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.
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 GHRSSST community standards.

- [www.nodc.gov](http://www.nodc.gov)

- National Centers for Environmental Information (NCEI) in collaboration with UMD
Acknowledgements
Robert Evans (NCEI)
Susan Walsh (RSMAS)