

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

This article studies salinity structure. It is decomposed into: monopolar and bipolar. On the one hand, there is one salinity anomaly (positive or negative) centers on the eddy's core. On the other hand, there are two salinity anomalies (one positive and one negative) rotate around the eddy's core.

This study considers two areas: Agulhas current and sub-tropical front. For each of them, there is equal number of anticyclonic and cyclonic eddies. In the cyclonic configuration, dipolar structure is more numerous than monopolar ones – which are also more often negative. Considering the Agulhas anticyclonic configuration, there are more or less the same number of monopolar and dipolar structures whereas for the sub-tropical anticyclonic configuration, there are exactly the same number.

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?

By reading this article, we clearly know that it will be about salinity impacts on mesoscale eddies observed around the Agulhas current and the sub-tropical front. Nevertheless, I think that the title could be clearer by also mentioning the sub-tropical front impact and not only the Agulhas current.

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

In this article, the salinity structure is clearly studied by describing and comparing eddies from Agulhas current and sub-tropical front. Nevertheless, there is no link between the salinity structure and its applications on salinity transport or general oceanic circulation that are mentioned in the abstract (“in order to [...] in the general oceanic circulation”). Maybe I misunderstood this sentence and the article was only about explaining the salinity structure but without developing the salinity impacts on a global scale.

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

According to me, every paragraph in the paper is relevant to the overall question. Nevertheless, I would reduce the size of the introduction.

If no, point to some examples:

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

Some portions of the text could be omitted.

If yes, point to some examples:

I have noticed some sentences which could be omitted:

- **Paragraph 2:** “It is therefore important for the ventilation and for the climate.”
 ➔ Omit or be the first sentence of the introduction.
- **Paragraph 11:** “We computed the general composites for each categories of eddies.”
 ➔ Already said previously.
- **Paragraph 11:** “on the other hand”
 ➔ Useless in the sentence.
- **Paragraph 13:** “Knowing the structure [...] of salinity anomalies”
 ➔ Same idea of the previous sentence (“These structures [...] by eddies”).

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

The overall organization of the paper is clear and effective but put intermediate titles (depending on the journal – Abstract, Introduction...) could help the reader to follow the plan. Moreover, some information could be gathered earlier in the article – especially in the introduction – because it concerns all the study, so it is applicable to the whole reasoning.

Suggestions for improvement:

- Complete introduction:
 - **Paragraph 5:** “We focused on mesoscale eddies, i.e eddy with synoptic scales (50-200 km).”
 - **Paragraph 6:** “We focused on the eddies [...] for the whole year.”
 - **Paragraph 9:** “We focused on two areas [...] the coast of Africa.”
- Change between paragraph 2 and 3: “Eddies play [...] and salinity”
- **Paragraph 8:** “Before realizing the composites, [...] coherent enough.”

➔ I suggest explaining this step before the composites realization such as:

In the purpose of creating composites – an average of the salinity on the lifespan of the eddy – we selected the eddies according to different criteria. The eddies are not too deformed, they do not split or merge during their lifetime and they are coherent enough. We also classified them into different categories: anticyclonic or cyclonic, monopolar or dipolar salinity structure and, especially for monopolar eddies, there is positive or negative anomaly.

To create composites, we needed the maximums of salinity at each time step to be superposed. After normalizing the salinity by the standard deviation, we performed a rotation followed by an interpolation (Optimal Interpolation) to be able to average the salinity.

- The last paragraph – composed of one sentence – could be included in the previous one.

Individual sections:

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

As mentioned in question 1, the overall purpose of the study is clear, but I think that the title could be clearer by also mentioning the sub-tropical front impact and not only the Agulhas current.

Suggestions for improvement:

The salinity signature of mesoscale eddies from Agulhas current and sub-tropical front.

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 summarizes clearly and concisely the paper. For me, context, need, task and object are mentioned but there is no clue about the findings or conclusions of the article. As said in question 2, because salinity transport and global oceanic circulation are mentioned, I was expecting to learn more about it in this article. I deduce that one of the goals of this article is to explain salinity structure by proving its relevance without explaining its proper applications.

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?

The introduction provides enough context to the readers (question 3: maybe too much – huge part). It provides the needed knowledge to read this article, but the plan is not clearly defined.

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

This article does not mention any information about published work that have been done before this study nor explicitly announced what is new in it. Nevertheless, referencing and discussion are correctly done and appreciated to complete and learn more about the study.

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?

The major part of the data is from SMOS/SMAP so, I was expecting more information about its source. The method is clearly explained, step by step, without 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 results section distinguishes clearly and concisely the line of reasoning (cyclonic / anticyclonic, monopolar / dipolar, positive / negative) for each area: Agulhas current and sub-tropical front.

The structure of this article is logical, but it could be sometimes difficult to follow the classical article plan (question 5: Abstract, Introduction, Methods, Results, Discussion, Conclusion and References) with appropriate transitions. In fact, I think that there are too many paragraphs because an idea is sometimes, not directly associated to a specific part of the article: there is more than one paragraph for one idea.

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?

The most outcome of the work – already raised in the introduction – are clearly stated in the conclusion. Nevertheless, the direct applications – salinity transport and global oceanic circulation – are still missing. The discussion part (just before the conclusion) completes the results by exposing the limits of the method and explaining some unexpected results.

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?

The adopted methodology permits to obtain evidence – presented logically all along the article – which are well interpreted and permit to clearly conclude about the study.

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

References, figures, table and captions are good complements to clearly understand this article. It allows the reader to follow each step of the work by more exploring the subject if needed. Maybe, figures and table could be more

closed to the paragraph where they are mentioned to avoid going further in the article to find it.

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

Sizes of figures and table are very well choosing: we can clearly read it. Concerning the captions, I would add more information:

- **Figure 3:**
 - Which data set was used?
 - Distinguish Figure 3.a & b in the text – Paragraph 10:
 - “A monopolar eddy (Figure 3.a) [...]”
 - “A dipolar eddy (Figure 3.b) [...]”
- **Table 1:** Add the areas names: “structure in salinity for Agulhas current and sub-tropical front”.

• **Sentences and Wording**

1. Can you find grammatical mistakes?

I found only few grammatical mistakes:

- **Paragraph 4:** “Eddies play”
- **Paragraph 6:**
 - “data sets, respectively from”
 - “until its disappearance”
- **Paragraph 8:**
 - “salinity structure”
 - “for monopolar”
 - “following criteria: eddies”

I also noticed some typo and contractions errors.

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

- Sentence too long – **introduction:** “Here we use SMOS/SMAP Sea Surface Salinity data to try to characterize the salinity structures of those eddies, in order to understand the transport modality of salinity and its importance in the general oceanic circulation.”
- ➔ Split the initial sentence into two: Here we use SMOS/SMAP Sea Surface Salinity data to try to characterize the salinity structures of those eddies. **The final goal is** to understand the transport modality of salinity and its importance in the general oceanic circulation.”
- Sentence too long with too many important information – **Paragraph 6:** “We focused on the eddies from 2016, the first year with data from SMOS available for the whole year.”

➔ Split the initial sentence into two: We focused on the eddies from 2016. It was the first whole year with available SMOS data.

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 this article, I think that the actions are in verbs, characters are in subjects, subjects are near verbs and, I did not detect misused nominalizations. In fact, if I missed something, it did not impact my reading comprehension.

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?

According to me, the writing is cohesive: sentences begin with old information and end with new ones in a logical way.

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

The order of the information presented in this article are coherent. Nevertheless, I think that there are too many paragraphs that are linked to the same idea. In fact, I would say that it is sometimes complicated to associate one part to one specific idea (question 6) so, first and last sentence of one paragraph are not all the time matching.

6. Is there an abusive use of passive voice?

I did not notice any abusive use of passive voice.

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

There are some useless words and phrases such as: on the other hand, then, finally...

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

I did not find complex words.

9. Can you find too complex subjects?

Maybe there are subjects more longer than usually but it does not impact the reading comprehension.

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

I paid attention to these similar terms: lifetime, lifespan, each time step and, time frame that are clearly explaining the same idea. I think that it would be better to use the same word to express it especially because they are sometimes mentioned into the same paragraph and to simplify the reading comprehension too.

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

In my point of view, sometimes past tenses are used instead of present tense which would be more appropriate to express general truth.

- **Other comments?**

To conclude, this article is easy to read without too complex vocabulary or scientific explanations. Nevertheless, some repetitions could be avoided and improved by restructured the paragraphs.