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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Variations in return value estimate of ocean surface waves – a study based on measured buoy data" *by* T. Muhammed Naseef and V. Sanil Kumar

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Thanks for the suggestions. We have now revised the manuscript considering all the suggestions. Since the measured buoy data is for a period of 8 years only, the Hs data from the ERA-Interim (Dee et al. 2011), the global atmospheric reanalysis product of the European Centre for Medium Range Weather Forecast (ECMWF) for 38 years (from 1979 to 2016) is now used to evaluate the wave height with different return period in the shallow (water depth ∼20m) and the deep water. The shallow region is close to the buoy location and the deep water location is at a water depth of ∼4000 m (Table 1). ERA-Interim used in the study has a spatial resolution is 0.125 X 0.125 deg and a

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temporal resolution of 6-h.

Dee, D. P., Uppala, S. M., Simmons, A. J., Berrisford, P., Poli, P., Kobayashi, S., Andrae, U., Balmaseda, M. A., Balsamo, G., Bauer, P., Bechtold, P., Beljaars, A. C. M., van de Berg, L., Bidlot, J., Bormann, N., Delsol, C., Dragani, R., Fuentes, M., Geer, A. J., Haimberger, L., Healy, S. B., Hersbach, H., Hólm, E. V., Isaksen, L., Kållberg, P., Köhler, M., Matricardi, M., McNally, A. P., Monge-Sanz, B. M., Morcrette, J.-J., Park, B.-K., Peubey, C., de Rosnay, P., Tavolato, C., Thépaut, J.-N., and Vitart, F.: The ERA-Interim reanalysis: Configuration and performance of the data assimilation system, Q. J. Roy. Meteor. Soc., 137, 553–597, 2011.

A section on "influence of length of wave data on estimated significant wave height return value" is now added. Since the data is collected at 9-m water depth, most of the time it is in intermediate wave regime. The data on mean wave period and the peak wave period are now added. A table is now added to show the percentage of time the waves are in intermediate, shallow and deep water regime based on relative depth (ratio of the water depth and the wave length) and the results are discussed. The wave breaking aspects are now covered. The methodology on wind-sea and swell separation are also added. The waves in the west coast of India are strongly season depended. Hence, we have considered seasons based on months. For the study location, the storm induced wave heights are less than the monsoon induced waves. June first week is the onset of Indian summer monsoon and the maximum Hs in the study area is due to monsoon influence and in all years it is during June to September.

The recent works as suggested are now cited.

Now we have added a wave rose plot showing the wave direction of measured data and the ERA-Interim data and discussed in the paper.

Other minor correction related to contribution number is corrected.

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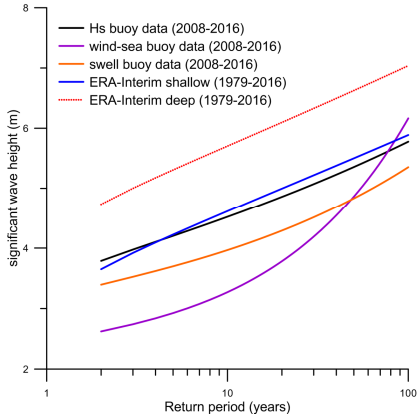

Figure 8: Return levels of significant wave heights for different return periods based on buoy data (2008-2016), ERA-Interim shallow and deep water (1979-2016) at 6-h interval by GEV model using annual maxima series

Fig. 1. Return levels of significant wave heights for different return periods based on buoy data (2008-2016), ERA-Interim shallow and deep water (1979-2016) at 6-h interval by GEV model using annual maxima s

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