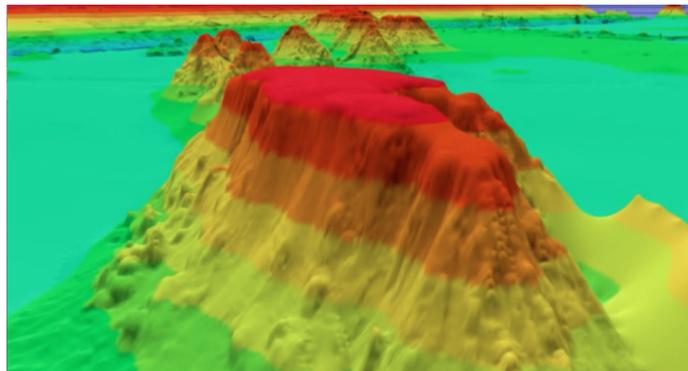


Seismic structure, subsidence and uplift history and evolution of the Louisville hotspot track

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The Louisville Ridge is a 3500 km long chain of seamounts which formed in the Late Cretaceous at a hotspot presently located near the intersection of the Eltanin Fracture Zone with the East Pacific and Pacific-Antarctica Rise. Dredge samples and IODP drill data suggest the seamounts progressively increase in age along the chain such that the oldest seamount, Osborn, is currently being subducted at the Tonga-Kermadec trench. Swath bathymetry surveys suggest the chain comprise of a number of flat-topped guyots, suggesting the seamounts were once above sea-level and have been trimmed by wave action. During 2001, the New Zealand government acquired a ~1000 km long seismic reflection profile with a 8 or 10 km long streamer and a large volume air gun array along the summit of the seamount chain in order to define the extent of its offshore land mass. The purpose of this project is to process, display and interpret the reflection data, along with all other data such as that acquired during recent D/V *Joides Resolution* and M/V *SONNE* cruises. The seismic data will be used together with sample, gravity, magnetic and swath bathymetry data to determine the thickness and age of the pelagic drape and carbonate cap on the crest of the seamounts, the morphology of their flanks, and the structural fabric of the volcanic basement. Of particular interest are the geological processes (e.g. landsliding, faulting) occurring along the seamount chain, its subsidence and uplift history and whether or not the seamounts were formed on a mid-plate topographic swell. The project is a unique opportunity to acquire experience in the handling of large marine geological and geophysical data sets in an active group interested in seamounts and submarine volcanism in both on-ridge and off-ridge settings in the Indian and Pacific Oceans.



Selected references:

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