

High-resolution paleo-observatory network: Strategy and Speculation

TADA, Ryuji^{1*} ; NAKAGAWA, Takeshi² ; IKEHARA, Ken³ ; YAMAMOTO, Masanobu⁴

¹Graduate School of Science, the University of Tokyo, ²Ritsumeikan University, ³AIST, ⁴Faculty of Environmental Earth Science, Hokkaido University

Climatic changes are manifestation of the dynamic behavior of the earth system, and observing changes in various spatio-temporal scales is essential to understand the dynamics and implications of the changes. In this respect, paleoclimatic studies are expected to provide the data that can be used to this purpose. Progress of paleo-science enabled us to produce high-resolution time series data of various proxies that affords us to discuss the timing and nature of paleoclimatic changes. However, it is still difficult to correlate such paleo-records obtained from different sites with high temporal precision and high temporal resolution. Consequently, it remains difficult to reconstruct spatio-temporal structures of climate changes, with high spatial resolution data with wide areal coverage. In addition, kinds of proxies and their quality are different from site to site, and inter-calibration efforts are rarely conducted.

Here we propose a systematic approach to 1) retrieve continuous and high-quality paleoclimatic/paleoceanographic archives of Quaternary at key sites both from land and under the sea, 2) correlate these archives from multiple sites with high temporal precision and resolution to construct paleo-observatory network, 3) date archives with high precision and resolution to construct the master age model that can be projected throughout the network, 4) analyze the archives to extract high resolution and precision inter-calibrated paleoclimatic/paleoceanographic parameters, and 5) compile the data to construct the raw database that can be used for data assimilation and reanalysis. Utility of such data sets will be discussed.

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