

Abstract Preview - Step 3/4

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Title: Physical and biogeochemical properties of winter sea ice during PIPERS, Ross Sea

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Text: The PIPERS (Polynyas, Ice Production and its seasonal Evolution in the Ross Sea) cruise on N. B. Palmer into the early winter Ross Sea took place between April 11 and June 14 2017. The main objective was to investigate the Atmosphere-Ice-Ocean interactions in the Terra Nova Bay and Ross Ice Shelf coastal polynyas. The cruise however extended these polynyas studies to a series of ice stations transects "in" and "out" of the Ross Sea. It involved a large set of multidisciplinary activities aiming at the detailed documentation of processes across the ocean-ice-atmosphere continuum. This paper presents the basic physical (Temperature, bulk salinity, brine volume, Rayleigh number) and biogeochemical properties (water stable isotopes, Chl-a) of the sea ice cover at 27 ice stations. The cruise encountered unusual sea-ice conditions in the 2016/2017 season, where exceptionally low sea-ice summer extent was recorded Antarctica-wide as early as November 2016, which stayed below previous records of the satellite era for the rest of the austral summer. It is also a year where active primary production was evidenced within the Ross Sea and Terra Nova Bay Polynya, a few weeks before the cruise took place. We will show how these conditions have potentially affected (or not) the physical and biogeochemical properties of the sea ice cover in the Central Ross Sea and discuss the contrasts with the sea ice properties of the Terra Nova Bay polynya and the MIZ.

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