

## Topography on the mantle discontinuities beneath the Ontong Java Plateau

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We conducted geophysical observations on the Ontong Java Plateau (OJP) and its vicinity from late 2014 to early 2017 to determine the underlying crust and upper mantle structure beneath the OJP. Most of the OJP was emplaced in the present South Pacific region at 122 Ma by massive volcanism. The observation network named “the OJP array” is composed of seafloor and island stations. P-wave tomography with seismic data from the OJP array shows a paleo-Pacific slab stagnant in the mantle transition zone beneath the OJP and a mantle upwelling above the mantle transition zone to the Caroline hotspot chain. It is unclear whether the mantle upwelling is connected to the Pacific superplume (LLSVP) or not from the tomography. We perform a receiver function analysis with teleseismic body waves to determine topography of the mantle discontinuities at around 410 and 660 km, which can be used to estimate temperature anomalies in the mantle transition zone. The 410-km discontinuity is depressed beneath the Caroline hotspot chain as compared with that beneath the OJP, indicating higher temperatures around the 410-km discontinuity beneath the Caroline hotspot chain. It is depressed beneath OJP, which may be due to the paleo-Pacific slab in the mantle transition zone.

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