

## Results of sea-floor crustal deformation Monitoring at Kumano Basin

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Our research group performs monitoring of sea-floor crustal deformation with the system composed of the kinematic GPS positioning and the acoustic ranging at the three stations (KMN, KMS, and KME sites) at the Kumano Basin from 2004. We have already measured 16, 20, and 7 times at KMN, KMS, and KME sites, respectively. Firstly, we carried out the following procedure for improving the data quality before deriving site velocities:

- (1) Correction of travel-times of acoustic ranging wave
- (2) Removing the incorrect results of KGPS positioning
- (3) Removing the incorrect results of ship's attitude measurement

Next, we determine the sea-floor benchmark position for each epoch using the corrected dataset with fixing the configuration of sea-floor benchmark. We obtain the site velocities from the coordinate of each epoch through the robust estimation method (Tukey's Biweight estimation). The observation shows the steady horizontal displacements with relative to the Amurian Plate of 39 mm/yr in N75W direction, 43 mm/yr in N69W direction, and 42 mm/yr in N75W direction at KMN, KMS, and KME, respectively. The estimation errors of horizontal displacement are 5-10 mm/yr at all the sites. The estimated displacement vectors are almost consistent to the crustal displacement caused by the plate conversion between the Philippine Sea and Amurian Plates at the Nankai Trough.