



Low Coda Q_c in the Zarand region, East-Central of Iran

M. Mahood , H. Hamzehloo

International Institute of Earthquake Engineering and Seismology(IIEES). I.R. Iran.
(m.mahood@iiees.ac.ir , hhamzehloo@iiees.ac.ir)

The occurrence of the 2005 Zarand-Dahoeie earthquake, with magnitude of M_w 6.4, and its aftershocks provide us to estimate the Q -coda waves for the Zarand region. For this purpose, we calculated the quality factor, Q_c , at frequency ranges from 1.5 to 18 Hz. The single backscattering method has been adopted to analyse the coda waves part of the local earthquakes. The data were recorded at 13 broad-band stations of temporal seismic network. We obtained a $Q - f$ relation of $Q=48.86 f^{1.09}$ by analyzing the coda waves. The values of Q_0 (Q at 1 Hz) estimated for five lapse time windows. These values are 38.23 for 20 s, 48.86 for 30 s, 59.58 for 40 s, 69.89 for 50 s and 81.31 for 60 s respectively. The estimated average frequency dependence quality factor shows that the average Q_c values vary from 77 at 1.5 Hz to 1178 at 18 Hz central frequencies. The estimated Q_0 and n vary from 38.2 to 81.3 and 1.15 to 0.98 at 20 to 60 s lapse window length respectively. The variation of Q_c with frequency and lapse time shows that the upper crustal layers are seismically more active compared to the lower lithosphere. The results fill an important gap in knowledge about the Q factor and associated crustal attenuation conditions in the east of central Iran region and provide useful insight into the influence of lapse time (depth) in coda- Q measurements, allowing better understanding of the degree of complexity in the crustal structure of the region.