

## Seismic Activity and Seismic Hazard Assessment along the Main Boundary Thrust, Northern Pakistan

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The seismicity of the northwestern Himalayan syntaxial bend, including that of the Main Boundary Thrust (MBT), is examined in a wider tectonic context by using about 2000 microearthquakes and 100 macroevents obtained from a telemetered seismic network in northern Pakistan centered at Tarbela dam on the Indus River for the period 1971-1993. The seismicity map (1904-2004) prepared for the purpose indicates that a branch of the MBT traverses the region as a straight northwesterly extension of the Murree Thrust, the mapped section of the MBT southeast of the Hazara-Kashmir Syntaxis (HKS). The HKS and MBT are microseismically inactive at present but are associated with recent and historical microseismicity, and overprint the northwesterly seismic blind zone, i.e. the Hazara Lower Seismic Zone.

Ten fault plane solutions (1965-1993) show the dominance of strike-slip over the thrusting with north-south compressional stresses, as six events out of ten are strike-slip and four are thrusts. Seismic Hazard Assessment (SHA) has also been incorporated on three selected sites of Islamabad, Kohat and Muzaffarabad, using both the deterministic and probabilistic approaches. Deterministic Seismic Hazard Assessment (DSHA) suggests MBT as the most critical tectonic feature for the three sites, with a maximum potential magnitude of 7.8 for all the three sites.