

Accuracy of GPS-Acoustic seafloor geodetic observation evaluated by numerical simulation

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Hydrographic and Oceanographic Department, Japan Coast Guard (JHOD), has been carrying out seafloor geodetic observations with the GPS-Acoustic combination technique (GPS-A), in order to detect a displacement of a focal area of the interplate earthquake. For example, we detected coseismic displacements, long-term interseismic and postseismic deformations [e.g., Sato et al., 2011]. However, insufficient frequency of the observation (a few times per year) prevents us from detecting the short-term deformation due to slow slip events and time-dependent postseismic effects. Therefore, it is necessary to improve the accuracy and/or frequency of the observation under the condition of limited ship-time. For the purpose of improving the frequency, we tested the alternative survey lines to optimize the accuracy and geometrical simplicity simultaneously, using pseudo GPS-A data generated by the GPS-A simulator [Yokota et al., 2016]. This simulator can generate the pseudo observation data sets with any errors and obtain the pseudo positions of seafloor transponder by inversion analysis.

In this presentation, we report the results of the accuracy of the alternative survey line, comparing the results using actual observation data.

Keywords: seafloor geodetic observation, GPS-Acoustic combination technique