

Precise age determination of the marginal sea sediments recovered by IODP Expedition 346 "Asian Monsoon"

SAGAWA, Takuya^{1*}; TADA, Ryuji²; IKEHARA, Ken³; IRINO, Tomohisa⁴; ITAKI, Takuya³; SUGISAKI, Saiko²; KUBOTA, Yoshimi⁵; KARASUDA, Akinori²; CHUANG, Xuan⁶; NAGAHASHI, Yoshitaka⁷; SATOGUCHI, Yasufumi⁸; NAKAGAWA, Takeshi⁹; MURRAY, Richard W.¹⁰; ALVAREZ-ZARIKIAN, Carlos A.¹¹; EXPEDITION 346, Scientists¹¹

¹Faculty of Sciences, Kyushu University, ²Department of Earth and Planetary Science, Graduate School of Science, The University of Tokyo, ³Institute of Geology and Geoinformation, National Institute of Advanced Industrial Science and Techn, ⁴Faculty of Environmental Earth Science, Hokkaido University, ⁵National Museum of Nature and Science, ⁶School of Ocean and Earth Science, Univ. of Southampton, ⁷Fukushima University, ⁸Lake Biwa Museum, ⁹Ritsumeikan University, ¹⁰Earth & Environment, Boston University, USA, ¹¹Integrated Ocean Discovery Program, Texas A&M University

High quality sediment sequences are recovered from seven sites in the marginal sea surrounded by the Eurasian Continent, Japanese islands, and Korean Peninsula during the Integrated Ocean Drilling Program Expedition 346 "Asian Monsoon." The sediment sequences from deeper sites are characterized by alternation of dark-light color layers of varied thickness from centimeter to tens of centimeter. Because the dark-light alternation pattern is common to all sites, correlations of the dark-light alternation among sites will provide us precise isochronous surfaces on millennial time-scale. We are trying to construct high precision age model by combining correlations of sediment sequences and several kinds of age constraints, i.e. magnetostratigraphy, biostratigraphy, and tephrochronology. When this is achieved, the well-dated sedimentary records along depth and latitudinal transects will tell us a new insight concerning the East Asian monsoon system during the Quaternary.

Time relationship between the dark layer deposition in the marginal sea and well-dated paleoclimate records is also a key to understand the climate system in terms of the cause-and-effect relationship. In order to investigate this, we propose to construct precise age model by correlating marine sediment off the Wakasa Bay and the varve sediment of Lake Suigetsu using tephra layers as well as invisible "micro tephra" preserved in both sediments. Recently, macrofossil radiocarbon data from the varve sediment of Lake Suigetsu is adopted into the calibration curve IntCal13. Therefore, the correlation between marine and Suigetsu sediments will allow us to investigate time relationship of the dark layer deposition with Dansgaard-Oeschger cycles.

Keywords: Integrated Ocean Drilling Program, Expedition 346, East Asian monsoon, Dansgaard-Oeschger Cycle