

第四紀日本海（日本海盆、大和海盆、対馬海盆）における高解像度古気候観測網構築とその応用可能性

The potential for a high-resolution, Quaternary paleo-observatory network in the Japan, Yamato, and Ulleung Basins

*多田 隆治¹、入野 智久²、池原 研³、烏田 明典¹、芦 松²、関 有紗¹、杉崎 彩子³、シュアン チャン⁴、板木 拓也³、佐川 拓也⁵、久保田 好美⁶、マレー リチャード W⁷、アルバレツォザリキアン カルロス A⁸、Exp 346 Scientists

*Ryuji Tada¹, Tomohisa Irino², Ken Ikehara³, Akinori Karasuda¹, Song Lu², Arisa Seki¹, Saiko Sugisaki³, Chang Xuan⁴, Takuya Itaki³, Takuya Sagawa⁵, Yoshimi Kubota⁶, Richard W Murray⁷, Carlos A Alvarez Zarikian⁸, Exp 346 Scientists

1.東京大学大学院理学系研究科地球惑星科学専攻、2.北海道大学大学院地球環境科学研究院地球圏科学専攻、3.産業技術総合研究所地質情報研究部門、4.サザンプトン大学海洋地球研究科、5.金沢大学大学院自然科学研究科自然システム学専攻、6.国立科学博物館地学研究部、7.ボストン大学地球環境学部、8.テキサスA&M大学国際深海科学掘削計画

1.Department of Earth and Planetary Science, Graduate School of Science, The University of Tokyo, 2.Graduate School of Environmental Science, Division of Earth System Science, Hokkaido University, 3.Research Institute of Geology and Geoinformation, Geological Survey of Japan, 4.School of Ocean and Earth Science, University of Southampton, 5.School of Natural System, Graduate School of Natural Science and Technology, Kanazawa University, 6.Department of Geology and Paleontology, National Museum of Nature and Science, 7.Earth and Environment, Boston University, 8.International Ocean Discovery Program, Texas A & M University

The Quaternary hemi-pelagic sediments of the Japan, Yamato, and Ulleung (JYU) basins are characterized by centimeter- to decimeter-scale alternations of dark (org-C rich) and light (org-C poor) clay to silty clay that are known to reflect variations in the East Asian summer monsoon (EASM) in association with millennial-scale abrupt climatic changes known as Dansgaard-Oeschger Cycles (DOC). These dark layers can be traced across the deeper (>500 m water depth) parts of the JYU basins, and therefore can be used as synchronous markers.

In the summer of 2013, IODP Expedition 346 drilled 7 sites in the JYU basins, and the 6 sites deeper than 800 m water depth are characterized by dark and light layering. Intercalation of the dark layers show millennial-scale variations in dark and light layers started c. 1.45 Ma with over 250 dark layers deposited repeatedly since then. In addition, approximately 100 tephra layers have been correlated across these 6 sites, and as a result we have obtained over 300 time slices with an average resolution of 5 k.y. covering the entire JYU basins.

We have constructed an age model for the Quaternary interval at Site U1424 off Akita using 10 geomagnetic polarity boundaries and 12 marker tephra layers as time constraints. This was then tuned using the gamma ray attenuation density (GRA) profile, which reflects diatom abundance, to the LR04 $\delta^{18}O$ stack to develop an age model of higher resolution and precision. This high-resolution and high-precision age model is projected to the other 5 sites using the correlation of dark layers and tephra layers. In this way, we have constructed a high-resolution paleo-observatory network from which to assess leads and lags in northern hemisphere climate. We will present a few examples of how to utilize the network.

キーワード：高解像度、第四紀、古気候観測網、統合国際深海掘削計画第346次航海

Keywords: High-resolution, Quaternary, paleo-observatory network, IODP Expedition 346

