

Beppu Bay sediments: Potential palaeoenvironmental archives for a candidate auxiliary stratotype for Anthropocene-Holocene boundary

*Michinobu Kuwae¹, Yoshiaki Suzuki²

1. Center for Marine Environmental Studies, Ehime Univ., 2. Department of Earth Sciences, Faculty of Education and Integrated Arts and Sciences, Waseda Univ.

A markedly increasing influence of human activity on the Earth system since 1950s has gained attention as one of the notable turning points of Earth's history, which is noteworthy to propose the 'Anthropocene' as a potential new unit of the International Chronostratigraphic Chart which serves as the basis of the Geological Time Scale. Now is ongoing the definition and selection of the Global Boundary Stratotype Section and Point (GSSP) mainly by the Anthropocene Working Group (AWG), a working group of the Subcommission on Quaternary Stratigraphy (SQS) of the International Commission on Stratigraphy (ICS). There are several candidates of a suitable stratotype for hosting an Anthropocene GSSP, including ice core, tree-ring, and coral that record an increasing fallout signal of ^{14}C and ^{239}Pu as well as a rapid decrease in $\delta^{13}\text{C}$ during 1950s. However, since (1) radionuclide fallout did not have major biological or other widespread physical repercussions, (2) ice might disappear itself due to global warming, and (3) ^{14}C signal won't detect in 100,000 years or more, other stable auxiliary stratotypes and markers may be needed for the establishment of GSSP.

GSSPs previously ratified have often been established in marine sediments; anoxic marine sediments emerges as one of the candidates for Anthropocene auxiliary stratotypes (Waters et al., 2018). In anoxic marine sediments, there are the potential Anthropocene boundary markers, including microplastics, diatom and foraminifer assemblages, metals, organic contaminations, and spheroidal carbonaceous particles, which can be used to correlate globally. Several marine anoxic basins have been addressed for a candidate of auxiliary stratotype, such as Santa Barbara Basin, etc., but, an existence of a Japanese marine anoxic basin has not been well-known. Here we introduce laminated sediments in the anoxic Beppu Bay basin for a potential auxiliary stratotype of Anthropocene and discuss its recent progress of stratigraphy and advantage to propose the candidate, and future tasks to acquire a comprehensive dataset for establishment of the boundary.

Keywords: Anthropocene, Beppu Bay sediments, auxiliary stratotype