

## **Quantifying seismic activity in the Makran subduction zone: analysis of instrument data for events of magnitude 4.5 and greater**

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The Makran subduction zone is one of the largest accretionary prisms on Earth. It extends for about 1000 km along the boundary where the oceanic part of the Arabian Plate is subducted beneath the Eurasian Plate (Figure. 1). Subduction and accretionary growth began in the Paleocene and Eocene, respectively. However, the final collision of the two plates has not yet occurred. To investigate seismic activity in this region, a comprehensive analysis of instrumental earthquake data was conducted. The study examined earthquakes with magnitudes greater than 4.5 that occurred between January 1900 and May 2023. The distribution of earthquakes from west to east for each longitude (57 to 67) and latitude (24 to 26) was considered using the Iranian earthquake catalog revised by the International Institute of Earthquake Engineering and Seismology Iran (IIEES). The analysis revealed a seismic gap in the western part of the Makran and seismic migration from west to east. The results of this study support Byrne et al. (1992) and suggest that two factors-asymmetric convergence rate and differential dip angle of subduction-significantly affect the seismicity of the Makran and confirm the extent of the eastern boundary of the Lut block in the Makran. These results are important for geohazard assessment in this area and contribute to a better risk assessment for future earthquakes in this region.