

## **Rapid gas exchange in the Amundsen Sea, Antarctica: Insights from radiocarbon analysis**

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Radiocarbon isotope content of dissolved inorganic carbon (DIC) in the Amundsen Sea was examined at three sites of different sea surface conditions. Radiocarbon content of DIC showed intrusion of modified Circumpolar Deep Water (MCDW) to the Amundsen Shelf along the bottom and its subsequent modification in the upper layer. In the central Amundsen Sea Polynya, radiocarbon content was significantly higher than in the sea ice zone and near the Dotson Ice Shelf, implying rapid absorption of atmospheric CO<sub>2</sub> in this region. Gas exchange rate estimation based on radiocarbon mass balance will be discussed.