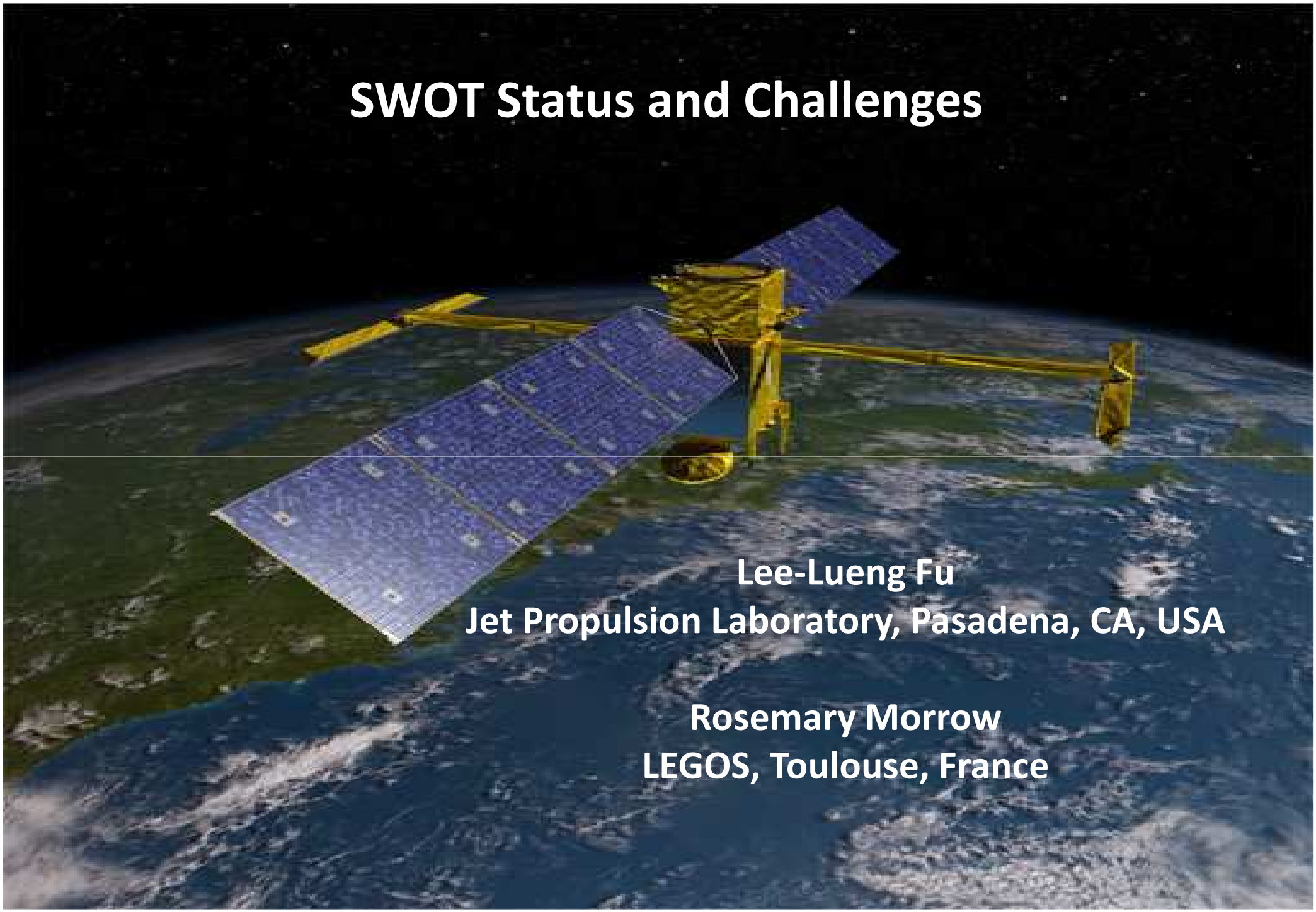
SWOT Status and Challenges



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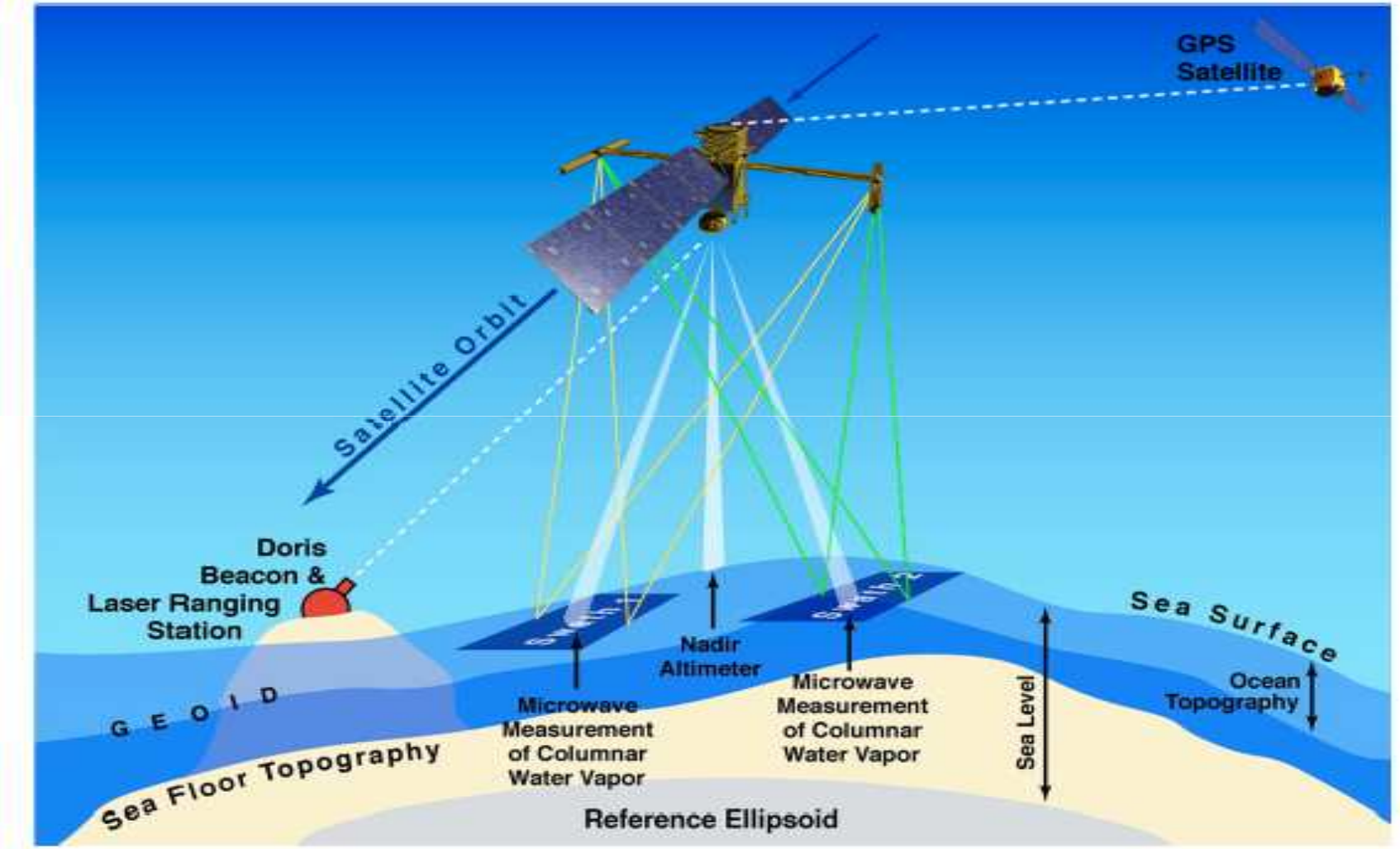
Mission Development Status

- Mission is now in Phase B (since July 2014).
- Two Science Definition Team meetings (January, July, 2015)
- The SDT will expire at the end of 2015
- A new Mission Science Team will be formed to start in 2016 after the completion of the ROSES and TOSCA selection process.
- Preliminary Mission Design Review will take place early next year.
- Mission launch is scheduled for October, 2020.
- The planning of calibration/validation and development of science algorithms are the main contributions from the Science Team in the next year.

SWOT Measurement Principle



- orbit: 891 km, 77.6º Incl., 21 day repeat

Oceanographic Objectives

–Mesoscale and Submesoscale Processes

–Tides and High-Frequency Motions
(incl internal tides, surface wave effects, internal waves, storm surge, ..)

–Interaction of Ocean Circulation with Mesoscale/Submesoscales
(SWOT Karin & Nadir -> scales 15 km to global)

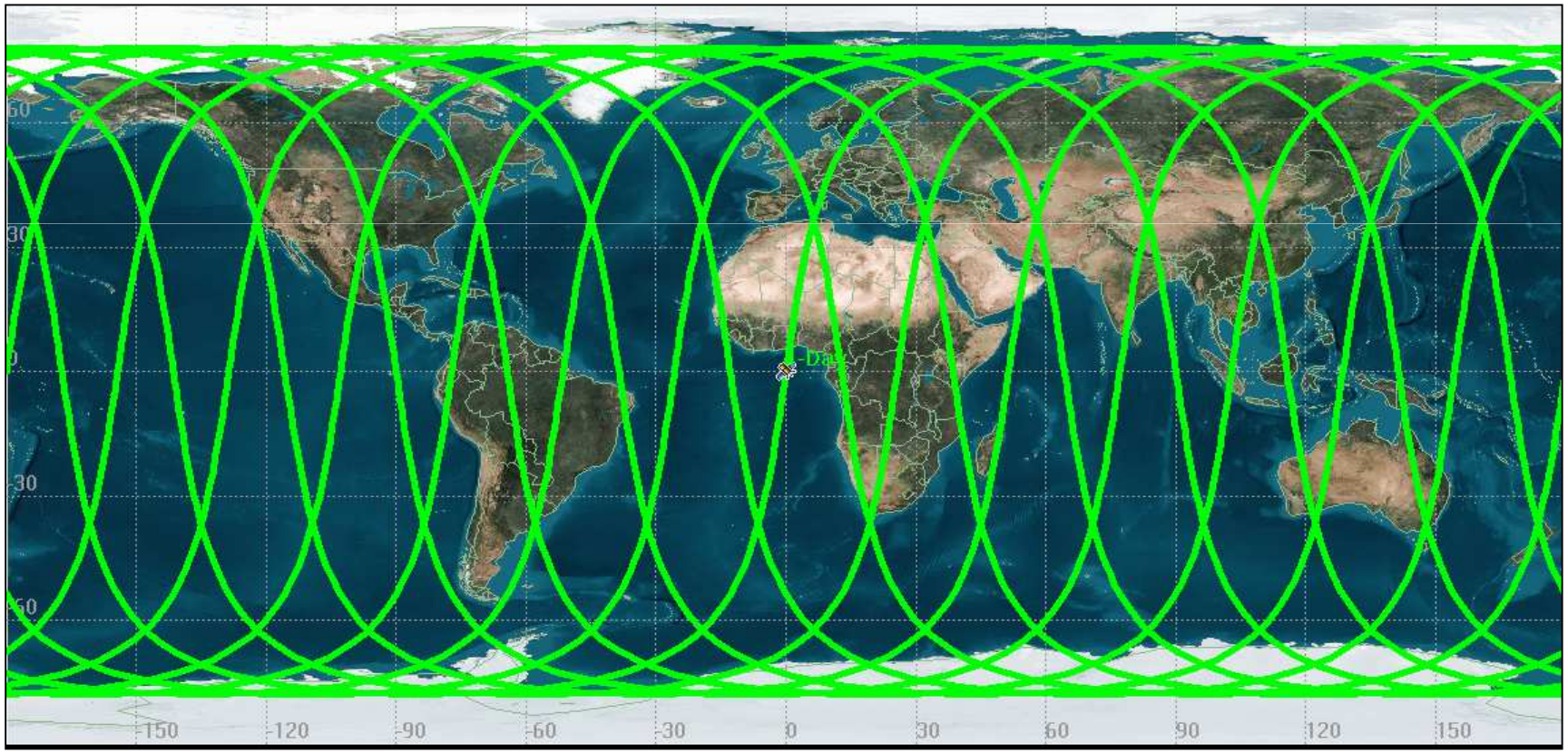
–Calibration/Validation
(New 2D calibration techniques needed, validation of small/fast processes)

–Geophysical Corrections and Algorithms
(1 km 2D corrections needed, new algorithms for interferometric SSH, SSB, ...)

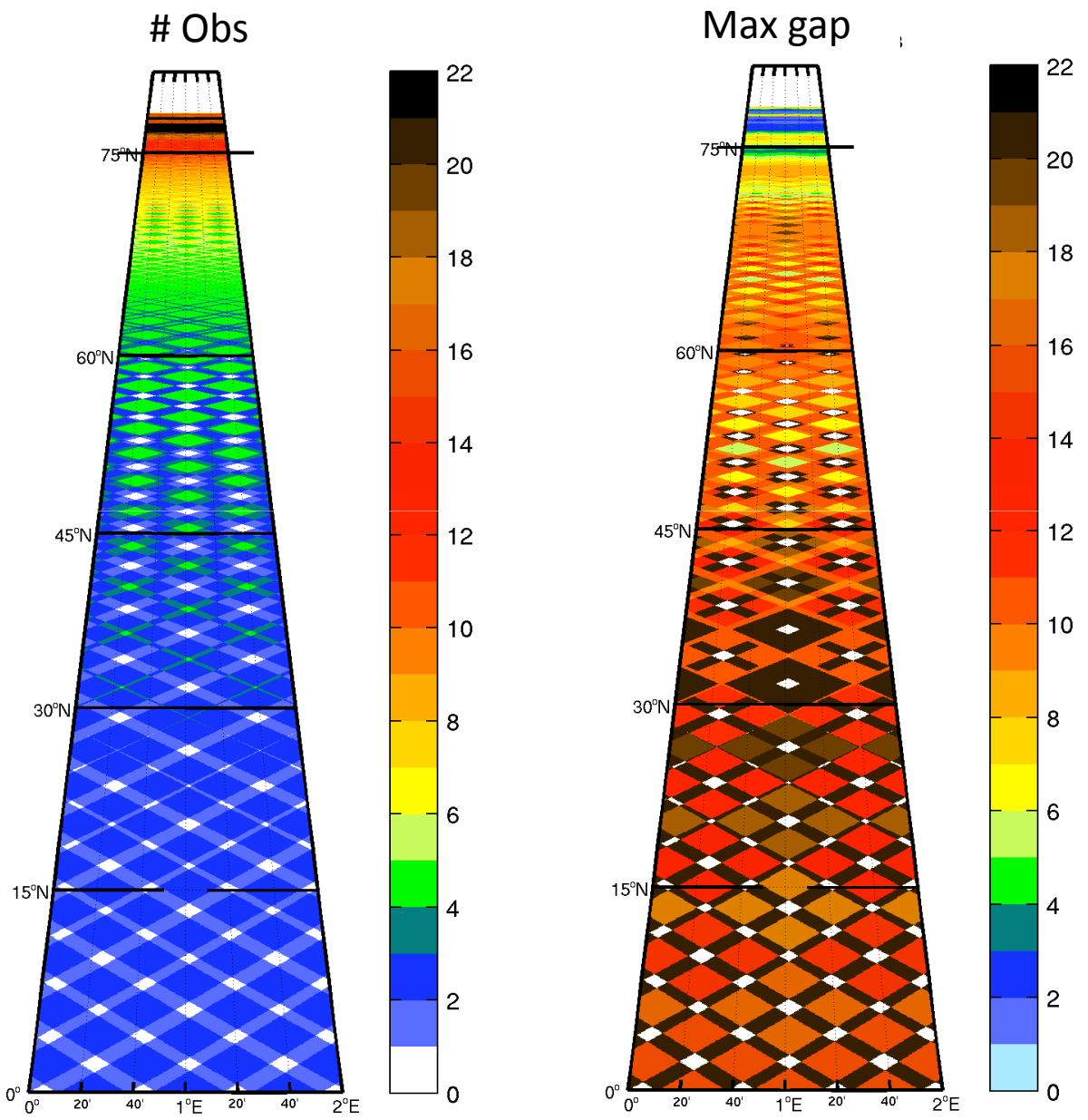
–High-Level Products
(2D and 3D products, data only or assimilation in models)

One-day repeat phase for initial Cal/Val

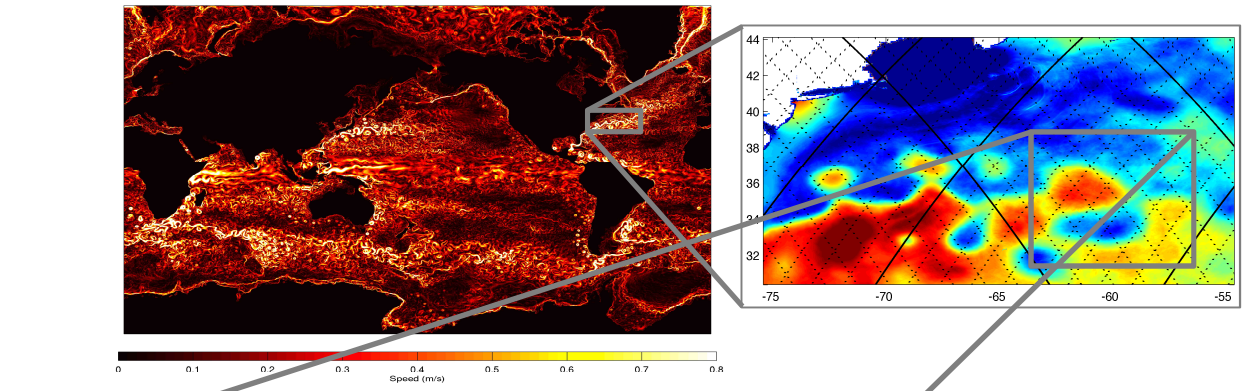
- Minimum 60 days up to 90 days before the 21 day repeat Science Phase
- Objectives are to assess measurement errors and study high-frequency geophysical processes

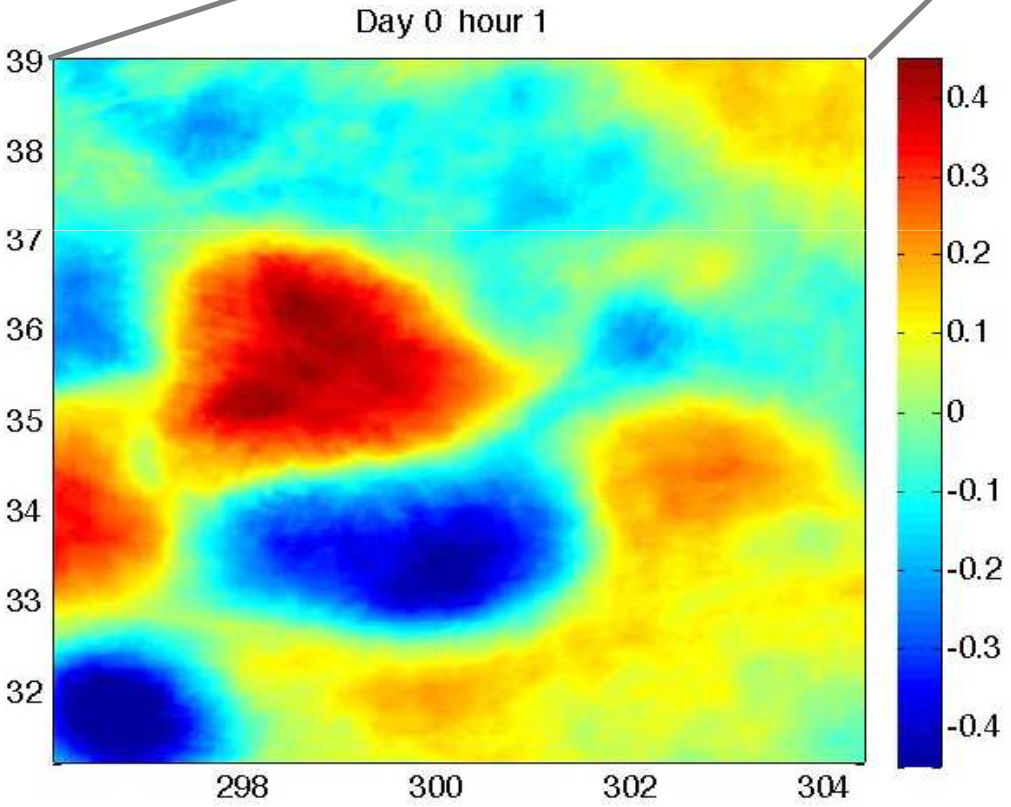


Sampling pattern of the 21-day orbit for the Science Phase

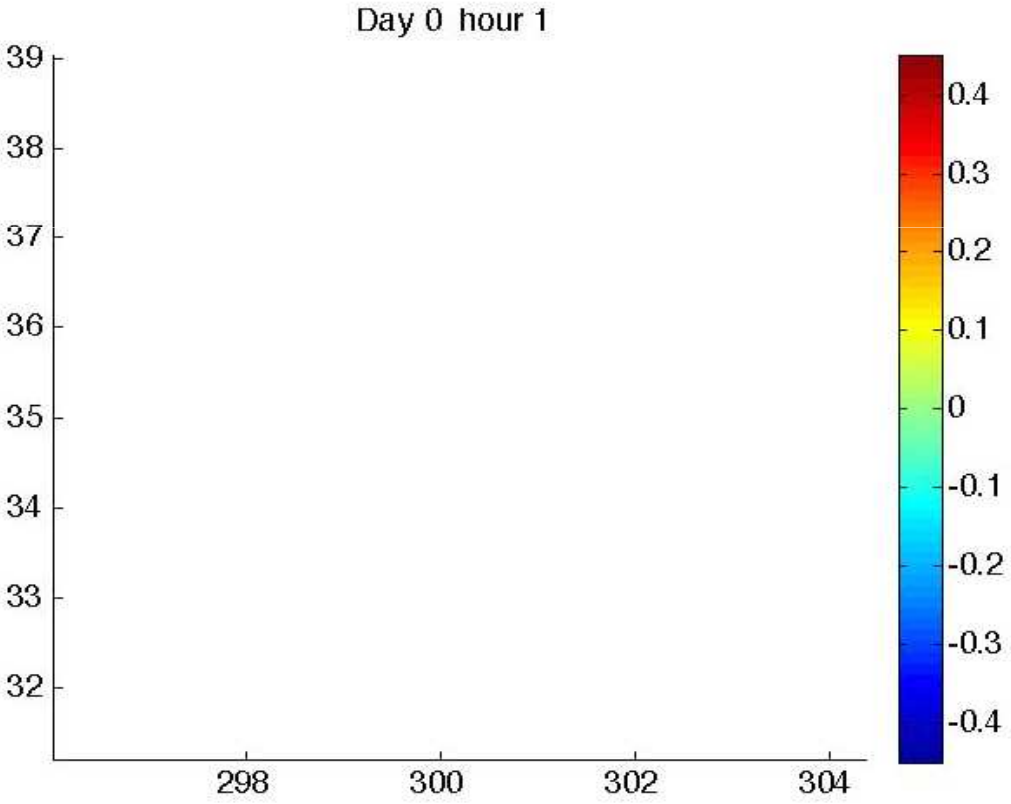


Challenges: Reconstruction of ocean state from irregular sampling



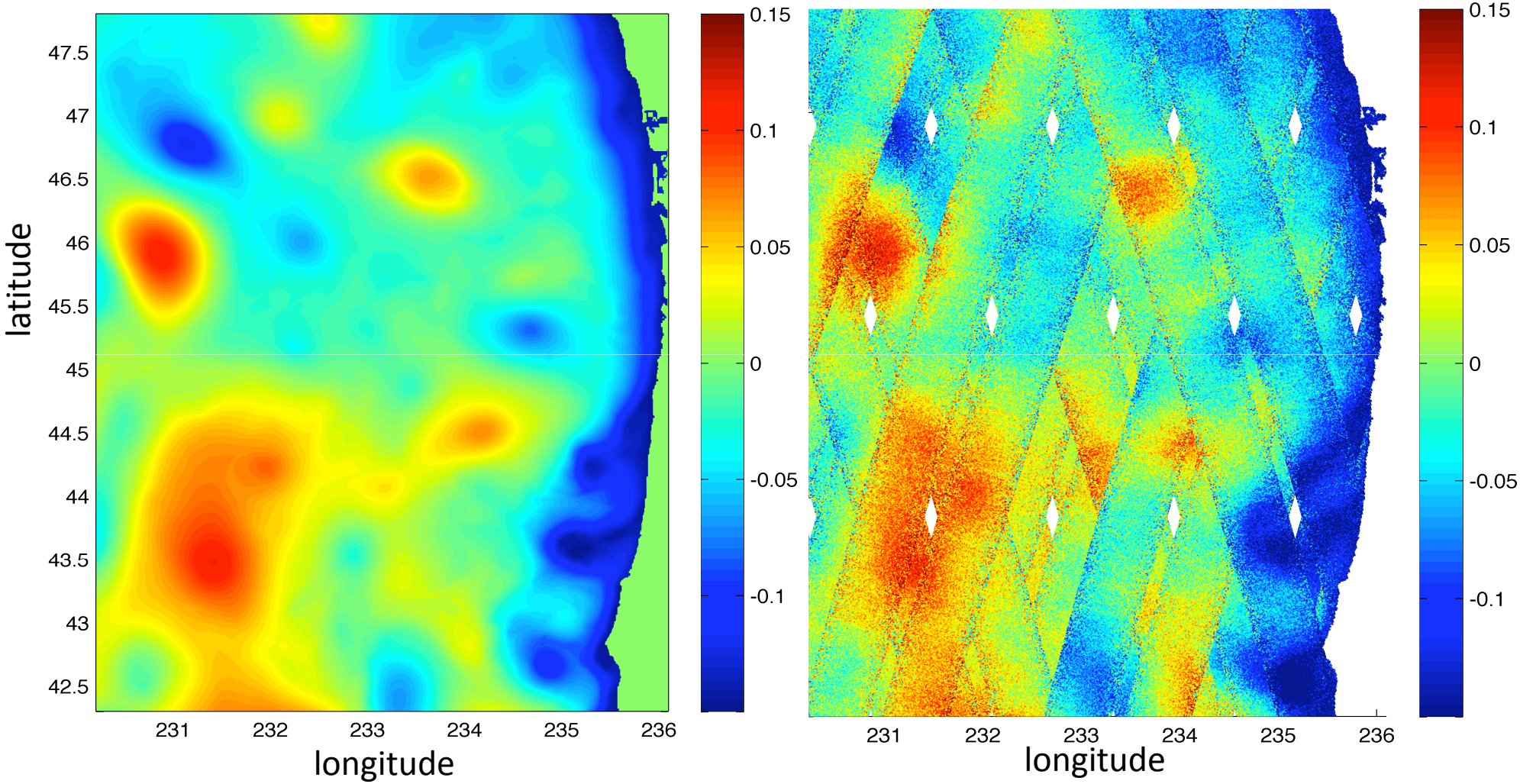


Full SSH (barot. Tides filtered)

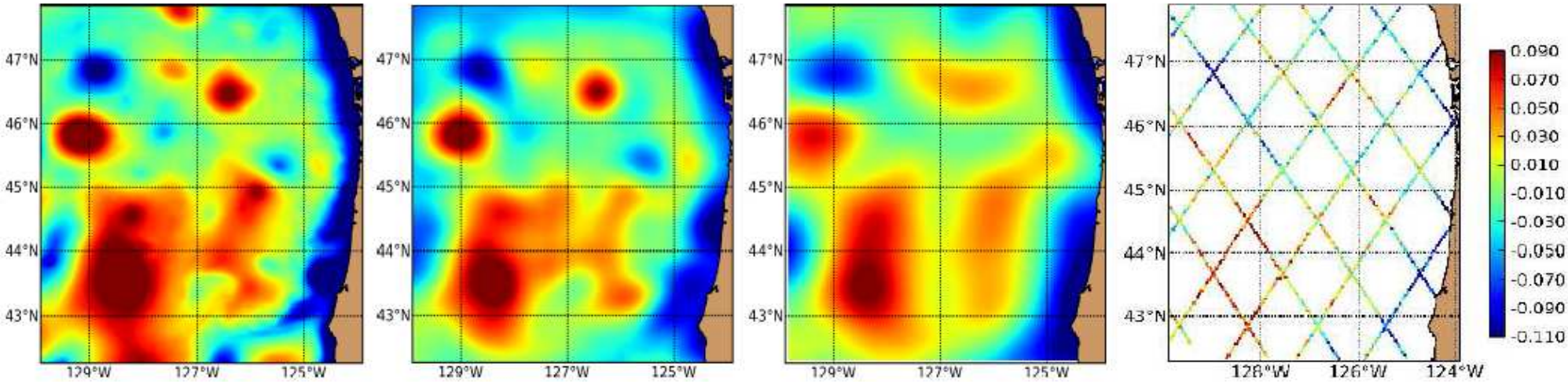


SWOT simulator

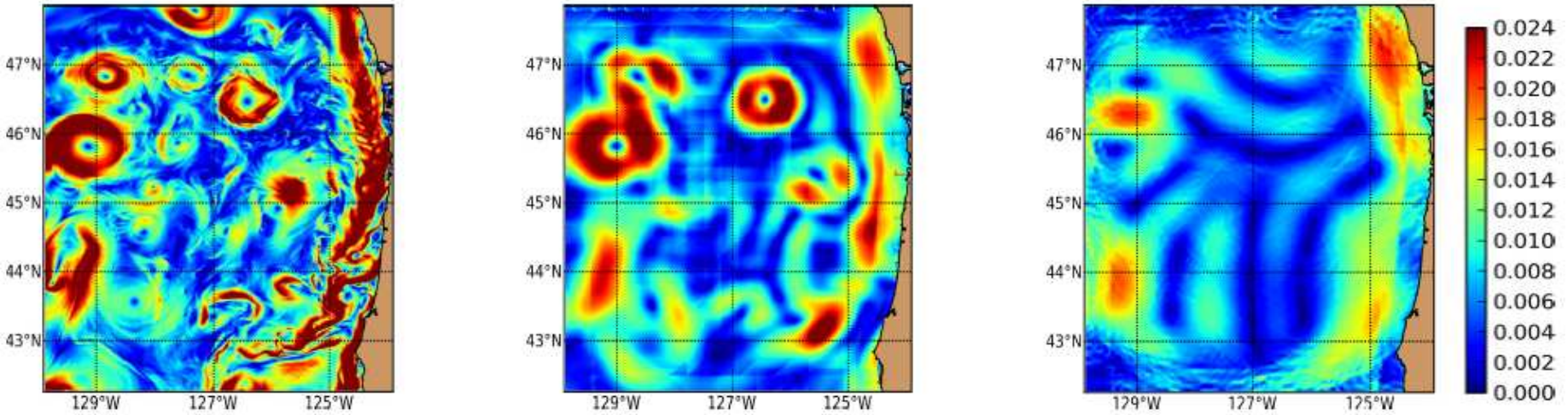
Challenges: Reconstruction of ocean state from irregular sampling and measurement errors



Reconstruction from Objective Mapping



(a) Truth (b) Mapped SWOT (c) Mapped nadir (d) Along track



(e) True Velocity (f) From SWOT-like mapped observations (g) From Nadir-like mapped observations

(Gaultier et al 2015)