

Middle Holocene changes in relative sea-level on western Shikoku Island, Japan

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Shikoku Island is situated 150 km northwest of the Nankai trough that has developed in response to the convergence of the subducting Philippine Sea Plate and overriding Eurasian Plate. This tectonism causes deformation of the island, megathrust earthquakes, and tsunamis. Shikoku Island experiences coseismic and interseismic deformation. The middle Holocene tectonics of the island are still poorly understood. Relative sea-level (RSL) changes indicated by coastal sediments potentially record seismic uplift and subsidence. To infer RSL changes between 8 and 4 cal. kyr BP, we studied Holocene ostracode assemblages from the SKM drill core in Sukumo, southwest Shikoku Island (Tsuji et al., 2018, JpGU, MIS11-P19), and from six cores in the northern part of the island (Yasuhara et al., 2005, *Paleo3*, 222, 285–312; Yasuhara and Seto, 2006, *Paleontol. Res.* 10, 99–116). To estimate paleo-water depth and RSL, we employed the ostracode assemblages and modern analog technique. The SKM core sediments are composed of conglomerate, ash, and mud chiefly. Its geological age was examined, using the ¹⁴C dating method (Nakanishi et al., 2019, *Radiocarbon*, 61, 1939–1950). The ostracode assemblages occur from mud sediments. They are divided into three biofacies, indicating the mud bottom of a central bay with influence of open-sea water during the period of 8.7–8.1 cal. kyr BP, a central bay with intensified influence of open-sea water in the interval of 8.1–7.4 cal. kyr BP, and the brackish condition of a bayhead during the period of 7.0–4.5 cal. kyr BP. The RSL decreases from +4.7 to -5.8 m in elevation between 8.0 and 7.0 cal. kyr BP, fluctuated between -5.8 and +8.8 m from 7.0 to 6.1 cal. kyr BP, and then gradually decreased to -2.4 m until 4.7 cal. kyr BP. The eustatic sea-level (ESL) changes of Okuno et al. (2014, *Quat. Sci. Rev.* 91, 42–61) indicates a gradual rise from -12 to -2 m in elevation in the period from 8 to 4.5 cal. kyr BP. Hence the RSL reflects uplift to 4.7 cal. kyr BP in the southwestern Shikoku Island, in contrast to north of Shikoku Island. In north of the island, the RSL were slightly lower than the ESL and increases in parallel to the ESL rise. The RSL changes reflect the subsidence between 8 and 4 cal. kyr BP. The differences in RSL across the island suggest tilting of the island, possibly due to convergence of the Philippine Sea Plate.

Keywords: Ostracoda, Nankai Trough, Tectonics