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Interactive comment on "The Sicily Channel Regional Model forecasting system: initial boundary conditions sensitivity and case study evaluation" *by* S. Gaberšek et al.

Anonymous Referee #1

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General comments

The paper untitled "The Sicily Channel Regional Model forecasting system: initial boundary conditions sensitivity and case study evaluation" by S. GaberŽek et al., is addressing an important issue in the domain of operational oceanography. A sensitivity analysis of a Regional Hydrodynamic model to boundary and initial conditions is performed, thanks to 7 seven experiments ranging from non-optimized to fully optimized interpolation. The main conclusions of the study are: - the best result is obtained with a Variational tool (VIFOP) used to nest the Regional Model (SCRM) to the Global Mediterranean Circulation Model (OGCM) through the lateral boundary conditions, -

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the ability of the SCRM to develop its own dynamics is inhibited by OCGM forcing

The general comments that are raising from the review of this paper is then: - Are the outputs of the SCRM significatively different from the outputs of the OGCM? - What are the specific results concerning the meso-scale activity in this area of the Central Mediterranean that have been obtained by the high resolution model?

Specific comments

As a first test to quantify the ability of the model to develop its own dynamic, it would be helpful to run the model in a free mode (forcing by climatological fields) and to shed light on the specific meso-scale oceanic features obtained in the area, when the equilibirum is reached. Then boundary conditions from the OCGM model will be introduced progressively thanks to VIFOP. In this second phase, the authors must gives an idea of the magnitude of the different constraints used in the Variationnal formulation and how this constraints are affecting, first the local dynamic (dynamical constraint) and second, the data misfit. As far as I known, VIFOP is an assimilation tool: assimilation of SSH altimetric data should be also tested.

The authors should also gives more details on the bathymetry that they have constructed and how this regional bathymetry is linked to the OGCM bathymetry.

The sensitivity analysis should be performed also for another period in addition the period of 5 days starting from 6 April 2005, in order to the evaluate the effect of two different forcing on the optimization interpolation.

Technical corrections Figure 3 and Figure 4 are not very clear and explicite. It would be helpful to shown the different results as T, S, U, V horizontal maps.

Interactive comment on Ocean Sci. Discuss., 3, 221, 2006.

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