

## Abstract Preview - Step 3/4

- print version -

---

Session: OS-7 Atmosphere-Ice-Ocean interactions in the Polar Regions

Polar program: None

**Title: PIPERS: Fall-winter observations of dissolved iron in the Ross Sea polynyas**

Author(s): [Peter Sedwick](mailto:psedwick@odu.edu)<sup>1</sup> (psedwick@odu.edu), Stephen Ackley<sup>2</sup>, Michael Dinniman<sup>3</sup>, Brice Loose<sup>4</sup>, Casey O'Hara<sup>1</sup>, Bettina Sohst<sup>1</sup>, Sharon Stammerjohn<sup>5</sup>

Institute(s): <sup>1</sup>Old Dominion University, OEAS, Norfolk, United States, <sup>2</sup>University of Texas San Antonio, Geosciences, San Antonio, United States, <sup>3</sup>Old Dominion University, CCPO, Norfolk, United States, <sup>4</sup>University of Rhode Island/Island, GSO, Kingston, United States, <sup>5</sup>University of Colorado Boulder, INSTAAR, Boulder, United States

**Text:** Primary production on the Ross Sea continental shelf is thought to be limited by the supply of dissolved iron (DFe), which is derived from melting of sea ice and glacial ice, intrusion and upwelling of Circumpolar Deep Water, and vertical resupply from the benthos. The latter will be most important during winter, when katabatic winds drive sea ice formation and convective overturn in coastal polynyas, although the impact of these processes on the water-column distribution of DFe has not been previously documented. As part of the project Polynyas and Ice Production Evolution in the Ross Sea (PIPERS), we collected hydrographic data and water-column samples for DFe analysis in the Terra Nova Bay (TNB) and Ross Ice Shelf (RIS) polynyas during April-June 2017 (fall-early winter). We observed several intense katabatic wind events in the TNB polynya, where the surface mixed layer varied from ~250 m to ~600 m depth over lateral distances of ~10 km. Stations occupied in the RIS polynya, where weather conditions were less extreme, revealed surface mixed layer depths < 300 m. These observations and our preliminary DFe data suggest that convective overturn progresses slowly and episodically over winter, perhaps earlier in the TNB polynya, where there is also evidence of substantial DFe inputs associated with Ice Shelf Water.

**Preferred Presentation Type: Poster Presentation**

---

Conference: POLAR 2018 · Abstract: A-938-0060-01418 · Status: Draft

[Print](#)

[Back](#)