

Interactive comment on “On the wind stress formulation over shallow waters in atmospheric models” by P. A. Jiménez and J. Dudhia

H. Weller (Editor)

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Many thanks for the revised version of the manuscript. The revisions and your responses are interesting but I am afraid that I am not convinced that you have addressed our concerns. I am still concerned about the following:

1. The new wind-stress formulation, as given in eqn (3) is a fit to a very limited amount of data. It is now clear from the revised manuscript and your responses that this formulation was not derived. Fitting relationships like this is of course a necessary activity, but fits which are recommended for widespread use should be fit to a very large and varied amount of data. You describe how this fit is done in your response to comment 6 "results from the different simulations were plotted in a percentile-percentile diagram, like the one on Fig. 1. Different values of z_0 fitted the observations better in different

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wind ranges from which we derived the linear relationship". But you did not give this description in the paper. This appears to be a fit just for one grid box, not for shallow seas in general.

2. Please clarify, is u^* calculated by the PBL parameterization?
3. Fig 2 confirms the reviewer's comment that the Charnock and Edson formulation is at the low end whereas your new formulation is at the high end of the spectrum. Although the 2nd derivative of the relationship does look more accurate for the new formulation.
4. In order to test sensitivity to resolution, you undertook a highly simplified experiment which a uniform wind profile, you kept the first model level the same and you did not present these results in the paper. I am not surprised that the sensitivity to resolution is low for a uniform wind profile.

I would like to get a second opinion from reviewer 2, particularly as the topic of this paper is not my area of expertise, so I am designating this as "Further Review with Referees". But my current opinion is that, having gone through two rounds of revisions already, the requested changes are never going to be made and I anticipate rejecting the paper.

Interactive comment on Geosci. Model Dev. Discuss., 7, 9063, 2014.