

# Ocean Data Products from the Visible Infrared Imager Radiometer Suite (VIIRS) NPOESS Preparatory Project Validation Program

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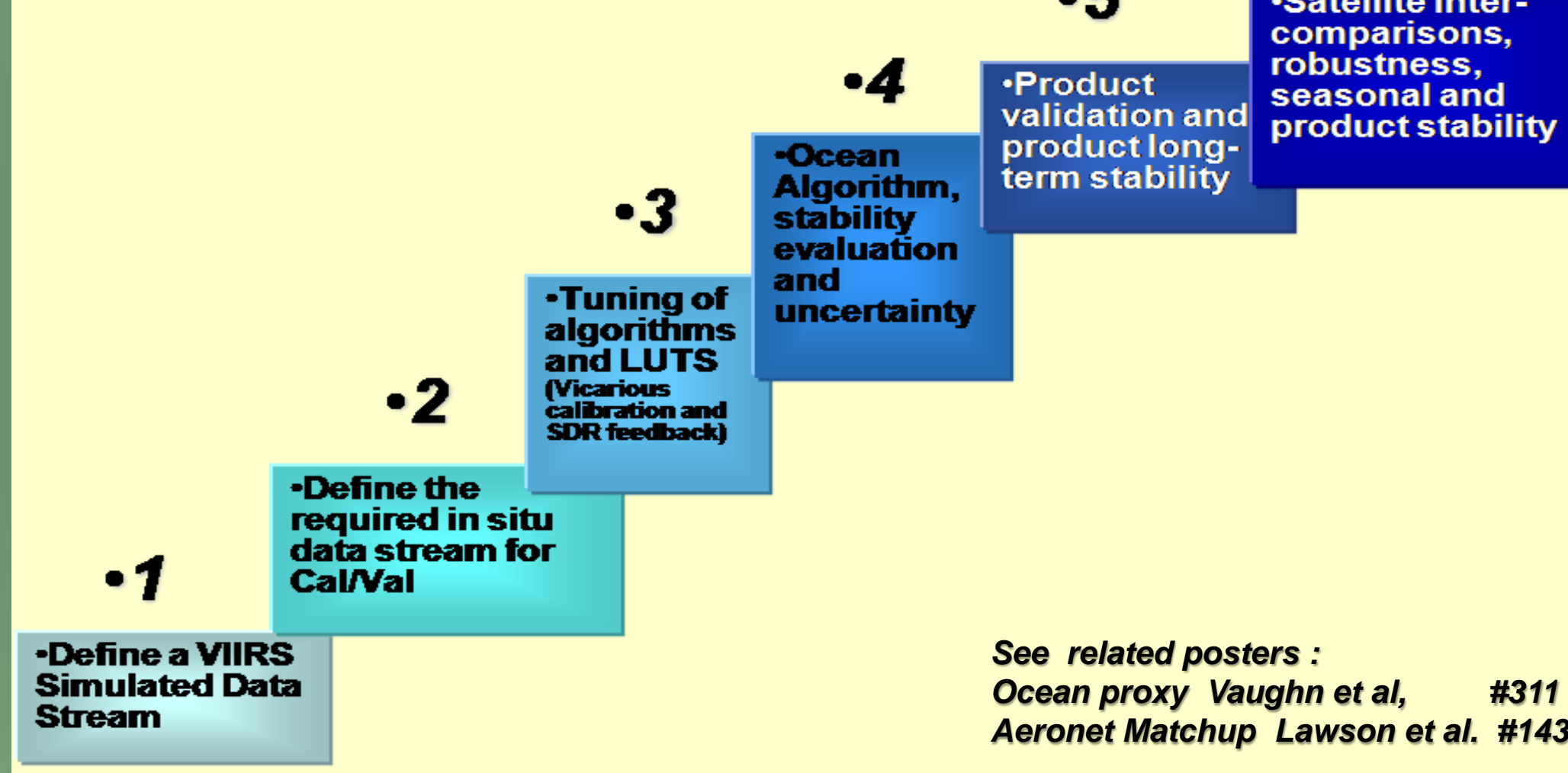
## ABSTRACT

Present pre launch activities for the Calibration and Validation for VIIRS are in development to provide operational "ocean products". Data from VIIRS will produce Environmental Data Records (EDR's) of Ocean Color/Chlorophyll and Sea Surface Temperature as part of the Joint Polar Satellite System (JPSS) Program. Efforts are directed providing operational capability quickly following launch. Current prelaunch activities highlight include:

1. Real time VIIRS proxy data from MODIS - presently ongoing
2. Real time Vicarious Calibration methods - Extensions of MOBY data and M-AERI
3. In situ data programs - AERONET -Ocean Color sites and M-AERI data collections
4. In situ match-up protocols for spatial and temporal uncertainty analyses
5. Inter-satellite comparisons of EDR products. - MODIS, SeaWiFS, MERIS, AVHRR, METOP

The ocean validation program is designed to address an "end to end" capability from sensor to end product which is based on ongoing capabilities currently in use with NASA research and Navy and NOAA operational products. This presentation describes the progress, approaches, data availability and schedule for the validation of VIIRS Ocean environmental data products. NOAA/NESDIS Center for Satellite Applications and Research (STAR) in partnership with National Aeronautical Space Administration (NASA) is coordinating the cal val efforts to insure products comply with requirements of sponsoring agencies.

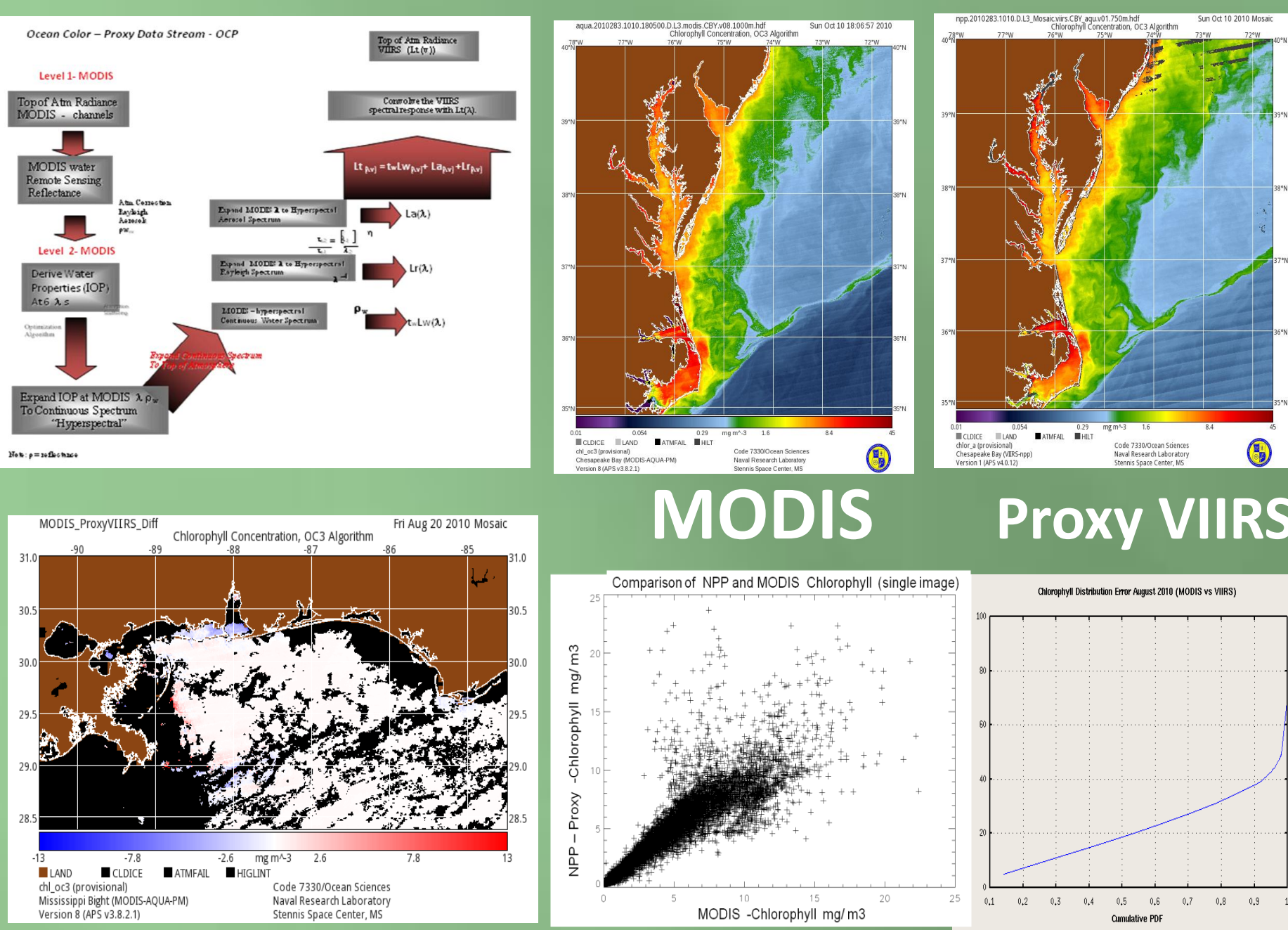
## Thrust Areas



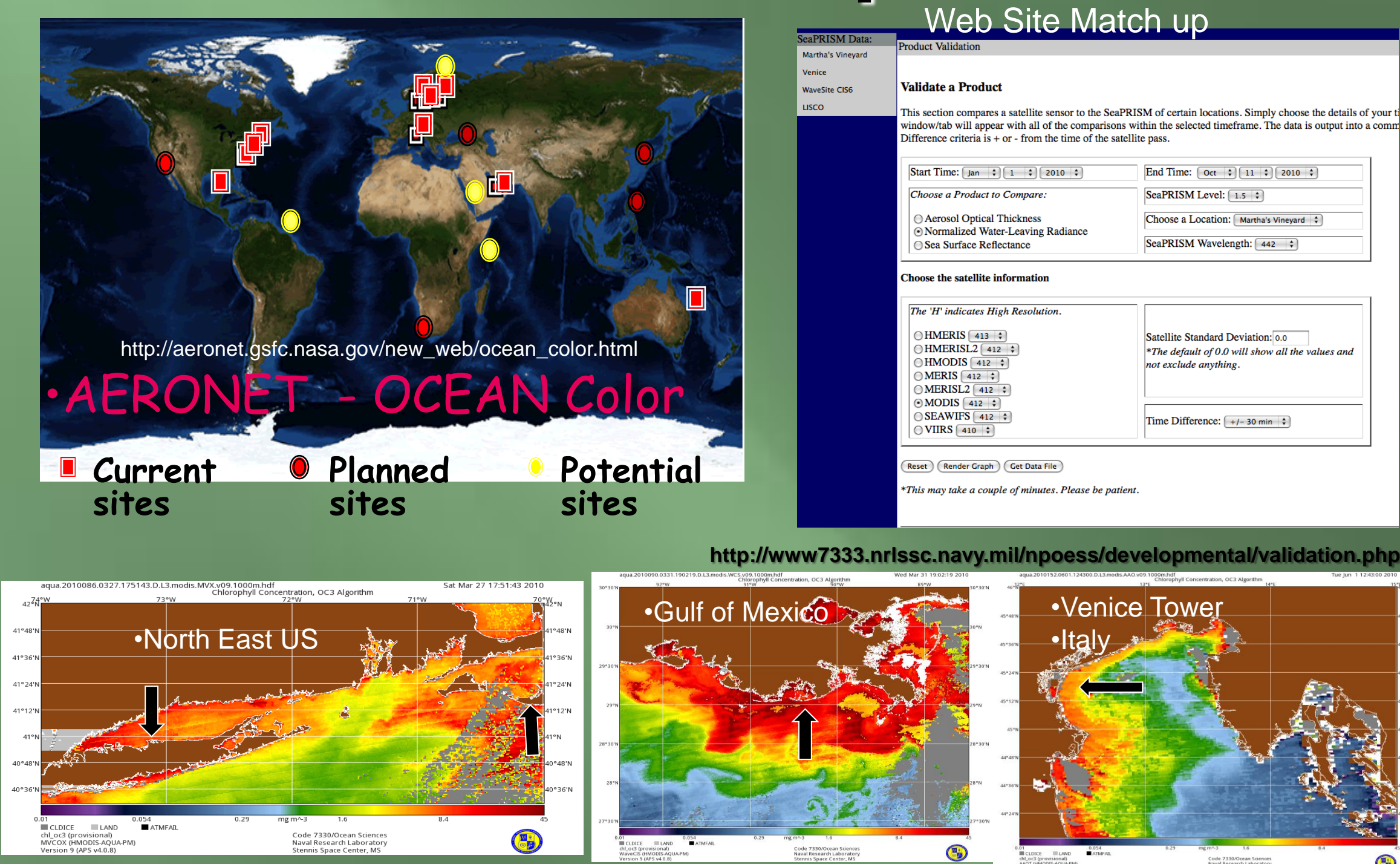
See related posters:  
Ocean proxy Vaughn et al, #311  
Aeronet Matchup Lawson et al. #143

Ocean EDR Validation Team		
Name	Organization	Responsibility
Arnone	NRL	Ocean Validation Lead
Vaughan	NRL	Proxy Data Stream & Data Assimilation
Ahmed & Gilerson	CUNY	LISCO SeaPrism & Coast Data Site Uncertainty
Davis, Letelier and Tullifaro	COAS, OSU	In Situ Observations, Algorithms Performance, Product Validation
Evans & Minnett	RSMAS- Univ. Miami	SST in-situ Observations, A-MERI, Skin/Bulk Algorithms Performance
Ignatov	STAR, NOAA	SST Product Validation, Inter-Satellite Calibration
May	NAVO	SST Product Validation & Assimilation
Johnson	NIST	SeaPrism Characterization & Traceability
Jones	USC	SeaPrism and Coast Data Site Uncertainty
Ondrusek	STAR, NOAA	In situ Observations, MOBY Data, Coast Watch Operations
Lee	MSU	Proxy Data - Algorithms
Stumpf	NOS	In situ Observations, Inter-satellite Calibrations, Data Continuity
Emery	CSU	SST- Proxy Data
Wang	STAR, NOAA	Generation of Calibration LUTs, Product Validation
Weidemann	NRL	In situ Observations, Product Validation
Gibson	LSU	Wave, CIS SeaPrism
Trees	NURC	In situ Observations, Product Validation & Uncertainty
Fargion	CHORS, SDSU	In Situ Data and Tools

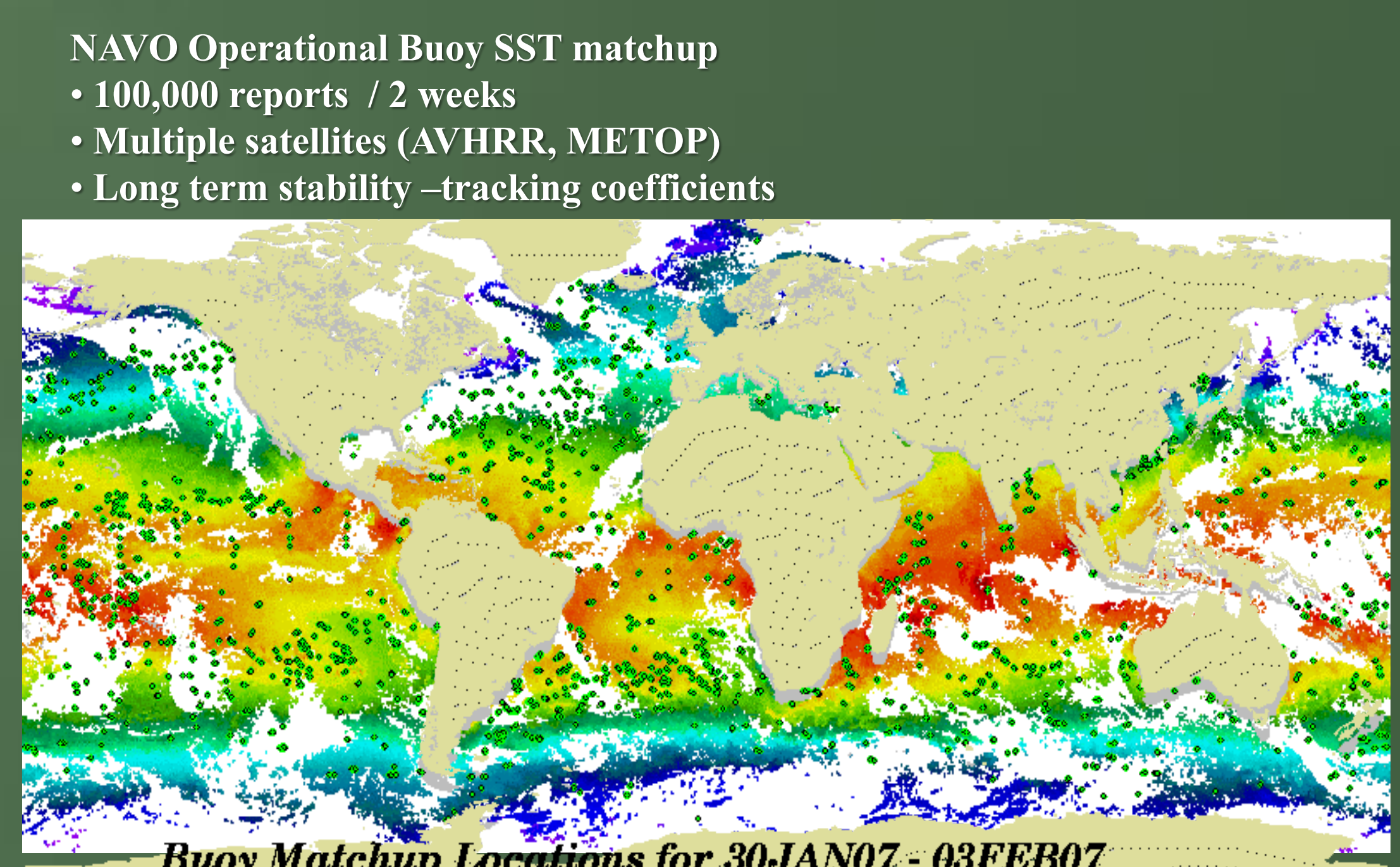
## Proxy Data Generator



## Ocean Match-up

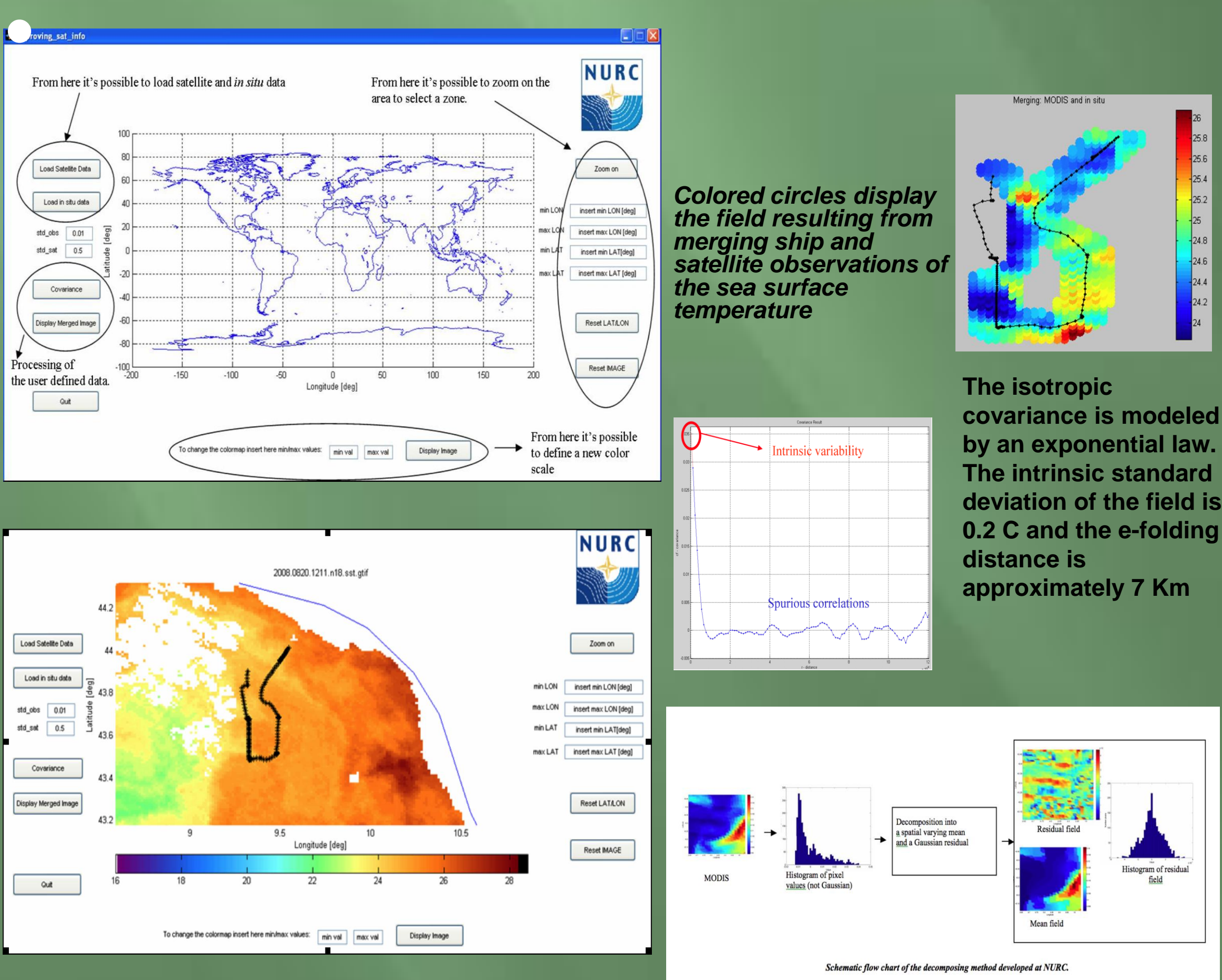


## SST Product Validation



## Product Uncertainties

This user-friendly GUI defines satellite product uncertainties as a function of the spatial and temporal placement of *in situ* measurement assets (e.g., SeaPRISMs sites; moorings such as MOBY, HOT, Boussole; ships; gliders; etc.). In order to define the uncertainty of the satellite products, it is critical to know from which specific platforms in situ measurements derive. This effort provides the capability to define the uncertainty of the SST, remote sensing reflectance, and CHL products.



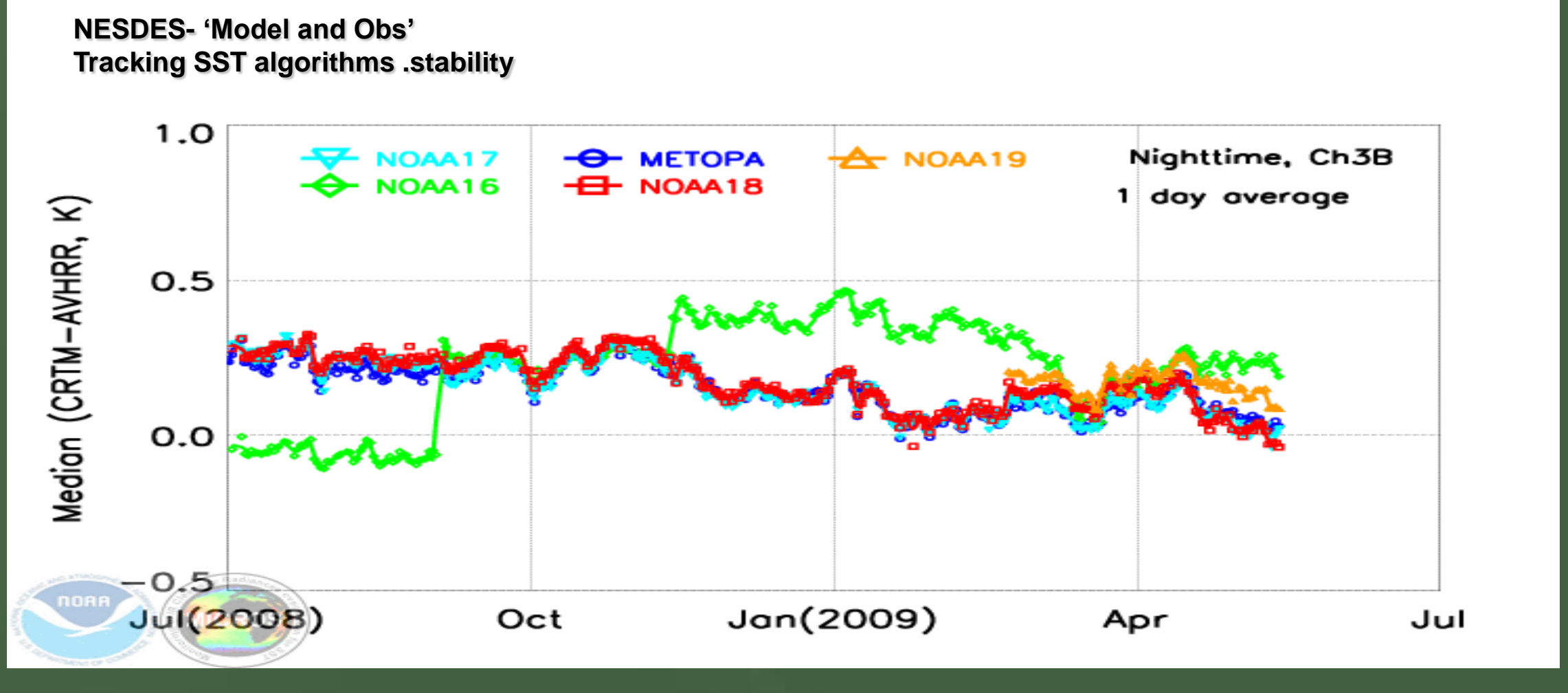
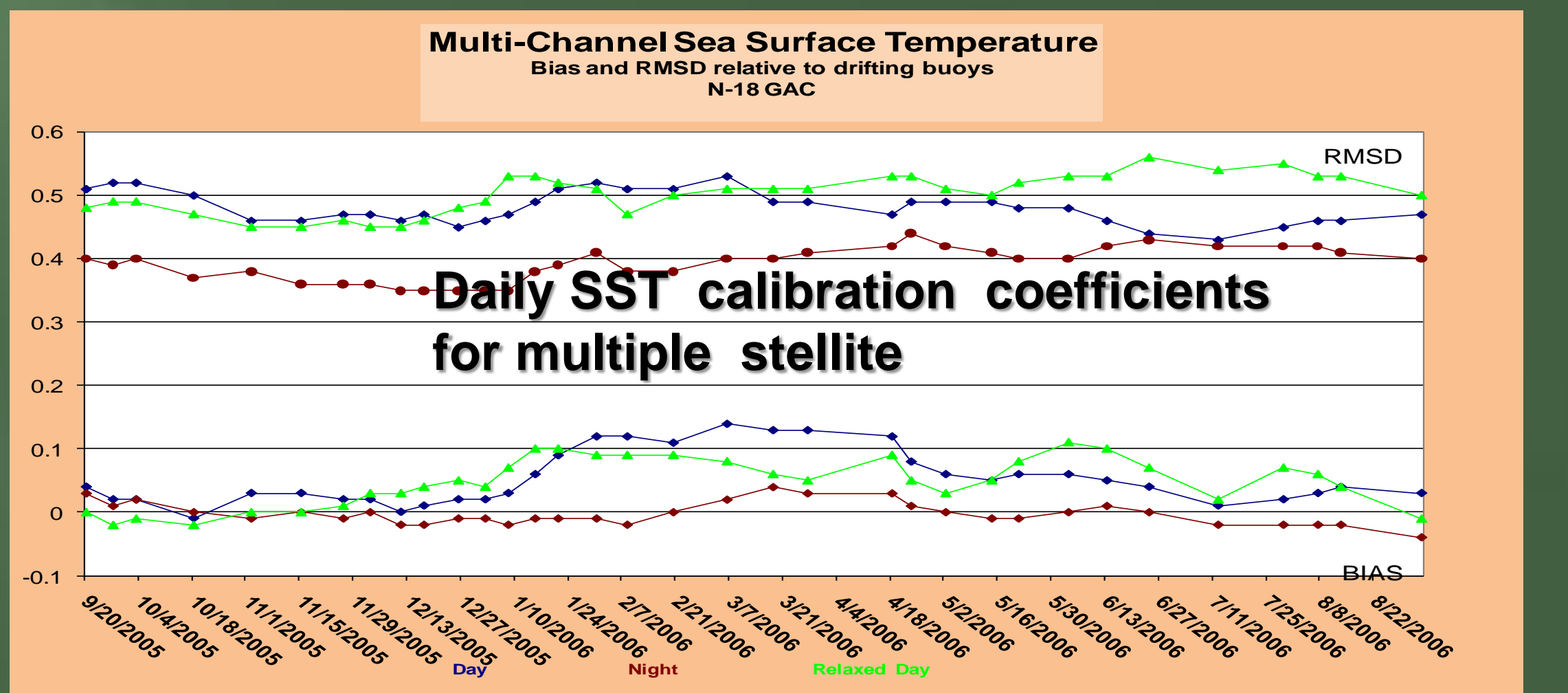
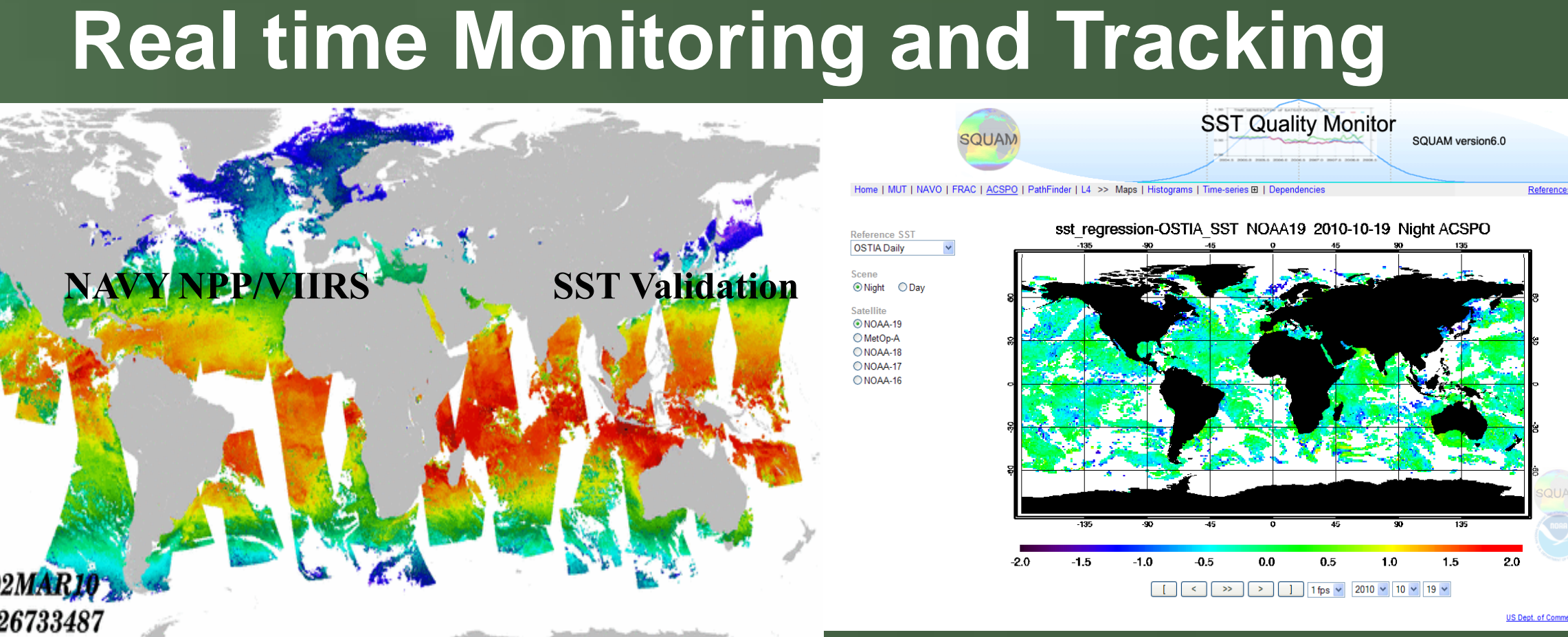
### Correlative Data

EDR	Data Source
SST	MODIS, AVIRIS, AVHRR, MERIS, SeaWiFS, NWS & AFWA Drifting and Moored Buoys, GHRST, M-AERI, ECMWF, NCEP, HICO
OC/C	MODIS, AVIRIS, AVHRR, MERIS, SeaWiFS, HICO. In Situ Observations: NASA SeaBASS, BATS, HOT, MOBY & MOBY-C, AERONET-OC and Team in Situ Observations

**RSMAS A-MERI - Cruises and Skin - Bulk Temperature stability**

M-AERI deployments for MODIS & AVHRR. The colors indicate the skin SSTs derived by the M-AERIs.

**Team in-situ observations**



- Real time VIIRS proxy data from MODIS Implement Dobson automation, perform instrument calibration and maintenance
- In situ data collections: AERONET -Ocean Color sites and M-AERI
- In situ match-up protocols for spatial and temporal uncertainty analyses
- Inter-satellite comparisons of EDR products: MODIS, SeaWiFS, MERIS, AVHRR, METOP

- Process Navy and NOAA products, generated from VIIRS SDRs, as well as NGAS EDRs through heritage algorithms and evaluate results against heritage products.

- Conduct VIIRS clear-sky radiances against radiative transfer models and other sensors;
- Conduct targeted validation campaigns and validation against operational field data sets;
- Suggest trouble-shooting to evaluate and fix any identified EDR/SDR problems.

- Continuously monitor and analyze long-term performance via comparison to heritage products and in situ sites, and identify needed fixes to SST and ocean color algorithms.

