

## ***Interactive comment on “Two typical merging events of oceanic mesoscale anticyclonic eddies” by Zi-Fei Wang et al.***

**Ilker Fer (Editor)**

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Received and published: 18 July 2019

Dear Zi-Fei,

I will request that you improve the analysis and presentation (e.g. description of calculations for some parameters is not clear, errors are not discussed). In particular, you need an estimate of errors associated with the analysis, following from the observations and methods. Figures 3 and 5 must have errorbars (at least on relevant parameters where possible). Looking at Fig 2, and definition of eddy boundaries, there seems to be an arbitrariness and associated uncertainty. Also please consider the following details.

1. Please see if you can have the language and style improved with help from colleagues. Alternatively you can consider professional services. Also please check for

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typos throughout.

2. Make sure all cites are included in the reference list, e.g. Gill and Griffiths
3. I like one referee's suggestion of splitting Fig 1 into two and showing the lower panels later toward the conclusions.
4. li45-46: There has been some observational work from the Lofoten Basin (I recall Roshin Raj's paper demonstrating some mergers).
5. li54: "without any assumption" is a \*very\* strong statement. You do use 2-layers (or 1 or 3), approximate SLAs as Gaussian, assume  $H_0=H_1=200\text{m}$ , and calculate the velocity and vorticity from geostrophy! etc..
6. li76: SST is not the only contributor to density. Is this a regional statement?
7. Eq.2 and on with integrals: are these accurate? It's not clear to me how you define the volume. How are the anomalies of  $u$  and  $\rho$  calculated? Please describe how you obtained  $h_2$ .
8. li198-199: now we have plus/minus (which is good), but what are these? Standard error, standard deviation, uncertainty? Please describe.

Thank you, Ilker

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Interactive comment on Ocean Sci. Discuss., <https://doi.org/10.5194/os-2019-67>, 2019.

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