

# Available Satellite Imagery of SST

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# NOAA CoastWatch

Address  http://sgiot2.www.noaa.gov/COASTWATCH/cwdirect.htm#West  



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## Directory


Regional Nodes:	Support:
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# NOAA CoastWatch – West Coast, La Jolla, CA

Address  http://cwatchwc.ucsd.edu/  Links >>













West Coast Regional Node

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The CoastWatch West Coast Regional Node is part of the [U.S. Department of Commerce, National Oceanic and Atmospheric Administration](#), [National Environmental Satellite, Data, and Information Service](#), [CoastWatch Program](#)

		
Get information on the web site and satellite remote sensing.	Access CoastWatch satellite data.	Browse the El Niño Watch archives.
		
Download CoastWatch software packages.	Visit other satellite and oceanography sites.	Give feedback on the web site or products.



 Internet

# NOAA CoastWatch – West Coast, La Jolla, CA

Address  <http://cwatchwc.ucsd.edu/types.html> 



## Data Types

West Coast Regional Node

[Information](#) | [Data](#) | [El Niño](#) | [Software](#) | [Sites](#) | [Feedback](#)

CoastWatch satellite data files can contain a number of different data types. Data such as AVHRR (Advanced Very High Resolution Radiometer) channels 1, 2, and 4 are calibrated values directly from the AVHRR sensor. Other data, such as SST (sea surface temperature), are derived from the AVHRR channels. The following table lists the types of data files currently produced at the West Coast Regional Node:

Type:	Description:	Units:
C1	AVHRR channel 1: red light approx. 575-710 nm	albedo (%)
C2	AVHRR channel 2: near-infrared light approx. 710-990 nm	albedo (%)
C4	AVHRR channel 4: infrared light ( <b>not SST</b> ) approx. 10.3-11.3 micrometers	brightness temperature (°C)
D7	NOAA/NESDIS daytime non-linear multichannel SST	temperature (°C)
S7	NOAA/NESDIS nighttime non-linear multichannel SST	temperature (°C)

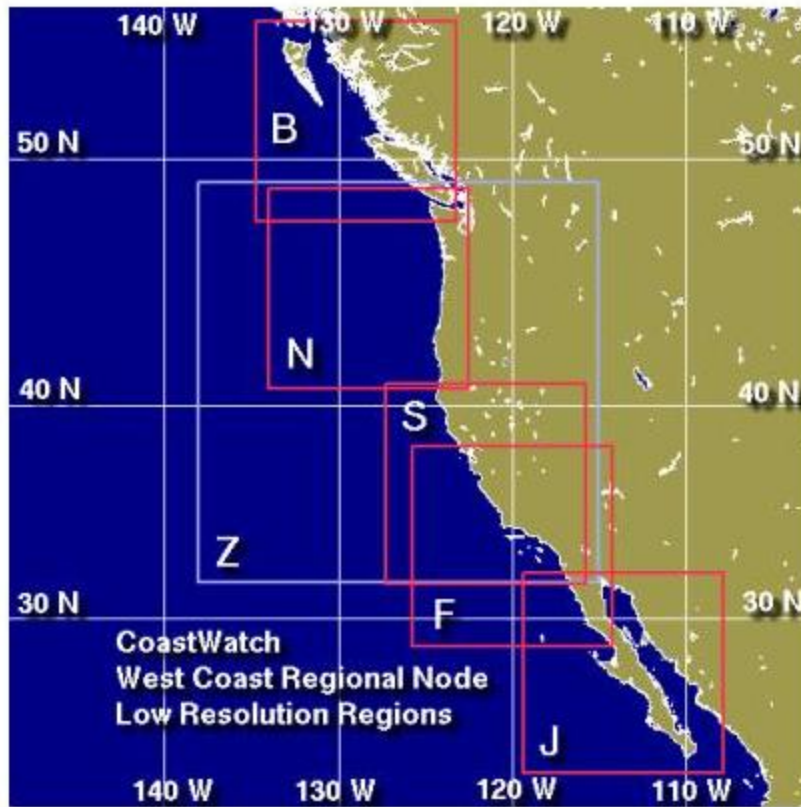
 [Back to main page](#)

[USDOC](#) | [NOAA](#) | [NESDIS](#) | [CoastWatch](#)

# NOAA CoastWatch – West Coast, La Jolla, CA

CoastWatch satellite data files cover a number of regions spanning the entire coast. Data is available in various low and high resolutions:

## Low Resolution (2.5 and 5.0 km/pixel):



- Z**-West Coast Synoptic
- B**-British Columbia Synoptic
- N**-Northwest Synoptic
- S**-Southwest Synoptic
- F**-CalCOFI Synoptic
- J**-Baja Mexico Synoptic

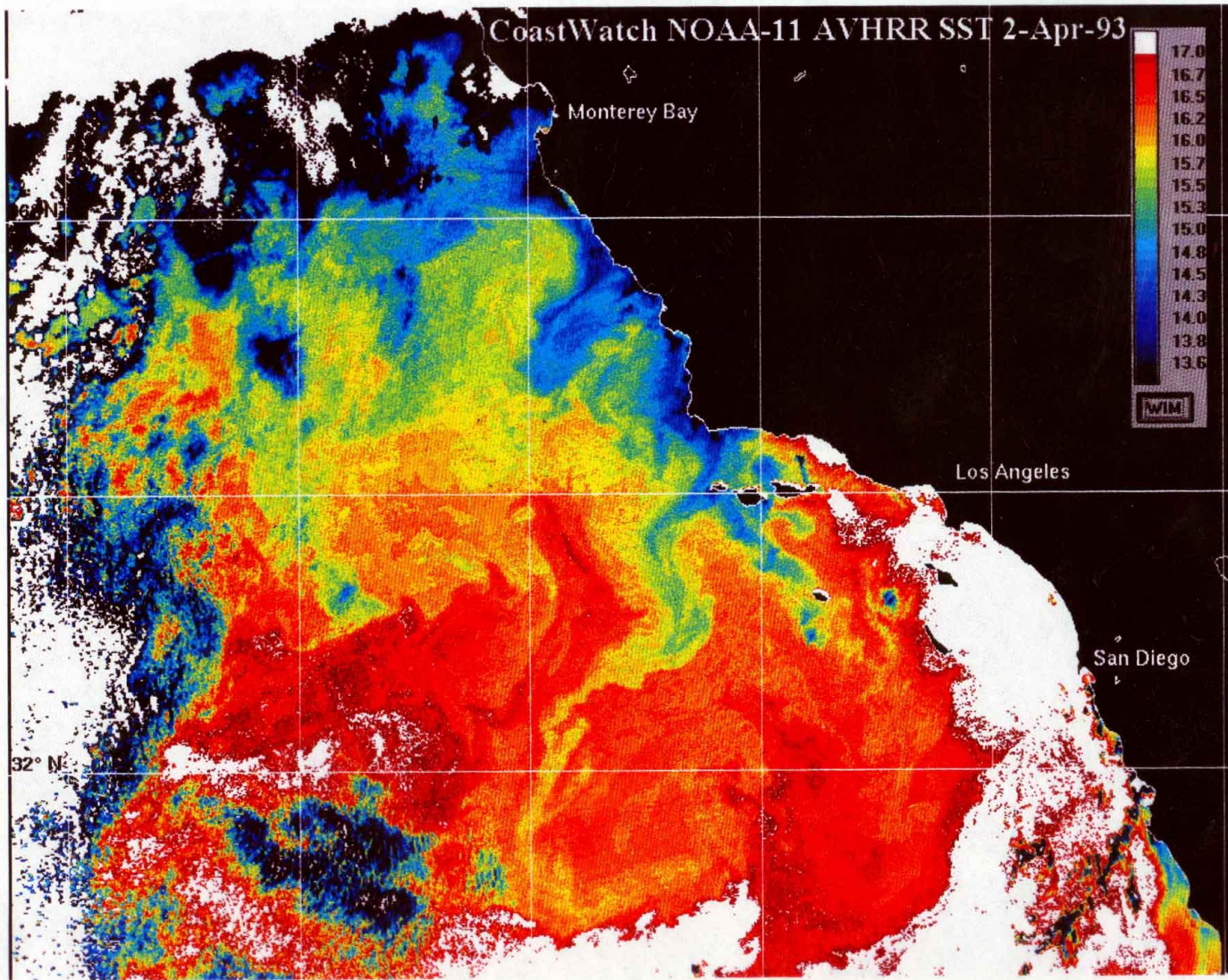
# NOAA CoastWatch – West Coast, La Jolla, CA

High Resolution (1.1 km/pixel):



- V**-Vancouver Island
- W**-Washington
- O**-Oregon
- U**-Northern California
- C**-Central California
- L**-Southern California
- E**-Northern Baja Mexico
- P**-Central Baja Mexico
- M**-Southern Baja Mexico

# NOAA CoastWatch – West Coast, La Jolla, CA

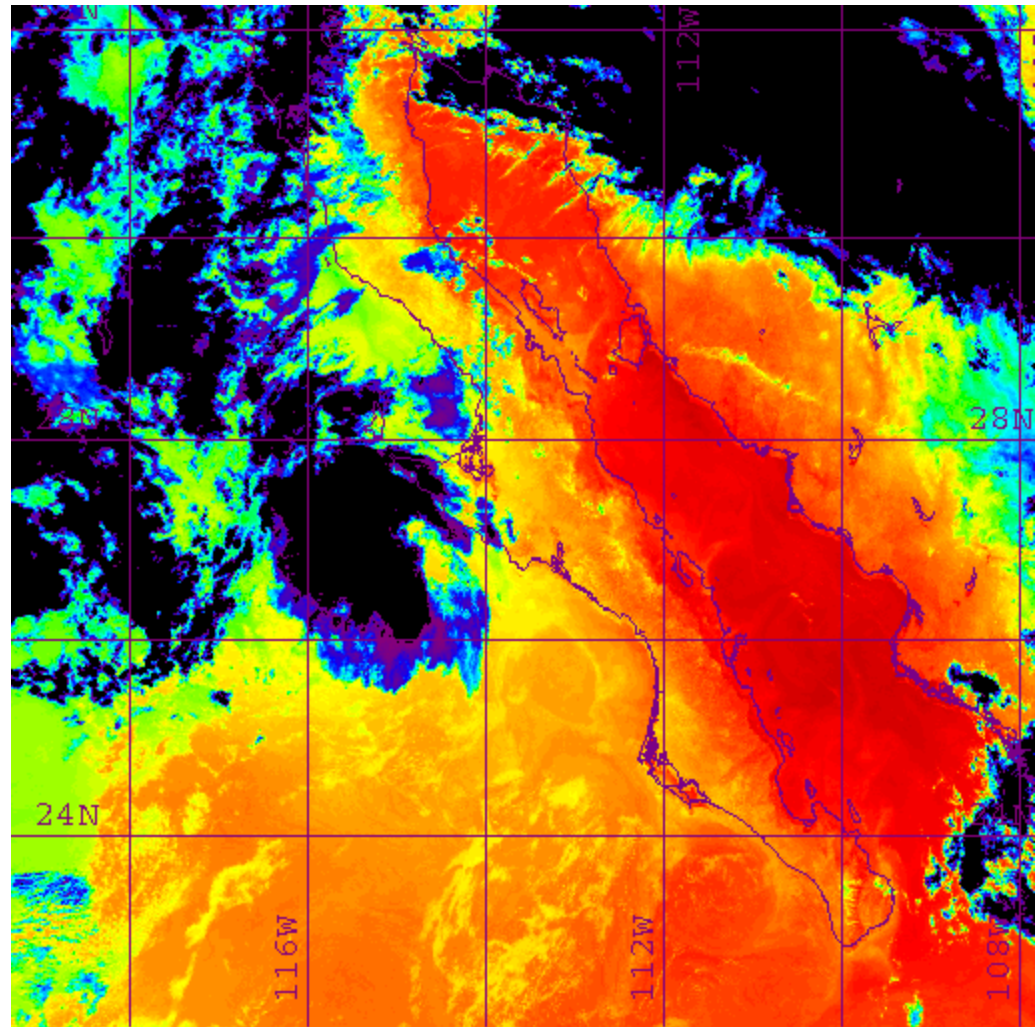


# NOAA CoastWatch – West Coast, La Jolla, CA

2001\_187\_0922\_n16\_wj\_c4.cwf

= July 6, 2001 09:22 GMT

channel 4 radiance temperature

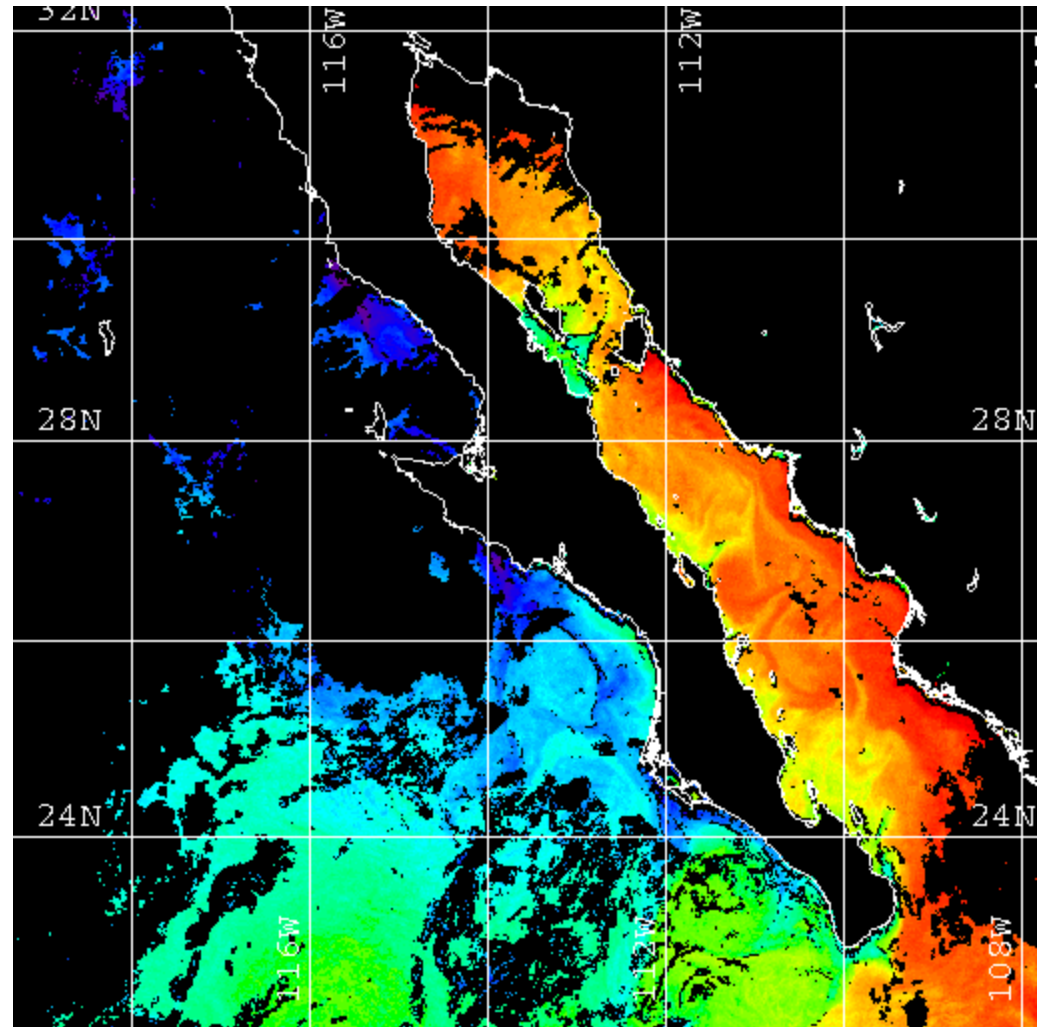


# NOAA CoastWatch – West Coast, La Jolla, CA




2001\_187\_0922\_n16\_wj\_s7.cwf

= July 6, 2001 09:22 GMT

Night-time SST, in C



Pathfinder SST  
– best quality  
global SST,  
available for  
1987-1999, 9-  
km resolution

Address  <http://podaac.jpl.nasa.gov/sst/>  

▶ PO.DAAC ▶ SEARCH ▶ ORDER ▶ FTP ▶ E-MAIL ▶ FEEDBACK

## Pathfinder SST

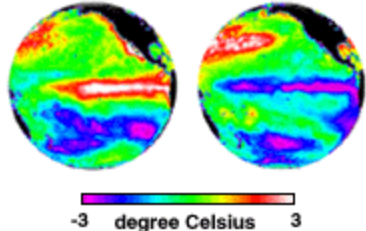
Physical Oceanography DAAC

- Data
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- Related Links
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Subset Status  
User Registration

The NOAA/NASA AVHRR Oceans Pathfinder sea surface temperature data are derived from the 5-channel Advanced Very High Resolution Radiometers (AVHRR) on board the NOAA -7, -9, -11 and -14 polar orbiting satellites. Daily, 8-day and monthly averaged data for both the ascending pass (daytime) and descending pass (nighttime) are available on equal-angle grids of 4096 pixels/360 degrees (nominally referred to as the 9km resolution), 2048 pixels/360 degrees (nominally referred to as the 18km resolution), and 720 pixels/360 degrees (nominally referred to as the 54km resolution or 0.5 degree resolution).

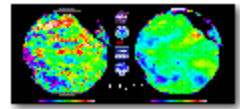
### El Niño vs. La Niña



-3 degree Celsius 3

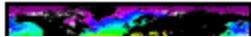
Sea Surface Temperature Anomalies for Jan 1998 (El Niño) and Jan 1999 (La Niña) respectively, using AVHRR Oceans Pathfinder Data.

### SST vs. Sea Level



Anomalies animation showing El Niño and La Niña events, using AVHRR Oceans Pathfinder and TOPEX/Poseidon Data Sets (1996-1999).

### Monthly vs. Daily



# Pathfinder SST – best quality global SST

- Browsing for SST (Sea-Surface Temperature)
  - Many sources with variable quality
  - Different requirements for accuracy (high precision for e.g. climate change, visual patterns for search of fronts or other features)
  - Best quality: PO-DAAC (NASA, JPL), <http://podaac.jpl.nasa.gov/sst/>



	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	Matchups
Version 1			x	x	x	x	x	x	x						v17.0
Version 3							x	x	x	x					v18.0
Version 4.0(beta)	x	x	x	x	x	x	x	x	x	x	x				v19.0
Version 4.1											x	x			v19.0
Interim Version 4.1													x	x	

**Spatial Coverage:** Global Gridded

**Spatial Resolution:** 09km (4096 x 2048)

18km (2048 x 1024)

54km (720 x 560 )

**Data Type:** Best Sea Surface Temperature ([Detailed Listing of Data Available](#))

Data containing "best SST values" refer to only the highest quality pixel selected based on a series of statistical tests.

All Pixel Sea Surface Temperature ([Detailed Listing of Data Available](#))

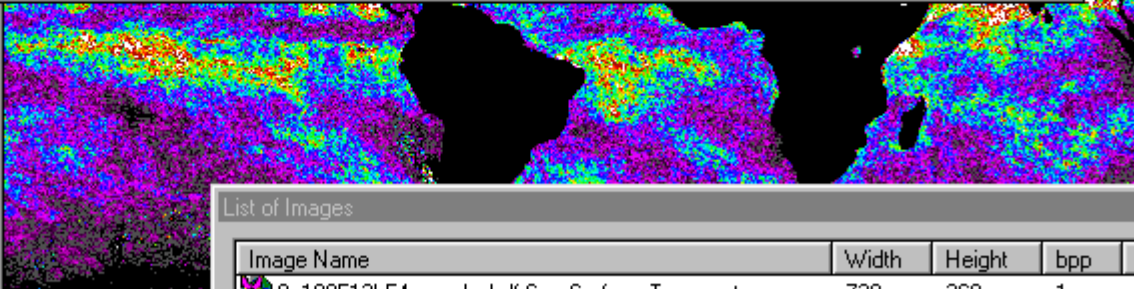
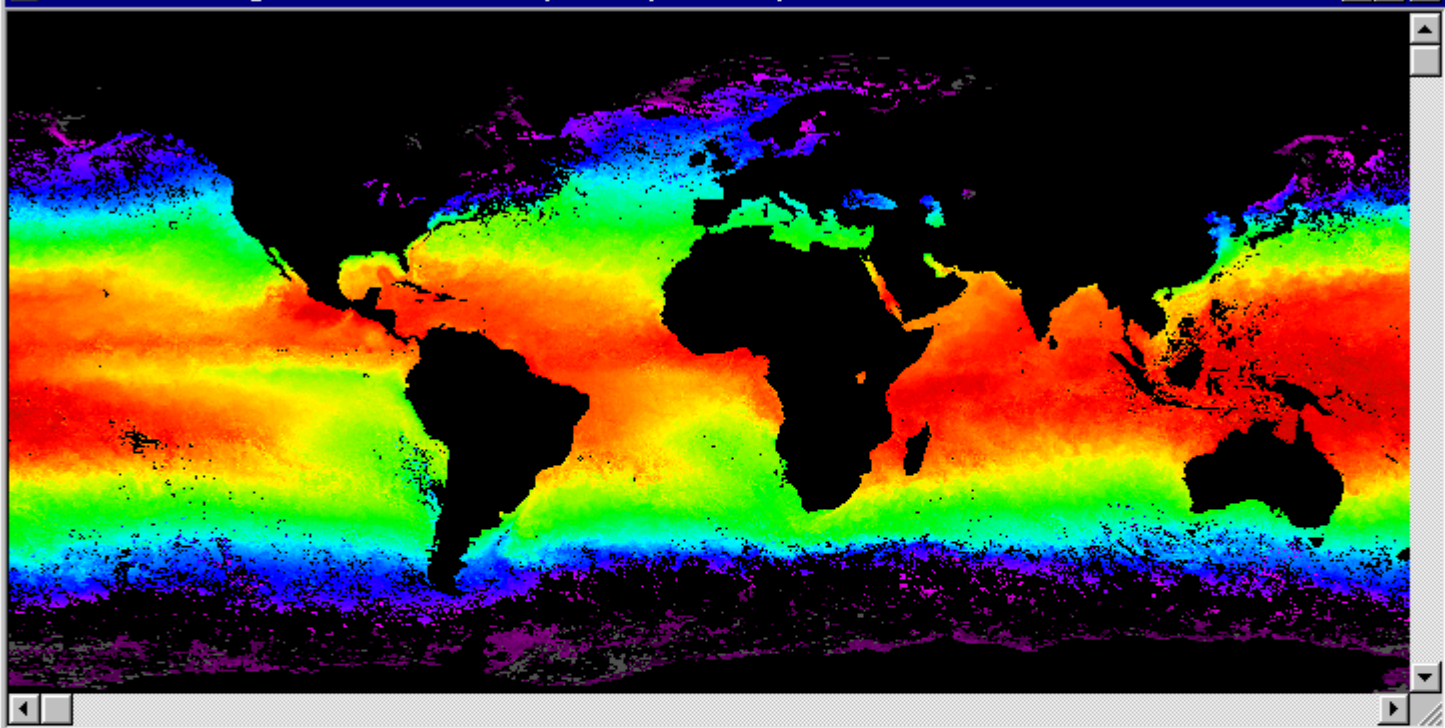
Data containing "all SST values", i.e. the products contain all available values and the associated statistics.

Windows Image Manager - 0 : 199512h54ma-gdm.hdf-Sea Surface Temperature (720x360x8)

File Edit View Examine Geo Transf Multi Window Help



0 : 199512h54ma-gdm.hdf-Sea Surface Temperature (720x360x8)



Current position: 318, 0

List of Images

Image Name	Width	Height	bpp	Size
0: 199512h54ma-gdm.hdf-Sea Surface Temperature	720	360	1	253 K
1: 199512h54ma-gdm.hdf-Number of Observations per Bin	720	360	1	253 K

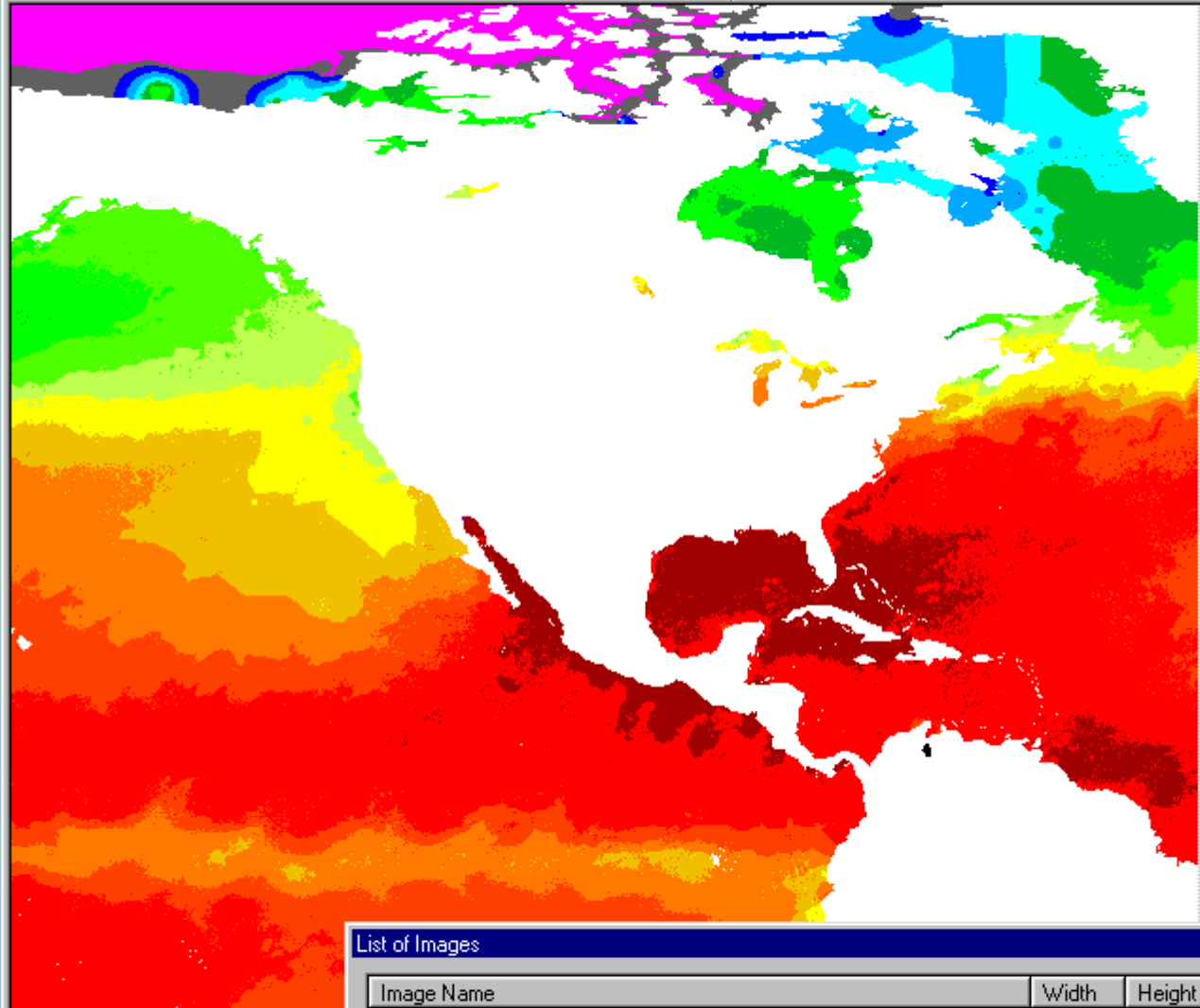
Reload Rebuild Delete Copy

MCSST –  
global SST,  
available for  
1981-2001, 18-  
km resolution,  
weekly

Use my *composite*  
utility to make monthly  
composites from  
weeklies, e.g.

*composite sd200101.lst sd0101.hdf*

The screenshot shows a web browser window with the address bar containing <http://podaac.jpl.nasa.gov/mcsst/>. The page features a navigation menu at the top with links for PO.DAAC, SEARCH, ORDER, FTP, E-MAIL, and FEEDBACK. Below this is a header for AVHRR MCSST, with the text 'Physical Oceanography DAAC' and decorative wavy lines. A left sidebar contains a list of menu items: Data, Documentation, Software, What's New, FAQ, Known Problems, References, Related Links, and Help. The main content area provides a detailed description of the MCSST data, stating it is derived from the 5-channel AVHRR on board NOAA satellites -7, -9, -11, and -14. It notes that weekly averaged data for both ascending (daytime) and descending (nighttime) passes are provided on an equal-angle grid of 2048 pixels longitude by 1024 pixels latitude (nominally referred to as the 18km resolution). Data are provided in Hierarchical Data Format and in Raw Binary Format.



Current position: 1653,509

List of Images

Image Name	Width	Height	bpp	Size
0: sn1998217.hdf-Multi-Channel Sea Surface Temperature (MCSST)	2048	1024	1	2048 K
1: sn1998217.hdf-Interpolated MCSST	2048	1024	1	2048 K
2: sn1998217.hdf-Flag and Number of Observation MCSST	2048	1024	1	2048 K

Reload Rebuild Delete Copy

# NAVOCEANO MCSST

## Physical Oceanography DAAC

Data

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What's New

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Known Problems

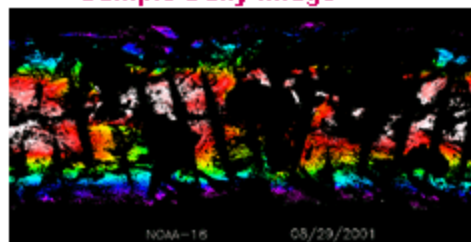
References

Related Links

Help

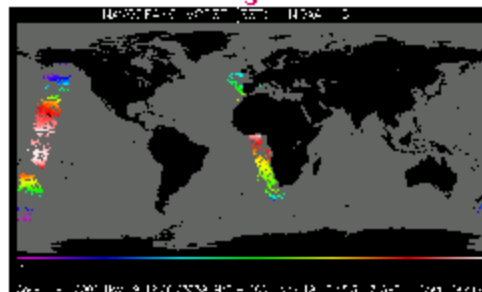
The NAVOCEANO MCSST data sets provide a 9 km sea surface temperature dataset, available within hours after data collection. This permits the data to be used for near-real time applications. The number of retrievals in this NAVOCEANO MCSST product is about twice the number in previous MCSST products, but still lower than the number of Pathfinder SST retrievals. The accuracy of this NAVOCEANO MCSST is about 0.7C, while the equivalent accuracy for Pathfinder SST is 0.3-0.5C. Multichannel sea-surface temperatures (MCSST) have been computed from NOAA AVHRR radiances operationally since 1981. The MCSST algorithm uses a linear combination of the brightness radiances to retrieve SST.

### Sample Daily Image



This image is the SST for August 29, 2001 from NOAA-16. Orbital files for this day were composited to generate one image. Black values indicate either land or missing values due to cloud cover.

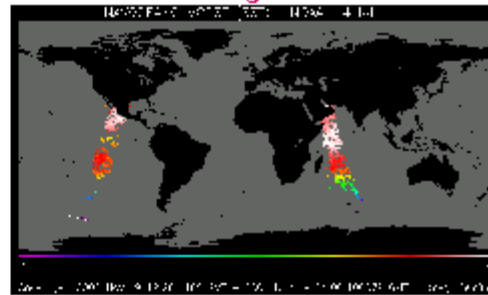
### Latest Orbital Image: NOAA-16



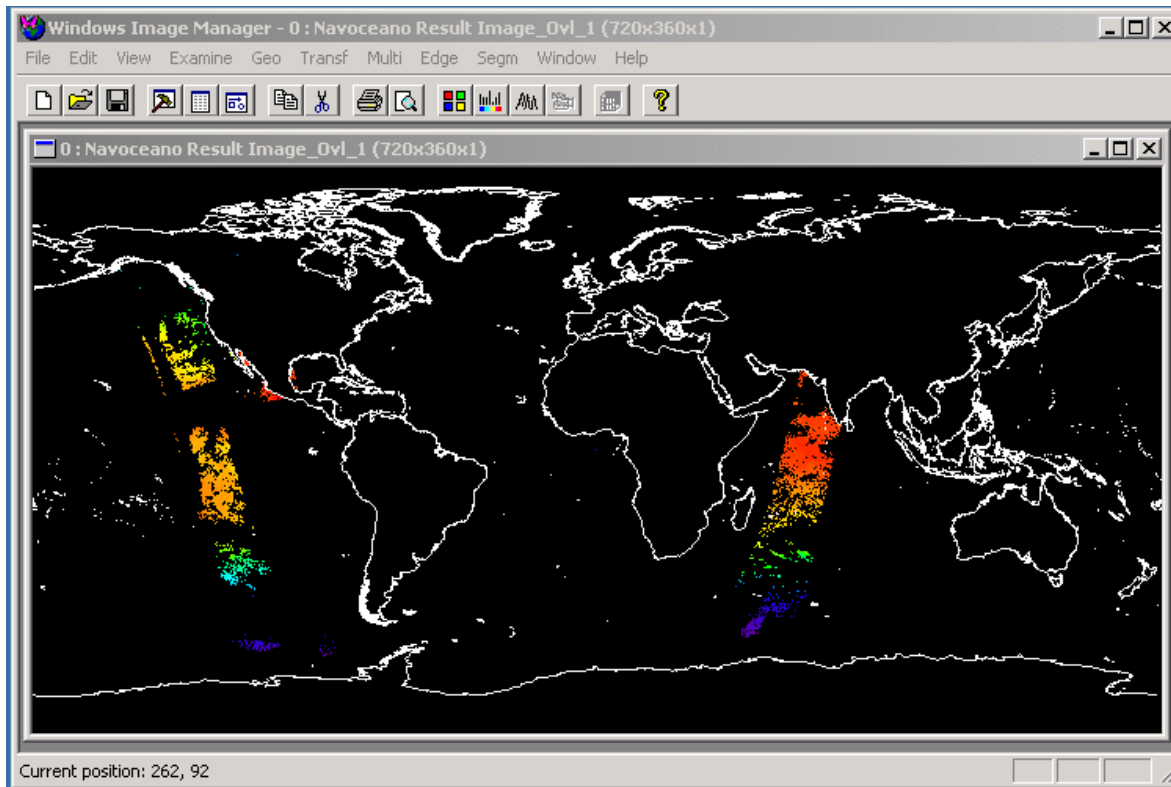
Latest orbital image for NOAA-16. Black values indicate land and grey values indicate no data.

NAVOCEANO's improved cloud retrieval algorithm accounts for the larger number of cloud-free SST pixels compared to previous MCSST products. The data files include the individual brightness radiances associated with each channel.

### Latest Orbital Image: NOAA-14



Latest orbital image for NOAA-14. Black values indicate land and grey values indicate no data.



# Satellite Active Archive – searchable global source of AVHRR Level-1B (raw) data

The screenshot shows the Satellite Active Archive website. At the top, the address bar displays <http://www.saa.noaa.gov>. The main header features the site title "Satellite Active Archive" and navigation links for "News" and "FAQs". Below the header, there are four tabs: "Home Page", "Search Page", "Order Query", and "User Profile".

On the left side, there is a sidebar with the heading "Make Selection Below" and three main options: "Enter as a New User", "Enter as a Registered User", and "Product Data". Below these options are logos for the "US Department of Commerce" and the "National Oceanic and Atmospheric Administration".

The main content area contains a descriptive paragraph: "The Satellite Active Archive is the NOAA's premier on-line facility for the distribution of NOAA and US Department of Defense (DoD) Polar-Orbiting Environmental Satellite (POES) data and derived data products." To the right of this text is a vertical menu with the following items: "U.S. Department of Commerce", "National Oceanic and Atmospheric Administration", "NESDIS", "National Climatic Data Center", "Product Data", "SAA FAQs", "SAA Help", and "Contact the SAA". A globe image is partially visible behind the menu.

# SeaSpace Terascan Data

- From a local receiving station; approximately 100 stations around the world
- Direct readout (HRPT) data from a downlink
- Proprietary Terascan (*\*.tdf*) files converted to HDF (*\*.hdf*) using a Terascan filter *tdftohdf*
- Directly readable with WIM, including projection, scaling information and other attributes

# **MODIS on Terra and Aqua satellites**

**(probably the best SST product available)**

## ***LEVEL 2 (5 minute granule)***

**MOD28L2**      (***MODIS product 28 Level2 group***)

'sst'

'sst4'

'common\_flags'

'L2\_flags'

'quality'

**MOD28QC**      (***MODIS product 28 Quality Control group***)