Japan Geoscience Union Meeting 2014
(28 April - 02 May 2014 at Pacifico YOKOHAMA, Kanagawa, Japan)

SSS26-05 Room:315 Time:April 30 17:00-17:15

Seismic anisotropy within the subducting Philippine Sea slab beneath the central Japan

SHIOMI, Katsuhiko[1*]

[1]NIED

Subduction of the Philippine Sea slab (PHS) is caused recurrent megathrust earthquakes every 100 to 150 years. Knowledge of slab geometry has been increased by using the recently established dense seismograph networks, but anisotropic feature, which is related to the tectonic stress field and/or rock properties, within the slab is still unclear. To reveal depth-dependent anisotropic feature within the PHS by using teleseismic receiver functions (RFs), we select 100 stations located in the Kii Peninsula and Shikoku, southwest Japan. We choose teleseismic events (M>6.0) from October 2000 to November 2013 for RF analysis, and use seismograms with good S/N. Low-pass filters with fc = 1.0 and 1.5 Hz are applied to estimate RFs. To estimate the orientation of anisotropy symmetry axis at each station, we apply the harmonic expansion method to the RFs (Bianch *et al*., 2010; JGR). When we apply this method to the data, we focus at the Moho depth for the CCD stacking and use the seismic velocity model by Matsubara & Obara (2011; EPS).

In the depth range around the slab Moho, the plunge azimuths in the eastern Kii, central and western Shikoku are corresponds well to the dip direction of the slab Moho estimated from the radial RFs only (Shiomi *et al*., 2008; GJI). At the southern edge of the Kii Peninsula, the plunge azimuths are rotated to clock-wise from the result of Shiomi *et al*. (2008). When N-S directed anisotropic rock exists just above the Moho, this feature can be explained. In the oceanic crust, the plunge azimuths and anisotropic axes correspond well to the dip direction of the slab, and 4-lobed terms are dominant as the Moho deepens to 40 km. This feature is consistent with the NE-SW extension field estimated from the focal mechanisms of earthquakes occurred in the slab. Within the oceanic mantle, plunge azimuths and anisotropic axes are directed to E-W direction. This direction corresponds to the spreading direction of the subducting PHS beneath this area.

Keywords: Philippine Sea slab, Receiver function, Harmonic analysis, Seismic anisotropy