

OSTST 2018

Instrument Processing –Measurement and Retracking (SAR and LRM)

Session chairs: Francois Boy, Phil Callahan,
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Instrument Processing Posters

Order ▲ ▼	Title	Author ▲ ▼
Order by order in ascendant		
<input type="checkbox"/> IPM_001	3D F4 GPR: Fully Focused Delay-Doppler Processing applied on RAW and RMC data- Preliminary results	Makhoul (Eduard.Makhoul@isardSAT.cat)
<input type="checkbox"/> IPM_002	A trade-off analysis of Fully Focused SAR processing algorithms for high PRF altimeters	Scagliola (michele.scagliola@aresys.it)
<input type="checkbox"/> IPM_003	Can fully-focused or unfocused SAR delay doppler altimeter range data provide enhanced detection of coastal currents?	Feng (hui.feng@unh.edu)
<input type="checkbox"/> IPM_004	Impact of the Sentinel-3 SRAL PTR Width Drift on the L2 Marine Measurement	Dinardo (salvatore.dinardo@eumetsat.int)
<input type="checkbox"/> IPM_005	Sea State Climate Change Initiative: first steps of the Algorithm Development Team	Passaro (marcello.passaro@tum.de)
<input type="checkbox"/> IPM_006	performance of ICE-1 vs ICE-3 in retrieving water levels over rivers with Jason-2	Conchy (tainaconchy@gmail.com)
<input type="checkbox"/> IPM_007	Validation of 400+ SARAL (ICE-1) water level series over rivers	Santos da Silva (joecila@yahoo.fr)
<input type="checkbox"/> IPM_008	Evaluation of retracker bias due to waveform fitting method	Ray (cray@stmarys-ca.edu)
<input type="checkbox"/> IPM_010	Reprocessing of the Poseidon-1 French Altimeter	Thibaut (pthibaut@cls.fr)
<input type="checkbox"/> IPM_011	Calibration Data for Retracking TOPEX Data	Callahan (philip.s.callahan@jpl.nasa.gov)

OSTST 2018 Instrument Processing Call

- Understanding the differences between Ka and Ku band backscatter, penetration, volume scattering, rain effects, etc.
- Understanding, exploiting, or mitigating correlations in high-rate (20, 40, or 80 Hz) geophysical retrievals, for example to detect internal waves, reduce correlated noise in the spectral bump, or improve the precision and resolution of altimetric signals.
- Understanding or improving multi-mission inter-calibration issues stemming from the individual performances of various altimeters and retracking algorithms, including: retracker biases, correlated errors, and the effects of these on sea state bias
- Understanding the similarities and differences between LRM and SAR altimetry, and the intercalibration of the two, including: sensitivities to mis-pointing, direction of winds and waves, etc.
- Algorithm improvements, including general improvements and also specialized algorithms for particular applications (coastal zone, leads in sea ice, inland water, internal wave detectors, etc.) What can be done and what is gained by it?
- What innovative things can we do with stack files (“looks” sorted by look angle or Doppler frequency), and how can they best be exploited?
- Does fully-focused processing add significant value? Is there some in-between hybrid processing that optimizes the mix of coherent and incoherent processing?
- What can simulations and empirical studies with existing data tell us about algorithm design or optimal exploitation of future missions?
- What additional data elements should be added to data structures to enhance the accuracy or utility of the data?
- How shall we exploit or mitigate heterogeneous ocean backscatter within the field of view of the altimeter, for example to detect internal waves, manage sigma-0 blooms or very low SWH events, edit rain events, etc.? Are the answers different for LRM and for SAR?

OSTST 2018 Key Points from Project Scientists

- Are our cal/val methods sufficient to verify the Jason-CS/Sentinel-6 global and regional mean sea level stability requirements?
 - Use RAW SAR mode to validate RMC? When, Where, Conditions?
 - Considering the possibility of switching on the redundant altimeter on JCS/S6 during the cal/val phase with Jason-3. If feasible, what is the number of cycles that the redundant altimeter should operate?
- Comments on Ice & Snow mission
- What orbit for Jason-2 after second geodetic phase?
- What orbit for Jason-3 after tandem cal/val with Sentinel?
- Data Services: Necessary features? Training, Display, Cloud
- ***For IPM: What is NEW, better? What problems have been solved? How mature is new processing – ready for routine use?***
 - *Reprocessing of previous products.*
- ***Fast summary***

OSTST 2017 Key Points from Project Scientists

- 1 – Are our cal/val methods sufficient to verify the Jason-CS/Sentinel-6 global and regional mean sea level stability requirements?
- 2 – Considering the possibility of switching on the redundant altimeter on JCS/S6 during the cal/val phase with Jason-3. If feasible, what is the number of cycles that the redundant altimeter should operate?
- *3 – Alternative processing approaches such as fully-focused SAR processing are emerging. Will the current Sentinel-3 and Jason-CS/Sentinel-6 systems allow for novel processing approaches to be fully exploited?
- 4 – What would be the impact of descoping MLE3 fields in the baseline for JCS/S6 products (except for sigma0)?
- 5 – Would increasing the frequency of the Jason-3 AMR cold sky calibrations improve the long term stability?
- *6 – What are the open issues that affect the continuity between LRM and SAR modes from SWH, roughness, swell and their impacts on SSH?
- 7 – What areas should S6/JCS RAW SAR data (non-RMC) be collected (acquisition mask)?

OSTST 2016

Draft recommendation that missions enable “fully-focused SAR” processing, if possible

Recognizing that “fully focused SAR processing” has new capabilities and applications that improve precision and resolution of Earth surface properties, the OSTST recommends that SAR altimeter missions provide, insofar as possible, characterization information needed to support coherent processing throughout the time when a point on the ground is visible.

More research and development is required to consolidate our understanding of fully-focused SAR processing performance.