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Interactive comment on "Combining operational models and data into a dynamic vessel risk assessment tool for coastal regions" *by* R. Fernandes et al.

Anonymous Referee #1

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General comment This paper addresses relevant scientific questions within the scope of OS and deserves publication. However there are a couple of issues that need to be addressed before. The authors develop a new methodology to dynamically estimate time and space variable shoreline risk levels from ship spills, integrating numerical meteocean forecast and oil spill simulations with vessel tracking automatic identification system. The risk index combines the likelihood of occurrence with the assessed consequences at the shoreline, based on coastal sensitivity.

In general, title and abstract are pertinent. The length is pertinent to the contents and the structure of the article is clear. There are many figures that could maybe reduced in number, avoiding redundancies, or integrating more information in fewer figures.

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Results should be extended to gain generality in the analysis of the model dynamic behaviour. Accordingly, the Discussion should be improved.

Specific suggestions 1) The paper presents a new tool that when calibrated will likely support the management of coastal water pollution. The aim of the present work, however is to test and evaluate the risk model dynamic behaviour and response to different variables and not the provision of an operational tool. Further calibration in risk model, in terms of probability and consequences, is not the focus of the work. I suggest to broaden the analysis in order provide more robust tests of the dynamic behaviour of the model. This can be done in different ways for example, extending the analysis presented in 3.4 by exploring a broader range of variation of: 1) meteocean conditions, 2) ship traffic conditions, 3) oil quality by varying these conditions one at time. For example, using the same ship position, the authors can calculate the integrated shoreline contamination risk levels at each day of the year in order to calculate the response to the meteocean conditions. Then, fixing the meteocean conditions, the index can be calculated according to the variation of the ship position during the year. At the end, a couple of additional model runs can be done in order to explore the index variability in response to different oil types. The latter test is needed to confirm/or validate the statement of page 1352, lines 25-28.

2) Another point that needs clarification and discussion is the spatial resolution of the index. If I understand correctly, the index (of 200 m resolution at the coast) is derived from info having different (coarser) spatial resolution:

-Meteocean conditions POMS-MOHID: 6.6 km -Atmospheric conditions, MM5 model: 9 km -Wave: 5 km -Wind: 0.5 ° -Oil spill model: 6.6 km -Coastal vulnerability: 200 m

Are these spatial resolution adequate? Are they suitable for the analysis and the description of the coastal processes? This point needs to be discussed, also referring to other related works.

Previous works have been partly acknowledged I suggest to include in the introduction

(page 1330, lines 15-20) also recently published papers focusing on risk indexes and modelling approaches (i.e Olita et al., 2012 Ocean Cost Manage., Goldman et al., 2014 Marine Pollution Bulletin, Liubartseva et al., 2015-Marine Pollution Bulletin, Melaku Canu et al., 2015 Marine Pollution Bulletin). The results should be discussed also considering the related work, including appropriate references.

Minor comment: Please, clarify in 2.5 which data are given by each model/database. Most of them are clear, others not (i.e. which atmospheric condition is obtained from MM5? Visibility? Others?).

Interactive comment on Ocean Sci. Discuss., 12, 1327, 2015.

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