

## ***Interactive comment on “Accuracy of altimeter data in inner and coastal seas” by Luigi Cavaleri et al.***

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General Comments:

The goal of the authors is to evaluate scatterometer (wind) and altimeter (waves) estimates applied to inner and coastal seas. The evaluation used model estimates as the basis to determine the quality of four altimeters, for small-scale water bodies. The results for the winds showed fairly strong and uniform correlation. The results of the wave evaluation produced larger differences and tended to under-estimate (slope greater than 1.0) the model's significant wave height (based on symmetric best-fit slope).

The interesting portion of the paper looked at a coastal track during a severe mistral storm. The significant wave height results clearly showed (Sentinel-3), the ku- and

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plrm-ku bands were comparable to the model estimates south of  $42.5^\circ$  and located relatively far from neighboring land masses, consistent with documented evidence using a 20-30km threshold.

The authors expanded the analysis in a region closer to land masses (e.g.  $> 44.5^\circ$  in the northern portion of the Adriatic Sea). Again, the ku- and plrm-ku-band results seemed to be consistent with one another, displayed spatial variability, but were about a factor of 4 greater than the model estimates. Investigating further using the L2 20 Hz estimates unmistakable noise level increase but were comparable to the previous analysis.

The discussion paper will require some editorial modifications (grammar, sentence structure). In general, the paper was concise and easy to follow. The number of figures was sufficient and contained information to ‘tell their story.’

Did the authors clearly support their initial hypothesis: how close to the coast can one reliability use the four altimeter estimates (wind and wave)? I would say yes. Rather than rely on a preconceived notion as to when altimeter wave height estimates could be useful, the authors for one example in a confined water body demonstrated it could especially the Sentinel 3.

#### Specific Suggestions / Comments:

1. Suggestion: The authors used model estimates as the base to evaluate four altimeter data sets. To emphasize this, the scatter plots may need to be plotted with the model as the independent variable (abscissa).
2. Comment: It seems as though the low error value of the winds provides the means to rule out the potential for bad wind estimates from the wave model results, and therefore focus on the model waves versus the altimeter estimates.
3. Suggestion: Figure 4. I did not see annotations for latitude that would aid the reader interpreting Figure 5 and others.
4. Suggestion: The results in Figure 6 display the wave estimates from Sentinel 3, but what was used? (e.g. c-band, ku-band, plrm-ku-band) It would aid the reader in the discussion of Figure 8. This

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could be my ignorance and apologize to the authors. As noted in 2) it would be helpful annotating the latitude. 5. Comment: When considering the 'distance' is that from the initial point of entry from the track, or the closest land mass where the estimate was recovered? It seems most useful when considering the data obtained from the north portion of the Adriatic Sea. 6. Comment: I am aware of the physical limits to altimeter data, are there limits to the quality in extremely low significant wave height estimates? I raise the question based on Figure 8 where there is a noticeable spatial variability in the altimeter estimates while the model significant wave heights are nearly constant. I do agree questionable results exist when the distance from land becomes less than about 10km.

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