

Interactive comment on “S2P3-R (v1.0): a framework for efficient regional modelling of physical and biological structures and processes in shelf seas” by R. Marsh et al.

Anonymous Referee #1

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One main comment, which I think is fundamental. I like the model system presented but the model system is based on the S2P3 modelling system. This already exists and is published elsewhere. The title and text outline “the provision of a practical tool for linking theory and observations”, whereas reading this I would argue that you are providing an evaluation based on a number of case-study examples. I would agree that this is useful and important but it is not clear what is novel about the S2P3-R framework apart from some source code changes and implementation in differing domains. If there is no other changes I would present the study differently or I would highlight the differences between the S2P3-R and S2P3 more explicitly.

Generally though a well written paper I found informative. I only have issues with the
C216

framework context, which may not really be that much of a concern for the GMD format compared to other journals.

13: what is meant by realistic geographical domains as I find this ambiguous? 14: does the –R actually mean anything? Reanalysis? Again the significance of S2P3-R over the S2P3 model. 36: The S2P3 does provide an efficient tool for addressing numerous scientific questions but I would argue choice of model depends on the question. For example, if your question concerns lateral advective processes, you require a different type of model. Practicality would not be an issue, more what modelling tool is required. 40: Something simple in the text to clarify the 1D nature of S2P3, which will make the transition to 3D later in the intro clearer. 44: exaggerates the problem I have with the text. If this information is on the website, why do I need to read this paper? What is the novelty of the framework stated in the title? 51: I don't agree with the way this is written. The physics you are describing can be implemented, and is implemented elsewhere. Granted there is a practicality to implementing fine-scale physics operationally but it is not that this model can do a better job, which is how a general reader could understand this sentence. If you disagree with differing responses in the simulations, I would expect to see a figure demonstrating this. 59: repeated link to the Jon Sharples website, the first reference doesn't seem necessary if you didn't have the earlier quote. 64/72: I understand the importance of S2P3 as an educational tool, but two references to this in two consecutive paragraphs could be streamlined. 91: “very little changed” can be better phrased 178: “aborpton” 184: I don't think it's correct to use colons in a list manner like this? 233: grammar - comma placements 247: the extension of S2P3 is something for the discussion 254: SCM not defined 259: CTD not defined 271: “temperature for each domain” 273: and the more coastal Scotland domain was for climate and ecosystem changes as well? 278: “emphasised” mixed anglo-americian spelling 280: there seems no context to go with the more coastal North Sea simulations compared to the other three simulations 308: rework sentence 376: “round. In particular the Irish Sea and parts of the English Channel are consistent. . .” 381: temperatures? 383: “locations, artefacts can be introduced to the forcing. This depends on...” 395:

C217

where nutrients are 405: split the sentence up 443: limitation 476: There is also scope..
515: Here, seasonal cycles. . . 523: “while simulated each year separately”?

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