

Seismicity along the Itoigawa-Shizuoka Tectonic Line

Yannis Panayotopoulos[1]; Naoshi Hirata[1]; Kazutoshi Imanishi[2]; Ikuo Cho[3]; Yasuto Kuwahara[4]; Aitaro Kato[1]

[1] ERI, Univ. Tokyo; [2] GSJ, AIST; [3] AIST; [4] GSJ,AIST

The wide area along the Itoigawa-Shizuoka Tectonic Line (ISTL) is considered to be with one of the highest probability of a major event occurrence in the near future. The tectonic relation between the different parts of the ISTL fault system and the surrounding geological units is yet to be fully explained. In order to understand the active tectonics that control the earthquake genesis mechanisms, it is essential to investigate the microseismic activity near the faults, the deep layout of active faults and the seismic velocity structure of the earth crust in the surrounding area. To reveal seismic activity, which may be related to the ISTL activities, we deployed seismic arrays in the south-central part of ISTL from 15 Sep. 2005 to 23 Dec. 2005, with prospect to extend our investigation in the central and northern part in the coming years. We deployed 2 parallel linear arrays consisted of 30 and 25 stations each at an average spacing of 1.5 km and 5 stations in the surrounding area. We used 3-component 1-Hz seismometers and long-term off-line recorders with a sampling rate of 200 Hz. We have combined our stations with the temporary station array deployed by the Geological Survey of Japan (AIST), the local network in this area deployed by the Japanese Meteorological Agency (JMA), the Earthquake Research Institute, the University of Tokyo (ERI) and the National Research Institute for Earth Science and Disaster Prevention (NIED) to relocate the regional seismicity observed by the JMA. We re-picked P and S phase from the waveform data obtained by the local network and our station array. We have precisely relocated 164 events that occurred in September. We have picked 16,535 P and S phase arrivals, while JMA has picked 7,279 for the same events. There are 2 prominent clusters of earthquakes to the north and to the south of our linear station array. We relocated the northern activity at a depth of 14 km, which is reported by JMA as 17 km depth. Also the southern activity was found at a depth of 11 km, which was 13 km by JMA.

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