

Development of the seafloor acoustic ranging system toward the cable network system

Yukihiro Osada[1]; Motoyuki Kido[1]; Hiromi Fujimoto[1]; Yoshiyuki Kaneda[2]

[1] RCPEV, Graduate School of Sci., Tohoku Univ.; [2] JAMSTEC,IFREE,DONET

We developed the a seafloor acoustic ranging system as a possible future application to monitoring seafloor crustal movement with DONET (Dense Ocean floor NETwork system) cable observatory system. In 2007 August we carried out an experiment to estimate the repeatability of acoustic measurement for this system. We deployed four PXP's (precision acoustic transponder) with about 600 m (M2-S1 baseline) and 920 m (M2-S2 base line) spacing at the depth of 2035 m on Kumano-nada. We plan to observe the acoustic measurement for 1 year. But we collect the data for 4 month because it had a trouble. The round trip travel time shows a variation with peak-to-peak amplitude of about 0.7 m in the range. It was confirmed that most of the variation could be explained by the change in sound speed estimated from measured temperature and pressure. The standard deviation in acoustic measurements is 1.5 cm on each baseline.