

Interdependence among earthquake magnitude, ground motion attenuation and consequences for the Central Asia derived from Pamir-Hindu Kush deep earthquakes data

The tectonics of Central Asia is dominated by the spectacular collision between India and Asia. For the Central Asia region the largest excitatory center of seismic activity are deep-focus (90-300 km) Pamir-Hindu Kush earthquakes. The spatial placement of focuses in the area with width 100-150 km and length 700 km, high level of seismicity and repeatability of events and compact localization of focuses providing a unique opportunity to study natural events that have different source parameters but nearly the same ray paths. We revised strong motion attenuation specific from Hindu Kush and Pamir seismic nests by searching the records of seismic stations of Uzbekistan, Tadjikistan and Kyrghystan. Variation in time delays with azimuth and epicentral distance appears to be due to the varying angles between the ray path and the principal axes of the anisotropic system. We have found a significant number of repeating earthquakes with reversed polarity waveforms, which may suggest repeating rupture on sub-parallel faults but with reversed slip directions. Comparative analysis of time of Pamir-Hindu Kush earthquakes and formation of large landslides in the period from 1969 to 2018 showed synchrony of more than 200 cases of landslides formed in South Kyrghystan, Uzbekistan and Tajikistan.

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