

Change in stress field around fault zones of the 2016 Kumamoto earthquake (Mj7.3) inferred from moment tensor data of micro-earthquakes

*Satoshi Matsumoto¹, Yusuke Yamashita², Manami Nakamoto³, Masahiro Miyazaki², Shin'ichi Sakai⁴, Yoshihisa Iio², Group for urgent joint seismic observation of the 2016 Kumamoto earthquake

1. Institute of Seismology and Volcanology, Faculty of Science, Kyushu University, 2. Disaster Prevention Research Institute, Kyoto University, 3. National Institute of Polar Research, 4. Earthquake Research Institute, University of Tokyo

The 2016 Kumamoto earthquake (Mj7.3, Mj: magnitude scale by Japan Meteorological Agency) occurred on 16 April 2016 in Kumamoto prefecture, middle part of Kyushu Island, Japan. Several earthquakes over Mj 6 also occurred before and after the mainshock. The earthquake killed resident people and heavily damaged the cities around the hypocentral area. The seismic activity in and around the area was highest in the Kyushu Island before the earthquake occurrence. Dense seismic observation carried out in the area enable us to estimate high precision focal mechanism solutions. Here we analyzed the focal mechanisms before and after the occurrence of the sequence as seismic moment tensors and estimated stress field in the hypocentral area. As general tendency, dominated minimum principal stress (σ_3) in the N-S direction obtained and the maximum principal stress takes value close to the moderate one. The stress field reveals spatial heterogeneous feature, which varies from southern to northern part of the area. We found that the stress field around the fault zone is consistent with co-seismic fault behavior of the earthquake sequence and decreasing maximum horizontal stress.

Keywords: 2016 Kumamoto earthquake, stress field, moment tensor