Up-to-date performances of the SWIM nadir Adaptive retracker on heterogeneous surfaces

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Résumé

The new satellite mission CFOSAT has been launched on October 29th, 2018. It provides, for the first time, colocated and global observations of the surface ocean wind and wave. Wind vectors and ocean wave spectral parameters will be derived from a combination of two Ku-Band radar instruments: a 6 beams incidence diffusiometer (nadir, 2◦, 4◦, 6◦, 8◦ and 10◦) measuring sigma0 profiles and wave spectra (SWIM) and wind scatterometer mode (SCAT).

At 0◦, SWIM is a nadir altimeter acquiring at a 5Hz rate. And for the first time in a reference ground segment, the retracking used to extract ocean parameters is the so-called Adaptive retracker uses an adaptive model which takes into account the roughness of the surface. This solution, deriving four geophysical parameters: Epoch, Significant Wave Height, Sigma0 and Mean Square Slope, was chosen for its particularly good performances at deriving precise and high-rate Significant Wave Height.

The aim of this presentation is to present up-to-date performances of the ground segment retracking algorithm for the SWIM altimeter on different surfaces.

In order to do so, we will describe the content of the peer-reviewed paper called "Benefits of the Adaptive algorithm for retracking altimeter nadir echoes: results from simulation and CFOSAT/SWIM observations" (Tourain et al 2021), that is currently in the final step before the submission.

A key aspect of this algorithm is its ability to process echoes from various types of surfaces and not only global ocean. Therefore, during this talk, global performances of the geophysical parameters will be assessed via several diagnoses, but this presentation will mainly focus on the performances of this retracker on heterogeneous surfaces such as sea-ice, blooms, and coastal areas, where the parameters Sigma0 and pseudo-mss can give useful information about the roughness of the surface.

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