Western North Atlantic Sea Surface Temperature (SST) images collected by NOAA satellites in 2012

Website: https://www.bco-dmo.org/dataset/3998
Data Type: Other Field Results
Version: 1
Version Date: 2013-06-26

Project
» U.S. GLOBEC Georges Bank (GB)

Program
» U.S. GLOBal ocean ECosystems dynamics (U.S. GLOBEC)

Contributors	Affiliation	Role
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Abstract
This dataset represents the MCSST western North Atlantic full-resolution domain for 2012. We chose this 2048 X 2048 pixel domain, as it covers almost the entire western North Atlantic region, from south of Florida to north of Newfoundland, Canada, thus incorporating the western Labrador Sea, and the entire eastern seaboard of the US and Canada, including the Florida Current and Gulf Stream regions.

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Coverage

Spatial Extent: **N**:57.566 **E**:-38.798 **S**:24.499 **W**:-82.448
Temporal Extent: 2012 - 2012

Dataset Description

MCSST western North Atlantic full resolution domain for 2012. We chose this 2048 X 2048 pixel domain, as it covers almost the entire western North Atlantic region, from south of Florida to north of Newfoundland, Canada, thus incorporating the western Labrador Sea, and the entire eastern seaboard of the US and Canada, including the Florida Current and Gulf Stream regions.

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Notes:
As a courtesy, please notify Jim Bisagni via email about your intent to use these data, so that he may keep a record.

Methods & Sampling

Domain:

57.566 latitude top, 24.499 latitude bottom, -82.448 longitude left, -38.798 longitude right

Center latitude: 41.000, center longitude: -60.580

2048 x 2048 pixels

Data Processing Description

Special data fields are defined to enable the satellite images to be plotted in the MapServer interface including the following: x_pixel_unit (pixel size in the X direction in map units per pixel), y_pixel_unit (pixel size in the Y direction, which is usually negative map units per pixel), x_correction (rotation about the X axis in degrees), y_correction (rotation about the Y axis in degrees), x_coordinate (X coordinate of the center of the upper left pixel in longitude degrees), and y_coordinate (Y coordinate of the center of the upper left pixel in latitude degrees). These values are made accessible to the MapServer by including them as part of the data object. These six data fields correspond to the six lines in the so-called world file.

From Wikipedia (http://en.wikipedia.org/wiki/World_file), "a world file is a plain text computer data file used by geographic information systems (GIS) to georeference raster map images. The file specification was introduced by Esri.

Small-scale rectangular raster image maps can have an associated world file for GIS map software that describes the location, scale and rotation of the map. These world files are six-line files with decimal numbers on each line.

World files do not specify a coordinate system; this information is generally stored somewhere else in the raster file itself or in another companion file, e.g. Esri's .prj file. The generic meaning of world file parameters are:

- Line 1: *A*: pixel size in the *x*-direction in map units/pixel
- Line 2: *D*: rotation about *y*-axis
- Line 3: *B*: rotation about *x*-axis
- Line 4: *E*: pixel size in the *y*-direction in map units, almost always negative
- Line 5: *C*: *x*-coordinate of the center of the upper left pixel
- Line 6: *F*: *y*-coordinate of the center of the upper left pixel

This description is however misleading in that the D and B rotation parameters are not really rotations (in degrees or gradients) and in that as soon as D or B are not zero, the A and E parameters do not correspond to the pixel size anymore."

The data object is served with two columns representing the satellite image. The clickable link in the "time" column links to the satellite image that includes a color bar and a clickable link to the actual digital values of the image. This image undergoes a transformation during the serving to include, among other things, the color bar. The overlay image is another representation of the satellite image but this one is used by the MapServer in order to create the overlay image of the satellite image on the display map. This image also undergoes a transformation (by a different procedure) to enable it to be transparent among other changes.

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Data Files

File
WNA_SST_2012.csv (Comma Separated Values (.csv), 1.08 MB) MD5:26a2e5a4dbe26f80e0bb83b43aef9f7b Primary data file for dataset ID 3998

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Parameters

Parameter	Description	Units
images	Name of the NOAA satellite providing the images	n/a
description	Description of the NOAA satellite providing the AVHRR images	n/a
contributor	Name of the investigator providing the processed images.	n/a
x_pixel_unit	Pixel size in the X direction	map units per pixel
y_pixel_unit	Pixel size in the Y direction. This value is usually negative.	map units per pixel
x_correction	Rotation about the X axis	degrees
y_correction	Rotation about the Y axis	degrees
x_coordinate	X coordinate of the center of the upper left pixel	longitude degrees
y_coordinate	Y coordinate of the center of the upper left pixel	latitude degrees
month	Month	n/a
year	Four digit year	n/a
status	Status of the image such as reviewed (by investigator)	n/a
yrday_utc	UTC year day, starting with 001 as January 1	three digits
day	UTC day of the month	two digits

time	UTC time of the image as hours, minutes and fraction of minutes	hhmm.mm
ISO_datetime_utc	UTC date and time formatted using the ISO standard	
overlay_image	Link to the satellite image to be used as the overlay image on the MapServer	gif image
color_bar	Color bar used for the AVHRR image representation of sea surface temperature. This scale is sometimes known as Pete's palette.	gif

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Instruments

Dataset-specific Instrument Name	AVHRR satellite
Generic Instrument Name	Advanced Very High Resolution Radiometer
Generic Instrument Description	"The AVHRR instrument consists of an array of small sensors that record (as digital numbers) the amount of visible and infrared radiation reflected and (or) emitted from the Earth's surface" (more information).

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Deployments

AVHRR_WNA_2004-2018

Website	https://www.bco-dmo.org/deployment/59020
Platform	NOAA Satellites
Start Date	2004-01-01
End Date	2018-12-31
Description	Western North Atlantic (aka MCSST AFMIS) Multiple satellites including NOAA-12, NOAA-15, NOA16, NOAA-17, NOAA-18, and NOAA-19 depending on the year. NOAA-12: 2004, 2005, 2006 NOAA-15: 2004, 2005, 2006, 2007 NOAA-16: 2005, 2010,2011,2012, 2013 NOAA-17: 2007, 2008, 2009, 2010 NOAA-18: 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014-present NOAA-19: 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014-present Note: The deployment (so far) is supposed to go through 2018 so the last "fix" is set to be in the future (2018). It was deemed a good idea by the data manager to make the deployment consistent with the data.

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Project Information

U.S. GLOBEC Georges Bank (GB)

Website: http://globec.whoi.edu/globec_program.html

Coverage: Georges Bank, Gulf of Maine, Northwest Atlantic Ocean

The U.S. GLOBEC Georges Bank Program is a large multi- disciplinary multi-year oceanographic effort. The proximate goal is to understand the population dynamics of key species on the Bank - Cod, Haddock, and two species of zooplankton (*Calanus finmarchicus* and *Pseudocalanus*) - in terms of their coupling to the physical environment and in terms of their predators and prey. The ultimate goal is to be able to predict changes in the distribution and abundance of these species as a result of changes in their physical and biotic environment as well as to anticipate how their populations might respond to climate change.

The effort is substantial, requiring broad-scale surveys of the entire Bank, and process studies which focus both on the links between the target species and their physical environment, and the determination of fundamental aspects of these species' life history (birth rates, growth rates, death rates, etc).

Equally important are the modelling efforts that are ongoing which seek to provide realistic predictions of the flow field and which utilize the life history information to produce an integrated view of the dynamics of the populations.

The U.S. GLOBEC Georges Bank Executive Committee (EXCO) provides program leadership and effective communication with the funding agencies.

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Program Information

U.S. GLOBal ocean ECosystems dynamics (U.S. GLOBEC)

Website: http://www.usglobec.org/

Coverage: Global

U.S. GLOBEC (GLOBal ocean ECosystems dynamics) is a research program organized by oceanographers and fisheries scientists to address the question of how global climate change may affect the abundance and production of animals in the sea.

The U.S. GLOBEC Program currently had major research efforts underway in the Georges Bank / Northwest Atlantic Region, and the Northeast Pacific (with components in the California Current and in the Coastal Gulf of Alaska). U.S. GLOBEC was a major contributor to International GLOBEC efforts in the Southern Ocean and Western Antarctic Peninsula (WAP).

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