NW margins. Quartz+feldspar-phyric glassy rhyolitic lavas were present in several dredges with basalts, suggesting they are part of the same igneous event. Crustal rocks, including garnet-bearing gneisses and granitic rocks, were also dredged along the S margin, including at the most westerly extent of the NP. We will present new age- and geochemical data for the extensive volcanic rocks of the Naturaliste Plateau, and evaluate possible links with the Kerguelen plume.