
[JJ] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-OS Ocean Sciences & Ocean Environment

[A-OS19]chemical and biological oceanography

convener: Tsuneo Ono (Fisheries Research Agency), Namiha Yamada (National Institute of Advanced Industrial Science and Technology), Hiroaki Saito (東京大学大気海洋研究所, 共同), Shin-ichi Ito (Atmosphere and Ocean Research Institute, The University of Tokyo)

Tue. May 22, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

This session invites presentations on a wide variety of topics related to chemical and biological oceanography.

[AOS19-P03] Potential influence of ocean acidification on deep-sea Fe-Mn nodules: An assessment by using artificial seawater

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With the continuous rise in CO₂ emissions, the pH of seawater may decrease extensively in the coming centuries. Deep-sea environments are more vulnerable to decreasing pH since sediments in deep oceans below the carbonate compensation depth (CCD) are often completely devoid of carbonate particles. In order to assess the potential risk of metal release from deep-sea sediments, the mobility of elements from ferromanganese (Fe-Mn) nodules and pelagic clays was examined. We adjusted the pH of seawaters into predicted values by CO₂-induced pH regulation system. Two geochemical reference samples (JMn-1 and JMS-2) were treated with these seawaters to investigate the possible metal releasing from deep-sea sediments in response to pH changes. We found that the solid phases in JMn-1 and JMS-2 affect the pH of the ASW through the reaction between the surface hydroxyl groups and the charged ions/complexes in the ASW. According to our result, the variation in the element concentrations in seawater were mainly affected by sorption-desorption processes, which are primarily determined by changes in the surface charge of the solid phase of deep-sea sediments and ion species in seawaters. The possible releasing of heavy metal such as Mn, Cu, Zn, Cd and toxic elements such as As and Ag should be taken into consideration when assessing the influence of pH changing on deep-sea Fe-Mn nodules and red clays.