Ocean Science
Discussions

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Interactive comment on "Coastal sea level response to the tropical cyclonic forcing in the north Indian Ocean" *by* P. Mehra et al.

Anonymous Referee #2

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This paper describes and analyses the coastal sea level response to two storm events at the end of 2011 in the north Indian Ocean. The authors use the sea level and atmospheric observations at 9 locations along the Indian coast and perform a classical but robust analysis (spectral analyses and multi-linear regression). Although there are no new findings, it gives a fair idea of the causes of the sea level variation in response to these strong atmospheric events. The Figures, Tables and References are clear and support well the present text. It is also interesting to have an analysis done at large scale and on both sides of the Indian Subcontinent (Arabian Sea and Bay of Bengal). The scientific quality of the paper is good but in my opinion the presentation of the results is poor and makes the paper hard to read and the purpose of the authors difficult to follow. For this reason I suggest major revision of the manuscript. Indeed the two main results concerning regression model and the HF response (harbor resonance)

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are treated together which make the paper very difficult to read. I strongly suggest that the HF analysis was treated separately in the text. I also would like to see more discussion about the possible remote part of the surge (what about the propagation of the surge along the coast as a coastal trapped wave for example).

Minor Comments:

Introduction:

The introduction is well documented but it sounds like an inventory. Reformulation to make the text more seamless is required.

Section 2:

578,L26 : Define JTWC

579 all : This section is really disconcerting, as all data processing methods (detiding, high-pass filtering, spectrum computation and multi-linear regression) which have different purposes are given all together like an inventory. I strongly suggest that details information which concern *only* the multi-linear regression model (the de-tiding + equation model) should appear in this section. The 5 minutes high-pass could be introduce in the dedicated paragraph, as well as spectrum. The Sea Level Residual (SLR) acronym is used in the text either for the detited sea level or for its high-pass component. You should introduce a hf-SLR (or whatever) to distinguish between this 2 quantities in the text.

equation 1: epsilon should be defined

Section 3.2

581,L23 : Define what you call a Surge Dome ? and how you compute it ?

582,L2 : You indicate that at Karwar the local influence of the wind is less and you suggest that the surge are partially due to the remote effect of long waves coming from the E1. It would be interesting to estimate the propagation time of the coastal

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trapped wave between your difference locations and discuss these results. Does the peak surge time at the difference location match with a theoretical speed of a coastal trapped waves (c=sqrt(gH)) ?

3.4 Harbour Resonance : I suggest you clearly separate this section from the rest.

586,L11 : space between *land(sea*

Table 1: The time is in IST should appear in Table 2 instead of this table

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Interactive comment on Ocean Sci. Discuss., 11, 575, 2014.

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