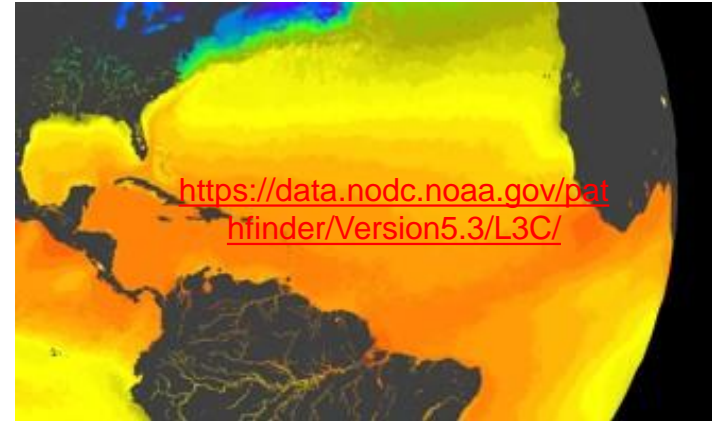


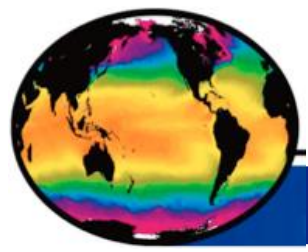
GHR SST Climate Data Record

Pathfinder Version 5.3 AVHRR Level-2 Processed Global Sea Surface Temperature



**Sheekela Baker-Yeboah^{1,2}, Korak Saha^{1,2},
Kenneth S. Casey¹, Dexin Zhang^{1,3}, Katherine
A. Kilpatrick⁴, Robert Evans¹ and Thomas
Ryan²**

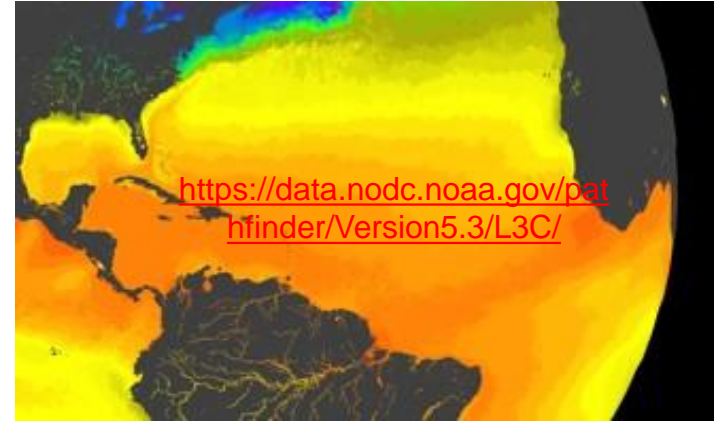
**¹University of Maryland CICS, ²NOAA/NESDIS/National Centers for
Environmental Information (NCEI), ³Science and Technology
Corporation, ⁴University of Miami RSMAS**

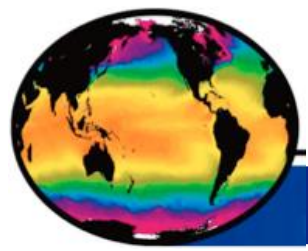


AVHRR Pathfinder SST (PFSST)

GHRSSST Climate Data Record

- Long-term, climate data record (CDR)
- Has been a staple in the GHRSSST community for decades.
- Version 5.3 PFSST used a modernized version of the heritage Pathfinder SST codes integrated into the open source NASA SeaWiFS Data Analysis System (SeaDAS6.4).
- (Ref: Sea Surface Temperature - Pathfinder - Climate Algorithm Theoretical Basis Document, 2016)

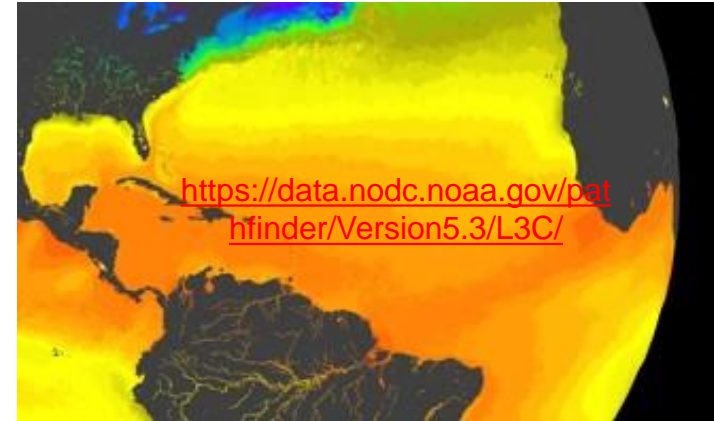


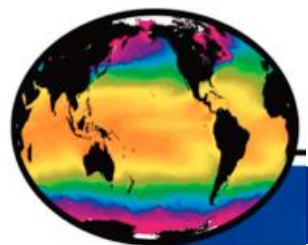


AVHRR PSST Project Goals

GHRSSST Climate Data Record

- To provide the longest temporal (1981-2014) and highest resolution of consistently-processed SST records,
- As a CDR from the AVHRR sensor series.
- To serve as a fundamental input to other GHRSSST Level 4 products.



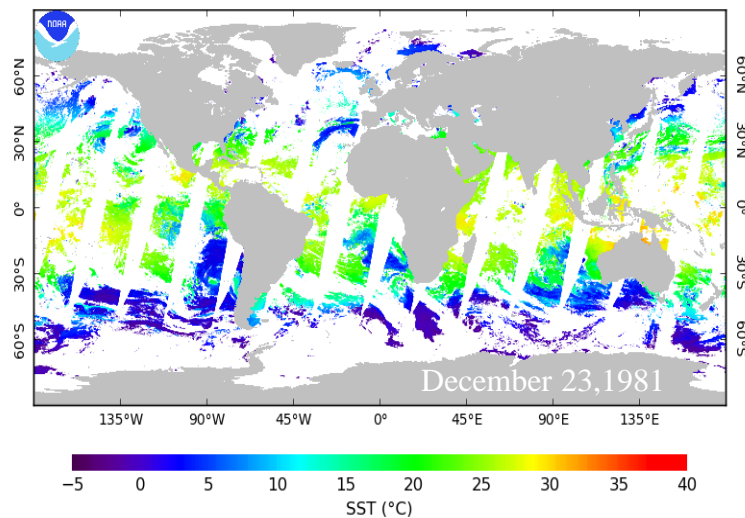
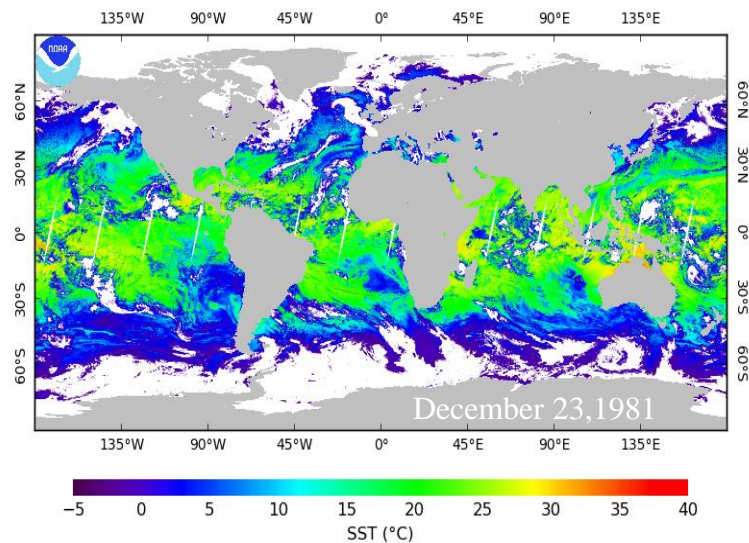


AVHRR PSST Current Status

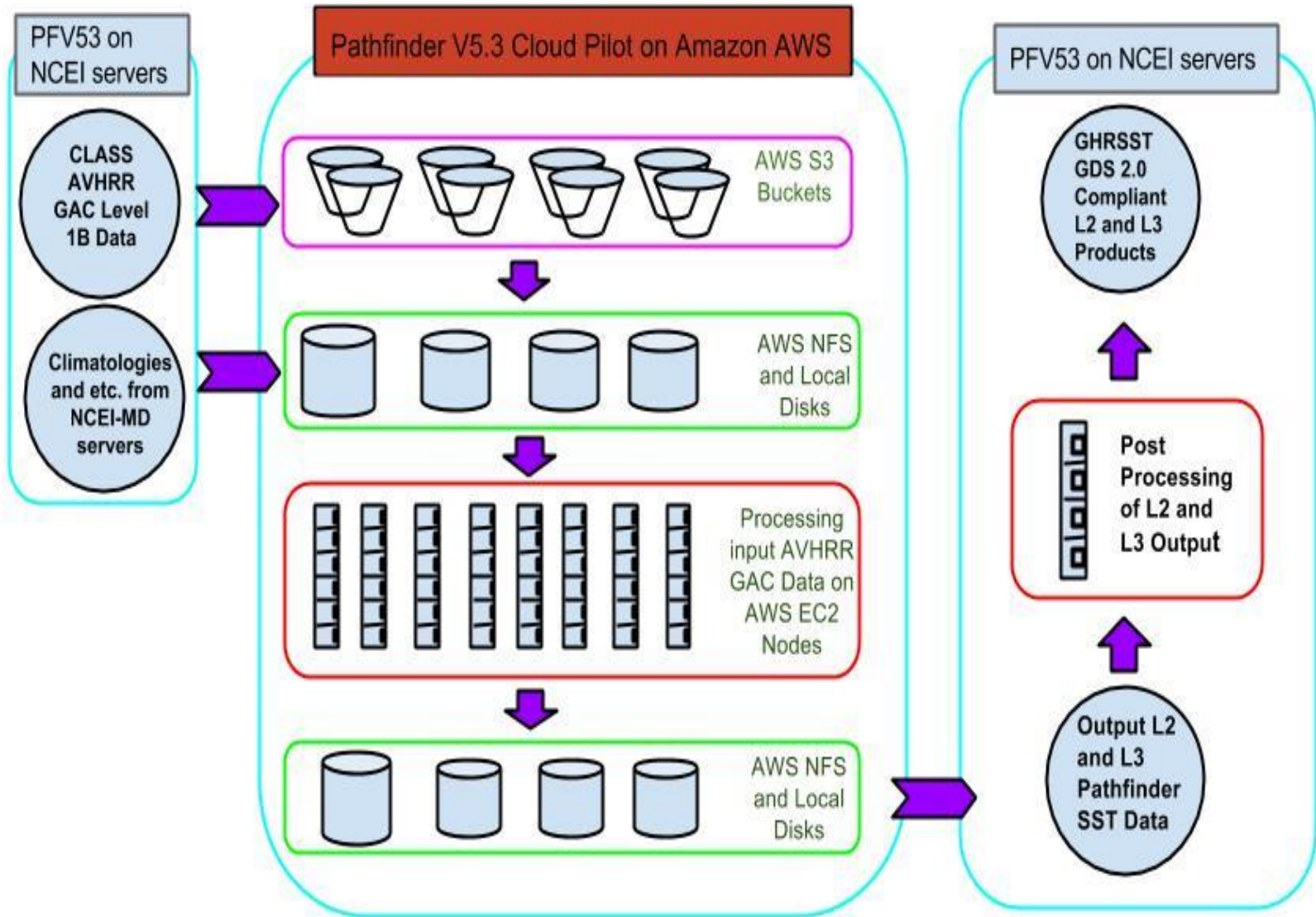
GHR SST Climate Data Record

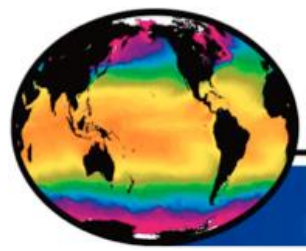
- The newer PFSST version 5.3 provides better identified and flagged anomalous hotspots at landwater boundaries;
- Updated land mask (based on Global Lakes and Wetlands Database);
- Sea ice data over the Antarctic ice shelves are masked as ice;
- Has improved handling of sun glint areas; and
- Consistent cloud tree tests for NOAA07 and NOAA-19 with respect to other sensors.

Pathfinder v5.3 L3C sea_surface_temperature for 1981357 (night)



One highlight: processing done using Amazon Web Service (AWS), Elastic Compute Cloud (EC2), Simple Storage Service (S3), through NOAA Pilot Project. (Version 5.3 L2P, L3U, and L3C generated in AWS, 1981-2014)





GHRSSST

AVHRR PSST

- PFSST 7-day climatology and gap-filled time series in [Coral Reef Temperature Anomaly Database (CoRTAD)] have been generated from PFV5.3.

12/8/2016

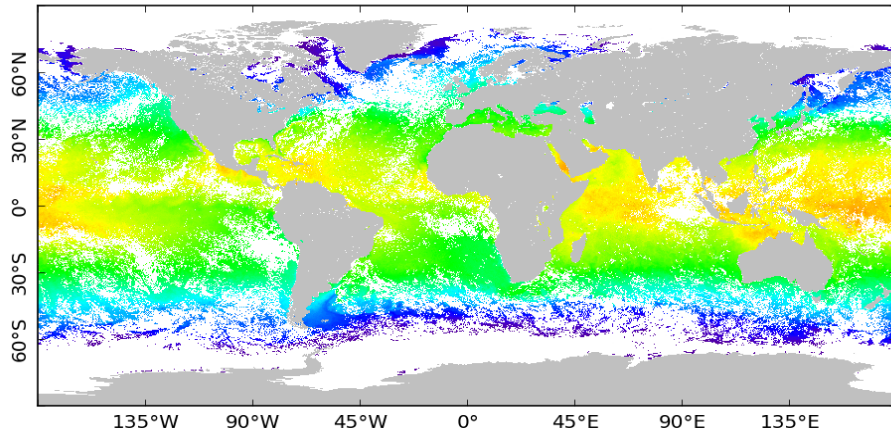
χορηγός_ΩκεανήςΣΤ_β_ο1714.png (960 720)

12/8/2016

χορηγός_ΦυκεδΣΣΤ_β_ο1714.png (960 720)

cortadv6 WeeklySST for week 1714 (from 2014-11-01 to 2014-11-07)

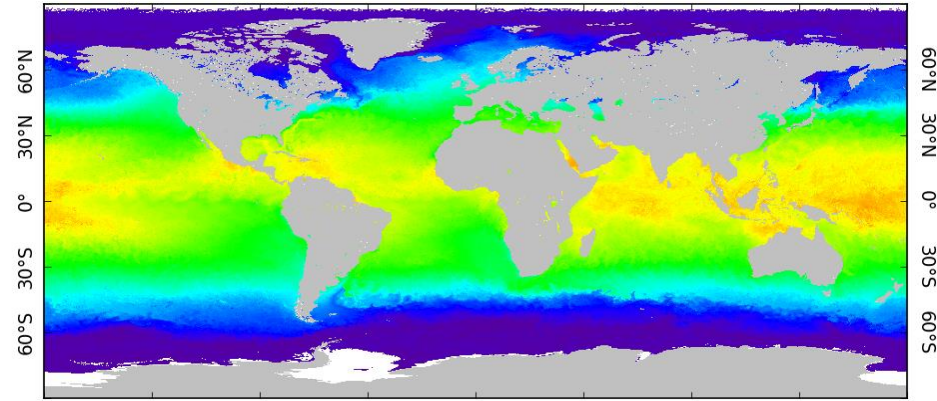
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SST (°C)

cortadv6 FilledSST for week 1714 (from 2014-11-01 to 2014-11-07)

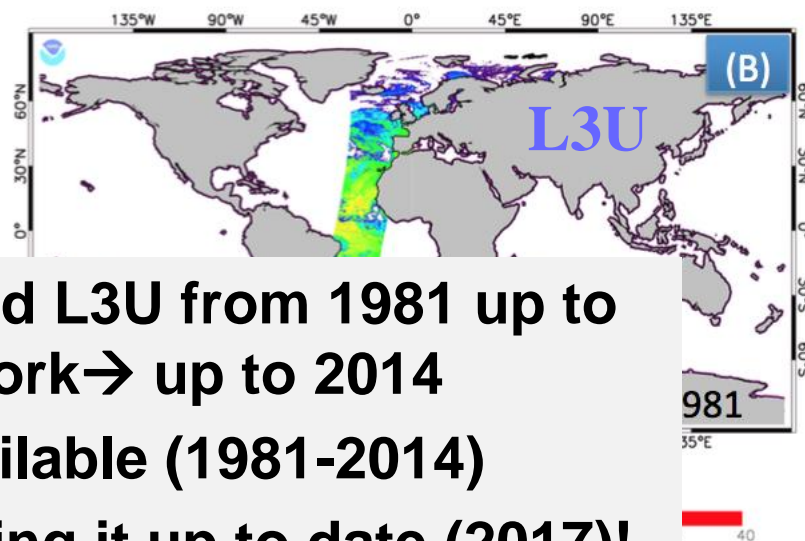
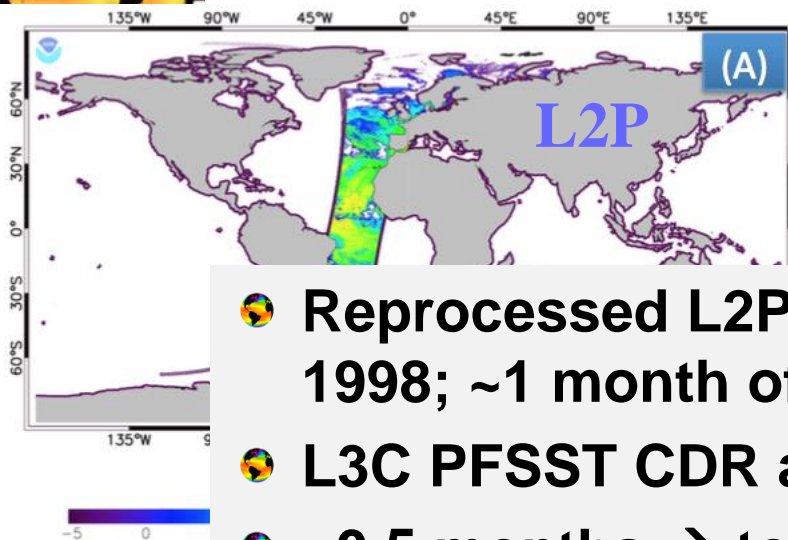
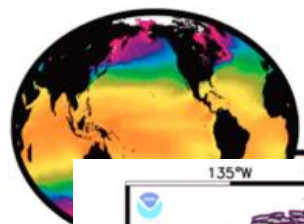
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SST (°C)

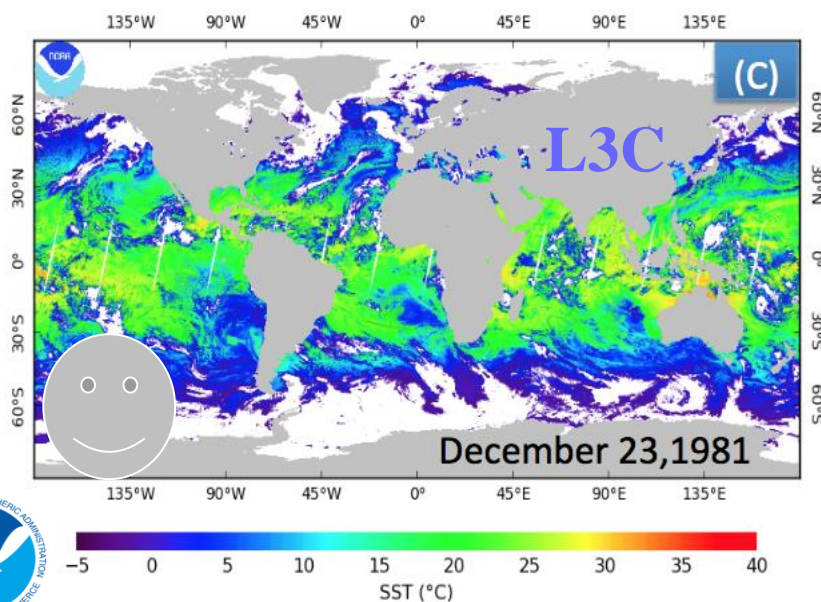
Thermal Stress Anomalies (SST minus Maximum of Weekly Mean Climatological SST)

AVHRR PSST Products

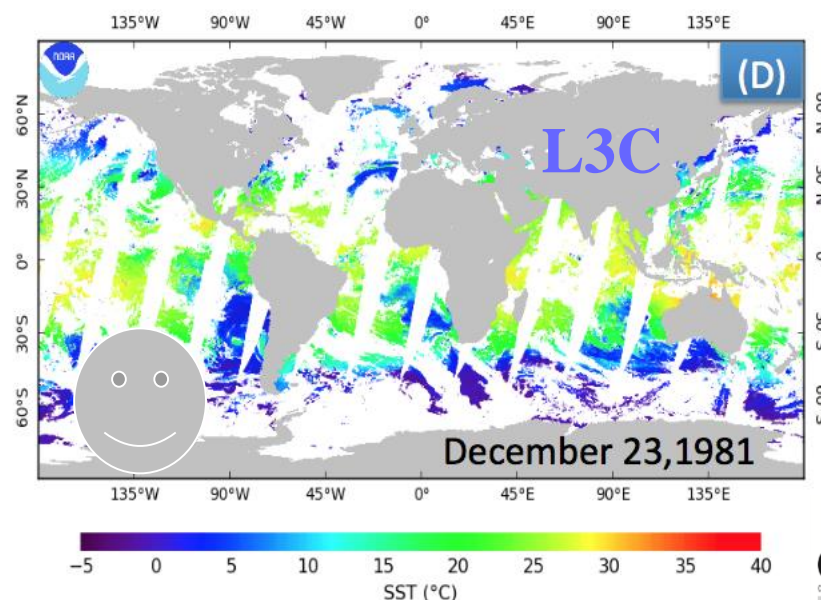


- 🌐 Reprocessed L2P and L3U from 1981 up to 1998; ~1 month of work → up to 2014
- 🌐 L3C PFSST CDR available (1981-2014)
- 🌐 ~0.5 months → to bring it up to date (2017)!

Pathfinder v5.3 L3C sea_surface_temperature for 1981357 (night)

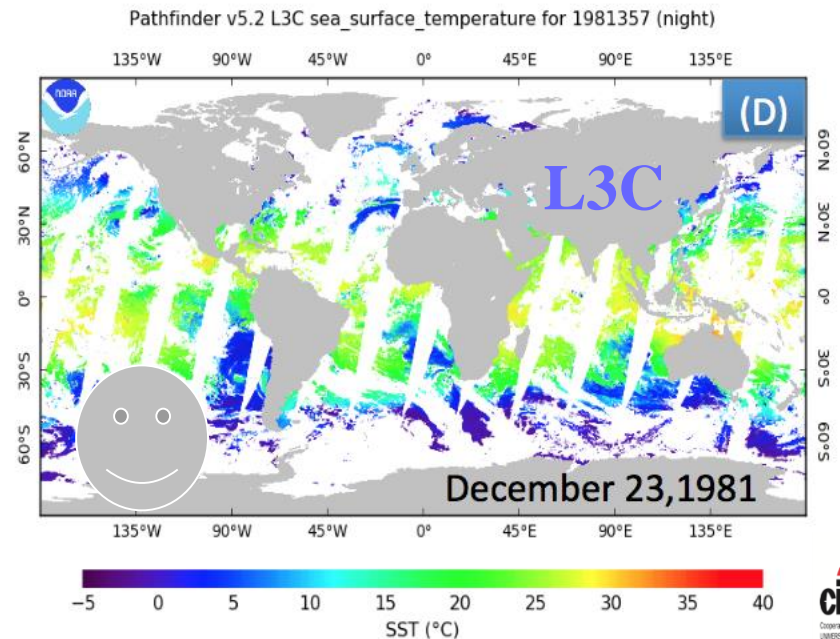
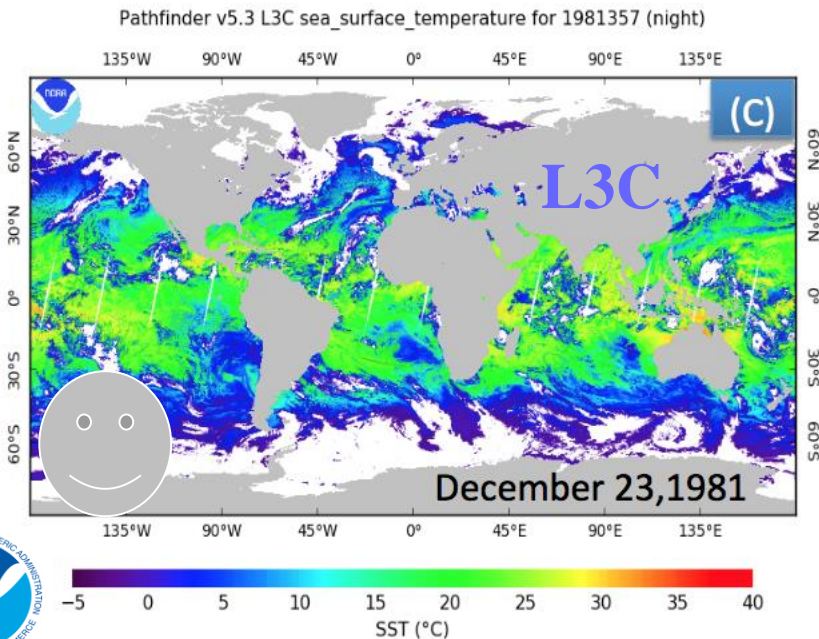


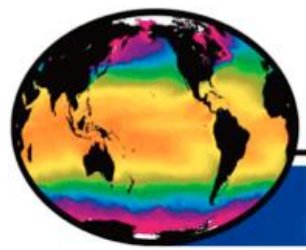
Pathfinder v5.2 L3C sea_surface_temperature for 1981357 (night)



AVHRR PSST Products

- 🌐 L3C archived and made available to users, <https://data.nodc.noaa.gov/pathfinder/Version5.3/L3C/>.
- 🌐 PFV5.3 DOI minted. URL: <http://doi.org/10.7289/V52J68XX>

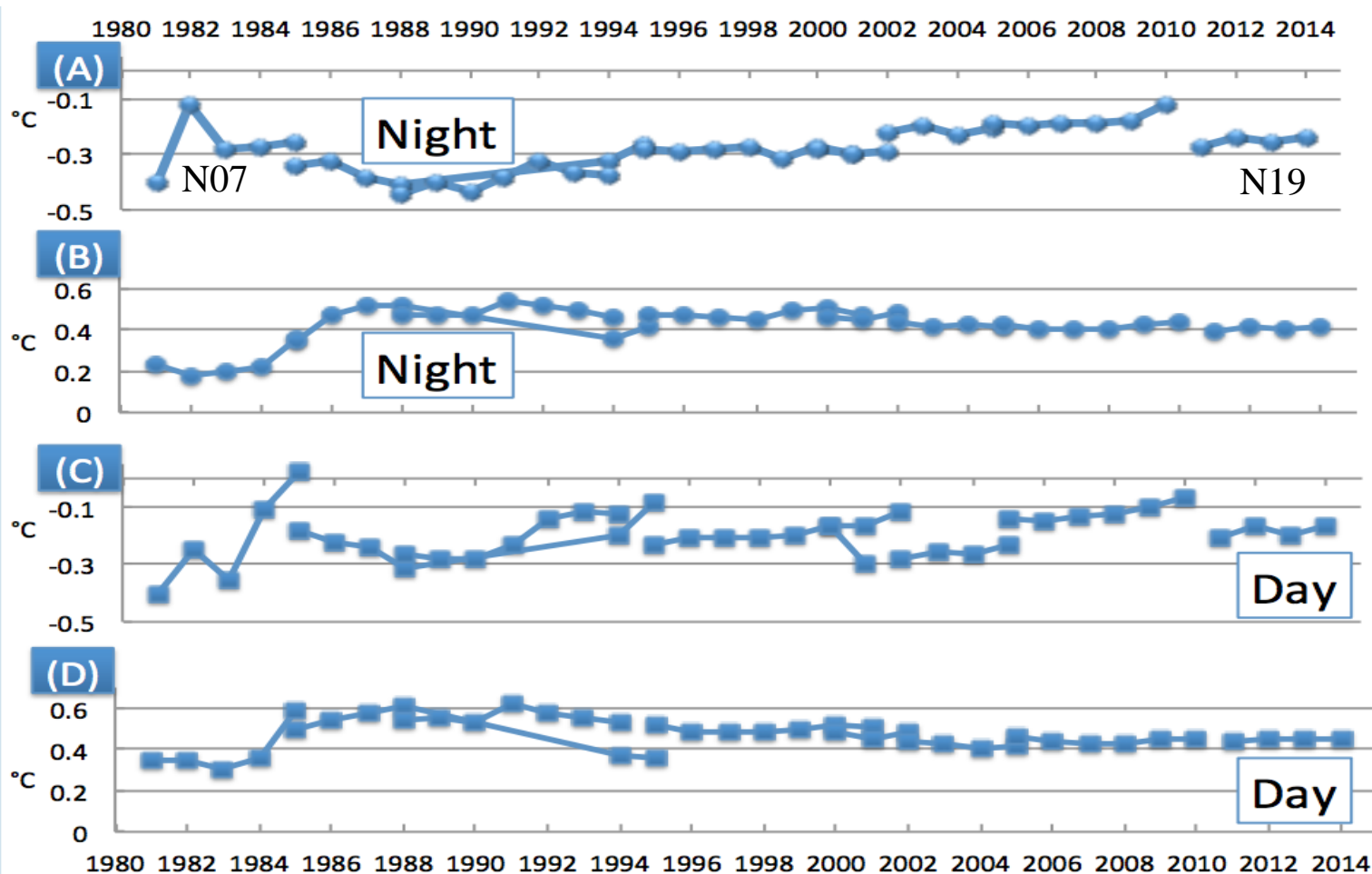


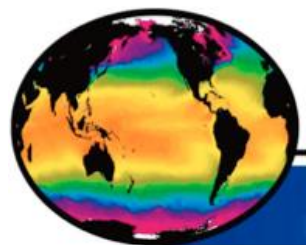


GHRSSST

AVHRR PSST L3C

- Validation results over 33 years corresponding to Pathfinder Level 3 skin SST minus sub-surface buoy SST (IQuam) show a global mean difference of -0.2 K (A,C) with a standard deviation of 0.5 K (B,D).





GHRSSST

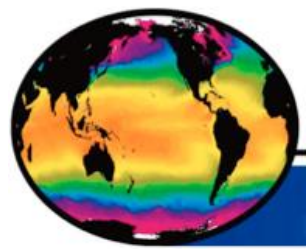
AVHRR PSST L2P

- Validation results corresponding to Pathfinder Level 2 skin SST minus sub-surface buoy SST (IQuam) show a global bias of -0.2 K with a standard deviation of 0.4 K (more years to be included).

BIAS	ROBUST SD	YEAR	SATELLITE PLATFORM	DAY/NIGHT
-0.178	0.407	1995	NOAA-14	D
-0.125	0.413	1995	NOAA-14	N

Mean BIAS	ROBUST SD	YEAR	SATELLITE PLATFORM	DAY/NIGHT
-0.177	0.375	1996	NOAA-14	D
-0.124	0.380	1996	NOAA-14	N

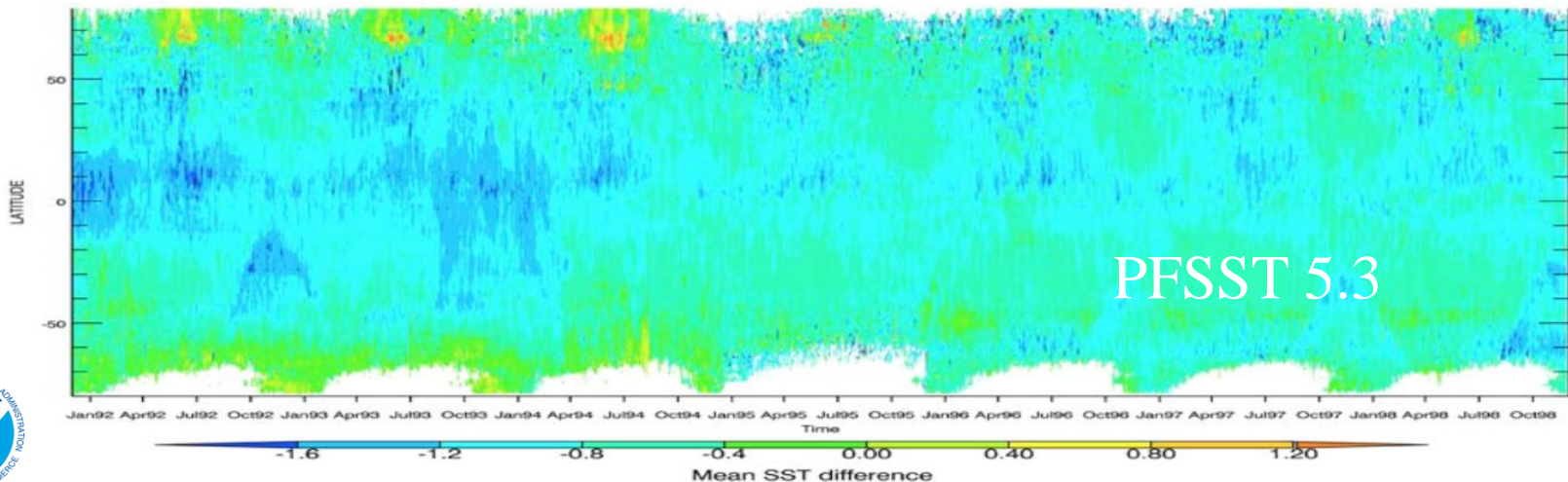
Mean BIAS	ROBUST SD	YEAR	SATELLITE PLATFORM	DAY/NIGHT
-0.304	0.295	2014	NOAA-19	D
-0.223	0.311	2014	NOAA-19	N

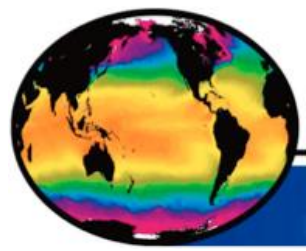


GHR SST

AVHRR PSST

- PFSST 5.3 compares well to the CMC0.2 Global Foundation SST, but differs as expected for a skin SST measurement.





GHRSSST

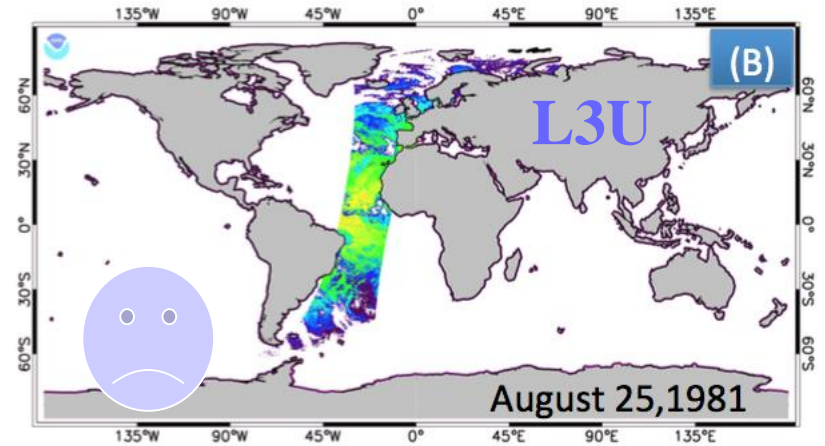
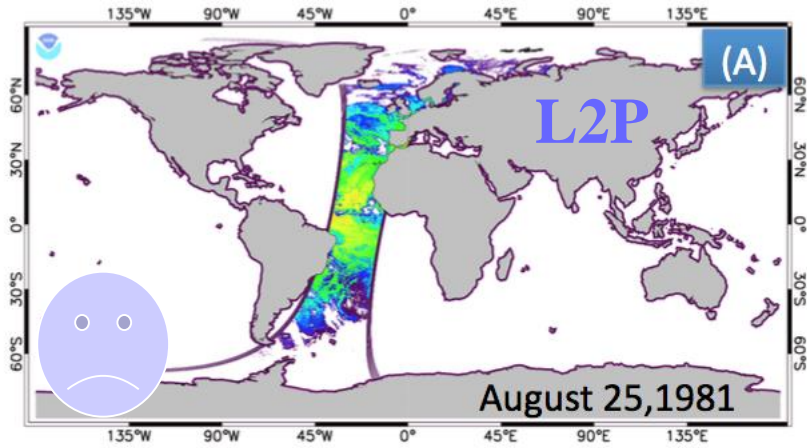
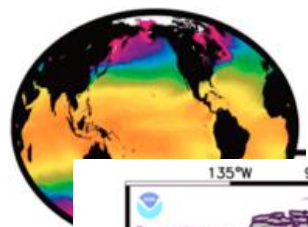
AVHRR PSST Current Status

Hibernation of PFSST Products

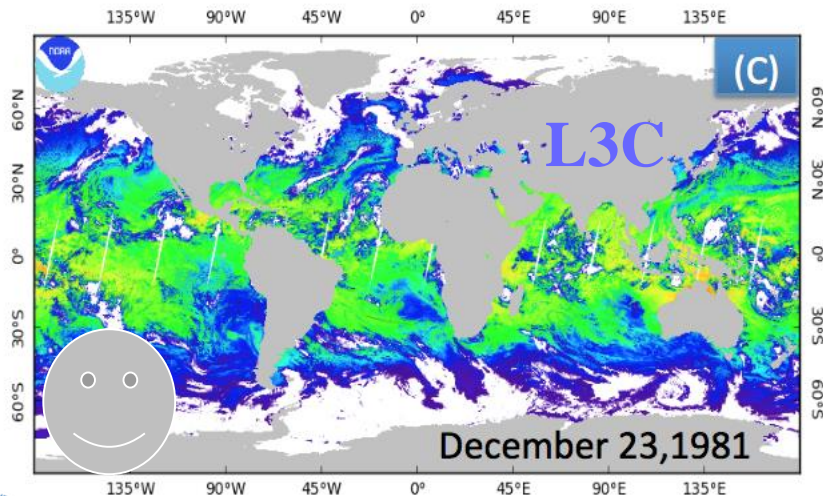


- 🌐 NCEI has been serving GHRSSST in two modes:
 - Operational LTSRF and
 - RDAC for PFSST
- 🌐 **Under current resource limitations, NCEI is moving PFSST production into hibernation mode.**
- 🌐 Hibernation mode: documenting and preserving the knowledge and capability of operation, production, and validation of PFSST products.

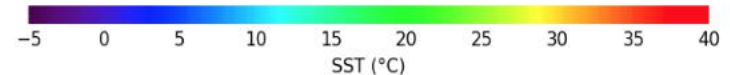
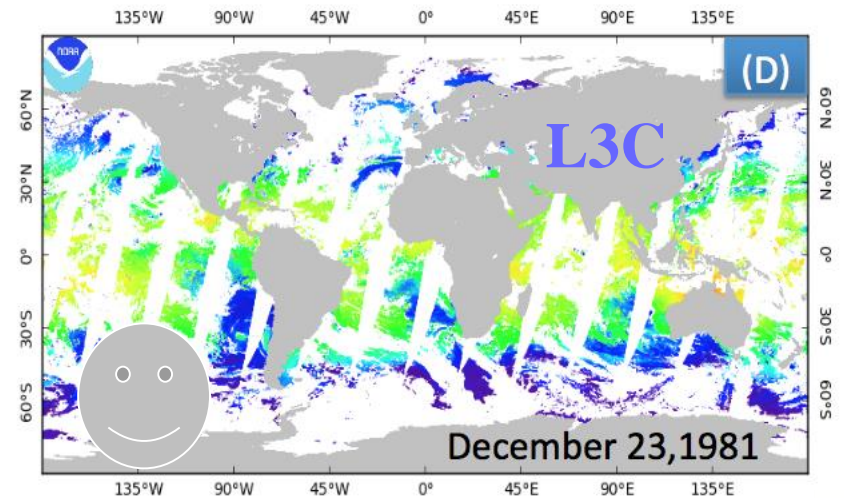
Impact On AVHRR PSST

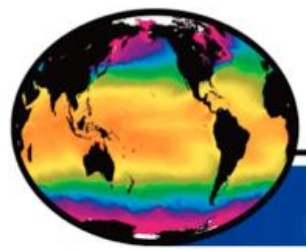


Pathfinder v5.3 L3C sea_surface_temperature for 1981357 (night)



Pathfinder v5.2 L3C sea_surface_temperature for 1981357 (night)





GHRSSST

Impact On AVHRR PSST Products

Impacts on PFSST Products

- **PFSST 5.3 L3C CDR will remain available (1981-2014).**
- **Resource wise:**
 - NCEI will not be able to make quarterly updates to L3C CDR
 - There are severe limitations on NCEI's science stewardship for these products to the user community, including answering technical and scientific questions for users.
- **Future plans to restore these products and services will depend on resource availability.**
- **User community feedback is welcomed and can be directed to Huai-min.Zhang@noaa.gov.**

Thank You