

Study for the efficient seafloor geodetic observation planning

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Japan Hydrographic and Oceanographic Department have been developing a system for precise seafloor geodetic observation with the GPS/Acoustic combination technique and deploying seafloor reference points on the landward slope along the Japan Trench and the Nankai Trough. The main purpose of seafloor geodetic observation is to estimate the crustal deformation velocity by observing the position of the seafloor reference points in the time series. We have succeeded in detecting seafloor motion associated with the subduction of the oceanic plate beneath to the continental plate and with the coseismic crustal deformation.

Recently, we have deployed nine new seafloor reference points along the Nankai Trough, in addition to the existing six points. It is necessary not only to monitor the existing points constantly but also to estimate the motion velocity of the new points as early as possible. Because the ship time is limited, we must design the observation plan which optimizes the observation time, precision and observation frequency. Thus, it is important to evaluate the estimated velocity data.

As positioning data increases, the estimated velocity converges to a constant value. Estimating convergent rates for the existing plan (actual data) and the various plans (numerically calculated data) enables us to evaluate the result. In this presentation, based on the result of the calculated convergent rate of velocity, we suggest the more efficient observation plans.

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