

Spatial variability of attenuation characteristics in Kumaon and Garhwal region

Attenuation characteristics of P-wave and S-wave are explored for the Garhwal and Kumaon Himalaya. The strong motion data of 105 local earthquakes recorded in Garhwal and Kumaon region are considered for this study. The site specific p-wave (Q_α) and s-wave (Q_β) quality factor values are estimated at each recording stations, which are further utilized to compute regional relationship for both Garhwal and Kumaon region. These obtained relations suggest the existence of spatial variation of attenuation properties in these two regions. The Kumaon region has low Q_α and Q_β as compare to Garhwal (Fig. 1), which means Kumaon region has high rate of attenuation than Garhwal region, as Q is inversely proportional to the attenuation. Hence, based on obtained attenuation properties it is proposed that Garhwal region has high seismic hazard potential zone as compared to its adjacent Kumaon region. The high value of $Q_\beta/Q_\alpha (> 1)$ obtained in this work indicates the presence partially saturated rocks in the earth crust for both Garhwal and Kumaon regions. The variable value of ratio (Q_β/Q_α) obtained for Garhwal and Kumaon region specify the different fluid saturation or fluid type exist for both the regions and it may be the possible reason of distinct attenuation properties of these two regions.

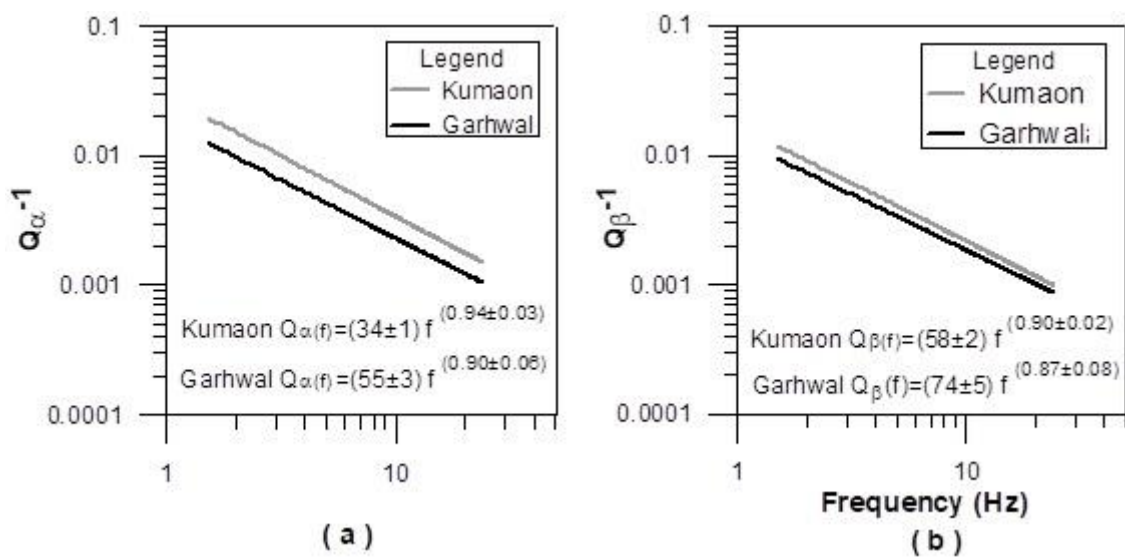


Figure The comparison of obtained regional relation for (a) P-wave and (b) S-wave for Garhwal and Kumaon region.

- Monika, Parveen Kumar, Sandeep, Sushil Kumar, A. Joshi, Sonia Devi (2020) Spatial variability studies of attenuation characteristics of Q_α and Q_β in Kumaon and Garhwal region of NW Himalaya, Natural Hazards (*published online*)