

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

Received and published: 8 June 2012

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

C535

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.