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Lg Attenuation Characteristic of Gujarat Region (Western India)

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We estimate the Lg attenuation characteristics of the Gujarat Region in Western India by using a reliable two-station method. This region comes under the V, IV and III seismicity zone. So, in India this is the seismic active region other than Himalayas, which shows high seismicity. Lg is typically the most prominent short-period seismic phase on high frequency seismogram observed over the continental paths from regional to teleseimic distance. We use data from 15 earthquakes with magnitude > 5 mb and focal depth < 30 km collected during 2008-2010 from 41 stations deployed in the study region. We estimate 1-Hz Lg Q (Q0) values between many pairs of stations. Finally, 5 events with 70 high-quality inter-station paths were selected from 117 possible pairs of stations that are (1) aligned approximately with the source and (2) separated enough to permit the use of the standard two-station method for Lg Q measurement. Spatial variations in Q0 have been noticed across the Gujarat region. Low Q0 (< 50) values are observed in the Kutch, Jamnagar and southeast region of Gujarat. The northern region of Saurashtra (Gujarat) shows a high Q0 (> 300) value. These observations are consistent with the results of the body wave attenuation structure reported for the region. The variations in the attenuation characteristics may be caused due to both the intrinsic and scattering contributions caused by thermal effects, sedimentary layer thickness as well as heterogeneities present below the study region. Our results are found to be comparable with the previous studies of the attenuation characteristics of the Gujarat region.