

# Observations coincident with SWOT ca/val



>30 platforms + 75 surface drifters

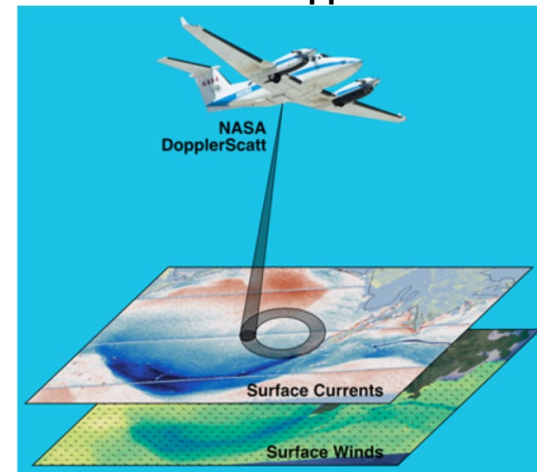
## Aircraft observations:

- DopplerScatt (km-resolution surface currents, winds)
- MASS (lidar SSH, detailed wave measurements, surface currents, SST)
- PRISM hyperspectral (~10m resolution chlorophyll and more)
- Infrared imagery (~50m resolution SST)

## In-water measurements:

- 9 underwater gliders (CTD, some with velocity)
- 8 Wave Gliders (velocity, directional wave spectra, meteorology)
- 10 Argo-style floats (CTD profiles, rapid repeat)
- 2 Lagrangian floats (CTD, 3D velocity)
- 1 Research vessel (velocity, rapid-profiling CTD, meteorology)
- 75 surface drifters

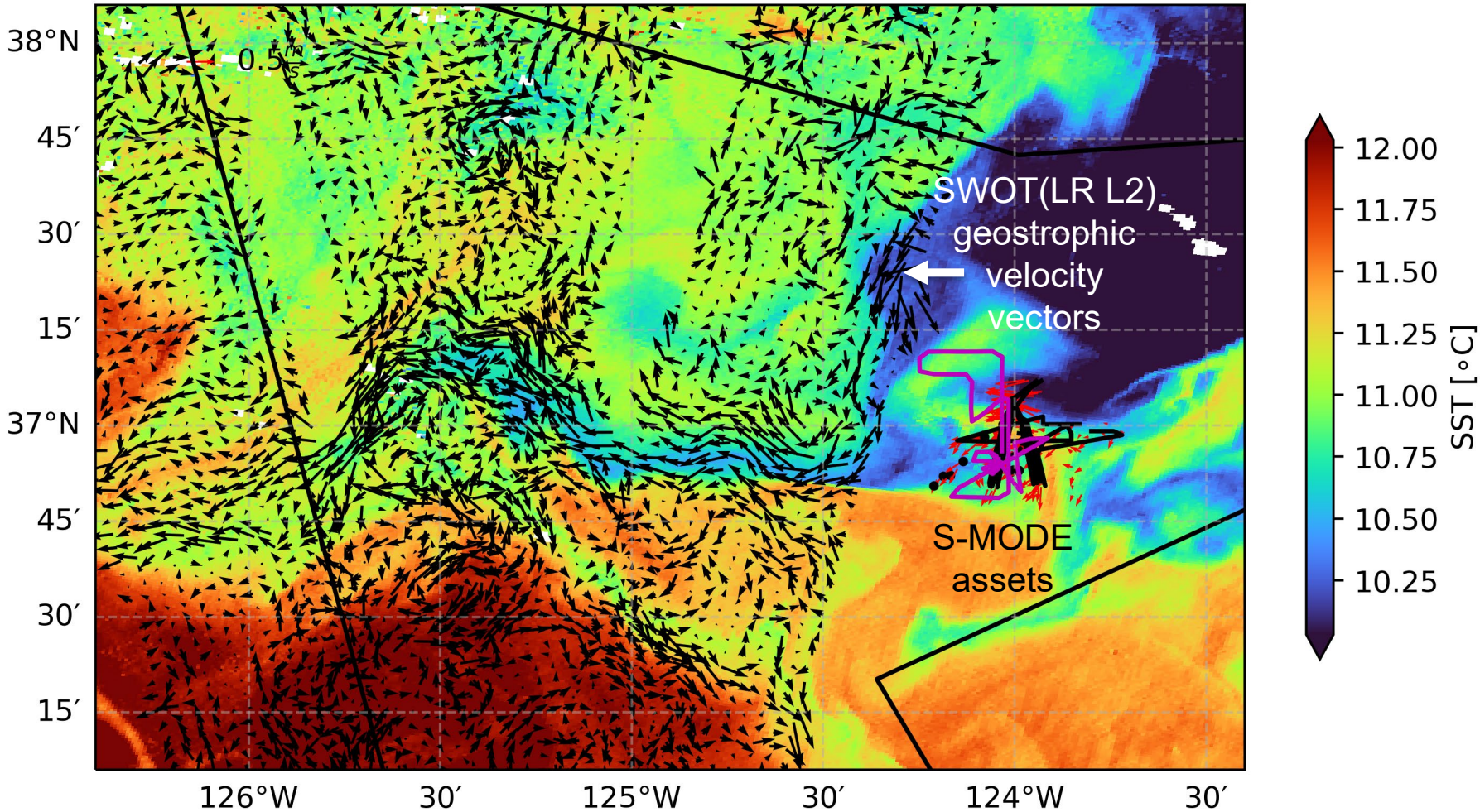
NASA JPL DopplerScatt

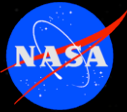


SIO Modular Aerial Sensing System (MASS)



SWOT (2023-04-21T15:58)/SST (2023-04-21T09:50)





National Aeronautics and  
Space Administration

Jet Propulsion Laboratory  
California Institute of Technology  
Pasadena, California

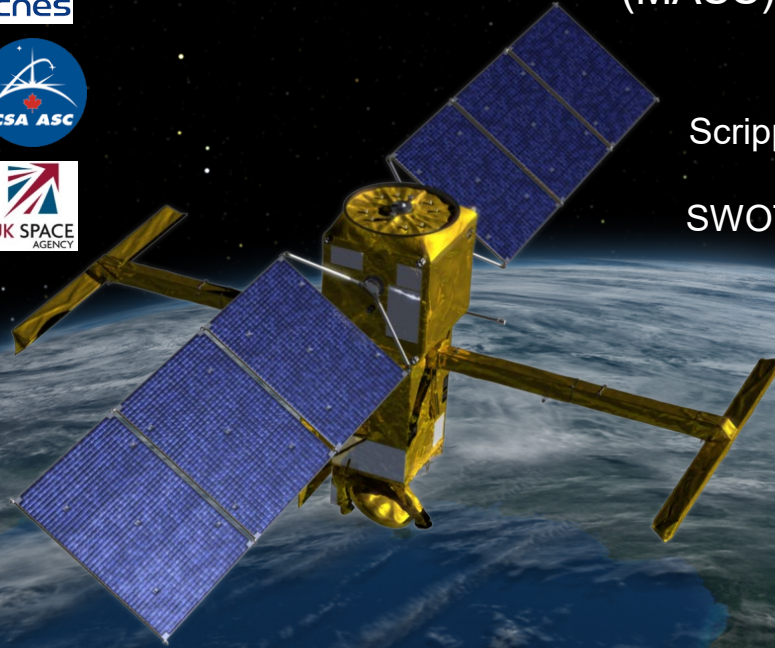


# Broadband 2D ocean topography airborne observations: Modular Aerial Sensing System (MASS) in support of SWOT Cal/Val

Luc Lenain

Scripps Institution of Oceanography

SWOT Science Team Meeting 2023



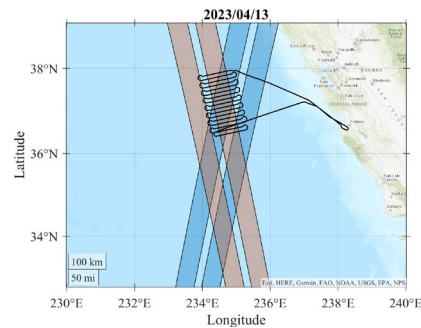
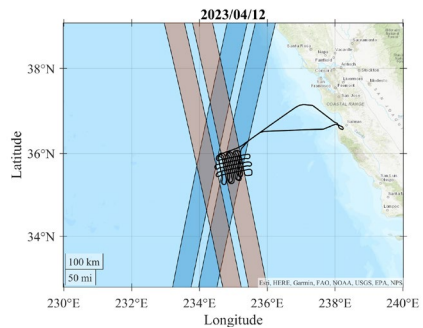
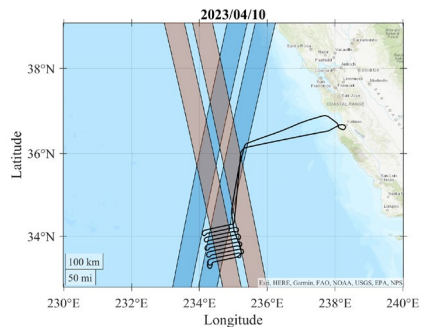
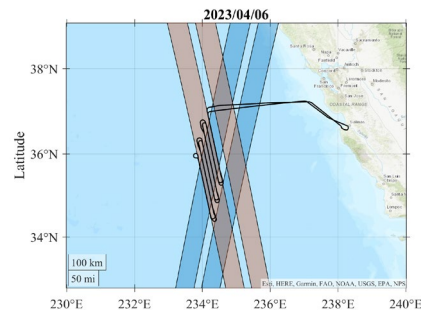
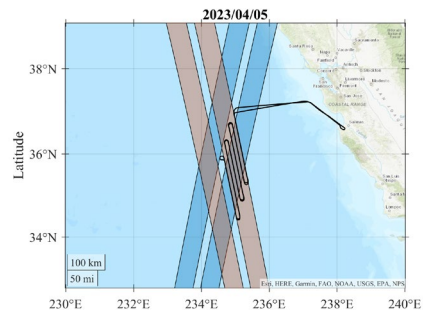
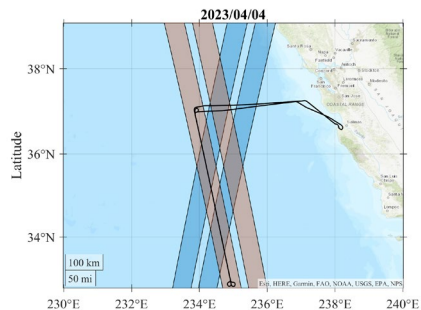
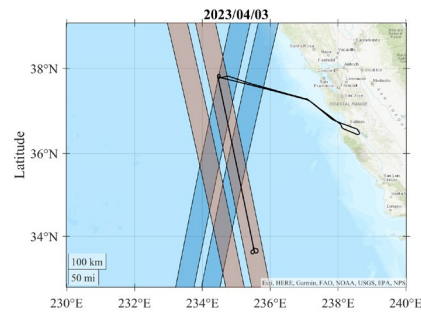
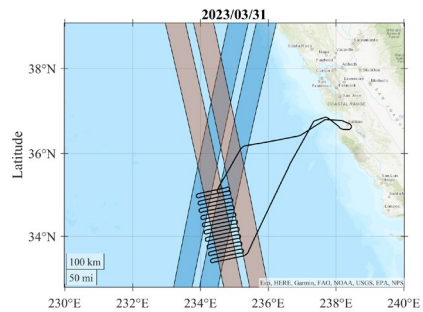
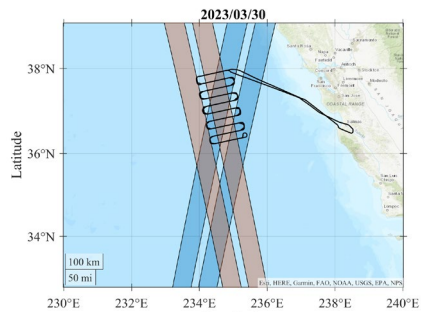
UC San Diego



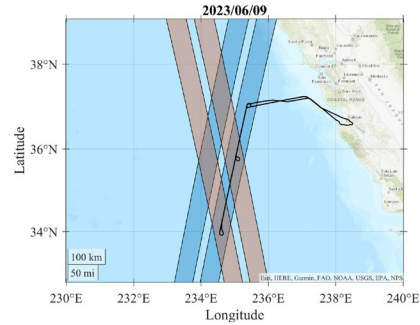
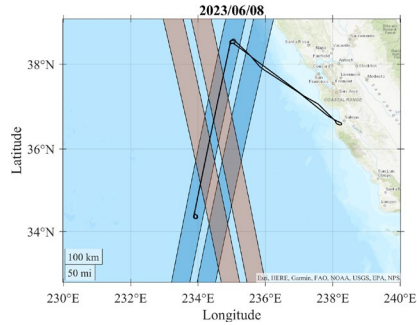
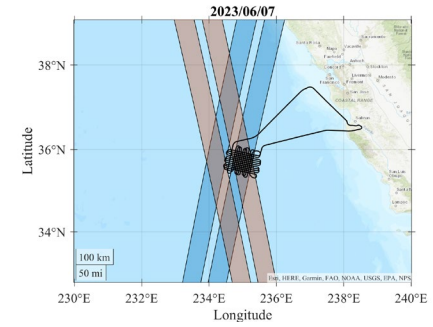
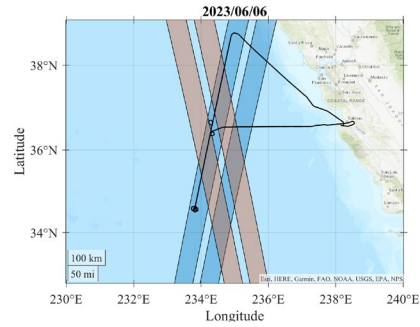
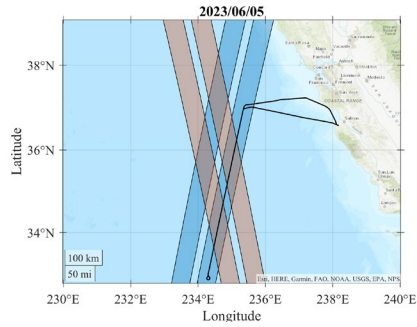
SCRIPPS INSTITUTION OF  
OCEANOGRAPHY



# Phase I – Flight tracks



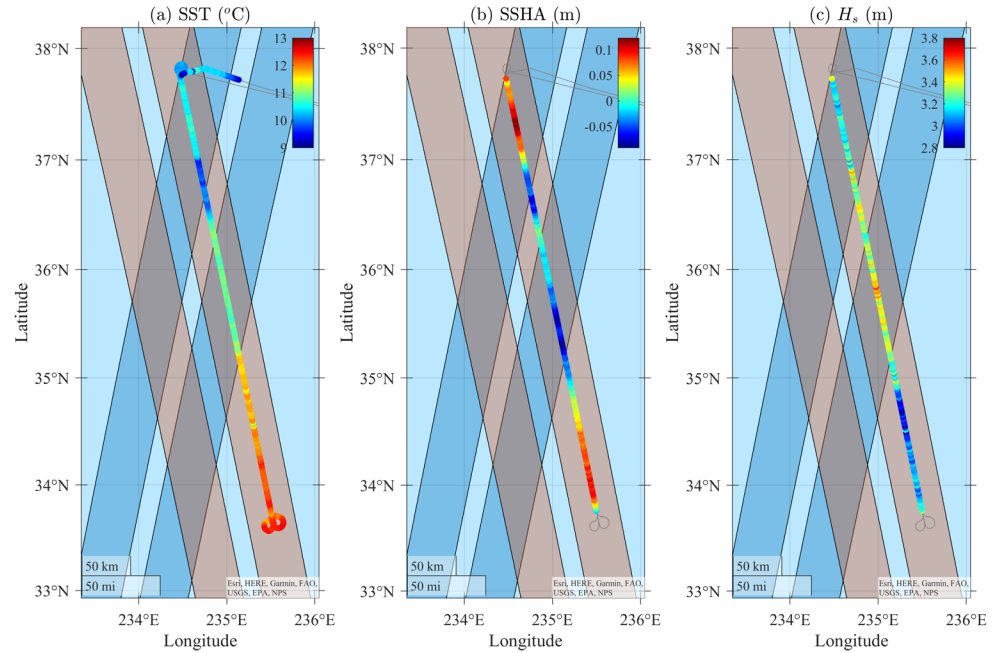
# Phase II – Flight tracks



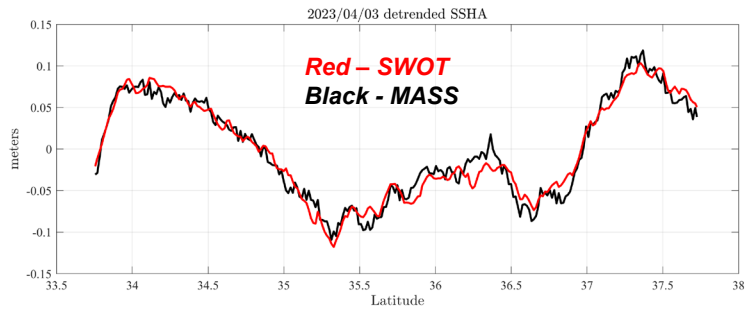
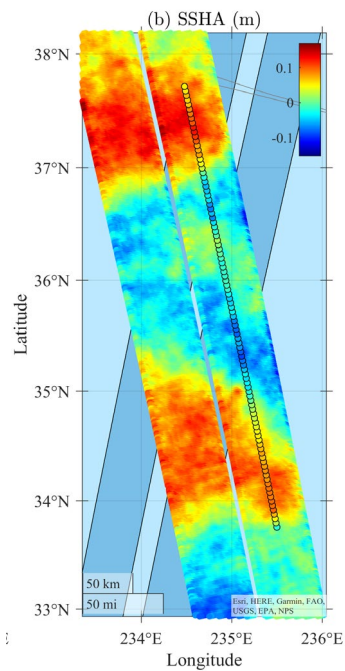
# Phase I – April 3 2023 – SST, SSHA, Hs

## 2.5km resolution products

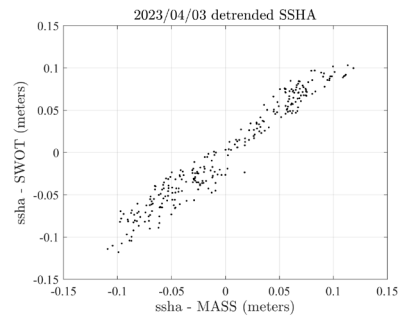
- Collect data for in situ cross comparison and left swath spectral validation



# Phase I – April 3 2023 – SST, SSHA, Hs

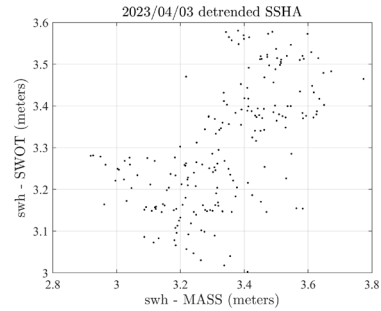
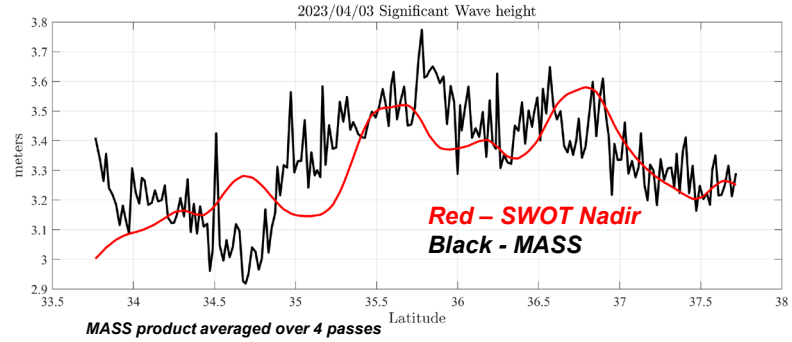
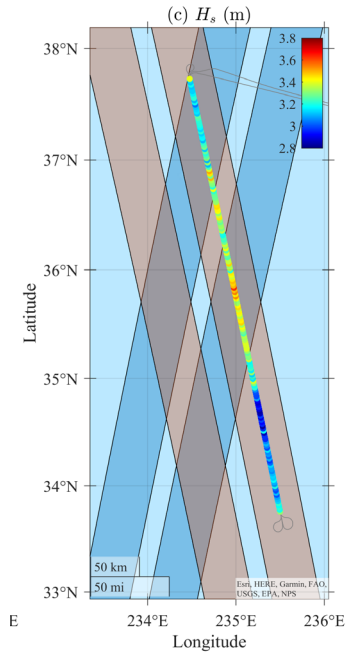


*MASS product averaged over 4 passes*



# Phase I – April 3 2023 – SST, SSHA, Hs

## 2.5km resolution products





## Summary

- We report here on the MASS surveys conducted as part of the post-launch SWOT CalVal.
- 14 flights were conducted from the NASA JSC GV over a 3-week period (early April and first week of June 2023)
- MASS measurement of 2-D SSH under the SWOT swath enables direct comparison with SWOT data for SWOT calibration, validation, and troubleshooting
- MASS SST, hyperspectral, and other data will enhance overall understanding of SWOT phenomenology during Cal/Val