



## **Observation of the tsunami forerunner of the 2011 Tohoku earthquake in Korea**

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An inter-plate earthquake occurred on March 11, 2011 off the Pacific coast of Tohoku, Japan. The resulting tsunami reached the Korean Peninsula and was recorded at numerous water level stations. Most of the records showed that the tsunami-like wave took about 4 hours to arrive at the water level stations. However, in the records of the north-eastern water level stations, a tsunami-like wave was found in only about a few minutes after the earthquake occurred, which was much shorter than the expected arrival time based on a numerical simulation. In this study, we investigated the tsunami forerunner observed at the north-eastern water level stations. A numerical simulation of tsunami was carried out, and the time series of water level stations were compared with those of nearby borehole seismic stations to find out the cause of the generation of the forerunner. In order to focus on the tsunami, the tide components of the water level records predicted by harmonic analysis software were subtracted from the original records. The arrival time of each seismic phase was determined by the parameterized velocity model.