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Characteristics and Seismic Hazard of Nepal Himalaya

Monitoring of seismicity in Nepal Himalaya in collaboration with DASE France lead us to understand the seismotectonics and earthquake nucleation process. Belt of seismicity, at a depth of 10-20 km, follows the front of higher Himalaya. This midcrustal seismic cluster lies within a zone of interseismic stress accumulation characterized by high uplift rate inferred from geodetic measurements. Low magnitude seismic events within that cluster describe a seasonal oscillation, partially simulated by seasonal detection level changes due to variations of seismic noise level, partially genuine due to hydrological forcing. GPS data shows that the MHT between the higher Himalaya to the MFT around 100 Km width is currently locked and accumulate slip deficit at a rate of approximately 1.8cm/yr. Himalayan region has been shocked by 5 great earthquakes, but region between 78°E and 85°E has not produced any major earthquake since more than four centuries and stands for being a large seismic gap in the Himalayan region. High seismogenic potential of this locked fault zone exposes the North-Western Himalaya and the densely populated region of nearby Ganges basin in India to a high level of seismic risk. Understanding the future seismic behavior within this seismic gap is the major challenges.

Primary author: SAPKOTA, Soma Nath (National Seismological Center)

Presenter: SAPKOTA, Soma Nath (National Seismological Center)

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