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## **Article Review**

**Article :** The salinity signature of Agulhas  
mesoscale eddies  
by Maelle Humblet

### **Summarize the main results of the article in a few sentences:**

The eddies in the south atlantic subtropical front and the agulhas ring show a monopolar or dipolar structure in SSS. More than half the eddies have dipolar structure. Most of the monopolar eddies have a negative SSS anomaly.

### **Answer the following questions about the structure of the paper:**

#### **Overall content:**

1. Is the overall purpose of the study and /or central question clear?

Yes, the goal is to show the structure in salinity of the subtropical front eddies and agulhas rings.

2. Does the interpretation of the findings answer the overall question of the paper?

Yes. The results show a clear answer to the question.

3. Is every paragraph and sentence in the paper relevant to the overall question?

Yes. I'm not sure that the very first paragraph is needed, but it's still a nice wide point of view before going deeper into more specific processes.

4. Are there portions of the text that could be omitted?

In my opinion, no. Everything is straightforward.

5. Is the overall organization of the paper clear and effective?

Despite not having any clear division in sections, I think that the paper has a clear organization. We know in what part we are, and it flows nicely.

## **Individual sections:**

1. Does the title adequately represent the content of the paper?

In the title, she doesn't talk about the subtropical front eddies, that she also studied.

### *Suggestions*

"Monopolar and dipolar distribution of sea surface salinity in subtropical front eddies and agulhas rings" could be more exhaustive, but longer. I think anyways it is important to also refer to the subtropical front eddies.

2. Does the abstract clearly and concisely summarize the paper and state the main results? Does it contain all needed information (context, need, task, object, findings and conclusion)?

The abstract misses the findings and conclusion, and it talks only about the Agulhas rings (like the title), while the study also tackles the subtropical front eddies.

It is closer to an introduction than to an abstract.

3. Does the introduction provide enough context to the readers? Does it state the need for the work? Does it state clearly what has been done to address it?

Yes, it provides a wide context.

It does state the need of the work, to know how water masses are transported by the eddies in the region of study.

It states clearly what will be done in this study to answer the question.

4. Does this paper put the progress it reports in the context of existing published work? Is there adequate referencing and introductory discussion?

There are quite a lot of references in the context.

The reference of Delcroix et al. should be mentioned in the text and not only in the figure, in my opinion.

It could have been interesting to add references to similar studies about other parts of the ocean.

5. Are the material and methods used in the study clearly explained? Can you point out what is special, unexpected, or different in the approach compared to existing published work? Does it contain too many technical details?

I don't really understand how the ISAS and OI2 fields from the SMOS are used to get the anomalies. The rest of the methods are well explained.

There is no comparison with existing published work.

It does not contain too many technical details.

6. Is the results sections(s) clearly and concisely written? Are there logical and smooth transitions between sections, subsections and between paragraphs?

The result section is clear. All the results are explained.  
The paragraphs flow nicely in my opinion.  
The table that summerizes all the results should be mentioned earlier in my opinion.

7. Does the conclusion clearly state the most important outcome of the work? Does it address the questions stated in the Introduction? Does the conclusion just summarize the results or does it interpret the findings and explain what they mean?

Yes, the conclusion talks about the two modes of salinity transport by eddies.  
The findings are not interpreted, I guess because it was not the goal of the paper.  
It could have been interesting to comment on possible causes of the differences in distribution of positive monopoles and negative monopoles (but it may be way out of the scope of this paper).

8. Are the interpretations and conclusions adequately supported by the evidence presented? That is, are the assumptions valid, is the methodology sound, is the evidence adequate, and do the conclusions logically follow?

Yes, the results clearly show what is presented in the conclusion, the methodology looks sound.  
I still have doubts about the eddies being selected on the fact that they are not “too deformed” and they are “coherent enough” : how is that deformation quantified ? What does coherent enough means ? This is not explained.

9. Are all parts of the text, references, graphics and tables necessary for the new results and main points to be understood?

Yes, I find the figures very interesting, and clear.  
The table presents clearly the results, but I think it should be cited earlier in the text than at the end of the results. I have a doubt about why don't the anticyclones have negative or positive monopoles. Also we have the same problem as before with the "resolved" and "coherent" eddies which are not explained.

10. Are the graphics and tables clear and their captions self-explanatory?

Figure2 : We don't know what is the colorbar, or the point at (72, -44)

Figure3 : Again, no unit or name to the colorbar

Table1 : What is "resolved" and "coherent" ?

Else, the figures and the table are clear.

## • Sentences and Wording

1. Can you find grammatical mistakes?

"Eddies plays" → Eddies play

"These structures reflects" → These structures reflect

2. Can you point to sentences that loose you (too long/complex) and do you have suggestions for improvement?

“ The first objective was to colocalize the eddies detected via the "Mesoscale eddies trajectory Atlas", provided by SSALTO/DUACS, with the SSS and SSH data sets, from SMOS/SMAP and Aviso respectively. “

I would suggest dividing the sentence, to emphasize on the colocalisation of the datasets, which is the important part.

The first objective was to colocalize the detected eddies with the SSS and SSH data sets. The eddies were taken from the "Mesoscale eddies trajectory Atlas", provided by SSALTO/DUACS ; the SSS from SMOS/SMAP ; and the SSH from Aviso.

3. Are generally the action in verbs, characters in subjects and subjects near verbs? Can you find counter-examples? Can you point out misused nominalizations?

In general the phrasing is right. The action is in verbs, character in subjects and subjects near verbs.

The following sounds like a misused nominalization :

“The Agulhas rings are eddies **allowing** the transport of these properties from the Indian ocean to the Atlantic ocean”

This sounds better to me :

“The Agulhas rings are eddies **that allow** the transport of these properties from the Indian ocean to the Atlantic ocean”

4. Is the writing cohesive? Does it flow well? Is the part of the sentence that links to the previous sentence at the beginning or the end?

The writing is globally cohesive and flows well. Except in some parts, like for example : “We then wanted to calculate SSS

anomalies, to be able to characterise the salinity structure of eddies. The SMOS data are composed of several fields.”  
There is no clear link between both sentences.

In general, the part that links to the previous sentence is at the beginning.

5. Are the paragraphs coherent? Do the first and last sentences of paragraphs match? Can you find counter-examples?

In general I find the paragraphs coherent.

The 5<sup>th</sup> paragraph is first about the data, and then about the localization of the eddy, and then about the data again.

6. Is there an abusive use of passive voice?

I don't see an abusive use of passive voice.

7. Can you find a lot of useless words/phrases?

I didn't feel like there were useless words or phrases.  
One example would be : “In the purpose of creating composites” that could be changed to : “To create composites”

8. Can you find complex words that could be replaced by simpler ones?

No, the words used are simple.

9. Can you find too complex subjects?

No. The subject used is often "We".

10. Can you find inadequately used adverbs/ repetition/ excessive hedging?

"show almost the same proportions" is not very precise

"the eddies are not too deformed, they don't split or merge during their lifetime and they are coherent enough." not very precise either.

In the abstract : "to try to characterise" shouldn't use the word try. You know you managed to do it.

11. Is the use of tenses (past/present/future) adequate?

The use of tenses seems adequate.

## • Other comments?

I caught some small typos.

until its disparition → until its disappearance

will prenent only → will present only

one anomalie → one anomaly