Japan Geoscience Union Meeting 2012
(May 20-25 2012 at Makuhari, Chiba, Japan)

SEM21-P06 Room:Convention Hall Time:May 25 15:30-16:45

Seasonal variations of iron sulfide and oxide in the Hiroshima bay

KAWAMURA, Noriko[1*], Yuka Amano[2], ISHIKAWA, Naoto[3]

[1]Japan Coast Guard Academy, Liberal Arts, [2]Japan Coast Guard Academy, [3]Graduate School of Human and Environment

Frequent outbreaks of red tide have been reported since 1970 in the Hiroshima bay, and the red tide is caused by the bloom of dinoflagellates. Iron is an essential element for dinoflagellates. Iron is supplied as bivalent or trivalent ions, or as oxides and sulfides from lands to sea. For damage predictions of red tide, it is important to research the iron distribution in the bay. Therefore we investigated iron sulfide and oxide in the sediments and seawater in this study. Sediments of 5 cm in depth and surface and bottom waters were taken from three sites in the Hiroshima Bay during 2011. We performed rock magnetic analyses on the sediments and suspended solids in surface water, and also measured the concentrations of carbon, nitrogen and sulfur. Measurements of dissolved iron concentration in bottom water were conducted. The SIRM of suspended solids varied with pH in the surface water, and showed the minimum value during summer. It is implied that iron in the liquid phase is richer in the surface water during this season. The presence of magnetite ($Fe_3 3O_4$) and hematite (Fe_2O_3) were recognized in all analyzed sediment samples, whereas greigite (Fe_3S_4) appeared at the sites with rich in sulfur in the sediments. The decrease of magnetization from 280 to 320 Celsius degree was unclear in the sediments taken in August. Magnetic grain size in the sediments decreased and iron concentration increased in the bottom waters in August. It is inferred that iron oxides were dissolved and greigite was replaced to pyrite (FeS_2) under an anoxic condition.

Keywords: iron oxide, iron sulfide, rock magnetism, C/N ratio, marine sediments, suspended solids