
[JJ] Evening Poster | M (Multidisciplinary and Interdisciplinary) | M-IS Intersection

[M-IS11] tsunami deposit

convener: Tetsuya Shinozaki (Center for Research in Isotopes and Environmental Dynamics (CRiED), University of Tsukuba), Takashi Chiba (Maritime Disaster Prevention Center), Daisuke Ishimura (首都大学東京大学院都市環境科学研究科地理学教室)

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The 2011 off the Pacific coast of Tohoku Earthquake and tsunami have an influence on the development of tsunami deposit research. After the tsunami, a lot of findings have been reported on various research fields. However, identification criteria of the tsunami deposit are not yet established. Moreover, it is still uncertain how to use the tsunami deposit in the risk assessment. In this session, we welcome researches from all aspect of sedimentary records of modern and paleo tsunamis both onshore and offshore, and numerical and experimental modeling studies for risk assessment. In addition, we also welcome other event deposits, such as flooding and storm surge, that they are considered to be important for discrimination of tsunami deposit.

[MIS11-P21] Paleotsunami history at Minna Island, southern Ryukyus, Japan

*Ryosuke Fujita¹, Kazuhisa Goto¹, Yasufumi Iryu¹, Kunimasa Miyagi, Tomoya Abe² (1.TOHOKU University, 2.Geological Survey of Japan)

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In Miyako Islands, many studies have been conducted on paleotsunami deposits. However, paleotsunami history is not well delineated because Holocene deposits including tsunami deposits are thin. It is known that a tsunami boulder transported by 1771 Meiwa tsunami occurs in a pasture at 7 m elevation on Minna Island, Miyako Islands (Kato, 2000 ; Goto et al., 2010). Because the boulder is large (3.8 m long, 3.1 m wide, and 2.3 m high) and heavy (about 33 tons), there seems to be no possibility that it was artificially placed. As it is well known that boulders are deposited on sandy tsunami deposits due to the differences in their moving velocity depending on the grain size (Yamada et al., 2014), sandy tsunami deposits, transported by the 1771 Meiwa and older tsunamis, were expected to be recovered immediately beneath the boulder. So we investigated the sandy deposit in the trench near the boulder in order to delineate paleotsunami history in Miyako Islands.

In this study, we discovered two event layers each composed of gravelly sand in the trench: upper Sand-A and lower Sand-B. Grain size and composition of these layers indicate that they were not formed by storm waves, but by tsunamis Sand-A and the boulder were deposited simultaneously at the 1771 Meiwa tsunami. Radiocarbon dates of a coral and a shell indicate that Sand-B was deposited by a tsunami for the last 700~800 years. This date is consistent with the dates of tsunami deposits known in Yaeyama Islands (e.g. Ando et al., 2018). Our data indicates that the tsunamis were large enough to cause serious damage to both Miyako Islands and Yaeyama Islands.