

Seismicity in Karnataka: an assessment of earthquake activity, geological controls and hazard implications

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Karnataka, traditionally considered a low to moderate seismicity zone, has shown increased activity over the past two decades, with low- to moderate-magnitude earthquakes clustered in certain districts. This article presents a comprehensive analysis of Karnataka's seismicity from 2003 to 2023, drawing on seismic data, geological mapping and case studies to assess the role of tectonic structures, fault reactivation, and reservoir-induced seismicity. The study highlights critical geological features like the Peninsular Lineament, Mercara Shear Zone and Chitradurga Boundary Shear, evaluating their influence on local seismicity. Findings underscore the need for advanced monitoring, improved fault mapping, and community awareness to mitigate seismic risks and build resilience.

Keywords: Earthquake, fault reactivation, hazard assessment, reservoir-induced seismicity, tectonic structures.