

## **Epidemic Type Aftershock Sequence (ETAS) Modeling of Himalayan Seismicity**

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We analyzed the seismicity of Himalayan region by divided into three parts: Western (29°-36°N, 76°-80°E), Central (20°-32°N, 80°-88°E) and Eastern (20°-30°N, 88°-96°E). The magnitude completeness found to be 4.6, 4.6, 4.3 for western, central and eastern, respectively. The b-values are found to be 1.28, 1.17, 0.93 for western, central and eastern, respectively. The seismicity of three regions is modeled using Epidemic type aftershock sequence (ETAS) model. The ETAS model is based on point process modeling of the seismicity and based on three assumptions: (1) the background seismicity follows the Poisson process, (2) the aftershocks can generate their own aftershocks and (3) decrease of aftershocks follows modified Omori law. The productivity factor K found double in case of western Himalaya as compared to the eastern and central Himalaya. The Omri-Utsu exponent p values are found to be 0.91, 1.03 and 0.8 for western, central and eastern Himalaya, respectively. In general lower the p values and b values in eastern Himalaya indicate more heterogeneous and hazardous nature as compared to the western and central portions. The depth distribution in the region indicates combination of shallower and deeper earthquakes in eastern Himalaya whereas central and western Himalayans are dominated by shallower activities.