

Interactive comment on “Co-existence of wind seas and swells along the west coast of India during non-monsoon season” by R. Rashmi et al.

Anonymous Referee #1

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This paper presents a case study of the wave field in three positions along the west coast of India during the non-monsoon period. The study presents a qualitative view of the wave field based on the dominance of wind seas (swells) vs. swells (wind seas), using wave buoy and wind observations (in situ and remote sensing).

I consider the paper interesting, relatively well written, and useful for the wave climate community.

Suggestions:

Throughout the all text it is not clear that we are in the presence of a “case study” limited in time. The authors try to pass the idea that this is a climate study and that in the non-monsoon period the wave field wind sea vs. swell partition is as presented.

This is not true, and the authors should make this clear, particularly in the abstract and in the conclusions.

This paper does not present a wave climate study, and rather discusses a short term event of co-existence of wind seas and swells along the west coast of India during non-monsoon season, which is fairly a calm weather season along these regions. Wave data (off Goa during May 2005, off Ratnagiri during Jan-Feb 2008 and off Dwarka during Dec 2007-Jan 2008) had been collected in different years during non-monsoon season which is fairly a calm weather season along the west coast of India. This has been made clear in the abstract as well as in the conclusion.

The usual partition between wind sea and swell is done via wave age (see Semedo et al. 2011, for example). The authors should mention the merits of their partition scheme compared to the more “conventional” wave age one.

Page 3098, line 25 – Add references after “... season”. This is an important statement, therefore reference(s) should be added. Suggest “Alves (2006) and/or Semedo et al. (2011).”

The merits of their partition schemes are explained in the introduction as follows.

“Recently, there has been a renewed interest in studying the swell characteristics. Alves (2006) studied the generation, propagation and attenuation of swells globally, whereas Semedo et al. (2011) presented the detailed global climatology, based on ERA-40, of wind sea and swell characteristics. Aboobacker et al. (2011b) have identified potential swell generation areas during different seasons in the Arabian Sea (from SW direction during SW monsoon and from SW/SSW and NW directions during both pre-monsoon and post-monsoon seasons). It has been shown that swell decay rates have an impact on the marine atmospheric boundary layer (MABL) and are related to a reverse momentum flux process.”

The above mentioned two references are added in the page 3098, line 25.

Page 3102, line 7 – erase “to”

Erased ‘to’

Page 3102, suggestion – it should be mentioned that the wind observations were made in land. The positions and distances to the wave buoys should be made available, and a table like table 1 should be added.

Yes, the wind observations are made on land, but very closer to the coast. It is mentioned in the text under the section “Data and Methodology”. The table for wind observations related to positions and distances to the wave buoys is added as “Table 1b” and it is referred in the text at the appropriate place.

Table 1b: Details of AWS wind measurements

Location	Latitude (⁰ N)	Longitude (⁰ E)	Distance between the buoy and AWS locations (km)
Goa (late pre-monsoon) (May 2005)	15° 27' 20.02"	73° 48' 8.44"	7
Ratnagiri (early pre-monsoon) (Jan – Feb 2008)	16 ⁰ 53' 35''	73 ⁰ 16' 55''	13
Dwarka (post-monsoon) (Dec 2007-Jan2008)	68° 57' 59.21"	22° 14' 32.92"	23

Page 3104, suggestion – The paragraph after equation (6) is a bit confusing; I recommend it to be re-written.

The paragraph is rewritten and as follows:

“The sea states are classified as follows: (i) Swell dominated sea state ($SSER \leq 0.8$): the major part of the wave energy is associated with low frequency spectral peak, , (ii) Mixed sea state with comparable energy of wind sea and swell ($0.8 < SSER < 1.2$): the wave energy is distributed over the low and high frequency ranges and (iii) Wind sea dominated sea state ($SSER \geq 1.2$): the maximum energy is confined to high frequency part of the spectrum.”

Page 3105, line 23-24 – Add “the” after “but, add “the” after “pattern of”, and replace “wave” with “waves”.

Page 3106, line 6 – Add “them” after “classifying”.

Page 3106, line 12 – Replace “dominated” with “dominant” (twice).

Page 3106, line 25 – Add “the” before “majority”.

Page 3106, line 28 – Add “the” between “is” and “spectral”.

The above changes are included in the manuscript.

Page 3107, line 10 – When the authors mention that “Off Goa, during late pre-monsoon season, we find that wind seas grow when the wind and the wind sea are in the same direction”. This is a redundancy: wind seas are always aligned, by definition, with the wind.

The sentence is removed.

Page 3107 – When referring to the figures, for example on this page to figure 4., the authors should be clear to which panel they refer to; figure 4. Has 15 panels, and they are not well identified (see caption comments below).

The figure label, caption and figure reference no. in the text are accordingly modified.

Page 3108, line 8 – Add “to the” between “and” and “disappearance”.

Modified

Page 3109, first full sentence stating with “Young...” – This sentence is a bit confusing; re-write.

The sentence is re-written as follows: “The dominance of young, mature and old swells are nearly the same, varying between 30% and 40% during early pre-monsoon season (Jan-Feb 2008)”.

Page 3111, very last sentence: is “No. xxxx” correct?

“No. xxxx” is correct. After the manuscript is accepted, the “xxxx” will be replaced with “4 digits Contribution Number” of our Institute.

Figures captions miss labels (a, b, c, etc.); without them it results hard to read or understand them and to relate them to the text, and vice-versa.

The figure label, caption and figure reference no. in the text are accordingly modified.

References:

Alves, J. H. G. M., 2006: Numerical modeling of ocean swell contributions to the global wind-wave climate. *Ocean Modell.*, 11, 98–122.

Semedo, A., K. Suselj, A. Rutgersson, A. Sterl, 2011: A Global View on the Wind Sea and Swell Climate and Variability from ERA-40. *Journal of Climate*, 2011, 24:1461-1479.

[Above references are cited in the text as well as listed in the reference section.](#)