Finite frequency S wave tomography model beneath the Ontong Java Plateau using data recorded by broadband ocean bottom seismographs

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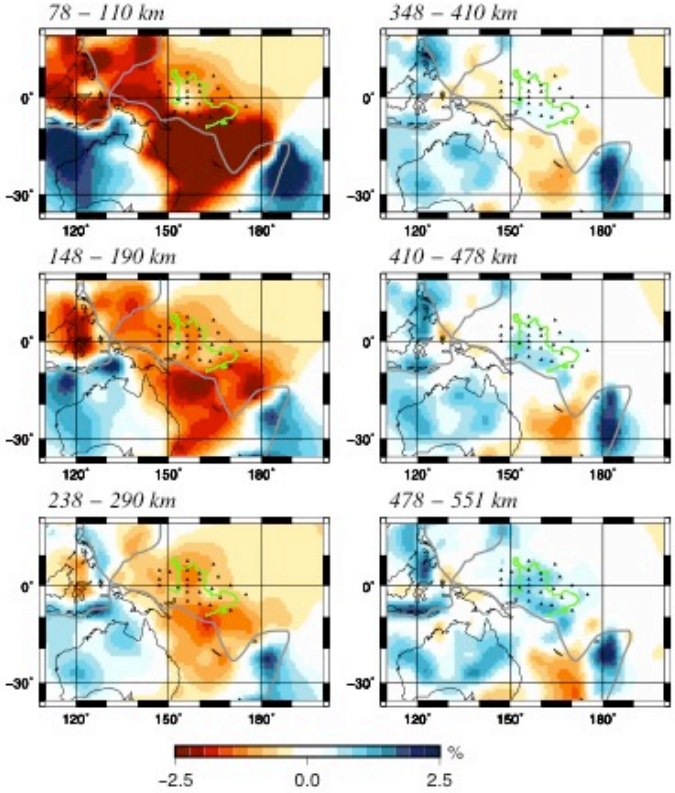
We determined three-dimensional S wave model beneath the Ontong Java Plateau (OJP) by finite frequency tomography using data recorded by broadband seismographs deployed at ocean bottom covered the OJP and at neighbor islands (Suetsugu *et al.*, 2018). Our dataset contains absolute and period-depended differential travel time data. The former consists of ~1,100,000 direct S-wave onset times reported by International Seismological Centre (ISC) and ~400 direct S-wave onset times picked up on broadband waveform records around the OJP and the latter is composed of ~3,000 differential traveltimes between two different stations around the OJP measured by waveform cross correlation at 7 different passband of which center periods varies from 5.3 sec to 42 sec. We used adaptive stacking method (Rawlinson and Kennett, 2004) to measure absolute travel time data near the OJP. These data were inverted based on the infinite frequency travel time tomography method for the absolute travel time data (Inoue *et al.*, 1990; Fukao *et al.*, 1992; Obayashi *et al.*, 2013) and the finite frequency travel time method for the relative travel time data (Dahlen *et al.*, 2000; Obayashi *et al.*, 2013). We obtained a well resolved S wave velocity model beneath the OJP. It shows significant high velocity anomalies in the mantle transition zone, which are considered as stagnant Pacific slabs related to the trench retreating as well as seafloor spreading in the Santa Cruz Basin and Melanesia Basin during the Eocene and Oligocene. It also reveals that S wave velocity just below the OJP is a little higher than the surrounding strong slow anomalies in the mantle shallower than 200 km. We will discuss these remarkable features beneath the OJP in comparison with P wave tomographic model (Obayashi *et al.*, 2018) in this presentation.

Keywords: finite frequency tomography, S wave velocity structure

(a)



(b)