Po/So waves traveling in the Ontong Java Plateau

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The Ontong Java Plateau (OJP) is an oceanic large igneous province (LIP) in the southwest Pacific. The OJP is estimated to be formed at 120 and 90 Ma by massive volcanism based on petrological and geochemical studies, however, the formation process is still under discussion. In order to explore the origin of OJP, we investigate the seismic structure of the oceanic lithosphere in the OJP region by analyzing Po/So waves.

The Po/So waves are P and S waves which travel over great distances through the oceanic lithosphere, and are characterized by high-frequency content and long-duration developed by the multiple forward scattering due to small-scale stochastic random heterogeneities.

We use broadband seismic wave data from campaign observation named “OJP project” conducted in 2014-2017. The campaign seismic network consisted of ocean bottom stations and islands stations in and around the plateau.

Through the waveform analysis, we found that the Po/So waves traveling in the OJP attenuate more rapidly compared to those in the North Western Pacific (NWP). Especially, the propagation efficiency of So waves in the OJP is much less than the NWP. We will investigate the cause of the difference in propagation efficiency of the Po/So waves using numerical Finite Difference Method simulations of 2-D seismic wave propagation. The results of this study will be expected to provide suggestive consideration for the origin of the oceanic lithosphere in the OJP.

Keywords: Po/So waves, oceanic lithosphere, Ontong Java Plateau

