

Time variation of wave phases of 17 months of ACROSS continuous transfer function observed at Hi-net Hourai station

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We have been studying monitoring the temporal variations of wave reflected at plate boundary using ACROSS (Accurately Controlled and Routinely Operated Signal System).

Up to now, Soma et al. (2007) deployed a seismic array in the neighbor of Hi-net Hourai station. The wave reflected at the plate boundary is detected from the semblance analysis of ACROSS transfer function assistance of the expected travel time calculated by Tsuruga et al. (2005). Using Hi-net Hourai data of the ACROSS transfer function, they calculated the temporal variation of the travel-time and the cross-correlation value. They implied that the activity of deep low-frequency tremors affected the temporal variation of travel-time variation and cross-correlation value.

Soma et al. (2007) has following problems.

1. Some coherent waves remain not analyzed.
2. The effect of noise on the travel-time variation and cross-correlation value has been not calculated.
3. The specific noises of Hi-net sites have not removed.

We address these problems and recalculate the cross-correlation values and the travel-time variations. Furthermore, we extend the Hi-net data of analysis period for 7 months coupled with the past analyzed period.

Accordingly, we obtained the results.

1. The variations of cross-correlation value and the travel-time are larger than the effect of noise.
2. Additional wave phases show the similar variation patterns of the cross-correlation value and the travel-time reported in Soma et al. (2007).
3. The variations of cross-correlation value and the travel-time seems to correlate to seasonal variation or the effect of deep low-frequency tremors.
4. The stability of the cross-correlation value provide that wave phase we analyzed are not noise.

We report detail of the results we obtain.

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