



Early estimation of magnitude and moment tensor analysis of large regional earthquakes around the Korean peninsula

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The general process relate to issue tsunami warning is compose of estimation of earthquake magnitude, issuance of tsunami warning, and monitoring tsunami as well as analysis of source parameters such as CMT and tsunami simulation. Rapid and correct determination of earthquake magnitude is important to properly issue tsunami warning. The information of moment tensor solution is useful for early determination of the cancellation or strengthening of tsunami warning. Because Korean peninsula experienced tsunamis damage several times due to generated by large earthquakes near the western coast of Japan, we tried to apply analysis technique of earthquake magnitude and moment tensor solution to seismic data of Korea Meteorological Administration (KMA) at regional distances in order to progress tsunami warning system in Korea.

There have been several studies to determine earthquake magnitude using high-frequency energy radiation of P waves for large teleseismic events with long source duration. This method can remove the contamination of relatively longer phases other than P waves. Therefore we may estimate the magnitude of large earthquakes accurately in a short time. We tested this method using regional data for 14 large earthquakes ($M > 6.5$) occurred around Japan. We used waveform data of the Korea Meteorological Administration (KMA) which are located in regional distances of $5^\circ \sim 25^\circ$, and calculated magnitude following the method of Hara(2007). As a result, estimated magnitudes were generally larger than those using teleseismic data having lower magnitude errors.

We also analyzed moment tensor solutions of several events using F-net data of Japan and KMA broadband data. From these analysis, we were able to understand that regional seismic data could be used for tsunami warning system in Korea.