

Interactive comment on “Predictions for oil slicks detected from satellite images using MyOcean forecasting data” by G. Zodiatis et al.

Anonymous Referee #1

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General Comments:

This paper presents an example of a very useful coupling of SAR-based oil spill observations with a modern oil spill fate modelling system (MEDSLIK), implemented in an automated operational environment. Potential oil spills detected by analysis of SAR imagery are digitised as polygons which, in turn, may be integrated in time in two ways: either by seeding the polygons with oil particles or by advecting the polygons themselves, i.e., treating the polygon vertices as particles to be advected. This provides two valuable alternative views of the oil slick fate. Some examples from the Mediterranean and Black Seas are presented demonstrating nicely how the system works.

This is a novel and interesting approach to the problem of initializing oil spill models with observations. It would be even more interesting if more focus had been put on

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the problem, for example, a discussion of the quality of the SAR detection analysis, the overall system performance (from SAR acquisition to forecast) and validation. As it is, a large part of the manuscript describes the model system itself, which I would imagine is available in previous publications. Also, the use of MyOcean data to drive the model system is not a major theme of the paper, contrary to the impression one gets from the title; perhaps in a follow-on paper?

Specific Comments

Section 3.1: title: Forecasts and backtrack trajectories of slicks as polygons

Section 3.1: State explicitly that diffusion is turned off. The algorithm used is NOT as described in Sect. 2!

Section 3.2: title: Forecast and backtrack trajectories of slicks as particles

p. 1983 lines 22-25: "A hindcast can also ..." This belongs in Section 2.

p. 1985 lines 20-21: I don't see the technical meaning of the last sentence. Does it mean that the ageing and motion algorithms operate simultaneously? Sounds like a TV advertisement.

p. 1985 last para: What about evaporation and dispersion? Emulsification certainly increases the volume, but this seems excessive.

p. 1986 lines 9-10: The last sentence is odd. Explain better or drop it.

p. 1986 lines 11-22: The discussion of the causes of the oil slick shadow is only speculation. There is no confirmation of the forecast currents nor of the forecast winds (although I expect the wind forecast to be more accurate than the currents). Unless the accuracy of the currents and winds can be established, this description is useless and should be dropped.

Section 4: title: Discussion and Conclusions

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p. 1987 line 18: Change to "At the current time, determination of the state of a satellite-detected oil slick..." "Satellite determination" is not possible at all, as the authors have made clear.

References: Drop Brostrom et al., 2008. It seems to be just an abstract for the Brostrom et al., 2010 article.

Technical Comments

Throughout: Use a single spelling of "MyOcean"

Throughout: "imageries" to "imagery" or "images"

p. 1977: I don't agree with replacing "backtrack" with "hindcast". Regardless of whether the authors find it unfortunate, the term "backtracking" is established in the oil spill modelling world, and "hindcast" is well-entrenched in the vocabularies of oceanographers and meteorologists, meaning something quite different. Also, I suspect the authors are not completely in agreement themselves, given the reference to Coppini et al. (2011) on p. 1988.

p. 1978 line 24 and later: "an ASCII file of type "*.tab"" is too technical and could be replaced by something more descriptive like "a polygon file"

p. 1979 line 22: should probably be " $1/2dt$ " is replaced by dt "

p. 1980 line 10: Which wave direction? Mean, peak, ...

p. 1983-4: put the description of fig 5 in the figure caption. I can't see any white arrows.

p. 1984 line 4: Change "It is clear that" to "Since there is no diffusion in backtracking,"

All figures except 1 and 8: text in the figures is too small. But maybe this works OK in the online version?

Fig 3, 5, 6, 9: Zoom in as much as possible. Perhaps add a vignette overview map.

Fig 5, 6, 9: add velocity scale, colour scale

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Fig 6: Need a better way to highlight the observed slick.

Fig 7a: It would be nice to add the amounts evaporated and dispersed.

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