



NOAA Climate and Climate Change Resources



*From the bottom of the ocean to the top of the atmosphere,
NOAA's instruments monitor Earth's climate system*

The National Oceanic and Atmospheric Administration (NOAA) is mandated by the U.S. Congress to deliver climate services to the nation



- National Weather Service Organic Act of 1890
- Marine Mammal Protection Act of 1972
- National Marine Sanctuaries Act of 1972
- Coastal Zone Management Act of 1972
- Endangered Species Act of 1973
- Magnuson-Stevens Fishery Conservation & Management Act of 1976 (Amended 1996)
- National Climate Program Act of 1978
- Global Change Research Act of 1990
- Hydrographic Services Improvement Act of 1998
- Coral Reef Conservation Act of 2000
- National Integrated Drought Information Services Act of 2006
- America Competes Act of 2007



NOAA National Centers for Environmental Information (NCEI)

The screenshot shows the NOAA National Centers for Environmental Information (NCEI) website. At the top, there are logos for NOAA and the Department of Commerce. The main header reads "NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION" and "NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION". Below this, it says "Formerly the National Climatic Data Center (NCDC)... more about NCEI »".

The navigation bar includes links for Home, Climate Information, Data Access, Customer Support, Contact, and About, along with a search box. The main content area features a large graphic titled "Climate and Outlook" showing "Precipitation Anomalies" for "June 1 - August 31, 2012" and "June 2015 Regional Climate Impacts and Outlooks".

Below the main content, there are three columns of information:

- HIGHLIGHTS:**
 - Upcoming Events, Products, and Services:** View a complete listing of the upcoming products and services.
 - State of the Climate in 2013 Report Release:** We are announcing the release of the State of the Climate in 2013 report, an assessment of the world's climate system.
 - 2014 Products and Services Guide Available Online:** The 2014 Products and Services Guide provides an overview of the wide range of products and services we offer. A free PDF copy of the guide is available for download.
- NEWSROOM:**
 - Extended Reconstructed Sea Surface Temperature Version 4:** We're announcing the release of version 4 of the Extended Reconstructed Sea Surface Temperature (ERSST) dataset.
 - The Recent Global Surface Warming Hiatus:** Scientists report that surface temperature data no longer support the idea that the rate of global warming has slowed.
 - New Climate.gov Blog: Beyond the Data:** Climate.gov has kicked off a new blog by NCEI scientists, titled Beyond the Data: A blog by the nation's official climate record keepers.
 - CoCoRaHS in the U.S. Virgin Islands:** The U.S. Virgin Islands is now participating in the Community Collaborative Rain, Hail, and Snow (CoCoRaHS) Network.
 - Comparisons of Ground-Based Observation Networks: USCRN and COOP:** Scientists compare pairs of ground-based observation networks to analyze temperature and precipitation variations between networks.
- NCEI PARTNERS:**
 - Climate.gov:** Science & Information for a Climate-smart Nation
 - weather.gov:** THE NATIONAL WEATHER SERVICE
 - NDIS drought.gov:** U.S. Drought Portal
 - globalchange.gov:** U.S. Global Change Research Program

At the bottom right of the page, there is a link: "Read more NCEI News »".

<http://www.ncdc.noaa.gov/>



National Weather Service (NWS)

National Weather Service Forecast Office

Milwaukee/Sullivan

Home
News
Organization

Local forecast by "City, St"

Current Hazards
 Watches / Warnings
 Outlooks
 Submit Report

Current Conditions
 Observations
 Radar
 Satellite Images
 Snow Cover
 Snowfall Analysis
 Precip Analysis

Forecasts
 Forecast Discussion
 Activity Planner
 Aviation
 Fire Weather
 Marine
 Severe Weather
 Hurricane Center

Hydrology
 Rivers & Lakes

Climate
 Local
 National
 More...
 Drought Info

Weather Safety
 Preparedness
 Weather Radio
 Storm Ready
 SkyWarn

Additional Info
 Education
 Resources
 Coop Observer
 Our Office

Contact Us
 Contact Info
 Feedback
 Ask Questions

As part of its ongoing efforts to improve service to the public, The National Weather Service has released a local 3-month temperature outlook. Access the product for your area [here](#). Please click [here](#) to complete the feedback survey.

Observed Weather	Climate Locations	Climate Prediction	Climate Resources	Local Data/Records	Astronomical	NOWData
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Observed Weather Reports

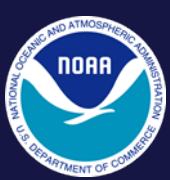
<p>1. Product »</p> <p><input checked="" type="radio"/> Daily Climate Report (CLI)</p> <p><input type="radio"/> Preliminary Monthly Climate Data (CF6)</p> <p><input type="radio"/> Record Event Report (RER)</p> <p><input type="radio"/> Monthly Weather Summary (CLM)</p> <p><input type="radio"/> Regional Summary (RTP)</p> <p><input type="radio"/> State Summary (Temp/Precip)</p>	<p>2. Location »</p> <div style="border: 1px solid #ccc; padding: 2px;"> Milwaukee Madison Green Bay Wausau La Crosse Chicago Rockford </div>	<p>3. Timeframe »</p> <p><input checked="" type="radio"/> Most Recent</p> <p><input type="radio"/> Archived Data:</p> <div style="border: 1px solid #ccc; padding: 2px; font-size: small;"> July 8th, 2015 July 7th, 2015 July 6th, 2015 July 5th, 2015 July 4th, 2015 July 3rd, 2015 </div>	<p>4. View »</p> <div style="text-align: right; margin-top: 10px;"> <input type="button" value="Go"/> </div>
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[Storm Event Database \(NCDC\)](#)

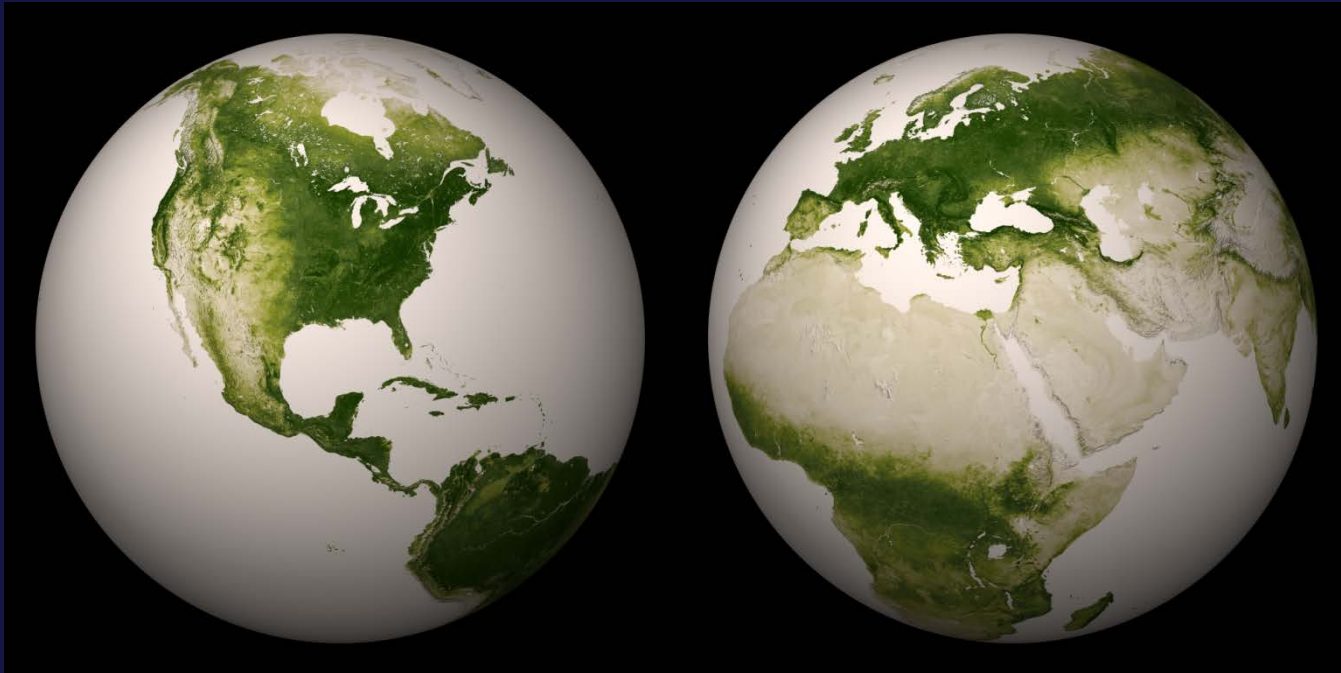
Product Description:

DAILY CLIMATE REPORT - issued daily. Detailed daily weather statistics (usually for yesterday), including temperature, precipitation, degree days, wind, humidity, sunrise/sunset, and record temperature data for the following day. Precipitation data includes both calendar year and water year totals, percent of normal values, and comparisons to normal. This product is available for up to 2 months.

Milwaukee/Sullivan Weather Forecast Office N3533 Hardscrabble Road Dousman, WI 53118 Tel: (262) 965-2074 Ask Questions/Webmaster Page last modified: 18-Dec-2014 9:25 PM	Disclaimer Credits Glossary	Privacy Policy About Us Career Opportunities
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Environmental Visualization Lab



Over 25% of Earth is a dynamic green! In 2013 NOAA's environmental visualization lab created a global dataset from the Suomi NPP satellite showing a years worth of vegetation on Earth in images and videos at <http://www.nnvl.noaa.gov/green.php>



Climate Program Office (CPO)

DEPARTMENT OF COMMERCE NOAA WEATHER OCEANS FISHERIES CHARTING SATELLITES CLIMATE RESEARCH COASTS CAREERS

CLIMATE PROGRAM OFFICE
Advancing scientific understanding of climate, improving society's ability to plan and respond

Home About CPO Climate Programs Grants and Projects Outreach and Education Partnerships Planning and Programming Contact Us

Outreach and Education Search

TEN SIGNS OF A WARMING WORLD

Resources for Teaching and Learning about Climate

Climate.gov, Climate Literacy, Signs of a Warming World

About Outreach & Education

Climate outreach and education activities are conducted by the CPO Communication & Education (CommEd) team, which supports both the Climate Program Office and the cross-agency Climate Mission. In response to public demand, the CommEd team provides climate data and information to help build a climate-smart, resilient nation. Our goal is to foster a climate-literate public that understands its vulnerabilities to a changing climate and makes informed decisions. Learn more.

About Outreach and Education
Adopt a Drifter
Climate Literacy
Climate.gov
Educational Resources
Outreach Archive

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NOAA Federal
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Outreach & Education News

President Obama Mentions U.S. Climate Resilience Toolkit While Touring National Hurricane Center
Friday, June 05, 2015
In a visit to the National Hurricane Center in Miami, Florida, President Barack Obama lauded the CPO-led Climate Resilience Toolkit, a key part of his Climate Action Plan.

CPO to brief Hill staff on CPO programs and efforts
Wednesday, April 15, 2015
CPO Director Wayne Higgins and Roger Pulwarty are scheduled to participate in a Climate Program Office "Day on the Hill" on Tuesday, April 21.

We're helping you build resilience now help us get the word out.
Tuesday, April 14, 2015
The International Academy of the Digital Arts & Sciences has chosen the U.S. Climate Resilience Toolkit—an initiative led by NOAA's Climate Program Office—as one of five nominees for the annual Webby Awards for online excellence. We are nominated in the "Green" category. If you're a fan of our site, please consider voting for us.

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TEN SIGNS OF A WARMING WORLD

air temperature over land	air temperature over ocean	arctic sea ice	glaciers	global sea level	humidity	ocean heat content	sea surface temperature	snow	temperature of the lower atmosphere
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About the Data

The 2009 *State of the Climate* report served as a basis for the poster and this website. This report draws on data for 10 key climate indicators that all point to the same finding: the scientific evidence that our world is warming is unmistakable. More than 300 scientists from 160 research groups in 48 countries contributed to the report, which confirms that the past decade was the warmest on record and that the Earth has been growing warmer over the last 50 years.

This set of indicators was selected, as we would unambiguously expect them to increase or decrease if the world were warming. In a warming world, based upon simple physical principles we would expect some indicators to increase: **land surface air temperature, sea-surface temperature, marine air temperature, sea level, tropospheric temperature, ocean heat content and specific humidity.**

Conversely, we would expect the following indicators to decline: **snow cover, sea-ice extent, glacier mass, and stratospheric temperatures.** Stratospheric temperature decline is also influenced by ozone depletion.

[Click here](#) for a 10 page summary or full supplemental package.

TEN SIGNS OF A WARMING WORLD

Download the poster | Request a printed version

Teachers

Why it's Important to Learn about Changing Climate indicators

In the coming decades, scientists expect climate change to have an increasing impact on human and natural systems. In a warmer world, accessibility to food, water, raw materials, and energy are likely to change. To protect fragile ecosystems and to build sustainable communities that are resilient to climate change—including extreme weather and climate events—a climate-literate citizenry is essential. (USGCRP *Climate Literacy*, 2009).

Climate is an ideal interdisciplinary theme for lifelong learning about the scientific process and the ways in which humans affect and are affected by the Earth's systems.

Learners of all ages can use data from their own experiments, data collected by satellites and other observation systems, or records from a range of physical, chemical, biological, geographical, social, economic, and historical sources to explore the impacts of climate.

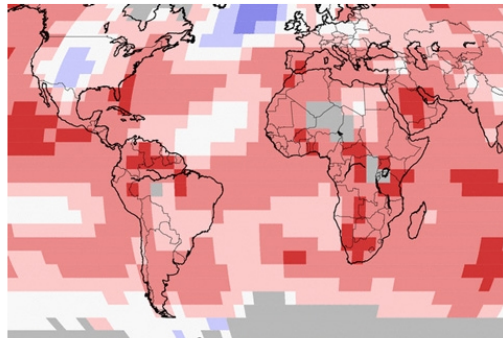
Why does Climate Science Literacy matter in a warming world?

- Society needs citizens who understand the climate system and know how to apply that knowledge in their careers and in their engagement as active members of their communities.
- Climate change will continue to be a significant element of public discourse. Understanding the essential principles of climate science will enable all people to assess news stories and contribute to their everyday conversations as informed citizens.

From the USGCRP *Climate Literacy Guide*, 2009



Featured on Climate.gov 1 2 3 4 5



Worldwide, many areas record warm in May 2015

June 24, 2015

Filed in: News & Features

For those trying to guess the May 2015 global temperature as part of our 'Climate Challenge' game, the climate served up a new record. Nowhere was record cool, but lots of places were record warm.

[read more](#)

Recent Topics



2014 National Climate Assessment (NCA) Teaching Resources for Educators

April 15, 2014

Filed in: Teaching Climate



Wind Map

Filed in: Teaching Climate



U.S. Climate Resilience Toolkit

November 17, 2014

Filed in: Supporting Decisions

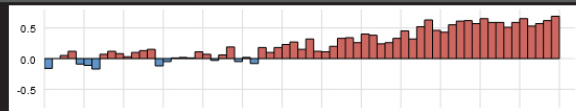
Global Climate Dashboard

▼ Climate Change
▶ Climate Variability
▶ Climate Projections

Global Average Temperature (°C)

The temperature near Earth's surface is rising: the bars show each year's average temperature compared to the 20th century average.

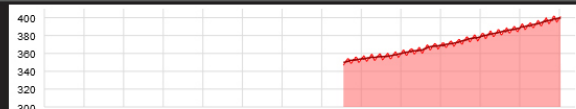
[learn more >>](#)



Carbon Dioxide (ppm)

The amount of carbon dioxide in the atmosphere has risen by 25% since 1958, and by about 40% since the Industrial Revolution.

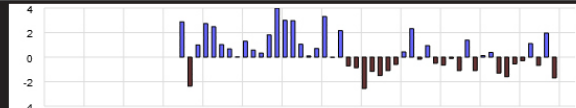
[learn more >>](#)



Spring Snow Cover (million km²)

Snow is melting earlier: each bar shows spring snow cover in the Northern Hemisphere compared to the long-term average.

[learn more >>](#)



1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010 2015

← Earlier

Later →

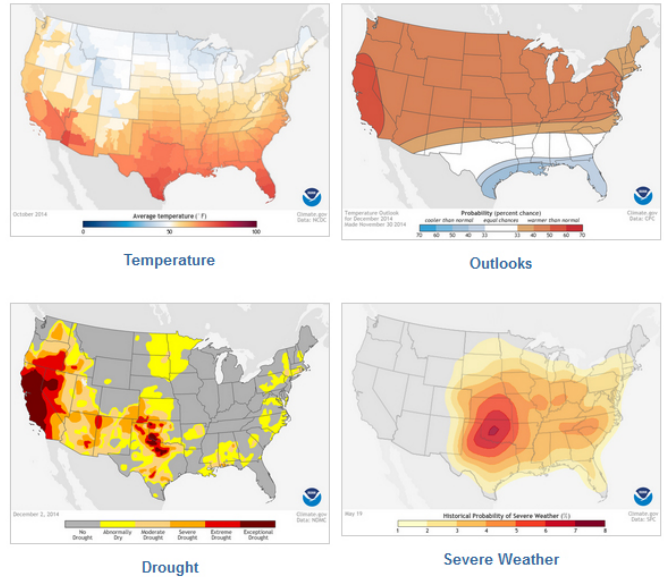
▲ Temperature	▲ Carbon Dioxide	▲ Snow
▶ Sea Level	▶ Arctic Sea Ice	▶ Ocean Heat
▶ Sun's Energy	▶ Glaciers	▶ Heat-Trapping Gases

News & Features
 Maps & Data
 Teaching Climate
 Supporting Decisions

Easy access to climate data, products, and services

[Data Snapshots](#)
[Dataset Gallery](#)
[Climate Data Primer](#)
[Climate Dashboard](#)

Data Snapshots: Reusable Climate Maps

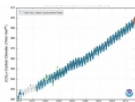


Explore a range of easy-to-understand climate maps in a single interface. Featuring the work of NOAA scientists, each "snapshot" is a public-friendly version of an existing data product.

[Launch Data Snapshots](#)

Dataset Spotlight: Greenhouse Gas Concentrations - Graphing Tool

Generate graphs showing the abundance of various gases measured at more than 200 sampling sites around the world.



[View the Greenhouse Gas Concentrations - Graphing Tool page](#)

Climate Data Primer

Ready to learn some of the basics about climate data? Find out about measuring, modeling, and predicting climate and ways to find and use climate data.

[Show me the table of contents](#)

Browse the Dataset Gallery

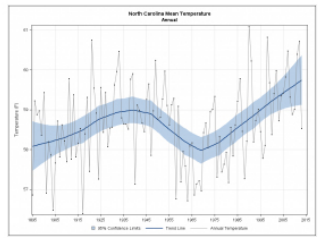
This visual catalog with convenient filtering options can help you find the climate data you need. How-to instructions can help you navigate data access tools.

[Enter the Dataset Gallery](#)

GIS Data Locator (Advanced Users)

[Launch Map Application](#)

See Climate Trends in Your State



View graphs of historical average temperature for any of the 48 contiguous United States.

[View Temperature Trends by State](#)

Recently Updated Datasets

- [Greenhouse Gas Concentrations - Graphing Tool](#)
- [Temperature and Precipitation Trends- Graphing Tool](#)
- [Temperature, Precipitation, and Drought Outlooks - Prepared Maps](#)
- [Global Temperature Anomalies - Graphing Tool](#)
- [Temperature, Precipitation, and Drought Outlooks - Interactive Map](#)
- [Global Temperature Anomalies - Map Viewer](#)

[Go to the Dataset Gallery](#)

- [Beyond the Data blog](#)
- [State of the Climate](#)
- [Dataset Gallery](#)
- [Climate Data Primer](#)
- [Data Snapshots](#)

<http://www.climate.gov/maps-data/data-snapshots/start>



Featured Resources **1** 2 3 4

National Climate Assessment (NCA) Teaching Resources

Learning Pathways to Help Educators Uncover Key Concepts and Authentic Data from the National Climate Assessment

2014 National Climate Assessment Resources for Educators

Explore a series of guides for educators that focus on the regional chapters of the Assessment Report, helping to unpack the key messages of each region and point to related, high-quality online resources.

[read more](#)

Teaching Climate Literacy



Climate and energy are complex topics. There are many ways to approach climate and energy depending on the grade level, course topics and instructional method.

[Read more](#)

Professional Development [view all](#)

Jun
1

Science and the President's Climate Action Plan: An Opportunity for Education and Citizen Science

June, 2015 national webinar for the NOAA Climate Stewards Education Project...

[View event](#)

Search

Grade Level

- Any -

[Find Resources](#)

Reviewed learning activities from [cleanet.org](#)

Educational Resources



Hurricanes as Heat Engines

In this activity, students examine the effects of hurricanes on sea surface temperature using NASA data. They examine authentic sea surface temperature data to explore how hurricanes extract heat energy from the ocean surface.



Studying Eco Climatic Domains

Activity is a Project BudBurst/National Ecological Observatory Network (NEON) exploration of eco-climatic domains, as defined by NEON, by investigating characteristics of a specific domain and studying two representative plants in that domain.



Thermal Expansion and Sea Level Rise

In this short but effective demonstration/experiment, students investigate how thermal expansion of water might affect sea level.



Introduction to Earth's Climate

This is the first of nine lessons in the "Visualizing and Understanding the Science of Climate Change" website. This lesson is an introduction to Earth's climate and covers key principles regarding Earth's unique climate, atmosphere, and regional and temporal climate differences.

Global Climate Dashboard



Just as a dashboard gives instant information on the status of a vehicle's various systems, NOAA's Global Climate Dashboard presents an overview of the current state of Earth's climate system in historical context.

The Dashboard is designed for people seeking a synoptic view about what we know about climate variability and change, particularly [policy leaders](#).

Adjustable sliders allow users to focus on the time period of interest.

Hover cursor over graphs to see specific values for each data point .

Click on "Learn More" to jump to more detailed landing pages with more details produced in a popular style.



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<https://www.facebook.com/NOAAClimateGov>



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