Analysis of ACROSS signal from Toki using Horai seismometer array in 2006

Kenji Yamazaki[1]; Toshiki Watanabe[2]; Yoko Hasada[3]; Toshiyuki Furukawa[4]; Koshun Yamaoka[3]; Ryoya Ikuta[5]; Haruhisa Nakamichi[6]

[1] Earth,Nagoya Univ.; [2] RCSV, Nagoya Univ.; [3] RSVD, Nagoya Univ.; [4] Environment,Nagoya Univ; [5] ERI. Univ. Tokyo / JSPS; [6] Environmental Studies, Nagoya Univ.

ACROSS stands for Accurately Controlled Routinely Operated Signal System. This system actively detects and monitors subsurface elastic structure and conditions by transmitting the wave signal of which the frequency, phase, and amplitude are controlled accurately. One of the purpose is to monitor temporal changes of the physical properties seismogenic zone.

In this study, we deployed a seismic array in Horai, Shinshiro City (Aichi Prefecture). We observed the seismic wave from the ACROSS source in Toki City (Gifu Prefecture) starting from June 2006 to Dec 2006. We compared the result with (Soma et al., 2007) that obtained using a similar seismic array deployed from Dec 2004 to Sep 2005.

We stacked the data for 6 months to obtain high signal to noise ratio and separated the ACROSS signal from noise. We calculated the transfer functions in the time domain by deconvoluving the observed signal by the source signal. Then we applied the semblance analysis to the array data of the transfer functions to identify the wave phases including the refracted wave and reflected waves from deep crust.

The transfer functions of array (2005) and those of array (2006) agrees with each other fairly well. The result of the semblance analysis also shows good agreement. The results implies that the repeatability of the ACROSS signal transmission, and surface array observation were good enough. They also proves that the major phases shown in the transfer function and the semblance panel were the ACROSS signal and they are stable during the observation period. The difference and the change in each wave phase will be examined and presented at the meeting.