



## **Recent progress of interpretation of bottom pressure during tsunamigenic earthquake**

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Offshore observations make it possible to detect tsunamis in advance prior to their arrival at the shoreline. For this purpose, pressure sensors deployed in the deep sea have been used for a long time. After the 2011 Tohoku tsunami, the offshore tsunami observations have been used for tsunami warning upgrade in Japan. In the meantime, the information of actual observed wave height would be issued since 2013. In the near- or the far-fields, however, bottom pressure records usually exhibit a complicated interface of signals related not only to tsunamis but also to hydroacoustic and seismic waves. This is why we need to interpret the bottom pressure recorded by the pressure sensors. Network of offshore observatories recently deployed in the Nankai Trough, SW Japan (i.e. DONET) provides high sampling records of bottom pressure and seismic records. Additionally, the seismic sensors (both broad-band seismometer and accelerometer) are deployed at the same location of the pressure sensor. In the present study, we review the recent offshore observations of bottom pressure from the tsunamigenic earthquakes. An outer-rise earthquake (Mw7.1) on 25 October 2013 taken place near the Japan Trench, NE Japan, for example, generated a few tens of centimeters tsunami at the nearest shoreline, and it also could be recorded by the DONET pressure sensors as a few millimeters of tsunami. Full seismic waveforms have been recorded by two types of seismic sensors as well. We present some features of the obtained pressure signals during the earthquake, in which it is worthwhile noting that the bottom pressure corresponds to the bottom acceleration in the inter-mediate frequency band. In the high frequency band, on the other hand, the bottom pressure follows the bottom velocity. This characteristic would be used for retrieving tsunami signals from the bottom pressure. Thus, quantitative interpretation and data processing of offshore tsunami observations can contribute to the effective tsunami warning system.