

General comments

This paper is presenting valuable information about the interannual variability in fresh water transport through Fram Strait with straightforward writing. There are, however, are two major and some minor issues that I like the authors to consider.

Specific comments

Major issues;

The authors state that there is a very stable relation (-1:2) between sea ice meltwater (IMW/IFW) and meteoric water (MW) for all three years, and that this indicates the Eurasian Arctic as the origin of these freshwater. I doubt the use of the ratio to identify the source region because of the following reasons:

Firstly, most of estimations of MW and IMW/IFW for 2005 are based on reconstructed value of $\delta^{18}\text{O}$ by piecewise linear regressions of salinity- $\delta^{18}\text{O}$ observed in 2004. This means that relative contributions of MW and IMW/IFW were assumed to be constant for waters in 2005, and to have the same ratio as the mean for 2004. Therefore, it is only to be expected to see a stable relation between them in these two years.

Secondly, in 1998 there was an influence of Pacific Water (PW) in the Fram Strait as author discusses in Appendix A. PW cannot originate in Eurasian Arctic.

Lastly, the authors mention that ratio of MW and IMW/IFW is fairly constant throughout the Eurasian basins in 2005 (Jones et al., 2008a). However, from Figure 4 of Jones et al. (2008a), I estimate the ratio varies from -1/3 to +1/2 in the region east of Lomonosov Ridge.

As discussed in Appendix A, there are large biases in estimates of MW and IMW/IFW transports (~20%) due to the reconstruction of $\delta^{18}\text{O}$ for 2005 and to the presence of PW for 1998. Taking these biases into account, volume transports of MW in Figure 6 and Table 1 should be lowered by 20% and 25% for 2005 and 1998, respectively. Resulting values for {1998, 2004, 2005} are {83, 100, 120} for solution A and {120, 130, 150} for solution B. This indicates a gradual increase in MW transport rather than “Only in 2005, as shown by observations, a high amount of MW passed the 97N latitude” as mentioned in the conclusion section (p599-line 19). I recommend authors to carefully treat these errors in their discussions and to move contents of Appendix A into the main text, because they are very important to interpolate the presented results.

Minor comments:

The use of IMW and IFW is confusing. At first, these remained me Inventories or Integrated heights of Meteoric Water and total Fresh Water, respectively, as have been used in previous works. “SIM”, instead of IMW, has been used. It is not a bad idea to name water containing brine, but not better be IFW.

583-15; A comma after “2001)” should be a period.

583-14; Holfort and Hange (2005) is cited to represent a research work estimating the volume transport through Fram Strait based on mooring observations covered only east of

8W. However, they did have a mooring on the shelf west of 8W, and they did not estimate volume transport.

586; The authors are not using data from 1997.

598-14; Yamamoto-Kawai et al. (2008) are based on data taken in 2003 and 2004, not 2000-2002.

Fig2; Dots are too small to see.

596-1; “tha” should be “that”

596-16; 2005 should be 1998

598-22; years years