

Interactive comment on “The Sub-Polar Gyre Index – a community data set for application in fisheries and environment research” by Barbara Berx and Mark R. Payne

Anonymous Referee #1

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The authors present a new dataset for general release that provides an index of North Atlantic subpolar gyre circulation. The index has been presented in journal articles in the past, but never freely distributed or updated before now. The index itself should prove very useful for applied research and monitoring, and for those who are not able to re-create the index from the original data. The manuscript gives a clear description of how the index is computed, assessing its sensitivity to the area over which is calculated, and the effects of the lengthening time series.

The manuscript is clearly written and provides good and appropriate figures. Overall my view is that it is suitable for publication with some revisions as follows.

In Section 3 you state that the index is EOF1 and explains 26.2% of the variance.

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It would be useful here to have a fuller explanation of what the EOF is in terms of the physical changes in the SPG (and cite some papers that are the origins of the information). For example, what does "weak" mean in this context? Can you plot composites or examples of what the SSH anomaly looks like under negative/weak conditions vs positive or "strong" conditions? Or SST to show the "westward retraction" (what does this retraction refer to?).

It would be interesting to know how much of the variance is explained by the second/third mode and what those patterns might represent? Could they be useful indicators of a different aspect of the SPG characteristics?

On Line 125 you cite some numbers referring to Figure 4a, but I can't see what they refer to. In the same paragraph you discuss the correlations between the indices over several different regions. Do the correlations decrease if you use de-trended series? This might highlight the differences between the subpolar and wider regions.

I wasn't very convinced by section 3.2, the sensitivity to length of time series. I think you are saying that you need a decent length of series to get a robust result. The statement on line 136 suggests that users need always to access the latest version of the index to use the "most accurate representation of sub polar dynamics", but then go on to say that we have now reached a series of sufficient length (which suggests that at some point that first statement stopped being true). Anyway it looks to me as though the length of the series is not a problem even for the shorter series; if those indices in Fig 5 were all overlain instead of being slightly offset at the start, their apparent difference would look even smaller. And since the value in the index is not its absolute value, but relative periods of high or low (as you say in the next paragraph), I think I would summarise this section as showing the form of the index is not at all affected by the number of years of data used.

In section 3.3 I noticed that you refer to your new index in Fig 7 as "yearly" data when there is clearly data at sub-annual time scales included in the red curve. In the text

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you described the data as annually filtered - you just need to be consistent with the terminology in Figure 7, or ideally, would present actual yearly values from your new index.

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