

## Focal mechanism distribution of main- and after- shock of the 2005 off Miyagi Earthquake (M7.2) by using the amplitude ratios

# Kensuke Suzuki[1]; Ryota Hino[1]; Yojiro Yamamoto[1]; Yoshihiro Ito[1]; Toshihiko Kanazawa[2]; Tomoaki Yamada[3]; Masanao Shinohara[4]; Kenji Uehira[5]; Masayuki Tanaka[6]; Yoshiyuki Kaneda[7]

[1] RCPEV, Graduate School of Sci., Tohoku Univ.; [2] ERI, Tokyo Univ; [3] ERI, Univ. of Tokyo; [4] ERI, Univ. Tokyo; [5] SEVO, Kyushu Univ.; [6] Earthquake and Tsunami Div.,JMA; [7] JAMSTEC,IFREE,DONET

Interplate earthquakes of magnitude of 7.5 have occurred along the subduction plate boundary of the Miyagi-Oki region, middle part of the Japan Trench area, repeatedly on about 40 years intervals. In 2005, interplate earthquake with magnitude of 7.2 occurred in this area. We can observe seismic activity before and after mainshock of the 2005 earthquake. And co- and post-seismic slip distributions of 2005 earthquake are estimated by Yaginuma (2006), Miura et al. (2006) and Iinuma et al. (2007). Therefore, the detailed analyses of the seismicity in the Miyagi-Oki region provide us a good opportunity to investigate the spatio-temporal correlation between the seismic activity and the interplate slip.

We determined the focal mechanism distribution of mainshock and aftershocks of the 2005 earthquake by using ocean bottom seismometers (OBSs) and coastal stations. We used the polarities of P wave and the amplitude ratios of S wave to P wave at land seismic stations for determining the focal mechanisms. We classified the aftershocks into two types according to their focal mechanism solutions: 1) thrust type having focal mechanism similar to the main shock and 2) non-thrust type with focal mechanism dissimilar to that.

Based on the above classification, we discovered that most of the thrust type events occur on the plate boundary and tend to occur in the area of large postseismic slip. We also found that frequency of the thrust type events tend to increase during the period when the rate of postseismic slip increased. We interpret that the thrust type events are the ruptures of small asperities along the plate boundary triggered by aseismic slip. Most of the non-thrust type events were located shallower than plate boundary. Those epicenters tend to be distributed along the edge of the areas with large coseismic slip or intense after slip. We think that the non-thrust type event are the intra-plate earthquake, mostly occurring in the overriding plate which are activated by the stress change due to spatial change of the amount of interplate slip. These results suggest that we may estimate interplate slip distribution and stress change due to the spatial variation of the slip by detailed analysis of spatio-temporal variation of seismicity and focal mechanism of small earthquakes around the plate boundary.