[JJ] Evening Poster | S (Solid Earth Sciences) | S-CG Complex & General

[S-CG65]Reducing risks from earthquakes, tsunamis &volcanoes: new applications of realtime geophysical data

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As the number of population centers grows in regions with earthquake, tsunami and volcano hazards, the importance of improving methods for rapid, realtime estimates of activity increases. Realtime monitoring, analysis, and prediction of seismic ground motion, crustal movement and tsunami will be powerful tools to contribute to earthquake and tsunami disaster preparedness/mitigation. Tsunami and Earthquake Early Warning systems exist today in many locations around the world. Now JMA has started to promptly provide Eruption Notices to inform people of impending and beginning volcanic eruptions. Large events like the 2011 Tohoku Earthquake (Mw9.0) have demonstrated some of the shortcomings of existing techniques. In this session, we invite presentations on new ideas, methods and applications of (near) realtime analysis of seismic, geodetic and tsunami data, to the problem of realtime prediction aimed at improving disaster preparedness/mitigation in the fields of earthquake, tsunami and volcano observation. Presentations are encouraged to bring together scientists, engineers, and practitioners from a broad range of backgrounds from around the world, and to promote collaborative communication at the leading edge of the science and technologies.

[SCG65-P04]Characteristics of PGA prediction for station corrected on-site EEWs in Taiwan

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There were wide developments on the application of earthquake early warning system (EEW) recent years for accomplishing disaster prevention issue for large earthquakes. Most of the peak ground acceleration (PGA) predictions for EEW were calculated from ground motion prediction equation (GMPE) for rock condition or linear relation between amplitude of initial P-wave (Pd) and PGA but prediction errors were usually still significant due to lack of site effect consideration. Meanwhile, traditional EEW system could divide into two major approaches including regional warning and onsite warning system. The latter one was the main purpose, including τc -Pd method (method 1) and the Pd method (method 2) were used for this study.

Earthquake database used in this study were recorded from Taiwan strong motion instrumentation program (TSMIP) with magnitude larger then five and time period was from 1993 to 2014. The abovementioned two methods were discussed for ability of PGA prediction purpose in western Taiwan region. For τc -Pd method, NCREE model (Hsu, 2015) used in this study was using additional station correction for traditional EEW parameters Pd and τc to firstly improve the accuracy of magnitude and hypocenter distance estimation. Second, site corrected GMPE would be applied for PGA prediction to get precisely ground motion estimation. In contrary, for Pd method, the linear relation of Pd and PGA were constructed for individual stations and site corrections were applied for two separated regions including whole Taiwan (ALL model) and regional ones. Preliminary results indicated site correction for both methods could effectively reduce prediction errors and different scale of regional models could

give several stages in situ that how many historical records for target station. Finally, several characteristics of PGA prediction for station corrected on-site were found including there was different linear relation for method 2 in near field events and far field events, method 2 could provide more accurate PGA prediction than method 1 but method 1 could also provide source information, site conditions could be a preliminary index for selection of alternative regression coefficient from nearby stations for those stations who didn’t have much records to calculate site correction for method 2.