

Interactive comment on “Large-scale temperature and salinity changes in the upper Canadian basin of the Arctic Ocean at a time of a drastic Arctic Oscillation inversion” by P. Bourgain et al.

Anonymous Referee #3

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General comments:

The authors compare water-mass properties and freshwater content between 2008 and 2010 in the Canadian Basin. They argue shifts in the freshwater distribution that they claim are a result of a shift in the AO index. They also claim a cooler Near Surface Temperature Maximum in 2010, shifts in Pacific Water distribution and little change in the Atlantic Water layer. The authors introduce a lot of material that is only superficially described. As a consequence, it is difficult to discern new robust results that are different from what has already been published.

The Arctic Oscillation needs to be defined and set in context with the Arctic Ocean

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Oscillation index (see Proshutinsky and Johnson, 1997). The introduction appears incomplete and needs many more citations and explanations of the physics of how the large-scale atmospheric forcing is well known to influence water-mass properties and Arctic wide freshwater distribution. See Proshutinsky et al., 2009, McPhee et al., 2009. How do the recent changes relate to the shift in large-scale forcing discussed by Timmermans et al., 2011? How do the maps of freshwater distribution differ from those already published?

Specific comments:

Abstract: Ice-Tethered Profilers, not Platforms

Data section 2.2 needs a lot of improvement. Why give detail on the Chinese cruises and not for the others? What does this mean: "(ITP-1 profile on 10-July to mid October 2008 and 2010)"? ITP 1 did not profile in 2008 - 2010.

Paragraph 10: "seasonal variability might intervene in the differences observed from one year to another": The authors never say how they rule this out as being the cause of perceived interannual variability in the NSTM.

Paragraph 25: State how you define the NSTM.

The authors state they use a definition of PWW to have temperatures below -1.4C , but Figure 7 shows temperatures above this value.

There are many grammatical errors in this manuscript.

Interactive comment on Ocean Sci. Discuss., 9, 2001, 2012.

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