

Reply to Referee #1

We thank Anonymous Referee #1 for his/her useful comments, which improved our paper.

The changes referred to in our replies can be found in the attached file "Reviewed_text.pdf" uploaded as supplemental material.

GENERAL COMMENTS

Referee: *This paper is presented as a 'discussion' on the use of X-band SAR for marine applications and presents no original research of its own. It should therefore be evaluated as a review-paper. However, the manuscript in its present form is not nearly comprehensive enough to be accepted as a review-paper. Instead of reviewing the possible marine applications of X-band data the paper is concentrated on reviewing a subset of issues affecting image quality (rain cells and scalloping). It is difficult to imagine what the target audience for this review-paper could be as it contains no new information for a SAR-expert, but on the other hand it does not give a complete review of marine applications or issues affecting image quality either. Even though the discussion concentrates on image-quality, the reader is not presented with any example images that would help a non-expert reader to understand what is being talked about.*

For comparison, a comprehensive treatment of issues affecting SAR image quality over the sea can be found in the "Synthetic Aperture Radar Marine User's Manual" that is also available on the web at:

<http://www.sarusersmanual.com/>

Similarly for comparison, a good review presentation of the marine applications of SAR data can be found for example in:

*Kerbaol, Vincent, and Fabrice Collard. "SAR-derived coastal and marine applications: From research to operational products." *Oceanic Engineering, IEEE Journal of* 30, no. 3 (2005): 472-486.*

Authors' Reply: The whole paper has been improved according to the referee's suggestions. In particular, suggested papers have been extensively referred. In particular, Section 2 and Section 3 have been modified following the referee's suggestion. The new version of the manuscript is now meant as an up-to-dated review of SAR marine applications with special care to X – band case.

MAJOR CHANGES

In the following, it is provided a list of other major changes, which have been made into the text following the suggestions of the two anonymous referees:

- The title has been changed to properly describe the content of the paper.
- All the sections have been corrected and improved (language, grammar and syntax) for a better comprehension of the whole paper.
- The reference list has been correctly updated.
- The tables 1, 2 and 3 has been updated and correctly described into the manuscript.
- A Table 4 has been inserted to better describe the experimental results in Section 4.3.
- Figure 2 has been updated according to the experimental results in Section 4.1.
- Figures 5, 6, 7 have been improved to better describe the experimental results in Section 4.2.
- Figures from 10 to 15 have been substituted with new Figures 10, 11 and 12 to better describe the experimental results in Section 4.3.