Lg wave propagation and attenuation characteristics of the NW Himalaya

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Lg waves are formed by the superposition of shear waves trapped within the crustal waveguide and are the most destructive at regional distances. Excitation of Lg waves, its propagation and lateral variability determine the intensity of ground shaking from regional earthquakes. Spatial decay of spectral amplitude of Lg waves have been used to quantify the attenuation characteristics of the crust. In this study we use regional waveform data from the Jammu and Kashmir Seismological NETwork (JAKSNET) to study Lg wave propagation across the Indian Peninsula, Himalaya, Tibetan Plateau and Hindu Kush regions. We compute Lg/Sn wave ratio to distinguish regions with efficient Lg propagation from those with Lg blockage. These results are categorised using earthquake magnitude and depth to study Lg wave excitation and propagation across these varying geological terrains. We further use the two-station method to study Lg wave quality factor and its frequency dependence for the NW Himalaya. Seismograms recorded at two stations of the network, which are aligned within 15 degrees of the event, are used for analysis. The spectral ratio of Lg wave amplitude recorded at the two stations will be used to estimate the Q (quality factor) as a function of frequency. This will provide Q_0 along all inter-station paths, which will then be combined to form Q_0 tomography maps for the region. Checkerboard tests will be performed to estimate the resolution of the tomographic maps and accordingly the results will be interpreted.