

Theoretical constraints on ocean anoxic events and photic zone anoxia

Kazumi Ozaki[1]; Eiichi Tajika[1]; Shigeo Tajima[1]

[1] Dept. Earth Planet. Sci., Univ. of Tokyo

We developed a new model for ocean biogeochemical cycles which can be applied to ocean anoxic events(OAEs).The model is one-dimensional and includes chemical reactions under anoxic condition,such as organic matter decomposition due to nitrate and sulfate ions,and also oxidation of ammonium ion and hydrogen sulfide due to oxygen,in addition to the processes of geochemical cycles under the normal ocean condition.

Condition required for the ocean anoxia is obtained from the model in terms of the rates of an ocean upwelling and nutrient supply to the ocean from the continents due to chemical weathering.We define ocean anoxia divided into the intermediate water anoxia and the deep water anoxia based on the ocean depth under anoxic condition.

Recently,evidence for photic zone anoxia/euxinia have been found during Permian/Triassic boundary and Cenomanian/Turonian boundary.We are trying to obtain such a condition for the chemocline upward excursions which might have occurred during these OAEs.