

Interactive comment on “Operational coastal ocean forecasting in the Eastern Mediterranean: implementation and evaluation” by G. Zodiatis et al.

G. Zodiatis et al.

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We thank the reviewer for their efforts to review this paper. The reviewer does not consider the title of the paper to correspond to its contents because they expect discussion of only the present operational model. However, the paper is not about a model, but about forecasting: how it is to be done (implementation) and how well it is done in different configurations (evaluation). The reviewer considers the investigations into active-slave configurations to be inappropriate here. This is not true because the present operational system may not be the best one, and we would like to explore options on how to best configure operational forecasts. In fact, we conclude that the present 1-week space between model reinitialization could be extended to 2 weeks without significant error increase. This is exactly what the reviewer requests in terms

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of quality of the forecast in terms of lead time, and we have tested lead times not of 1 to 5 days, but 1 to 28 days. We also find that our forecasts are more reasonable with the VIFOP method of initialization.

We feel that we DO answer the question of how to validate a high resolution nested model. We compare the low resolution “donor” model with high resolution nested model, we compare both to series of sea surface temperature from remote sensing, we compare high resolution to two separate extremely detailed research cruises (completely independent of the forecast since they have not been assimilated to any model). To the authors’ knowledge, there are no other nested models with so much independent data available for comparison. The in situ data are high-resolution (especially near the coast) and collected frequently (semi-annually for the last 10 years and for the foreseeable future). We do not aim to decide which model is best between high and low resolution, but to minimize the errors generated on downscaling and initialization from the coarse model, and characterize differences. We will clarify this at the end of 3.2.1 by noting that the disagreement of ALERMO slave with SST observations is also in the CYCOM slave. I.e. most of the difference between model and observations is due to overall model configuration, not purely model resolution. We are not trying to decide which model is best, but what configuration is best.

Specific responses: Yes, a 5 day forecast (actually 4.5 day) is chosen because SKIRON meteorological forcing is available for 120 hours from midnight, every day. We do not use the first 12 hours because we must wait for the ALERMO 24-hour average output centred at noon. This will be clarified in the revised paper.

There is no surface wave parameterization for mixing. Mellor-Yamada vertical mixing parameterization is widely used and we do not feel it necessary to describe here. The reader should see the cited references.

Several of the reviewer’s comments relate to the section on ALERMO, which will be almost entirely removed. The detailed description of ALERMO is not necessary and it

sidetracks readers. Only the basic features like resolution, domain, levels, bathymetry, min depth, mode of running will be kept. A reference to ALERMO description paper will be cited. Also the technical details on VIFOP will not be included, references should be consulted. Essential SKIRON details will be moved to 2.1.

Section 2.3 will be clarified with regard to schedule and method of initialization, as suggested by the reviewer.

Figure 2 does not seem to be helpful, so will be removed, in favor of a verbal description.

Section 3.1.1 Throughout the paper, the forecasts are run daily with updated meteorological forecasts (except slave and active experiments when an analysis meteorological data set was used). We will state in the implementation section exactly when VIFOP and SKIRON were implemented in the operational system. At the time of the output in Fig. 3, both VIFOP and non-VIFOP versions were running in parallel, and one date was chosen for a simple comparison. We do not feel it is redundant because we want to see the effect of VIFOP on our particular forecasting system. Yes, it is used, but it cannot be assumed it is better than interpolation. We do not know of a more appropriate place to report this small, but significant result. Perhaps a more systematic investigation of the effects of VIFOP will be carried out in the future, but for this paper, a simple comparison is useful.

Section 3.1.2 contains two sentences defining active and slave modes, and another two stating which experiments have been carried out. We do not feel this is overly repetitive, and is very useful for the reader to quickly understand the discussion.

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