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Activity in Madagascar: Study of the Origins of Moderate Magnitude Earthquakes

Madagascar is located on the African Plate and is not intersected by any plate boundaries. Despite this, the East African Rift (EAR) extends into the island, suggesting potential tectonic influences. Given Madagascar's position within the African Plate, it would theoretically be expected to exhibit low seismic activity and relative tectonic stability. However, contrary to this assumption, the island experiences significant seismic activity, with earthquakes occurring from the northern to the southern regions.

The National Data Centre (NDC) Madagascar conducts real-time seismic monitoring through its local seismic network, which includes data from the Comprehensive Nuclear-Test-Ban Treaty Organization seismic station. Using this network, a comprehensive seismic map has been developed to analyse and understand Madagascar's seismicity. While no destructive earthquakes have been recorded to date, the local magnitudes of these events are generally less than 6 on the Richter scale, with only a few exceeding a magnitude of 5. The origin of these seismic events remains uncertain, potentially linked to microplate interactions within Madagascar, the influence of the EAR system, or other geological factors. This study focuses on analyzing earthquakes with magnitudes greater than 5 to investigate their origins and contribute to the understanding of Madagascar's seismic dynamics.

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