Mean Sea Surface (MSS) Working Group for SWOT

CLS/CNES
Philippe Schaeffer
Isabelle Pujol
Yannice Faugere
Gerald Dibarboure

SIO
David Sandwell
Yao Yu

DTU
Ole Andersen
Per Knudsen
Adeli Abulaitijiang
Shengjun Zhang

JPL
Jinbo Wang

NOAA
Eric Leuliette
Walter Smith

- Need high resolution MSS for CAL/VAL early in the mission.

- MSS should have long wavelength accuracy from multidecadal repeat-track altimetry (ERM) and short wavelength precision from geodetic mission (GM) phases.

- Need uncertainty map as well as error spectrum.

- MSS should have an epoch and a linear variation with time.

Agenda for Today

Hybrid 2023 MSS: Status and Implementation for User Community - Philippe Schaeffer (7 min)
(This presentation will explain how the Hybrid 2023 (HY23) model was constructed)

Stacking SWOT Data and Residual Geophysical Signals – Jinbo Wang (7 min)
(This presentation will follow from Jinbo's previous presentation in the Ocean Validation section to focus more on the residual geophysical signals. Perhaps this is the place to discuss the Python tools for extracting the HY23 MSS.)

MSS Noise and Residual Geophysical Signals - Isabelle Pujol (7 min)
(This presentation will discuss and analysis of the noise in the HY23 MSS.)

Moving Forward with SWOT MSS: Discussion – David Sandwell (7 min)
(This will be a discussion on how to move forward with blending the new SWOT data with the HY23 MSS, how often, and how the data will be made available to the user community.)

Discussion Items

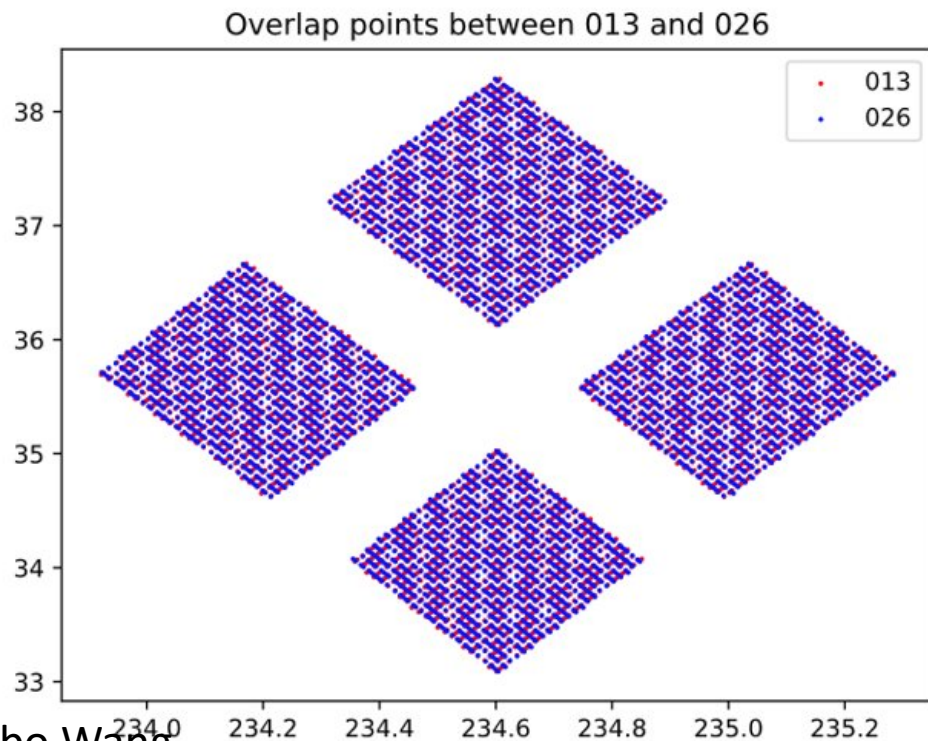What MSS products will be made available on L2 and L3 data?

How can one replace the MSS with their favorite version? (e.g., netcdf file and python code)

The best MSS based on standard altimetry has spatial resolution of 20 km wavelength while SWOT may resolve 10 km wavelength.   Should this MSS group provide periodic updates to or let the user make a SWOT stack and use that to update the MSS?

The MSS changes with time due to global and regional sea level variations. Should this group try to construct an MSS(t) or let the broader research community do that?

Should we be thinking in terms of sea surface gradient rather than sea surface height? (SIO has those grids ready to use.)

- The SWOT KaRIn SSH is corrected with the most up-to-date Mean Sea Surface.
- The three-month mean of KaRIn SSH shows the residual uncorrected Geoid and ocean signals.
- The small-scale features in the time mean are due to residual Geoid by small, undiscovered seamounts.

Three-month mean of KaRIn SSH

Overlap points between 013 and 026

Image: Jinbo Wang