

Interactive comment on “Ocean state indicators from MyOcean altimeter products” by L. Bessi res et al.

Anonymous Referee #2

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The paper ‘Ocean state indicators from MyOcean altimeter products’ describes the definition of ocean state indicators from satellite altimetry in three regions of known key variability patterns, i.e. the equatorial Pacific, the Kuroshio current region and the Ionian Sea. The paper is well written and shows the high potential of satellite altimeter data to be used for the definition of ocean state indicators. I recommend minor revision of the paper before publication. The paper needs to be re-organized in order to remove its ‘project documentation’ character. Especially the introduction needs to be reorganized to improve the scientific context. Moreover, work needs to be done on the referencing.

General comments:

1 Introduction

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More work needs to be done on this part, as the focussed is set only set on the project detail description rather than on the scientific basis. Beside a precise and short section on the MyOcean project, other aspects needs to be addressed, e.g. i) Why these 3 regions are chosen to define the indicators? What does connect these three regions? What do they have in common? Why is it useful to define indicators from altimetry, what its advantage? ii) Scientific background introducing the regions of analysis iii) Why is it useful to define indicators from altimetry, what its advantage? What will be the application/purpose of these indicators?

2 Data and methods

A possibility could be to add here more detailed information on the MyOcean project which are necessary to know for the analysis, and which should be removed from the introduction. Moreover, the general description of the EOF analysis is not well placed in this chapter as this method is not used to build all three indicators. Moreover, this is standard and could be just referenced. Page 2086, L. 6-8: The EOF analysis can be a powerful mean to analyse ocean variability patterns. But it is still a statistical analysis and can only hint to an ocean physical signal, it is not a prove.

3 Monitoring ENSO

The introduction of section 3.1 is very well written, but addresses a broader audience which is not well placed for a scientific paper. This needs to be changed, and the actual scientific background important for the paper needs to be introduced. As suggested, this could be placed in the introduction. In particular, the question needs to be addressed: Why is there a need to develop a new ocean indicator for the ENSO phenomena, what is the advantage of using altimetry for this purpose? Page 2088, L10-L11: ... ‘even though it is very small’: This is not true, the tidal aliasing signal can be very important in some areas, especially in the equatorial basin. Moreover, this needs to be in the data/method description, as the signal is removed for each indicator???

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4 Monitoring the Kuroshio Extension

The introduction could be placed in chapter 1. It is very well written, but citations are missing, especially in the first 5 lines. Page 2089, last two sentences: '... is characterized by a modulation...': better: forced by or triggered. Moreover, these results need to be cited. Similar for page 2090 first 5 lines. Page 2090, L27-28: '... favour baroclinic instability.': not necessarily true. A stronger mean flow favors mesoscale activity, but not necessarily baroclinic. It could be for example also barotropic. Moreover, a reference is missing here! Then '... this clearly indicates that baroclinic instability is not the dominant mechanism.': I do not agree, this is not a clear indication, and no instability analysis is done here to quantify this statement. Either one needs to add a reference performing such a result; otherwise this statement has no basis here. For example, also topographic effects might play an important role. So, not clear... Moreover, this statement is used to hint to the plurality and variability of EKE energy sources. I do not see the necessity to argue with instability theory to result on this...

5 Monitoring the surface circulation in the Ionian Sea

The introduction is very well written, but references are completely missing. Moreover, the scientific basis is very detailed compared to the other two indicators, hence it should be shortened to be balanced. One could get the impression that this chapter is a single paper within this paper... Page 2095, L10-11: Tests have been performed to evaluate anomalies relative to a clim., are the results similar? Why is this method used to remove the seasonal cycle? Check Figure numbering/referencing...

6 Conclusion

One could more discuss the usefulness of indicators from altimetry. In this context, future perspective of the last paragraph should remain more general.

Specific comments:

Page 2082: L2 : remove 'The Sea Level Thematic Assembly Center': Not necessary

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to detail the structure of the project. L2: add 'European MyOcean project (www...)' L7: 'ocean indicator checks'...: change word 'check' L14: Abbrev. SLTAC used, but not known in the abstract. L22: 'overall behaviour'...: change expression, not very scientific L23: 'and help to track trends' L23: change 'between places' into space.

Page 2083: L1: 'way to talk to'...: better: to approach a wider audience L3-L7: references are missing to link to corresponding analyses defining these named indicators L12: Change global ocean observations system into global ocean observing system L19-L20: Data details which should be not placed in the introduction part

Page 2084: L9-L10: product involved in reprocessing: not clear.

Page 2085: L16: NRT and DT maps: where are they available?

Page 2086: Title chapter 3: no abbreviation in the title, this needs to be introduced in the introduction. L15-L16: '... each reacting quickly to changes in the other': grammatical, not clear.

Page 2987: L15-L16: '... International Research Institute Data Library': add link.

Page 2088: L10-L11: 'As this signal is not geophysical ...': Remove entire sentence as already mentioned before. L16: remove text in parentheses. L18-L19: remove: 'An analysis is performed every week': this is mentioned two sentences later.

Page 2089: No abbrev. in the title. L1-L2: change El Nino/La Nina to ENSO.

Page 2090: L11 : Weakening : better : decreasing or slowing down L12: 'The weakening (strengthening)...': change to 'Changes'...

Page 2092: L1: weakening: change to decreasing or slowing down No abbrev. in the title L5-7: Remove first sentence and put reference in the end of the sentence in L12 L15-16: '... from the west to the east.' L15: '... Mid-Ionian Jet (MIJ), top right ...' L18: change 'waters' to water masses' L19: During an anticyclonic state, ... L24: change '... what conveys'.. to 'conveying' L25: '... by the shortest route': needs better

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expression L25-24: Change ...'Under cyclonic mode' to 'This...'

Page 2093: L5: remove sentence L7: '... from an anticyclonic to cyclonic state. Larnicol et al. (2002) ...' L8: change ...' as discussed by Klein et al.' to (Klein et al., 1999)
L11: Ionian Sea L25-26: put reference in the end of the sentence.

Page 2094: L17: in order

Page 2096: L1: change '... see its location ' to 'marked in '... L27: '... for the year ...'

Page 2098: L4-5: remove sentence: 'Therefore remaining variability ...' L26: reference missing

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