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Global calibration/validation of 2 years of SARAL/AltiKa data

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The AltiKa altimeter flying onboard the French/Indian SARAL satellite provides the first opportunity to examine Ka-band measurements of sea surface height, significant wave height and ocean surface wind speed. In this presentation we provide the results from our global calibration/validation analysis of the AltiKa measurements, with an emphasis on near real-time applications of interest to both EUMETSAT and NOAA. Traditional along-track SSHA, and single as well as dual-satellite crossover assessments of the AltiKa performance are be provided. Unique aspects of the AltiKa mission such as improved along-track resolution, reduced ionospheric path delay corrections, mission-specific wind speed and sea state bias corrections, and sensitivity to liquid moisture and rain are also explored.

In February 2014, a major update to the ground processing was introduced. "Patch-2" improved the way wind speed was derived from altimeter backscatter, as suggested by Lillibridge et al. (1). The backscatter attenuation is now derived from the radiometer measurements via neural network algorithms, which also determine the wet tropospheric correction. We emphasize these improvements in our analysis. After 2 years in flight, SARAL/AltiKa is already providing a significant contribution to the constellation of operational radar altimetry missions, demonstrating the large benefits of high-rate Ka-band altimetry.

(1) Lillibridge, John, Remko Scharroo, Saleh Abdalla, Doug Vandemark, 2014: One- and Two-Dimensional Wind Speed Models for Ka-Band Altimetry. J. Atmos. Oceanic Technol., 31, 630–638. doi: http://dx.doi.org/10.1175/JTECH-D-13-00167.1