Geoscientific

Model Development

Discussions

[GMDD]

Interactive

comment

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

Anonymous Referee #2

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Recommendation: Paper "The UKC2 regional coupled environmental prediction system" by Huw Lewis et al. is a thorough (if not yet exhaustive) and well-written presentation of a new fully coupled regional operational setup that deserves to be published after a minor revision.

Apart from agreeing with the authors that there is a lot be done I am left with few remarks.

The work presents several case studies performed using various implementations of atmosphere-land-ocean-wave modeling setups with different levels of coupling between the modeling system components, along with estimates of influence of each specific coupling interaction, as compared to the control (i.e. not coupled) setup. Data assimilation was not implemented in any of the modeling setups. The paper shows

(and admits) that two-way coupling will not solve all the modeling issues but is nevertheless, at least in the UK case, worth pursuing on regional scales.

Such analyses of the impact of various types of coupling are surely of interest to various modeling groups around the globe. The description in the paper is sufficient to allow, at least in principle, reproducibility of simulations to modelers working with OASIS or other kinds of coupled setups (like COAWST, for example).

General comments: In the future, it would be worth simulating longer time windows to improve the robustness of the statistics and check for possible model drifts, especially in the coupled systems.

Specific comments: P8 L15-20: the authors state the formulas for computing sensible (13) and latent fluxes (14) but they do not define the turbulent exchange coefficients or explain how they were calculated (or perhaps i missed this.). How does the atmospheric model compute the fluxes? This should be explicitly included since only the fluxes (and not the bulk quantities) are exchanged during the coupling.

FIGURE 2: Table 1 is very informative and i would suggest that Figure 2 is explicitly made consistent with it. For example: it is clear from Table 1 that SST is being sent from the ocean to the atmosphere in the coupled setups. However, the ARROW indicating the SST feedback to the atmosphere is missing in Figure 2 b). The same holds for Charnock parameter and roughness length in Figure 2 a) and SSH in Figure 2 c). Perhaps this is my problem but i lost some time over this during first read.

P28 L25: COWAST → COAWST

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