

QUICK START GUIDE TO ESA SST CCI PRODUCTS

What products are available?

- Stable, low-bias sea surface temperature (SST) data starting in late 1991 and continuing to 31 December 2010 (referred to as the 'long term' product):
 1. Data from the series of Along Track Scanning Radiometer (ATSR) sensors (a single orbit per file on a 0.05° regular latitude-longitude grid) and from the series of Advanced Very High Resolution Radiometer (AVHRR) sensors (a single orbit per file on an irregular grid with grid cell spacing about 4 km). These start in August 1991.

Each file contains two sets of SSTs. The first set provides a measure of the temperature of the skin of the water at the time it was observed; the second set are estimates of the temperature at 20 cm depth and at either 1030 h or 2230 h local time. Each SST has associated with it a total uncertainty estimate, and uncertainty estimates for various contributions to that total uncertainty.

2. Daily, spatially complete fields of SST, obtained by combining the orbit data described above, using optimal interpolation to provide SSTs where there were no measurements (a single file per day; 0.05° regular latitude-longitude grid). These data start in September 1991.

The SSTs correspond approximately to the daily average of the temperature of the water at 20 cm depth. Uncertainty estimates are provided for each value.

- Demonstration products are also available that experimentally exploit a larger number of sensors. The products cover two periods of three months.

What tools are available for these products?

- Tools are provided to 1) regrid any of the data to coarser spatial and temporal resolution and 2) perform regional averages of the data and generate time series.

How to download the data and tools

Visit <http://www.esa-sst-cci.org/PUG/home.htm> for details.

How to read the data

The data are stored in NetCDF-4 format files. Information about the NetCDF format can be found at <http://www.unidata.ucar.edu/software/netcdf/>. Data arrays in NetCDF files are known as 'variables' and each variable has metadata stored with it. The names of key variables in the long term product files are given in the table below. Please also read the notes below the table before using the data, **particularly with regards to interpreting the quality/location type information - it is essential to check this information when using the data.**



Description of the content of key variables in the NetCDF files	Names of variables in files containing single orbits of data	Names of variables in files containing infilled, combined data
Latitudes of the data points	lat	lat
Longitudes of the data points	lon	lon
Sea surface temperature at the skin*	sea_surface_temperature	N/A
Total uncertainty of the sea surface temperature at the skin**	sses_standard_deviation	N/A
Sea surface temperature at 20 cm depth and 10.30 am and pm local time	sea_surface_temperature_depth	N/A
Infilled daily-mean estimate of sea surface temperature at 20 cm depth	N/A	analysed_sst**
Total uncertainty of the sea surface temperature at 20 cm depth #	sst_depth_total_uncertainty	analysis_error
Quality / location type (ocean / sea ice / lake etc.) information	l2p_flags and quality_level***	mask****

* Skin SST is the temperature of the radiating surface layer of the water, which is of 10 µm depth.

** 'analysis' is the term used for the combination/interpolation of the SSTs in the orbit files

*** Good quality SSTs have quality_level = 5.

**** Ocean SST values have mask = 1.

Also available in the files is uncertainty broken down into different components.

Important: Check that the add_offset and scale_factor attributes are being applied when reading the variables. These must be used to convert the data stored in the file to the correct units. Many tools will do this automatically for NetCDF files, so no action may be necessary. Don't forget to use the _FillValue attribute, which reveals the number inserted into the data array where no SST was available. Again, many tools will do this automatically.

Further information and how to contact us

For further help, first see the full ESA SST CCI user guide, available at http://www.esa-sst-cci.org/sites/default/files/Documents/public/SST-CCI-PUG-UKMO-001_Issue-1-signed.pdf.

If these do not help, email science.leader@esa-SST-cci.org. We also welcome any feedback about the data to this address.