Pathfinder Sea Surface Temperature Climate Data Record

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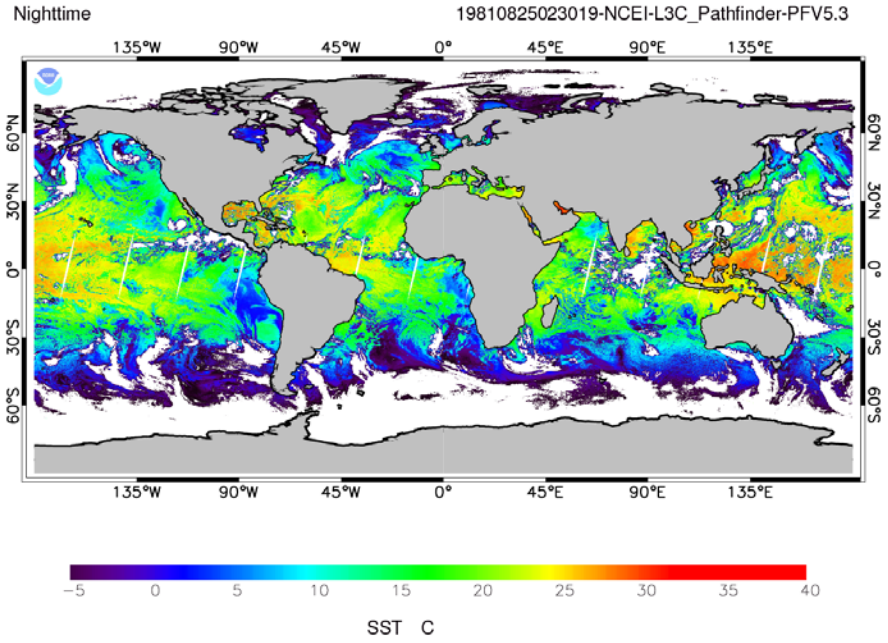
Overview

- Brief Overview of the AVHRR 4km Sea Surface Temperature Climate Data Record

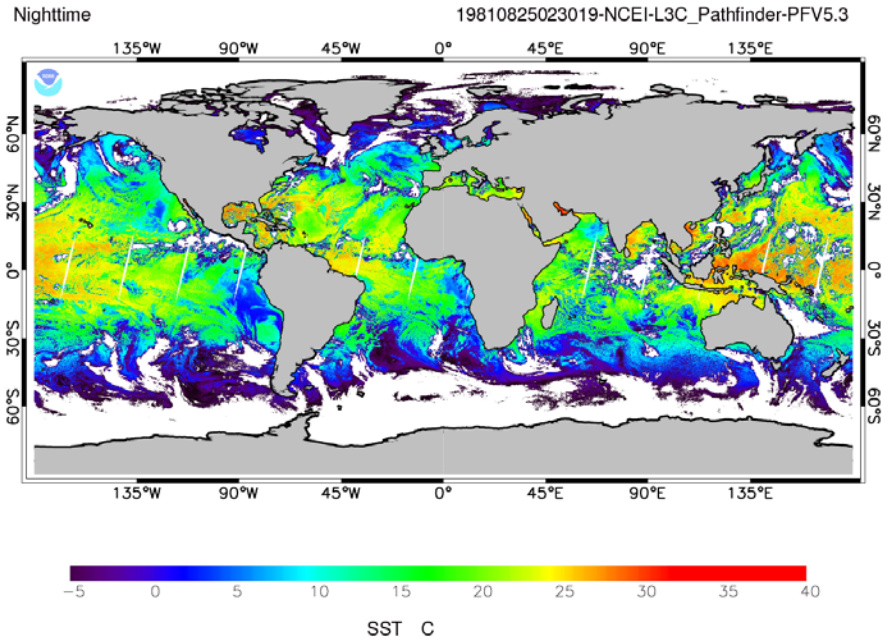


Pathfinder SST CDR Description

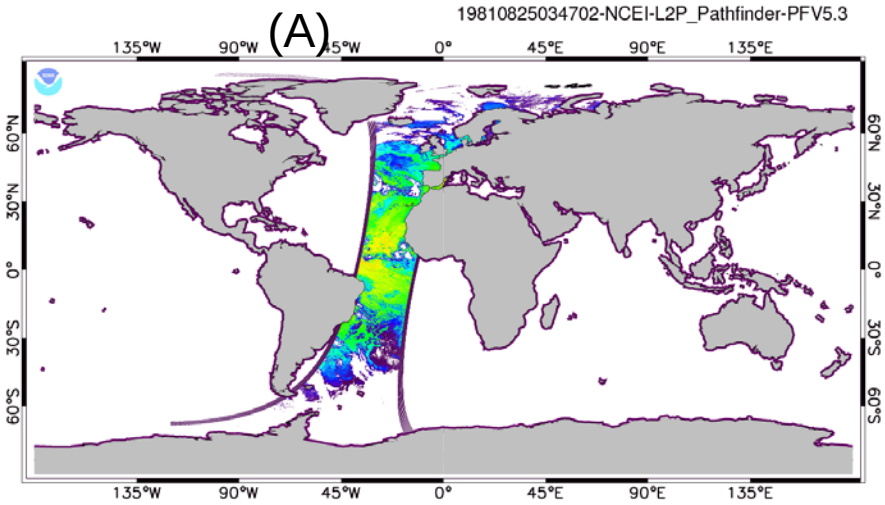
- Global sea surface temperature (SST) fields are important in understanding ocean and climate variability.
- The NOAA National Centers for Environmental Information (NCEI) develops and maintains a high resolution, long-term, climate data record (CDR) of global satellite SST.
- Since 1981 fields of SST values have been collected using Advanced Very High Resolution Radiometer (AVHRR) instruments aboard polar-orbiting satellites of the NOAA series.

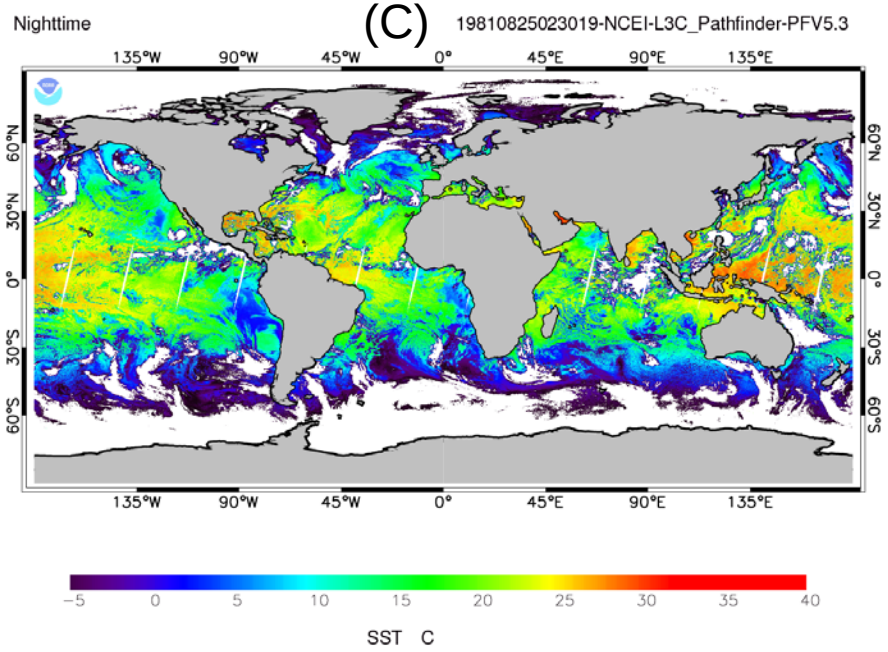
Pathfinder SST CDR Description

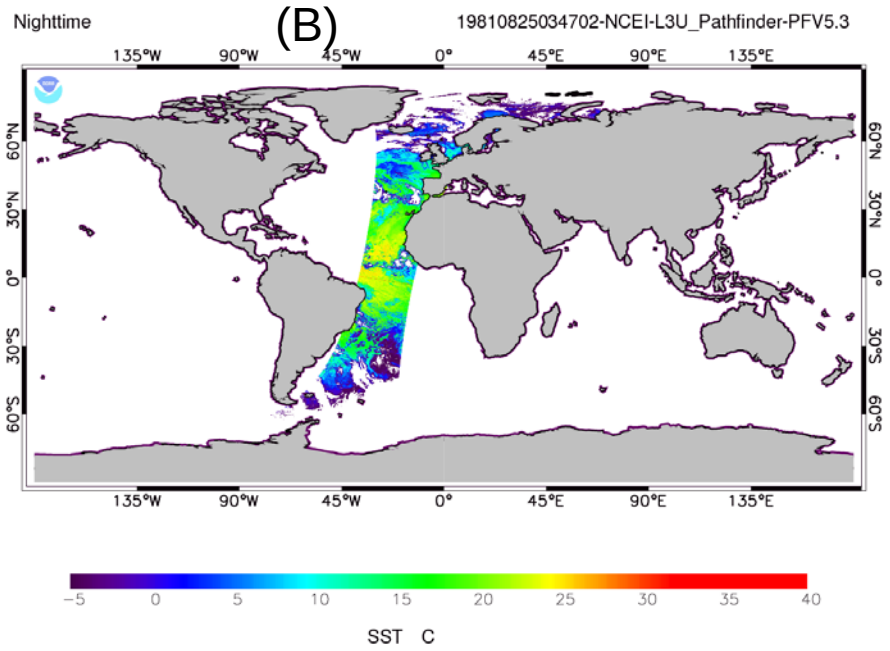
- The AVHRR Oceans Pathfinder SST algorithm is based on the Non-Linear SST algorithm using the modernized NASA SeaWiFS Data Analysis System (SeaDAS). Coefficients were generated using regression analyses with co-located *in situ* and satellite measurements.



- **Pathfinder SST CDR products: (A) level 2P and L3U (B) products from large orbit files will be available to users in the release of version 5.3; (C) Level 3C provided as in all previous versions.**

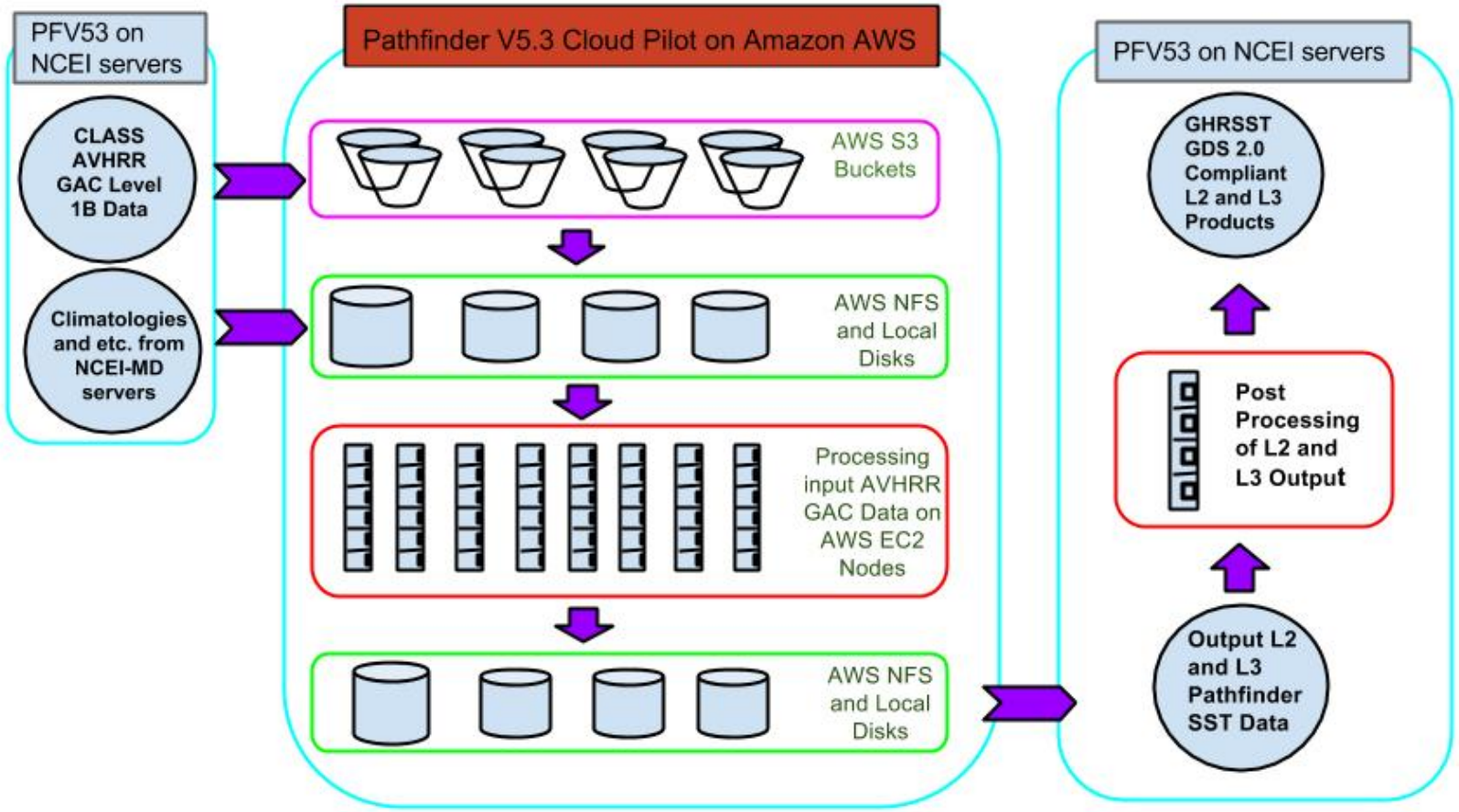




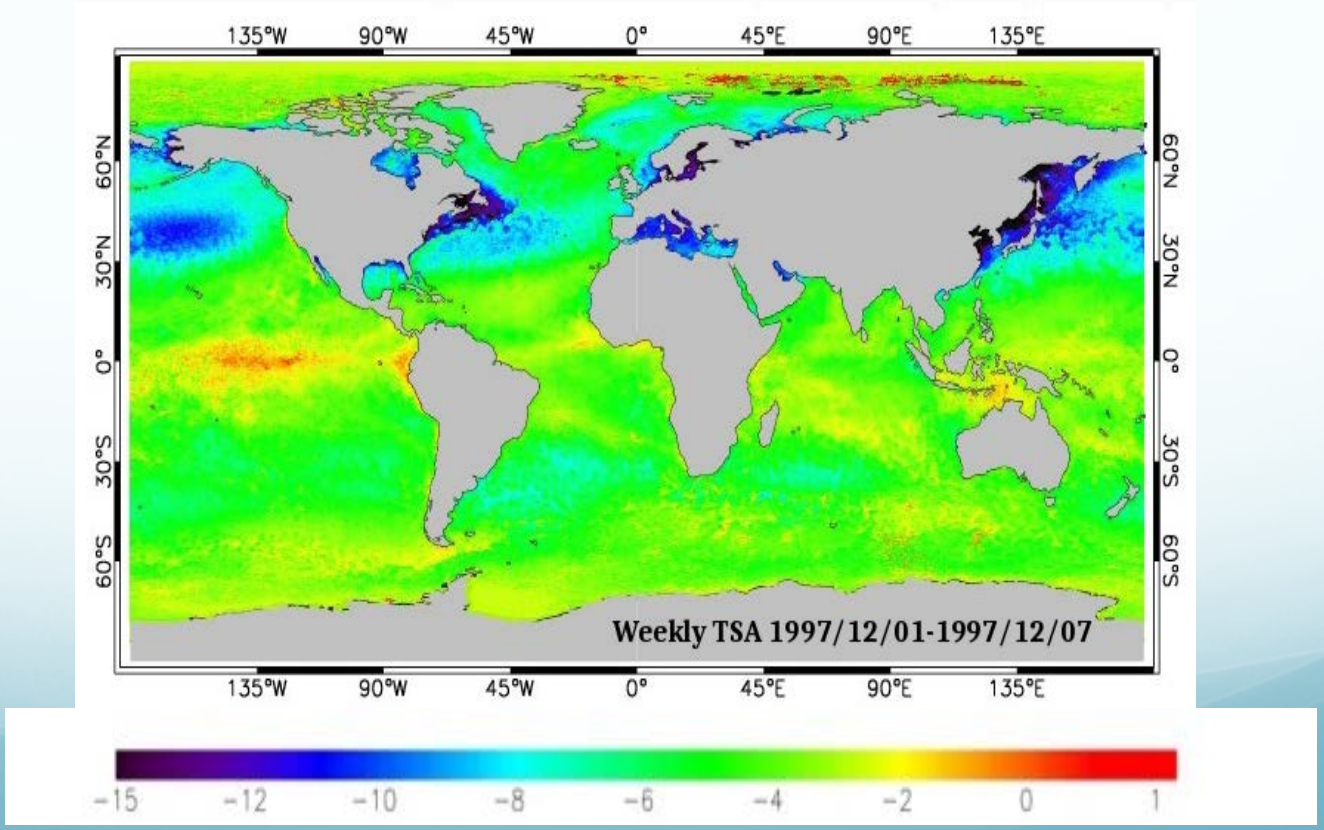


- **Processing done using cloud computation in Amazon Web Service.**

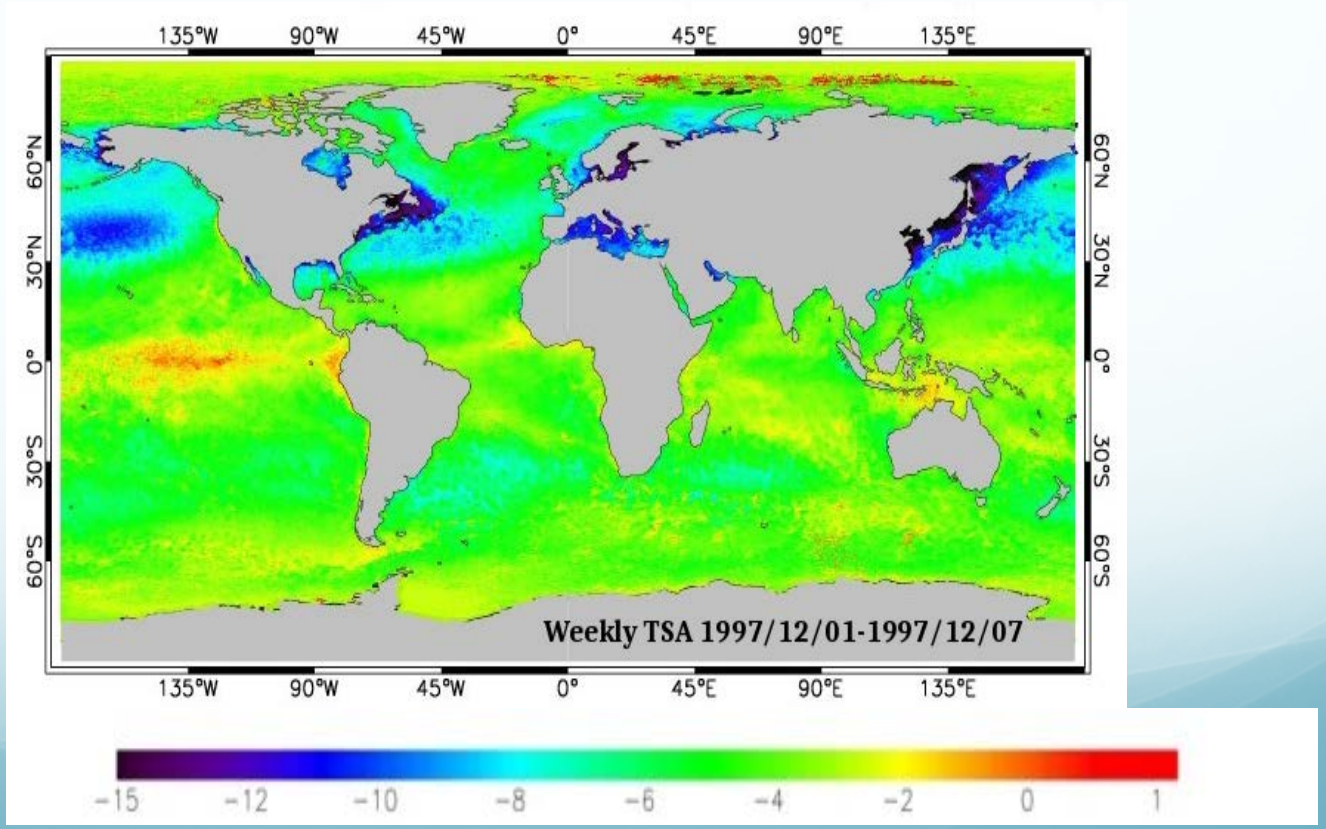
- **Cloud flowchart for Pathfinder SST version 5.3. (Acronyms: AWS, Amazon Web Service; EC2, Elastic Compute Cloud; S3, Simple Storage Service.)**



- This CDR is a primary source of information for numerous regional and
- global marine resource efforts, e.g.,
  - local habitat characterization,
  - coral reef stress monitoring by Coral Reef Temperature Anomaly Database (CoRTAD, **Figure 4**)**,**
  - and El Niño events.

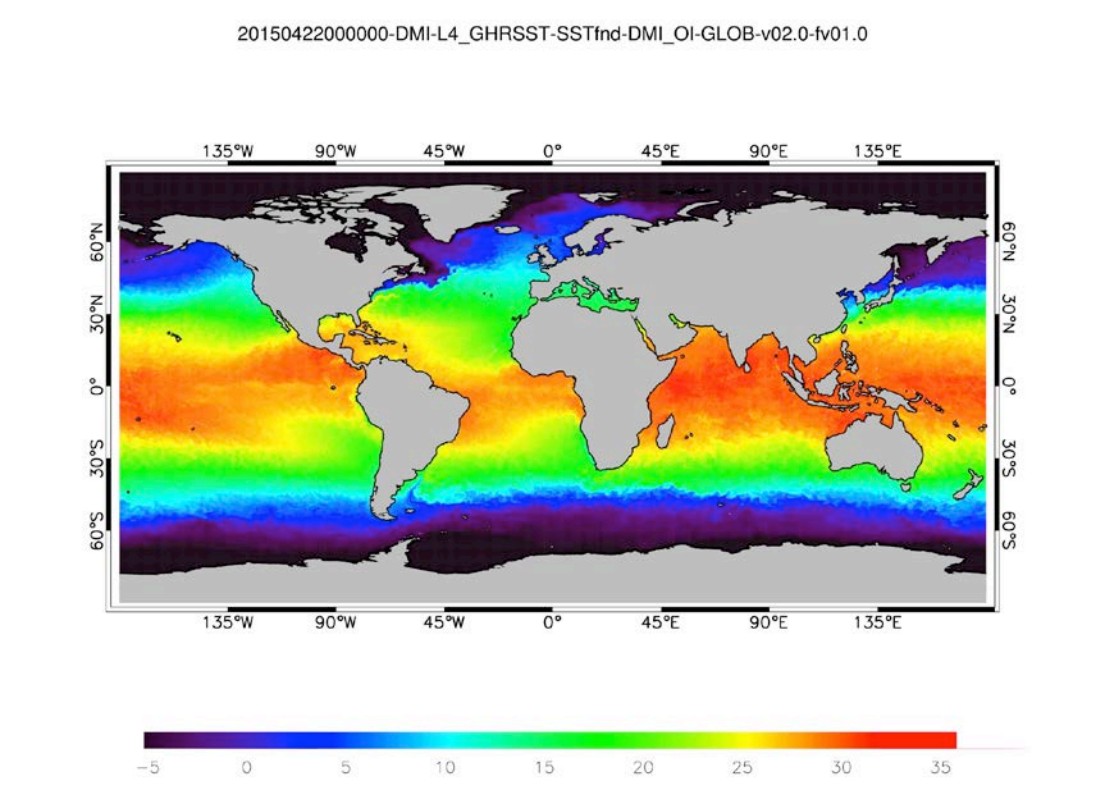


- The Pathfinder SST CDR is recognized and utilized by users as an authoritative source of SST and
- contributes to the international effort on quality controlled SST field through GHRSST.



Additional applications include

- Input to produce a collection of sea surface temperature (SST) and related thermal stress metrics, developed specifically for coral reef ecosystem applications (the full suit of CoRTAD)
- Input source of AVHRR data for the Danish Meteorological Institute L4 reanalysis (**Figure 5**)
- AVHRR input to MGDSST (level 4) developed by Japanese Meteorological agency (JMA) reanalysis dataset (1982-current)
- Used in the Italian National Research Council (CNR) Reanalysis over the Mediterranean region.
- Acts as a reference climatology to OSTIA SST by UK Met office
- Google Earth

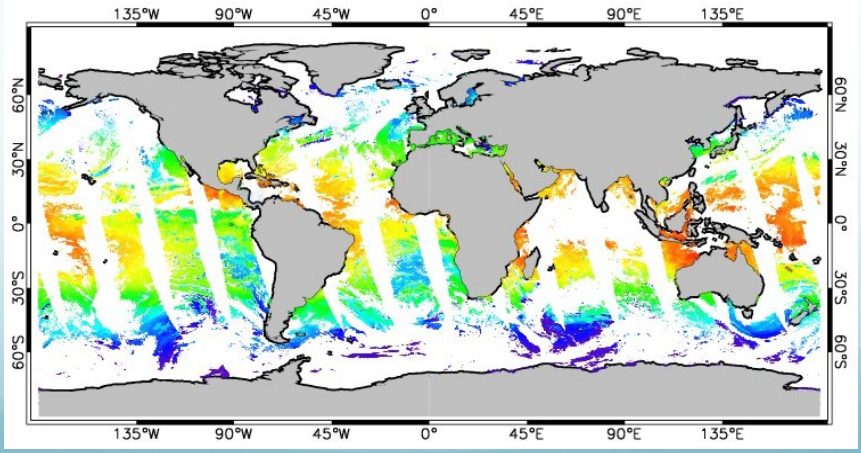


Summary

- The Pathfinder SST CDR products are improved with scientific quality assessments through rich inventory analysis and in situ data matchups.

Future improvements include

- Improve the scientific quality of the data through a rigorous Rich Inventory analysis and developing match up database with in-situ SST
- Update of the CDR on a Quarterly basis (1981 - 2014 + updates)
- Apply Climate Data Assessment Framework (CDAF) based on the GHRSST community standards.
- www.nodc.gov
- National Centers for Environmental Information (NCEI) in collaboration with UMD



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