

Comparison of IISEE CMT catalog to Global CMT catalog and USGS MT solutions

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We determined centroid moment tensor (CMT) solutions of 101 large (moment magnitudes are larger than or equal to 7.2) earthquakes that occurred during 1994-2006 by analyses of long period body wave data from GSN stations. In order to reduce dependency of solutions on initial location guesses, we used grid search approach of Hara (2004) in our analyses. We compared our solutions to Global CMT solutions and USGS MT solutions. We computed inner products between moment tensor components and variances of differences between moment tensor components to find that our solutions are more consistent with the former than the latter. For shallow earthquakes, differences of Mrt and Mrf components for shallow earthquakes between our solutions and Global CMT solutions are larger than those of other components. This is probably due to lower resolution for Mrt and Mrf components in Global CMT solutions. However, we did not observe significant decrease of non-double couple components in our solutions. We find positive values of epsilon (an index of non-double couple component, e.g., Giardini, 1984) in the depth range 100-200 km and negative values in the depth range 400-600 km in our solutions and Global CMT solutions, which is consistent with Kuge and Kawakatsu (1993), while there is not such a trend clearly in USGS MT solutions.