

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

### **Anonymous Referee #1**

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Comments on 'Coastal sea level response to the tropical cyclonic forcing in the north Indian Ocean' by Mehta et al. (OSD)

This paper discusses tide gauge data at several sites in India during a few months in which cyclones resulted in two modest surges on the Indian coast. The analysis methods are based on tidal analysis of the gauge data, so as to separate tide and residual (surge) components, and then use linear regression on the daily averages of the residuals in terms of local meteorological parameters from weather stations, so as to learn how sea level responds to local forcings.

This is a well-established technique that has been used many times in the past, al-

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though regressions are usually performed using local wind stress rather than winds as these authors have done, but is not as good as using synoptic meteorological information and a surge model. The paper also discusses the high frequency components of the records that are presumably due to seiches.

The time series are short, the surges discussed are small by Indian standards, the methods are not new, and there are no conclusions other than such analyses are useful within a surge monitoring system.

The paper itself is written well enough, although the absence of 'the', 'a' and 'an' in sentences is irritating. But the authors have not learned the lesson that less is more sometimes. There is a large amount of irrelevant descriptive detail. Some of the figures are poor (figure 1 is too dark, figure 10 font is unreadable).

I am sorry but, while it may be relevant locally, I cannot see why this paper should be published in an international journal.

Minor remarks:

576, 10 - what is a surge 'dome'? - the peak of the event?

20 - I don't think tropical cyclones relate to meteotsunamis much. What about tornadoes?

577, 5 and 18 - 'in situ' is Latin, not to be hyphenated

21 - similarities to what?

578, top - I am not sure some of the references given in this literature review are relevant to the present paper

579, 25 - perhaps you can explain the difference between the data in the cyclone track data set, which must include the speed of the cyclones, and the translational speed data set. What is JTWC? (tsunami centre?)

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570, 8 - the reader will want to know what the Rabinovich method is. It is not good enough to assume they know it.

18-20 - I understand the daily regression analysis discussed above. I didn't understand the monthly business. Do you mean you make a separate analysis of daily values each month? Is making regressions using daily values good enough to learn about surges?

As mentioned above, equation 1 is usually undertaken using wind stress and not wind speeds.

581, 22 and elsewhere - what does 'well marked' mean?

582 - I don't really care about the history of every storm in the region in this period - if the big events E1 and E2 are of interest, keep the focus of the paper on them

Figure 2c is not discussed in the text?

Sections 3.2, 3.3 etc. I felt I was drowning in detail.

Section 3.4 - actually I found this interesting myself. There is a great range of variation in seiching around the Indian Ocean (for example, the currents associated with those with short period on the West Australian coast can damage shipping) and if the authors had written this section to put the observations in some regional context it might have been more interesting. As it stands, they show that these stations have seiches. But many tide gauge records contain seiches.

Section 3.5 - I have no reason to think that the analysis has not been done well at a technical level. The problems are that the techniques are not new, the data sets are short and the results are not particularly interesting.

590, 19 - sentence 'Presently ..'. This isn't true for surges in general, it may well be for tropical surges.

25 - 'Storm 5' is presumably the same as E2? Don't confuse the reader with different names.

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I didn't look at the Supplementary Material.

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

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