

Interactive comment on “Interferometric swath processing of Cryosat-2 data for glacial ice topography” by L. Gray et al.

Anonymous Referee #2

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Very thorough and well-written article confirming earlier work on the ability of the swath processed data obtained by SAR interferometric altimeter to retrieve dense height information over ice and snow covered regions. I only have a few suggestions for the authors:

In general the author could find an appellation to distinguished swath processed CryoSat heights, CryoSat height is ambiguous and could refer to either heights from swath processing or to Level 2 height products. Also the paper would benefit from the inclusion of additional commas.

P 3133, Title: Although it is the second version of the Satellite, I believe the mission is still considered by ESA as CryoSat, not CryoSat-2. This is also true for the abbreviation, CS-2, used later in the text.

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P 3134, L16: The idea of increase in height measurement density is not developed in the paper, can the authors be more specific about exactly how many more points are available from swath processing?

P 3139 L15-16: “Less than those”

P 3139 Formula 5: Can the author double check the sign of the right term? In the CryoSat handbook, positive phase convention is for signal coming from the right hand side of the spacecraft.

P 3141, L22: It should be “2011”

P 3141, section 4. This section could benefit from further justification and specifics. Why are the data filtered? From fig. 5 it is not obvious that the level of noise would affect much the unwrapping, or does it? What filter is used? What is the origin and characteristics of the filtered noise? Why is the unwrapping performed line by line rather than in 2-dimension?

P 3142 L9: “In the L1b . . .” The implication of this sentence is not clear. Can the authors develop?

P3143, L1: Why has this resolution been chosen?

P3143: What is the true resolution of the swath processed height product? Is it the range resolution of the L1b bins? Are the values of adjacent bins correlated in any way? Can this be assessed/discussed with the dataset and models available to the authors? Ultimately knowing the true spatial resolution of the swath processed CryoSat heights is critical.

P3143, L26: What are these statistics on the non-filtered dataset?

Fig. 3: Difficult to distinguish the colours, maybe the slope values could be added at the end right of the curves or different colour used or thicker lines.

Fig. 10: The agreement between data and model is very good for the low latitudes but

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seems to worsen for the higher latitude; what may be the reason for this degradation?

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