

Assessing strike-slip motion at the Shionomisaki Canyon along the Nankai oblique subduction zone using acoustic ranging system

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Nankai trough is known as an oblique subduction zone, and may have trench-parallel strike slip motion along the extent of the outer ridge at least in geological time scale. Tsuji et al. (2014) pointed out that the right-lateral strike slip motion at least in geological timescale is evident from the offset at the Shionomisaki Canyon truncating the trench-parallel linearment. We installed short baseline acoustic ranging system at this site to measure a possible offset to reveal whether such displacement is steady state phenomenon or episodic one. We deployed three acoustic units forming a triangle array with a dimension roughly equal to the depth (~3000m) in 2016 and just have recovered in 2019. The total observation period reached to ~2 years before the batteries were exhausted. The southern baseline of the array is on the same segment, while the northern baseline crossing the trench parallel linearment obliquely. If there were any strike skip motion during our observation period, shortening should be observed only for the northern baseline. All of the three units were recovered in Shinsei-maru cruise (KS19-02), and we confirmed that all data, acoustic traveltimes for ranging, temperature and pressure for sound speed correction, were available properly. Preliminary analysis shows no significant shortening for both the baseline. However scatter is still large to identify the real signal due to large temperature fluctuation beyond the usual correction. More complicated temperature correction considering the time-difference among the three temperature data have to be applied to remove the noise before we conclude the result.

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