

## ***Interactive comment on “Mesoscale circulations over complex terrain in the Valencia coastal region, Spain, Part 1: simulation of diurnal circulation regimes” by G. Pérez-Landa et al.***

### **Anonymous Referee #3**

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This is a well written paper. The main thrust is the description of complex mesoscale circulations around the Valencia region. The authors use a version of the RAMS model and try to establish the skill of the model to deal with the complex topography, sea breezes and up and downslope winds that rise from these. In general this is a useful paper, but I fear that the splitting up of the work in two parts is making the first paper a little lackluster.

The paper suffers from a repetitiveness that certainly needs to be removed before it is acceptable. There are many places where the same thing is said in slight different phrases. This makes the paper too long and furthermore, it creates a feeling for the

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reader of lack of focus. In the introduction this pertains to the frequent mentioning of the effects of orography on mesoscale flow in the Mediterranean basin.

I find problems with the analysis in the fact that fluxes are not used, the soil moisture initialization is problematic, the comparison in humidity is done with RH rather than  $q$ , and there is no real discussion on how the model performs at night (stable cases), so I recommend major revisions with a new review.

## Comments

Page 2818 first five lines another example of repetition

Line 10, 15. How do the fluxes of the tower compare to the airplane? What is in fact the relevance of mentioning that fluxes are measured, while there is no effort made to show the fluxes or alternatively use them for model validation. This would improve the paper dramatically and make the model results more robust!

Page 2820 The soil moisture initialization is complicated, but why not show how the fields compare to analysis or a simple water balance model that uses observed  $P$ . The fact that someone else has also done this is not necessarily a correct justification; one does not want to repeat errors. See also page 2826 line 23-24.

Page 2820 L 25. I do not understand why RH is shown and not  $q$ . Since RH is also strongly dependent on  $T$ , the RH picture is far more difficult to interpret than  $q$ . I would also suggest to make conserved variable plots of potential  $T$  versus  $q$  as in the work of Allan Betts that can really show the diurnal trends well (f.i. on page 2826).

Page 2830 It would be good to see how the stable boundary layer development proceeds during the night in this environment.

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