Ocean Sci. Discuss., 4, S218–S220, 2007
www.ocean-sci-discuss.net/4/S218/2007/

Ocean Science Discussions

Interactive comment on "Altimetric sampling and mapping procedures induce spatial and temporal aliasing of the signal – characteristics of these aliasing effects in the Mediterranean Sea" *by* M.-I. Pujol et al.

Anonymous Referee #1

Received and published: 22 August 2007

Review of manuscript "Altimetric sampling and mapping procedures induce spatial and temporal aliasing of the signal - characteristics of the aliasing effects in the Mediterranean" by M.-I. Pujol, G. Larnicol, G. Dibarboure and F. Briol

This manuscript deals with the problem of the aliasing of the high frequency signal in SLA maps of the Mediterranean produced from satellite observations. It has been shown that the aliasing problem can be alleviated by combining the information from several satellites and by merging satellite observations with outputs of a barotropic model. The best result is obtained by correcting the model bias with the low frequency

signal estimated from filtered SLA observations.

As a user of SLA products I find this article interesting, because the authors try to extract a novel information about the sea level variability in the Mediterranean from existing observations and models. However, I have several comments which I think should be considered before the manuscript can be accepted for the publication in Ocean Sciences. Therefore, I propose the manuscript for publication in Ocean Sciences after a revision.

Specific comments:

1. The title is very long. Practically it is composed of two full sentences. I think it should be shorter.

2. A large part of the abstract describes the technical aspects in detail. I think that this part of the abstract should be condensed in order to highlight the main findings of the study.

3. Generally I think that the manuscript contains a very detailed description of all technical aspects. The authors should try to write these descriptions in a shorter form. Maybe tables describing different experiments can be used instead of text. Now large parts of the manuscript have a form of a detailed technical report.

4. Page 574, line 2 and page 581, line 16: I think that delayed sea level oscillations due to atmospheric forcing in a semi-enclosed sea are well known in oceanography even before satellites. This phenomenon is described and explained in many textbooks. Some previous studies in the Mediterranean are referenced Le Traon and Guzelin (1997).

5. Page 580, lines 9-14: I think that the statement that there is a high variability of atmospheric forcing in specific areas should be supported with some evidence or by references. I also do not understand why the barotropic signals are favoured by shallow bathymetry? I guess the authors wanted to say that the amplitude of sea level oscilla-

OSD

4, S218–S220, 2007

tions is larger due to the shallow bathymetry, or that their specific method to estimate the barotropic variability shows high values in those areas.

6. Page 581, line 13: I think that the paper of Fukumori et al. (2007) links winds at Gibraltar to much shorter scales than intra-annual.

7. Page 594, lines 1 and 26, and Page 604, line 23: What is the non-barotropic component of the surface variability?

8. Section 5: In this section the authors combine two data sets. It is assumed that one data set (observations) estimates well the low frequency signal, and the other (the model) the high frequency signal. Assuming that the model is biased, the authors correct the model outputs by observations using an ad hoc method of statically merging two data sets. As expected the comparison with independent in situ observations shows that the new data set is more accurate. I think that this section describes in too many details all possible experiments that have been performed in order to empirically tune parameters. I think that the section should be much shorter and the detailed description of all steps which arbitrary generated merging parameters should be removed. The authors should also avoid a detailed description of the parameter tuning in sections 3 and 4.

9. Comparison to in situ observations: I think that instead of the table it would be useful to see the position of stations on the map of the Mediterranean. I suspect that most of them are grouped in several isolated geographical regions and have a correlated sea level variability. Therefore, the results for different stations shown in tables 2-4 can be strongly spatially correlated.

Interactive comment on Ocean Sci. Discuss., 4, 571, 2007.