

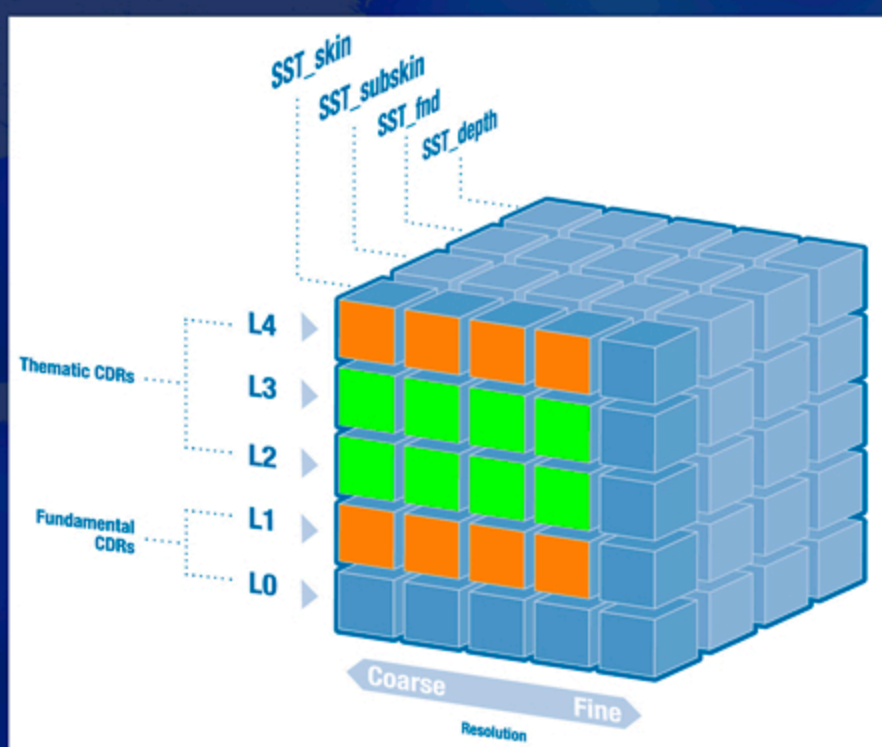
# Pathfinder, GHRSSST, and the SST Essential Climate Variable Framework

Kenneth S. Casey<sup>1</sup> and Robert H. Evans<sup>2</sup>

<sup>1</sup>NOAA/NESDIS National Oceanographic Data Center, Silver Spring, MD, USA; <sup>2</sup>University of Miami Rosenstiel School of Marine and Atmospheric Science, Miami, FL, USA

In the last few years, the sea surface temperature (SST) community has coalesced its thinking on the SST Essential Climate Variable (ECV) framework through the efforts of the Group for High Resolution SST (GHRSSST) and the GCOS SST and Sea Ice Working Group. These efforts have resulted in an SST ECV product framework that consists of a three-dimensional array of related and coordinated products, each with different space-time, processing level, and SST-type characteristics. Taken together and visualized as a cube of related SST datasets, this framework is helping to optimize the distributed efforts of the international community. An overview of the SST ECV framework will be presented.

Contributing to this framework are the latest versions of the Advanced Very High Resolution Radiometer (AVHRR) SST climate data record, known as Pathfinder Versions 5.2 and 6. These latest versions of Pathfinder are shown here in detail, with a focus on how the two were developed following an open, transparent, and accessible process. Pathfinder's position in the SST ECV cube is illustrated as is its conformance to the new Version 2 GHRSSST Data Specification (GDS2), the community standard for satellite-based SST datasets. Comparison with other satellite and *in situ* based datasets is also presented along with a summary of future directions for the Pathfinder SST program.



## About Pathfinder V5.2

- AVHRR Pathfinder Version 5.2 (PFV52) was computed using an entirely modernized system based on SeaDAS
- Public comment and review period conducted, full documentation and software available online
- Key changes over V5.0 and V5.1 include the use of an entirely new land mask, a modified grid, and the inclusion of sea ice, aerosol, and wind speed ancillary data to support the use of the SST data
- Provided in netCDF-4 (classic model, with internal compression and chunking)
- Nearly 100% compliant with the GHRSSST Data Specification Version 2.0 (GDS2\*) for L3C products (sses\_bias, sses\_standard\_deviation, and sst\_dtime variables are empty). L2P and L3U are under development.
- Data for 1981-2010 are available through NODC's ftp, http, OPeNDAP, and THREDDS access systems (<http://pathfinder.nodc.noaa.gov>)
- PFV52 was partly supported by the NOAA Climate Data Record Program

## About Pathfinder V6

- Will use "LATBANDS" coefficient scheme to reduce seasonal/latitudinal biases (see Figure 3)
- Will be fully GDS2-compliant including sses\_bias, sses\_standard\_deviation, and sst\_dtime variables

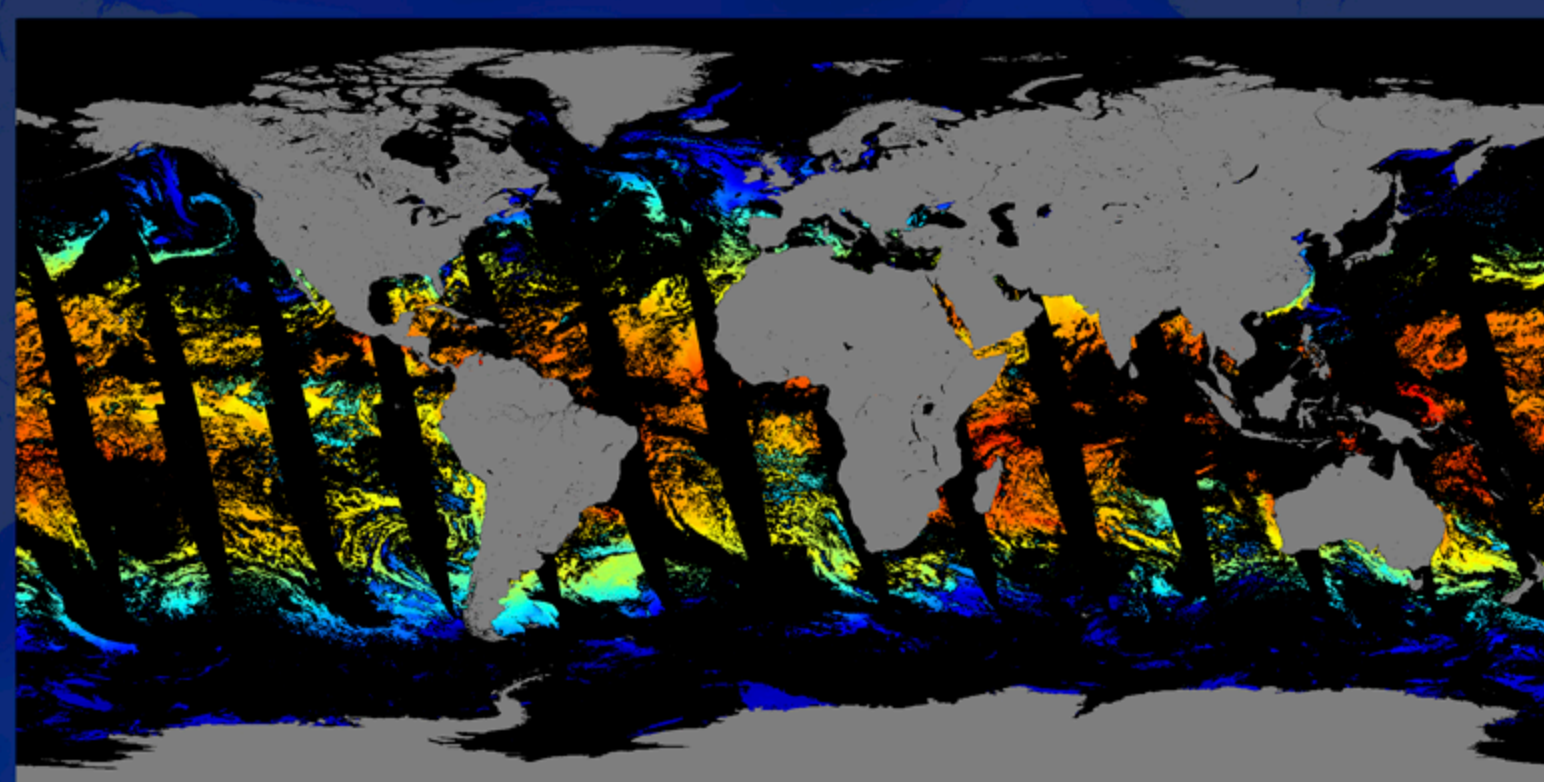


Figure 2. An example PFV52 daily SST map for 31 Dec 2010 (20101231155122-NODC-L3C\_GHRSSST-SSTskin-AVHRR\_Pathfinder-PFV5.2\_NOAA18\_G\_2010365\_day-v02.0-fv01.0.nc)

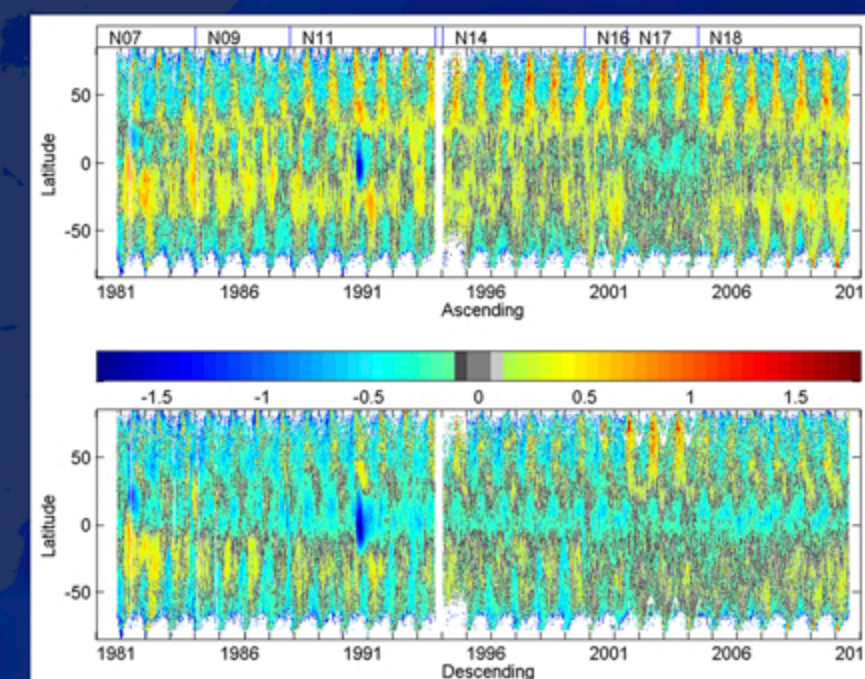
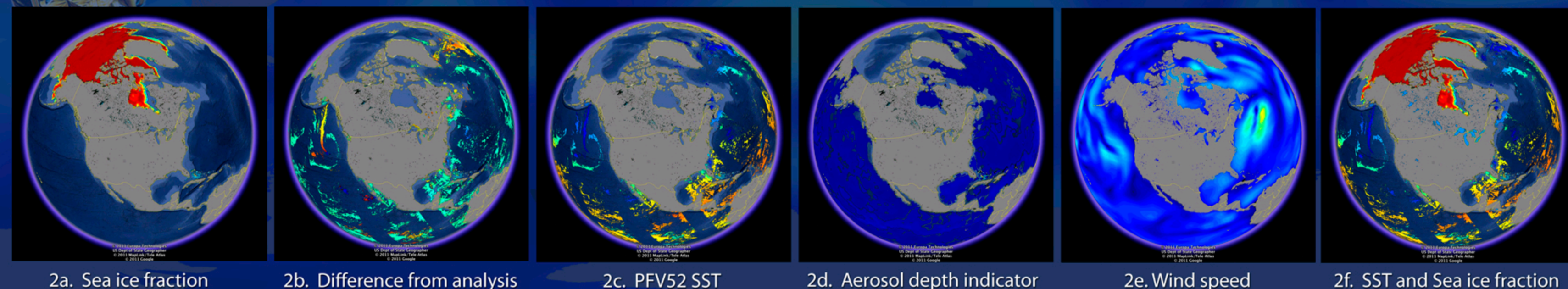


Figure 3. PFV52 minus NCDL Daily OISST (DOISST) temperature difference highlights remaining seasonal/latitudinal biases.



2a. Sea ice fraction

2b. Difference from analysis

2c. PFV52 SST

2d. Aerosol depth indicator

2e. Wind speed

2f. SST and Sea ice fraction