

An empirical relationship between seismic attenuation and velocity anomalies beneath the northeastern Japan arc

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We have compared the attenuation and velocity tomographic results and obtained an empirical relationship between them for NE Japan. In the forearc and the deeper part of the backarc region, high velocities are correlated with low attenuation. Beneath the volcanic front and in the shallow part of the backarc region, low velocities are correlated with high attenuation, although at the most upper mantle beneath the backarc large attenuation values appear with only moderately slow velocities. Most of these trends are consistent with the effects of temperature variations. The observed data for backarc region show systematic deviation from experimental prediction and velocity and attenuation anomaly might be caused by not only the effects of temperature deviations but those of melt or fluids.