

## 3-D attenuation structure in the off Tokachi region

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### Introduction

It is interesting that the 2003 Tokachi-oki earthquake suggest that the large discontinuity is found in a horizontal direction. The slip area and afterslip area do not overlap.

Since a characteristic difference is not found from velocity structure study in the Tokachi region, we will carry out tomographic inversion for the three dimensional attenuation structure in this region derived with the Annual Seismological Bulletins JMA (JMA Catalog) and NIED Hi-net data.

### Data

We choose the earthquake in the JMA Catalog and NIED Hi-net data based on the following criteria:

- (1) Earthquakes occurred before September 1, 2003.
- (2) Earthquakes are located within the study area. (36.0N - 46.0N, 136.0E - 146.0E)
- (3) Magnitude fixed from JMA of the earthquakes is between 3 to 5.

Then number of the stations we used is 352, and the number of the selected earthquake is 1152.

We introduce the grid with an interval of 0.5 degree and apply it to the study area at depth of 10, 25, 40, 65, 90, 120, and every 30km up to 360km. For calculating ray path and travel times, 3-D velocity models are required, and we choose the Matsubara et al.(2003) 3-D velocity model.

### Results

In the 40km depth, the depth of the hypocenter of the Tokachi-oki earthquake, we found the characteristic attenuation structure. The near region of the hypocenter, the attenuation factor for S wave is high, and the afterstep region, the  $Q_s$  is low. However for the  $Q_p$  side, we don't locate the typical structure.

In the same depth, the velocity anomaly is little, so we consider the mineral have hydorated and changed in quality.