

2019年夏季のケーブダンレー沖におけるクロロフルオロカーボンと六フッ化硫黄の観測結果速報

Preliminary observation report on chlorofluorocarbons (CFCs) and sulfur hexafluoride (SF₆) off the Cape Darnley in the summer of 2019

*大橋 良彦¹、川合 美千代¹、佐々木 建一²、熊川 小綾花¹、田村 尚之¹、大島 慶一郎³

*Yoshihiko Ohashi¹, Michiyo Yamamoto-Kawai¹, Kenichi Sasaki², Sayaka Kumakawa¹, Naoyuki Tamura¹, Kay I. Ohshima³

1. 東京海洋大学、2. 海洋研究開発機構、3. 北海道大学低温科学研究所

1. Tokyo University of Marine Science and Technology, 2. Japan Agency for Marine-Earth Science and Technology, 3. Institute of Low Temperature Science, Hokkaido University

Antarctic Bottom Water (AABW) occupies the largest volume of water mass in the global ocean and its formation is a key process of global ocean circulation. Ohshima et al. (2013) found newly formed AABW off the Cape Darnley (Cape Darnley Bottom Water; CDBW). However, little is known about the circulation of CDBW and its time scale. To quantitatively understand the spread and circulation of CDBW, it is effective to use the chemical tracer such as chlorofluorocarbons (CFCs) and sulfur hexafluoride (SF₆). We carried out CTD observation and water sampling off the Cape Darnley in the summer of 2019. Water sampling was performed from ocean surface to the bottom at 16 Stations (along the Wild Canyon and its west). CFCs and SF₆ of the samples were measured by an analytical system developed at JAMSTEC based on Bullister and Wisegarver (2008). The concentrations of CFCs and SF₆ were significantly high near the surface (< 100 m) (CFC11 > 2.0 pmol kg⁻¹; CFC12 > 1.2 pmol kg⁻¹; SF₆ > 1.4 fmol kg⁻¹). They showed a minimum at depths of 800–1500 m and then increased to the bottom. The relatively high concentrations of CFCs and SF₆ near the bottom, together with the low temperature (< -0.4°C), reflects the spread of CDBW. At the presentation, we will discuss mean age and circulation of CDBW.

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