Depositional sequence of the Post-LGM incised-valley fill controlled by seismic crustal deformation and large-scale lahars: An example of SKM core obtained from the Sukumo coastal lowland along the Nankai Trough, Japan

*Futoshi Nanayama[1,2], Tatsuhiko Yamaguchi[3], Nakanishi Toshimichi[4], Tomohiro Tsuji[5], Michiharu Ikeda[5], Kondo Yasuo[6], Michiko Miwa[7], Shinji Sugiyama[8], Kazunari Kimura[9]

1. Geological Survey of Japan, AIST, 2. CWMD, Kumamoto University, 3. National Museum of Nature and Science, 4. Japan Atomic Energy Agency, 5. Shikoku Research Institute Inc., 6. Kochi University, 7. JAPEX Research Center, 8. Paleo Environment Research Center, 9. Naiba Ehime Branch

The characteristics of the post-LGM incised valley fills and the depositional sequence were examined the SKM core collected in the Sukumo coastal lowland, where is expected to huge seismic subsidence due to the Nankai Trough great earthquakes. Our sedimentological, radiocarbon dating and paleoenvironmental results are as bellows. Sediments of the SKM core clearly show a succession influenced by post-glacial sea level change. The Matsuda River incised valley was formed in LGM and filled by fluvial sand and gravels in late Pleistocene. After the postglacial transgression, sea level reached -30 m (a.s.l.) at 9.8 ka and the incised valley changed to an estuary environment. The sea level continued to rise and it became an inner bay mud bottom environment, and reaching a maximum water depth was at 7.5 ka. The 7.3 ka Kikai caldera eruption in southern Kyushu caused heavy K-Ah ash fall in southwestern Shikoku, and then large-scale lahars frequently occurred immediately after the ash fall because of the vicinity of volcanic source. After ash fall, the K-Ah secondary sediments rapidly deposited on the inner bay environment and caused forced regression. After 7.0 ka, the growth of the delta became active ahead of the other regions, which may be due to the large K-Ah ash fall. At 5 ka, the sea level reached + 2.5 m (a.s.l.) estimated by the Sukumo midden and this altitude is recognized as the Holocene marine limit in this area. The information on relative sea level change during the past 10000 years has revealed that the Sukumo Bay area has not subsided due to seismic crustal deformation.

AMS^{14}C dating was supported by JSPS KAKENHI Grant Number JP 18H01310.

Keywords: post-LGM incised valley fills, Upper Pleistocene to Holocene, sequence stratigraphy, AMS14C age, sedimentary environment, Sukumo coastal lowland

