

Interactive comment on “The UKC2 regional coupled environmental prediction system” by Huw W. Lewis et al.

Anonymous Referee #1

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This paper is a good description of the different components of the UKC2 regional coupled prediction system. It is quite honest on what has implemented but also what still needs to be done (and the list is not short). The attempt at validating the system with respect to observations indicate the potential of the system. I will however deplore the very lengthy case by case statical analysis that does not get the message across, is more than likely statistical non significant because of the the short samples and the in inherent errors in the observations

Comments and notes:

page 3, line 19: add Bertin et al. 2015 to your list. This paper show a nice example when the impact of the coupling of the ocean and the wave can be expected to have large impact and another case when it is not. Xavier Bertin, Kai Li, Aron Roland, Jean-

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Raymond Bidlot. 2015: The contribution of short-waves in storm surges: Two case studies in the Bay of Biscay. Continental Shelf Research 96, 1-15.

page 5, line 7. When referencing Breivik et al., it should be noted that this piece of work is mostly about how a wave model can alter surface fluxes and provide information on the Stokes drift. It does not however cover other effects such as the wave radiation stress, the impact of wave orbital motion on the bottom stress (see for instance Bertin et al. 2015)

There is some discussions later on addressing the issue of coupling more often than every hour, but how will handle atmospheric fluxes that are modulated by the wave model to be later passed to the ocean model. Do you have de facto a time lag of two hours between what the atmosphere produces and what the ocean sees. Is passing instantaneous fields the right thing to do then, or should there be some averaging over the coupling time steps?

Page 6, line 25, with the surface current part of the boundary condition (5), the surface stress will be altered and in response the whole surface wind profile will adapt. Lower surface stress usually implies smoother flow and stronger 10m winds (even though the actual stress acting on the ocean surface is less) and vice versa. This has implication when forcing the waves and the oceans.

Page 7, line 20. add: τ_{hf} is tabulated beforehand based on the assumption that for high frequencies the stress is in the wind direction and the spectral shape is known (f^{-5})

Page 7, line 27: the value 0.0095 is not an universal constant and it should be noted that it can be used as a tuning parameter in order to get the mean value of the Charnock and hence the mean behaviour of the drag coefficient to fit to observation (Edson et al. 2013)

Section 4.2: what happened to all wave observations from the North Platforms (see

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Andy Saulters)?

page 27, line 33: COWAST -> COAWST

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