Changes in C37 alkenones recorded in sediment on the continental shelf of the Bering Sea: record of Emiliania huxleyi bloom

Naomi Harada[1]; Kazumasa Oguri[2]; Osamu Tadai[3]; Susumu Konno[4]; Richard W. Jordan[5]; Kota Katsuki[6]; Kyung-Hoon Shin[7]; Hisashi Narita[8]; Makio Honda[9]; Takashi Kikuchi[10]

[1] JAMSTEC, IORGC; [2] IFREE, JAMSTEC; [3] MWJ; [4] Interactive Symbiosphere Sciences, Yamagata Univ.; [5] Dept. of Earth & Environmental Sci., Yamagata Univ.; [6] PNU; [7] Dept. of Environ. Mrine Sci., Hanyang Univ.; [8] Div. Oceanogr., Tokai Univ.; [9] MIO, JAMSTEC; [10] IORGC/JAMSTEC

Flourishes of coccolithophores can be detected by ocean color imagery with data from the satellite-borne Sea-viewing Wide Field-of-view sensor SeaWiFs that was launched in 1997. Thus, temporally and spatially large-scale blooms of *Emiliania huxleyi* (*E. huxleyi*) have been distinguished annually in the eastern continental shelf of the Bering Sea since 1997. In 1997, a combination of atmospheric mechanisms produced summer weather anomalies such as calm winds, clear skies, and warm air temperature over the Bering Sea and the weather anomalies caused depletion of the subpycnocline nutrient reservoir. After depletion of nitrate and silicate, a sustained (more than 4-month-long) bloom of *E. huxleyi* was observed. Because of the speed and magnitude with which parts of the Bering Sea ecosystem responded to changes in atmospheric factors, and because a bloom of the coccolithophorid, *Coccolithus pelagicus* has also been detected in the northeastern Atlantic Ocean off Iceland every year since 1997, the appearance of an *E. huxleyi* bloom in the Bering Sea could be related to atmospherically forced decadal oscillations or global factors. We have investigated spatial expansion and temporal development of *E. huxleyi* bloom on the continental shelf in the Bering Sea by using a biomarker of E. huxleyi, C_{37} alkenones flux recorded in the sediments during the past 100 years. As a result, the *E. huxleyi* bloom had been prominent since 1970's at latest during the last 100 years. In this presentation, we will discuss the relationship between *E. huxleyi* bloom and activity of Aleutian low, and also changes in diatom assemblages, and will show a hypothesis to be a trigger occurring the *E. huxleyi* bloom in the Bering Sea. In addition, we will introduce a new plan of sediment trap observation to detect changing the ecology and biogeochemical cycles in the Arctic Ocean.