

Comment on os-2021-116

Anonymous Referee #2

Referee comment on "Counter-rotating eddy pair in the Luzon Strait" by Ruili Sun et al.,
Ocean Sci. Discuss., <https://doi.org/10.5194/os-2021-116-RC2>, 2022

The study presented in this manuscript is based on satellite data and ocean model reanalysis data investigating a counter-rotating eddy pair in the Luzon Strait. The authors have studied a pair of anticyclonic and cyclonic eddy exhibiting seasonal variation, anticyclonic mode in summer and cyclonic mode in winter with mean lifetime of 70 days. Authors apply barotropic and baroclinic conversion, wind stress work and vorticity budget equations to study counter-rotating/dipole eddy seasonal variation and its role in the transport of particles and energy exchange in the Luzon Strait in the Northwest Pacific. I would like to recommend this paper for publication, but, unfortunately, it contains a number of major shortcomings that do not allow this at the moment.

- The text needs to be rewritten with an improved English. For example, instead of the word "material" it is better to use "particle" (in line 30 and ...).
- In line 31 the sentence "The LS comprises three straits ..." should change to "The LS is comprised of three straits ..."
- In line 33 the sentence "These complex topographic features can ..." should be changed to "This complex topography significantly influences/affects the ocean/dynamic processes ...".
- In line 37 the paragraph "The bifurcation of the Kuroshio ..." needs to be rewritten.
- In line 42 it is written that "These mesoscale eddies from the NWP can carry an enormous amount of kinetic energy and can alter ..." which should be changed to a sentence like "These mesoscale eddies from the NWP transfer high kinetic energy and impact the local circulation" which also needs a reference.
- In line 45 the sentence "it is important to ..." needs to be rewritten
- In line 51 authors say that Jing and Li (2003) "speculated", to my knowledge in a scientific study nothing is speculated but is "found". Also the sentence is not understandable which needs to be rewritten.
- There are typos in the text (e.g. line 33 instead of the word "straits" it is written "straights"; line 77: instead of past tense of the verb "led to" present tense should be used "leads to").
- The introduction of a scientific paper gives sufficient background information to understand the writers' study. Authors give a brief introduction of the region, ocean processes and eddy activity and a detailed summary of the previous studies but a very brief description of the present study I given and its scientific goal and necessity is

missing.

- References should be checked accurately. There are papers cited in the text but do not exist in the references section (line 50: Jing and Li, 2003; line 54: Yin et al., 2014; line 62: Zhang et al., 2007; line 76: Huang et al., 2019). References need to be checked carefully and the citations must be included in the references section/list.
- The authors need to follow Copernicus Marine Service instructions to cite the product correctly (<https://help.marine.copernicus.eu/en/articles/4444611-how-to-cite-or-reference-copernicus-marine-products-and-services>).
- Also change the citation for the HYCOM model outputs in the text (e.g. model data is obtained from the HYCOM model output by the Naval Research Laboratory).
- Remove the links from the text and insert them in references section.
- As written in section "Results" authors explain the method applied for the identification and seasonal variation of the eddy pair. This is not a part of results of the study. The method should be move into section two and described in methods section. The results from eddy as "2.3". The identified eddy pair should be shown in results section as a subsection (i.e. 3.1).
- In the text and in figure captions "Figure x is the same as figure x but ..." has been used which is not the way to refer to a figure (figure caption). The authors need to be precise about the captions and while referring to a figure in the text.
- Findings of the study are not discussed in section 4. Authors do not discuss their findings for meridional and zonal advection role.
- In line 358 authors say that the details of figure 16d, 16e and 16f which illustrate BT, BC and WW will be discussed but in fact no details are found later!