Comments to Sensitivity study of wind forcing in a numerical model of mesoscale eddies in the lee of Hawaii islands
M. Kersalé, A. M. Doglioli, and A. A. Petrenko

The manuscript shows an interesting comparison of model results forced by COADS and QUICKSCAT winds. Their conclusion about the spatial resolution of the forcing influencing the mesoscale phenomena reproduced by the model is well substantiated. Not so the comparison with observations. The authors only state that 'The numerical eddies resembles the most Opal on 14 April for C5 and 29 March for c1'. A 'detailed' comparison is mentioned in section 4 but no actual data are shown or discussed.

Specific comments:
In the introduction the authors mention the formation of the Hawaiian Lee Counter Current in apparent relation to the formation of eddies in the lee of an obstacle. Immediately after they mention a classical mechanism of eddy formation in the lee of obstacles (without specifying it). I find this confusing. The author should separate the description of the mean circulation from that of eddies and eddy-generating processes.

Perhaps it would be better not to mention the eddy generating processes in the lee of obstacles. Firstly, because this has been observed clearly in the atmosphere but not so much in the ocean, which probably indicates that the lee phenomenon cannot be resolved by the model. The process tested with the model has to do with the wind flowing in between high peaks or islands, as explained in the following paragraph The paragraph also ends discrediting (I think) the lee theory: 'This mechanism can create cyclonic eddies south of the HLCC, in the region where the previous mechanism was favoring anticyclonic eddies'.

This phrase needs clarification: 'The numerical eddies resembles the most Opal on 14 April for C5 and 29 March for c1.' Please state the variable used to compare numerical eddies with Opal, do they resemble Opal in position of the core, central sea level, diameter? etc.

Section 3.1: why check ergodicity in the model? Please explain.

Section 3.2:
Where it says 'After their formation, the eddies generally move westward. In general, we observed that the cyclones move toward the north-west and anticyclones to the south-west. This fact has been explained by Cushman-Roisin (1994) in terms of potential vorticity conservation on a _-plane'
you should be more specific when explaining the westward drift. My pdf copy of Cusman-Roisin (2009) states the following:
The combined effect at the latitude of the vortex center is a westward drift. Theories (Cushman-Roisin *et al.*, 1990, and references therein) show that the induced speed is on the order of _$_0$R$_2$, where R is the internal radius of deformation, being slightly larger for anticyclones than cyclones. However, in both atmosphere and oceans this speed is usually too weak to be noticeable compared to the entrainment by the ambient Flow … Rather than to interpret the westward drift in terms of potential vorticity, we can also explain the drift by a balance of forces.

Perhaps is better to explain the south or nortwestward (rather westard) drift in terms of such balance of motion. Cushman-Roisin (2009) also includes a more general discussion in terms of layer thickness, implying advection by a mean flow:

Figure 18-13 Lateral drift of a vortex embedded in layer of varying thickness. The advection of surrounding fluid induces cyclonic and anticyclonic vorticities, which combine to induce a drift of the vortex structure along lines of constant thickness. In the Northern Hemisphere (as drawn in the figure), the vortex moves with the thin-layer side on its right; the direction is opposite in the Southern Hemisphere.

In 3.3 it is mentioned a direct comparison with Opal but I found no comparisons with data in the text, delete or rephrase: 'We choose this depth for a direct comparison with in situ measurement performed by Nencioli et al. (2008) inside the cyclone *Opal*'

In 3.3 it is written: 'Nonetheless, it appears clearly that the part in solid body rotation has a diameter smaller than the one estimated above on the basis of the isopycnal outcropping'. What would the radius of the eddy be?, estimated from isopycnal outcropping?. I ask this because the diameter can be related to the region where isopycnals acquire a horizontal level, in contrast to the dome within the eddy. But outcropping (where isopycnals reach the surface) can be expected to occur in the core of the eddy and it does not necessarily define its diameter.

Conclusions, it says:
In particular, the simulation forced by QuikSCAT wind data reproduces well the energetic mesoscale structures observed during the E-Flux field experiments (Dickey et al., 2008), including their hydrological characteristics and behavior.
But I don't see a comparison been made with observed eddies either in terms of their dynamics or of their hydrographic features.

Other comments:
At the start of the Results section:
Change:
the eddies' generation and spread and the cyclones' characteristics.
For something like:
The generation and spread of eddies and features of the cyclones.

And also change in 3.2 *Eddies' generation and spread*
And 3.3 *Cyclones' characteristics*