STT53-P04　　　　　　Room:Convention Hall　　　　　　Time:May 24 18:15-19:30

Construction of the seismic observation network around Shimokita Peninsula (2)

NOGUCHI, Shinako[1]* ; SEKINE, Shutaro[1] ; SAWADA, Yoshihiro[1] ; KASAHARA, Keiji[1] ; SASAKI, Shunji[1] ;
TAZAWA, Yoshihiro[1] ; YAJIMA, Hiroshi[1]

[1]Association for the Development of Earthquake Prediction

In Japan, dense seismic observation networks have been installed including high-sensitivity seismograph network (Hi-net) operated by NIED. While these networks were relatively thin around northern Tohoku and southeastern Hokkaido. It decreased the earthquake detection capability in this region compared to other regions. Under the circumstance, we installed high-sensitivity seismic network (AS-net) in this region, Shimokita, Tsugaru and southeastern Hokkaido, and started real-time monitoring for earthquake activity (Sekine et al., 2014). In this presentation, we report the first fruits by AS-net system after the completion of network installation and data release.

We have completed the installation of AS-net which consists of 36 observation sites at August 2014, in addition to 20 stations already installed in 2013. Seismic data recorded by AS-net are distributed at the nation-wide real-time distribution network for seismic data, JDX-net. From January 2015, it became able to download the seismic data by AS-net via continuous seismic data download web service managed by NIED. It would contribute to enhance the precision of seismic monitoring and any other researches for seismology.

We estimated the level of background noise for each AS-net station. As a noise level, we calculated the root-mean-square (RMS) value for the amplitude of 1 hour ambient noise waveform. As a result, the noise level in daytime exceeds 50 micro-cm/s at 11 stations. On the other hand, the noise level in daytime was around 10 micro-cm/s or less at 14 stations. At the stations with higher noise level, the ambient noise were dominant at 0.5-1 Hz. The measured average S-wave velocity (Vs) for soil layer between the seismometer at borehole bottom (~20 m depth) and ground surface was related to the noise level for each station; the stations with averaged Vs of 300 m/s or less tended to show higher noise level. It indicates that the noise level at each station depends on the soil condition.

Then we relocated earthquakes around Shimokita region during 2014 automatically using AS-net data in addition to the other stations nearby. Up to 4616 events were determined by our relocation, which are 2.5 times as many as JMA hypocenter catalogue (1846 events). Of course, our result contains some artificial events; blasts, seismic exploration and so on. For natural earthquake, we caught 375 events during a swarm around Towada from 20 to 31 January 2014 (287 events in JMA catalogue). To distinguish these various events we got, we will check them in detail with manual measurement. Frequency-magnitude diagram for our catalogue peaks out at around M0.6 while that for JMA catalogue peaks out at around M1. It implies that the AS-net enhanced earthquake detection capability around Shimokita region.

Reference;
Sekine, S., S. Sawada, K. Kasahara, S. Sasaki, Y. Tazawa, H. Yajima, 2014, Construction of the seismic observation network around Shimokita Peninsula, Jaman Geoscience Union Meeting 2014, Yokohama, STT57-P09, April 2014.

Keywords: Seismic observation network, Shimokita Peninsula