

STT075-P01

Room: Convention Hall

Time: May 25 17:15-18:45

The stress tensors off of Sanriku

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Matsubayashi et al. (2006) found that there were 2 lines of distribution of the thrust type earthquakes off of Sanriku. The 2 lines were parallel to the Japan Trench. By choosing the thrust type earthquake mechanisms from the F-net earthquake catalogue, the lines were found.

In the study, we tried to calculate stress axis in small area by the stress tensor inversion off of Sanriku. We expected to get the detailed result.

The test area is the 39-40N and 141.5-145.5E. We divided the area into 1degree of longitude. Each area interval is 0.5degree of longitude. The area interval of depth is 6km. The area is 1 degree square and 6km thickness. We used the earthquakes which were from 2000 to 2009, as the data for the calculation. We chose the earthquakes that variance reduction (VR) was over 60 from the F-net mechanism catalogue.

At the all area which was around subducted plate boundary, the primary stress axis is pointing east-southeast direction. The direction of the primary stress axis had the variation at the region of 142.5E. The regions that were shallower than plate boundary had many earthquakes over VR60, but the direction of the P and T axis had the variation.

The region of 142.5E is over the 'Blank line' which is between the 2 lines of distribution of the thrust type earthquakes. There were few thrust type earthquakes in the 'Blank line'(Matsubayashi et al.,2006). We can find the difference of the feature of the primary stress to other region.

Keywords: stress tensor, Sanriku, earthquake mechanism, primary axis