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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 #2

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An index that has been used in other papers is discussed and a new update is prvided with an analysis of the sensitivity of its estimations, based on published/publically available SSH mapped products.

This is probably a valubale effort and this index will be used by some. However, I would like to see major improvements in the paper for the folling reasons:

Among major reasons provided for this index work is a recommandation from a working group (WGOOFE) of ICES. This does not seem enough motivation, or at least this is not argued enough.

How will this particular index help the Fisheries work? and how is it complementary to

other indices that are published in delayed mode (based for example on atmospheric variables (NAO, EA, Arctic Oscillation...) or on CPR survey data...). Or, to take an other example, on the time series and ocean analysis published by an other ICE working group (WGOH)?

On the other hand, one can guess that this index might be interesting for fisheries work, as this community may not be used to manipulating large gridded datasets (such as the ones provided by Copernicus Marine Service, for example T-S 3D analyses either from data (for example ISAS or ARMOR products) or model simulations).

I am also wondering about the interest to provide an index in a rather delayed mode (my understanding of the paper is that the 13-month smoothed index that is recommanded ends in May 2015; on the web-site, the monthly non-smoothed files end up in December 2015, with the next 6-month release from Aviso just published this week). Is there a commitment of the Scottish Institute to update the index? Or should it be defered once publication done to the Copernicus Marine Service (there is index work planed to be provided, but I dont think that it includes this index?); There also near-real time altimetric products that might be used to extend the time series to near-present (but this requires more work).

Mabye in the itroduction, it could also be informative to add bibliography, for example from modeling work on this index such as in the Gao Yong-Qi and Yuh Lei 2008 's paper or on variability in the subpolar gyre and connection to subtropical gyre?

I am also wondering whether this first EOF of SSH is the only part of the SSH mapped data that might be interesting to the fisheries community (or climate community). If this is research in progress, it could be worth adding indices of intergyre transport and different gyre intensity... Combining with other indices that can be derived from easily accessible indices could als obe helpful, but this requires more work (it could be an average T-S or density 0-1000m of the subpolar gyre?)

Then, different sensitivity tests are presented to show how stable and reliable is the

index chosen. Work is presented on tests of size of domain and smoothing. I dont see tests on whether normalizing the variance in each (spatial) grid point before EOFA could have an effect, whether. ANother point to test would be whether removing a time series of spatial mean before doing the EOF/PC analysis has an impact. There are also tests on time series length, butthey all include the first part of the time series, where the largest changes occur in PC1. This is not very informative, and more sophisticated tests to provide information on the stability of the pattern. This could be done by extracting EOF1 by randomly selecting subsets of years, and providing tests of significance (how, does the proportion of variance explained by EOF/PC1 changes, whether patterns and regressed time series vary or not...). Even, doing the analysis separately on first and second halves of the record could be instructive (instead of figure 5)

Minor comment. The schematic circulation of Figure 1could be modified/updated. Not that great from a physical point of view.

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