Sea surface temperature is a critical environmental parameter and an important indicator of climate change. The 4.6 km resolution SSTs used in this atlas were created jointly by the National Oceanic and Atmospheric Administration (NOAA) National Oceanographic Data Center (NODC) and the University of Miami's Rosenstiel School of Marine and Atmospheric Science (RSMAS) as part of the Advanced Very High Resolution Radiometer (AVHRR) Pathfinder Program (Casey et al., 2010). The Pathfinder SST data have multiple applications including climate studies (El Niño/La Niña, arctic, oceans and human health), marine ecosystem studies (coral bleaching and diseases, habitat, marine protected areas), and fisheries and aquaculture (migration, productivity, and distribution). NODC's 4 km Pathfinder SST data are developed from observations collected by the AVHRR sensors aboard the NOAA Polar Orbiting Environmental Satellites.

SST is a difficult parameter to define precisely because the surface of the ocean has a complex and highly variable temperature structure that is related to ocean turbulence and the air-sea fluxes of heat, moisture and momentum. The AVHRR instruments used in Pathfinder make direct measurements of what is known as the “skin SST”, which is an approximately 10 micrometer thick layer at the topmost surface of the ocean. However, to better associate these satellite-derived SST observations with observations collected from ships and buoys, the Pathfinder algorithm is designed to approximate the water temperature at a depth of about 1 meter.

These plates depict seasonal (Jan-Mar, Apr-Jun, Jul-Sep, and Oct-Dec) climatological number of observations for SSTs for five-day periods throughout the course of an “average” year for a given season. To produce a seasonal climatological number of observations, the mean SSTs for January 1-5, January 6-10, and so on are calculated. The seasonal number of observations derived from SSTs for the 5-day periods in each year from 1982 through 2009 are then summed together. The minimum, maximum, average, and standard deviation used in the averages are also recorded. Data from the Version 5.0 and 5.1 Pathfinder data with qualities of 4 to 7 (“good” through “best” quality) are used in the averages.

User note: The .PNG files used in these maps view differ from the actual data files in that data values are not held in the .PNG files. Users who wish to work with actual data values should download the Arc grid files associated with the display image.

The display and Arc grid files have a WGS 1984 Web Mercator Auxiliary Sphere projection.

Citation:

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)](http://pathfinder.nodc.noaa.gov/OFS_21_Cas_09Dec2009.pdf)