

*Dear Authors*

*Thank-you for your response to referees' comments and the revised manuscript. Please consider the comments below in preparing your final manuscript. These are "Technical Corrections" meaning that I do not need to see the manuscript again before you upload it for the final processes leading to publication. However, please note that (i) all the reviewer and editor comments (including those below) will be available to readers of the published paper; they will be able to see how you have responded to the comments; (ii) the manuscript will be copy-edited by Copernicus and you should check that your intended meaning remains.*

*Thank-you for publishing in Ocean Science*

*Yours sincerely*

*John Huthnance (editor).*

**Response:** Thank you for reviewing our revised manuscript. We appreciate your feedback and are glad to address the technical corrections that need to be made.

Comments

*Many times you refer to "high resolution". I prefer "fine resolution" in the same sense that you use "finer" and "fine" in lines 51, 52. But I don't insist on this change.*

**Response:** Thank you for your suggestion to use "fine resolution" instead of "high resolution" in our text. While I understand your preference for "fine resolution," after careful consideration, we have decided to continue using the term "high resolution" consistently throughout the paper, as it is a widely and commonly used terminology in this field and may be more easily understood by our readers.

*Line 27. "moisture fluxes transports" – omit "fluxes" or "transports" or do you want "fluxes and transports"?*

**Response:** Deleted "transports".

*Line 28. "parameter" → "variable" or omit.*

**Response:** It is revised as "variable"

*Line 57. "over a 36-km spacing" is unclear. If it refers to the atmospheric forcing resolution being compared with 4 km, then "over" → "compared with". If 36 km refers to the ocean model, then what is the comparison implied by "more accurate and skillful"?*

**Response:** It refers to the atmospheric forcing resolution being compared with 4 km, so it is revised as "compared with".

*Line 80. "processes" tends to mean some ocean phenomena. Maybe "procedures" or omit?*

**Response:** It is omitted.

*Line 93. Omit "quality" [it does not seem to add meaning]?*

**Response:** It is omitted.

*Section 2.2 last paragraph. Referee 1 suggested nudging but you responded "we did not apply additional surface temperature nudging . . because we conducted a short-term simulation, with the*

*main driving forces being wind stress and heat fluxes. Applying high-frequency SST nudging could potentially twist the physical dynamics.” I accept your response but the referee and any new reader of the revised manuscript might again raise the same question. I think you should include a short version of your response here.*

**Response:** We have briefly explained this in the section 2.2 of the revised ms..

“Since we conducted a short-term simulation, with the main driving forces being wind stress and heat fluxes, we opted not to apply additional high-frequency SST nudging to avoid potential interference with the natural physical dynamics of the system.”

*Line 156. “rotated by 23 degrees” from what orientation? As it stands, this whole sentence adds very little meaning., e.g. “cross-shore component being approximately perpendicular to the coastline” is to be expected.*

**Response:** It is revised as “The alongshore and cross-shore components of the wind vectors are approximately parallel and perpendicular to the coastline, respectively.”

*Line 162. “erroneously weaker variability” refers to spatial variability?*

**Response:** We revised this sentence to make it clear.

“This spatial variability of the wind forcing induced by topography was erroneously omitted in the WL-OBS experiment, where uniform wind forcing was applied. Consequently, the wind forcing in the WL-OBS experiment was overestimated in comparison to the observed data.”

*Line 253. “21, 2017.”*

**Response:** Revised.

*Figures 6 and 7 differences. The captions should make clear which experiment result is subtracted from which.*

**Response:** Yes, it is revised as “The differences in the magnitude of time-averaged surface current from (b) the WL-OBS minus LR-ERA1, (c) the LR-ERA1 minus HR-WRFW, and (d) the HR-WRFW minus HR-WRFA experiments during the downwelling favorable wind from 11 to 21 July 2017.”

*Line 398. “domain-averaged” -> “domain-average”*

**Response:** Yes, it is revised following the suggestion.

*Line 493. Better “. . Ekman transport east of the PRE but weakened it in the west.”?*

**Response:** Yes, it is revised following the suggestion.

*Line 500. Better “. . exchange west of the PRE.”*

**Response:** Yes, it is revised following the suggestion.

*Data Availability. “Model and observational data is available on request.” This is not satisfactory for publications generally in 2023. For Ocean Science, please see [https://www.ocean-science.net/policies/data\\_policy.html](https://www.ocean-science.net/policies/data_policy.html) and the “Statement on the availability of underlying data” there.*

**Response:** The part is revised as below:

“All the in-situ observations for validation in this study and the model results are available at <https://doi.org/10.5281/zenodo.8051261> (ilai, 2023). The hourly surface wind and temperature data at weather stations around PRE are available from the Integrated Surface Database (<https://www.ncdc.noaa.gov/isd>)”

*Line 517. “This work was supported . . .”; at CORE or by CORE? (word missing)*

**Response:** Yes, it is revised as “This work was supported by CORE”