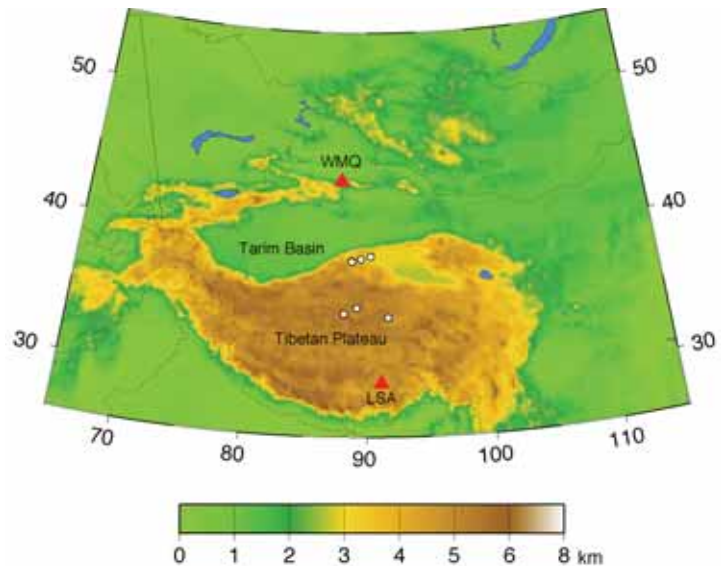
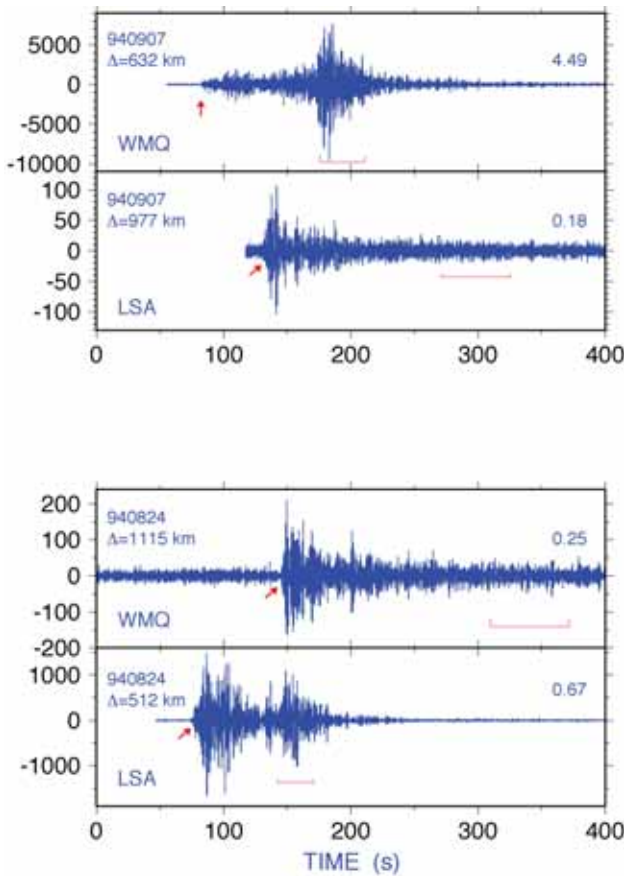


Strong LG Attenuation in Tibet

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One of the challenging regions for monitoring nuclear testing treaties is the high plateau of Tibet. In this region earthquake signals have a tendency to look explosion-like due to strong attenuation or blockage of high frequency S-wave energy. Using GSN observations from stations WMQ, LSA, and KMI, we constrain the attenuation of Lg, a reverberating shear wave in the crust, finding very strong attenuation in northern Tibet, and quite strong attenuation in eastern Tibet, consistent with local determinations made for data from InDEPTH deployments. To obtain robust estimates of attenuation, we use data involving two sources and two receivers all along (close-to) a given great circle path. This enables isolation of the attenuation properties on the path segment between the sources using a double spectral ratio method. Systematic analysis of data from CDSN stations near Tibet reveal that the strong amplitude and frequency content variations of Lg signals are most consistent

with progressive attenuation effects rather than blockage on the margins of the Plateau. Mapping out the attenuation behavior may allow more robust seismic identification in this region of the world.



Topography map of Tibet, indicating the locations of stations WMQ and LSA, which are used to study attenuation on the path segments between clusters of events (white dots) in northern Tibet. The northern portion of Tibet has very strong attenuation of Lg, with 1 Hz Lg attenuation coefficients of about 79.

Seismograms from WMQ and LSA for two events at different distances from the stations along the same great-circle path. Note that there must be very acute attenuation of high frequency signal for the path segment between the two events.

Fan, G.-W., and T. Lay, Strong Lg wave attenuation in the Northern and Eastern Tibetan Plateau measured by a two-station/two-event stacking method, *Geophys. Res. Lett.*, 30, No. 10, 1530, doi:10.1029/2002GL016211, 2003.

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