海水中の全炭酸濃度の測定：船上測定の信頼性向上の試み

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Abstract

To detect slight changes of oceanic carbon cycle in response to atmospheric CO_2 increase, high precise measurements of oceanic CO_2-system properties are necessary. For the purpose, we examined to improve a coulometer (model 5012,UIC), which is generally used to detect a temporal increase of total dissolved inorganic carbon (TCO_2) in the ocean. In addition, we produced in-house reference materials (RM), which are traceable to certified reference materials (CRM), to monitor performance of a TCO_2 measuring system.

For the coulometer improvement, we improved the photometric detection part of a coulometer to minimize variations of light source intensity. The repeatability was improved to be 0.03%(relative standard deviation), which was previously 0.08%. Measurements of RMs showed no statistically significant changes over approx. 2 years. The RM was judged to be useful as a standard for monitoring TCO_2, It is also useful for reducing systematic erros of TCO_2 values, which are often found in measurements between stations to stations, and cruises to cruises.