

Estimation of geostrophic current in the Red Sea based on Sea level anomalies derived from extended satellite altimetry data

Second review

General comment

In this article, the authors use altimetric data extended toward the coast to describe the monthly climatological circulation in the Red Sea. This study provides a spatial configuration of the mesoscale eddies in the basin and their evolution along a climatological year. The authors also discuss the interannual variability of this surface circulation.

After taking into account the different reviews, the overall quality of the manuscript has improved. Particularly the data and method and the validation sections, where the authors provided more informations on their calculations as well as comparisons with in-situ observations.

The structure of the paper and its aim is clear, but in my opinion some figures remain unclear and the text still contains some grammatical errors. I recommend publication after minor revisions.

Specific comments

FIGURES

Figure 4 : Change the last colorbar to have matching fonts. I also suggest changing the maximal and minimal value of the colorbar as figures 4c to 4f only exhibit one color.

Figure 5 and 6 : I still think these figures are not readable which is a shame as they show the main result of the paper. For each month, only a color is exhibited, arrows are quite small, and for the months of June through September, the « AE » and « CE » fonts are not readable over a yellow color. As the SLA can be centered at 0, a « balance colorbar » (as the one found here : <https://matplotlib.org/cmoccean/>) could help improve greatly the figure.

Figure 7 : Same remark as the previous figure for the axis of the colorbars.

I provide hereafter some grammatical corrections for the english. But as non-native english speaker I do not think it covers everything in the paper. I suggest having a thorough review of the english in the text.

ABSTRACT

Line 19 : I suggest changing the end of the sentence by « except along the eastern coast where they flow in the opposite direction ».

Line 21 : « except a small part near the eastern coast ».

Line 21 : « This flow is modified by the presence of ».

INTRODUCTION

Line 31 : « between the continents ».

Line 32 : the words « latitude » and « longitude » are not necessary.

Line 51 : « that are often present ».

Line 54 : « 18°N and 24°N »

Line 70 : « from the coastline ».

Line 84 I suggest « advect » instead of « circulate ».

RESULTS AND DISCUSSION

Line 159 : « on the other hands » should not be used. Change to something like « Oppositely, near the coasts, weak correlation coefficient are found between the two datasets ».

Line 175 : « shows ».

Line 199 : « three cruises ».

Line 224 : « starts ».

CONCLUSION

Line 329 to 331 : This sentence should be removed as it is repeated in the last paragraph.

Line 332 : « shows ».

Line 334 : « Geostrophic current ».

Line 335-336 : « except along the eastern coast where they flow in the opposite direction ».

Line 337 : « except a small part [...] and of the western coast ».

Line 341 : « northern Red Sea ».

Line 341-343 : Please rewrite this sentence.