

## Receiver function imaging of the amphibious NE Japan subduction zone - effects of low-velocity sediment layer-

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We performed receiver function imaging in the northeast Japan subduction zone using an amphibious dataset. To incorporate the ocean bottom seismometers, we identified their significant time delaying and amplifying effects on receiver functions due to low-velocity seafloor sediment. We have corrected those effects to produce a continuous image across ocean and land, and the coherent structures are retrieved. Our images delineate the subducting oceanic Moho and the top of the oceanic crust further to shallower depths than previously reported. The weakening and strengthening signals of the subducting oceanic Moho in the offshore part of images are partially due to the interference with the sediment reverberations. Some of our along-dip structural variations at shallow offshore regions provide structural features that may be related to the dynamics of the NE Japan subduction zone. The sediment effect we discuss in the ocean is also observed in the land part, at places where it is covered with low-velocity sediments (e.g. west part of NE Japan). The difference of continental Moho depths inferred from receiver functions and the active source surveys may be explained by the effect of on-land slow sediments. Our study suggests that the sediments should be taken with caution during teleseismic waveform analysis at both onshore and offshore regions.

Keywords: receiver function imaging, seafloor sediment, ocean bottom seismometers