# Hydrology

Wrap-Up

# Key Meeting Outcomes: Algorithms and Validation

- Water Surface Elevation and River Slope measurements from SWOT continue to be highly accurate.
- River width is a major focus of future improvements in the RiverSP product
  - There is a notable dependence of width on cross-track distance, which substantially impacts width-stage relationships in reaches and nodes with multiple passes.
- Lake WSEs are quite good, but work on improving area continues
- Substantial planned updates to lake products, including a product more constrained by prior information on lake area.
- Version D data contains substantial improvements in data accuracy, as well as new fields like reconstructed (interpolated) water surface elevation in rivers.
- Multiple complementary approaches for densifying, denoising river data
- Plan for continued improvements to prior databases (SWORD, PLD)
- Plans for SWOT Algorithm and VAlidation **(SAVA) working group** for HR data, joint between the projects and Science Team

# SWOT Working Groups: SLEW and River Science

- First global lake water storage analysis nearing completion
- Lots of fruitful efforts to combine SWOT with other sensors for lake studies
- First applications of SWOT to address lake/reservoir/wetland issues
  - Understanding of reservoir storage variability & human impacts
  - Reservoir evaporation
  - Improving understanding lake-river interactions
- Considerable advances in understanding global riverbank shape (bathymetry products/WG?) and river water storage variations with SWOT
- Robust tracking of flow waves and floods with SWOT
- Advances in tracking narrow rivers, including those narrower than 50 m goal
- Multiple approaches under development to track river & lake bathymetry with SWOT

# SWOT Working Groups : DAWG & GHyM

- First global release of the L4 discharge product : December 1st.
- Plans for Level 4 V2.0 and Level 2 with version D and SWORD v17 early 2026.
- Complementary approaches for discharge estimation and temporal frequency improvements (daily).
- Intriguing improvements in ML river models with incorporation of SWOT data.
- Global assessment of strengths and weaknesses of latest state of the art global models using SWOT.
- Assimilation of discharge and/or SWOT WSE into global hydrological models to improve global simulations of water storage and fluxes.

# SWOT Applications & Open Science

- Potential of SWOT in critical water management decisions (irrigation networks, transboundary basins, reservoir storage, greenhouse gas emissions, etc.)
- Multiple examples of SWOT capabilities to observe floods when we're lucky to observe them.
- Capabilities of SWOT to analyze diverse land cover types (examples over Pacific Coast of Ecuador)
- SWOT captures irrigation events and can inform on soil moisture information.

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**Strong recommendation for the mission extension, from the Science Team.**

# Where to see us next?

**AGU SWOT Hydrology Session** | 17 December 2025 | New Orleans, USA

"The Surface Water and Ocean Topography (SWOT) Mission: New Frontiers in Hydrology"

42 Abstracts

**EGU SWOT Hydrology Session** | 3-8 May 2026 | Vienna, Austria
"The Surface Water and Ocean Topography (SWOT) Mission: New Frontiers in Hydrology"

# A word from CNES regarding Hydrology

- What a year! **Giant leap from last ST meeting**, from fighting with the data and getting the flags recipe to confident products, science, and applications!
  - Still some work to do of course on width, area detections, added value product
- From local to global scale, **SWOT has now transformed its potential into reality** with outstanding studies on river/lake dynamics, flow waves, water storage, densification of SWOT data, floods, river bathymetry, assimilation into models, and much more.
- Various applications all over the world
- **Time to publish all these nice results**
- **River Discharge product will be released in December** + communication to plan for the users
- A lot of interesting discussions at the end of each session **showing the path for the next few years**