

Response: Thank the reviewer for the time spent on our manuscripts. The comments and suggestions by the reviewer are of great helps for us to improve our manuscripts significantly. We have addressed all the comments one by one very carefully.

- 1) The authors have replied in their letter to my point of the sensitivity of the detection method over the sensitivity of balance relation used, yet no comment (as far as I can see) appear in the revised paper. This point is too important to be overlooked. The authors should include in the paper their reply in their letter. [the paper they cite is their reply latter (You et al 2022) does not appear in the bibliography]

Response: Thank you for your reminder. We sincerely thank the reviewer for the careful reading. As suggested by the reviewer, we have added this section to the manuscript.(L282-283)

which is far larger than the eddy count difference of about 8% induced by different eddy detection algorithms (You et al., 2022).

And we have revised and standardized the literature citations in the revised manuscript.(L288,871-872)

You, Z., Liu, L., Bethel, B. J., and Dong, C.: Feature comparison of two mesoscale eddy datasets based on satellite altimeter data, *Remote Sens.*, 14, 116, <https://doi.org/10.3390/rs14010116>, 2022.

- 2) Minor point 3. The authors have rephrased their original sentence but the new sentence makes little sense ('... a more intense evolution ...') : an evolution has no 'intensity'. Please rephrase.

Response: Thank you for your valuable feedback. To enhance the flow of the manuscript, we have re-written the abstract.(L24-26)

Similarly, case studies indicate that anticyclonic eddies exhibit more pronounced variability in their energy evolution under the influence of streamline curvature, making them more prone to dissipation in low-latitude seas.