



# **Scientific Stewardship of VIIRS ACSPO Sea Surface Temperature**

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Technology Corporation**



# NCEI Data Stewardship of VIIRS Ocean Satellite Data

## Tier 2 Archive for

- VIIRS Sea Surface Temperature (derived using NOAA heritage Advanced Clear-Sky Processor for Oceans) products.

## Access Links:

FTP:

[ftp://ftp.nodc.noaa.gov/pub/data.nodc/ghrsst/L2P/VIIRS\\_NPP/OSPO](ftp://ftp.nodc.noaa.gov/pub/data.nodc/ghrsst/L2P/VIIRS_NPP/OSPO)

[ftp://ftp.nodc.noaa.gov/pub/data.nodc/ghrsst/GDS2/L3U/VIIRS\\_NPP/OSPO](ftp://ftp.nodc.noaa.gov/pub/data.nodc/ghrsst/GDS2/L3U/VIIRS_NPP/OSPO)

THREDDS:

[http://data.nodc.noaa.gov/thredds/catalog/ghrsst/L2P/VIIRS\\_NPP/OSPO/](http://data.nodc.noaa.gov/thredds/catalog/ghrsst/L2P/VIIRS_NPP/OSPO/)

[http://data.nodc.noaa.gov/thredds/catalog/ghrsst/L3U/VIIRS\\_NPP/OSPO/](http://data.nodc.noaa.gov/thredds/catalog/ghrsst/L3U/VIIRS_NPP/OSPO/)

HTTP:

[http://data.nodc.noaa.gov/ghrsst/L2P/VIIRS\\_NPP/OSPO/](http://data.nodc.noaa.gov/ghrsst/L2P/VIIRS_NPP/OSPO/)

[http://data.nodc.noaa.gov/ghrsst/L3U/VIIRS\\_NPP/OSPO/](http://data.nodc.noaa.gov/ghrsst/L3U/VIIRS_NPP/OSPO/)

OPENDAP:

[http://data.nodc.noaa.gov/opendap/ghrsst/L2P/VIIRS\\_NPP/OSPO/](http://data.nodc.noaa.gov/opendap/ghrsst/L2P/VIIRS_NPP/OSPO/)

[http://data.nodc.noaa.gov/opendap/ghrsst/L3U/VIIRS\\_NPP/OSPO/](http://data.nodc.noaa.gov/opendap/ghrsst/L3U/VIIRS_NPP/OSPO/)

## DOI URL

<http://dx.doi.org/10.7289/V5PR7SX5>

<http://dx.doi.org/10.7289/V5KK98S8>

### 6: National Services and International Leadership

- Lead, coordinate, or implement scientific stewardship activities for a community or across disciplines
- Establish highly specialized levels of data services and product assessments

### 5: Authoritative Records

- Combine multiple time series into a single, inter-calibrated product
- Establish authoritative quality, uncertainties, and provenance
- Ensure products are fully documented and reproducible

### 4: Derived Products

- Build upon archived data to create new products that are more broadly useful
- Distill, combine, or analyze products and data to create new or blended scientific data products

### 3: Scientific Improvements

- Improve data quality or accuracy with scientific quality assessments, controls, warning flags, and corrections
- Reprocess data sets to new, improved versions and distribute to users

### 2: Enhanced Access and Basic Quality Assurance

- Create complete metadata to enable automated quality assurance and statistic collection
- Provide enhanced data access through specialized software services for users and applications

### 1: Long Term preservation and Basic Access

- Preserve original data with metadata for discovery and access
- Serve as expert advisors on standards for data providers
- Archive only necessary data using appropriate retention schedules
- Safeguard data over its entire life-cycle
- Coordinate support agreements for sustainable data archiving
- Provide data citation services by mining DOIs



# NCEI Data Stewardship of VIIRS Ocean Satellite Data

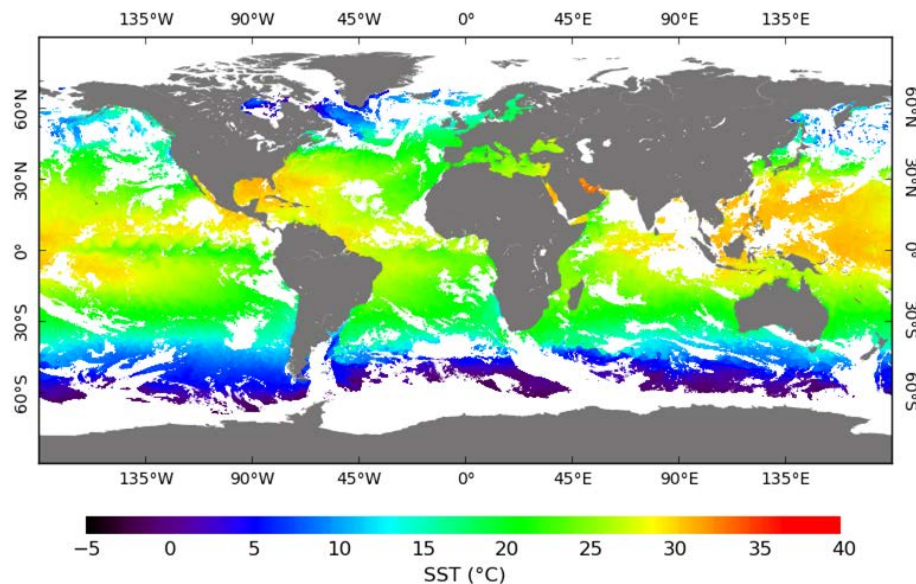
## Scientific data stewardship

- Consists of the application of an integrated suite of functions designed to preserve and exploit the full scientific value of environmental data and information over the long-term (decades).
- Acquire, archive, provide access, and add value!

In Archive

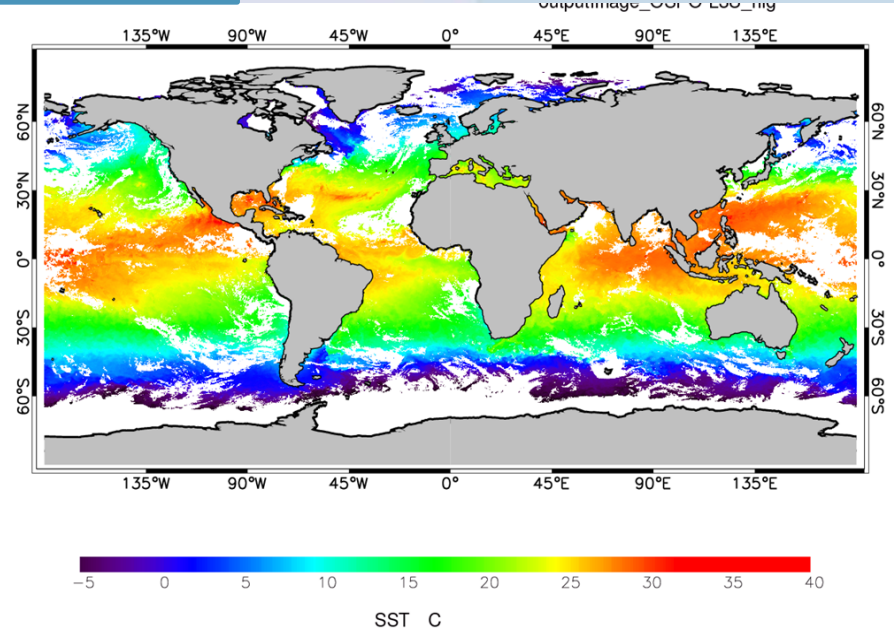
VIIRS ACSPO L2P SST

ACSPO VIIRS S-NPP L2P SST for 2016-07-18



In Archive

VIIRS ACSPO L3U SST







# Data Access & Discovery

At both collection level and granule level via HTTP, FTP, Live Access Server, THREDDS server, OPeNDAP server, and OGC services.

data.nodc.noaa.gov/geoportal/catalog/search/search.page

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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)

title GHRSSST AND ACSPO 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

Results 1-2 of 2 records(s)  
Expand results Zoom To Results Zoom To Searched Area

**GHRSSST 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\_O) (GDS version 2)**  
The ACSP\_O VIIRS L3U (Level 3 Uncollated) product is a gridded version of the ACSP\_O VIIRS L2P product Data files are 10min granules in netcdf4 format compliant with the GHRSSST Data Specifications version 2.00022. There are 144 granules per 24hr interval, w...  
Details Metadata Search Granules TDS OPeNDAP FTP Zoom To

**GHRSSST v2 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\_O) (GDS version 2)**  
The Joint Polar Satellite System (JPSS), starting with 5-NPP launched on 28 October 2011, is the new generation of the US Polar Operational Environmental Satellites (POES). NOAA is responsible for all JPSS products, including SST from the Visible Infrared...  
Details Metadata Search Granules TDS OPeNDAP FTP Zoom To

See results through REST API: GEORSS ATOM HTML FRAGMENT KML JSON CSV

Zoom To Results Zoom To Search Area

rest/find/document?searchText=fileIdentifier%3AGHRSSST-VIIRS\_NPP-OSPO-L3U\*%20OR%20fileIdentifier%3AVIIRS\_NPP-OSPO-L3U\*&start=1&max=10...

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**ENTERS FOR**  
**NAL INFORMATION**  
ND ATMOSPHERIC ADMINISTRATION

CHIVE BROWSE SEARCH TIPS

Keywords, for example, "water temperature"

Results 1401-1500 of 2835 record(s) First < 13 14 15 16 17 > Last

Select shown Expand results

**20150716031000-OSPO-L3U\_GHRSSST-SSTskin-VIIRS\_NPP-ACSP\_O\_V2.40\_0.02-v02.0-fv01.0.nc**  
Sea surface temperature retrievals produced by NOAA/NESDIS/STAR office from VIIRS sensor and gridded over a 0.02 deg rectangular grid  
Open Preview Website Details Metadata WMS Download WCS TDS OPeNDAP FTP Zoom To

**20150716021000-OSPO-L3U\_GHRSSST-SSTskin-VIIRS\_NPP-ACSP\_O\_V2.40\_0.02-v02.0-fv01.0.nc**  
Sea surface temperature retrievals produced by NOAA/NESDIS/STAR office from VIIRS sensor and gridded over a 0.02 deg rectangular grid  
Open Preview Website Details Metadata WMS Download WCS TDS OPeNDAP FTP Zoom To

**20150716014000-OSPO-L3U\_GHRSSST-SSTskin-VIIRS\_NPP-ACSP\_O\_V2.40\_0.02-v02.0-fv01.0.nc**  
Sea surface temperature retrievals produced by NOAA/NESDIS/STAR office from VIIRS sensor and gridded over a 0.02 deg rectangular grid  
Open Preview Website Details Metadata WMS Download WCS TDS OPeNDAP FTP Zoom To

**20150716045000-OSPO-L3U\_GHRSSST-SSTskin-VIIRS\_NPP-ACSP\_O\_V2.40\_0.02-v02.0-fv01.0.nc**  
Sea surface temperature retrievals produced by NOAA/NESDIS/STAR office from VIIRS sensor and gridded over a 0.02 deg rectangular grid  
Open Preview Website Details Metadata WMS Download WCS TDS OPeNDAP FTP Zoom To

**20150716050000-OSPO-L3U\_GHRSSST-SSTskin-VIIRS\_NPP-ACSP\_O\_V2.40\_0.02-v02.0-fv01.0.nc**  
Sea surface temperature retrievals produced by NOAA/NESDIS/STAR office from VIIRS sensor and gridded over a 0.02 deg rectangular grid  
Open Preview Website Details Metadata WMS Download WCS TDS OPeNDAP FTP Zoom To

**20150716121000-OSPO-L3U\_GHRSSST-SSTskin-VIIRS\_NPP-ACSP\_O\_V2.40\_0.02-v02.0-fv01.0.nc**  
Sea surface temperature retrievals produced by NOAA/NESDIS/STAR office from VIIRS sensor and gridded over a 0.02 deg rectangular grid  
Open Preview Website Details Metadata WMS Download WCS TDS OPeNDAP FTP Zoom To

**20150716094000-OSPO-L3U\_GHRSSST-SSTskin-VIIRS\_NPP-ACSP\_O\_V2.40\_0.02-v02.0-fv01.0.nc**  
Sea surface temperature retrievals produced by NOAA/NESDIS/STAR office from VIIRS sensor and gridded over a 0.02 deg rectangular grid  
Open Preview Website Details Metadata WMS Download WCS TDS OPeNDAP FTP Zoom To

[http://data.nodc.noaa.gov/geoportal/rest/find/document?searchText=title%3AGHRSSST%20AND%20ACSP\\_O&start=1&max=25&f=searchPage&expandResults=True](http://data.nodc.noaa.gov/geoportal/rest/find/document?searchText=title%3AGHRSSST%20AND%20ACSP_O&start=1&max=25&f=searchPage&expandResults=True)



# ACSPO Data in the NCEI Archive

## ACSPO Version 2.3

- L2P: 2014/5/20 to 2015/5/19 archived
- Ongoing work
  - backfilling of some of the dataset still missing.

## ACSPO Version 2.4

- [http://data.nodc.noaa.gov/cgi-bin/iso?id=gov.noaa.nodc:GHRSSST-VIIRS\\_NPP-OSPO-L3U](http://data.nodc.noaa.gov/cgi-bin/iso?id=gov.noaa.nodc:GHRSSST-VIIRS_NPP-OSPO-L3U)
  - L3U : 2015/06/29 to Current data archived
- [http://data.nodc.noaa.gov/cgi-bin/iso?id=gov.noaa.nodc:GHRSSST-VIIRS\\_NPP-OSPO-L2P](http://data.nodc.noaa.gov/cgi-bin/iso?id=gov.noaa.nodc:GHRSSST-VIIRS_NPP-OSPO-L2P)
  - L2P: 2015/11/24 to Current data archived
- Ongoing work
  - Moving forward data is received directly RDAC (OSPO) via NDE and missing data is backfilled from the GHRSSST GDAC (JPL PoDAAC)
  - granules are accessible  
[http://www.nodc.noaa.gov/geoportal/rest/find/document?searchText=fileIdentifier%3AGHRSSST-VIIRS\\_NPP-OSPO-L3U\\*%20OR%20fileIdentifier%3AVIIRS\\_NPP-OSPO-L3U\\*&start=1&max=1](http://www.nodc.noaa.gov/geoportal/rest/find/document?searchText=fileIdentifier%3AGHRSSST-VIIRS_NPP-OSPO-L3U*%20OR%20fileIdentifier%3AVIIRS_NPP-OSPO-L3U*&start=1&max=1)



# ACSPO Data in the NCEI Archive

## Recent Issues Addressed

www.nodc.noaa.gov/search/granule/rest/find/document?searchText=fileIdentifier%3AGHRS

NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION  
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:GHRST-VIIRS\_NPP-OSPO-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:

Zoom To Results Zoom To Search Area

Results 1-100 of 6006 record(s)

Select shown Expand results

20141211141959-OSI  
Sea Surface temperature retrievals prod  
Open Preview Website Details

20140801121959-OSI  
Sea Surface temperature retrievals prod  
Open Preview Website Details

20141213165959-OSI  
Sea Surface temperature retrievals prod  
Open Preview Website Details

20141211075959-OSI  
Sea Surface temperature retrievals prod  
Open Preview Website Details

20141213120958-OSI  
Sea Surface temperature retrievals prod  
Open Preview Website Details

20141213090959-OSI  
Sea Surface temperature retrievals prod  
Open Preview Website Details

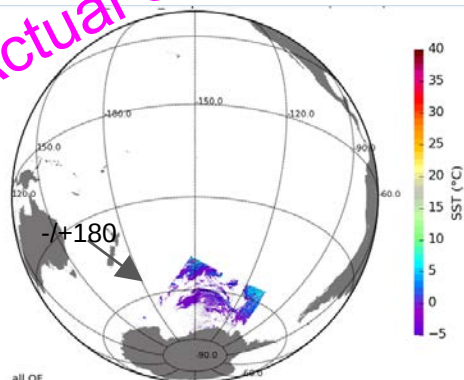
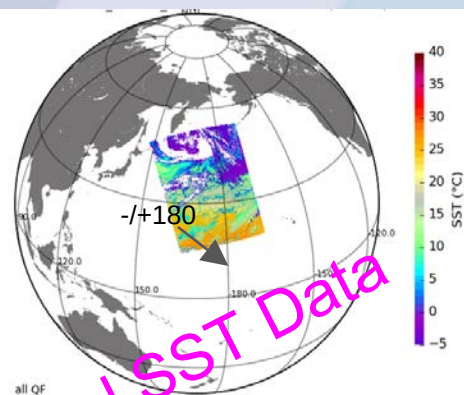
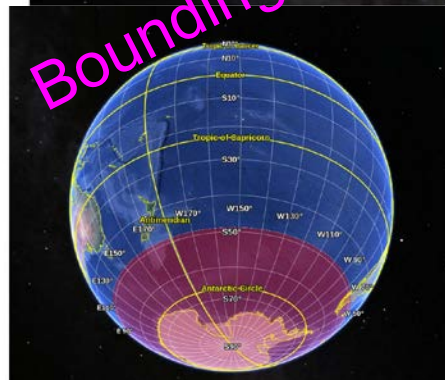
20140801073958-OSI  
Sea Surface temperature retrievals prod  
Open Preview Website Details

20141213001959-OSI  
Sea Surface temperature retrievals prod  
Open Preview Website Details

20141211062959-OSPO-L2P\_GHRST-SST1m-VIIRS\_NPP-v02.0-fv01.0.nc  
Sea Surface temperature retrievals produced by NOAA/NESDIS/OSPO office from VIIRS sensor  
Open Preview Website Details Metadata WMS Download WCS TDS OPeNDAP FTP Zoom To



Bounding Boxes



1. A user downloaded ACSPO VIIRS L2P data for a selected area of "mid-Atlantic bight" and ended up getting granules from elsewhere along with the correct files.
2. This problem was only seen for the granules that spans across the dateline (-/+180)
3. It was an issue related to erroneous entry of longitude bounding boxes
4. We notified this issue to the ACSPO providers and they are working to resolve this issue





# Summary

**The satellite oceanography team provides a stewarded archive of ACSPO VIIRS L2P and L3U SST.**

- ACSPO data are acquired in near-real time from OSPO via NDE
- Both these datasets are archived in near-real time
- If the data is missed then it is backfilled by picking them from the PoDAAC source (currently overcoming some backfilling issues)
- There was a small issue related data searchability due to erroneous longitude boundary box values, that is being taken care of by the producer
- The upcoming NOAA ONE STOP portal will enhance user's capability to search the data

## **DOI URL**

<http://dx.doi.org/10.7289/V5PR7SX5>

<http://dx.doi.org/10.7289/V5KK98S8>



Thank You  
Questions ?



# Example: Using OPeNDAP to extract a subset of data



## OPeNDAP Dataset Access Form

Tested on Netscape 4.61 and Internet Explorer 5.00.

### Action:

### Data URL:

[http://data.nodc.noaa.gov/thredds/dodsC/ghrsst/L3U/VIIRS\\_NPP/OSPO/2015/](http://data.nodc.noaa.gov/thredds/dodsC/ghrsst/L3U/VIIRS_NPP/OSPO/2015/)

### Global Attributes:

Conventions: CF-1.6  
title: VIIRS L3U SST  
summary: Sea surface temperature retrievals produced by NOAA/NESDIS/STAR office from VIIRS sensor and gridded rectangular grid

### Variables:

☒ **lat:** Array of 32 bit Reals [lat = 0..8999]

lat:0:1:20

\_Netcdf4Dimid: 1  
\_FillValue: 9.96921E36  
long\_name: latitude  
units: degrees\_north  
valid\_min: -90.0

☒ **lon:** Array of 32 bit Reals [lon = 0..17999]

lon:0:1:20

\_Netcdf4Dimid: 0  
\_FillValue: 9.96921E36  
long\_name: longitude  
units: degrees\_east  
valid\_min: -180.0

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

time:0:1:0

\_Netcdf4Dimid: 2  
\_FillValue: -2147483647  
long\_name: reference time of sst file  
units: seconds since 1981-01-01 00:00:00  
axis: T

```
Dataset {  
  Float32 lat[lat = 21];  
  Float32 lon[lon = 21];  
  Int32 time[time = 1];  
} ghrsst%2fL3U%2fVIIRS_NPP%2fOSPO%2f2015%2f219%2f20150807022000-OSPO-L3U_GHRSSST-SSTskin-VIIRS_NPP-ACSP0_V2%2e40_0%2e02-v02%2e0-fv01%2e0%2enc;  
-----  
lat[21]  
89.99, 89.97, 89.95, 89.93, 89.91, 89.89, 89.87, 89.85, 89.83, 89.81, 89.79, 89.77, 89.75,  
89.73, 89.71, 89.69, 89.67, 89.65, 89.63, 89.61, 89.59  
  
lon[21]  
-179.99, -179.97, -179.95, -179.93, -179.91, -179.89, -179.87, -179.85, -179.83, -179.81,  
-179.79, -179.77, -179.75, -179.73, -179.71, -179.69, -179.67, -179.65, -179.63, -179.61,  
-179.59  
  
time[1]  
1091758801
```

### Opening 20150807022000-OSPO-L3U\_GHRSSST-SSTskin-VIIRS\_N...

You have chosen to open:

Opening 20150807022000-OS

...kin-VIIRS\_NPP-ACSP0\_V2.40\_0.02-v02.0-fv01.0.nc.dods  
which is: DODS file (374 bytes)  
from: http://data.nodc.noaa.gov

What should Firefox do with this file?

☒ **Open with:** Notepad (default)

☐ **Save File**

☐ Do this automatically for files like this from now on.

OK

Cancel