

Legend

Reviewer comment

Author comment

RM: revised manuscript

Review of manuscript 2023-418 *Internal tides off the Amazon shelf Part I: importance for the structuring of ocean temperature during two contrasted seasons*, by F. Assene et al.

Manuscript reviewed by Clément Vic on 9th November 2023.

This is my third review of the manuscript. The authors addressed most of my comments favorably. The manuscript has shortened and improved, and the science is more clearly presented. Importantly, wobbly and confusing statements have been removed. I recommend the manuscript to be published after taking into account a few minor comments – one of them concerns a whole section of the discussion that I find speculative. There are still a few sentences that read bizarrely, and I think the manuscript would benefit from thorough proofreading. I tried to give some advice on writing where I could but failed at doing it thoroughly throughout the whole manuscript. I do not want to review the manuscript again.

Minor comments

- L. 37: Temperature does not “play a role” per se, it is not a process or mechanism. Maybe this sentence could be rewritten to focus on the processes that shape the temperature structure?

[We agree with the reviewer, this sentence has been rewritten in the RM L37](#)

- L. 52 and in many other places: Please choose between using “barotropic” and “baroclinic” OR “external” and “internal”.

[We apologize for this confusing using of terms. This is corrected in the RM L51 and elsewhere](#)

- L. 70 (and elsewhere): You cannot start a sentence with “But”

[The sentence has been rewritten in the RM L71](#)

- L. 79: EKE has already been defined. Please remove “eddy kinetic energy”

[The terms have been removed in the RM L80](#)

- L. 85 and in other places: “in turn” is wrongly used. Please remove here.

[The terms have been removed in the RM L86](#)

- L. 98: “runs”? flows?

[The term has been replaced accordingly in the RM L99](#)

- L. 123: “represents” → is

[The term has been replaced accordingly in the RM L124](#)

- L. 150: remove “ ‘s”

[The term has been replaced accordingly in the RM L151](#)

- L. 155: “multiplicative factor” on what?

[The sentence has been rewritten in the RM L158](#)

- L. 205: remove “(from ...)”

[The terms have been removed in the RM L208](#)

- L. 206: remove “ADV includes nonlinear ...” as this is not generic to all advective processes, and the non-linearity is not discussed later.

We agree with the reviewer, the non-linear effects are not effectively discussed or analyzed in the manuscript. The sentence has been rewritten accordingly in the RM L209

- L. 210: “work”? effect?

The term has been replaced accordingly in the RM L213

- L. 225 and elsewhere: remove “color shading” and “solid contours”. These should only belong to the caption, except in the case of very complex and rich figures for which the reader needs to be guided.

We agree with the reviewer, this sentence has been rewritten accordingly in the RM L230

- L. 239: remove the sentence starting with “In addition”, it does not hint at any explanation for differences.

The sentence has been removed in the RM L243

- L. 247: missing verb “they from”

The verb “propagate” has been added to the sentence in the RM L251

- L. 257: “propagation” → wavelength

The term has been replaced accordingly in the RM L262

- L. 264: add “satellite” before “estimate”?

The term has been added accordingly in the RM L269

- L. 269: remove second occurrence of “SST”

The second occurrence has been added accordingly in the RM L274

- L. 270: split the sentence in two and remove “then” (no logical link)

The sentence has been modified accordingly in the RM L275

- L. 284: remove “of the model”

The terms have been removed in the RM L290

- L. 291: remove “an”, add “performance” after “model”?

The sentence has been modified accordingly in the RM L297

- L. 296: “with” → as

The term has been replaced accordingly in the RM L302

- L. 303: remove “the” before “temperature”

The term has been removed in the RM L309

- L. 312 and in many other places: remove “the” before “tides”

The term has been removed in the RM L318 and elsewhere

- L. 313: “shows” → show

The sentence has been modified in the RM L319

- L. 343: you cannot start a sentence with “And”

We agree with the reviewer, this was a mistake. The sentence has been rewritten accordingly in the RM L349

- L. 362: “both” → the two. (both is not used when contrasting subjects’ properties)

The sentence has been replaced accordingly in the RM L368

- L. 376: split the sentence in two at “further”

The sentence has been replaced accordingly in the RM L382

- L. 385: wrong use of “whilst”

The sentence has been modified in the RM L391

- L. 393: “missing” → absence

The term has been replaced accordingly in the RM L399

- L. 409: “tight” → thin

The term has been replaced accordingly in the RM L415

- L. 415: remove “Fig 6b and 7b”

The term has been removed in the RM L421

- L. 430 and elsewhere: remove “the” before “ZDF” (before acronyms most of the time)

The term has been removed in the RM L436

- L. 485: The sentence is confusing. Do you mean that the diffusive part of the advection scheme overwhelms the explicit diffusivity? Or that the diffusive part of the advection scheme has larger impacts in terms of cooling/warming than the advection?

We apologize for the confusion. The authors would like to mean “the diffusive part of the advection scheme may account significantly in the vertical advection”. This sentence has been rewritten in the RM L490

- L. 491: “weak extreme”? extremum?

The term has been removed in the RM L496

- L. 497: “tides hardly generate h-ADV”? That is something we already discussed previously, that the tides are mostly linear at the scales resolved by the model and we do not expect them to have an important advective effect.

We agree with the reviewer, tides are primarily linear in surface water, however, non-linear effects intensify due to bottom friction for barotropic tides or as a result of IT breaking. Consequently, we anticipate a corresponding increase in ADV. This has been added in section II.3.2 of the RM L216. And we modified the above-mentioned sentence accordingly in the RM L502

- L. 511: I do not understand the reasoning leading to the statement “energy dissipated to internal tides is mostly transferred to mixing” To me, this is related to the mixing efficiency (Γ) and needs to be addressed via an energetic approach.

We agree with the reviewer, the sentence can be confusing. This has been removed in the RM L514.

- L. 523: “That vertical profile is probably the case”? Please clarify.

The sentence has been removed in the RM, and the paragraph has been rewritten L518

- L. 527 and elsewhere: remove “the” before “SST”

- L. 529: “offset”?

- L. 530: sentence cannot start with “But”. Also, “working” should be replaced with “acting” or “at play”

The paragraph to which the three above comments refer has been deleted in the RM.

- Section V.2: This section is quite speculative. Wavelengths are estimated visually, but the discussion would require robust estimates (via spectral analysis?). I would recommend strengthening the section with further analyses or delete.

- L. 541: is a verb missing?

We agree with the two above suggestions of the reviewer, since the estimations are visual. While a 1D band-pass filter can be employed to extract a specific wavelength range from the transect, we are confident that visually examining the data would allow the reader to arrive at the same conclusion as us. Nevertheless, we have shortened this section in the RM L538.

- L. 569: “before” → onshore?

The sentence has been rewritten in the RM L562

- L. 577: why “i.e.”? There is no clear link between the two parts of the sentence.

The sentence has been rewritten in the RM L568

- L. 609: missing “of” after “scope”

The sentence has been added in the RM L602

- Section VI. The summary deserves to be rewritten to clarify the main points. There are still many typos and unclear sentences. For example, L. 612, you should not define a

new acronym (“IT”) at this stage.

We agree with the two above suggestions of the reviewer. The summary section has been rewritten to be short and more concise in the RM L604.