Scientific Stewardship of GHRSST Products

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Introduction

The NOAA National Centers for Environmental Information (NCEI) play an important institutional role as the US archives for oceanographic data. As such, NCEI provides scientific stewardship of the Group for High Resolution Sea Surface Temperature (GHRSST) products. Scientific data stewardship (**Figure 1**) 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). One example of a newly stewarded GHRSST product is the real time archive of VIIRS Sea Surface Temperature (**see Figure 2**) derived using NOAA heritage Advanced Clear-Sky Processor for Oceans (ACSPO) products from STAR (Center for Satellite Applications and Research). Products are monitored in a dynamic table (**Figure 3**), built automatically from metadata and archive metrics to provide a summary of GHRSST products and data volume and file statistics. NCEI provides enhanced access, data discovery and user services (**Figure 4**) for GHRSST products. GHRSST will serve as one of the featured data groupings in NOAA's OneStop effort, which is targeted at providing next-generation discovery and access capabilities for environmental data. NCEI continues to play a role in the ongoing discussions of the evolution of the GHRSST Regional/Global Task Sharing Framework.

Figure 1. NCEI Data Stewardship Tiers (T1-T6) are continuous from bottom to top. T6 represents data stewarded through tiers 1-6.

Figure 2. Example GHRSST products: (A) Pathfinder SST Version 5.3 from AHRR sensors (NOAA/NESIS/NCEI) and (b) VIIRS global ACSPO Version 2.4 Level 3 Sea Surface Temperature (NOAA/NESDIS/STAR).

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

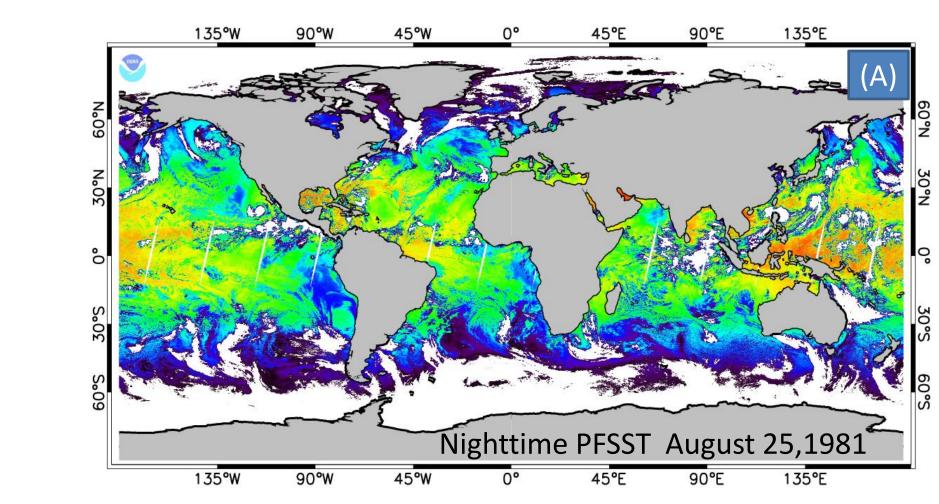
❑Combine multiple time series into a single, inter-calibrated product
❑Establish authoritative quality, uncertainties, and provenance
❑Ensure products are fully documented and reproducible

4. Derived Products

Build upon archived data to create new products of broader use
Distill, combine, or analyze products and data to create new or blended scientific products

3. Scientific Improvements

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



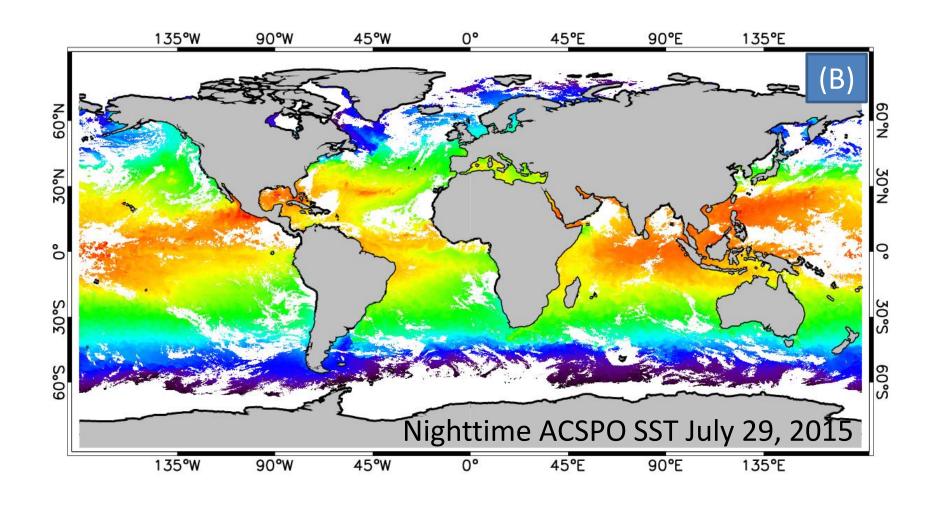
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2. Enhanced Access and Basic Quality Assurance

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

I. 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 minting DOIs

Figure 3. Dynamic Table of GHRSST products (at 81

and growing). http://ghrsst.nodc.noaa.gov/accessdata.htm



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

 NOAA satellite and Information Service

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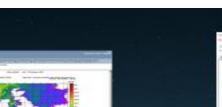




Figure 4. Data can be discovered and accessed at the collection level and granule level using HTTP, FTP, Live Access Server, THREDDS server, OPeNDAP server, and other services (see A through C).



Data Access is Here!

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- HTTP: http://data.nodc.noaa.gov/ghrsst/
- FTP: http://ftp.nodc.noaa.gov/pub/data.nodc/ghrsst/
- OPeNDAP: http://data.nodc.noaa.gov/opendap/ghrsst/
- THREDDS: <u>http://data.nodc.noaa.gov/thredds/catalog/ghrsst</u>

• 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.

NODC Live Access Server: <u>http://data.nodc.noaa.gov/las/</u> - Use the Live Access Server to search dynamically in time and space through NODC data
products. To access GHRSST data, click the 'Choose dataset' button at the top left of the browser window, click on 'GHRSST Aggregations,' and select
a GHRSST product. Currently only GHRSST L4 products are available through the Live Access Server.

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.

			GHRS	ST Pro	ducts in	the LTSRF			
RDAC	Product	Product Level	Start Date		GDS Version	Grid / Pixel Resolution	Metadata	Access	Disk Volume · Number of Days · Number of Files
ABOM	GAMSSA_28km GLOB	L4	2008- 08-24	2016- 04-17		28 km	Details · Granule Search · Live Access Server	<u>FTP</u> · <u>HTTP</u> · <u>OPeNDAP</u> · <u>THREDDS</u>	2.7GB · 2785 days · 2785 files
	RAMSSA_09km AUS	L4		2016- 04-17		9 km	Details · Granule Search · Live Access Server	<u>FTP</u> · <u>HTTP</u> · <u>OPeNDAP</u> · <u>THREDDS</u>	4.6GB · 2911 days · 2915 files
СМС	CMC0.2deg GLOB	L4		2016- 04-24		0.2°	Details · Granule Search · Live Access Server	<u>FTP</u> · <u>HTTP</u> · <u>OPeNDAP</u> · <u>THREDDS</u>	15.0GB · 6957 days · 7232 files
DMI	DMI_OI GLOB	L4		2016- 04-30		0.05°	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	56.1GB · 371 days · 373 files
	DMI_OI NSEABALTIC	L4		2016- 03-04		3 km	Details · Granule Search · Live Access Server	<u>FTP</u> · <u>HTTP</u> · <u>OPeNDAP</u> · <u>THREDDS</u>	1.6GB · 3161 days · 3161 files
EUR	AMSRE	L2P		2007- 02-26		25 km	Details · Granule Search · Live Access Server	<u>FTP</u> · <u>HTTP</u> · <u>OPeNDAP</u> · <u>THREDDS</u>	3.0GB · 744 days · 8995 files
	ATS_NR_2P	L2P		2009- 09-29		1 km	Details · Granule Search	<u>FTP</u> · <u>HTTP</u> · <u>OPeNDAP</u> · <u>THREDDS</u>	315.4GB · 1643 days 22303 files

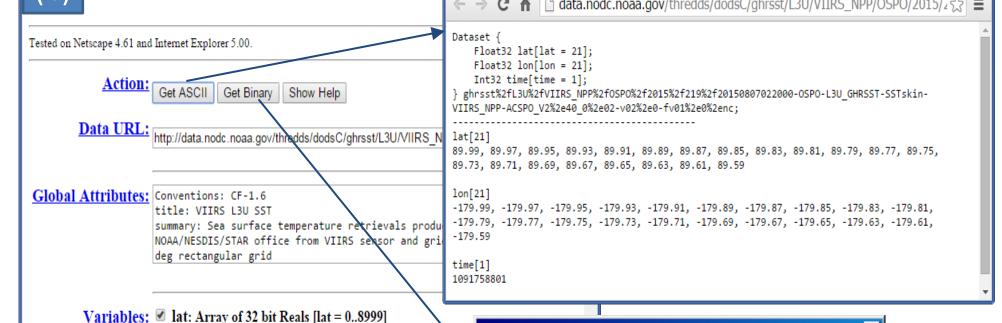


Summary

The NCEI provides scientific stewardship of the Group for High Resolution Sea Surface Temperature (GHRSST) products. In summary, NCEI

 provides timely, relevant and authoritative satellitebased data products to the oceanographic community with a focus on Climate Data Records and Essential Ocean and Climate Variables,

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+water +temperature; use "" to search for an exact phrase, for example, "water temperature"							
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-	WSAT	L2P_GRIDDED		2015- 12-28		25 km	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	14.7GB · 4340 days · 4738 files
	mw_OI GLOB	L4		2016- 04-13		0.25°	<u>Details</u> · Granule Search	FTP · HTTP · OPeNDAP · THREDDS	2.5GB · 4533 days · 4533 files
	mw_ir_OI GLOB	L4	2005- 08-21		2.0/1.5	0.081°	<u>Details</u> · <u>Granule Search</u>	FTP · HTTP · OPeNDAP · THREDDS	24.1GB · 3506 days · 6771 files
UFRJ	REMO_OI_SST_5km SAMERICA	L4		2016- 04-29	1	0.05°	<u>Details</u> · <u>Granule Search</u>	FTP · HTTP · OPeNDAP · THREDDS	0.3GB · 263 days · 264 files
икмо	OSTIA GLOB	L4		2016- 04-24	2.0/1.5	0.054°	Details · Granule Search · Live Access Server	FTP · HTTP · OPeNDAP · THREDDS	28.1GB · 3672 days · 3672 files
UPA	ATS_NR_2P	L2P		2012- 04-08		1 km	<u>Details</u> · <u>Granule Search</u>	FTP · HTTP · OPeNDAP · THREDDS	248.5GB · 1090 days · 17122 files
		Summary:		2016- 05-25		Volume and	d Number of Files:	109068GB · 56	649458 files

RDAC Codes and Acknowledgements			
ABOM*	Australian Bureau of Meteorology, Australia		
CMC*	Canadian Meteorological Centre, Meteorological Service of Canada, Canada		

<u>ene</u>	Canada, Canada, Canada			
DMI*	Danish Meteorological Institute, Denmark			
EUR*	Medspiration Project, Europe			
JPL	NASA Jet Propulsion Laboratory, Ocean Biology Processing Group and University of Miami, USA			
JPL OUROCEAN	NASA Jet Propulsion Laboratory, OurOcean Project, USA			
NAVO	Naval Oceanographic Office, USA			
NCDC	NOAA National Climatic Data Center, USA			
NCEI	NOAA National Centers for Environmental Information, USA			
NEODAAS*	NERC Earth Observation Data Acquisition and Analysis Service, United Kingdom			
OSDPD	NOAA Office of Satellite Data Processing and Distribution, USA			
OSISAF*	EUMETSAT Ocean and Sea Ice Satellite Application Facility, Europe			
<u>OSPO</u>	NOAA Office of Satellite and Product Operations, USA			
REMSS*	Remote Sensing Systems, Inc., USA			
UFRJ*	Laboratory of Applied Meteorology, Federal University of Rio de Janeiro, Brazil			
UKMO*	UK Meteorological Office, United Kingdom			
UPA*	UK Multi-Mission Product Archive Facility, United Kingdom			

Please use this information to acknowledge GHRSST data providers for their products used in publications and media applications. Please see metadata for each product for any usage restrictions.

Contact Us With Questions or Concern

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GHRSST Documents	LTSRF Home	SST-SI Intercomparisons

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- helps plan archive requirements for future NOAA satellite missions and lead NCEI efforts relating to satellite data and metadata, and
- improves visibility of NCEI satellite products and establish strategic partnerships for better stewardship and an increased number of satellite-derived data products for users,
- and plays a role in the ongoing discussions of the evolution of the GHRSST Regional/Global Task Sharing Framework.

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Acknowledgements

We acknowledge Krisa Arzayus, NOAA/NESDIS/NCEI Deputy Director of Oceans and Coasts Science Division, NCEI Nancy Ritchey, Archive Branch Chief, Steven Rutz, Data Operations and contributions from Ajay Krishnan and Yongsheng Zhang, members of the NCEI Long Term Stewardship and Reanalysis Facility (LTSR).



NOAA/NESDIS National Centers for Environmental Information (NCEI)

