



## **Seismotectonics of the northern Manila subduction zone using ocean bottom seismometers**

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The Eurasian Plate (EP) subducts beneath the Philippine Sea Plate (PSP) along the Manila subduction zone. The northern portion of this subduction system is located between the Taiwan and Luzon Island. Since the 2004 great Sumatra-Andaman earthquake, the tsunami generation potential and the hazard risk of the Manila subduction zone has been underlined. Although some main tectonic structures have been imaged based on geophysical approaches, the incomplete earthquake records caused by the poor seismic station coverage still limits our understanding for the seismogenic characteristics of the area. In order to obtain more information about the seismotectonics of the northern Manila subduction zone, two temporal seismic arrays composed of 8 ocean bottom seismometers (OBSs) were deployed along the northern Manila trench from June 22 to July 12, 2016 and from June 27 to July 20, 2017, respectively. During this recording period, 1437 earthquakes were determined and relocated. Less than 15 earthquakes have been reported in the international or local catalogue for the same period, showing the efficiency and necessity of OBSs networks for the seismotectonic studies for the marine area. The result shows that the earthquakes appear to be segmented and divided into different groups. Furthermore, the hypocenters distribution reveals that most of the events occurred in the subducting plate to the west of the trench with depth shallower than 40 km and magnitude lower than 2, which infers the seismogenic behavior of the northern Manila Subduction system should be mainly controlled by the plate bending or/and the reactivation of tectonic structures in the subducting plate. Relatively less earthquakes are located to the east of the trench. Instead of spreading along the plate interface, they demonstrate a spatial concentration distribution. Further investigation is needed for the understanding of the mechanism.