

NOAA NCEI's Sea Surface Temperature Portfolio and Contribution to GHRSSST RDAC

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NOAA's National Centers for Environmental Information (NCEI)

GHRSSST-XIX
(June 4-8, 2018)

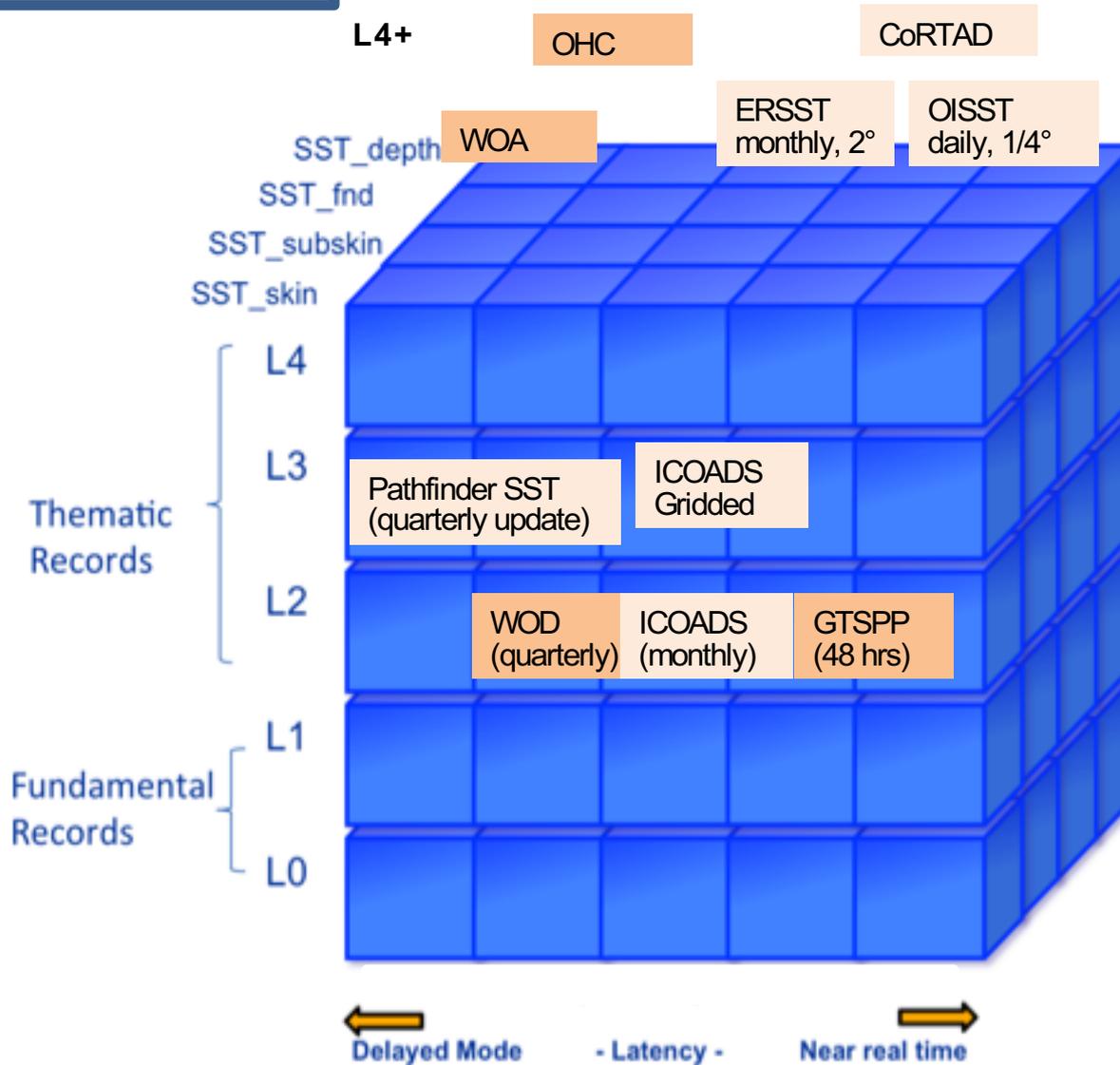
NOAA Satellite and Information Service | National Centers for Environmental Information



NCEI's SST Datasets
in Cube's time
domain

NCEI's SST Datasets
are SST_depth

NCEI CLASS archives
L0/L1 data



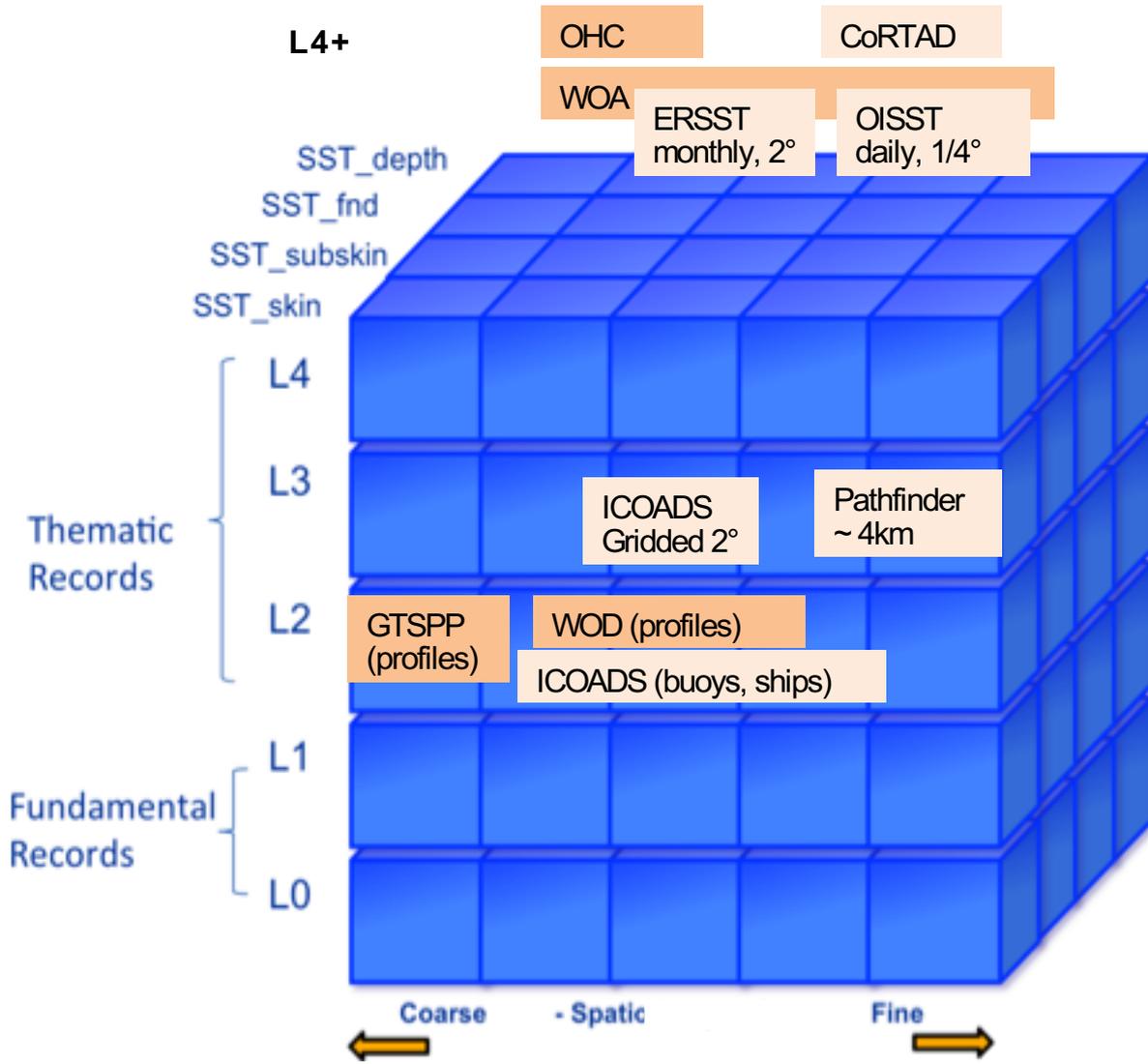
SST Products
needed across
several
dimensions:

1. SST type
2. Processing Level
3. Space-time resolution
4. Latency

CoRTAD = Coral Reef Temperature Anomaly Database
 ICOADS = The International Comprehensive Ocean-Atmosphere Data Set
 ERSST = Extended Reconstructed SST
 OISST = Optimum Interpolation SST

OHC = Ocean Heat Content
 WOA = World Ocean Atlas
 WOD = World Ocean Database
 GTSP = The Global Temperature and Salinity Profile Programme

NCEI's SST Datasets in Cube's spatial domain



SST Products needed across several dimensions:

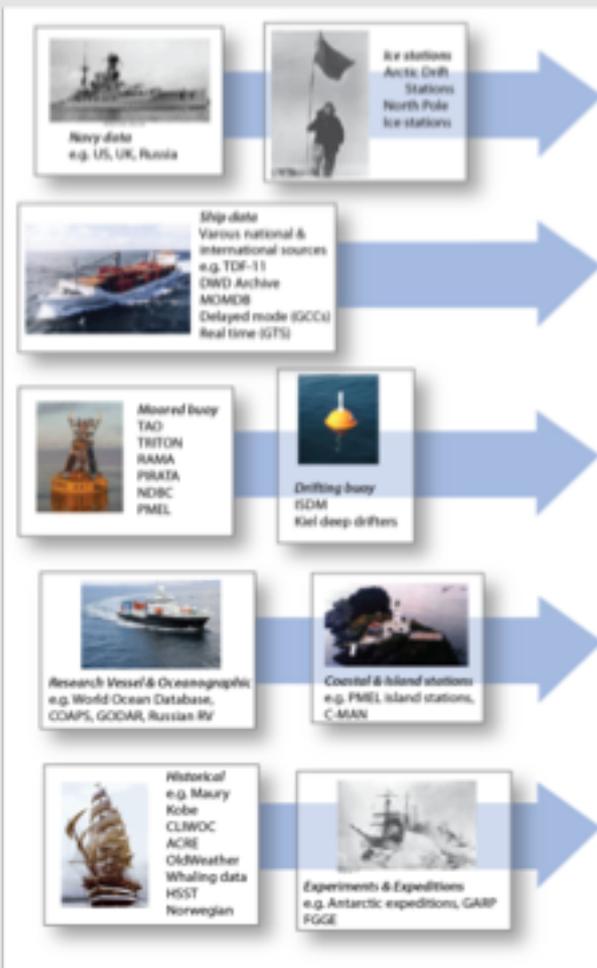
1. SST type
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ICOADS:

The International Comprehensive Ocean-Atmosphere Data Set

Scope: The world's most extensive surface marine & meteorological data collection (**akin to GHCN over land**); a foundational dataset for climate monitoring & studies (e.g. ERSST ...)

Objective: Stewardship, archive & service of ICOADS



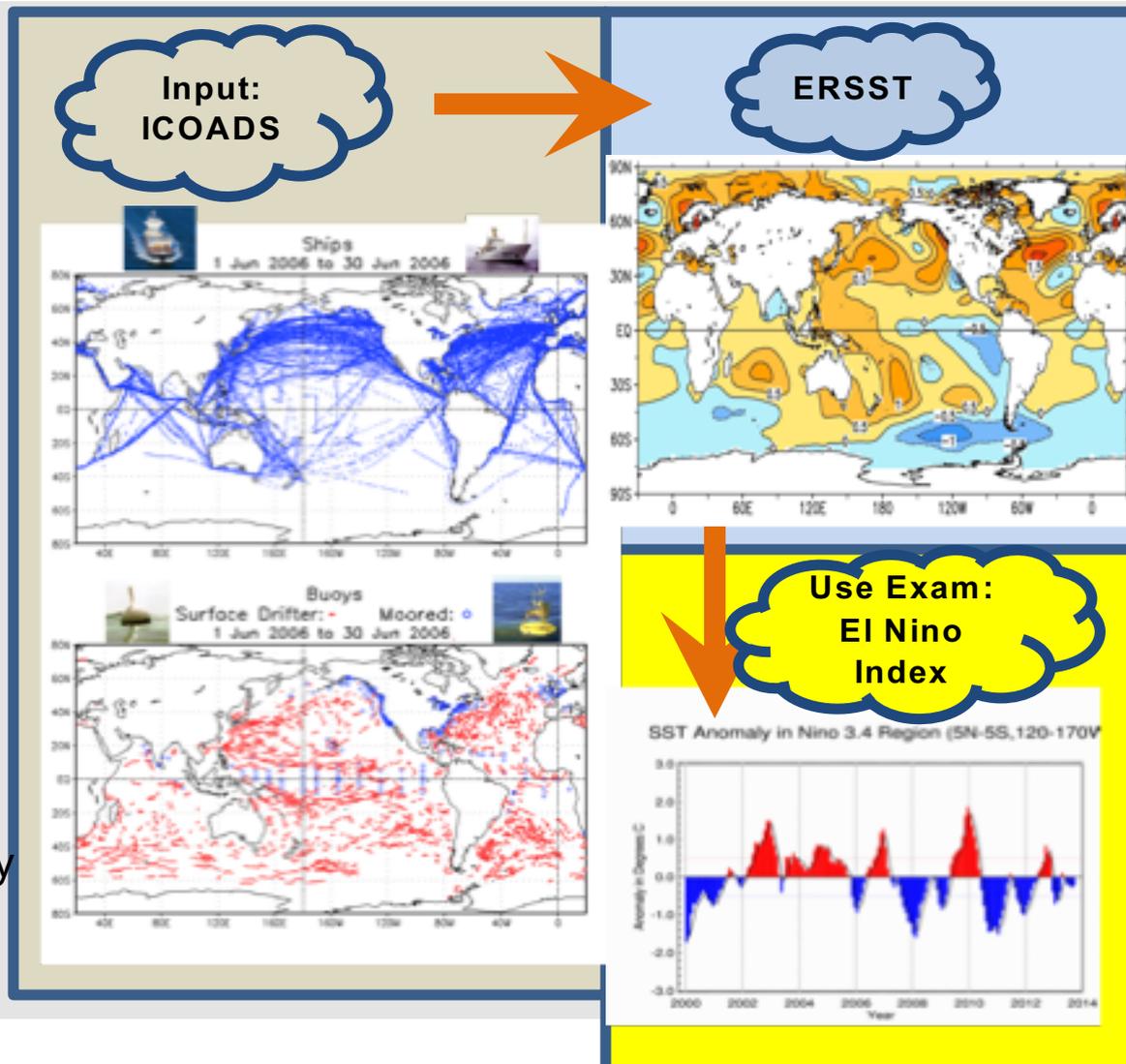
Centennial-Scale Extended Reconstructed Sea Surface Temperature (ERSST)

Scope: Authoritative centennial global sea surface temperature dataset for climate change research, assessment & monitoring

Objective: Monthly production & dissemination; development to remain state-of-the-science & authoritative

Major Ongoing Improvements:

- ERSST version 5 published: including data from Argo floats, using ICOADS R3.0, comprehensive data error/homogenization estimates, updated SST corrections using new sea ice datasets
- Working on ERSSTv5 uncertainty



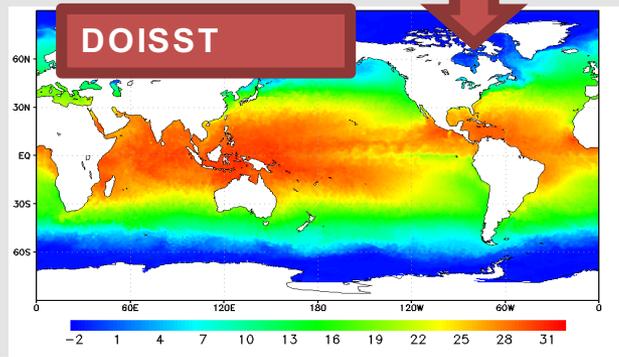
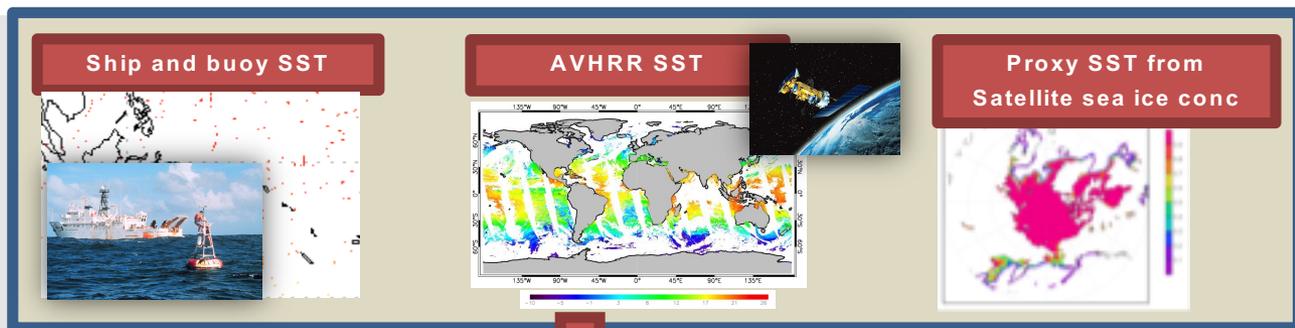
NOAA 1/4° daily Optimum Interpolation SST

Scope: Blended satellite + in-situ sea surface temperature dataset for climate change research, assessment & monitoring

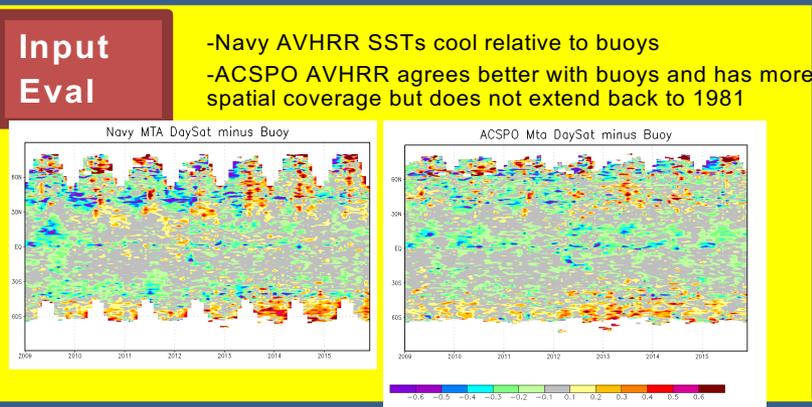
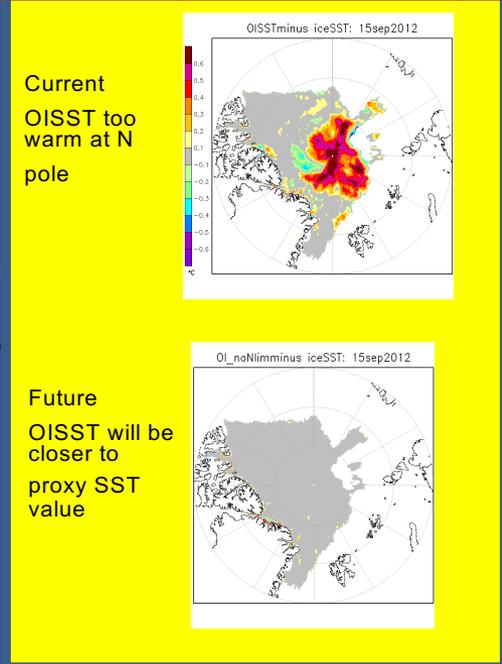
Objective: Timely production & dissemination; support users; prep for new version

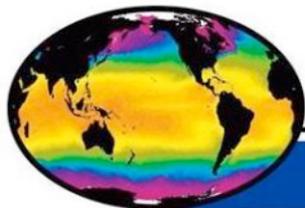
Major Ongoing Milestones:

- Arctic SST improvements under investigation
- Ongoing evaluation of inputs (operational and historic)
- Replacement of full period in archive (non GHRSSST format) because still netCDF3 up to March 2017 causing THREDDS instability



Future Arctic improvements

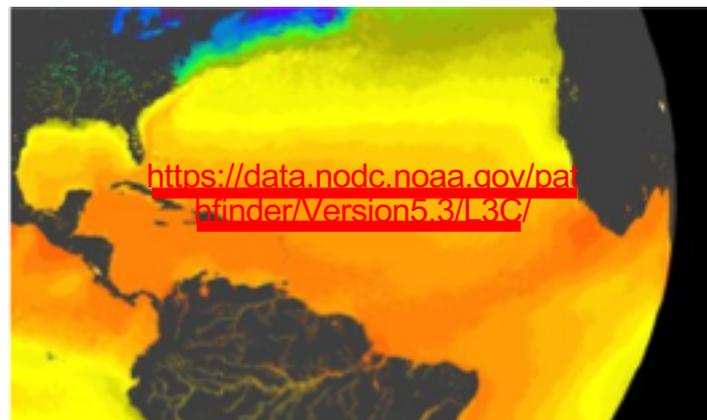




GHR SST

*Group for High Resolution
Sea Surface Temperature*

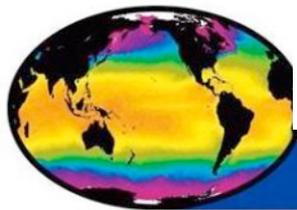
Update on the R20 Transition of AVHRR Pathfinder SST (PFSST) Version 5.3 (PFv5.3) at NOAA/NCEI



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¹NOAA/NESDIS/National Centers for Environmental Information (NCEI), ²University of Maryland CICS, ³NOAA/NCEP, ⁴University of Maryland ESSIC, ⁵University of Miami RSMAS



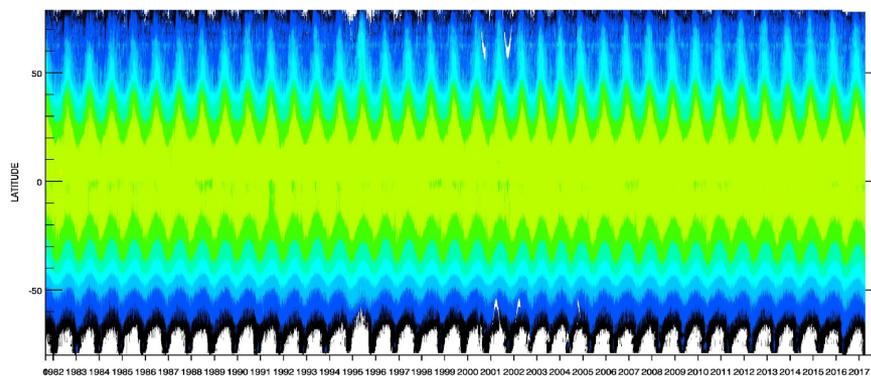


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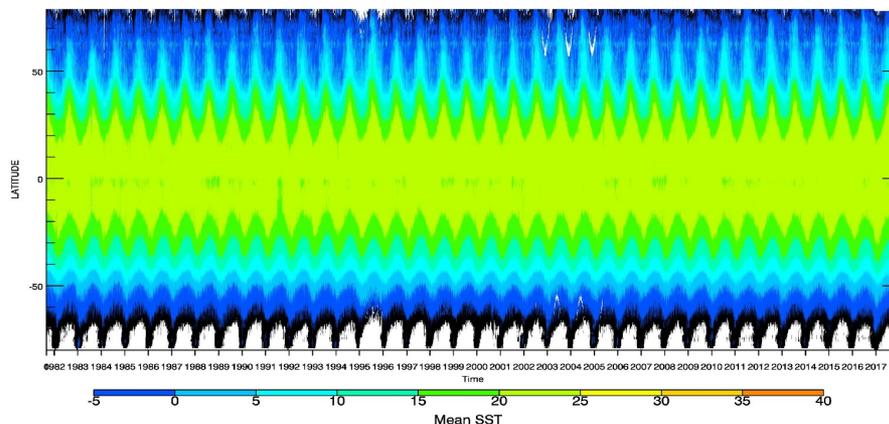
Objectives of PFSST R20

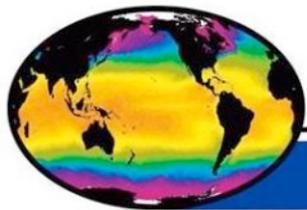
- To transfer the PFSST CDR production capability from research environment to NOAA/NCEI operational environment for long-term sustainment and preservation.
- To provide the longest, most accurate, and highest resolution consistently-reprocessed SST climate data record (CDR) from the AVHRR sensor series.
- To serve as a fundamental input to GHRSSST reanalysis CDRs.

Nighttime



Daytime





GHR SST

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Status of Previous Year

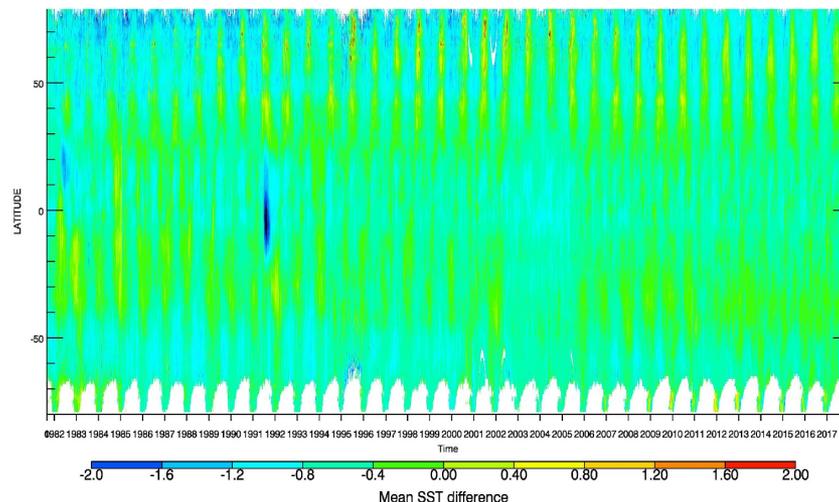
- **NCEI decided stopping PFSST R20 transition in May 2017 before it is completed:**
 - ✓ **Moved PFv5.3 production into hibernation mode.**
 - ✓ **Started documenting the production procedures to preserving the production capability for future restoring & reviving.**
- **NCEI continued RDAC service for the existing static L3C CDR products of PFv5.3 (1981-2014) and PFv5.2 (1981-2012).**
- **NCEI continued LTSRF service for other NOAA GHR SST products with reduced resources.**



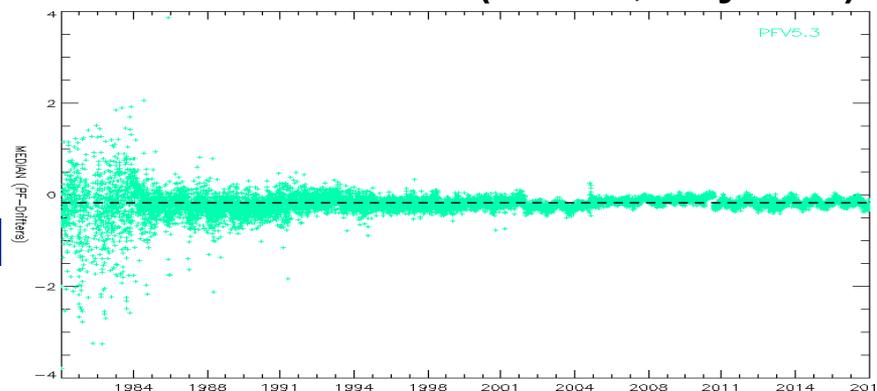
Current Status of AVHRR PFSST

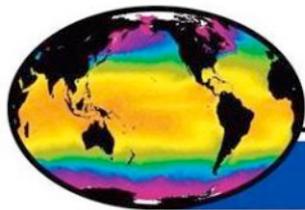
- NCEI revived and accomplished R20 transition of PFv5.3 and L3C CDR product has been extended from 2014 to 2018.Q1 and will soon be available at <https://data.nodc.noaa.gov/pathfinder/Version5.3/L3C/>
- Quarterly operational forward update of PFv5.3 L3C CDR is achieved and will be maintained at NCEI.
- PFv5.3 L3C CDR compares well with other GHR SST CDRs.

PFv5.3 – OISST (daytime)



PFv5.3 – iQuam2 (drifter; daytime)





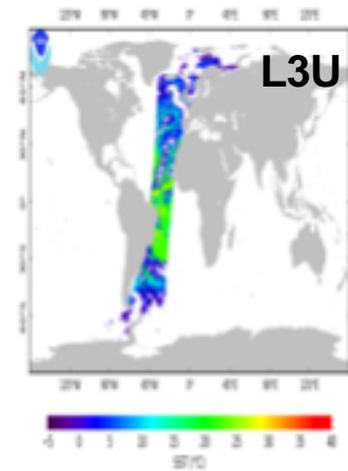
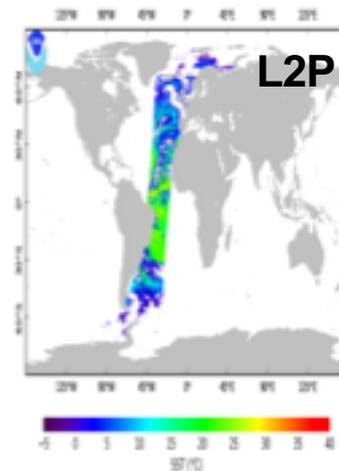
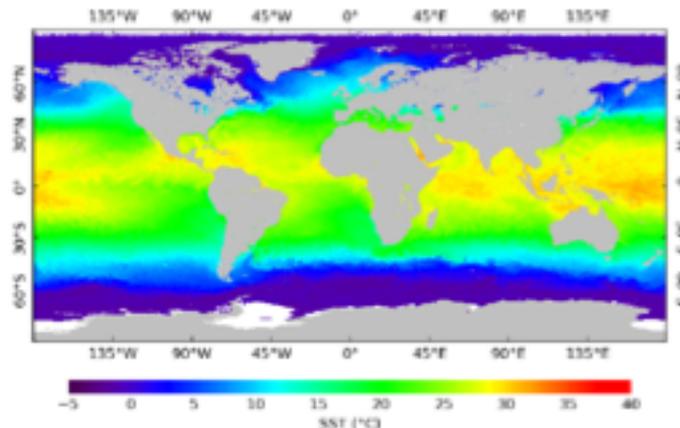
GHR SST

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Future Plan

CoRTAD v6

corradv6 File05SST for week 1714 (from 2014-11-01 to 2014-11-07)



- Complete the production of SST anomaly CoRTAD v6 product (based on PFv5.3 L3C SST) from 1981-current and make it available to users. Perform annual forward update of CoRTAD v6 data record.
- Perform reprocessing with PFv5.3.1 (improved binning at high latitudes) for the production of L2P, L3U, and L3C CDRs. Fill the gap from Oct. 1994 to Jan. 1995.
- Populate the “SSES_bias” and “SSES_standard_deviation” variables for PFSST to make it 100% GDS2 compliant.
- Include MetOp-A/B/C AVHRR observations in the data production.

