

Preliminary analysis of the OBS data in northern Okinawa trough: A glimpse into the mantle wedge dynamics

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The North Okinawa trough (NOT) experiment is highlighted by a deployment of 35 broadband ocean-bottom seismometers (OBS) on the seafloor of the NOT south of Ryukyu. The data available provide the first glimpse into the mantle wedge and the back-arc basin of this part of the Ryukyu subduction system. We first determine the orientation of each of the available OBS using a Rayleigh wave amplitude ratio method. After this step, the OBSs are equivalent to land stations except for different types of noise. The second part of this research is to investigate anisotropic structures in the mantle wedge of the NOT by measuring shear-wave splitting. Because of the relatively low seismic rate, up to date we analyzed waveforms for only 2 events in the nine-month period of deployment. All the measured fast directions are aligned perpendicular to the strike of the Ryukyu trench. This trench-normal pattern is consistent with the corner flow model of mantle wedge dynamics, and is considered an extension from the Japan island. We also obtained trench-normal splitting for the paths mostly inside the slab. At present it is hard to explain this pattern.

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