

Receiver function imaging of subducting Pacific plate and mantle wedge under Japanese islands using denser network of stations

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Receiver function imaging has been frequently used by different groups focusing on different depths of the Japanese subduction zone. The overlying crust (Shiomi and Park, 2008, Bianchi et al, 2015), the Pacific plate before (Kawakatsu et al., 2009) and after subduction (Kawakatsu and Watada, 2007; Wirth and Long, 2012), and the mantle transition zones (Kawakatsu and Yoshioka, 2011; Tauzin et al., 2018) were discussed using the NIED array stations (Hi-net and F-net). Recently, deployment of ocean bottom seismometers (OBSs) enabled studies of subduction zones closer to the trench (e.g., Akuhara and Mochizuki, 2015). Kawakatsu and Kim (2018, SSJ) have obtained a new version of receiver function imaging using 14-year long of Hi-net data. However, there are other land stations (e.g., J-array) that can improve the station coverage. Here, we collect data from available on-land stations deployed in north-eastern Japan to obtain a denser 2-D array of stations. Additionally, data from temporary OBS stations (Shinohara et al. 2012) are gathered to image the subducted Pacific plate in shallower depths than previously available. Continuous imaging from ocean to land will help to constrain transition of the hydrated oceanic crust along subduction that is expressed as a low velocity layer for better understanding of the hydration/dehydration processes during subduction, which might be related to the occurrence of subduction zone earthquakes.

Keywords: subduction zone, receiver function, ccp stacking