

STT075-P03

会場:コンベンションホール

時間: 5月25日17:15-18:45

海陸地震観測データから求めた日向灘南部の応力場

The stress field of the southern part of Hyuga-nada region, deduced from onshore and offshore seismic observations

植平 賢司^{1*}, 八木原 寛², 山田 知朗³, 馬越 孝道⁴, 中尾 茂², 小林 励司², 後藤 和彦²,
宮町 宏樹², 望月 公廣³, 中東 和夫³, 篠原 雅尚³, 金沢 敏彦³, 日野 亮太⁵, 合田 政次⁶,
清水 洋¹

Kenji Uehira^{1*}, Hiroshi Yakiwara², Tomoaki Yamada³, Kodo Umakoshi⁴, Shigeru Nakao²,
Reiji Kobayashi², Kazuhiko Goto², Hiroki Miyamachi², Kimihiro Mochizuki³,
Kazuo Nakahigashi³, Masanao Shinohara³, Toshihiko Kanazawa³, Ryota Hino⁵, Masaji Goda⁶,
Hiroshi Shimizu¹

¹九大地震火山センター, ²鹿大理工院, ³東大地震研, ⁴長崎大環境, ⁵東北大地震噴火予知センター, ⁶長崎大水産

¹SEVO, Kyushu Univ., ²Sci. and Eng., Kagoshima Univ., ³ERI, Univ. of Tokyo,

⁴Faculty of Env. Studies, Nagasaki Univ., ⁵AOB, Tohoku Univ., ⁶Faculty Fisheries, Nagasaki Univ.

In Hyuga-nada region, the Philippine Sea (PHS) plate is subducting beneath the Eurasian (EU) plate (the southwest Japan arc) along the Nankai trough at a rate of about 5 cm per year. In this region, microearthquake activity is very high. Big earthquakes (M7 class) have occurred at intervals of about dozens of years, and so plate coupling varies dozens of kilometers specially. It is important to understand seismic activity, stress field, and structure in such region in order to understand seismic cycle. According to the previous study of Uehira et al. (2007), there is a good correlation between the slip distribution at large earthquakes and the angle between maximum principal axis and the plate boundary in northern part of Hyuga-nada region. We performed extraordinary seismic observations for 75 days from April to July 2006, and for 73 days from April to July 2008. 23 and 26 pop-up type ocean-bottom seismometers were deployed above hypocentral region in Hyuga-nada using Nagasaki-maru in 2006 and 2008, respectively. And three data loggers were deployed on land in order to compensate a regular seismic network. We used these data and permanent stations for this analysis. In order to obtain precise hypocenter distribution, focal mechanisms, and a 3D seismic velocity structure around the Hyuga-nada region, we used Double-Difference (DD) Tomography method developed by Zhang and Thurber (2003). We obtained that earthquakes of various focal mechanisms, such as a normal fault type, a reverse (thrust) fault type, occurred. So, the stress field was estimated using a stress tensor inversion method by polarity of first arrivals from earthquakes [Horiuchi et al. (1995)]. The direction of minimum principal axis of the PHS slab is almost parallel to the direction of subduction. This means that stress field of the PHS slab is down-dip tension. The direction of maximum principal axis is almost perpendicular to the plate boundary, so it is suspected that the shear stress of plate boundary is very small.

キーワード: 応力場, 海底地震観測, 日向灘

Keywords: stress field, ocean bottom seismic observation, Hyuga-nada