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Ocean Science Discussions

Interactive comment on "NEMO on the shelf: assessment of the Iberia-Biscay-Ireland configuration" *by* C. Maraldi et al.

Anonymous Referee #2

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Comments OS IBIROOS Scientific Significance This paper focuses on the Consistency verification process applied to a regional high resolution (1/36th degree or ∼2 km) ocean model developed for running regional ocean forecasts under the My Ocean program. This paper significantly furthers a framework for formal understanding and benchmarking how well an ocean model configuration performs with respect to reproducing observed oceanographic features. The approach to assessment of model skill at the model development stage can be a bit hap hazard. It's nice to see a paper that formalises this approach. Regional ocean modelling is particularly important for marine end users, as most of them operate in shelf and near shore regions. This work is a strong stepping stone towards future regional ocean modelling development needed such as improved bathymetry, improved coastal altimetry products (SWOT), improved high resolution winds and improved assessment of representativety of in-situ

observations. It will be very interesting to see in the future, when a data reanalysis on the 1/36 IBIROOs system is applied for the standard year herein, to see how well the data assimilation system improves the general regional ocean circulation as well as the instantaneous assessment of ocean state.

Science Quality

The tables presented by the authors provide a very honest picture of the performance of the IBIROOS system. Table 2 is particularly impressive by benchmarking the transport estimates against observations along with the reference for each observation. A lot of work has gone into this paper for the systematic review of the model system performance in reproducing observed oceanographic features in the domain. Overall the paper is a powerful template to follow for future model development work as well as model evaluation work.

Presentation Quality

The paper is easy to read. There may be a bit of tightening of the sentences needed where some appear vague and may require inside knowledge of the My Ocean program and this project to fully understand the meaning. Clarifications are suggested below. The authors are clearly familiar with the My Ocean program, but the readers may not be. Most of the clarification of text is concentrated in the first part of the paper where explanations are given on the approach and methods used. The latter part of the paper, results, discussion, is very well written.

P85 L5-6: "The increasing number of users over this region demands that good estimates and forecasts of marine variables are available in order to support the development of these activities." Comment: This sentence is confusing. Are we referring to the users of the ocean demanding these forecasts, or are we referring to with so many "competing" users in one location, availability of the ocean forecasts allows these uses to better co-exist together and be more efficient.

P86 L20: " This is clearly not research, since not much new is learned about the ocean itself, but is an essential task adopting a scientific methodology". Comment: Better to focus on what this paper is rather then what it is not Suggestion: This is applied research that develops a scientific framework and methodology for improving ocean model configurations at the development stage for use in basic research or operations.

P86 L23: " Part of the approach adopted in this paper is inspired by past work (e.g. Holt and James, 2001; Holt et al., 2001, 2005; Sotillo et al., 2007), and part follows the specific needs of this work or the availability of data. ".

Comment: Disjointed sentence and meaning Suggestion: This paper's approach is inspired partly by (Holt and James, 2001; Holt et al., 2001, 2005; Sotillo et al., 2007), partly by the needs of this project, and partly by available observational data for this project.

P87 L1: "For MyOcean-related reasons, we concentrate on the year 2008." Comment: this is a bit vague in justification. Suggestion: To better collaborate and meet My Ocean objectives, we focus on evaluating the model configuration during calendar year 2008.

P88 L21: "The slopes of z_ surfaces remain however small so that the procedure does not give rise to significant errors, and in any case, much lower than with terrain following coordinates." Comment: Authors are comparing apples with oranges (slopes and coordinates)... Suggestion: The use of z* coordinates reduces computational error significantly compared to terrain following coordinates with z* surfaces having very faint slopes.

P89 Line 5 " A part from these, other parameters as well as model equations strictly follow those of Warner et al. (2005) and will not be repeated here." Comment: 1) You may want to reword the sentence and put it at the beginning of the paragraph. There are too many ideas in this sentence. I think the idea is that : The model turbulent mixing scheme uses parameterisation and equations from Warner et al. (2005) unless mentioned explicitly here. 2) Furthermore, the next sentence although related to vertical

turbulence, talks about boundary conditions and it should start a new paragraph.

P94: L 23 At 33 major rivers mouths (shown in Fig. 2a), climatological monthly flow-rates are prescribed."

Suggestion: Change order of sentence. "Climatological monthly flow-rates are prescribed for 33 river mouth locations"

Interactive comment on Ocean Sci. Discuss., 10, 83, 2013.