

## Stress condition around M6.5 earthquake fault of the 2016 Kumamoto earthquake sequence

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The 2016 Kumamoto earthquake sequence occurred at Hinagu and Futagawa fault zones under tectonic stress condition of strike slip or normal fault type. First large earthquake with magnitude 6.5 on April 14, 2016 was located at Hinagu fault zone with high seismic activity prior to the event. The stress condition around the fault zone is important to understand the generation of the earthquake. Especially, it is a key factor estimating the spatial variation of stress field at the depth of the hypocenter.

In this study, we estimated the deviatoric stress field and the stress ratio around Hinagu fault zone from focal mechanisms. We used the method estimating it from seismic moment tensor data (Matsumoto, 2016). The data were selected from focal mechanisms of earthquakes occurring from May 2016 to December 2016 at a depth range of 0-20km. We found that the stress field with strike-slip fault regime at the 0-5km depth area. This principal direction is similar to commonly observed in Kyushu Island, Japan. However, the stress field in the area deeper than 5km was in normal fault regime. The maximum principal compressional stress was close to the moderate one at the area. This area corresponds to the co-seismic large slip area estimated from the kinematic waveform inversion of strong motion data (Asano and Iwata, 2016). This suggests that the spatial change in the stress could be caused by decreasing the differential stress at the area deeper than 5km. The stress field around Hinagu fault zone was in strike-slip regime before the occurrence of the M6.5 event and changed to normal fault stress type due to the slip of the event.