

## ***Interactive comment on “Mesoscale eddies and submesoscale structures of Persian Gulf Water off the Omani coast in Spring 2011” by P. L’Hégaret et al.***

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## **Mesoscale eddies and submesoscale structures of Persian Gulf Water off the Omani coast in Spring 2011, answer to referee #1**

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### **1 General comments**

When I read the title and abstract of the manuscript, I have high expectations that this manuscript will be an important observational study to fill in some gaps in the mesoscale research in the Sea of Oman and Arabian Sea. However, I have to stop my reading due to the confusions and mixed-up in the descriptions in the text, inconsistency in the figures, captions, and text and poorly prepared figures. For example, in the text, the authors keep talking about A# and C# mesoscale eddies. However those numbers are not marked in the figures or clearly described in the captions, which give me a difficult time to understand and follow the descriptions in the paper. Another example, figure 4 and its caption are not consistent. Many of the

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descriptions in the text cannot find in Fig. 4. Therefore, I think this is a poorly written paper and it is unacceptable in its current format. I did not read the second part of the paper, so have no comments on the second part.

*We thank the referee for reading the first part of this article. Indeed the mesoscale situation is complex, and in the revision process, we will correct the deficiencies noted by the referees in our presentation. We will indicate the numbers of the eddies on the figures and correct the caption that are misleading. Furthermore, the descriptions in the text will be revised to have a clearer vision of the mesoscale circulation seasonal evolution.*

## 2 Specific comments

Following are some comments I wrote when I read the first part.

Page 2746, lines 8-13. My understanding is there are still some debates about the PGW pathway through the Persian Gulf and in the Sea of Oman in the literature. I suggest to read and cite papers including but not limited to Seniyu et al. (1998), Lee et al. (2000), Bower et al. (2000) and Wang et al. (2013) etc. They all discussed the measurements of the PGW patches/ mesoscale eddies in the Sea of Oman and Arabian Sea.

Page 2746, lines 14-18, using ARGO data to investigate the mesoscale eddies in the Sea of Oman is also discussed in Wang et al. (2013).

*We will implement these corrections.*

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Page 2751, lines 14-15, "The wind stress from summer 2010", I can only find 2011 line in Fig. 4 according to the legend. In Fig. 4, the caption indicates the red lines are 15 day means, while in the legend, the red lines are for 2011. Figures, captions and description in the text are inconsistency and very confusing. Lines 20, "see Fig. 4, right", something must be wrong here. There are only top and bottom panels. Where is the right panel? I have to skip this paragraph due to the confusion in the text and Fig. 4.

*This figure will be corrected and the caption will be rewritten for a better understanding.*

Page 2752, line 6, "this current..", which current?

*We will specify that this is the Oman Coastal Current.*

Page 2752 and Fig. 6, cyclones and anticyclones need to (should) be marked in Fig. 6. Because they are not indicated clearly in Fig. 6, it gives me a very hard time to understand and follow the descriptions in this section. I only went through half of this section. Need rewriting.

Fig 2. I suggest plot the locations of ARGO profiles superimposed on the contour map of salinity and temperature and remove the contour of number of floats. The contour of number of floats is very confusing and misleading.

Fig 3. What do those blue dots represent? There are many of them along the track. Are those big green dots "green circles" on the map? I could not find "green circles".

*We will implement these corrections and we will provide a clear correspondence between the markers on the figure and the description of symbols in the caption.*

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