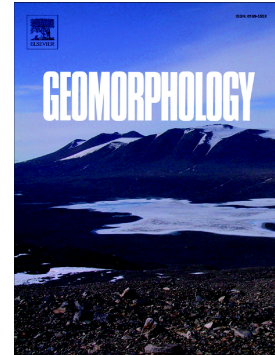


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Morphotectonic characteristics, distribution and probable genesis of bathymetric highs off southwest coast of India

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Abstract

The western continental margin of India and the adjacent deep ocean basins were formed by break-up and separation among India, Seychelles and Madagascar since the Late Cretaceous. The initial India-Madagascar separation and the subsequent India-Seychelles separation are believed to have been caused by the Marion hotspot at ~90 Ma and the Réunion hotspot at ~68.5 Ma, respectively. These geodynamic events resulted in the formation of several bathymetric highs that probably represent imprints of these volcanic events. In the present study these bathymetric high features were mapped comprehensively to understand their morphotectonic characteristics, using a fresh set of multibeam bathymetry, sea-surface gravity and magnetic anomalies, complemented by the available multichannel seismic reflection sections. A high-resolution bathymetric map of the southwestern continental margin of India and the adjoining deep offshore regions has been generated to decipher detailed morphological configuration and distribution of prominent undersea bathymetric features. We also carried out detailed morphometric analysis of these features to deduce the morphological parameters. A total of 33 individual bathymetric high features were identified and classified as seamounts, hills, knolls, guyots and plateaus based on the standardization of undersea feature names published by Intergovernmental Oceanographic Commission (IOC) and International Hydrographic Organization (IHO) in 2013. Multichannel seismic reflection, sea-surface gravity and magnetic data were used to describe the sub-seafloor

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