

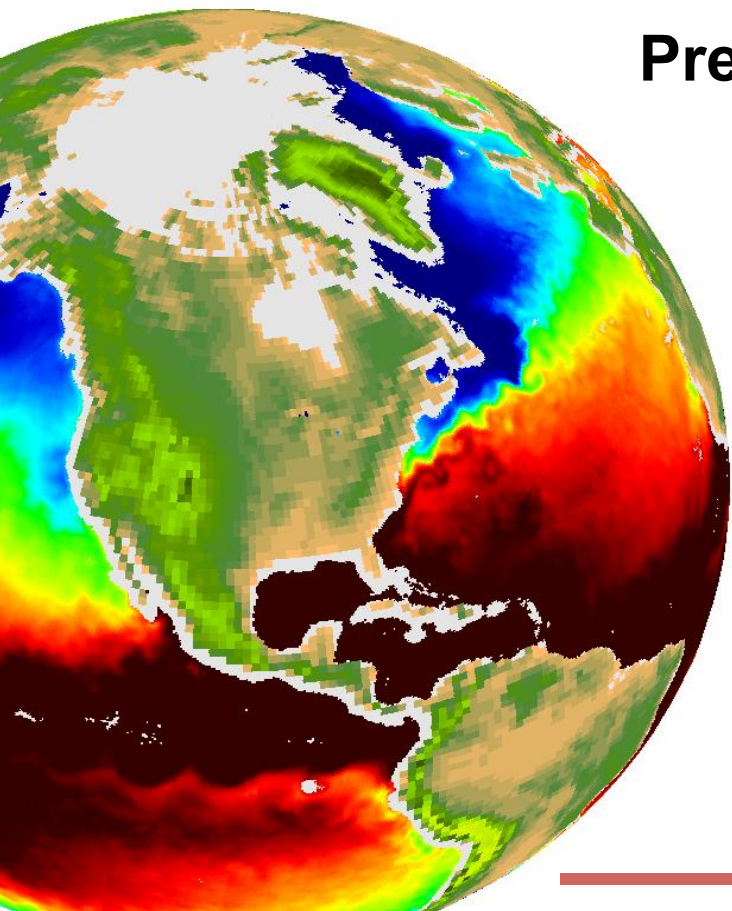
MISST2

**Chelle L. Gentemann,
Presented by G.Wick (THANK YOU)
+lots other people**

www.misst.org

- ➡ **Progress 2013.5 – 2014.5**
- ➡ **Future work**

**GHRST14
far away 2014**



RIP

**DAVID G.
FOLEY**

1966-2013

Dave passed away Dec 8, 2013

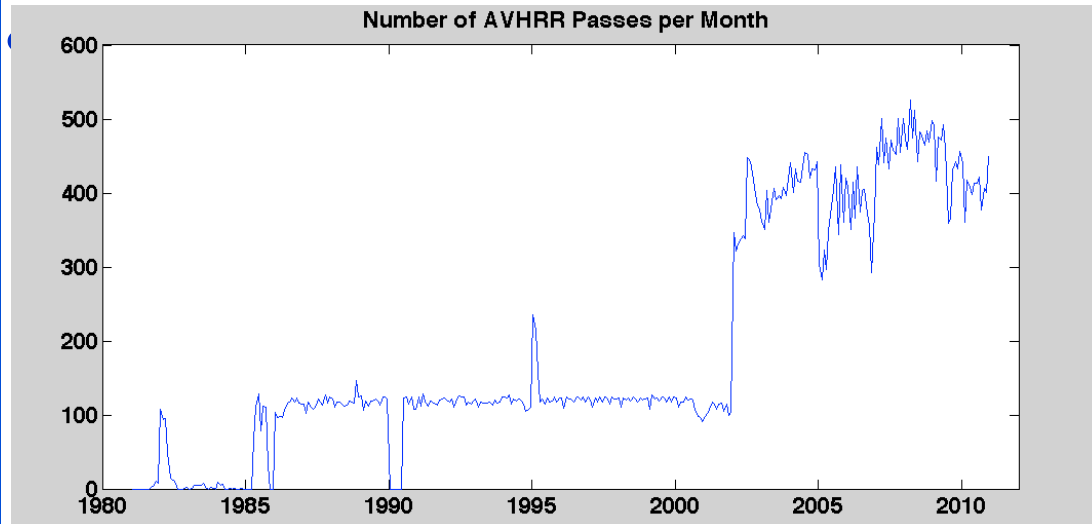
Memorial website:

<http://www.forevermissed.com/david-g-foley>



URI - Cornillon

- Using HRPT data, extend the sea surface temperature SST time series covering waters off the east and west coasts of the continental US from January 1982 through May 2016.
 - Release in L2P



Plans for the coming year

To process all of the data in our archive through the Pathfinder retrieval algorithm.

To send the retrieved data to NODC for GHRSSSTification.

To apply the fronts/gradients workflow to the AVHRR SST time series.

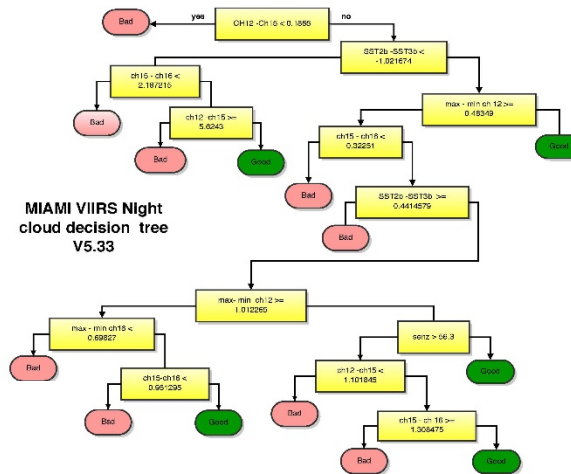
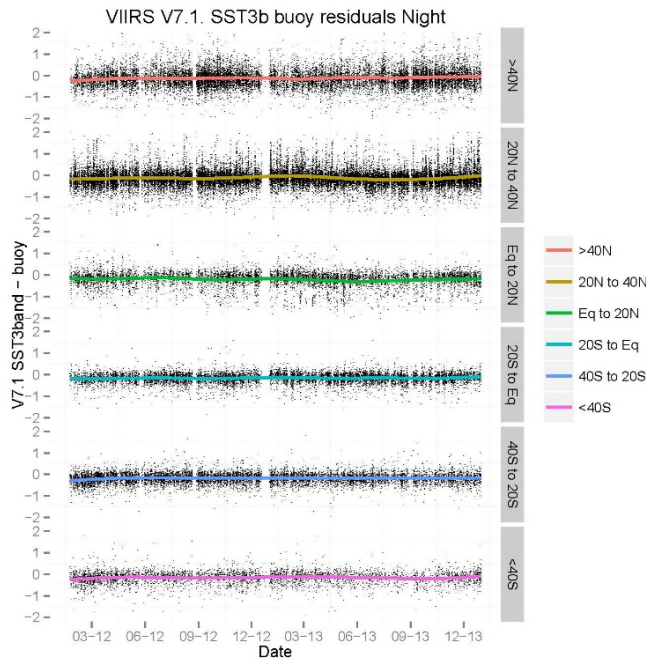
To send the gradient and front dataset to NODC.

NRL – Cummings *

- An adjoint-based procedure to determine the impact of assimilation of observations on reducing ocean model forecast error has been integrated into the Navy's global HYCOM ocean analysis/forecast system.
- A capability for direct assimilation of satellite sea surface temperature (SST) radiances has been implemented in the three-dimensional variational Navy Coupled Ocean Data Assimilation system (NCODA 3DVAR).

U.Miami - Minnett/Evans

Recent progress – focus on improving cloud screening and atmospheric corrections for assessment of VIIRS SSTs, including using M-AERI Mk2s on research vessels.



MIAMI V6:

- $SST2b = a_0 + a_1 T_{11} + a_2 (T_{11} - T_{12}) T_{sfc} + a_3 (T_{11} - T_{12}) S_\theta$
- $SST3b = a_0 + a_1 T_{11} + a_2 (T_{3.7} - T_{12}) T_{sfc} + a_3 S_\theta$

MIAMI V7:

- $SST2b = a_0 + a_1 T_{11} + a_2 (T_{11} - T_{12}) T_{sfc} + a_3 (T_{11} - T_{12}) S_\theta + a_4 S_\theta + a_5 S_\theta^\chi$
 - $SST3b = a_0 + a_1 T_{11} + a_2 (T_{3.7} - T_{12}) T_{sfc} + a_3 S_\theta + a_4 S_\theta^\chi$
- $\chi = 0.1$ for $|\text{lat}| \leq 40^\circ$; 2.0 for $|\text{lat}| > 40^\circ$

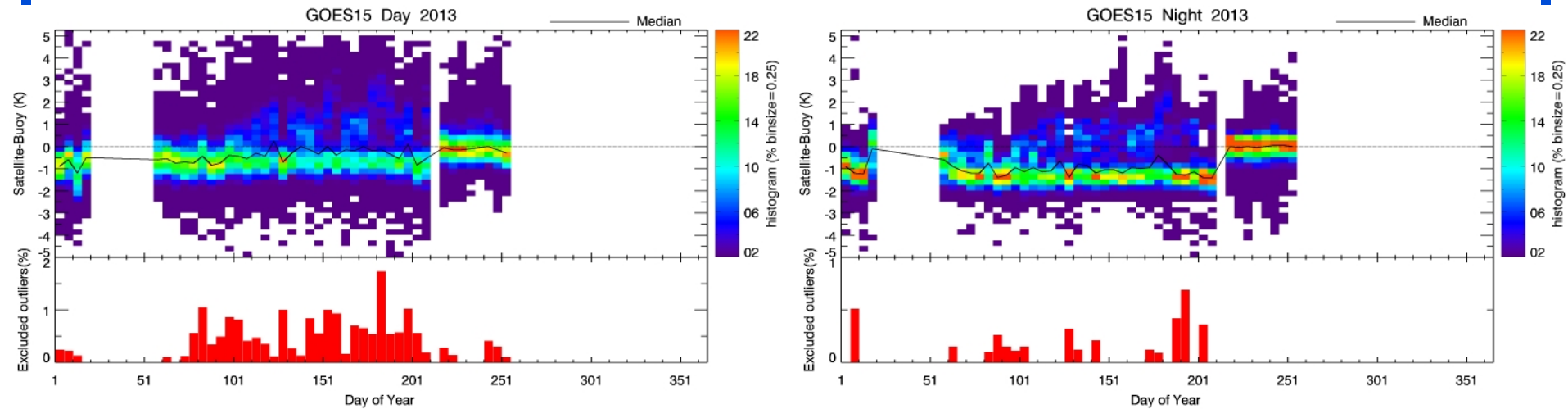
$S_\theta = \sec(\theta) - 1$; θ is satellite zenith angle

	N	Mean	Std. Dev.	Median	Median Abs. Diff.
Satellite zenith <55°					
SST2b.day	92061	-0.089	0.510	-0.085	0.337
SST2b.night	126174	-0.160	0.436	-0.153	0.331
SST3b.night	81155	-0.172	0.395	-0.152	0.230
Satellite zenith >55°					
SST2b.day	34693	-0.105	0.647	-0.149	0.536
SST2b.night	29922	-0.193	0.519	-0.206	0.485
SST3b.night	35982	-0.131	0.489	-0.161	0.355

U.Maryland – Harris & Mittaz

- Recent update to Geo-SST
 - Physical retrieval based on Modified Total Least Squares
 - Improved bias and scatter *cf.* previous regression-based SST retrieval

GOES-15

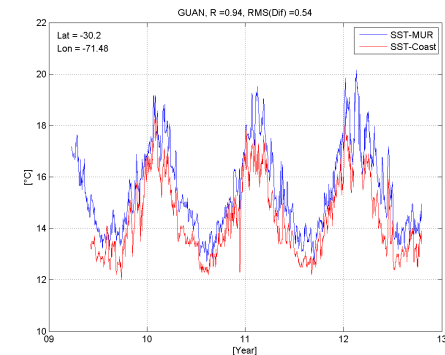
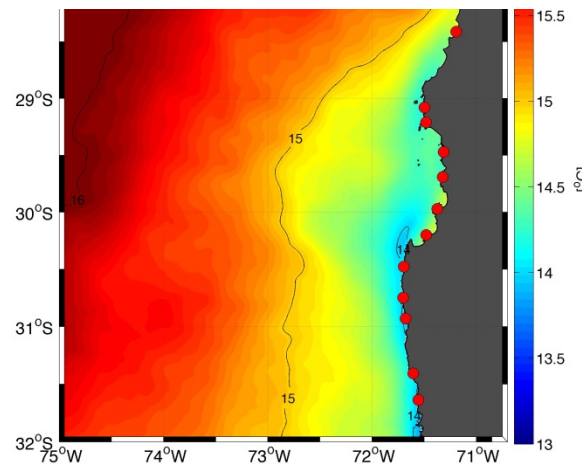


Daytime

Nighttime

JPL – Chin, Vazquez, Armstrong

- **Task 1.6.2** Continue production of MUR using the HRPT and VIIRS data (Chin). Six tera-bytes of HRPT data have been transferred from P.Cornillon to the JPL Team (Chin, Vazquez) and are in process of being incorporated into MUR.
- **Task 1.6.4.1** Cross-validation of the MUR product against other L4 products and independent data sets. Additionally for validation in coastal regions MUR was directly compared with buoys off the South American Coast. Additional comparisons between MUR and buoy SST values over the Great Lakes.
- **Task 2.2** Continue archiving and providing IOOS-based access to and discovery of all MISST products. Update virtual aggregations for all gridded MISST products. Maintain and update LAS access to gridded MISST products.
- Future work
 - Full integration of AMSR2 and VIIRS into processing stream.
 - Continue validation of the MUR product, including comparisons with higher resolution models and inter-product comparisons.
 - Work with GHRSS Inland and Coastal Waters Technical Advisory Group (ICWTAG) to compare MUR and other products in Lakes.



U.Utah - Crosman

- MISST2 Past Year:
 - Lake SST errors review presented at GHRSSST June 2013.
 - Subset of review and some recommendations incorporated into Grim et al. 2013 paper in Journal of Atmospheric and Oceanic Technology
 - Coordinating with GHRSSST Near Shore Water Working Group (NSWWG) and Global Lake Temperature Collaboration (GLTC) to improve available Lake SST validation data
 - Requested validation data from available published lake SST studies
- Difficulties
 - Variable quality of lake buoy validation data
 - Determining which of many SST products to analyze/validate over lakes
- MISST2 Next Year:
 - Validate current lake temperature SST products (NAVOCEANO, MODIS, NASA MUR and others) over several (TBD) lakes during future meetings or NSWWG telecons
 - Report findings and present recommendations for lake SST at future GHRSSST meetings

NAVOCEANO - May

- Current progress
 - NPP VIIRS processed and distributed in GDS 2.0 format
 - METOP-B GAC processed and distributed in GDS 2.0 format
 - N-18 GAC, N-19 GAC, N-19 LAC and METOP-A GAC switched to GDS 2.0 format
 - Profiling float data obtained for upcoming investigation of relative accuracy to satellite retrievals
- Future Work
 - Investigate assimilation of sea ice concentration into NAVO K10 L4 product
 - JPSS-1 VIIRS SST to be processed and distributed in GDS 2.0 format
 - Implement regional L3 product improvements into operational areas of interest
 - Implement Eric Crosman's lake SST algorithms

Problems/Difficulties: Sentinel-3 delayed until 2015

RSS - Gentemann

- AMSR-E MODIS buoy validation paper published in JGR ---- VAP correction should be applied to all AMSR-E, TMI, WindSAT
- AMSR2 SSTs available from www.remss.com
- GDS 2.0 test files sent to JPL, all users of RSS data should EMAIL GENTEMANN@remss.com for info on dates for switch to GDS2.0
 - AMSR-E, TMI, WindSAT, AMSR2 data, full datasets, will be in GDS2.0. All except AMSR2 will include correction for vapor
 - MWOI fusion and MWIR fusion **version 4.0** released this month in GDS2.0

NOAA/NESDIS/STAR Maturi, Harris, Mittaz, Wick

- Physical retrievals for all Geostationary SST (GOES 13, 15, MTSAT, MSG) in GDS 2.0
- 5 km day/night and 5 km night blended SST in GDS 2.0
 - Data-adaptive correlation length scales, shortest correlation length where data density is max
 - Final result interpolated from these analyzes based on data density
 - Preserves fine-scale features without introducing excessive noise

NOAA: Wilson & Mendelssohn

- FY1 6/1/2011-5/31/2012: Task 2.3
Make MISST L3 and L4 products available to the IOOS community via NOAA/SWFSC/ERD data services (Foley and Mendelssohn).
- FY2 6/1/2012-5/31/2013: Task 2.3
Make MISST L3 and L4 products available to the IOOS community via NOAA/SWFSC/ERD data services (Foley and Mendelssohn).
- FY3 6/1/2013-5/31/2014: Task 2.3
Conduct satellite applications class for marine managers and researchers featuring GHRSSST products. (Foley).
- FY4 6/1/2014-5/31/2015: Task 3
Submit manuscript featuring the use of GHRSSST data for the determination of Salmon habitat along the US West Coast. (Foley).
- FY5 6/1/2015-5/31/2016: Task 3.2
Serve L3 and L4 GHRSSST products developed in the course of the project to IOOS customers via ERD data services. (Foley/Mendelssohn).

NCDC Banzon

- $\frac{1}{4}^\circ$ Daily OISST Highlights
 - extensive “code refactoring” was initiated in 2013 to allow portability to virtual machine and meet internal NCDC requirements
 - has slowed reprocessing effort but will eventually help reach long term MISST2 goals
 - expected ‘refactoring” completion is summer 2014
 - Make new SST products operational and GDS 2.0 (6/2015-5/2016)

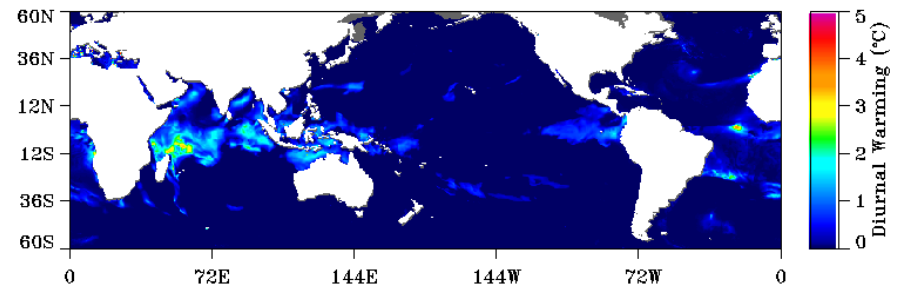
NODC Casey

- FY3 6/1/2013-5/31/2014: Task 2.2: Continue archiving and providing IOOS-based access to and discovery of all MISST products. Update virtual aggregations for all gridded MISST products. Maintain and update LAS access to gridded MISST products. (Casey)
- All MISST/GHRSSST products archived daily via automated systems
- All product-level ISO 19115 metadata records updated and discoverable via NODC Geoportal at <http://data.nodc.noaa.gov/geoportal>
- 60 of 60 MISST/GHRSSST GDS1 products with searchable granule inventories at <http://www.nodc.noaa.gov/geoportal/> (also linked to products above)
- 26 virtual aggregations, allowing the separate daily data files to be viewed as a three-dimensional products in LAS at <http://data.nodc.noaa.gov/las>
- All MISST/GHRSSST product inventories automatically updated and include on-demand browse graphic generation for gridded products
- All MISST/GHRSSST products registered to CEOS IDN and CWIC
- Rich inventory calculated, archived, and in LAS for Pathfinder Version 5.2 L3C SST data. DOI minted! <http://dx.doi.org/10.7289/V5WD3XHB>
- **Remaining Plan for FY3:**
- Data.gov connection re-established, but need to coordinate on ocean.data.gov
- Establish GDS2 data flows from JPL PO.DAAC
- Add a few DOIs – looking for volunteers!

CU/ESRL Castro

- Completed evaluation of performance of GHRSSST L4 SST analyses at high latitudes (Beaufort Sea) relative to buoys - See poster 1606
- Implemented facility (with ESRL) for computation and evaluation of diurnal warming estimates from multiple numerical models forced with real time numerical weather prediction forecast data
- Assessment/refinement of SSES values underway now
- How best to interface diurnal warming product evaluation with other MISST activities
 - Evaluation of diurnal warming estimate accuracy (in particular via real-time capability at NOAA/ESRL)
- Collaborate with NOAA/ESRL on the derivation of diurnal warming climatologies and characteristics from different sensors

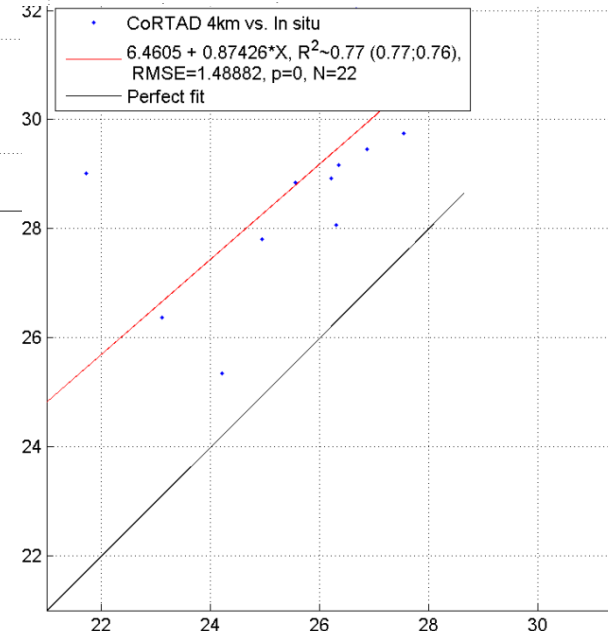
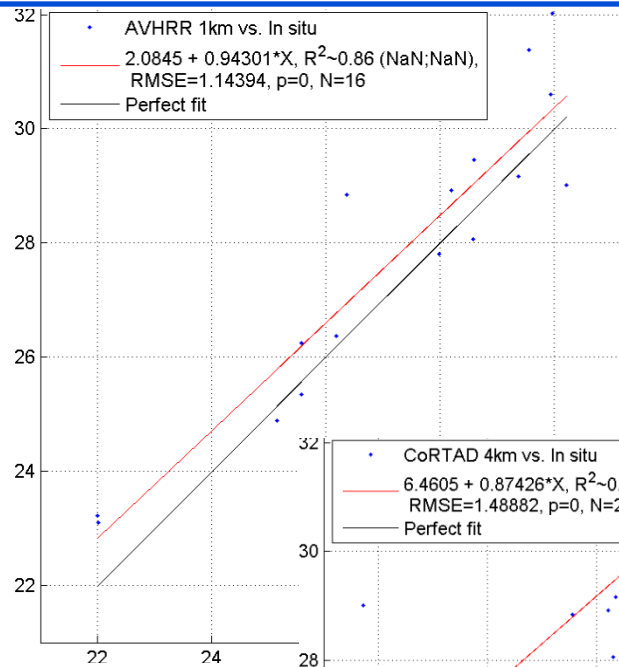
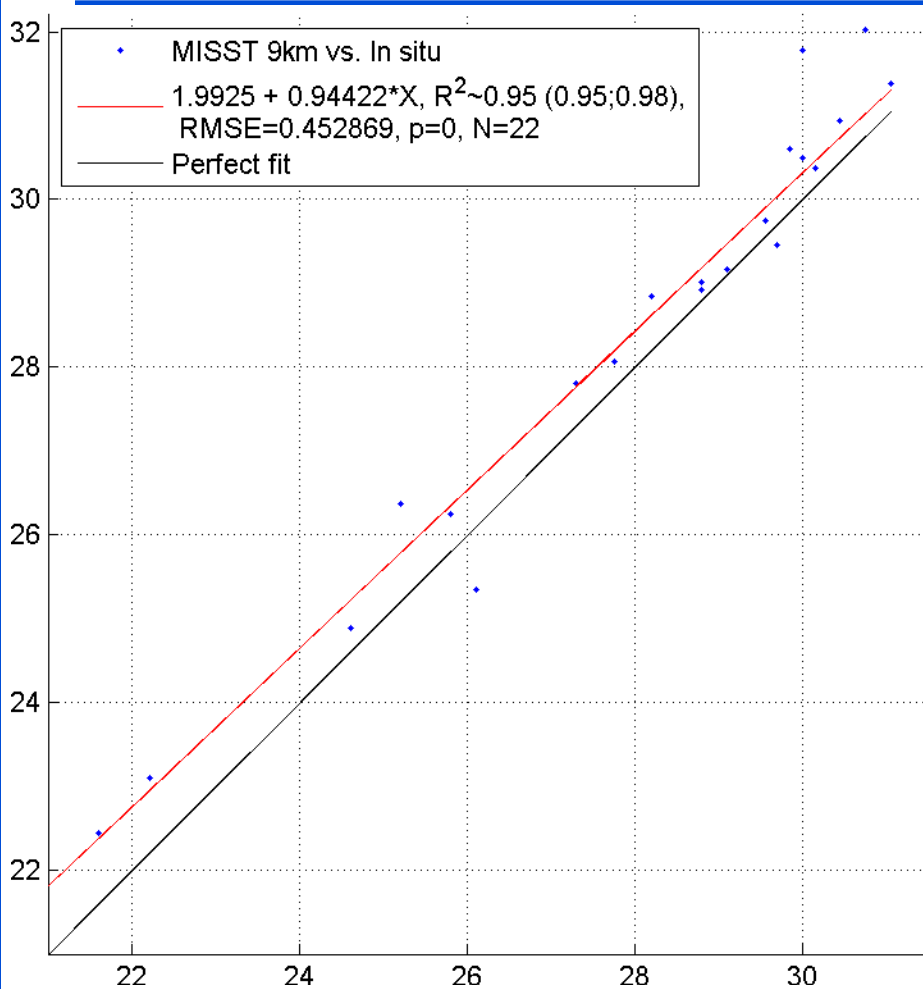
Modeled DW 1400 UTC, 03/21/13



UCLA Chao

- Since Yi Chao left JPL in Dec 2011, the G1SST PI role has been transferred to Dr. Zhijin Li at JPL
- Produce the level 3 MODIS day and night SST data at 1-km spatial resolution for both real-time and retrospective applications
- Produce other level 3 SST data at 1-km spatial resolution as needed
- Demonstrate the use of these level 3 SST data in regional ocean data assimilation and impact on operational predictions

NOAA AOML/CIMAS Gramer & Hendee



Low-wind Bleaching Days – Florida Keys 2003-2011

Erik Crosman

University of Utah

Department of Atmospheric Science

- **MISST2 Past Year:**

Lake SST errors review presented at GHRSSST June 2013.

Subset of review and some recommendations incorporated into Grim et al. 2013 paper in *Journal of Atmospheric and Oceanic Technology*

Coordinating with GHRSSST Near Shore Water Working Group (NSWWG) and Global Lake Temperature Collaboration (GLTC) to improve available Lake SST validation data

Requested validation data from available published lake SST studies

Thank you!
