

*To provide operational users and the science community
with the SST measured by the satellite constellation*

Group for High Resolution Sea Surface Temperature (GHR SST) Short Course on SST

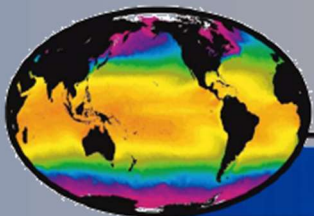
Practicals

Chris Merchant, University of Reading

Peter Minnett, University of Miami

Gary Corlett, University of Leicester

Mingqiang Fang, Ocean University of China

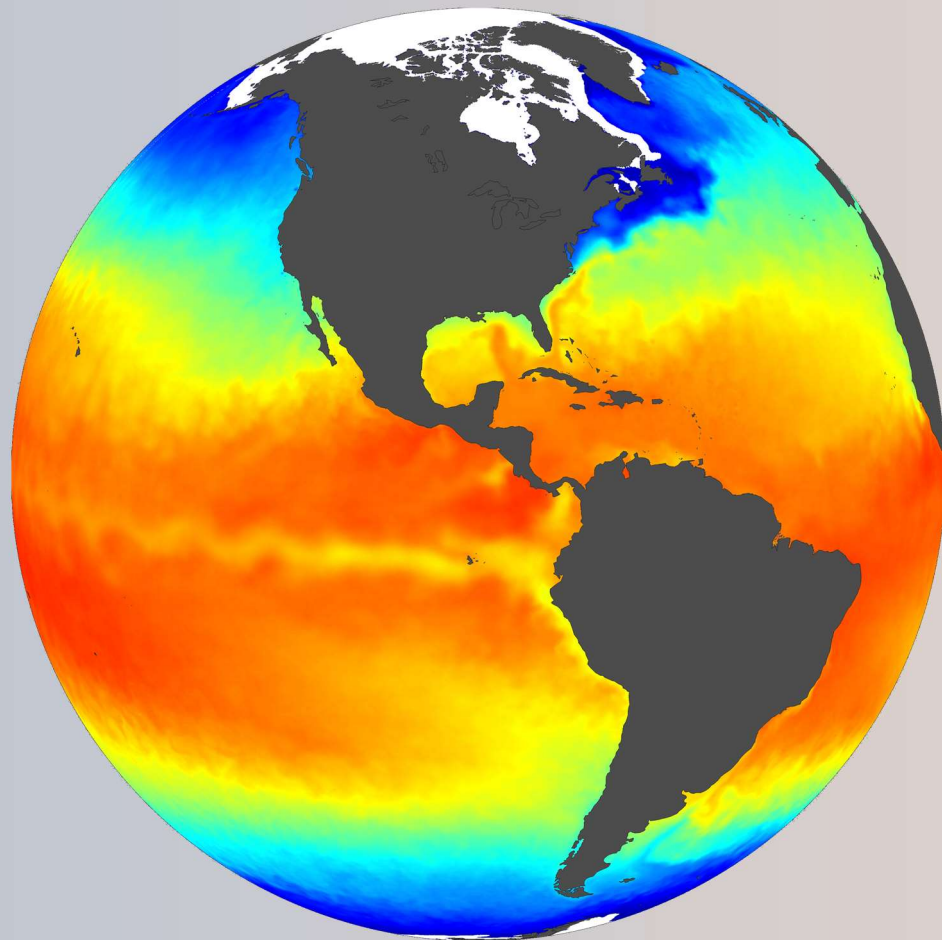


GHR SST

*Group for High Resolution
Sea Surface Temperature*

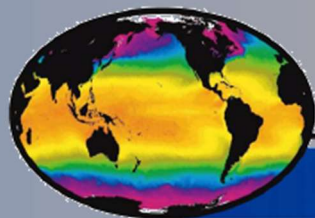


Committee on Earth Observation Satellites
Sea Surface Temperature Virtual Constellation



Group Activities

*To provide operational users and the science community
with the SST measured by the satellite constellation*



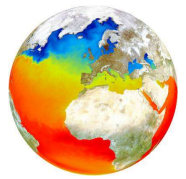
GHR SST

*Group for High Resolution
Sea Surface Temperature*



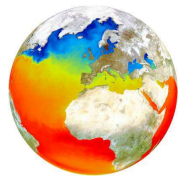
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Research Plan



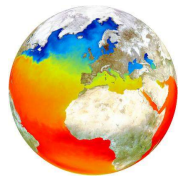
- Maximum one page
 - Summarise what steps are needed to reach your research goal
 - What GHR SST data will you use?
 - What other data will you use?
 - What problems do you expect to encounter?
 - What are your expected outcomes?
-
- Present outline on Friday

Next steps



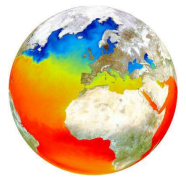
- Implement your research plan
- Write up your results
- Submit a short report (4 pages max) on your findings

Potential Topics



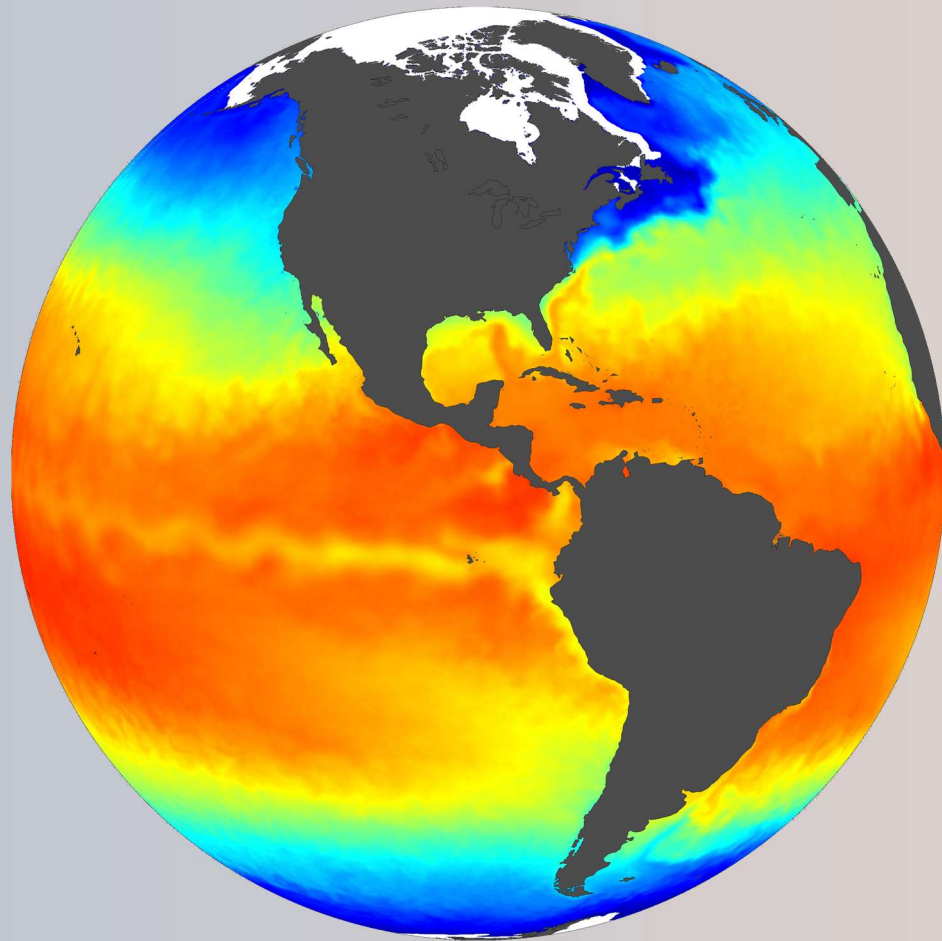
- Coral bleaching
- Upwelling variability link to wind – orographic or coastal
- TIW – measure their wavelength and asymmetry
- Western boundary currents (e.g. inter-annual position variability)
- Aerosol impacts on SST retrievals (Cf IR and MW)
- Construct an ocean index (such as IOD) with uncertainty
- Coastal currents and fronts -- e.g. loop currents, hunt for semi-permanent features off E China
- Aghulas leakage (find rings that have gone into Atlantic)

Activities



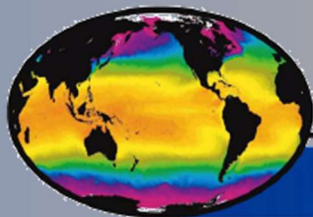
- Group 1 (Upwelling variability linked to wind - orographic or coastal)
 - Mingfeng Wang
 - Qianmei Li
 - Brandon Bethel
 - Yu Shujie
 - Qianguang Tu
- Group 2 (Western Boundary Currents - interannual position variability)
 - Fei Zhou
 - Changgang Wang
 - Tianyu Zhang
 - Li Song
- Group 3 (Western Boundary Currents - interannual position variability)
 - Runjie Ding
 - Ke Zhao
 - Rui Xu
 - Sicong Li
- Group 4 (Aerosol effects on SST retrievals (cf IR and PMW))
 - Liqin Qu
 - Mingkun Liu
 - Minglun Yang
 - Mengyu Li
- Group 5 (Aerosol effects on SST retrievals (cf IR and PMW))
 - Shaoqing Wang
 - Xanyu Ji
 - Zhenzhen Song
 - Hang Yang
- Group 6 (Coastal currents and fronts -- e.g. loop currents, hunt for semi-permanent features off E China)
 - Xiaobo Yang
 - Zhaoying Li
 - Shuai Cong
 - Haiqin Duan
- Group 7 (Coastal currents and fronts -- e.g. loop currents, hunt for semi-permanent features off E China)
 - Miao Sun
 - Yingjie Liu
 - Changzhong Feng

PRACTICAL SESSION 1



GHR SST Data Access and Visualisation

*To provide operational users and the science community
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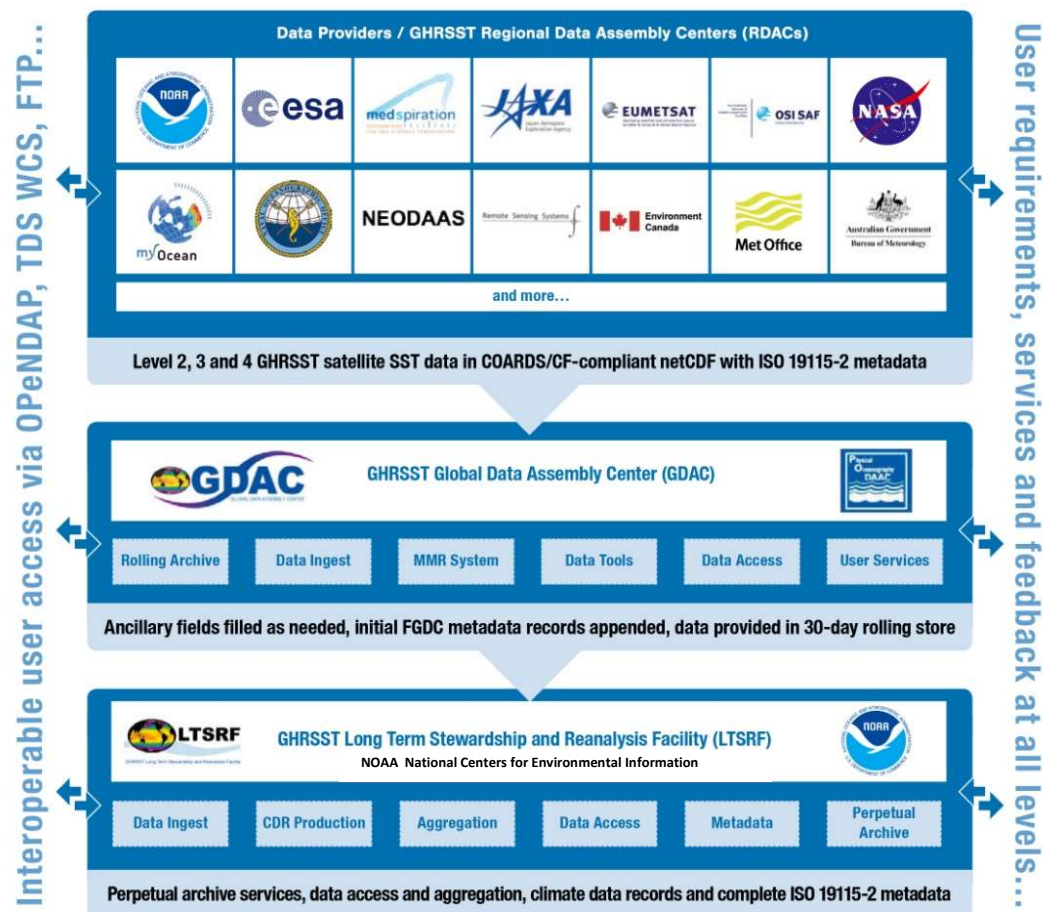
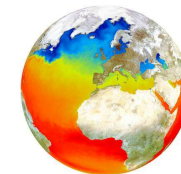
GHR SST

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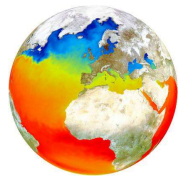


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Sea Surface Temperature Virtual Constellation

Regional/Global Task Sharing

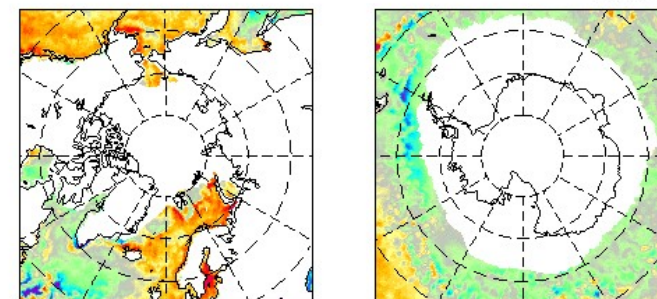
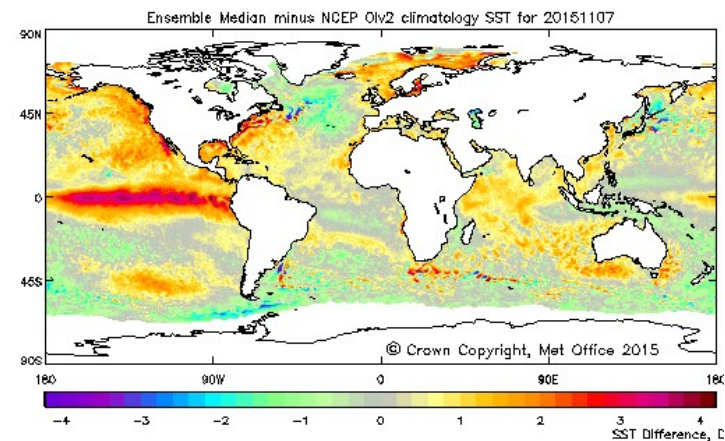
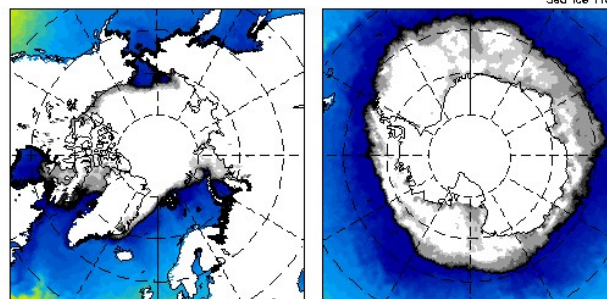
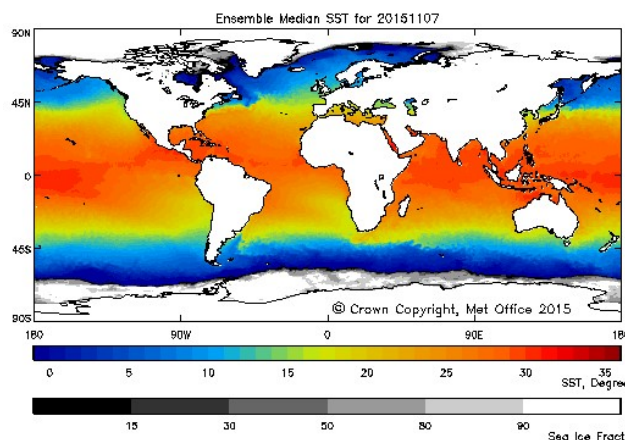
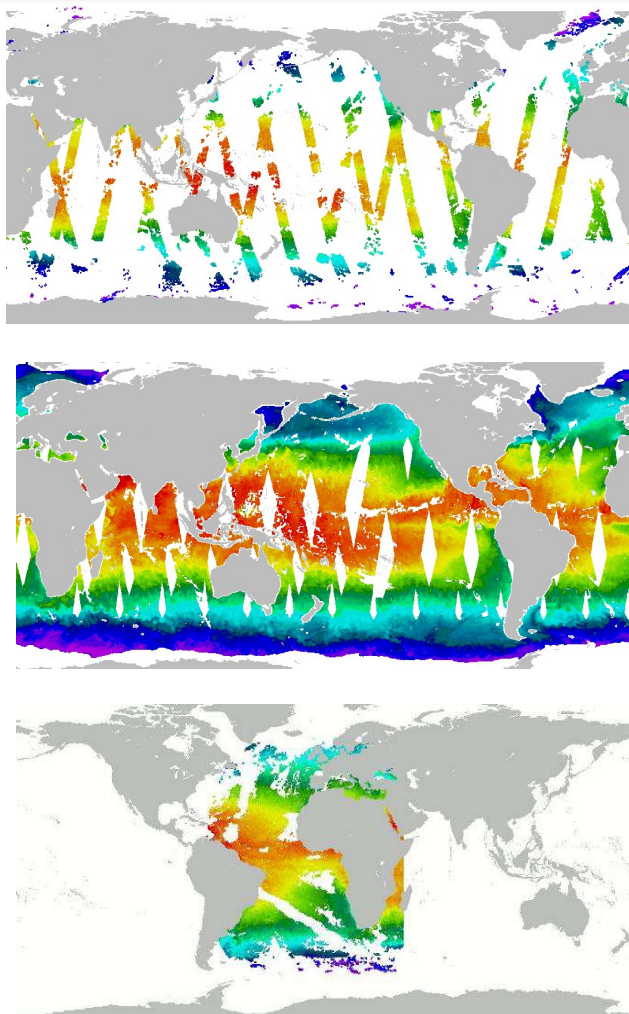
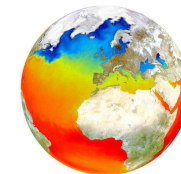


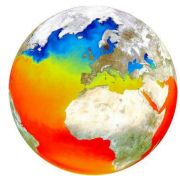
- GHRST products generated by RDACs
 - Some RDACs are self-serve
- GHRST offers to serve data on-behalf of RDACs
 - Optional step but recommended
 - Additional metadata for discovery services
- Real time
 - Global Data Assembly Centre (GDAC)
 - Primary system hosted by NASA JPL
 - See <http://podaac.jpl.nasa.gov/>
 - Secondary system hosted by Ifremer
 - See <http://cersat.ifremer.fr/data/collections/ghrst/> (requires simple registration)
 - Not all datasets are mirrored
- Delayed mode
 - Long-term Stewardship and Reanalysis Facility (LTSRF)
 - Hosted by NOAA NODC
 - See <http://data.nodc.noaa.gov/ghrst/>
- Data can be accessed using many methods
 - ftp, http, DAP, WMS, WCS, LAS, Geoportal, Granules, CWI



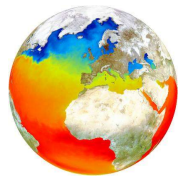
- GHR SST Data Processing Specification (GDS) 2.0
- All data files are in NetCDF file format
- All data files contain COARDS/CF compliant file level metadata
- All GHR SST data products have a ISO 19115-2 compliant metadata record
- All data are free and openly available to everyone
- Some RDACs require simple registration

Example L2P and L4 data





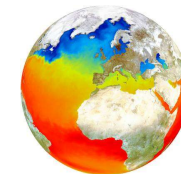
- Regional Data Assembly Centres
- **GHRST Data Producers**
 - Provide L2P, L3 or L4 data
- Self serve or pass to GDACs
 - If self-serve then metadata should at least be passed to GDAC/LTSRF



GDACs and LTSRF

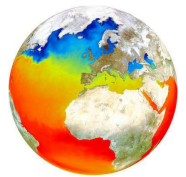
- Global Data Assembly Centres
- **GHRST Data Distributors**
 - Mainly real-time (up to 30 days)
- Long-term Stewardship and Reanalysis Facility
- **GHRST Data Archive**
 - And much, much more...
- Both have many ways to access GHRST data
 - ftp, http, DAP, WMS, WCS, LAS, Geoportal, Granules, CWI

LTSRF Progression



	2007	2008	2009	2010	2011	2012	2013	2014	2015*
Products		22	26	27	40	59	60	62	77
Accessions		39,048	49,957	59,982	67,906	92,282	105,046	112,182	123,325
Files		679,000	993,580	1,352,901	1,662,004	2,459,724	3,290,806	3,971,657	4,894,891
Volumes (TB)		13	20	28	34	57	69	81	92
Services	ftp http	ftp http	ftp http DAP	ftp http DAP WMS WCS	ftp http DAP WMS WCS LAS	ftp http DAP WMS WCS LAS Geoportal	ftp http DAP WMS WCS LAS Geoportal Granules CWIC	ftp http DAP WMS WCS LAS Geoportal Granules CWIC	ftp http DAP WMS WCS LAS Geoportal Granules CWIC

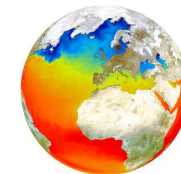
Some considerations in selecting a GHR SST product...



- Spatially complete?
 - Analysis or native swath data
- Duration?
 - Time series or single image
- Spatial resolution?
 - High-resolution near coast or basin scale
- Level of uncertainty?
 - Best quality only
- Depth?
 - Skin or other defined depth
- Synergy?
 - Co-located with other data
- Availability?
 - Timeliness
- Volume?
 - Local or remote processing



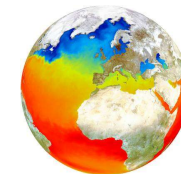
GDAC Access



The screenshot shows the Podaac (Physical Oceanography Distributed Active Archive Center) website interface. The browser address bar shows `podaac.jpl.nasa.gov`. The page features a navigation bar with links like "Home", "Dataset Discovery", "Data Access", "Measurements", "Missions", "Multimedia", "Community", "Forum", and "About". A sidebar on the left titled "Select Filter" allows users to refine search results by "Processing Levels", "Swath Spatial Resolution", "Grid Spatial Resolution", "Temporal Resolution", and "Parameter". The main content area, titled "Dataset Discovery", shows "Found 94 matching dataset(s)". It includes a "View mode" selector (list or grid) and a "Sort By" dropdown set to "Popularity (All Time)". A pagination bar shows results 1 through 10. Three dataset entries are visible, each with a thumbnail map and descriptive text:

- 1** GHR SST Level 2P Global Skin Sea Surface Temperature from the Moderate Resolution Imaging Spectroradiometer (MODIS) on the NASA Aqua satellite (JPL-L2P-MODIS_A). Platform/Sensor: AQUA/MODIS. Processing Level: 2P. Along/Across Track Resolution: 1 km x 1 km. Start/End Date: 2006-Jun-30 to Present. Description: The Moderate-resolution Imaging Spectroradiometer (MODIS) is a scientific instrument (radiometer) launched by NASA in 2002 on board the Aqua satellite platform (a second series is on ... more).
- 2** GHR SST Level 2P Global Skin Sea Surface Temperature from the Moderate Resolution Imaging Spectroradiometer (MODIS) on the NASA Terra satellite (JPL-L2P-MODIS_T). Platform/Sensor: TERRA/MODIS. Processing Level: 2P. Along/Across Track Resolution: 1 km x 1 km. Start/End Date: 2006-Oct-1 to Present. Description: The Moderate-resolution Imaging Spectroradiometer (MODIS) is a scientific instrument (radiometer) launched by NASA in 1999 on board the Terra satellite platform (a second series is ... more).
- 3** GHR SST Level 4 MUR Global Foundation Sea Surface Temperature Analysis (JPL-

LTSRF Access



noaa.gov

NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

formerly the National Oceanographic Data Center (NODC)... [more on NCEI](#)

NOAA Satellite and Information Service

You are here: [NODC Home](#) > [Satellite Oceanography Team](#) > [GHRSSST LTSRF](#) > [Access Data](#)

LTSRF

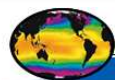
GHRSSST Long Term Stewardship and Reanalysis Facility

Data Access is Here!

- **HTTP:** <http://data.nodc.noaa.gov/ghrsst/>
- **FTP:** <ftp://ftp.nodc.noaa.gov/pub/data.nodc/ghrsst/>
- **OPeNDAP:** <http://data.nodc.noaa.gov/opendap/ghrsst/>
- **THREDDS:** <http://data.nodc.noaa.gov/thredds/catalog/ghrsst/>
- **NODC Geoportal:** <http://data.nodc.noaa.gov/geoportal/> - You may use NODC's Geoportal to search the NODC Ocean Archives for GHRSSST data using criteria such as date, collecting institution (the RDAC that created the data), and geographic domain. To limit your searches to only GHRSSST data, be sure to specify "fileIdentifier:*GHRSSST*" as one of your search criteria.
- **NODC Ocean Archive System:** <http://www.nodc.noaa.gov/Archive/Search/> - You may search NODC's Ocean Archive System for GHRSSST data using criteria such as date, collecting institution (the RDAC that created the data), and geographic domain. To limit your searches to only GHRSSST data, be sure to select "Contributing projects" as one of your search criteria, and then select "GHRSSST" from the menu.
- **NODC Live Access Server:** <http://data.nodc.noaa.gov/las/> - Use the Live Access Server to search dynamically in time and space through NODC data products. To access GHRSSST data, click the 'Choose dataset' button at the top left of the browser window, click on 'GHRSSST Aggregations,' and select a GHRSSST product. Currently only GHRSSST L4 products are available through the Live Access Server.

For a simple tutorial on accessing GHRSSST data from the LTSRF or GDAC, try the GHRSSST Data Access Tutorial in [PDF \(~4 MB\)](#) or [PPT \(~6 MB\)](#) formats.

GHRSSST Products in the LTSRF									
RDAC	Product	Product Level	Start Date	End Date	GDS Version	Grid / Pixel Resolution	Metadata	Access	Disk Volume · Number of Days · Number of Files
ABOM	GAMSSA_28km GLOB	L4	2008-08-24	2015-10-02	1.5	28 km	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	2.5GB · 2589 days · 2589 files
	RAMSSA_09km AUS	L4	2008-04-01	2015-10-02	1.5	9 km	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	4.3GB · 2716 days · 2720 files
CMC	CMC0.2deg GLOB	L4	2013-06-27	2015-09-20	2.0	0.2°	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	1.0GB · 461 days · 461 files
DMI	DMI_OI GLOB	L4	2013-12-11	2015-09-15	2.0	0.05°	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	21.5GB · 143 days · 143 files
	DMI_OI NSEABALTIC	L4	2007-06-04	2015-10-03	1.5	3 km	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	1.5GB · 3009 days · 3009 files
EUR	AMSRE	L2P	2004-12-19	2007-02-26	1.5	25 km	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	3.0GB · 744 days · 8995 files
	ATS_NR_2P	L2P	2004-12-30	2009-09-29	1.5	1 km	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	315.4GB · 1643 days · 22303 files
	AVHRR16_G	L2P	2004-12-30	2006-08-14	1.5	8.8 km	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	0.6GB · 549 days · 7549 files
	AVHRR16_L	L2P	2004-12-30	2005-10-26	1.5	2.2 km	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	0.1GB · 241 days · 1021 files
	AVHRR17_G	L2P	2004-12-30	2007-02-26	1.5	8.8 km	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	0.8GB · 708 days · 9756 files
	AVHRR17_L	L2P	2004-12-30	2007-02-26	1.5	2.2 km	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	0.5GB · 687 days · 3126 files
	AVHRR_METOP_A	L2P	2009-10-01	2013-07-04	1.5	1.1 km	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	3221.9GB · 1326 days · 622720 files
	AVHRR_METOP_A	L3P	2009-09-01	2013-07-03	1.5	0.05°	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	34.6GB · 1396 days · 2741 files
	AVHRR_NOAA_19	L3P	2009-12-10	2013-07-03	1.5	2 km	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	24.0GB · 1301 days · 2584 files
	MSR	MSR	L4	2005-04-26	2008-01-13	2.0	3 km	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS



GHRSSST

Group for High Resolution Sea Surface Temperature

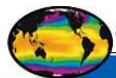
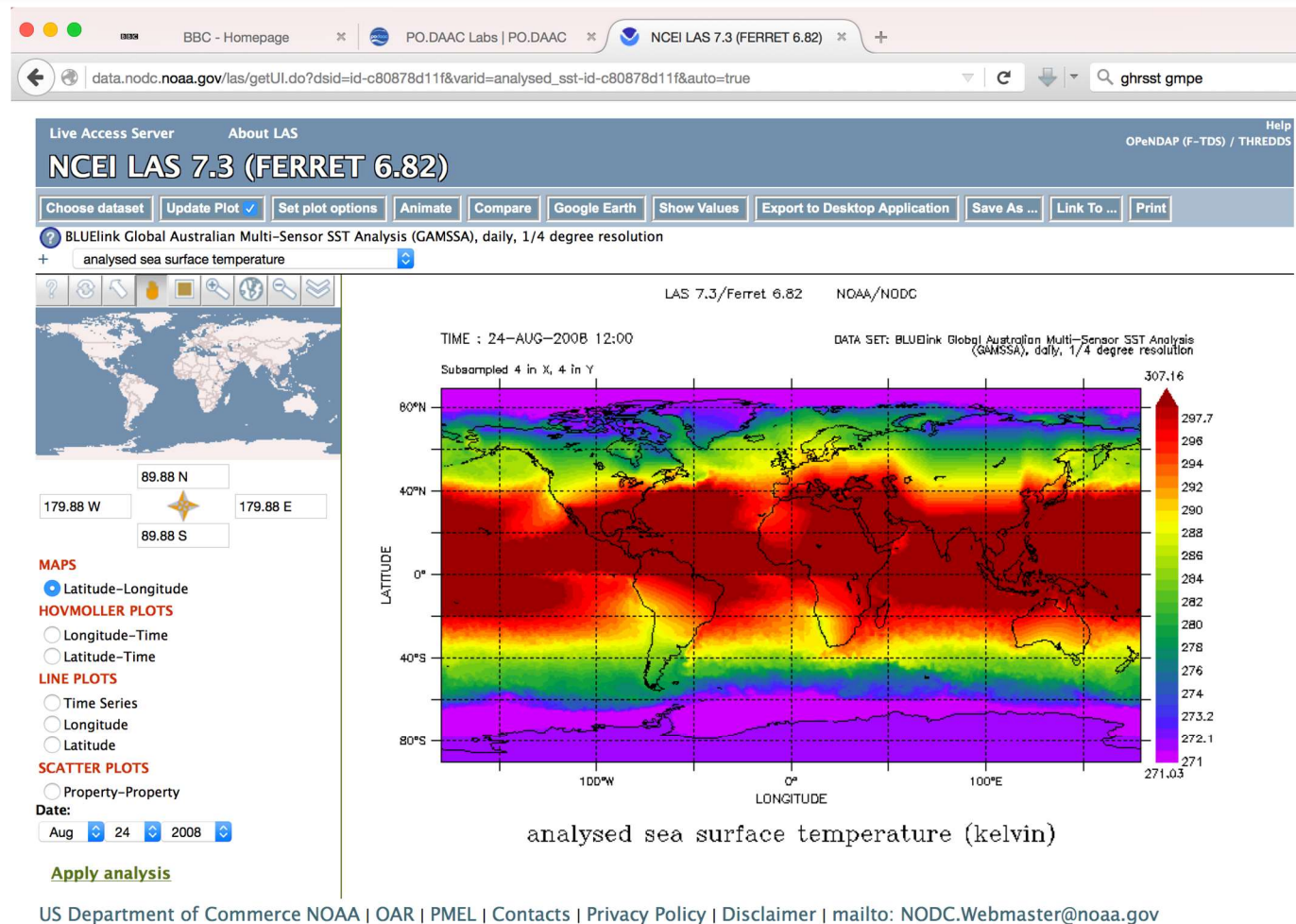
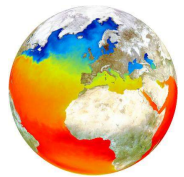
<http://www.nodc.noaa.gov/sog/ghrsst/accessdata.html>

<http://www.ghrsst.org>



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Sea Surface Temperature Virtual Constellation

Live Access Server



GHR SST

Group for High Resolution Sea Surface Temperature

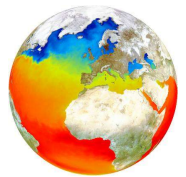


<http://www.ghrsst.org>

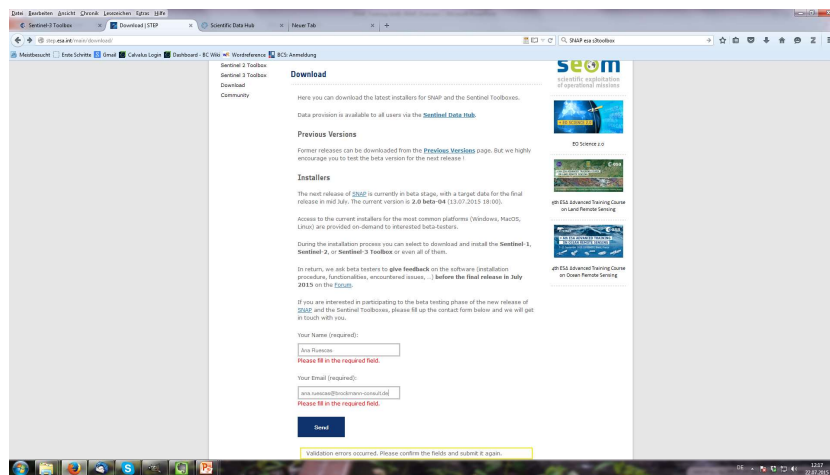


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SNAP – Sentinel Application Platform

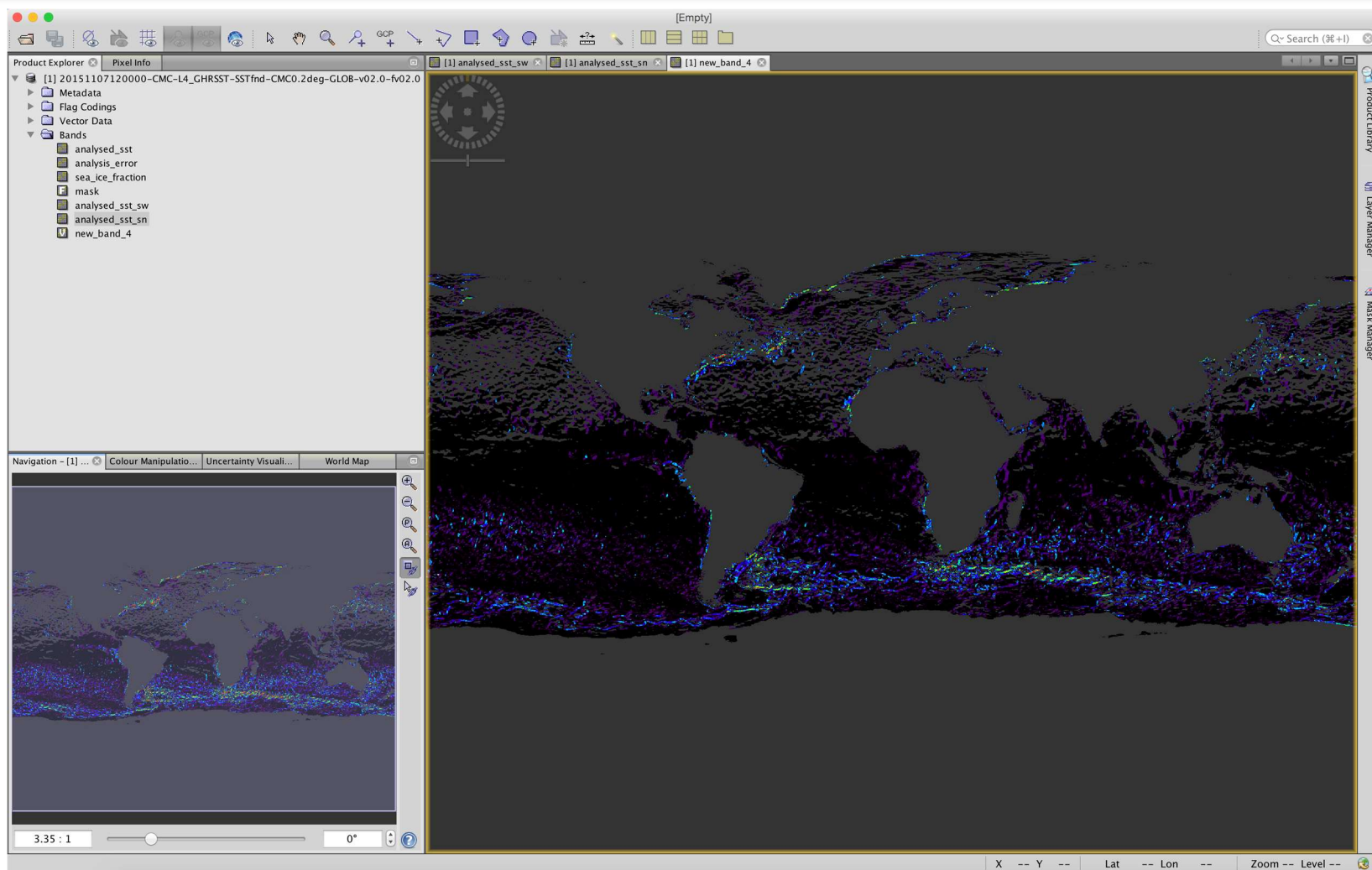
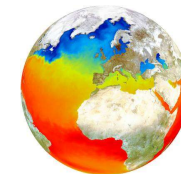


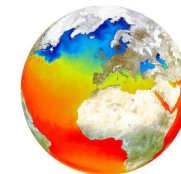
<http://step.esa.int/main/download/>



- SNAP is an open source toolbox for visualisation, analysis and processing of the Sentinels 1, 2 and 3 EO data. All supports many third-party missions and generic formats (e.g. NetCDF).

Example: SST gradients





BBC - Homepage PO.DAAC SST Monitoring at NCOF

ghrsst-pp.metoffice.com/pages/latest_analysis/sst_monitor/daily/ens/ ghrsst gmpe

NCOF

The National Centre for Ocean Forecasting

Contact us | What's new? | Access keys

Home > Products > SST Monitoring > Global SST

NCOF Global SST Intercomparison

Overview

This page shows the differences between daily sea surface temperature (SST) analyses and also differences between the median SST and multiyear means for the same time of year (climatology).

SST Ensemble Intercomparison Statistics

The median and standard deviation of the available daily SST analyses are displayed below. The analyses used in the statistics are OSTIA, RTG, K10, MGSST, RSS MW, RSS MW+IR, FNMOC, NOAA AVHRR OI, CMC, ODYSSEA and GAMSSA. Where the OSTIA analysis indicates sea ice SST values are masked out. The analysis grids have been homogenised by area averaging onto a 0.25° lat/lon grid prior to comparison. The data have been restricted to the OSTIA ocean mask, although several analyses provide greater coverage (such as large lakes). These pages are a United Kingdom contribution to the [GHRSSST-PP Multi-product Ensemble \(GMPE\)](#) experiment. [Latest El Nino index from GMPE](#).

NCOF at the Met Office
NCOF at NOC
NCOF at ESSC
NCOF at PML
NCOF at Cefas

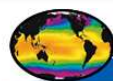
[Download the NCOF brochure](#) (PDF, 1.5 Mb)

Ensemble Median SST for 20151107

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SST, Degree

Sea Ice Fracti



GHRSSST

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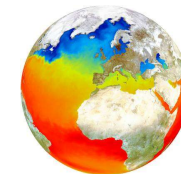


<http://www.ghrsst.org>



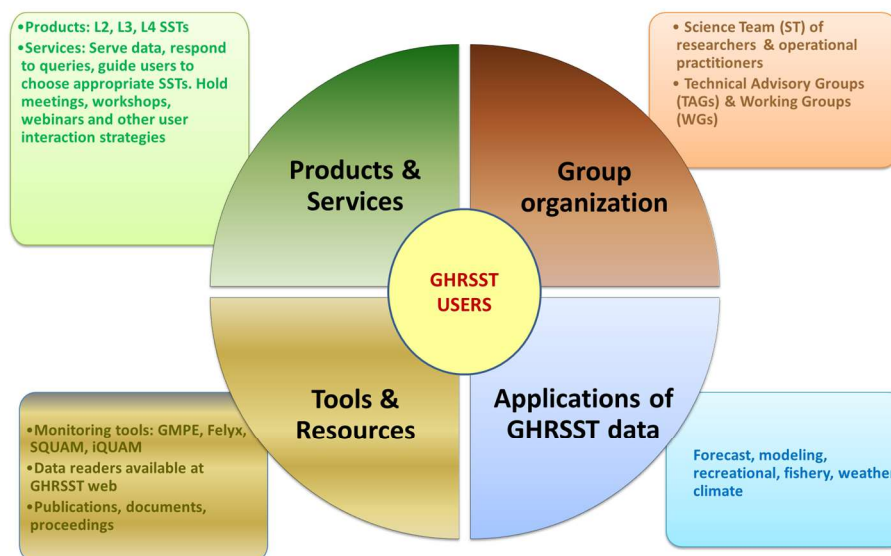
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Finding the SST you need



Interested in GHR SST data:

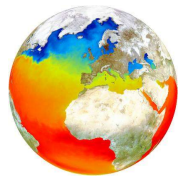
- Real-time data (collection - GHR SST): <http://podaac.jpl.nasa.gov>
- Long-term data: <http://www.nodc.noaa.gov/SatelliteData/ghrsst/>
- Which data to use? Please check “Quick Start” : www.ghrsst.org/quick-start
- Tools/resources/codes: <https://www.ghrsst.org/products-and-services/tools/>



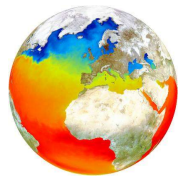
Interested in GHR SST activities:

- Visit the GHR SST website at <https://www.ghrsst.org>
- For your interest in a particular technical advisory group (TAG) or working group (WG), please check the description for that working group

Other products/tools

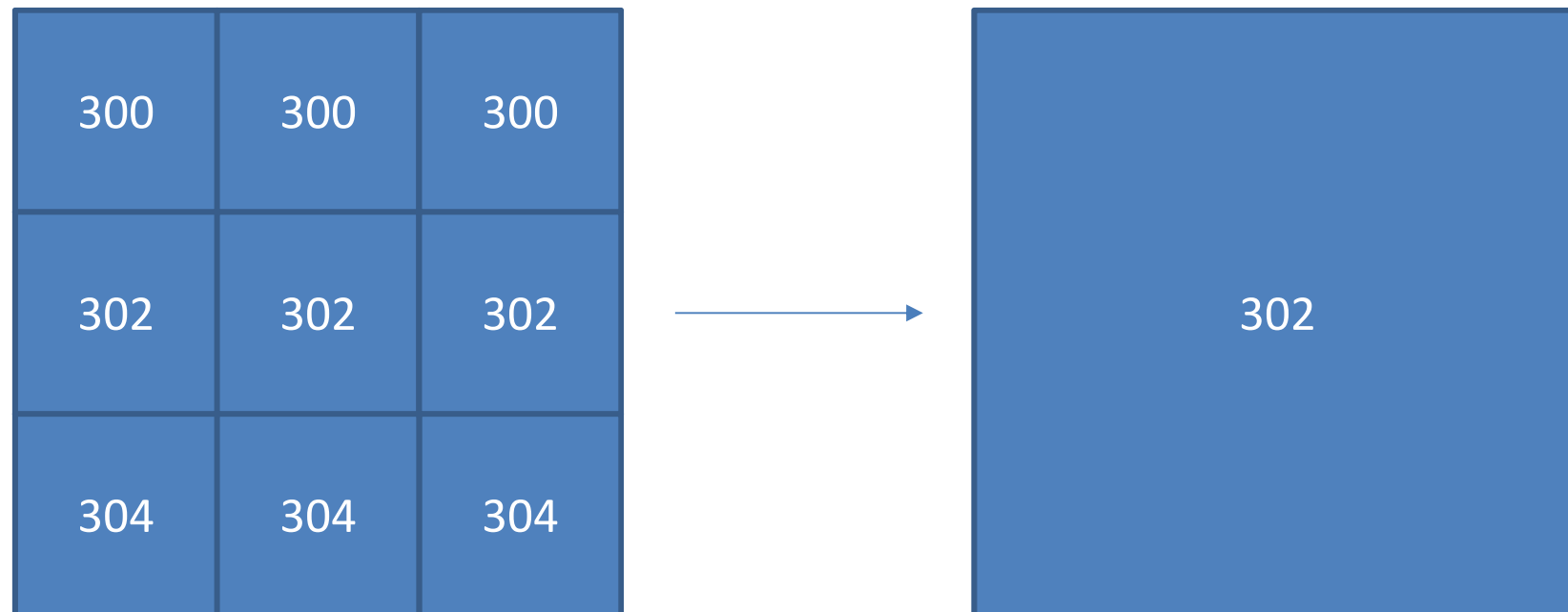


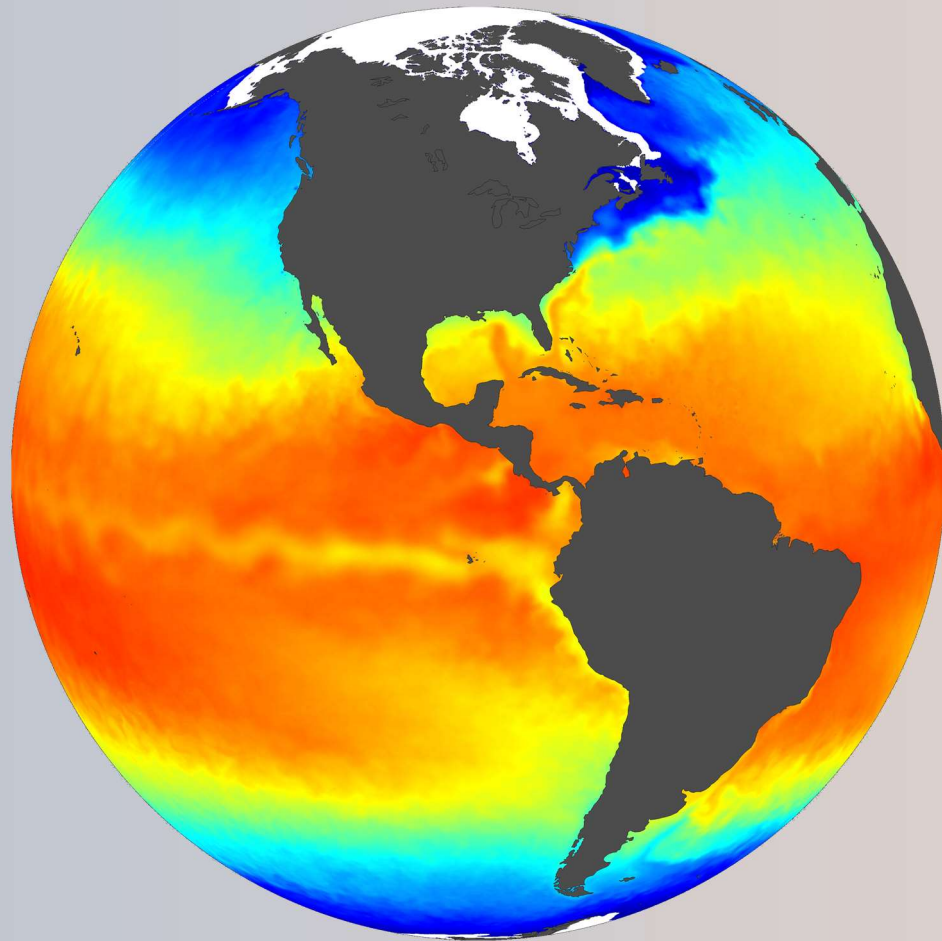
- Globcurrent (ocean currents)
 - <http://www.globcurrent.org/>
- OceanDataLab (online visualisation)
 - <http://www.oceandatalab.com/syntool-web/>
- NANSAT (Python toolbox)
 - <https://github.com/nansencenter/nansat>
- NAIAD (visualisation and extraction)
 - <http://naiad.ifremer.fr>
- Nephelae (data mining and processing)
 - <http://cersat.ifremer.fr/oceanography-from-space/our-domains-of-research/mass-data-processing-and-mining>



Uncertainty of measurement

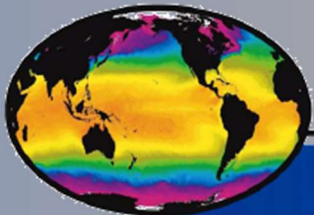
- SST uncertainty is 0.5 K
- What is the uncertainty of the average SST?





SNAP – Basic Analysis

To provide operational users and the science community with the SST measured by the satellite constellation



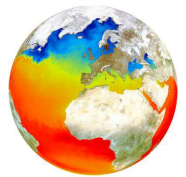
GHR SST

*Group for High Resolution
Sea Surface Temperature*



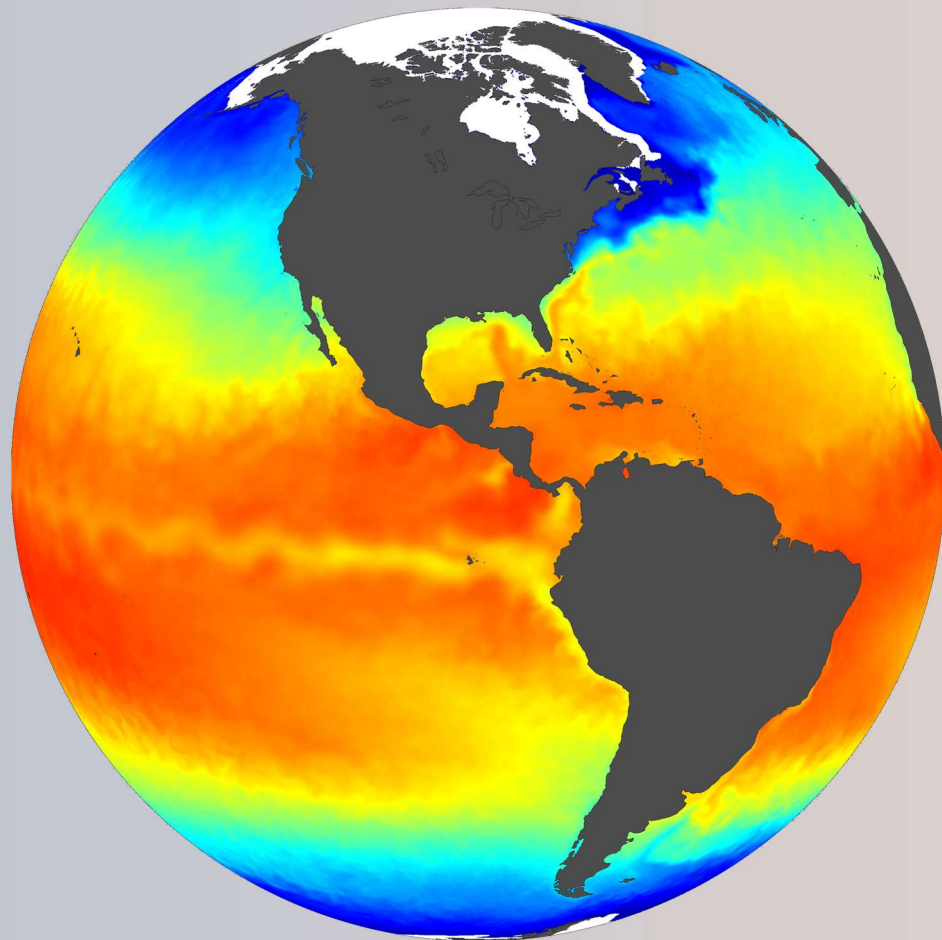
Committee on Earth Observation Satellites
Sea Surface Temperature Virtual Constellation

ATSR Image analysis



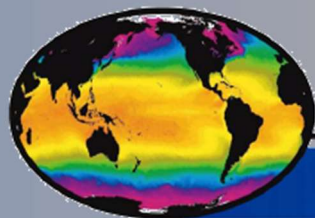
- Open example ATSR L1b file using SNAP
 - *File -> Open Product -> Select file*
ATS_TOA_1PRBCM20091021_020809_000005092083_00317_39950_0011
- The data – look at the ATSR filename - what does it tell you?
- What is in ATSR L1b file?
 - Expand arrow in *Product Explorer*
- Open 11 micron nadir image
 - *Select Bands -> Nadir -> btemp_nadir_1100*
 - What do you see?
 - Set minimum BT to 283.15 (hint use Basic thresholds...)
 - What do you now see?

PRACTICAL SESSION 2



ATSR Image Analysis

*To provide operational users and the science community
with the SST measured by the satellite constellation*



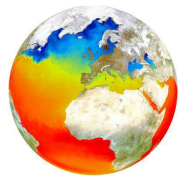
GHR SST

*Group for High Resolution
Sea Surface Temperature*



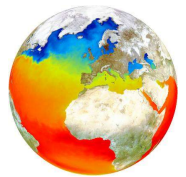
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Sea Surface Temperature Virtual Constellation

Tasks (1)

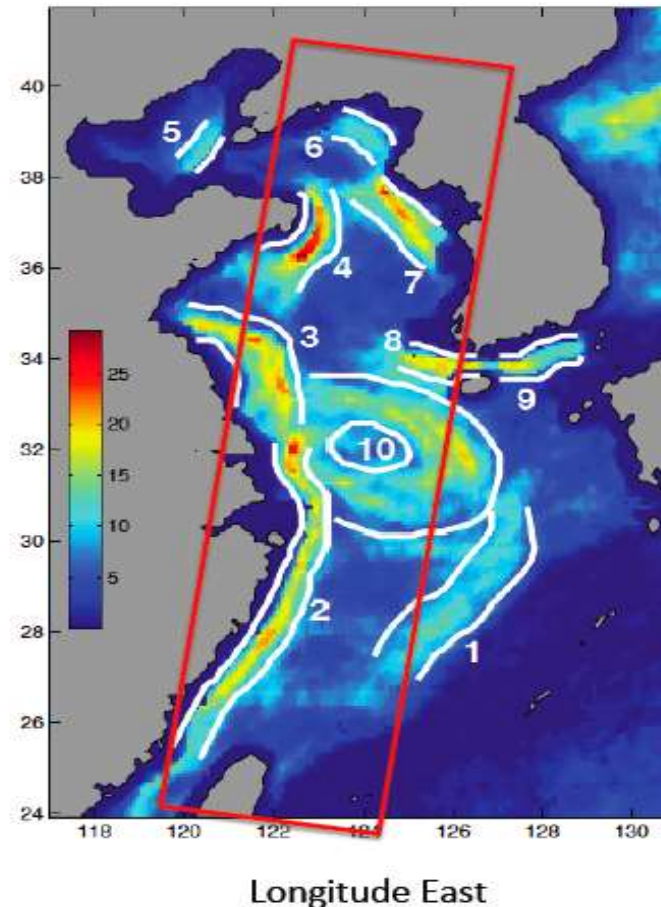


- Open the ATSR L1b image in SNAP
- Identify some geographic features
 - Shanghai
 - Hangzhou Bay
 - Yangtze River
 - Eastern tip of the Shangdong Peninsula
 - Kyunggi Bay
 - Seohan Bay

Tasks (2)



- Imagery is very useful for understanding mesoscale dynamics
- Find and comment on the main frontal systems:

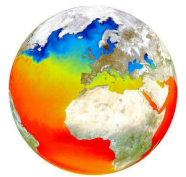


Frontal regions of the East China and Yellow Sea are identified as follows:

1. Kuroshio Front
2. Zhejiang-Fujian Front
3. Jiangsu Front
4. Shandong Peninsula Front
5. Bohai Sea Front
6. Seohan Bay Front
7. Kyunggi Bay Front
8. Western Chejudo Front
9. Eastern Chejudo Front
10. Yangtze Bank Ring Front

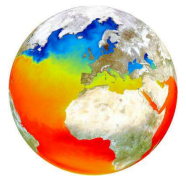
From Hickox et al. GRL, 2000

Tasks (3)



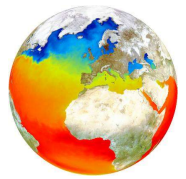
- Apply ATSR land mask – easy in SNAP!
 - *Use Mask Manager Tool Window*
 - If not visible use *View -> Tool Windows*
- Cloud masking activities
 - Basic cloud test – design your own mask based on knowledge from lectures
 - Hint: Create a new band using *Raster -> Band Maths*; now add a new mask in the *Mask Manager Tool Window*
 - Look again at the ATSR basic cloud test – can you find out from internet what they are and how they work?
 - Which ones work – which ones don't?

Tasks (4)



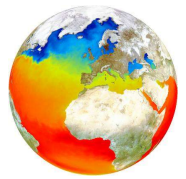
- Open all 6 bands
 - ATSR has three spectral channels and two views
 - Compare and comment on differences between channels
- Look at NAD 11-12 differences
 - Hint: Use *Band Maths* again
 - What causes them?
- Look at dual minus nadir 11 differences
 - What causes them?
 - Why are FWD view colder than NAD view?
 - What is going with cloud in middle of image?

Tasks (5)



- Now retrieve SST
 - Use default settings
 - *Optical -> Thematic Water Processing -> (A)ATSR SST Processor*
 - This will generate a SNAP format file by default
 - Why is the image so sparse?
 - How can we improve this?
 - Compare dual to nadir results - why different?
 - Compare SST and BT – are they different? If so, why?

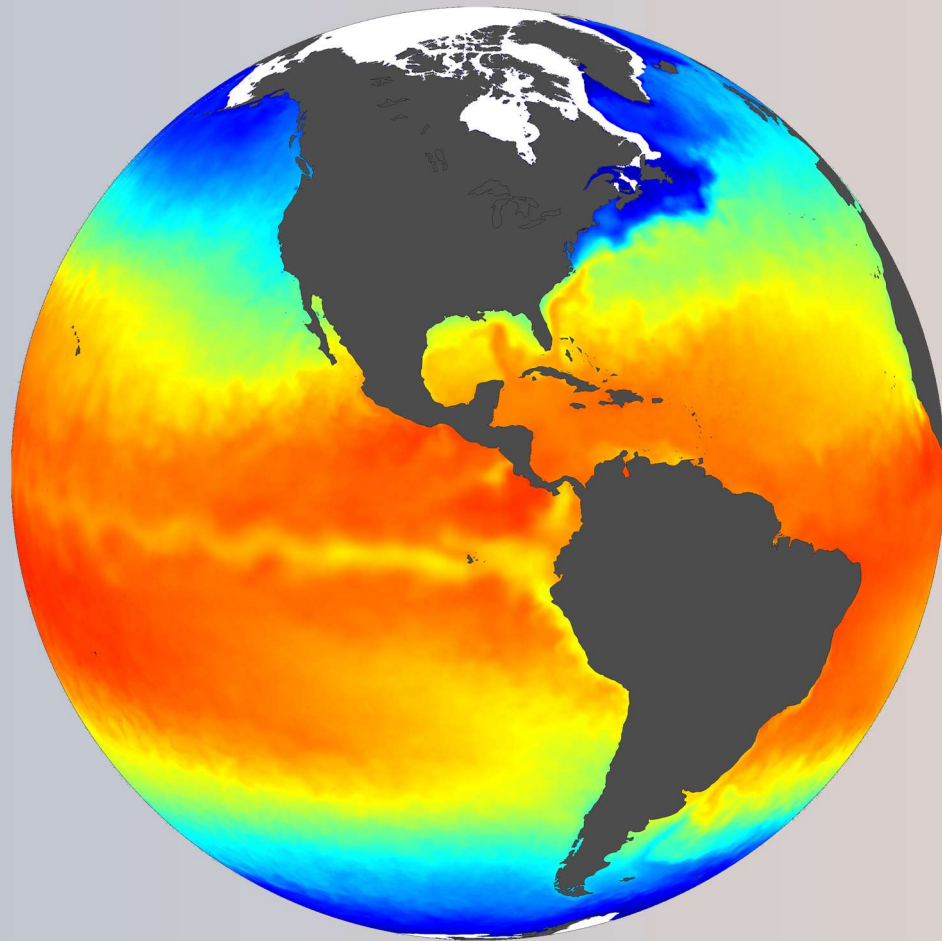
Tasks (6)



- Lastly
 - Generate an RGB image
 - *Right-click* the product name -> *Open RGB Image Window* - >
Select defaults
 - What do you now see in the image?
 - Can we improve our SST map even further?

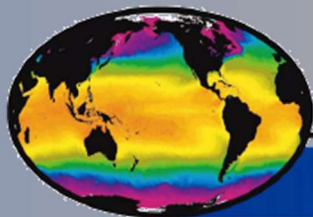


PRACTICAL SESSION 3



SNAP – Extended Analysis

To provide operational users and the science community with the SST measured by the satellite constellation



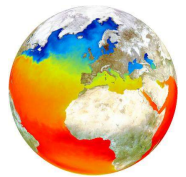
GHR SST

*Group for High Resolution
Sea Surface Temperature*



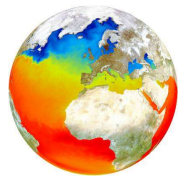
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Sea Surface Temperature Virtual Constellation

Task 1: Averaging



- AMSR-E
 - Download one day of REMSS L2P files (not L2P_GRIDDED) from the LTSRF
 - Data provided on disk
 - Create daily average SST using the L3 binner
 - *Raster -> Geometric Operations -> Level-3 binning*
 - Select 2 products to start with
 - Click the + sign, then *Add product file(s)...*
 - *Configuration -> Aggregator -> Select defaults*
 - Select sea-surface_temperature as source band
 - Now do all files
 - This will take a while...
 - Now look at the data
 - Change the colour scale
 - Comment on the average SST and variance

Task 2: Gradients (1)



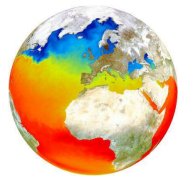
- **Example**

- Download OSTIA file for 1st January 2009 from LTSRF
- Generate SST gradients using SOBEL filters

- **Activity**

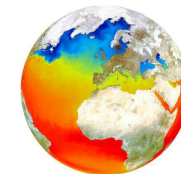
- Download ODYSSEA and AVHRR_OI for same day
- Generate SST gradients
- Comment on differences

Task 2: Gradients (2)



- File -> Open Product -> Select OSTIA L4 file
- Open analysed_sst and apply a colour scale
- Raster -> Filtered Band -> Select Sobel West
 - *Right click* on the new filtered band -> *Properties*
 - Mask invalid data ($mask == 1 \text{ AND } abs(analysed_sst_sn) < 100$)
- Repeat for Sobel North filter.
- Now calculate gradients
 - $sqrt(sq(analysed_sst_sn) + sq(analysed_sst_sw))$

LTSRF Access



nodc.noaa.gov

GHRSST Long Term Stewardship and Reanalysis Facility (LTSRF) at NOAA NODC- Access Data

NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

formerly the National Oceanographic Data Center (NODC)... [more on NCEI](#)

NOAA Satellite and Information Service

You are here: [NODC Home](#) > [Satellite Oceanography Team](#) > [GHRSST LTSRF](#) > [Access Data](#)

LTSRF
GHRSST Long Term Stewardship and Reanalysis Facility

Data Access is Here!

- **HTTP:** <http://data.nodc.noaa.gov/ghrsst/>
- **FTP:** <ftp://ftp.nodc.noaa.gov/pub/data.nodc/ghrsst/>
- **OPeNDAP:** <http://data.nodc.noaa.gov/opendap/ghrsst/>
- **THREDDS:** <http://data.nodc.noaa.gov/thredds/catalog/ghrsst/>
- **NODC Geoportal:** <http://data.nodc.noaa.gov/geoportal/> - You may use NODC's Geoportal to search the NODC Ocean Archives for GHRSST data using criteria such as date, collecting institution (the RDAC that created the data), and geographic domain. To limit your searches to only GHRSST data, be sure to specify "fileIdentifier:*GHRSST*" as one of your search criteria.
- **NODC Ocean Archive System:** <http://www.nodc.noaa.gov/Archive/Search/> - You may search NODC's Ocean Archive System for GHRSST data using criteria such as date, collecting institution (the RDAC that created the data), and geographic domain. To limit your searches to only GHRSST data, be sure to select "Contributing projects" as one of your search criteria, and then select "GHRSST" from the menu.
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For a simple tutorial on accessing GHRSST data from the LTSRF or GDAC, try the GHRSST Data Access Tutorial in [PDF \(~4 MB\)](#) or [PPT \(~6 MB\)](#) formats.

GHRSST Products in the LTSRF									
RDAC	Product	Product Level	Start Date	End Date	GDS Version	Grid / Pixel Resolution	Metadata	Access	Disk Volume · Number of Days · Number of Files
ABOM	GAMSSA_28km GLOB	L4	2008-08-24	2015-10-02	1.5	28 km	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	2.5GB · 2589 days · 2589 files
	RAMSSA_09km AUS	L4	2008-04-01	2015-10-02	1.5	9 km	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	4.3GB · 2716 days · 2720 files
CMC	CMC0.2deg GLOB	L4	2013-06-27	2015-09-20	2.0	0.2°	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	1.0GB · 461 days · 461 files
DMI	DMI_OI GLOB	L4	2013-12-11	2015-09-15	2.0	0.05°	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	21.5GB · 143 days · 143 files
	DMI_OI NSEABALTIC	L4	2007-06-04	2015-10-03	1.5	3 km	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	1.5GB · 3009 days · 3009 files
EUR	AMSRE	L2P	2004-12-19	2007-02-26	1.5	25 km	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	3.0GB · 744 days · 8995 files
	ATS_NR_2P	L2P	2004-12-30	2009-09-29	1.5	1 km	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	315.4GB · 1643 days · 22303 files
	AVHRR16_G	L2P	2004-12-30	2006-08-14	1.5	8.8 km	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	0.6GB · 549 days · 7549 files
	AVHRR16_L	L2P	2004-12-30	2005-10-26	1.5	2.2 km	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	0.1GB · 241 days · 1021 files
	AVHRR17_G	L2P	2004-12-30	2007-02-26	1.5	8.8 km	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	0.8GB · 708 days · 9756 files
	AVHRR17_L	L2P	2004-12-30	2007-02-26	1.5	2.2 km	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	0.5GB · 687 days · 3126 files
	AVHRR_METOP_A	L2P	2009-10-01	2013-07-04	1.5	1.1 km	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	3221.9GB · 1326 days · 622720 files
	AVHRR_METOP_A	L3P	2009-09-01	2013-07-03	1.5	0.05°	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	34.6GB · 1396 days · 2741 files
	AVHRR_NOAA_19	L3P	2009-12-10	2013-07-03	1.5	2 km	Details · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	24.0GB · 1301 days · 2584 files
	MSR	L4	2005-04-26	2008-04-13	2.0	3 km	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	0.6GB · 281 days · 281 files

<http://www.nodc.noaa.gov/sog/ghrsst/accessdata.html>

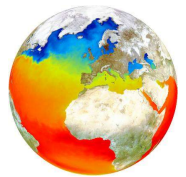


<http://www.ghrsst.org>



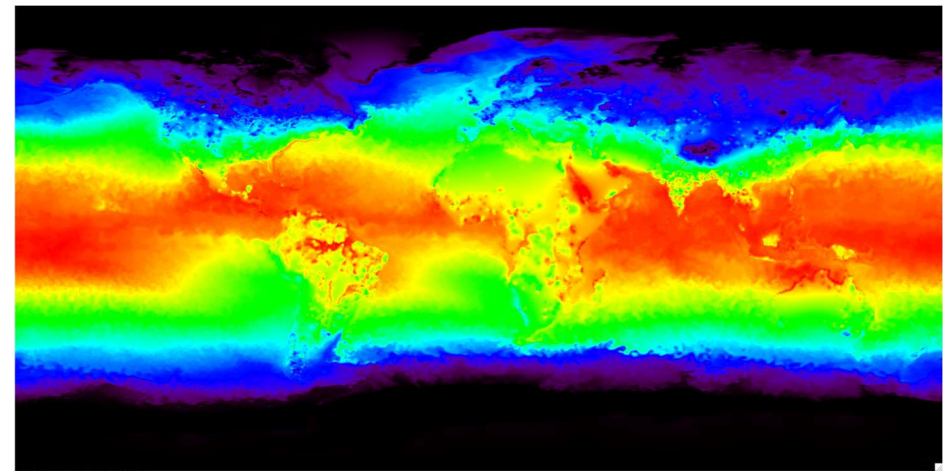
Committee on Earth Observation Satellites
Sea Surface Temperature Virtual Constellation

Task 3: OPeNDAP (1)



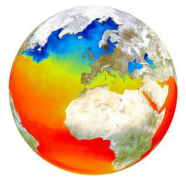
- Easy access to GDS2.0 format through OPeNDAP
 - Internally compressed NetCDF 4.0 format
- Can use IDL, MATLAB, etc., for direct access

```
url =  
'https://data.nodc.noaa.gov/thredds/dodsC/ghrsst  
/L4/GLOB/CMC/CMC0.2deg/' $  
+ '2015/' $  
+ '311/' $  
+ '20151107120000-CMC-L4_GHRSST-SSTfnd-  
CMC0.2deg-GLOB-v02.0-fv02.0.nc'  
  
file_id = NCDF_OPEN(url, /nowrite)  
NCDF_VARGET, file_id, 'analysed_sst', sst  
NCDF_CLOSE, file_id
```

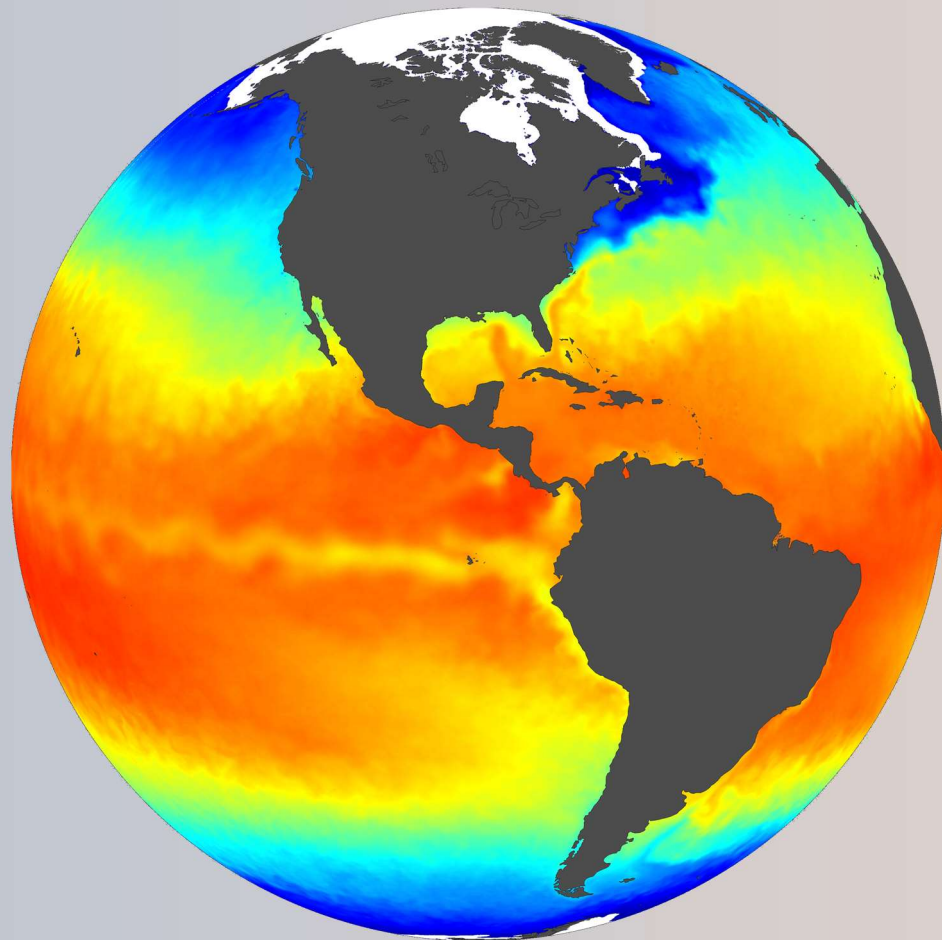


No flags applied

Task 3: OPeNDAP (2) – Time series

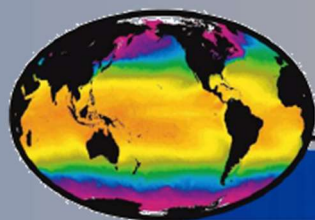


- More advanced – use OPeNDAP to generate a time series
 - **Activity:** Plot the SST at one location for one month
- Try the GHR SST LTSRF...
 - <https://www.nodc.noaa.gov/SatelliteData/ghrsst/accessdata.html>
- Try the ESA CCI data portal...
 - <http://cci.esa.int/data>



Data Access

*To provide operational users and the science community
with the SST measured by the satellite constellation*



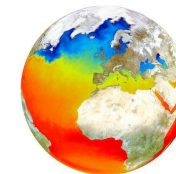
GHR SST

*Group for High Resolution
Sea Surface Temperature*



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Sea Surface Temperature Virtual Constellation

LTSRF



Browser address bar: <https://www.nodc.noaa.gov/SatelliteData/ghrsst/accessdata.html>

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

formerly the National Oceanographic Data Center (NODC)... more on NCEI

NOAA Satellite and Information Service

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LTSRF

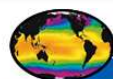
GHRST Long Term Stewardship and Reanalysis Facility

Data Access is Here!

- HTTP:** <http://data.nodc.noaa.gov/ghrsst/>
- FTP:** <ftp://ftp.nodc.noaa.gov/pub/data.nodc/ghrsst/>
- OPeNDAP:** <http://data.nodc.noaa.gov/opendap/ghrsst/>
- THREDDS:** <http://data.nodc.noaa.gov/thredds/catalog/ghrsst/>
- Geoportal:** <http://data.nodc.noaa.gov/geoportal/> - You may use the Geoportal to search the NCEI Ocean Archives for GHRST data using criteria such as date, collecting institution (the RDAC that created the data), and geographic domain. To limit your searches to only GHRST data, be sure to specify "fileIdentifier:*GHRST-*" as one of your search criteria.
- Ocean Archive System:** <http://www.nodc.noaa.gov/Archive/Search/> - You may search the Ocean Archive System for GHRST data using criteria such as date, collecting institution (the RDAC that created the data), and geographic domain. To limit your searches to only GHRST data, be sure to select "Contributing projects" as one of your search criteria, and then select "GHRST" from the menu.
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RDAC	Product	Product Level	Start Date	End Date	GDS Version	Grid / Pixel Resolution	Metadata	Access	Disk Volume · Number of Days · Number of Files
ABOM	GAMSSA_28km GLOB	L4	2008-08-24	present	1.5	28 km	Granule Search · LandingPage · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	2.9GB · 3072 days · 3072 files
	RAMSSA_09km AUS	L4	2008-04-01	present	1.5	9 km	Granule Search · LandingPage · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	5.0GB · 3198 days · 3202 files
CMC	CMC0.2deg GLOB	L4	1991-09-01	present	2.0	0.2°	Granule Search · LandingPage · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	18.7GB · 9115 days · 9115 files
DMI	DMI_OI GLOB	L4	2013-04-30	present	2.0	0.05°	Granule Search · LandingPage · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	75.9GB · 504 days · 505 files
	DMI_OI NSEABALTIC	L4	2007-06-04	present	1.5	3 km	Granule Search · LandingPage · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	1.6GB · 3161 days · 3161 files
EUR	AMSRE	L2P	2005-01-31	2007-02-26	1.5	25 km	Granule Search · LandingPage · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	3.0GB · 744 days · 8995 files
	ATS_NR_2P	L2P	2005-01-31	2009-09-30	1.5	1 km	Granule Search · LandingPage	FTP · HTTP · OPeNDAP · THREDDS	315.4GB · 1643 days · 22303 files
AVHRR16 C		L2P	2005-01-31	2006-08-14	1.5	16 km	Granule Search · LandingPage	FTP · HTTP · OPeNDAP · THREDDS	11.6GB · 549 days · 7540 files



GHRST

Group for High Resolution Sea Surface Temperature

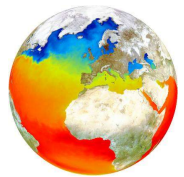


<http://www.ghrsst.org>



Committee on Earth Observation Satellites
Sea Surface Temperature Virtual Constellation

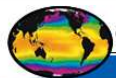
THREDDS: ABoM



Catalog https://data.nodc.noaa.gov/thredds/catalog/ghrsst/L4/GLOB/ABOM/GAMSSA_28km/

Dataset	Size	Last Modified
GAMSSA_28km		--
2017/		--
2016/		--
2015/		--
2014/		--
2013/		--
2012/		--
2011/		--
2010/		--
2009/		--
2008/		--

NCEI TDS 4.2.10 at National Centers for Environmental Information
THREDDS Data Server [Version 4.2.10 - 20120417.2151] Documentation



GHRST

Group for High Resolution Sea Surface Temperature

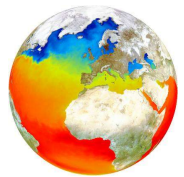


<http://www.ghrsst.org>



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Sea Surface Temperature Virtual Constellation

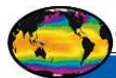
THREDDS: ABoM



Catalog https://data.nodc.noaa.gov/thredds/catalog/ghrsst/L4/GLOB/ABOM/GAMSSA_28km/2017/029/catalog.html

Dataset	Size	Last Modified
029		--
FileSpecificMetadata/		--
20170129-ABOM-L4LRFnd-GLOB-v01-fv01_0-GAMSSA_28km.nc.bz2	884.4 Kbytes	2017-01-30 05:17:16Z

NCEI TDS 4.2.10 at National Centers for Environmental Information
THREDDS Data Server [Version 4.2.10 - 20120417:2151] Documentation



GHRST

Group for High Resolution Sea Surface Temperature

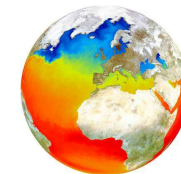


<http://www.ghrsst.org>



Committee on Earth Observation Satellites
Sea Surface Temperature Virtual Constellation

THREDDS: ABoM



Catalog Services

https://data.nodc.noaa.gov/thredds/catalog/ghrsst/L4/GLOB/ABOM/GAMSSA_28km/2017/029/catalog.html?dataset=ghrsst/L4/GLOB/ABO

ghrsst noaa ltsrf

NCEI TDS 4.2.10

THREDDS Data Server

Catalog https://data.nodc.noaa.gov/thredds/catalog/ghrsst/L4/GLOB/ABOM/GAMSSA_28km/2017/029/catalog.html

Dataset: 029/20170129-ABOM-L4LRfnd-GLOB-v01-fv01_0-GAMSSA_28km.nc.bz2

- Data size: 884.4 Kbytes
- ID: ghrsst/L4/GLOB/ABOM/GAMSSA_28km/2017/029/20170129-ABOM-L4LRfnd-GLOB-v01-fv01_0-GAMSSA_28km.nc.bz2

Access:

1. OPENDAP: /thredds/dodsC/ghrsst/L4/GLOB/ABOM/GAMSSA_28km/2017/029/20170129-ABOM-L4LRfnd-GLOB-v01-fv01_0-GAMSSA_28km.nc.bz2
2. HTTPServer: /thredds/fileServer/ghrsst/L4/GLOB/ABOM/GAMSSA_28km/2017/029/20170129-ABOM-L4LRfnd-GLOB-v01-fv01_0-GAMSSA_28km.nc.bz2
3. WCS: /thredds/wcs/ghrsst/L4/GLOB/ABOM/GAMSSA_28km/2017/029/20170129-ABOM-L4LRfnd-GLOB-v01-fv01_0-GAMSSA_28km.nc.bz2
4. WMS: /thredds/wms/ghrsst/L4/GLOB/ABOM/GAMSSA_28km/2017/029/20170129-ABOM-L4LRfnd-GLOB-v01-fv01_0-GAMSSA_28km.nc.bz2
5. NCML: /thredds/ncml/ghrsst/L4/GLOB/ABOM/GAMSSA_28km/2017/029/20170129-ABOM-L4LRfnd-GLOB-v01-fv01_0-GAMSSA_28km.nc.bz2
6. UDDC: /thredds/uddc/ghrsst/L4/GLOB/ABOM/GAMSSA_28km/2017/029/20170129-ABOM-L4LRfnd-GLOB-v01-fv01_0-GAMSSA_28km.nc.bz2
7. ISO: /thredds/iso/ghrsst/L4/GLOB/ABOM/GAMSSA_28km/2017/029/20170129-ABOM-L4LRfnd-GLOB-v01-fv01_0-GAMSSA_28km.nc.bz2

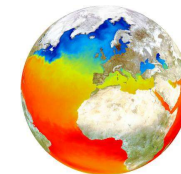
Dates:

- 2017-01-30 05:17:16Z (modified)

Viewers:

- NetCDF-Java ToolsUI (webstart)
- Godiva2 (browser-based)

THREDDS: ABoM



OPeNDAP Dataset Access Form

Tested on Netscape 4.61 and Internet Explorer 5.00.

Action:

Data URL:

https://data.nodc.noaa.gov/thredds/dodsC/ghrsst/L4/GLOB/ABOM/GAMSSA_28km/2

Global Attributes:

Conventions: CF-1.0
title: BLUElink Global Australian Multi-Sensor SST Analysis (GAMSSA), daily, 1/4 degree resolution
DSD_entry_id: ABOM-L4LRfnd-GLOB-GAMSSA_28km
references: http://www.bom.gov.au/bmrc/ocean/BLUElink/SST/GAMSSA_BoM/

Variables:

☐ lon: Array of 32 bit Reals [lon = 0..1439]

lon:

long_name: longitude
standard_name: longitude
units: degrees east
_FillValue: 9.969209968386869E36
valid_min: -180.0

☐ lat: Array of 32 bit Reals [lat = 0..719]

lat:

long_name: latitude
standard_name: latitude
units: degrees north
_FillValue: 9.969209968386869E36
valid_min: -90.0

☐ time: Array of 32 bit Integers [time = 0..0]

time:

long_name: reference time of sst field
standard_name: time
units: seconds since 1981-01-01 00:00:00
_FillValue: -2.147483647E9
axis: T

☐ analysed_sst: Grid

time:

lat:

lon:

long_name: analysed sea surface temperature
standard_name: sea_surface_temperature
type: foundation
units: kelvin
add_offset: 273.15

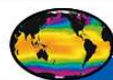
☐ analysis_error: Grid

time:

lat:

lon:

long_name: estimated error standard deviation of analysed_sst
units: kelvin
add_offset: 0.0
scale_factor: 0.01
_FillValue: -32768.0



GHRSSST

Group for High Resolution Sea Surface Temperature

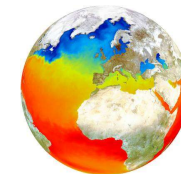


<http://www.ghrsst.org>



Committee on Earth Observation Satellites
Sea Surface Temperature Virtual Constellation

THREDDS: ABoM



OPeNDAP Dataset Access Form

Tested on Netscape 4.61 and Internet Explorer 5.00.

Action:

[Get ASCII](#) [Get Binary](#) [Show Help](#)

Data URL:

https://data.nodc.noaa.gov/thredds/dodsC/ghrsst/L4/GLOB/ABOM/GAMSSA_28km/2

Global Attributes:

Conventions: CF-1.0
title: BLUElink Global Australian Multi-Sensor SST Analysis (GAMSSA), daily, 1/4 degree resolution
DSD_entry_id: ABOM-L4LRfnd-GLOB-GAMSSA_28km
references: http://www.bom.gov.au/bmrc/ocean/BLUElink/SST/GAMSSA_BoM/

Variables:

☐ lon: Array of 32 bit Reals [lon = 0..1439]

lon:

long_name: longitude
standard_name: longitude
units: degrees east
_FillValue: 9.969209968386869E36
valid_min: -180.0

☐ lat: Array of 32 bit Reals [lat = 0..719]

lat:

long_name: latitude
standard_name: latitude
units: degrees north
_FillValue: 9.969209968386869E36
valid_min: -90.0

☐ time: Array of 32 bit Integers [time = 0..0]

time:

long_name: reference time of sst field
standard_name: time
units: seconds since 1981-01-01 00:00:00
_FillValue: -2.147483647E9
axis: T

☐ analysed_sst: Grid

time:

lat:

lon:

long_name: analysed sea surface temperature
standard_name: sea_surface_temperature
type: foundation
units: kelvin
add_offset: 273.15

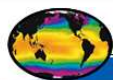
☐ analysis_error: Grid

time:

lat:

lon:

long_name: estimated error standard deviation of analysed_sst
units: kelvin
add_offset: 0.0
scale_factor: 0.01
_FillValue: -32768.0



GHRSSST

Group for High Resolution Sea Surface Temperature

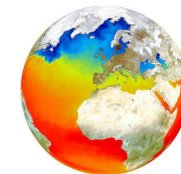


<http://www.ghrsst.org>



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Sea Surface Temperature Virtual Constellation

Geoportal: GHR SST Search



NODC Geoportal 1.2.2

https://data.nodc.noaa.gov/geoportal/rest/find/document?searchText=fileIdentifier%3A*GHR SST-*&start=1&max=25&contentOption=inter

grrsst noaa ltrf

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NODC HOME SEARCH THE NCEI OCEAN ARCHIVES BROWSE SEARCH TIPS

Search the NCEI Ocean Archives

Search metadata content, for example, title:SST; use + to require keywords, for example, +water +temperature; use "" to search for an exact phrase, for example, "water temperature" (Search tips!)

fileIdentifier:"GHR SST-"

Search Clear All

Additional Options
Clear

WHEN
☒ Dates overlap range ☐ Dates within range
 From: (yyyymmdd)
 To: (yyyymmdd)

WHERE
 Zoom the map to desired area and choose "intersecting" or "fully within"
 You can zoom the map by shift-click-dragging a bounding box
☒ Anywhere ☐ Intersecting ☐ Fully within

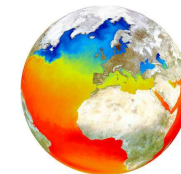
Arctic Ocean
North Pacific Ocean
South Pacific Ocean
Ross Sea
Antarctic
Indian Ocean
South Atlantic Ocean
North Atlantic Ocean
North Indian Ocean

Results 1-25 of 84 record(s) 1 2 3 4 > Last

☐ Expand results ☒ Zoom To Results ☐ Zoom To Searched Area

- ☒ GHR SST Level 4 RAMSSA Australian Regional Foundation Sea Surface Temperature Analysis (GDS version 1)
- ☒ GHR SST Level 4 GAMSSA Global Foundation Sea Surface Temperature Analysis (GDS version 1)
- ☒ GHR SST Level 2P Global Subskin Sea Surface Temperature from the Advanced Scanning Microwave Radiometer - Earth Observing System (AMSR-E) on the NASA Aqua Satellite (GDS versions 1 and 2)
- ☒ GHR SST Level 4 AVHRR_OI Global Blended Sea Surface Temperature Analysis (GDS version 2) from NCEI (GDS versions 1 and 2)
- ☒ GHR SST Level 2P sub-skin Sea Surface Temperature from the Advanced Very High Resolution Radiometer (AVHRR) on Metop satellites (currently Metop-A) (GDS V2) produced by OSI SAF (GDS version 2)
- ☒ GHR SST L3C global sub-skin Sea Surface Temperature from the Advanced Very High Resolution Radiometer (AVHRR) on Metop satellites (currently Metop-A) (GDS V2) produced by OSI SAF (GDS version 2)
- ☒ GHR SST Level 3C North Atlantic Regional (NAR) subskin Sea Surface Temperature from SNPP/VIRS and Metop-A/AVHRR (GDS V2) produced by OSI SAF (GDS version 2)
- ☒ GHR SST Level 3C North Atlantic Regional Subskin Sea Surface Temperature from the Advanced Very High Resolution Radiometer (AVHRR) on NOAA-19 (GDS version 2)
- ☒ GHR SST Level 4 CMC0.2deg Global Foundation Sea Surface Temperature Analysis (GDS version 2)
- ☒ GHR SST Level 4 DMI_OI North Sea and Baltic Sea Regional Foundation Sea Surface Temperature Analysis (GDS version 1)
- ☒ GHR SST Level 2P Regional Subskin Sea Surface Temperature from the Advanced Scanning Microwave Radiometer - Earth Observing System (AMSR-E) on the NASA Aqua satellite for the Atlantic Ocean (GDS version 1)
- ☒ GHR SST Level 2P Global Skin Sea Surface Temperature from the Advanced Along Track Scanning Radiometer (AATSR) on the ESA Envisat satellite produced by EUR (GDS version 1)
- ☒ GHR SST Level 2P Global Bulk Sea Surface Temperature from the Advanced Very High Resolution Radiometer (AVHRR) on the NOAA-16 satellite (GDS version 1)
- ☒ GHR SST Level 2P Atlantic Regional Bulk Sea Surface Temperature from the Advanced Very High Resolution Radiometer (AVHRR) on the NOAA-16 satellite (GDS version 1)
- ☒ GHR SST Level 2P Global Bulk Sea Surface Temperature from the Advanced Very High Resolution Radiometer (AVHRR) on the NOAA-17 satellite (GDS version 1)

Geoportal: Sensor Search



NODC Geoportal 1.2.2

https://data.nodc.noaa.gov/geoportal/rest/find/document?searchText=fileIdentifier%3AGHRSST-*&start=1&max=25&contentOption=inter

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NODC HOME SEARCH THE NCEI OCEAN ARCHIVES BROWSE SEARCH TIPS

Search the NCEI Ocean Archives

Search metadata content, for example, title:SST; use + to require keywords, for example, +water +temperature; use "" to search for an exact phrase, for example, "water temperature" (Search tips!)

viirs

Additional Options

Clear

WHEN

☒ Dates overlap range ☐ Dates within range

From: (yyyyymmdd)

To: (yyyyymmdd)

WHERE

Zoom the map to desired area and choose "intersecting" or "fully within"

You can zoom the map by shift-click-dragging a bounding box

☐ Anywhere ☒ Intersecting ☐ Fully within

Baker Island
Vao Motu
Te Puka I Mua
Nukunonu Atoll
Tokelau
Kanton
Fakaofu Village
Fakaofu Atoll
Rawaki
Kiribati (Gilbert Islands)
Palmyra Atoll

China
East China Sea
Southern China
South Kuroshio

Results 1-11 of 11 record(s)

☐ Expand results [Zoom To Results](#) [Zoom To Searched Area](#)

☐ [Satellite Ocean Heat Content Suite](#)

☐ [GHRSST Level 2P 1 m Depth Global Sea Surface Temperature from the Visible Infrared Imaging Radiometer Suite \(VIIRS\) on the Suomi NPP satellite \(GDS version 2\)](#)

A global Group for High Resolution Sea Surface Temperature (GHRSST) Level 2P dataset based on retrievals from the Visible Infrared Imaging Radiometer Suite (VIIRS). This sensor resides on the Suomi National Polar-orbiting Operational Environmental Satellite...

[Details](#) [Metadata](#) [TDS](#) [Search Granules](#) [OPeNDAP](#) [FTP](#) [Zoom To](#)

☐ [GHRSST v2 Level 3U Global Skin Sea Surface Temperature from the Visible Infrared Imaging Radiometer Suite \(VIIRS\) on the Suomi NPP satellite created by the NOAA Advanced Clear-Sky Processor for Ocean \(ACSP\) \(GDS version 2\)](#)

☐ [GHRSST GDS2 Level 2P Global Skin Sea Surface Temperature from the Visible Infrared Imaging Radiometer Suite \(VIIRS\) on the Suomi NPP satellite created by the NOAA Advanced Clear-Sky Processor for Ocean \(ACSP\) \(GDS version 2\)](#)

☐ [NOAA Coral Reef Watch Operational Near-real-time Twice-weekly Global 50 km Satellite Coral Bleaching Thermal Stress Monitoring Product Suite](#)

☐ [GHRSST Level 4 OSPO Global Nighttime Foundation Sea Surface Temperature Analysis \(GDS version 2\)](#)

☐ [GHRSST Level 4 OSPO Global Foundation Sea Surface Temperature Analysis \(GDS version 2\)](#)

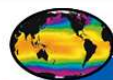
☐ [GHRSST Level 4 DMJ_OI Global Foundation Sea Surface Temperature Analysis \(GDS version 2\)](#)

☐ [GHRSST Level 4 OSTIA Global Foundation Sea Surface Temperature Analysis \(GDS versions 1 and 2\)](#)

☐ [GHRSST Level 4 MUR Global Foundation Sea Surface Temperature Analysis \(v4.1\) \(GDS versions 1 and 2\)](#)

☐ [GHRSST Level 4 CMC0.2deg Global Foundation Sea Surface Temperature Analysis \(GDS version 2\)](#)

See results through REST API: [GEORSS](#) [ATOM](#) [HTML](#) [FRAGMENT](#) [KML](#) [JSON](#) [CSV](#)



GHRSST

Group for High Resolution Sea Surface Temperature

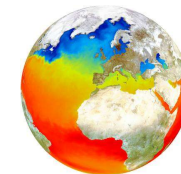


<http://www.ghrsst.org>



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Sea Surface Temperature Virtual Constellation

Geoportal: Granule Search



NODC Geoportal 1.2.2 NCEI-MD Granule Level Disc

https://www.nodc.noaa.gov/search/granule/rest/find/document?searchText=fileIdentifier%3AGHRSST-VIIRS_NPP-NAVO-L2P* OR fileIdentifi ghrsst noaa ltsrf

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HOME SEARCH THE NCEI AMS GRANULE LEVEL ARCHIVE BROWSE SEARCH TIPS

Home

Search metadata content, for example, title:SST; use + to require keywords, for example, +water +temperature; use "" to search for an exact phrase, for example, "water temperature" (Search tips!)

Text: fileIdentifier:GHRSST-VIIRS_NPP-NAVO-L2P* OR fileId Search

Additional Options Clear

WHEN
☒ Intersecting ☐ Fully within
Start Date: (yyyy-mm-dd)
End Date: (yyyy-mm-dd)

WHERE
☐ Anywhere ☒ Intersecting ☐ Fully within
Text: M

Results 1-100 of 11320 record(s) 1 2 3 4 5 > Last

☐ Select shown ☐ Expand results

- ☐ 20151231020555-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231175608-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231034819-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231161217-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231211227-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231124602-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231035526-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231035110-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231193708-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231143117-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231174901-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231125309-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231071310-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231021009-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231071019-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231142952-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231020720-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231053751-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231053335-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc
- ☐ 20151231071435-NAVO-L2P_GHRSST-SST1m-VIIRS_NPP-v02.0-fv01.0.nc

Zoom To Results Zoom To Search Area