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Holocene environmental change in Kuji-gawa Lowland, Northeast Japan, with reference to vertical crustal movement

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There is an inconsistency that the Sanriku coast in Northeast Japan forearc has geologically uplifted and but has geodetically and seismologically subsided. In order to solve the paradox, we investigated Holocene lowland topography and geology in the mouth of Kuji-gawa of the central part of Sanirku coast and examined the Holocene vertical crustal movement, using lithofacies and diatom analysis and radiocarbon dating. The obtained results are as follows. 1) At least an emergent abrasion platform with unknown age is located at 1 m high above sea level, 2) Kuji-gawa lowland environmental chages; river mouth to bay around 10 ka, deltaic flat in 10-7.5 ka, lagoon in 7.5-7 ka and fluvial since 7 ka, 3) depicted relative sea-level curve suggests the complex history that the uplift component exceled before 7 ka and the subsidence component exceled after 7 ka, 4) The deposition and depth of the 6 ka Towada-chuseri tephra layers indicated the vertical uplift of 5 meters in late Holocene. Some of the uplift possibly results from a kind of intermittent co-earthquake movement demonstrated by the emergent coastal topography Further heightening chronological resolution relating to subtle environmental changes let us deeply understand the process and timing of such complex vertical crustal movement.

Keywords: Holocene, Sanriku coast, alluvial lowland, diatom analysis, paleoeinviroment, relative sea-level change