Environmental change over the past 2000 years in Lake Kawahara and Ryuuoo in southern Japan

*Cho Ara¹, Kota Katsuki², Jonathan D Woodruff³, Kaoru Kashima¹, Hannah Elizabeth Baranes³, Caroline Ladlow³

1. Kyushu University, 2. Shimane University, 3. University of Massachusetts

The lagoon environment is strongly controlled by relative sea-level (RSL) fluctuation and climate change. The sediment in the lagoon in Japan was continuously deposited and provide high-resolution results of paleoclimate change and RSL fluctuation. Furthermore, the typhoon and tsunami deposit were reconstructed from Lake Kawahara and Ryuuoo. Therefore, those sediment core is good enough to reconstruct the change of climate and sea-level. The environmental change was reconstructed from Lake Kawahara and Lake Ryuuoo based on diatom assemblage, sedimentary facies, and radiocarbon dating. The drastic environmental change happened approximately 1000 years ago. Marine diatom disappeared from Lake Kawahara and the lithology changed from laminated layer to gray clay with sand layer from Lake Ryuuoo. It can indicate the RSL fell down until the past 1000 years. Although freshwater diatom already dominated in Lake Ryuuoo before C.E 1000, the bromine (Br) which is an indicator of marine organic carbon content and salinity suggests the lake was still brackish lagoon. Therefore, both lakes were affected by RSL until C.E 1000. After C.E 1000, the environment of both lakes changed to freshwater conditions. Between C.E 1000 and 1700, the total diatom increased in Lake Kawahara and the and layers were deposited frequently in Lake Ryuuoo. It might be generated by a high amount of precipitation induced by the intense summer monsoon, which is related to the positive phase of the Asain-Pacific Oscillation (APO). After C.E 1700, both lakes changed to the modern condition

Keywords: diatom, environment change, lagoon