

## ***Interactive comment on “Physical processes mediating climate change impacts on regional sea ecosystems” by J. Holt et al.***

**Anonymous Referee #2**

Received and published: 27 March 2014

The manuscript focus on the effect of climate change on regional seas, motivated by the fact that global climate models have a too coarse resolution to answer many important questions. To illustrate this 3 different models have been used focusing on six different areas from the Barents to the Black Sea, areas with quite different characteristics. The main focus has been on changes in primary production.

Saying this, the manuscript is lacking a clear focus. Section 2 is a kind of review of different mechanisms important for the areas in question. This is interesting reading, but seems only loosely motivated from the rest. Section 3 gives some example results of the models, with reference to a MEECE report for more details. While there are three models and 6 areas available, the focus is mainly on one of them (POLCOMS-ERSEM). Section 4 discuss different strategies for doing downscaling experiments,

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again with one example for POLCOMS-ERSEM.

As the manuscript appears it seems like three independent parts put together. There is a lack of focus combining the review in Section 2 to the results in Section 3. If the discussion in Section 4 are to be interesting more experiments are to be done discussing the different approaches. Since most of the paper is only focusing on one model, I also question why the other two are included.

To conclude, the ms in its present state is unfocused, without a clear motivation, and contains three independent parts hardly without any coupling. It should therefore be rejected in its present state.

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Interactive comment on Biogeosciences Discuss., 11, 1909, 2014.