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Discussions
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Interactive comment on "Ocean modelling for aquaculture and fisheries in Irish waters" *by* T. Dabrowski et al.

Anonymous Referee #2

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The paper by Dabrowski et al. presents several oceanographic model products to support fisheries and aquaculture in Irish marine waters. The paper properly addresses the scope of the Ocean Science special issue on operational oceanography in support of blue and green growth.

At the present stage, the paper seems to be a list of oceanographic model products, and does not give a comprehensive overview and discussion of the operational system they have implemented at the Marine Institute. Among the several products and model results presented, some appear mature and have already been published, whereas others look preliminary and need for a more detailed presentation and validation (see specific comments). Then, a summary table with the list of the products should be prepared. The table could contain the following information: a short description of

the products; the models where the products are derived from; the frequency and location/resolution of products; the level of reliability and the specific metrics used to validate the products; the target users. The table should be presented in a discussion section that compares and reviews the presented products (see specific comments on the "conclusion" section.) Further, validation of operational products is an important step to guarantee a high level of confidence of model results that are used in support of blue growth decisions. The choice of the correct metrics (parametric vs non parametric statistics, contingency tables, expert judgment, GODAE/MERSE class metrics) for operational products is a presently debated issue. Given the richness of the products presented and the broad experience, the authors have the opportunity to contribute to the discussion about the most appropriate metrics for operational oceanography and about the level of reliability of the operational products serving the blue growth management. The authors have given some indications in the different sections of the paper, however a specific section dedicated to this topic, in which metrics and level of reliability of the products presented are compared and commented, would be strongly appreciated.

Other comments on the specific sections are reported below:

3.1-2 "Shellfish growth and carrying capacity" and "Shellfish microbial contamination" Pag1191 line 20-21: Are the North-East Atlantic biogeochemical model and the NE_Atlantic model different? How? Which kind of coupling are they using? Some more details are needed. The list of open questions at the end of the two sections (page 1192 line 17-22 and page 1193 lines 16-20) remains unexplored in the paper. These could be moved in a discussion section, and the answers should be given on the basis of the potentiality of the presented products. Since Figures 2 and 3 are already published, the authors could decide whether to cite directly them or to modify them presenting some novel aspects.

3.3 "HAB warming" This section presents a well-developed set of products, however a more accurate presentation of the validation would be appreciated. A contingency

table and an analysis of the factors causing the errors would help in understanding Figure 5. Page 1195, line 26: how downwelling and upwelling events are defined? Page 1196 lines 5-15: It is not clear what is generated by the present modeling system and what is from other sources. Please clarify.

3.4 "Offshore aquaculture". These products seem very preliminary. Authors should explore more in detail the potentiality of their suitability model for aquaculture site selection. The suitability model could be linked to a specific aquaculture industry; and new specific indexes (new specific layers of the GIS-based model) should be produced for different type of aquaculture industries. Results at the present stage look too generic and poorly informative. Further, the wave model is only briefly introduced in sec. 2; its results should be shown and validated. Finally, authors could draw the locations of existing off-shore aquaculture sites in Fig. 6-7 and discuss the level of agreement and the errors between model suitability and real data.

3.5 "Cross-contamination of farms" Some validation of the hydrodynamic Connemara model could be shown. It would be interesting to see some other examples (and validations) of this product other than that already shown by Jackson et al., 2012. In particular, has this model been used in any contamination events since 2012? Which were the results? Page 1198, line 16: why 14 days?

3.6 "Products for fisheries. " O'Sullivan et al., 2014, and Casal et al., 2015 are not ISI publications. Some more details on these products should be shown, as well as their validation.

4 "Conclusion section" Page 1201, line 8-14. The feedback and continuous improvement of the HAB product is not shown. Please provide a description of the process of participation of users (how are their feedbacks gathered? and how are new features implemented after that?). This looks like a very interesting aspect of the use of products for blue growth management.

Page 1201 line 21: ERDDAP is only mentioned. A description of this potentially useful

tool would be appreciated.

Page 1201 from lines 22- to the end. This part looks like a too generic dissertation. The paper lacks a discussion about the presented list of products. As commented earlier, a discussion section is needed. Some possible questions that could find answer in this discussion section could be: Which is the level of reliability of the presented products? Which products are already mature for supporting blue growth policies, and which are not? Why? What is missing? Which are the main requests raised by the Irish aquaculture and fisheries users/industry that the present models can answer and which are not? Which observing systems/modeling systems/ modeling crossvalidation activities are needed to provide high-quality operational oceanographic services and products in the Irish (eventually European) marine systems? Which validation techniques are the most appropriate for the different type of products?

Finally, the conclusions are missing a clear take home message matured from the many model products, applications and derived services described in the paper.

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