

An attempt to detect temporal variations of seismic wave velocity before and after the 1998 M6.1 Shizukuishi earthquake

Ayako Nakamura [1], Akira Hasegawa [1], Naoshi Hirata [2], Takaya Iwasaki [3], Hiroyuki Hamaguchi [4]

[1] RCPEV, Graduate School of Sci., Tohoku Univ., [2] ERI, Univ. Tokyo, [3] ERI, Tokyo Univ., [4] Res. Centr. Pred. Earthq. Volc. Erupt., Grad. Sch. Sci., Tohoku Univ.

An M6.1 earthquake occurred in Shizukuishi town, on September 3, 1998. Two artificial explosions were carried out on the edge of the source region before and after its occurrence. We applied cross-spectrum technique to waveforms from these two explosions to detect travel-time change. An increase in direct P-wave travel time, ~1% (20 msec), is detected at two of stations with epicentral distances less than 15 km. These stations are located to the west of the rupture area. On the other hand, a slight decrease in travel time within 10 msec is observed at stations located to the east of the rupture area. This suggest P-wave velocity decrease in the upper part of the hanging wall.