

High Crustal Seismic Attenuation in Ladakh- Karakoram

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Analysis of the Lg wave has been attempted to study the seismic attenuation along a profile from southern edge of NW Himalaya to Ladakh and Karakoram using broadband waveform recordings of regional earthquakes. The lateral variability in seismic attenuation is derived from inversion of 23 two station measurements using a Differential Evolution global optimization scheme. The Q value decreases northwards from ~ 700 in Himalaya and ~ 400 beneath Indus Zangbo Suture (IZS) to ~ 70 in Ladakh- Karakoram. This suggests efficient

transmission of seismic waves beneath Himalaya and the IZS and high attenuation under Ladakh-Karakoram. The Values for NW Himalaya and IZS are significantly ($>50\%$) higher compared to their counterpart at 90°E , while the Ladakh-Karakoram and southern Tibet show comparable (~ 70). The high attenuation zone (low) is correlatable with increase in electrical conductivity and decrease in the mid- crustal S-velocity suggesting the possible presence of aqueous fluid in the Ladakh – Karakoram crust.