



## Attenuation characteristics of P and S waves in the crust of western Tibet

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The attenuation characteristics of western Tibet have been analyzed by estimating the attenuation parameters ( $Q_p^{-1}$  and  $Q_s^{-1}$ ) at five different central frequencies (1.5, 3, 6, 12 and 18 Hz). The extended coda normalization method has been used on 248 three component local earthquakes which are recorded in 30 broadband stations during 2007-2011. We have estimated the frequency dependent  $Q_p^{-1}$  and  $Q_s^{-1}$  values at each station. The results indicate the high body wave attenuation in the medium below western Tibet. Furthermore, we have subdivided the entire study area into two parts across the Karakoram fault (KKF). First part covers the northeastern part of KKF referred as Region 1 while second part covers southwestern part of KKF referred as Region 2. For these two regions, the frequency dependent relations are found as follows:  $Q_p^{-1} = (19.4 \pm 4.37) \cdot 10^{-3} f^{(0.86 \pm 0.13)}$ ,  $Q_s^{-1} = (13.3 \pm 2.09) \cdot 10^{-3} f^{(0.81 \pm 0.11)}$  for Region 1 and  $Q_p^{-1} = (18.4 \pm 1.7) \cdot 10^{-3} f^{(0.84 \pm 0.06)}$ ,  $Q_s^{-1} = (13.2 \pm 2.17) \cdot 10^{-3} f^{(0.83 \pm 0.11)}$  for Region 2. Both the regions show strong frequency dependent nature of  $Q^{-1}$  values with no significant lateral variations which may suggest the presence of similar tectonic complexities and heterogeneities beneath these regions. We also find that all the estimated values of  $Q_p^{-1}/Q_s^{-1}$  ratios are greater than unity at all frequency range which may suggest that the crustal structure of western Tibet is characterized by high degree of heterogeneity.

**Key words:** Attenuation, Karakoram fault, Western Tibet, Coda normalization