Improvement of the realtime tsunami prediction system using DONET and its implementation

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Coastal areas along the Nankai Trough were damaged repeatedly by large earthquakes and tsunamis. And, these areas are relatively close to the trough axis comparing with the Japan Trench area. Therefore, it is very important to understand tsunami distribution for disaster prevention around local residents. We developed a realtime tsunami prediction system using the Dense Oceanfloor Network for Earthquakes and Tsunamis (DONET), which is installed in rupture areas of Tonankai and Nankai earthquakes. The principle of this prediction system is based on the tsunami amplification, which corresponds to correlation between the pressure data at the DONET stations and the coastal tsunami height. Although previous system used average of absolute pressure gauge data of 20 DONET stations, we developed the prediction system by optimized selection of fault models from the tsunami database. We introduced selection method of the fault models based on tsunami trigger pattern of the DONET stations and the dynamic selection of the DONET stations used for the prediction. In particular, the dynamic selection depends on the tsunami propagation, therefore, the used DONET stations for realtime tsunami prediction on each coastal position are revised every second. We also revised processing of pressure gauge data for calculation of average of absolute values and use peak hold value of the pressure data as input data into the prediction system. The accuracy of the tsunami prediction was improved than previous system, and it is implemented in the a few local governments. We introduce the developed tsunami prediction system using a few fault models of Tonankai and Nankai earthquakes.