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Interactive comment on "Coastal ocean forecasting with an unstructured-grid model in the Southern Adriatic Northern Ionian Sea" *by* I. Federico et al.

Anonymous Referee #1

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Coastal ocean forecasting with an unstructured-grid model in the Southern Adriatic Northern Ionian Sea Authors: I. Federico, N. Pinardi, G. Coppini, P. Oddo, R. Lecci, and M. Mossa Manuscript Type: Research article Special Issue: Situational sea awareness technologies for maritime safety and marine environment protection

General comments

In the present paper the SANIFS (Southern Adriatic Northern Ionian coastal Forecasting System) unstructured-grid forecast-ing system is adopted to predict the three dimensional fields of active tracers and hydrodynamics for the Southern Adriatic North-

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ern Ionian Seas, with a specific investigation for the Gulf of Taranto. The downscaling technique and the numerical settings adopted during the implementation phase make the system stable and robust, and allow short-time simulations at three different scales, from large to shelf-coastal, to coastal and harbour. During the verification phase, SANIFS simulations are favourably compared with hourly time-series of temperature, sea level and velocity measured at the coastal-harbour scale showing a good agreement. First of all, the specific needs of each development stage are identified, and based on the state of the art. The paper is properly organized and concise. It is written clearly using correct grammar and syntax. The title is informative reflecting its contents. Scientific approach, methodology and work program are well outlined and also intelligible from the Abstract. The referenc-ing includes well sounded contributions from literature. It has been very interesting to read and review this paper, since I found it clear and useful for future works. I think that it meets international quality standards.

Specific comments

Pag. 5, lines 5-6: “River inflow surface salinity values were fixed to a constant value of 15 psu next to the river mouths, fol-lowing the sensitivity tests carried out with MFS parent model in the shelf areas close to river outlets”. Please, specify how the value of 15 psu has been calibrated and/or add reference.

Pag 7, line 13: please substitute “hydrodynamics” with “hydrodynamic”.

Pag. 10, lines 5-6: “. . . an underestimation of the sea velocity intensity (bottom panel of Fig. 13b). This indicates that future investigations should focus on the turbulence scheme in coastal waters and/or bottom friction parameterization”. In the shal-low area the underestimation could be also related to currents induced by waves, not modelled by the system.

Pag. 10, lines 16-17: “Although few observed experimental evidences of northward oriented WACC exists, this is one of the features of the SANIFS system over this period”. Could be appropriate to add reference of the mentioned “observed experi-mental

evidences". In addition, please substitute "exists" with "exist".

Further comments

The paper is focused on an innovative approach to operational oceanography, which consists in the use of unstructured grid model in forecast mode. The model products of this operational system can be adopted for many downstream fields, from applications to decisions support system and even to the field of coastal engineering.

Please also note the supplement to this comment:
http://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2016-169/nhess-2016-169-RC1-supplement.pdf

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