Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)

HDS26-05 Room:301B Time:May 20 17:15-17:30

A development of GPS tsunami meter —-A data communications experiment using ETS-VIII—-

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On 11th March 2011, Tohoku-Oki earthquake tsunami clarified two problems to be solved about the function of GPS tsunami meter. One is the technical development of the further offshore deployment of a GPS tsunami meter, and another is the avoidance of a risk of locating the tsunami information base station in an earthquake disaster area. The result of having examined these two subjects is reported.

In the former investigation, the GPS-FIX solution is obtained by the performed appropriate troposphere compensation for the 100 km baseline RTK-GPS method. Moreover, the positioning methods without reference data, the point precise variance detection method (PVD) and precise point positioning with ambiguity resolution method (PPP-AR), are effective tsunami observation without distance limitation for offshore deployment. These are proved by continuous experiment from April 2012 using the GPS tsunami meter at Muroto cape offshore.

In the latter investigation, communications satellite is useful for this subject. The data measured on GPS buoy is sent to the satellite, and is transported to the area without the earthquake disaster. The subject in satellite communication is how keep the gain for electric wave intensity on the condition of the GPS buoy, which moves with the sea level displacement and restrict the power supply. The communications satellite ETS-VIII (Kiku VIII) gives the solution which is proved by the experiment using the Muroto GPS buoy at Oct. 2012.

This work was supported by JSPS KAKENHI Scientific Research (S) 212210007.

Keywords: GPS tsunami meter, ETS-VIII, PVD, PPP-AR