

## ***Interactive comment on “A volumetric census of the Barents Sea in a changing climate” by Sylvain Watelet et al.***

**Sylvain Watelet et al.**

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We would like to thank the Referee #1 for the time spent in the review of our work and its positive assessment. Hereafter, we answer to the comments:

Referee 1: I suggest to use a same time period (1970-2010) for the analysis. In the Fig.2, it is seen that the salinity data is available before 1970. The author should explain, why the data before 1970 was not used in the analysis.

Reply: There is no salinity data available on the Barents Sea before 1970 except a few in Autumn, as shown on Fig. 3., while the Fig. 2 only refers to temperature. This is confirmed on the error graphs of both the Barents Sea (Fig. 6b) and the Most Reliable Area (Fig. S2). As the temperature data is also present before 1970 and after 2010,

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we discarded only 2016 for our analyses on the MRA, due to the huge error estimate this particular year. The temperature analysis between 1970-2010 is however easy to visualise on our graphs, so we do not think removing 1965-1969 and 2011-2015 is useful. For greater clarity, we will include this reasoning in the manuscript.

Referee 1: Avoid such phrasal verb "First of all" or "indeed" in the scientific texts.

Reply: We will remove these phrasal verbs from the manuscript.

Referee 1: Line 100: In the text is written that the temperature data was available for a time range 1965-2016. But in this line, the time range was changed to 1965-2015.

Reply: The atlas is available on 4 seasons between 1965 and 2016, which are defined as follows: November to January for winter, February to April for spring, May to July for summer, and August to October for autumn. The first season is thus November 1964 to January 1965, the last being August to October 2016. Considering this, we preferred to make the average between spring 1965 and winter 2015-2016, in order to have only full years running from February to January. Otherwise, there would be two biases involved: no data in November and December 1964 and no data for November and December 2016. For greater clarity, we will include this reasoning in the manuscript.

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