Progress at the Naval Oceanographic Office Regional Data Assembly Center

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XV Science Team Meeting
Cape Town, South Africa
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Outline

- L2P production
- NAVO K10 L4
- NAVO production statistics
- GDAC downloads
- MCSST processing improvements
- Future Plans

L2P Production

Product	Formats
• NOAA-18 global 9 km	GDSv1, GDSv2
• NOAA-19 global 9 km	GDSv1, GDSv2
• NOAA-19 regional 2.2 km	GDSv1, GDSv2
• MetOp-A global 9 km	GDSv1, GDSv2
• MetOp-B global 9 km	GDSv2
• S-NPP VIIRS global 1.5 km	GDSv2

L2P Input Data

- Calibrated and earth-located AVHRR and HIRS 1b data from NOAA/NESDIS/ Office of Satellite and Product Operations (OSPO)
  - NOAA-18 GAC/HIRS
  - NOAA-19 GAC/LAC/HRPT/HIRS
  - METOP-A GAC/HIRS
  - METOP-B GAC/HIRS
- NPOESS S-NPP VIIRS M-Band and associated geo-location files
- Navy Aerosol Analysis and Prediction System (NAAPS) aerosol optical depth data from Fleet Numerical Meteorology and Oceanography Center
  - appended to each retrieval
- Land/Sea Mask
  - Low resolution
  - High resolution 1km
- Climatology
- Analyzed fields (100 km and 10 km)
- SST matchup database

L2P Output File Content – GDSv1

Variables filled by NAVOCEANO:

- lat
- lon
- sea_surface_temperature
- sst_dtime
- SSES_bias_error
- SSES_standard_deviation_error
- DT_analysis
- aerosol_optical_depth
- aod_dtime_from_sst
- sources_of_aod
- satellite_zenith_angle
- rejection_flag
- confidence_flag
- proximity_confidence
- **brightness_temperature_4um**
- **brightness_temperature_11um**
- **brightness_temperature_12um**

Variables filled by JPL at GDAC:

- sea_ice_fraction
- wind_speed

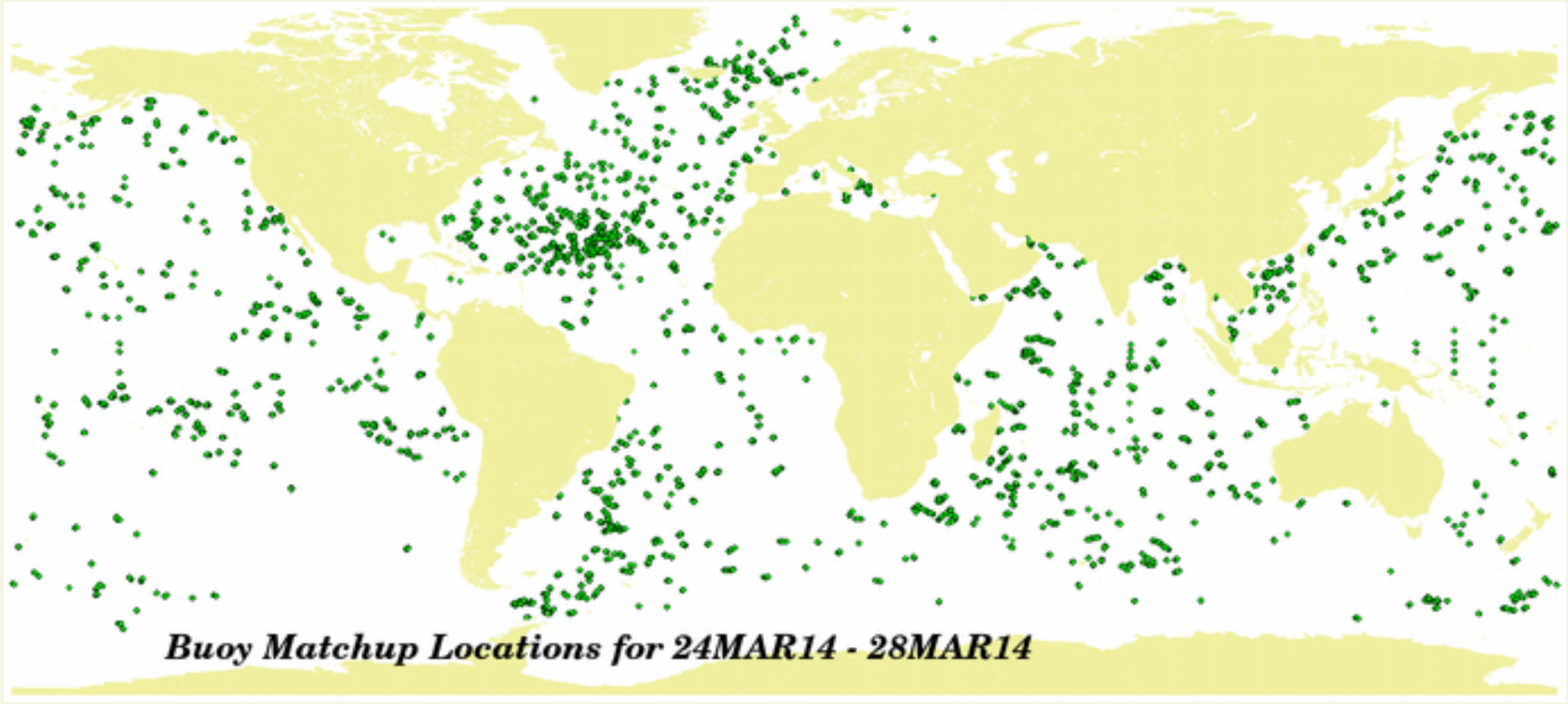
L2P Output File Content – GDSv2

Variables filled by NAVOCEANO:

- adi_dtime_from_sst
- aerosol_dynamic_indicator
- brightness_temperature_11um
- brightness_temperature_12um
- brightness_temperature_4um
- dt_analysis
- l2p_flags
- lat
- lon
- ni
- nj
- quality_level
- satellite_zenith_angle
- sea_surface_temperature
- sses_bias
- sses_standard_deviation
- sst_dtime
- time

* Wind and sea ice variables no longer added by JPL at the GDAC.

NAVOCEANO L2P SSES
Matchup Buoy Coverage



NAVO SST matchups March 24 – 28, 2014

NAVOCEANO L2P SSES
27 April 14

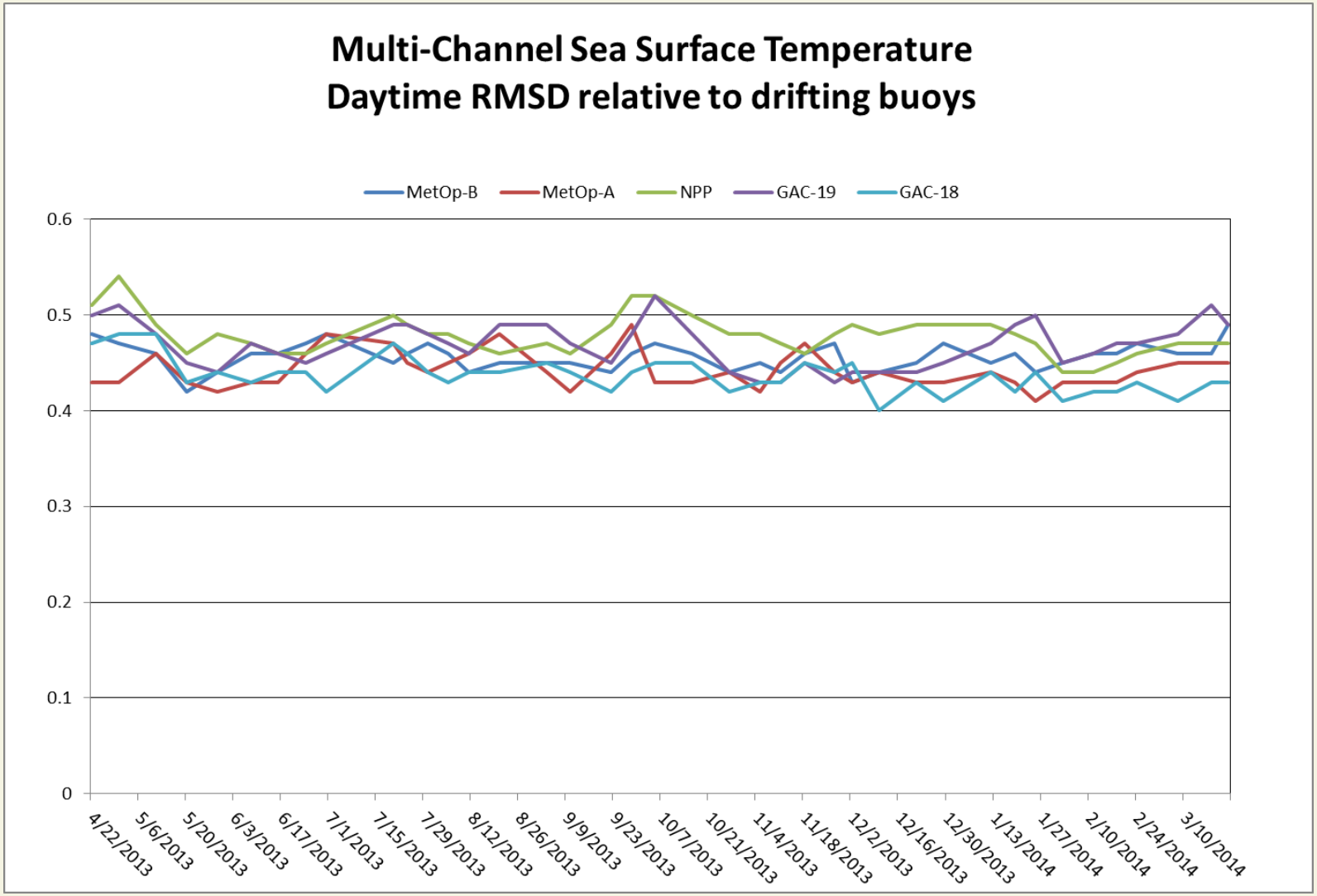
Product	Proximity Confidence 5		Proximity Conf. 4		Proximity Conf. 3	
	RMS	Bias	RMS	Bias	RMS	Bias
NOAA-18 GAC	0.40 (97% of data)	-0.07	0.69	0.34	1.52	1.03
NOAA-19 GAC	0.40 (96% of data)	- 0.01	0.79	0.30	1.81	0.95
NOAA-19 LAC	0.45 (97% of data)	-0.11	0.84	-0.03	2.04	-0.22
METOP-A GAC	0.40 (98% of data)	-0.04	0.70	0.25	2.03	-0.42
METOP-B GAC	0.43 (98% of data)	-0.04	0.72	0.31	1.98	0.84
SNPP VIIRS	0.39 (93% of data)	-0.03	0.76	0.02	2.01	-0.54

NAVOCEANO K10 L4 Analysis

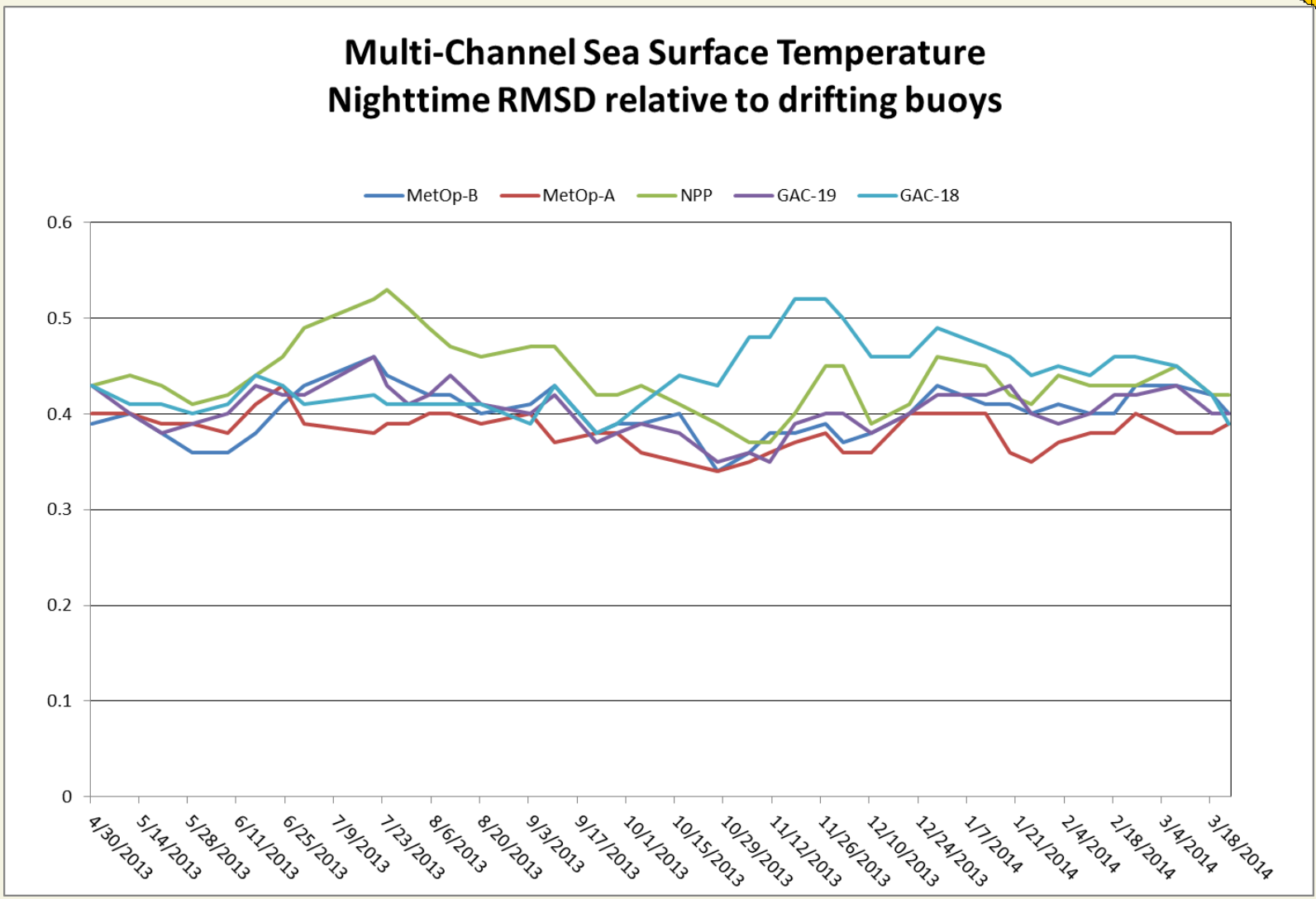
- Updated 4 times daily with the following:
  - GOES 13 (EAST) SST
  - GOES 15 (WEST) SST
  - MSG SST
  - NOAA 19 GAC 9km SST
  - NOAA 19 LAC/HRPT 2.2 km SST (regional)
  - METOP-A GAC 9km SST
  - METOP-A FRAC 2.2km SST
  - METOP-B GAC 9km SST
  - METOP-B FRAC 2.2km SST
  - S-NPP VIIRS 1.5km SST
  - WindSat (microwave) SST
  - JPL Pentad Climo 1985 – 1999

2014 May 7 statistics
Matches = 11876
RMS = 0.50
Bias = -0.08

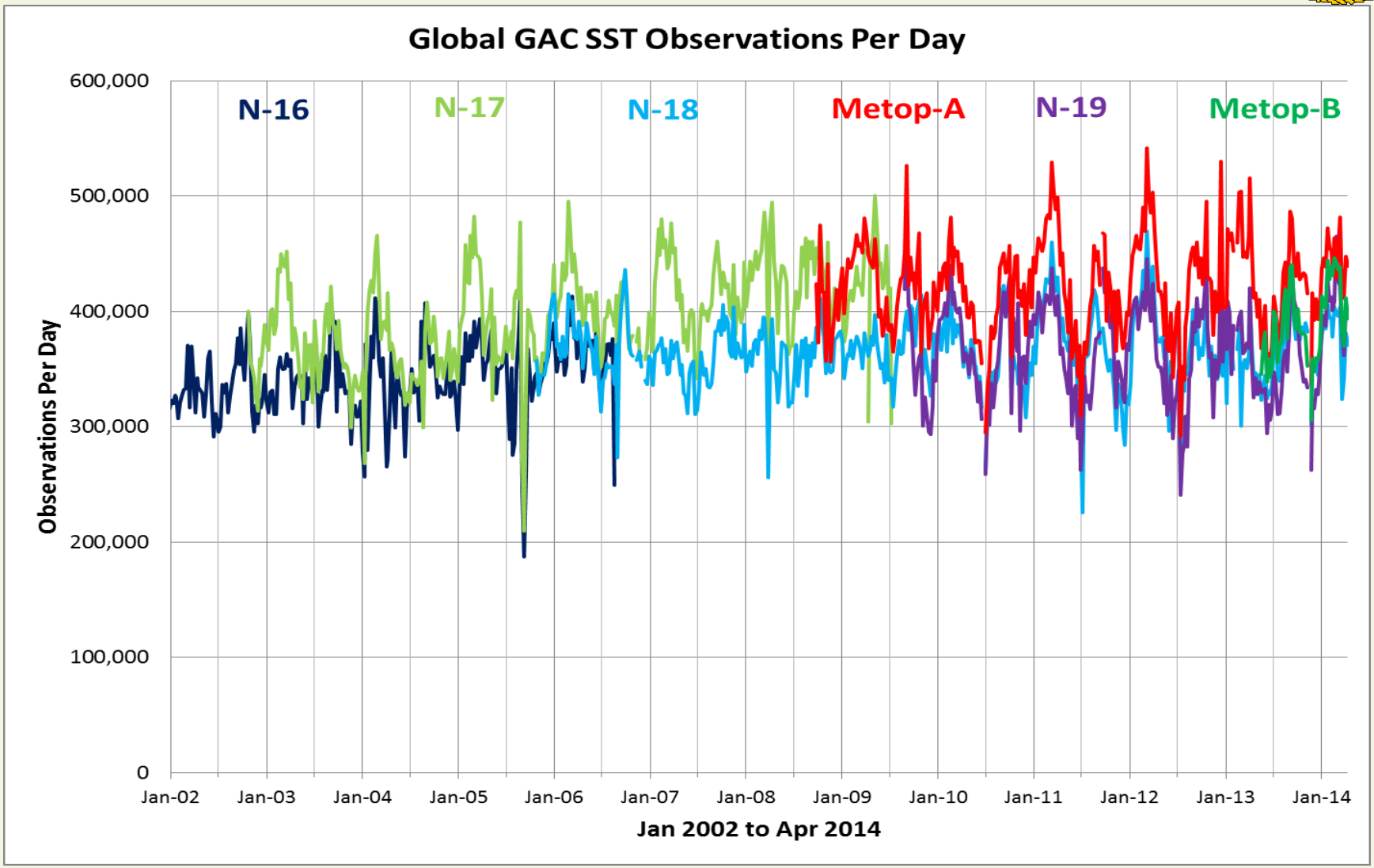
Buoy SST matchup statistics for daytime SST



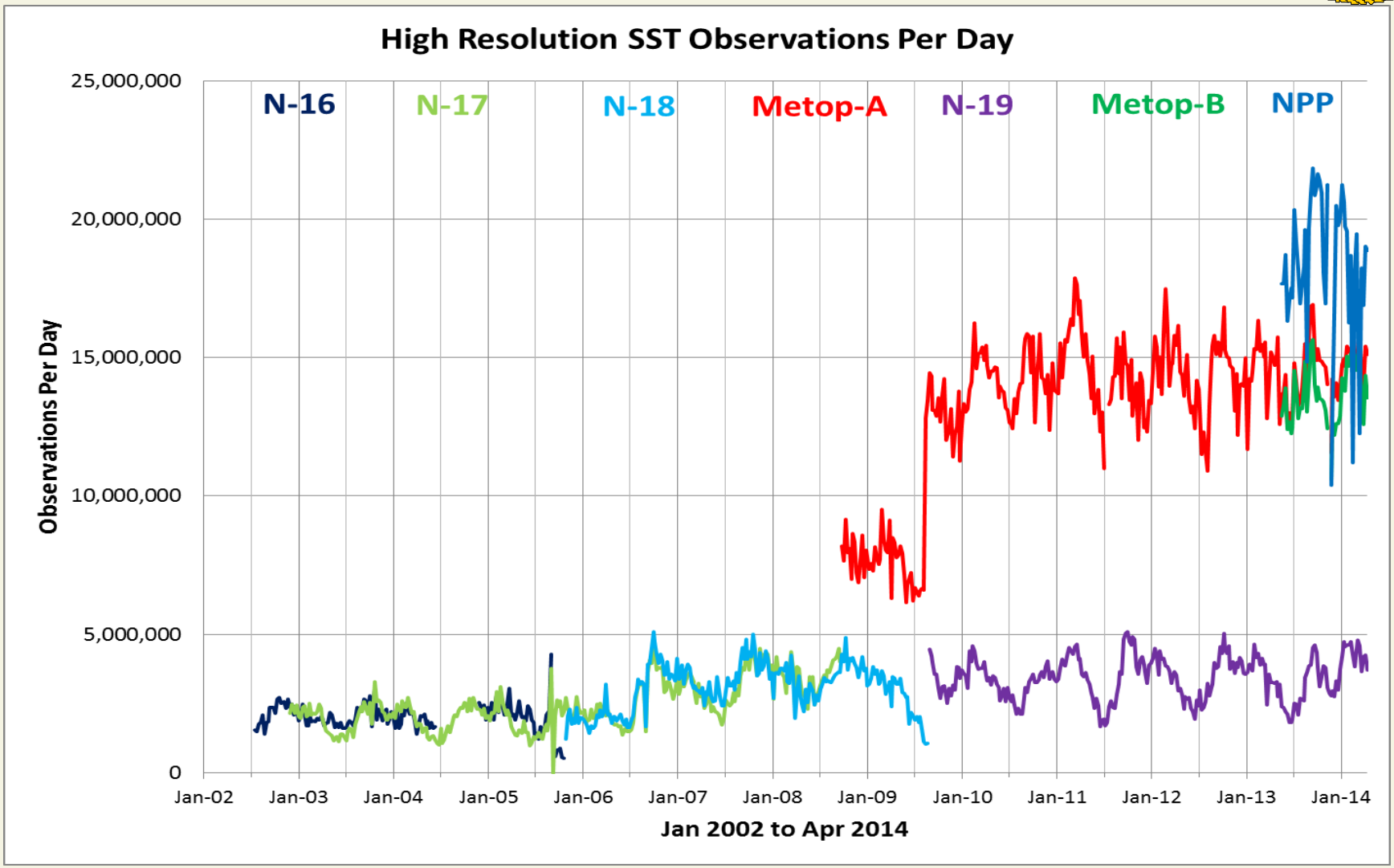
Buoy SST matchup statistics for nighttime SST

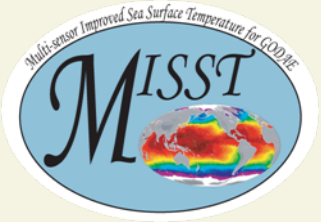


GAC SST Observations Per Day

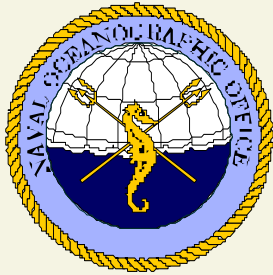


High Resolution SST Observations Per Day





NAVO Product Downloads from the GDAC
March 2014



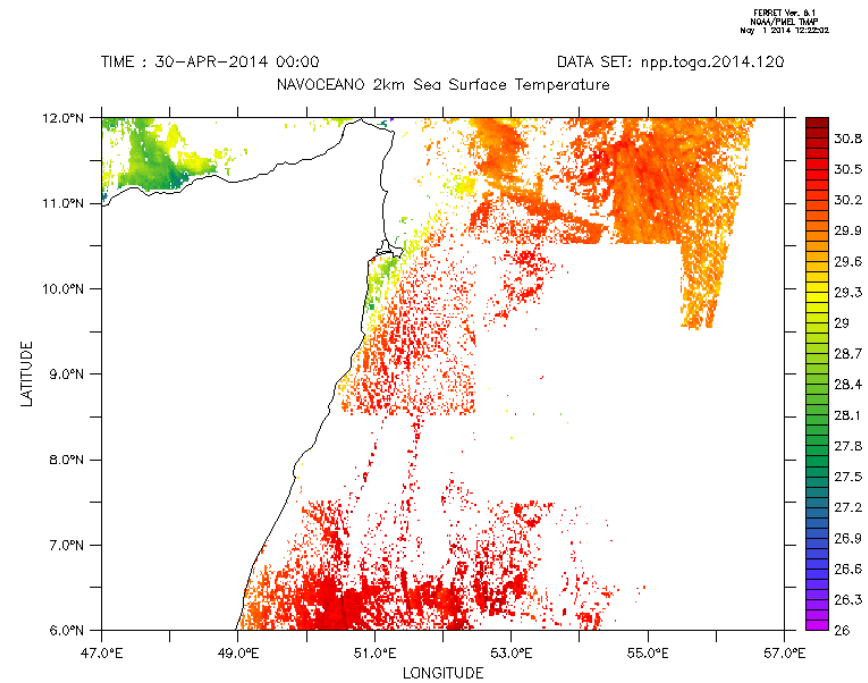
Satellite	Product	Format	Users	GB	Files
NOAA-18	GAC L2P	GDSv1	11	125.5	7328
NOAA-18	GAC L2P	GDSv2	12	339.3	12410
NOAA-18	LAC L2P	GDSv1	2	0.0	2
NOAA-19	GAC L2P	GDSv1	40	125.6	7717
NOAA-19	GAC L2P	GDSv2	9	335.2	12364
NOAA-19	LAC L2P	GDSv1	47	177.3	9818
NOAA-19	LAC L2P	GDSv2	8	367.2	13413
MetOp-A	GAC L2P	GDSv1	11	67.8	3522
MetOp-A	GAC L2P	GDSv2	4	86.2	3909
MetOp-B	GAC L2P	GDSv2	5	61.6	6286
SNPP	VIIRS L2P	GDSv2	16	5391.5	725006
Multiple	K10 L4	GDSv1	155	1.0	1130
TOTAL			215	7078.3	802905

NAVOCEANO improvements

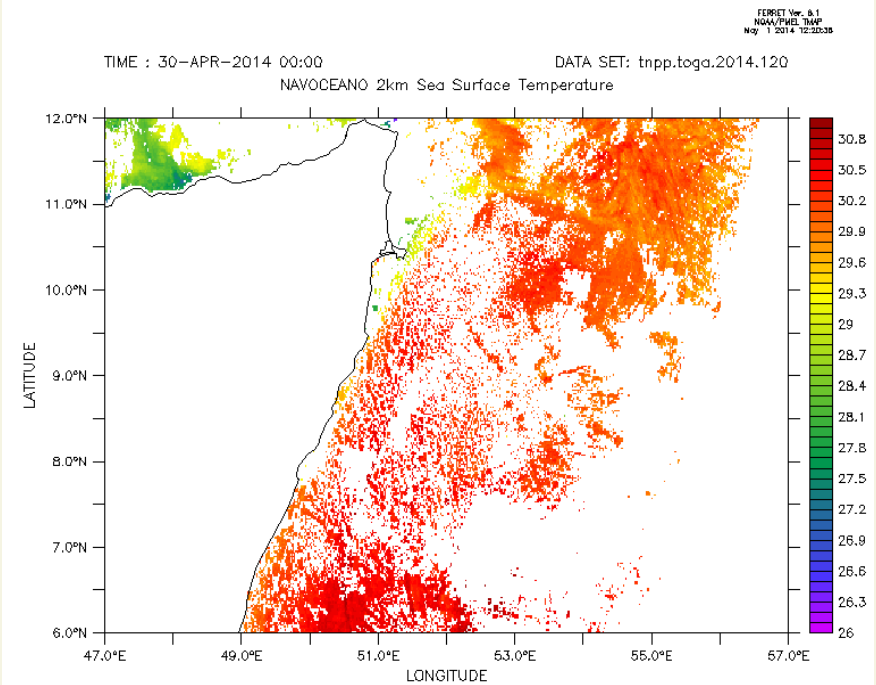
NAVOCEANO is investigating improvements to the NCM along with potential utilization of the VCM for SST production.

Example 1: Recent improvements address coverage and cloud detection artifact issues in nighttime SST by switching to a higher resolution field SST.

Before April 29, 2014



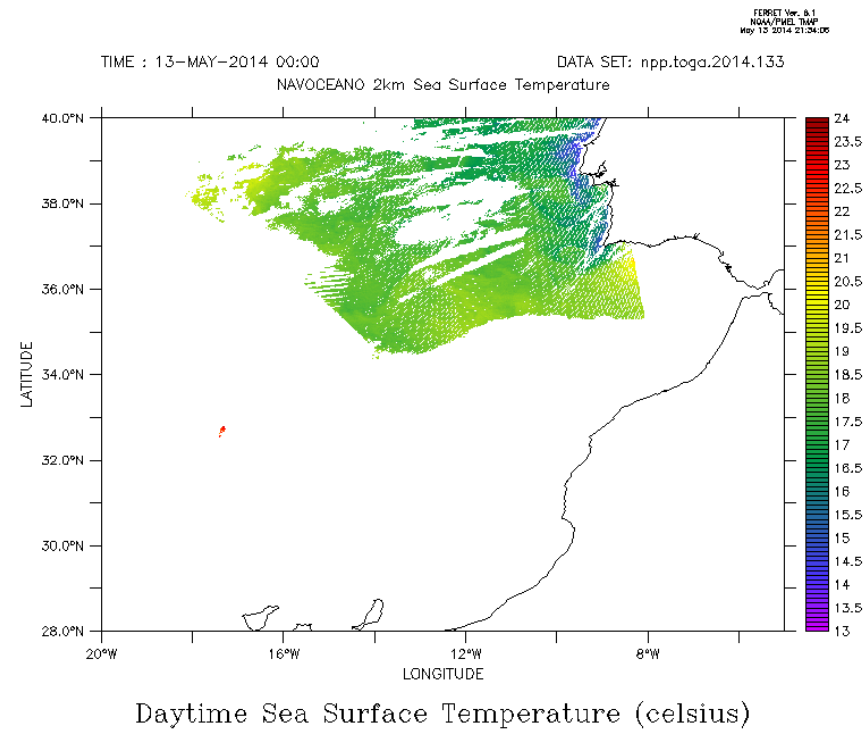
Current operational



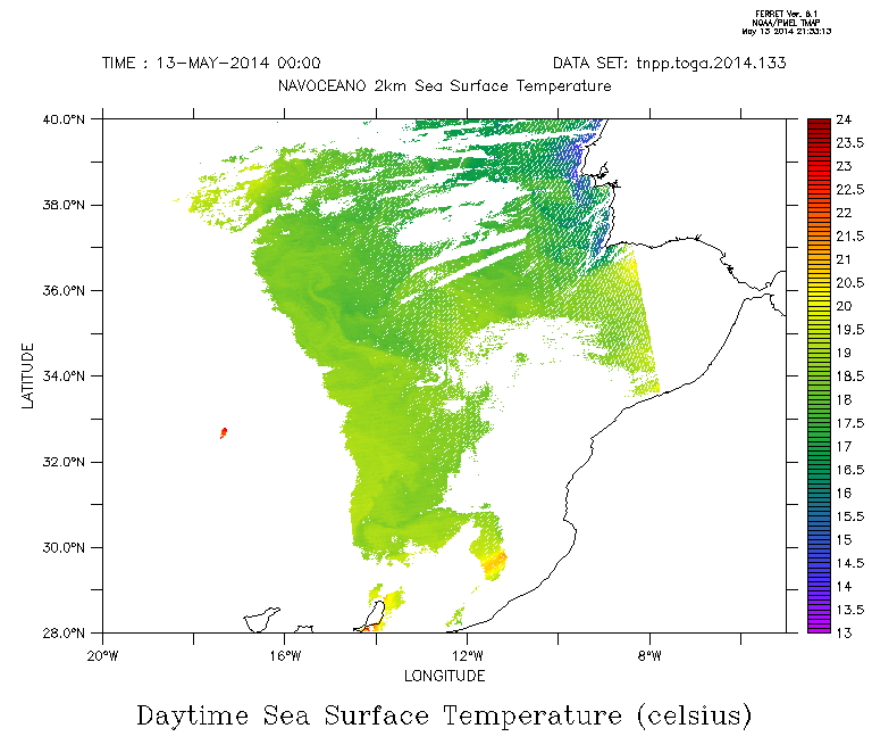
NAVOCEANO improvements

Example 2: Evaluating modification to address coverage and cloud detection artifact issues in daytime SST by more selective use of VCT test.

Current operational



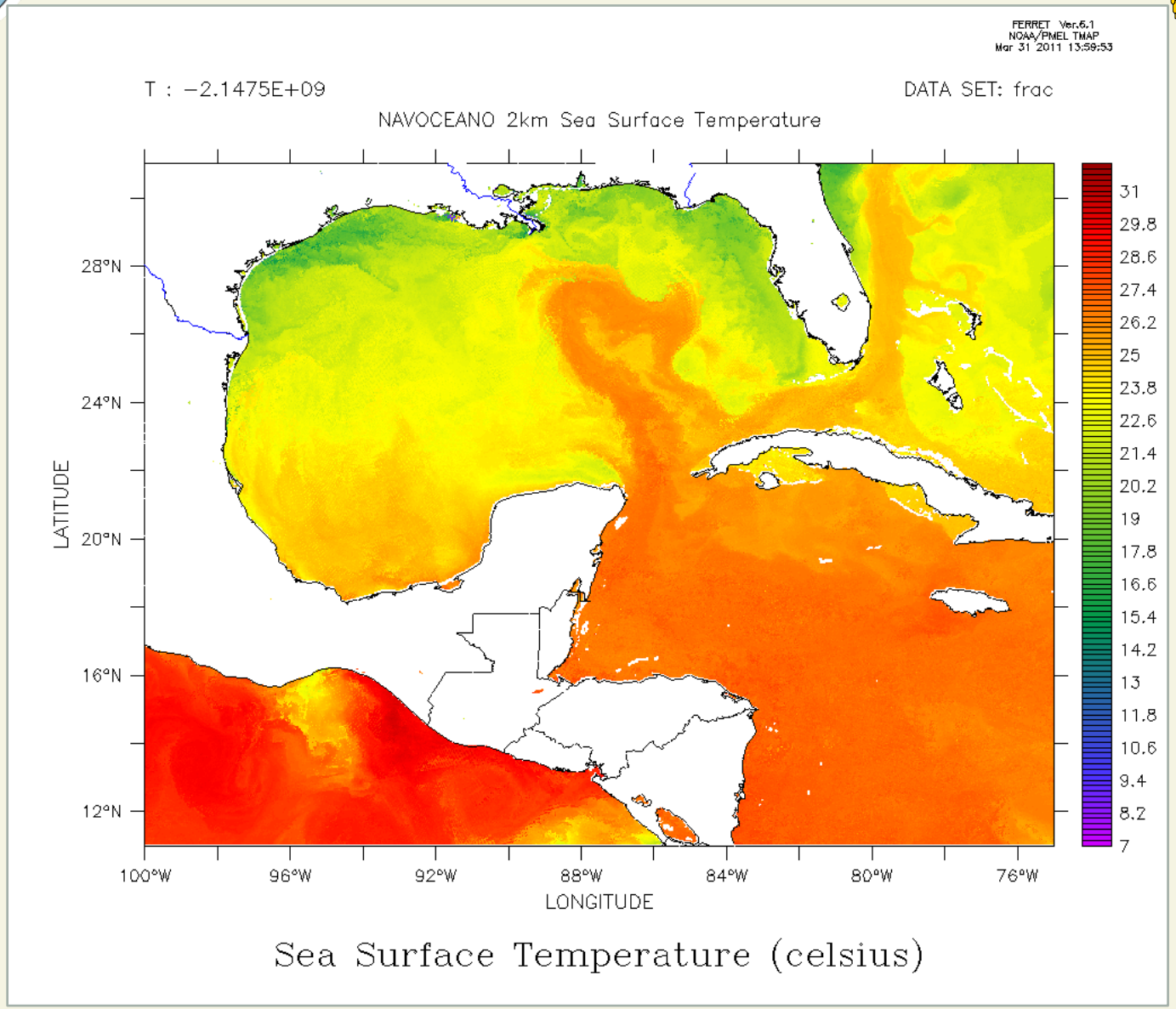
In validation



Future Plans

- Turn off dissemination of L2P products in GDSv1 format
- Continue improvements in daytime NCM
- Investigate switch to OSISAF algorithms
- Add day/night indicator to GDSv2 L2P data using l2p_flags array
- Investigate using full swath (S-NPP)
- Investigate full resolution SST (S-NPP)
- Investigate accuracy of satellite retrievals to profiling float data
- Investigate lake SST algorithms
- Obtain Sentinel-3 L2P data
- Distribute the NAVOCEANO K10 L4 analysis in GDS V2.0 format?
- Update the NAVOCEANO K10 L4 product 4 times daily?

Thank you. Questions?



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