

## ***Interactive comment on “Assessment of reliability of extreme wave height prediction models” by Satish Samayam et al.***

### **Anonymous Referee #1**

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#### General comments:

This study estimates the design wave heights associated with return period of 30 and 100 years using four different methods of extreme wave analysis. Also based on the results obtained from four methods, the study has attempted to generalise the reliable model which can be used in future for better wave height estimation in designing the coastal activities.

The name of the Oceans or Seas may be mentioned, instead of Continent or country, as we are dealing with ocean waves.

This paper presents good piece of work which is publishable in NHESS. However, the authors should incorporate the following corrections and suggestions in their MS before its acceptance:

Specific comments:

Pg5, Ln 136-137: provide a few important references to the statement Section 2.2.2: Buoy data: If buoy data of the Indian Ocean is used, the details should be given. Section 3.5: may be reduced, and only the important details of the method may be given.

Section 4.4: It is not clear which datasets are used for this estimation. As stated earlier this method considers wave height estimation during storm events, and ERA data may not give accurate results for extreme events. As all the regions considered in this study are prone to extreme events, authors should clearly comment on this aspect in the text.

Pg. 17, Para 1: As you have considered long term data, 6 h time interval is sufficient for extreme wave analysis. If so, 6 hly data may not be the reason for under prediction. Accordingly, the end part of the para may be modified. Yes, the main drawback of ERA-I is that it does not capture the cyclonic events, and that is the important aspect to be considered in this study. As this study has utilised long term buoy data, important conclusions can be drawn from all four methods used in this study.

Pg. 17, Ln 484: " 30,100 year extreme wave estimates"?? I suppose it is 30 and 100 years; if so, add 'and'.

Pg 17, Para 3: The reasons for not discussing 100 yr results may be provided. Section 6: As the results of ERA-I are showing underestimation, and use of ERA-I is not the objective of the study, it may be brought down. Before that results of other data sets may be provided in the conclusion. Also, results of ETS method are not mentioned in the conclusion. It is worth to mention which method has given the best results for the datasets.

"Buoy data" may be written as "buoy data" in the entire manuscript.

In the abstract it is stated that four models have been used, and the results are inter-compared, and from that the best model is chosen for the present work. But, in the

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text, that part is missing. While revising the MS, this aspect may be looked into, and accordingly, the conclusion can be drawn. Then it is possible to state that which method or analysis provides the best results. It may also be noted that the datasets used for this study are from three different Oceans.

Figure 1: Only the location map of IO is shown; what about buoy locations in the other Oceans? Figure 6: It is good to present the results of both the datasets in one figure with different colours; it gives better visual interpretation to the readers.

Technical corrections:

Pg 1, Ln 17: Replace 'water' with Ocean

Pg.16: Ln 446: Replace Al. with al.

Pg. 16: Ln 466-467: This is repetition, and may be deleted from any one place.

The language of the paper needs to be improved.

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., doi:10.5194/nhess-2016-333, 2016.

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