

2003 Seismic Expedition in the Hinagu Fault Region, Kyushu, Japan

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The Hinagu fault system, Kyushu, Japan, is located in the western extension of Median Tectonic Line (MTL), which is a major tectonic boundary in Japan. This fault system is characterized by a quite high seismic activity as compared with the other part of the MTL, and regarded as a higher seismic risk among active onshore faults. The seismic observation by Kyushu University indicates that NS extensional stress is dominant in this region. Furthermore, observed seismic records contain prominent later phases from which a number of reflectors are imaged with a high dip angle in the shallow part of the crust, and some other reflectors in the deeper part.

In order to clarify the physical process of inland large earthquakes, it is inevitably important to obtain detailed information on various scale crustal heterogeneities and elucidate their relations with ongoing crustal activities in and around the source regions.

In 2003, we conducted an extensive seismic expedition in and around the Hinagu fault area. This expedition involves seismic refraction/wide angle reflection, array observation and natural earthquake observation using temporal and permanent seismic stations. For the refraction/wide-angle reflection study, two profile lines of 56 were set in EW and NNE-SSW directions, respectively, on which 7 dynamite shots of 100-200kg charge and 338 recorders were deployed. The array observations, which were designed for high-resolution imaging of crustal scatterers and reflectors, were undertaken at 5 points in the fault region. The travel time data from the refraction/wide-angle reflection lines and seismic arrays are also used to determine 3-D tomographic image by combining the data from the permanent stations around the fault region.

This paper presents the outline of the 2003 expedition and some preliminary results.