

Answer to reviewers

We thank the Editor and the two reviewers for their feedback on our manuscript. Answers to the reviewer comments and some additional modifications are written in [blue](#) in the text. Below, we have addressed the minor comment given by reviewer 1, and we thank them for helping us improve the new version of this manuscript.

Reviewer 1

I am overall satisfied with the revised manuscript. I also believe that the comments raised by the other referee have been addressed satisfactorily. I therefore have only one minor remark authors should address before the manuscript is ready for publication, given below. Since the first submission, several studies have demonstrated that mesoscale eddies can be reliably detected directly from raw SWOT SSH measurements, without additional interpolation. These applications include high-latitude regions such as the Arctic Pacific, the Labrador Sea, and the Antarctic coastal zone, where the relatively small Rossby deformation radius results in eddies that are fully contained within the SWOT swath. In the Mediterranean Sea, many mesoscale eddies are also small enough to be entirely captured within a single swath. However, this approach would fail to detect the largest, quasi-permanent eddies, whose spatial extent exceeds the swath width, namely the one that are of interest for the present study. In this context, the use of MIOST-K is advantageous because it enables the detection of both small and large eddies. This distinction, and the complementary strengths of the two approaches, should be discussed in the Introduction, the Discussion, or both.

Refs:

<https://doi.org/10.1038/s43247-026-03498-9>

<https://doi.org/10.1093/nsr/nwag181>

<https://doi.org/10.5194/os-22-1515-2026>

We thank the reviewer for this important remark. We agree that it is important to mention and have done so in the introduction:

“Recent studies have demonstrated that mesoscale eddies can be directly identified from SWOT wide-swath SSH observations, particularly in regions with small Rossby radius of deformation (e.g., Verger-Miralles et al., 2025; de Marez et al., 2026; Han et al., 2026; Fu et al., 2026). However, direct swath-based detection is more limited for larger mesoscale eddies extending beyond the instantaneous SWOT swath coverage. Gridded products integrating SWOT observations, provide a complementary approach by reconstructing spatially continuous fields, allowing both smaller-scale structures and larger mesoscale eddies to be characterized.” (Lines 56-61 of the new manuscript version)

And discussion:

“Recent studies have shown that mesoscale eddies can be identified directly from SWOT wide-swath SSH observations (e.g. Verger-Miralles et al., 2025; de Marez et al.,

2026; Han et al., 2026; Fu et al., 2026). This direct approach is less suited to larger eddies that extend beyond the swath, but preserves the fine-scale information contained in SWOT observations and avoids the smoothing introduced by Level-4 mapping. However, a key limitation lies in the coarse temporal sampling imposed by the 21-day repeat cycle of the science phase, which hinders the analysis of rapidly evolving fine-scale dynamics (Archer et al., 2025).” (Lines 336-339 of the new manuscript version)

Additional modifications

- Figures 2e-f have been updated as the time period shown was too long.
- Cortes-Morales et al., in prep. reference replaced by e.g. Beron-Vera et al., 2013; Haller et al., 2016; Liu et al., 2019; as manuscript still not available (Lines xx)
- Appendix A:
 - Figure A1 made larger for clarity
 - Caption updated to : “Figure A1: Outer (dashed) and inner (solid) eddy contours identified with MIOST-K on 20/04/24. The background fields are all the SWOT L3 ADT (filtered) [m] observations on 20/04/24 +/- 10 days.”
 - Added information on SWOT data source: “SWOT L3 LR ADT 2 km (Expert v2.0.1) data was obtained from AVISO (AVISO/DUACS, 2024).”, and corresponding reference in bibliography.
- Update software reference of codes used for this study:
 - In the code availability section “The codes used in this study are available on GitHub:
https://github.com/LauraGomezNavarro/paper-OSR10_Gomez-Navarro_etal_2026, and the version used for the manuscript is published on Zenodo: <https://doi.org/10.5281/zenodo.22659162> (Gómez-Navarro, 2026).”
 - In the references: “Gómez-Navarro, L.: LauraGomezNavarro/paper-OSR10_Gomez-Navarro_etal_2026: First release (Version v1.0.0). Zenodo [code]. <https://doi.org/10.5281/zenodo.22659162>, 2026. ”
- Reference typo: “Ballarotta, M.: SSALTO/DUACS Experimental Product Handbook: Gridded Sea Level Heights and geostrophic velocities computed with SWOT Level-3 products (using both KaRIn and nadir instruments) with MIOST Version 2.0.1., Issue 2.1., AVISO, https://www.aviso.altimetry.fr/fileadmin/documents/data/tools/hdbk_duacs_experimental_miost_swot_v2.1.pdf, last access: 22 April 2026, 2025.”