

Review 2

Response to the review on "Spectral signatures of the tropical Pacific dynamics from model and altimetry: A focus on the meso/submesoscale range" by M. Tchilibou et al.

We thank the reviewer for taking the time to review our manuscript. Please find the reviewers' comments below in bold and our responses in non-bold.

Reviewer

The scientific goal of the paper is to explain the reason why the observed SSH wave number spectra exhibit flatter slopes in the tropics. The dynamical waves the authors address for generating these flat slopes are internal tides and waves. They use high resolution numerical models with and without internal tides and waves to infer that the latter waves are responsible for the flattening below the 200km length scales. They compare the slopes obtained with observed satellite SSH data. Conclusions are relevant, spectral slopes tend to match the satellite observed slopes (Figure 10).

With some modifications, I recommend the paper to be published in Ocean Science journal.

We are glad that the reviewer finds the paper fundamentally sound to be published. Reviewer 2 has made only a few remarks compared to reviewer 1, and a lot of modifications have been made to take into account the remarks of reviewer 1 that should satisfy reviewer 2.

Major comment: The paper deals with model descriptions and a large part deals with technical issues to access correct filtered SSH wave number spectra for model and satellite datas. Most of the paper deals with these technical issues and makes the paper hard to read. Simplifying those technical issues would enlighten the paper greatly. The discussion around all those different types of filtering should be transferred to an appendix.

These technical issues are an important piece of this paper. We agree that this part could be hard to read, especially since some misinterpretations were present. This discussion has been improved thanks to comments from reviewer 1. We think that this section is important for the paper, but have followed the reviewer's remarks and moved most of the details on the model configurations to Annexe 1, and the Spectral sensitivity tests to Annexe 2. The old Figure 2 has also been moved to the Annexe 2. We trust that the main text is a bit easier to follow now, and the important details are still included in the Annexe for the interested readers.

Suggestion: The dynamical discussions could be improved if scaled equations are added to the text to exhibit the importance of the different types of waves present and the linear or nonlinear behaviour of the processes acting at different length and time scale.

We understand the purpose of this suggestion, and we have tried to give in the text the necessary information to present the different dynamics that are discussed. We think that added equations and their comments will extend the paper too much, and we prefer to refer to the different references.

Minor comment: Figure 1 anotations are hard to read.

We will try to do our best to get the best quality for this figure. But these two plots come from published paper to introduce our discussion and it is difficult to change them