

Outreach of tsunami observation using experimental water tank

*Osamu Sandanbata¹, Hajime Shiobara¹, Taku Ueda¹, Makoto Ogawa¹, Ittetsu Kotobuki¹, Kazutoshi Takano¹, Yuchen Wang¹, Satoshi Kusumoto¹

1. Earthquake Research Institute, the University of Tokyo

In the annual open campus in Earthquake Research Institute, the University of Tokyo, students demonstrate several experiments related to geoscience phenomena, such as tsunamis, caldera collapse, seismic wave propagation or volcanic eruption. Among them, the tsunami experiment using water tank gets good reviews from audiences every year, because different processes of tsunami, such as including generation, propagation and run-up on coast, can be demonstrated in one tank.

In the field of tsunami science, the development of tsunami observation system is one of the biggest progresses. Several types of tsunami observation systems have been deployed, such as tide gauges on coast, offshore GPS buoys (e.g. the Ministry of Land, Infrastructure, Transport and Tourism), or offshore ocean bottom pressure (OBP) gauges (e.g. DONET by JAMSTEC, or S-net by NIED). They are useful for tsunami research and the real-time detection and prediction tsunami approaching on coastline. However, it seemed that these systems were not recognized well to the audiences of the open campus.

In the open campus in 2017, we equipped the water tank with tsunami measurement tools, buoy-type and ocean-pressure-gauge-type (OBP-type). The buoy-type measurement is composed of a styrene buoy guided by a vertical steel bar. By measuring the distance from roof to the buoy with an infrared distance sensor (GP2Y0E03), tsunami waves are detected as disturbance of electronic signals. On the other hand, the OBP-type pressure gauge is a air-pressure sensor (MIS-2500-015G) in a small plastic case filled with silicon oil, which is put on the bottom of the tank. By measuring water-pressure disturbance due to water height change, tsunami waves were detected. The tsunami signals are displayed to the audience in real time as electronic disturbances with a display (MR8847-01) in real time.

Public recognitions and understandings of tsunami observation system are important in terms of our geoscience activities and the disaster mitigation. The demonstration of experimental observation tools with miniaturized tsunami waves is useful to get higher recognition of the tsunami observation systems.

Keywords: tsunami experiment, ocean bottom pressure gauge, tide gauge, tsunami observation

(a) ポスターを用いた解説の様子



(b) 津波水槽を用いた実験の様子

