

## ***Interactive comment on “Wind-wave amplification mechanisms: possible models for steep wave events in finite depth” by P. Montalvo et al.***

### **Anonymous Referee #2**

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The paper provides very interesting insights on the evolution wind forcing of water waves in finite and shallow waters.

Among the results, it provides an extension of Miles' theory for the prediction of wave growth in intermediate and shallow water. Then, the Jeffery's sheltering mechanism, and the related wave growth, is reformulated to let appear new finite depth parameters. A comprehensive comparison between these mechanisms is presented. Finally, an extension of the NLS equation in intermediate depth under weak wind forcing is derived. The paper is really interesting, and I recommend its publication after minor revisions. However, few comments remain:

- The most important comment I can formulate concerns the introduction. Some-C1039

how, the whole introduction deals with wind models in deep water. The fifth part of the paper, however, deals with weakly nonlinear propagation under the influence of wind. This part is extremely interesting, but I find the introduction is not really supporting it. The connection between the work on wind models and this part (which clearly exists) could be more emphasized in introduction.

- In Introduction, end of section 1.1, the work of Reul, Branger Giovanangeli might be cited to support the claim of the thickening of the boundary layer.
- At the beginning of section 2 (page 3103, line 5), the problem is described as “symmetric”. I guess the 2D formulation better corresponds to an invariant in Y direction.
- Some misprints do not help understanding the computation (P and P on page 3103, line 20) ( $P_a = P_a + \dots$  on page 3104, line 14) ...
- A few word for justification of for the boundary conditions on  $W_a$  and  $P_a$  (page 3104, line 20) would be welcomed.

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