

Fracture zones in the Pacific slab revealed by the temporal seismic observation in the Hidaka Collision Zone, Hokkaido, Japan

Kei Katsumata[1], Naoto Wada[1], Minoru Kasahara[1]

[1] ISV, Hokkaido Univ

Dense seismic network has worked since August 1999 for researching the collision tectonics. The area of this network is 250km X 250km. Eighty short period seismic stations including forty seven temporal stations are expected to provide well-located hypocenters, focal mechanisms and travel time data of P- and S-waves for a 3-D seismic tomography.

The Hidaka Mountain region in Hokkaido, Japan is characterized by a collision between two island arcs, that is, the northeastern Japan and the Kurile Islands arcs [Kimura, 1996; Moriya et al., 1997; Tsumura et al., 1999]. Little was known on the detailed tectonics of this arc-arc junction and the processes of uplifting and deformation in the Hidaka Mountain region. The purpose of this study is to reveal microearthquake seismicity in detail at the collision zone.

Dense seismic network has worked since August 1999 for researching the collision tectonics. The area of this network is 250km X 250km. Eighty short period seismic stations including forty seven temporal stations are expected to provide well-located hypocenters, focal mechanisms and travel time data of P- and S-waves for a 3-D seismic tomography. Each seismic station consists of a 1-Hz seismometer with three components (Up-Down, North-South and East-West). Waveform data are sampled by 100 Hz, transmitted through a communication satellite or a telephone line, and recorded in real-time at a data center in Hokkaido University. The detection of earthquake, the reading of arrival times of P- and S-waves, and the calculation of hypocenter using HYPOMH [Hirata and Matsu'ura, 1987] has been conducted automatically by a computer software called WIN [Urabe and Tsukada, 1992]. We have manually downloaded waveforms of only large events from HI-NET since November, 2000. After getting the preliminary results from the computer we carefully checked the readings of arrival times and selected only data with a very sharp onset for the seismic tomography. All hypocenters were relocated assuming three-dimensional P- and S-wave velocity structures obtained by using a powerful method produced by Zhao et al. (1992, 1994).

In our talk we will present the hypocenter location at the Hidaka Collision Zone, Hokkaido, Japan.

[References]

Hirata, N., and Matsu'ura, M., 1987, *Phys. Earth Planet. Int.*, 47, 50-61.

Kimura, G., 1996, *The Island Arc*, 5, 262-275.

Moriya, T., Miyamachi, H., Oguz, O., Nurcan, O., Iwasaki, T., Kasahara, M., 1997, *Structural Geology (The J. of the Tectonic Research Group of Japan)*, 42, 15-30 (in Japanese with English abstract).

Tsumura, N., Ikawa, H., Ikawa, T., Shinohara, M., Ito, T., Arita, K., Moriya, T., Kimura, G. and Ikawa, T., 1999, *Geophys. Res. Lett.*, 26, 1057-1060.

Urabe, T and Tsukada, S., 1992, *Programme and Abstracts, the Seismological Society of Japan*, No. 2, 331.

Zhao, D., A. Hasegawa and S. Horiuchi, *J. G. R.*, 97, 19909-19928, 1992.

Zhao, D., A. Hasegawa, and H. Kanamori, *J. G. R.*, 99, 22313-22329, 1994.