A Regional Validation of the first S-3 STM L1b & L2 SAR Data Products against an independent implementation of SAR and PLRM Chain

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In the present work, we intend to carry out a first regional validation of the Sentinel-3 STM L2 SAR (Synthetic Aperture Radar) and PLRM (Pseudo-LRM) data products against an independent implementation of SAR and PLRM processing chain.
The L2 altimetric geophysical parameters, that are intended here to be validated, are the sea surface height above the ellipsoid (SSH), sea level anomaly (SLA), the significant wave height (SWH) and wind speed (U10), all estimated at 20 Hz, whereas the selected validation areas are the German Bight and Mediterranean Sea in order to validate the dataset in a region with high tide dynamics either in a region with low tide dynamics.
The work is structured in two parts.
In the first part, we will process independently the Sentinel-3 SAR data products from L1a until L2 using exactly the same processing baseline as defined in the S-3 STM PDGS.
The objective will be to reproduce all the CAL/VAL results obtained as from the nominal S-3 STM PDGS L2 data products and, in case of inconsistency with them, to spot any eventual anomalies in the S-3 STM PDGS implementation (L1b & L2).
The second part of the work will be to process the Sentinel-3 data products using a different processing baseline that encompasses a tailoring of the Delay/Doppler Processing and SAR Waveform Retracking. We will introduce new processing options in the L1b SAR chain (as zero-padding and Hamming window in coastal zone, double extension of the radar range window) and in L2 chain (as Delay-Doppler Stack Masking computed using the exact slant range correction) in order to identify the positive impact of these changes in the S-3 data product quality.
TU Darmstadt will provide the PLRM L2 data (built from S-3 STM L1a), the SAR L2 data will be extracted from the ESRIN GPOD Sentinel-3 service whereas the CAL/VAL sites will be Corsica Calibration Site (Ajaccio) and the German Bight tide gauges and buoys network.