

Late Holocene uplifts of Shikine Island on the northern Zenisu Ridge off Central Japan

IMAI, Takafumi^{1*}; KITAMURA, Akihisa²; ITO, Mami¹; MIYAIRI, Yosuke³; YOKOYAMA, Yusuke³; YAMAGUCHI, Toshiyuki⁴; SUGIHARA, Kaoru⁵; ANDO, Masataka⁶; MITSUI, Yuta²; KIM, Haeng yoong⁷; NAKAMURA, Mamoru⁸

¹Institute of Geosciences, Shizuoka University, ²Faculty of Science, Shizuoka University, ³Atmosphere and Ocean Research Institute, University of Tokyo, ⁴Faculty of Science, Kanagawa University, ⁵Center for Environmental Biology and Ecosystem Studies, National Institute for Environmental Studies, ⁶Center for Integrated Research and Education of Natural hazards, Shizuoka University, ⁷Hot Springs Research Institute of Kanagawa Prefecture, ⁸Faculty of Science, Ryukyu University

Emerged marine sessile assemblages are observed on Shikine Island, located on the northern Zenisu Ridge in the northern Philippine Sea plate, Japan. A previous study obtained ¹⁴C ages of 1400 years BP from these assemblages by the liquid scintillation counter method and concluded that approximately 3 m of uplift occurred suddenly at 1400 years BP (Ota et al., 1983). The present study examined emerged assemblages at four sites on the island, and dated the assemblages at all four sites, and well as the assemblages reported by Ota et al. (1983), by accelerator mass spectrometry (AMS) ¹⁴C dating. The results show that all the specimens are younger than AD 950. The difference in ages between the previous work and this study reflects contamination by dead carbon of the specimens measured in the previous work. By combining the our ¹⁴C age data of the emerged sessile assemblages and faunal analysis of present-day rocky intertidal sessile assemblages around the study area, we suggest that uplift events took place at AD 1120-1400, AD 1530-1890, and AD 1858-1950. The amount of uplifts were estimated to be 0.4-1.8 m. It is likely that the modern uplift was due to an earthquake which occurred along south Zenisu fault system at AD 1890. The two older uplift events were caused by either fault motion or igneous activity. Although the timing of the uplift event at AD 1530-1890 corresponds to AD 1605 Keicho earthquake, our fault model did not support relationship between the uplift event and the earthquake. In conclusion, this study do not support possibility that tsunami source areas of AD 1498 Meio and 1605 Keicho tsunamis were located at the northern Zenisu Ridge.

Keywords: Shikine Island, Emerged marine sessile assemblages, Late Holocene, uplifts, ¹⁴C dating