

SN ATTENUATION IN THE NORTHEAST CHINA

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ABSTRACT

Northeast China is a tectonically active continental craton that has been re-activated by Pacific plate subduction and India-Eurasia collision. In this thesis a study of seismic wave attenuation characterized from regional earthquakes in northeast China is presented. Regional phase Sn wave is used to map lateral variations of shear wave Q. This method allows us to measure, in some detail, to map the effective shear wave attenuation for the uppermost mantle. Eventually these kind of measurements could be used in determining uppermost mantle temperatures.

We collected waveform data recorded by 127 stations from 140 earthquakes in a rectangular region from 30 °N to 60 °N in latitude, 100 °E to 145 °E in longitude. We have obtained models of Sn Q for northeast China using two methods: two station method and reverse two-station method. The former method results contain site effect, whereas the latter do not. The inversion results show high Q values in Songliao basin, which is consistent for a tectonically stable and possibly low temperature uppermost mantle. Resolution test using checkerboard shows good resolution at scale of 2 °×2 ° within most of study area.