

Evaluation of uncertainty of nutrient measurements

*Daisuke Sasano¹, Michio Aoyama^{2,3}, Toshiya Nakano⁴, Naoki Nagai¹

1. Japan Meteorological Agency, 2. University of Tsukuba, 3. JAMSTEC, 4. Nagasaki Meteorological Office

Nutrient is one of the fundamental parameters in the biogeochemistry of the ocean. It reflects biogeochemical cycle through biological activities. Because changes in nutrient concentrations reflect changes in the physical and biological processes, it is useful as a tracer to detect the changes in the ocean. However, because nutrient data includes a systematic error in analysis due to the lack of comparability among stations and cruises, it is difficult to detect the difference of nutrient in the ocean. Nutrient certified reference materials (CRMs) have been available since about 10 years ago. With measurement of CRMs, the comparability can be ensured among stations and cruises. Additionally, uncertainty of measurement of nutrient can be evaluated. Through comparison of nutrient data with uncertainty, it is possible to detect a significant change in nutrient concentration. The Japan Meteorological Agency has measured nutrient concentrations in ocean observations. Since April 2010, nutrient CRMs have been analyzed at all stations to ensure comparability between cruises and stations. In this presentation, we show our quality control in the nutrient measurement, and discuss the factors of uncertainty. Additionally, we examine nutrients change using our data acquired in the Japan Sea, where significant oxygen decrease has been observed recently.

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