Japan Geoscience Union Meeting 2015
(May 24th - 28th at Makuhari, Chiba, Japan)

SCG65-P01 Room:Convention Hall Time:May 26 18:15-19:30

Investigation on earthquake damage in the Near-Surface-Fault area during the 2014 Northern Nagano Prefecture earthquake

SI, Hongjun[1*] ; SASAKI, Tetsuro[2] ; YAMAGUCHI, Shingo[2]

[1]Seismological Research Institute Inc., [2]The Japan Atomic Power Company

On 22 Nov., 2014, an earthquake of M_{JMA}6.7 (M_W6.2) occurred in Hakuba villege, Nagano Prefecture. During the earthquake, traces of surface fault are observed in the source region in Hakuba and Otani villages, and heavy building damages are report in Horinouchi, Hakuba Village.

In this study, in order to study the damages in the near field area, we carry out an investigation for the damage in the near-surface-fault-area, on 26 and 27, Nov., 2014, just after the earthquake. The main methods used in the investigation are interviews and photography. As a result, the earthquake damage in the vicinity of the surface fault are generally not significant. In particular, in the vicinity of largest surface fault in Shiojima area, Hakuba Village, there are no significant damage observed even for the block fence.

However, since there are significant damage observed in the Horinouchi area, Hakuba Village, it is planned to perform measurements of micro tremor to check if there are differences in site effects between the damaged non-damaged near-filed area.

Keywords: Surface fault, Damage, Site effect, Northern Nagano-ken earthquake

Japan Geoscience Union Meeting 2015
(May 24th - 28th at Makuhari, Chiba, Japan)

SCG65-P02 Room:Convention Hall Time:May 26 18:15-19:30

Source model of the 2014 Northern Nagano earthquake (Mj 6.7) by waveform inversion with empirical Green's functions

SHIBA, Yoshiaki[1*]

[1]CRIEPI

The slip distribution model of the November 22, 2014 Northern Nagano earthquake (M6.7) is estimated by using the waveform inversion method with empirical Green's functions (EGFs). The main shock occurred just beneath the Kamishiro fault, which is the active fault located at the northern end of Itoigawa-Shizuoka Tectonic Line, however the aftershock distribution expands beyond the existing active fault zone. This suggest the fault rupture during the main shock also reaches such area.

Estimated source model displays the large slips on the shallow part near the hypocenter where the surface ruptures were observed, and the northern fault region where neither the active faults nor the surface earthquake faults were recognized. The secondary inversion procedure referring the slip distribution model as the initial condition reveals that the largest asperity at the northern fault area shows relatively high effective stress, radiating strong high-frequency earthquake motions. It implies the earthquake rupture propagating the area where the existing fault plane does not fully developed might be involved in high effective stress or stress drop.

Keywords: 2014 Northern Nagano earthquake, source model, active fault, inversion analysis