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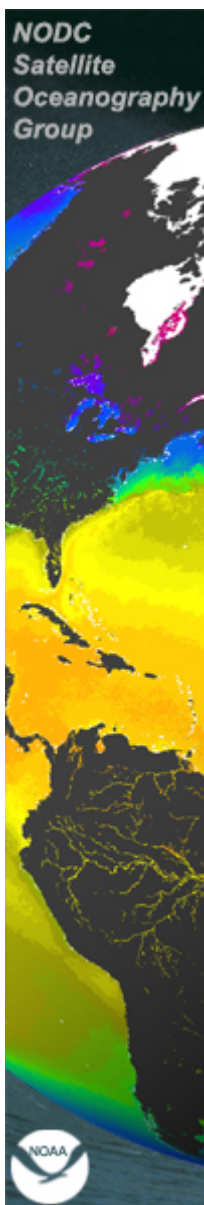
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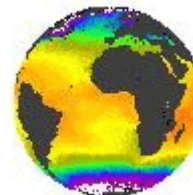
4 km AVHRR Pathfinder Project

*****ANNOUNCEMENT 27 August 2016: NCEI releases AVHRR Pathfinder Version 5.3*****

NCEI is pleased to release the AVHRR Pathfinder Version 5.3 (PFV53) sea surface temperature data set. See https://data.nodc.noaa.gov/cgi-bin/iso?id=gov.noaa.nodc:AVHRR_Pathfinder-NCEI-L3C-v5.3 for more information.

*****ANNOUNCEMENT October 2013: NODC releases AVHRR Pathfinder Version 5.2 for the year 2012*****

The AVHRR Pathfinder Version 5.2 (PFV52) data set was computed using an entirely modernized system, based on SeaDAS and incorporating several key changes over the older Pathfinder V5.0 and V5.1 datasets. PFV52 is viewed as a significant step forward in preparation for the future Version 6 (PFV6) data set (no release has yet been established for PFV6). Changes in PFV52 include the use of an entirely new land mask, a modified grid, and the inclusion of sea ice and wind speed ancillary data to support the use of the SST data. Importantly, the new PFV52 data are provided in netCDF-4 (classic model, with internal compression and chunking) and are nearly 100% compliant with the GHRSSST Data Specification Version 2.0 (GDS2.0, http://data.nodc.noaa.gov/pathfinder/Version5.2/GDS_TechSpecs_v2.0.pdf) for L3C products. These data deviate from that standard only in that the sses_bias, sses_standard_deviation, and sst_dtime variables are empty. Data for 1981-2012 are available. All of the PFV52 data are available through NCEI's FTP, HTTP, ~~OPeNDAP~~, and THREDDS access systems:



- HTTP: <http://data.nodc.noaa.gov/pathfinder/Version5.2/>
- FTP: <ftp://ftp.nodc.noaa.gov/pub/data.nodc/pathfinder/Version5.2/>
- ~~OPeNDAP~~: <http://data.nodc.noaa.gov/opendap/pathfinder/Version5.2/> (Hyrax server needs to be updated to most recent version before it can serve the Pathfinder V5.2 netCDF-4 data)
- THREDDS: <http://data.nodc.noaa.gov/thredds/catalog/pathfinder/Version5.2/catalog.html>
THREDDS supports OPeNDAP, so you can use OPeNDAP through the THREDDS server using this link.
- Browse Images and KML: http://data.nodc.noaa.gov/pathfinder/Version5.2/browse_images

Pathfinder is a NOAA official Climate Data Record for Sea Surface Temperature:

<http://www.ncdc.noaa.gov/cdr/>

In addition to embracing the National Research Council CDR definition ([Climate Data Records from Environmental Satellites: Interim Report 2004](#)) , NOAA operational CDRs are routinely assessed for

quality and systematically generated. The first step in establishing an operational CDR includes public posting of the source code that generated the CDR dataset, the dataset itself, and supporting documentation through a six-phase Research-to-Operations process that is described in the [Developers Guidelines](#).

Once posted to the NCDC webpage, the CDRs are grouped by Fundamental CDRs and Thematic (Atmospheric, Oceanic, and Terrestrial) CDRs. Fundamental CDRs are sensor data (e.g. calibrated radiances, brightness temperatures) that have been improved and quality controlled over time, together with the ancillary data used to calibrate them. Thematic CDRs are geophysical variables derived from the FCDRs, such as sea surface temperature and sea ice concentration, and they are specific to various disciplines. Thematic CDRs are often generated by blending satellite observations, in-situ data, and/or model output.

The following table lists known issues with the PFV52 data set:

Known Issue	Comments
A very small percentage of pixels have been given SST values of 39.9 degrees C. These occur almost exclusively in the day files. The fraction of pixels that are given these values are 1 in 1.2×10^{-8} . Approximately 70% of these pixels are flagged as land. Of these pixels flagged as water, roughly half have quality flags over 0.	The source of these pixel values is currently being investigated. These errors will be fixed in the next release of Pathfinder. Those concerned should filter out any SST value over 39.5 degrees C.
The error budget for PFV5.2 N-7 and N19 shows twice the standard deviation with in situ observations than the other sensors. This increased noise has been traced to a software limitation and its impact on cloud detection, whereby the binary decision trees were not applied for these 2 sensors during processing. As a result the cloud/anomalous atmospheric condition flag was not set in the same manner as the other sensors and may occasionally allow contaminated pixels to be assign best quality.	These errors will be corrected in the next release of Pathfinder.
Some problems with strict GDS2.0 compliance have been identified in the netCDF attributes in PFV5.2: global attribute netcdf_version_id is misspelled, lat and lon have no comment or long_name attributes, and l2p_flags is missing valid_min and valid_max attributes.	These errors will be corrected in the next release of Pathfinder.
The data from NOAA-17 were incorrectly processed using the wrong data-day divider. Instead of 180 degrees west, it was processed using 0 degrees W. The years impacted are 2002-2005.	This problem has been resolved. Anyone downloading data from the years 2002-2005 on after Thu Oct 20 15:00:00 UTC 2011 will be getting the correct files. If you are unsure which version you have, look at any file you have with "NOAA17" in the file name (part of 2002, all of 2003-2004, and part of 2005). If it has "fv01.0" then you have the incorrect file. If it has "fv02.0" in it then you have the correct file.
PFV52 are not fully GDS2.0 compliant: sses_bias, sses_standard_deviation, and	These empty variables are a known issue and were not possible to include in PFV52

sst_dtime variables are empty.	The plan is to include them in a future PFV6 data set.
Currently, a major gap exists from 1994275 to 1995017, where Level 0 GAC data from NOAA-9 have not yet been found. In the original PFV50 processing, these data were available from RSMAS. They no longer have these data so we were not able to include them in PFV52.	NODC staff have begun searching for the missing NOAA-9 GAC data. There is some hope that University of Wisconsin might have them, but so far we have been unable to confirm that. Our solution has been to regrid PFV50/51 for that period, then reformat it into the new PFV52 NetCDF format, but obviously a full reprocessing would be preferable. If you have a copy of these data or know where to obtain them, please send an email to NCEI.info@noaa.gov .
Occasionally, much but not all of the sea ice is missing. Since it is not entirely missing, our fall-back to the DOISST sea ice does not kick in. This problem is more prevalent in the early years of PFV52	We will work to improve the way we implement the fall-back plan, and will also work with our sea-ice data providers to improve coverage in the early years of their data sets.
The aerosol_depth_indicator variable is sub-optimal, since it relies on a two fairly different sources of aerosol data.	NODC will work toward making this variable more consistent over time. The aerosol data community is improving its datasets so we hope by the time of a future PFV6 data set to have available a consistent aerosol product available for the entire Pathfinder period.
Aerosols missing from primary and fallback sources for Sep 1994 - Feb 1995.	Corrected for now by using the previous year's aerosol values for the missing day.
Sea ice missing from primary and fallback sources for 1987 day 340 through 1988 day 10.	We resolved this for now by using the previous year's ice. For example, for 1988 day 001, we used 1987 day 001 sea ice. However, the source attribute does not appear to properly reflect this correction. We notified NCDC of the missing sea ice in the DOISST for this period.

Acknowledgment & Citation:

If you use Pathfinder 4km data, please acknowledge the use of these data with the following statement: "These data were provided by GHRSSST and the US National Oceanographic Data Center. This project was supported in part by a grant from the NOAA Climate Data Record (CDR) Program for satellites".

and cite the following publication:

Casey, K.S., T.B. Brandon, P. Cornillon, and R. Evans (2010). "The Past, Present and Future of the AVHRR Pathfinder SST Program", in *Oceanography from Space: Revisited*, eds. V. Barale, J.F.R. Gower, and L. Alberotanza, Springer. DOI: 10.1007/978-90-481-8681-5_16. ([Click here for a PDF copy](#)).

Sample text for a journal article:

In this study, we used AVHRR Pathfinder Version 5.2 (PFV5.2) data, obtained from the US National Oceanographic Data Center and GHR SST (<http://pathfinder.nodc.noaa.gov>). The PFV5.2 data are an updated version of the Pathfinder Version 5.0 and 5.1 collection described in Casey et al. (2010).

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