

The OJP array: seismological and electromagnetic observation on seafloor and islands in 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. The OJP was emplaced in the present South Pacific region at 120 and 90 Ma by massive volcanism, but the causes of this volcanism are still debated. Previous studies have suggested that seismic velocity beneath the OJP is anomalously slow, thus could represent thermal or chemical remnants of the volcanism. However, the seismic resolution of the slow anomalies is poor due to lack of seafloor observations. The observation network named “the OJP array” is composed of seafloor and island stations. The seafloor stations have broadband ocean bottom seismographs and ocean bottom electromagnetometers. The island stations have broadband seismographs. The OJP array is designed to obtain seismic and electrical conductivity structures of the mantle beneath the OJP with better resolution than that of previous studies. Joint analysis and interpretation of seismological and electromagnetic data should provide tight constraints to thermal and chemical structures and clarify the cause of OJP emplacement.

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