

A preliminary report of the study on Kaiike, Kamikoshiki Island: as a model ocean of Cretaceous Ocean Anoxic Event

Kaiike Research Group Oguri Kazumasa, # Kazumasa Oguri[1]

[1] IFREE, JAMSTEC

??stratified ocean having anoxic bottom water in the Cretaceous. This event was well known as Ocean Anoxic Event (OAE). In such environment, there accumulated black shale or sapropel sediments. Recently, biomarker that indicates cyanobacteria is found in the OAE sediment (Ohkouchi et al., 1997). It suggests that bacterial contribution for material cycle was higher in the period. Moreover, sulfur isotope evidence shows that sediment-water interface (SWI) was euxinic environment, suggesting that oxic-anoxic boundary was in the water column. If this boundary was in the euphotic zone like modern Black Sea environment, many photosynthetic bacteria can be lived there. This phenomenon is sometimes seen in the modern lagoonal lakes.

The aim of our study is to understand past anoxic ocean, especially how to record the geological information from water column at SWI. It is hard to reconstruct OAE environments, however, we can study Model Ocean which environment is similar to the Cretaceous ocean. The Lake Kaiike, Kamikoshiki Island in Kagoshima Prefecture is considered to be similar to the OAE environment, because the lake water consists of saline and brackish water so that the lake shows strong stratification in all the seasons and thus, there is a euxinic environment at the bottom lake water. Moreover, there exist many photosynthetic bacteria at oxic-anoxic boundary in the water column. So that the bacterial contributions play an important role on the material cycles in the lake.

Our survey was carried out during 2001/Oct./26 to Nov./1, and we collected lake water using Niskin sampler and undisturbed sediment core with SCUBA diving. We also recorded water column and SWI environments using underwater video camera system. These data indicated that oxic-anoxic boundary was in 4.5-5m depths from lake surface, and there existed extremely high abundance of photosynthetic bacteria (*Chromatium* sp.). At the SWI, black to red colored bacterial mat was covered the huge area, and thin bacterial sheets were seen from SWI to depth at 3 cm. The bacterial sheets in the sediment have different characteristics, suggesting that different bacteria are living in every sheet. In the deeper part of sediment, very fine laminations are seen. This structure is possible to be made by bacterial activity from SWI to the depth to 3 cm.

We would like to report the preliminary results of the Kaiike survey carried out in the last year, considering to the questions -What is the environment of the OAE, and what produced and recorded (or erased) into sediments?-.

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Kaiike Research Group is:

Kazumasa Oguri, Masashi Itou, Saburo Sakai, Toshio Hisamitsu, Satoshi Hirano, Hiroshi Kitazato (IFREE, JAMSTEC), Yoshikazu Koizumi (Tokyo Metropolitan Univ.), Masafumi Murayama (Kochi Univ.) and Asahiko Taira (OD21, JAMSTEC)