Geophysical Research Abstracts
Vol. 18, EGU2016-10503, 2016
EGU General Assembly 2016

CP40: Improved Estimation of the Thermal Noise in the SAMOSA retracker.

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Estimation of the thermal noise is a key parameter in the retracking of the SAR altimeter waveforms, since it affects directly the estimation of the Significant Wave Height (SWH). Originally the noise level was obtained as the average value of the early part of the waveform prior to the leading edge, l typically gates 11-21 for a waveform with 128 gates. However, this fixed approach does not consider the impact that the SWH can have on the leading edge and on the amplitude of the averaged SAR waveform.

In fact, the range position of the first gate of the leading edge, depends on the SWH, and can vary considerably. Thus using the “fixed-gate” (11-21) approach can lead on erroneous noise floor estimation.

In the framework of the CP40 project, an empirical model was proposed for the computation of the thermal noise, attending to the leading edge position variability, as part of an modified implementation of the SAMOSA re-tracker. However, analysis of a test data set generated with this modified re-tracker, revealed that further optimisation of this model was need .

In this work the authors presents an improved estimation of the Thermal Noise, where an approach based on the uncorrelated characteristics of the thermal noise have been used as supplementary tool.

Data from Cryosat-2 CNES-CPP L1b (v14) have been used as input to evaluate this optimised version of the thermal noise estimation. The analysis has been focused on the area where in situ data (wave buoy data) are available (30º-65ºN and 20º-0º W).

Main results, as well the main characteristics of the approach followed, will be presented.

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