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Ocean Science Discussions

Interactive comment on "Atmospheric forcing of DSOW salinity" *by* J. Holfort and T. Albrecht

Anonymous Referee #1

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This paper attempts to make a connection between atmospheric forcing and the temporal evolution of Denmark Strait Overflow Water (DSOW). It does so by creating a smoothed and interpolated time series of DSOW and carrying out some statistical analysis to find meaningful correlations with various atmospheric indices. They conclude that the wind field over the Denmark Strait region is correlated with changes in salinity over short time scales (months to years), but not over longer time scales. They propose the hypothesis that this is due to mixing in the DSOW formation region but do not really assess that hypothesis. They speculate about causes of the long term changes in salinity but do not present any evidence to assess possible mechanisms.

The basic idea of the study is a good one, and the results could be interesting. But in its present form, the paper is not of sufficient quality for final publication in Ocean Science. Its has one rather weak conclusion, and rather more unsubstantiated speculation. It is strangely organised, with methods, results and discussions mixed up in poorly-named

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sub-sections. It is full of spelling mistakes and grammatical errors. Some figures and captions are of poor quality. For the manuscript to be suitable for publication it needs to be re-written with more scientific content and a more readable structure.

My detailed comments follow.

1. The authors have been very careless with their checking of grammar and spelling. In the Abstract the third sentence is nonsensical; in the Introduction I counted 6 basic errors, in the Data section I counted 8 errors. I'm tempted to stop reading right there. If the authors cannot accurately copy edit their own text then I do not have much confidence in the reliability of their results. I recognise that the authors do not have English as a first language, but they could run spell-checks and make sure cited authors are correctly spelled,

2. The text generally is poorly written and unnecessarily verbose. The first paragraph of section 3 could be re-written in a couple of sentences without reference to approaches they took before settling on a final isopycnal.

3. Salinity does not have units - the authors should remove any "PSU".

4. Section 3 would better if it focused on methods, assumptions and estimated errors in the DSOW time series and the atmospheric time series. It should explain the methods for EOF analysis (including expanding those acronyms). Then a better description of the variability of the DSOW could be given in a new section.

5. The Figures and their captions are of rather poor quality. Figure 2 and Figure 5 could be combined. Figure 3 is illegible; better symbols are required. The figure captions for Fig 6 is inadequate - a better description of the green line is required.

6. The discussion in section 4 regarding the usefulness or otherwise of correlations should be put in a new discussion section; this Atmospheric forcing section should focus on the results of the correlations. The two hypotheses for a causal mechanism should also go into a Discussion section.

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7. The Conclusion is weak. First the authors say how "a few years", then "about several months". Be more specific. This one conclusion does not merit a whole paper to itself. The paper needs more content.

8. The title should not contain an acronym.

Interactive comment on Ocean Sci. Discuss., 3, 1661, 2006.