

National Aeronautics and  
Space Administration

Jet Propulsion Laboratory  
California Institute of Technology  
Pasadena, California



# Surface Water and Ocean Topography (SWOT) Mission Science Team Meeting

September 22, 2023

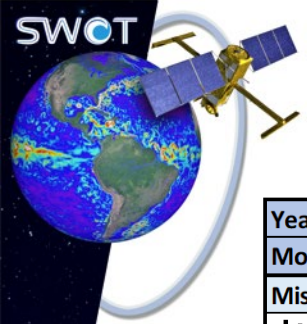
SWOT Algorithms and Products: Plans for  
ongoing operational data processing

Shailen Desai<sup>(1)</sup>, Nicolas Picot<sup>(2)</sup>

on behalf of JPL/CNES Algorithm Development Team

<sup>(1)</sup>Jet Propulsion Laboratory, California Institute of Technology

<sup>(2)</sup>Centre National d'Etudes Spatiales



# Science Algorithm Software (SAS) Status

Today

Year	2022	2023											
Month	12	1	2	3	4	5	6	7	8	9	10	11	12
Mission Phases													
Launch	█												
Commissioning		█	█	█									
Calibration					█	█	█						
Science									█	█	█	█	█
Calibration Updates													
Satellite Center of Mass					●		●						
Medium-accuracy Orbit		●			●		●						
Radiometer Calibration							●						
KaRIn Coarse Calibration						●							
KaRIn Initial Fine Calibration							●						
Ground Processing Updates													
Reconstructed Attitude					●		●						
Radiometer O/IGDR									●				
Nadir Altimeter O/IGDR			●					●					
KaRIn L1B LR Interferogram		●				●			●				
KaRIn L2 Sea Surface Height		●				●			●	●			
Crossover Calibration								●			●		
KaRIn L1B Single-Look Complex		●			●				●	●			
KaRIn L2 Pixel Cloud		●						●		●			
KaRIn L2 River Single Pass						●			●				
KaRIn L2 Lake Single Pass	●		●	●		●			●		●		
KaRIn L2 Raster			●						●				
Month	12	1	2	3	4	5	6	7	8	9	10	11	12

KaRIn Performance Checkout Completed

NALT and RAD O/IGDR Release

KaRIn Beta Pre-Validated Product ST Release

KaRIn Pre-Validated Products Release

Rapidly Evolving Product Maturity

Algorithm Cutoff Date for Beta Products

Algorithm Cutoff Date for Pre-Validated Products



# Beta Pre-Validated Science Data Products

---

- **“Beta Pre-Validated” KaRIn science data products.**
  - Added to plans due to better than expected maturity of KaRIn products (especially ocean).
  - Aimed towards familiarizing users with novel KaRIn science data products.
  - **Circulated to SWOT ST, ADAC and Early Adopters teams mid September**
  - Includes data from calibration phase only :
    - Entire calibration phase of KaRIn ocean products released
    - 2 weeks of ~6 passes of KaRIn hydro products



# Science Algorithm Software (SAS) Status

Today

Year	2022	2023											
Month	12	1	2	3	4	5	6	7	8	9	10	11	12
Mission Phases													
Launch	█												
Commissioning		█	█	█									
Calibration					█	█	█						
Science									█	█	█	█	█
Calibration Updates													
Satellite Center of Mass					●		●						
Medium-accuracy Orbit		●			●		●						
Radiometer Calibration							●						
KaRIn Coarse Calibration						●							
KaRIn Initial Fine Calibration							●						
Ground Processing Updates													
Reconstructed Attitude					●		●						
Radiometer O/IGDR									●				
Nadir Altimeter O/IGDR			●					●					
KaRIn L1B LR Interferogram		●				●			●				
KaRIn L2 Sea Surface Height		●				●			●	●			
Crossover Calibration								●				●	
KaRIn L1B Single-Look Complex		●			●				●	●			
KaRIn L2 Pixel Cloud		●						●		●			
KaRIn L2 River Single Pass						●			●				
KaRIn L2 Lake Single Pass	●		●	●		●			●		●		
KaRIn L2 Raster			●						●				
Month	12	1	2	3	4	5	6	7	8	9	10	11	12

KaRIn Performance Checkout Completed

NALT and RAD O/IGDR Release

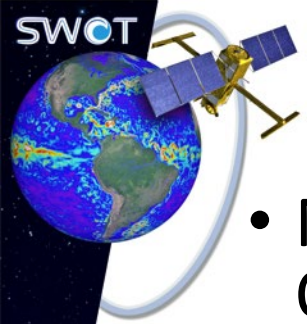
KaRIn Beta Pre-Validated Product ST Release

KaRIn Pre-Validated Products Release

Rapidly Evolving Product Maturity

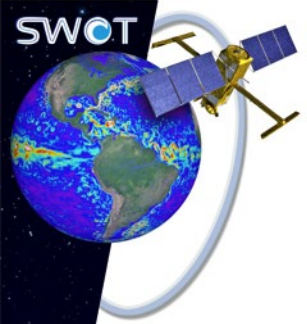
Algorithm Cutoff Date for Beta Products

Algorithm Cutoff Date for Pre-Validated Products



# Science Data Products: pre-validated products schedule

- New software versions likely to be in operations on CNES side by end-October – November
  - Will use most recently released versions of science algorithm software from August/September 2023.
  - Will use best available in-flight instrument calibrations for KaRIn, radiometer, and nadir altimeter.
  - Will apply various lessons learned from August 2023 reprocessing.
- Project teams will conduct some quality assessment before releasing the products
- Forward processing products release planned a few weeks (~4) after processing start, **products will be made publicly available.**
- **Full global reprocessing of all products** from March 29th phase up to date when forward processing uses same algorithms
- Products are aimed towards the **SWOT validation meeting.**



# Backup