Interactive comment on "Temporal variations in the wind and wave climate at a location in the eastern Arabian Sea based on ERA-Interim reanalysis data" *by* P. R. Shanas and V. Sanil Kumar

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We would like to thank the referee for the constructive comments. We have revised the paper based on the referee comments. Responses to referee comments are given below.

Unconvincing aspects are removed (section 3.4 deleted) and the text improved.

Comment 1: Section 2.3 Comparison of reanalysis data with measured data Page 7244

Line 2 "The comparison between the reanalysis and measured SWH data shows very high correlation (correlation coefficient = 0.96) with small RMS error (0.27 m) during both years." 0.96 is very high! I have found similar correlations only when dealing with astronomical tides (i.e. a quasi periodic process). What about coherence and phase? I think the authors should show the original series and explain such a result.

Reply: The original time series plot showing the 6 hourly ERA- interim SWH and the measured SWH for 2011 and 2012 are now added in Figure 2. Correlation coefficient estimated using the equation given in the attachment and good correlation is observed between the two data sets.

Comment 2: Page 7244 Line 4 "Scattering Index (SI) value is 0.23 with a positive bias of 0.2m during 2011 whereas slightly reduced SI and bias is observed during 2012 (Fig. 2)." The scatter of data (in particular for what concerns 2012) seems to suggest significant discrepancies between the two series.

Reply: The large scatter in 2012 is during the monsoon period. Now the original time series plot is added to show clearly the variations between the two data sets.

Comment 3: Section 3.1 Variation in wind speed during 1979–2012 The analysis of maxima should be performed in terms of Extreme Value statistics. In particular, it should be considered that the reliability of statistical inference crucially depends upon the shape of the tail of the distribution (the ïAÿ value of GEV distribution) and this has strong influence on the detection of trends. As a consequence, I am not confident the proposed (in Section 3.5 Statistical trend analysis for the time series data) estimates of trends are reliable for what concerns extremes. More explicitly: if the extreme distribution is "long tailed" strongly negative ïAÿ) very long time series are needed in order to assess with acceptable reliability the presence of trends.

Reply: The objective of the work is to know the temporal variations in the wind and wave parameters during 1979 to 2012 in the eastern Arabian Sea. The trend in annual maximum SWH depends on the few individual events and hence the 90th and 99th

percentile values of SWH are estimated and presented in the paper. We agree that the analysis of maxima should be performed in terms of Extreme Value statistics. We also agree that for estimating the extreme values we need a long time series in order to assess reliable results. The proposed methodology is commonly used for the statistical significance of identified trends.

Comment 4: Section 3.4 Influence of ENSO and Indian Ocean dipole on wind and waves To be quite frank I think that the analysis of just three events is not sufficient to support all the proposed discussion concerning various modes of climatic variability. I think the authors should limit themselves to explaining different influences of local and distant wind stresses in determining local wave height in view of the proposed scientific and technical potential applications, leaving aside climate problems that are outside the scope of the present work.

Reply: As per the suggestion we have removed the section 3.4.

Comment 5: Response to suggestions

Page 7240: Line 5 . . . . . .comparison with the reanalysis . . ..

Reply: corrected

Lines13 –âĂŘ15 . . . . . .relationships between annual . . . . Are tested and it is found that . . . . .negative IOD years. . ...

Reply: Sentence removed from the manuscript since section 3.4 deleted.

Page7242: Line21. . . . . .are performed for the tropical. . . . . ..

Reply: corrected as "have been performed"

Line25. . . . . . . .and shows that ERA–âĂŘInterim. . . . . Reply: corrected

Page 724: Line10 Either. . . . .wind speed shows decreasing. . . . . .or. . . . .wind speeds show a decreasing. . . . . ..

Reply: corrected

Lines9–âĂŘ10page7244. . . . .Statistical analysis of wind speed frequency is performed by classifying Wind speed into different ranges through. . . . .

Reply: corrected

Lines12–âĂŘ13 The weakening of strong winds is also Consistent with the decreasing trend of monthly mean wind speed over 34yr. Reply: corrected

Line19. . . . . .study also supports the hypothesis that the cyclonic activity in the AS is decreasing. Line25 These are statistically significant decadal variabilities. . . Reply: corrected

Page 7248 Line 3 . . . . observed speeds are . . . . Lines 3–âĂŘ5 The most logical cause of the peak identified in the wave height is the increase in wind speeds over time. Reply: sentence removed from the manuscript

Page 7250 Line 24 . . . . . .confident of non–âĂŘstationarity. Page 7251 Line 7 Theil Sen's slope estimate is also a method . . . .

Reply: corrected

Lines 13–âĂŘ15 The study shows that during 1979–2012 the annual mean wind speed is characterised by a decreasing trend (1.5 cm s−1 yr−1),whereas the annual maximum wind speed displays an upward trend of 3.6 cm s−1 yr−1.

Reply: corrected

Line 24 . . . . . .activity and wind speed finding that the peak2 event

Reply: corrected

Please also note the supplement to this comment:
http://www.nat-hazards-earth-syst-sci-discuss.net/1/C2719/2014/nhessd-1-C2719-

2014-supplement.pdf

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