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Comment

## ***Interactive comment on “Sensitivity study of wind forcing in a numerical model of mesoscale eddies in the lee of Hawaii islands” by M. Kersalé et al.***

**M. Kersalé et al.**

andrea.doglioli@univmed.fr

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### GENERAL COMMENTS

We agree with all the reviewers that our work is very similar to the one by Calil et al. (2008). As explained in our introduction, we did not know the existence of such a paper at the beginning of our work (we were only familiar with the poster by the same authors [http://www.to.isac.cnr.it/aosta\\_old/aosta2006/LecturesSeminars/contrib/calil.pdf](http://www.to.isac.cnr.it/aosta_old/aosta2006/LecturesSeminars/contrib/calil.pdf)). We deeply apologize with reviewers and readers of Ocean Sci. Discuss. for such an error in our initial bibliographical research. Indeed, when we finally "discovered" the Calil and colleagues' paper during the final phase of redaction of our work, we wondered whether to submit our manuscript or not. Finally, we decided to submit our paper, since our methodology and results analysis had been done completely independently. More-

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over, our work was mainly done by the first author M. Kersale, undergraduate student, during an educational course started at the beginning of 2009 and then followed by a volunteer internship. Hence the work took a little bit more time than if it had been done by researchers but we thought it was of high quality and worth encouraging. To go back to the comparison with Calil et al. (2008), we also present some different analysis, such as ergodicity analysis, allowing us to check the turbulent behavior of the simulated flow. Moreover, Calil et al. (2008) did not look at the COADS eddies as closely as we did. Hence people can have the wrong interpretation, reading Calil et al. (2008), that the eddies are solely due to the wind forcing. While we show that both bathymetric and wind forcings have a mixed contribution. We also considered that an independent repetition of a numerical experiment could be an interesting exercise in numerical modeling. Indeed *in silico* results are frequently compared with *in situ* data but more rarely with the ones from other independent numerical experiments. Finally, we had hoped that the readers of Ocean Sci. Discuss. would consider our work interesting to read, despite the fact that, obviously, a repetition of a previous numerical experiment is not going to provide surprisingly different results. About this last point, we have been reassured by the fact that 6 reviewers read our paper (unfortunately one of them after the deadline for online publication and we only received his comments by email). We are honored by such a number of revisions, especially in Ocean Sci. Discuss. where they are generally less numerous.

We acknowledge all the reviewers for their useful suggestions for an improvement of our work and future developments.

## SPECIFIC COMMENTS

We disagree with reviewer#2 when he suggests to not mention the "eddy generating processes in the lee of obstacles because this has not so much [been observed] in the ocean". Indeed a large literature is present on the generation of eddies behind capes or islands, observed in coastal flows [e.g. Black and Gay, 1987; Pattiaratchi et al., 1987; Signell and Geyer, 1991; Farmer et al., 2002]. Moreover, it is known to have significant

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consequences in terms of dispersion processes [Chiswell and Roemmich, 1998; Wang et al., 1999] and sediment transport [Pingree, 1978; Ferentinos and Collins, 1980; Bastos et al., 2002, 2003]. In the specific case of the Hawaiian eddies, we agree with Calil et al. (2008) who stated that "Mesoscale eddies are formed as a result of wind forcing and intrinsic instabilities of the oceanic flow."

Andrea M. Doglioli, as corresponding author, on behalf of all co-authors.

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Interactive comment on Ocean Sci. Discuss., 7, 477, 2010.

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