

## General comments

The paper analyzes air-sea interaction fluxes—latent and sensible heat (LHFL, SHFL) and momentum (MOFL)—which are key for understanding the ocean-atmosphere interaction and variability. Data were collected from 2011 to 2023 aboard four Spanish research vessels across Spanish and adjacent seas. The data processed and quality-checked by the IEO Data Center, are used to compute the heat and momentum fluxes via bulk aerodynamic methods and stored in MEDAR/MedAtlas format. Regional subdivisions of Spanish waters are used to study air-sea fluxes behavior, and results are presented. The dataset is publicly available on SeaDataNet/SEANOE data citing and publishing service.

The paper can be accepted for publishing. Below are some issues to be addressed before publication.

## Specific comments

- 1) Based on journal rules: *“... for the final accepted publication, a functional data set DOI and its in-text citation must be given in the abstract. If multiple data set DOIs are necessary, please instead refer to the data availability section.”* Therefore, authors could add at the abstract (line 19, after SEANOE), the 4 DOIs or make a reference at section 5. To my knowledge, the ESSD publications include the DOIs in the abstract, so I would recommend this option.
- 2) Line 16: use capital initials (Atmospheric Boundary Layer (ABS)) as for other terms
- 3) Line 86: where do the 3 additional regions come from? Are there references (as the MSFD regions)? Are the regions mentioned in the Introduction (line 50)? Or they cover the measured area of this work? The linkage is not clear.
- 4) Table 1: for consistency with the rest of the paper (text, tables, etc.) use as name for the 2<sup>nd</sup> column the “Variable” instead of “Magnitude” (which is more appropriate).
- 5) Line 100: besides the reference to the MEDAR/MedAtlas format, authors could also add what standards and controlled vocabularies are used in this format for the (meta)data descriptions such as the P09 (variables names), SeaDataNet flag scale (L20), ICES platform codes (C17) for R/Vs, Instruments (L22), etc. The addition of the general web link would be useful to the reader (<https://vocab.seadatanet.org/search>).
- 6) Line 105: The sentence is not clear to me, I do not see any SHFL, LFL, MOFL in Table 1.
- 7) Line 122: Instead of “visual recognition” I would prefer “visual inspection”.
- 8) Line 122-131: It would be useful for readers to include a Table with the global and regional (and seasonal) ranges for TSG data as it is done below for the Gradient Test thresholds.
- 9) Line 143: what flag value is used when spikes are detected? Is it “3” according to the SeaDataNet flag scale? It should be mentioned as it is done for flag=4 above.
- 10) Are specific tools used for the automatic QC checks (gradient, spikes checks) or “in-house” software? As I reader and data manager I am interested to know.
- 11) Figure 2 caption: without being a native English speaker, I think the last 2 sentences are not correct and can be rephrased to “Data quality control has been applied. Number of data points for each variable is indicated in the plot legend” or “Quality controlled data records timeline .... Number of data points for each variable is indicated in the plot legend”.
- 12) Figure 3, sub-caption (a): I would suggest to add the “Vessels’ trajectories” for consistency with the others sub-captions.

- 13) Line 212: In the section 3.2 of validation and QC, it is mentioned the spikes controls. Are statistics for this QC result available? If yes, these could be included. It should be clear if values with flag=3 are used in the analysis or rejected.
- 14) Table 3: correct the "Percentage".
- 15) Section 4.2: the annual means are computed by averaging the monthly means or by averaging all available data values?
- 16) Table 5, 7: correct the "standar".
- 17) Line 329: change the "SEANOE (SEA scieNtific Open data Edition) service of SeaDataNet" to "SEANOE (SEA scieNtific Open data Edition) data citing and publishing service of SeaDataNet". Authors can also add a link here (<https://www.seadatanet.org/Software/SEANOE>).
- 18) Line 343: correct the "wit"
- 19) Line 357: change "present" to "presents".

### **Text editing**

- 20) Check inconsistencies between lines for example: a) line 108 ends with a dot and the equation (1) follows, while line 133 ends with a comma before the equation, b) line 78: at the end of the sentence there is a minus before the dot for example "...2011)-." that should be deleted. Check the paper for other points like (a), (b) and correct.

### **References**

- 21) Most of the references do not include the DOIs. It would be helpful if authors could add them where available (recent publications) so as readers can get quick access at the linked resources.
- 22) Line 464: change it as: Schlitzer, R.: Ocean data view, <https://odv.awi.de>, 2025. Also change the reference in the text (line 224).
- 23) Line 476, 478, the two references not in chronological ascending order as the others.