

Chronostratigraphic big data assimilation to characterize the Late Cenozoic warming episodes

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Various paleoceanographic big data from deep sea cores, including the core logging data, age models and multi proxy data, are now accessible basically through the online databases at the IODP websites and others. However, data quality and resolutions of data set from different sites are different each other and taxonomic concept used to establish onboard age model are changing and changing, and also the Geologic Time Scale has been revised several times for the last half Century. So, it is important to assimilate chronostratigraphic data with precise and accurate stratigraphic correlation, and it is essential for better understanding of geologic Earth history including such as the past warming episodes during Late Cenozoic Ice Age, which will be important as an analogue of the upcoming global warming during the 21st Century and will provide us insight to survive warming world.

Our research project on the chronostratigraphic data assimilation is one of three subprojects of the Joint Usage/Research Project on the Super Warm Earth: Understanding Global Warming Processes from Paleoclimatological Big Data (a.k.a. "Big Data Project"). Objectives of the projects are to reevaluate and reassess the Cenozoic magnetobiochronology by using legacy cores at Kochi Core Center (KCC) and cores from on-going IODP expeditions, to establish high quality and high-resolution paleoceanographic data sets in order to reveal tempo and mode of the global warming under the >400ppm CO₂ emission, and to understand biotic response to those environmental changes from cored materials.

The Workshop on Paleoclimatological Big Data: Chronostratigraphic data assimilation held on 20th February, a total of 33 professionals in various research fields from 5 countries (NZ, UK, France, Germany, Japan) had been meet together at KCC/CMCR, Kochi University, in order to share our experiences on chronostratigraphic, taxonomic and genetic big data, and to discuss on those data assimilation and future collaboration to integrate those big data sets and pass it to the next generation. In addition, we also discussed on the following issues to establish an open science platform for researches related to those scientific drillings; 1) Sample and data traceability, 2) Utilizing legacy cores for research and education, and 3) AI-IoT opportunity for the IODP core repositories.

Keywords: DSDP, ODP, IODP Legacy core, Cenozoic, magnetobiostratigraphy, chronostratigraphy, KCC