

The medium-term improvement plan of the JMA EEW system

Masaki Nakamura^{1*}, YAMADA, Yasuyuki¹, HIRANO, Kazuyuki¹, KIKUTA, Haruyuki¹

¹JMA

The JMA earthquake early warning (EEW) system is a part of the EPOS system, which operates 24 hours a day. So, the improvement must be limited. In other words, the update of the EPOS system will be a good chance to improve the EEW system. We will make a presentation about the medium-term improvement plan of the JMA EEW system.

The main part of the JMA EEW system uses the analysis results at the individual stations. We are making the system more efficient by adding and upgrading the elements of the analysis. For example, we will add the continuous transmission mode to the conventional trigger transmission mode. Using the new mode, we will always be able to grasp the seismic motion field all over Japan. Furthermore, we will introduce the real-time pseudo seismic intensity by Kunugi et al. (2008), by which we will be able to monitor the extent of the strong motion field and to evaluate the calculated hypocenter parameter.

The JMA EEW system has to separate the picking data into the individual events correctly. Then, we only use the phase time data so far, but plan also to use the amplitude data. Moreover, the JMA EEW system also uses the calculated hypocenter parameters by the other methods, including the conventional STA/LTA trigger and AR-AIC method, and we plan also to use the calculated results by the particle filter method (Tamaribuchi, the abstracts of this meeting, 2013).

The JMA EEW system is based on the calculated hypocenter parameter but in the cases of the 2011 off the Pacific coast of Tohoku Earthquake and the aftershocks, the system did not necessarily work well because of the procedure. To overcome the situation, we have the idea of the hybrid method using the conventional method and the real-time pseudo seismic intensities.

As mentioned above, the main part of the JMA EEW system uses the analysis results at the individual stations. Now we use 220 stations over Japan including 5 OBS stations in Tonankai. We have already installed 50 new stations and will use those data after the preliminary surveys. Moreover, we are making the external system which will use the 30 NIED KiK-net stations in the deep boreholes under the southern Kanto area and the 20 JAMSTEC Donet OBS stations off the Kii Peninsula. We will also use those data. Furthermore, we have a plan also to use the real-time pseudo seismic intensities of 400 JMA seismic intensity meters after the next EPOS system.

Keywords: EEW, JMA, seismic intensity, hypocenter determination