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## ***Interactive comment on “Operational evaluation of the Mediterranean Monitoring and Forecasting Centre products: implementation and results” by M. Tonani et al.***

**Anonymous Referee #1**

Received and published: 1 June 2012

\* General comments

On accessing the website of the system described by the paper I see that it is an impressive system. Unfortunately the paper in its current form does not really do the system justice.

I think the paper needs a good example or examples of the use of the CalVal system to address a deficiency in the models or observations, or to explore a scientific question about the Mediterranean. The comparison of the regional subsystems and the Med-Currents system should surely have yielded some results of interest. Some of these results could be highlighted in the abstract giving the reader a reason to read on.

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Unfortunately as it stands it is more of a user manual or technical report than a paper.

There are numerous typos, spelling and grammatical errors which make it difficult for the reader to enjoy reading the paper. Please see the "technical corrections" below for a (by no means exhaustive) list of these. Another thing which makes this paper hard work to read is the excess of acronyms. I think in many cases it would help to use words instead. Some examples are FC, FC-3d and AN - please replace these with forecast, 3 day forecast and analysis.

Finally, in the conclusion, it would be worth discussing what the limitations of this system are and how you might go about understanding the causes for the model data differences in more detail.

#### \* Specific comments

1) Abstract: You hint in the abstract that the system can be used to "discover sub-regions where the model performances (performance) could be improved" however you fail to provide any concrete examples. You should give a specific example.

2) Section 1: The long and unwieldy sentence which begins the introduction is not a good start to paper. The whole introduction needs reworking. One thing that is definitely missing is a discussion of other operational group CalVal systems. You should do this and explain the distinctive aspects of your work.

3) Section 2: The section begins with a bullet point list of the components - again a weak way to begin a section. Having a list like this is useful if you include some description of each system after the bullet point. For example, add something to say Med-currents is (Ocean forecasting model and data assimilation system?)

4) Section 2: The description of offline coupling is not entirely clear. It sounds like the NEMO model forecast provides fields for WAM. The WAM forecast then provides data for the next days NEMO forecast.

5) Section 2: You should split this into subsections where each subsequent deals with a

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particular component of the system. One section for the model, one for the assimilation, one for the backup system.

- 6) Section 2: I'm not sure the reference to MyOcean service desk is required here.
- 7) Section 2.1: The paragraphs are a bit random here. Why does each sentence need a separate one? I think the bullet point list is somewhat unnecessary. Just make the lists into a sentences.
- 8) Section 3: Do we really need to read about CSV format? Save this for an appendix.
- 8) Section 3.1: Explain what the in-situ meta data update step involves.
- 9) Section 4: It would be useful to know how the sea level anomaly for the model is determined. Is it by subtracting the model mean or by using a specific mean dynamic topography (MDT)?
- 10) Section 5.1: This section is not really assessing the efficiency of the network. I would say it is assessing the reliability.
- 11) Section 5.1: The reference to Figure 5 is a mess. There is no top panel or bottom panel in my figure 5.
- 12) Section 5.1: When a datum is missing are the emails automatic? How is this dealt with in practice? Might be interesting to have a specific example of this process.
- 13) Section 5.1: Not really clear what you mean by "the loss of data". What is written here is vague and non-specific. Please fix this.
- 14) Section 5.2.1: Please use words for AN and FC-3d (see general comment above).
- 15) Section 5.2.1: Perhaps you could say why there is a seasonal cycle in the RMSE of sea level.
- 16) Section 5.2.1: Be specific about the model resolution difference between WNRM and MFC

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17) Section 5.2.2: A discussion of the reason for the seasonal variability of temperature RMSE would be interesting

18) Section 5.2.3: It is a shame to not go into more details about why the model underestimates the salinity and just say this should be futher investigated. Perhaps examining model fields for those days would be informative.

19) Section 5.2.4: Again add something about why the current is so weak in the model and why is there a negative bias in the zonal and positive for the meridional component. Remove your statement about the intensity since it is incorrect for a velocity component which can be either positive or negative.

20) Section 5.3: I think you should attempt an explanation of the model observation differences in the chlorophyll.

21) Section 5.3: Presumably the evidence that the data assimilation improves the forecast of the model is in the reference. This should be made clear.

22) Section 6: The conclusion is very short I think this represents the lack of assessment of any of the results presented. If you address the general comments I think there would be more meat here.

23) Section 6: Also in the conclusion you do not explain any future developments for the system.

24) Section 6: Explain the major upgrade in 2011.

25) Table 3: Not sure I see the need or point of this table. Remove.

26) Fig 4: Explain the red lines in the figure caption.

27) Fig 7: Temperature anomaly compared to climatology might show more clearly the differences between the timeseries lines.

\* Technical corrections

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As stated above there are many typos, spelling errors and grammatical errors. I will point out a few below as well as few more stylistic suggestions:

- 1) Section 2: Split the first paragraph after (Oddo et al., 2009) Each paragraph really should have its own topic if at all possible.
- 2) Section 2 p1819 para 4. Perhaps join to the previous paragraph. When I first read this I wasn't sure what assimilation you were discussing. I also don't think the last sentence is needed about the sequential application of the Vi operators since the previous sentence already said that the solution is found in reduced dimension space.
- 3) Section 2.1: "Med-biogeochemistry instead as a bi-weekly production..." Rewrite.
- 4) Section 3.1: "...convert in the standard format the in-situ data..." change to "convert the in-situ data to the standard format".
- 5) Section 3.2: Redundant sentence: "This was done in order to evaluate the forecast degeneration..." It would be interesting however to know if there was a reason for selecting 3 days rather than 10 days or 1 day, for example.
- 6) Section 3.2: I would call a grid node a grid point.
- 7) Section 4 p1824: Replace "The variables could be selected out of a pool of seven: Temperature..." with "The options are: Temperature...".
- 8) Section 4.1: Replace "confrontations" with "comparisons" and later "confronted" with "compared".
- 9) Section 4.1: Remove the unneeded sentence "The bias is always a difference..."
- 10) Section 4.1: "con- served" to "conserved"
- 11) Section 5 p1827: "These limits must be kept in the right account and in spite of this the system is very powerful..." to "Nevertheless, the system is very powerful..."
- 12) Section 5.1: "These are only examples of the potentiality intrinsic in this instru-

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ment". Remove or rewrite in a clearer way.

13) Section 5.2.1: "...due to the higher grid resolution seem not available to catch...". Unclear sentence.

14) Section 5.2.2: First sentence should be something like: "There are around 27 single point measurements between the surface and a depth of 3m"

15) Section 5.2.2: I presume this is the RMSE of all the data between the surface and 3m. Might be worth making this clearer.

16) Section 5.2.2: Another bad sentence here: "The bias respects the statistics.." Rewrite.

17) Section 5.2.2: Consider breaking up the paragraph (perhaps where you move on the SST comparison)

18) Section 5.2.2: "The bias is slightly negative even though is (STET) clear from the figure that during the summer it is positive". Not clear.

19) Section 5.2.2: Change "statics" to "statistics".

20) Section 5.2.3: First sentence I would say: "In 2011 there were only 10 buoys available in the Mediterranean basin". You also should say that the "statistics should be treated with caution because of the small number of observations". (This argument might apply to temperature as well).

21) Section 5.2.4: "fix point (x,y)" to "fixed point (x,y)".

22) Section 5.2.4: "correct direct of the flow" to "correct direction of the flow".

23) Section 5.2.4: I think you should say "None of the systems, neither the MFC-currents nor POSEIDON..." - Is that all the systems you could have looked at? If not you should just say "Neither MFC-currents nor POSEIDON..."

24) Section 5.2.4: A few times here you have used "week" when you should have used

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"weak" when referring to the strength of currents.

25) Section 5.3: "grater" to "greater" (this error appears a few times).

26) Fig 5: Months on graph are not in English.

27) Fig 6: Change "Substracted" to "subtracted".

28) Fig 6: Change "bar" to "bars".

29) Fig 6: Expand AN and FC-3d acronyms in figure caption.

30) Fig 9: Figure labels quite small.

31) Fig 10: Figure labels very small.

32) Missed one in section 2: "Lvel" should be "Level"

OSD

9, C439–C445, 2012

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Interactive comment on Ocean Sci. Discuss., 9, 1813, 2012.

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