

Spatio-temporal strain change around the 2016 Kumamoto earthquakes observed by GEONET data

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We analyzed GEONET data to estimate coseismic strain field induced by three large earthquakes over Mj6.0 (Mj6.5 on 14 April, Mj6.4 on 15 April, and Mj 7.3 on 16 April). First two earthquakes took place several ppm strain around the source area with a pattern of right lateral faulting along the Hinagu active fault. On the other hand, Mj 7.3 earthquake induced ~100 ppm of areal strain and ~40 ppm of right lateral maximum shear strain around the hypocenter on the Futagawa active fault. In order to explain the coseismic strain field, we estimate coseismic fault assuming a slip of simple rectangular fault in the half-space elastic media. The estimated fault corresponds to Mw6.96 with a length of 26 km and width of 10 km along the Futagawa active fault. Although the calculated strain field roughly explains observed data, residuals of several cm displacements and several ppm strains are remaining near the hypocenter. Our rectangular fault may be too simple to explain the more complex fault slip distribution. Anomaly of the coseismic strain field around the aftershock area is not appear from those residuals at this moment.

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