

2013

Products and Services

GUIDE



Protecting the past... Revealing the future

NOAA's NATIONAL CLIMATIC DATA CENTER ■ ASHEVILLE, N.C.

www.ncdc.noaa.gov

PRODUCTS AND SERVICES GUIDE

***NOAA's NATIONAL CLIMATIC DATA CENTER
ASHEVILLE, NC***



2013 Edition

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See <http://www1.ncdc.noaa.gov/pub/data/inventories/2013psguide.pdf> for a digital copy of this guide.

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A message from the Director, National Climatic Data Center

The National Climatic Data Center (NCDC) offers a wide range of products and services. Our users range from large engineering firms designing the latest in safe energy efficient structures, to the attorney documenting a weather event, to the individual planning for a retirement move.

Services offered include data resource consultations, subscription items and publications, copies of original records, certifications, generation of specialized climate studies, and a host of other climate-related activities. Services are delivered on a variety of media including online access, CD-ROM, DVD, computer tabulations, maps, and publications.



Tom Karl
Director

About the National Climatic Data Center

The National Oceanic and Atmospheric Administration (NOAA) Data Centers (of which NCDC is the largest) are world-class centers that provide long-term preservation, management, and ready accessibility to environmental data. The combined archive includes records taken even before Ben Franklin's weather observations and continues with the latest real-time satellite imagery. The Centers are part of the National Environmental Satellite, Data and Information Service (NESDIS). NCDC is located in Asheville, NC.

NCDC Mission Statement

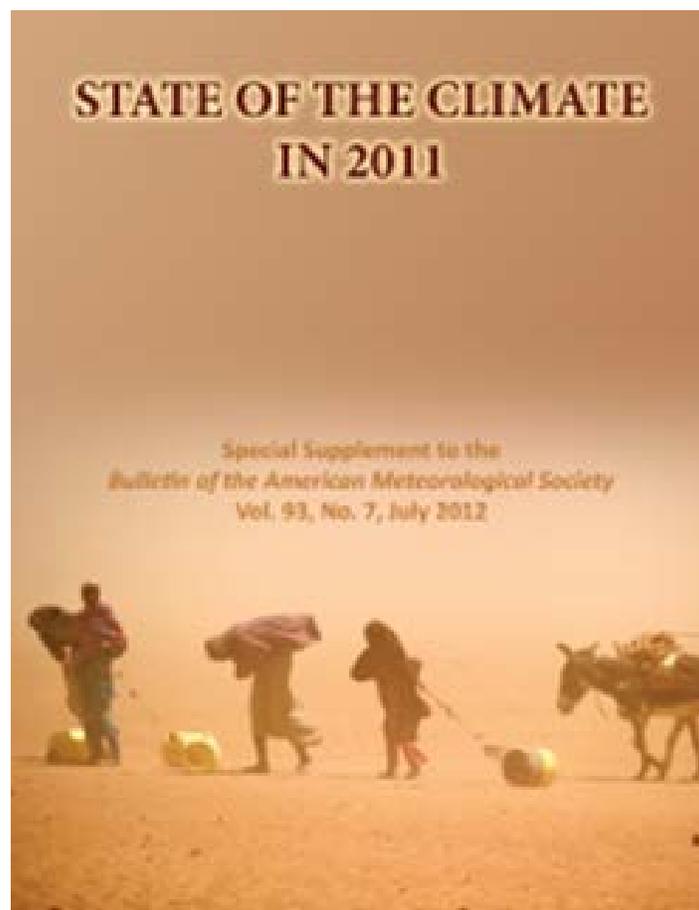
NCDC's mission is to manage the Nation's resource of global climatological *in situ* and remotely sensed data and information to promote global environmental stewardship; to describe, monitor and assess the climate; and to support efforts to predict changes in the Earth's environment. This effort requires the acquisition, quality control, processing, summarization, dissemination, and preservation of a vast array of climatological data generated by the national and international meteorological services.

Highlights

NCDC Releases the Annual “State of the Climate in 2011” Report

For the 12th consecutive year, and as part of a suite of climate services NOAA provides to government, business, and community leaders so they can make informed decisions, NCDC served as lead editors of the “2011 State of the Climate” report. This peer-reviewed report is published annually as a special supplement to the *Bulletin of the American Meteorological Society* and serves as one of the world’s most comprehensive and reliable annual “scorekeepers” of changes, variations, and trends in the state of the climate. In the analysis, 43 Essential Climate Variables (ECVs), which include thousands of measure-

ments from multiple independent datasets, were used to track and identify changes and overall trends to the global climate system. In addition, the report provides details on a number of extreme events experienced all over the globe. This year, NCDC also worked to develop a suite of highlights from the 2011 State of the Climate report. Posted on www.climate.gov, the highlights provide viewers with quick access to the foremost elements and conclusions in the full report, including a map of major climate events in 2011, descriptions of global climate indicators, details on the double-dip La Niña, information on the Arctic and the Antarctic, and an article on the Arctic’s first ozone hole.



NCDC Scientist Co-Edits Paper Examining the Extreme Events of 2011 from a Climate Perspective

NCDC scientist Dr. Thomas Peterson along with colleagues from the UK Met Office Hadley Centre and NOAA's Office of Program Planning and Integration edited a paper entitled "Explaining Extreme Events of 2011 from a Climate Perspective." The paper <http://dx.doi.org/10.1175/BAMS-D-12-00021.1> was published in the *Bulletin of the American Meteorological Society* and explains how the odds of six different extreme events of 2011 have changed in re-

sponse to global warming. Interestingly, the article showed that long-term climate change had no role in the 2011 flooding in Thailand, revealed a decreased likelihood of the cold UK winters like the one in 2010/2011, but concluded increased probabilities of several other events such as the 2011 droughts in Texas and the Horn of Africa. By developing the ability to put recent extreme weather or climate events into the longer-term context of climate change, scientists can provide the public with the information needed to make decisions about how to effectively minimize and prepare for the impacts of these variations and changes in the climate system.

Explaining Extreme Events of 2011 From a Climate Perspective

Event	Human Influence?
Thailand Floods	No
East Africa Droughts	Yes
Texas Drought	Yes
European Temperatures	Yes
Central England Warm Nov, Cold Dec	Yes
UK Cold Winter	Yes



Thailand Floods

September 12, 2012



ACE 2012

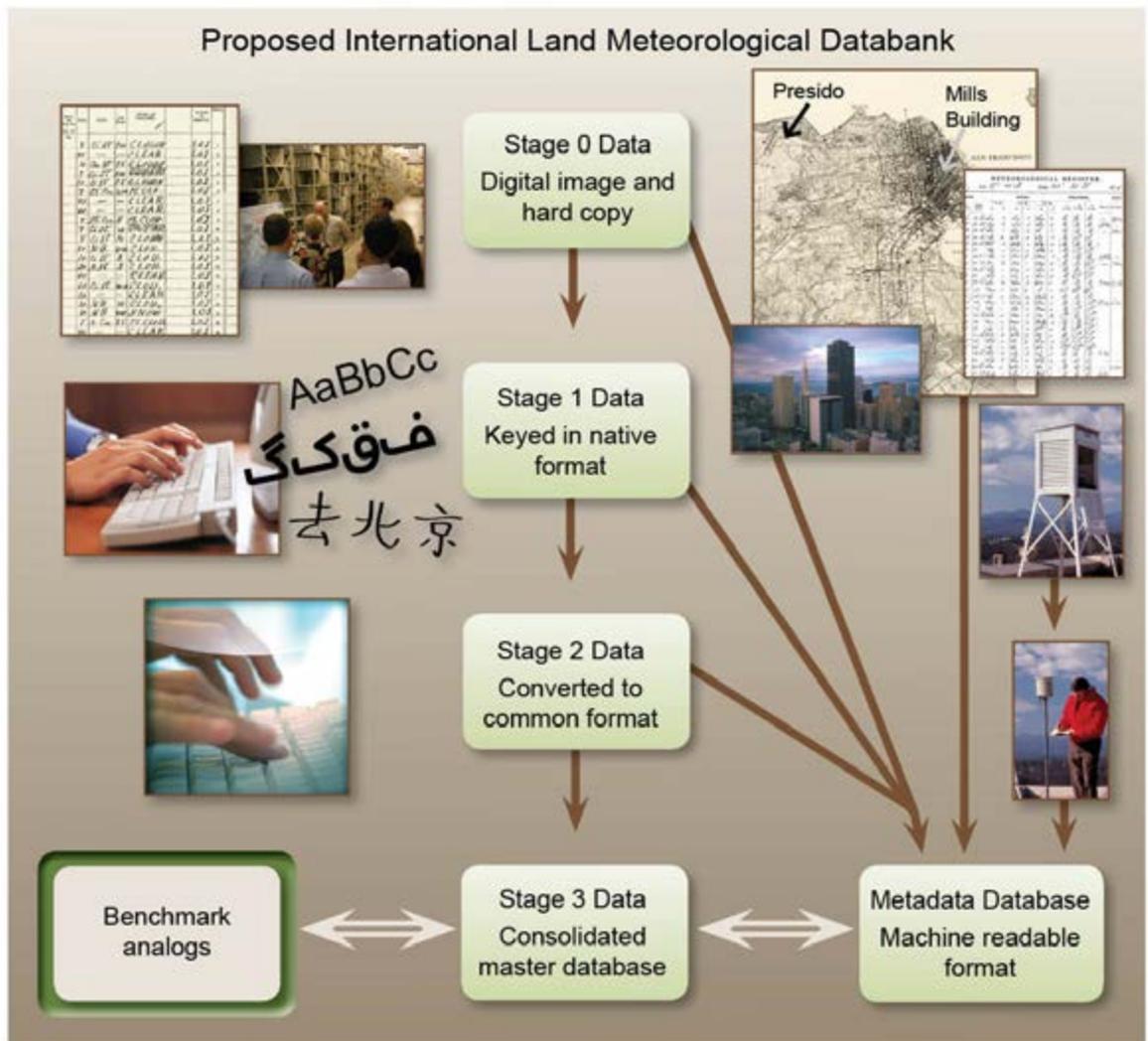
11

climate change, these long-term records also are valued by decision-makers to devise effective strategies to respond to, adapt to, and mitigate the impacts of climate variability and change. In order to produce CDRs, NCDC developed long-term, seamless homogeneous records characterizing climate change and variation. As new climate algorithms and sensor knowledge are developed, the entire period of record is reprocessed to update the data. Further, although no standards existed for such long-duration software and algorithm maintenance, NCDC applied software engineering expertise and tailored existing standards and best practices. NCDC also devised new requirements to ensure that CDR software design and documentation can accommodate migration to future computing platforms and software languages.

together into a single consolidated dataset, thereby filling gaps in data, both temporally and spatially, and providing a more complete picture of the Earth's climate from the 1800s to present. By integrating more than 40 sources of data into a single dataset, the databank brought the number of stations with mean monthly temperature to more than 35,000 from 7,280. Moreover, the new methods of data provenance as well as openness and transparency better ensure the integrity of the climate record and provide a higher level of confidence in analyses for scientists and for public and private sector decision-makers.

NCDC Improves Global Surface Temperature Record

NCDC improved the global temperature record in 2012 by providing data and analyses of higher quality and by establishing a new baseline for reducing uncertainty in the global temperature record. Primary among those advances was the release of the first version of a new global databank of surface temperature data. This databank was developed as part of the International Surface Temperature Initiative, an effort led by NCDC to improve data provenance, version control, openness and transparency, temporal and spatial coverage, as well as to develop methods for merging disparate sources. At its most basic level, the effort has uncovered new sources of climate observations and brought the sources



NCDC Increases Data Holdings and Access of Data to Users

NCDC gathers and archives data from all over the world. Throughout FY 2012, NCDC consistently advanced its data holdings and improved public access to its data. In FY 2012, visitors downloaded 1.9 petabytes of data, which is the equivalent of 25 years of HD-TV video and a 40-fold increase over the 47 terabytes of data downloaded just 7 years earlier (FY 2005). In comparison, FY 2011 recorded a total download of 1.285 petabytes. NCDC has also vastly increased its data holdings: A total volume of 9.9 petabytes was archived in FY 2012, which is an increase of more than 9 petabytes over the last 10 years. It would take almost 2.5 million DVDs, which would stack up nearly 10,000 feet high, to hold 9.9 petabytes of data. Once the data is archived, NCDC employs state-of-the-art data management techniques to provide these precise weather and climate records to the public. As the world's largest archive of climate data, NCDC's vision is to be the most comprehensive, accessible, and trusted source of climate and historical weather data and information. NCDC enables its customers to respond to the current and changing state of the climate through open access to the center's data holdings.

NCDC Fosters Understanding of Extremes and Climate Change

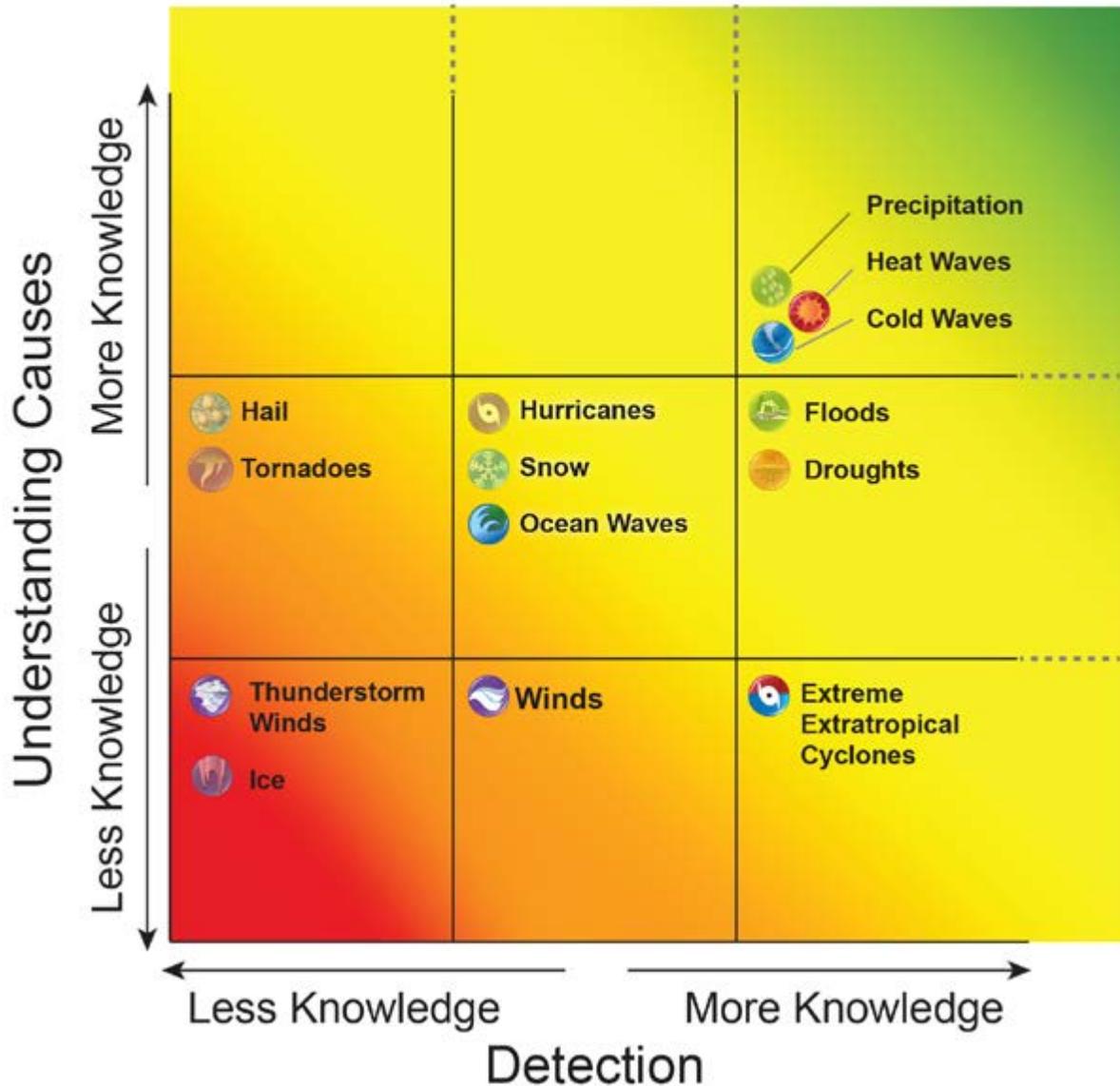
In FY 2012, NCDC and the Cooperative Institute for Climate and Satellites-North Carolina (CICS-NC) hosted a series of workshops focused on bringing leading experts together to discuss and analyze the state of science as it relates to extreme events and climate change. Analysis of climate extremes will benefit not only decision-makers but also society and the environment, potentially reducing the loss of life, property, and habitat. For example, since 1980 the United States has sustained well over 100 weather and climate disasters where damage from each exceeded \$1 billion (U.S.). To ascertain the state of knowledge of such events, participants documented observed changes on multidecadal timescales, assessed the suitability of the underlying data, and explored the potential causes of any changes that had been observed. The first workshop focused on climate hazards, including hurricanes, tornadoes and heavy precipitation. The second workshop focused on larger-scale events, such as heat waves, cold waves, floods and droughts. The third workshop addressed extratropical storms, winds, and waves of the Northern Hemisphere, primarily during the cold season, with an emphasis on U.S. coastal regions. The intent behind each workshop

was to advance the science by publishing a series of peer-reviewed papers in the *Bulletin of the American Meteorological Society (BAMS)*. The paper from the first workshop, entitled "Monitoring and Understanding Changes in Extreme Storm Statistics: State of Knowledge," is available at <http://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-11-00262.1>. The paper from the each of the second and third workshops is currently under review at BAMS.



NCDC Uses Modern Archive Technology to Support High-Volume and Complex Datasets

Adequacy for Detection and Understanding Causes of Changes for Classes of Extremes



Authors' assessments of the adequacy of data and physical understanding to detect and attribute trends. Phenomena are put into one of three categories of knowledge from less to more. The dashed lines on the top and right sides denote that knowledge about phenomena in the top category is not complete.

NCDC Team Enables Success of the Suomi National Polar-orbiting Partnership Mission

NCDC’s Comprehensive Large Array-data Stewardship System (CLASS) team led and participated in archive activities in support of the Suomi National Polar-orbiting Partnership (NPP), which is a joint NASA/NOAA satellite mission. Suomi NPP is the pathfinder or transition mission to the next generation of operational environmental satellites (Joint Polar Satellite System-JPSS) for the United States. CLASS is the sole designated archive for the mission’s data, and the team facilitated rigorous preparation for new data flows, completed successful exhaustive pre-launch testing, and quickly established new data distribution mechanisms to meet NOAA’s and other interdepartmental agencies’ emerging post-launch needs. After launch, the excellent performance of CLASS encouraged new demands and requests for service that were placed on the system in response to critical needs for data flows from other NOAA offices and NASA project elements. The Suomi NPP mission’s data that reside in CLASS represent the latest polar-orbiting satellite technology and will extend NCDC’s considerable satellite climate data records.



NCDC Engages Partners to Support National and Regional Climate Assessments

NCDC engaged NOAA’s Regional Climate Centers and external experts to contribute to and review the information in a suite of regional and national assessment climate scenarios that were developed, reviewed, and deployed in support of the National Climate Assessment (NCA) and adaptation planning. The scenarios to support the NCA are a more focused effort than in previous assessments, provid-

ing rigorous and consistent climate science underpinning as part of a commitment to a ‘sustained’ assessment endeavor. This attention will assist in understanding plausible futures and in achieving a consistent base of climate information for each successive synthesis report. Envisaged and designed as both beneficial to the NCA process as well as directly beneficial to decision-makers intending to include climate information in their decision processes, these scenarios incorporated eight regional reports and one national report, and in combination represent over 600 pages, 650 images, and approximately 60 tables of information. Approximately 32 authors and an additional 24 contributing authors provided information for the reports, which included observed climatologies and future projections as well as a full description of data sources used. The reports and the underlying maps, graphics, and metadata are available to agency adaptation planning efforts, to the public, and to authors preparing the NCA. Through NCDC and the Climate Program Office, NOAA has been a lead agency in the 2013 NCA and in all previous assessment efforts.

National Climate Assessment
 U.S. Global Change Research Program

Preparing the Nation for Change
 Introduction to the National Climate Assessment

Introduction
 The National Climate Assessment (NCA) is an important resource for understanding and communicating climate change science and impacts in the United States. It informs the nation about already observed changes, the current status of the climate, and anticipated trends for the future. The NCA report process integrates scientific information from multiple sources and sectors to highlight key findings and significant gaps in our knowledge. The NCA is also establishing consistent methods for evaluating climate impacts in the U.S. in the context of broader global change. Finally, findings from the NCA provide input to federal science priorities and are used by U.S. citizens, communities and businesses as they create more sustainable and environmentally sound plans for the nation's future.

What's New about the 2013 Assessment?
 The 2013 NCA will set the stage for more comprehensive assessments in the future. It will differ from previous U.S. climate assessments by:

- being an ongoing effort, rather than a periodic reporting activity;
- evaluating the nation's progress in adaptation and mitigation;
- building long-term partnerships with entities in both the public and the private sectors;
- identifying national indicators of change within regions and sectors, and establishing consistent and ongoing methods for evaluating them;
- including new methods for documenting climate-related risks and opportunities;
- providing web-based information that supports decision-making processes within and across regions and sectors of the U.S.

Objectives
 The NCA is envisioned as an inclusive, nationwide process with many key objectives, including:

- Synthesizing relevant climate science and information;
- Increasing understanding of what is known and not known about climate change;
- Informing climate science priorities;
- Building climate assessment capacity in regions and sectors;
- Supporting climate-resilient and skilled use of NCA findings.

The National Climate Assessment studies how climate change impacts different regions (depicted on the map below) and sectors across the United States, including:

- Human Health | Land Use and Land-Use Change
- Agriculture | Energy | Economy and Biodiversity
- Water Resources | Energy Security and Use | Transportation
- Urban Infrastructure and Resilibility | Food Communities
- Biogeochemical Cycles | Oceans and Marine Resources
- Wild, Indigenous, and Native Lands and Resources
- Coastal Zone | Adaptation and Mitigation
- International Security | Trade, Policy

U.S. Global Change Research Program
 www.globalchange.gov

NCDC Promotes Regional Drought Forums and Webinars

During 2012, NCDC Regional Climate Services Directors (RCSDs), in coordination with other NOAA offices and other partners substantially enhanced the nature and benefits of drought information services by providing regionally specific details and opportunities to discuss impacts and response options with government and private-sector decision-makers charged with responding to the drought. In an effort to provide climate services information and resources to the hard-hit central and southern U.S., the RCSDs delivered webinars and forums to connect regional and local stakeholders to climate services that attempt to equip and educate on the drought impacts. These venues brought together a range of weather and climate information providers, along with representatives from a broad cross-section of management and user communities and surrounding areas. The purpose was to assess the current drought status, its historic nature, and the short- and long-term weather and climate outlooks for possible relief; identify key impacts from the drought on a range of physical and socioeconomic systems; discuss the use of climate information, products, and services in response to this and previous droughts; and identify opportunities for improved response efforts in the future. NCDC's drought and climate monitoring data and information products were vital to the services provided for the regions. These interactions created an opportunity for NOAA's climate services to expand their reach beyond its internal partners and have been the springboard for new partnerships with state and

local governments as well as with other Federal agencies. Feedback from the sessions included positive comments regarding the clarity of the information provided and the timely delivery by the presenters. Inquiries for more information as well as invitations to speak at other events were also generated from these sessions.

NCDC Commissions New Component of U.S. Climate Reference Network (USCRN)

NCDC, which is responsible for operation of the USCRN, completed the addition of soil moisture and temperature sensors as well as relative humidity sensors in 2011, and the new component system was commissioned at all 114 network sites in the conterminous United States in 2012. NCDC worked to implement a sustained soil and relative humidity monitoring program as part of its overall climate monitoring efforts. The new sensor program add-on was necessary because traditional USCRN above-ground instrumentation lacked the sub-surface soil observation components of moisture and temperature, which are very important for understanding climate and drought. The USCRN now provides the continuous monitoring of soil conditions across the conterminous United States and has recently begun expanding the installation of those soil sensors at the current total of 12 stations in Alaska. This effort is all in support of the National Integrated Drought Information System (NIDIS), which synergizes with an overall U.S. and North American drought monitoring effort led by NCDC. Drought and other climate extremes have the potential of

increasing in frequency and/or magnitude in the future, making the provision of this soil and relative humidity data critical to advancing the scientific understanding of drought. Capturing the data will allow the USCRN program and NCDC to better characterize the climate conditions that exist and to provide the information to water resource managers, farmers, and scientists. The management of ensuring the installation of these sensors and their continued maintenance, coupled with the ability to have programming and scientific staff devoted to analyzing the data, is a great addition to the overall study of climate and greatly enhances the success of this effort.



David Brown, NCDC Regional Climate Service Director-Southern Region (standing), oversees one of several Drought Forum workshops held during the summer 2012.



USCRN station photo of WY Moose 1 NNE located in Grand Teton National Park. Site photo was taken on June 22, 2005.

Online and Operational Service



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

The National Climatic Data Center (NCDC) maintains an Internet World Wide Web (WWW) home page service, releasing a redesigned version in September of 2012. The website redesign creates a more inviting entry point to NCDC's vast products, services and archives, in addition to offering a more intuitive way to access the Center's many datasets and products. Some of the datasets and products available are highlighted in the following pages.

Our Web system includes access to U.S. and global climatic data, model data, satellite data, radar images, inventories of datasets available off-line, publications, climate monitoring reports, special reports on extreme weather events, and an online ordering system. Just over 1,900 terabytes (1.911 petabytes) of data and information were downloaded by our customers during the 2012 fiscal year.

Several useful quick links are listed here, with these and others being described further in the following pages.

NOAA Virtual Data System (NVDS) Climate Data Online Version 2 (CDO) –

<http://www.ncdc.noaa.gov/cdo-web/search>

The latest version implemented many new capabilities and features.

Our most popular products—

<http://www.ncdc.noaa.gov/most-popular-data>

A listing of our top 20 products and datasets

Our Online Store—

<http://www.ncdc.noaa.gov/online-store> While online data are now free, NCDC's Online Store provides the ability to order those offline items such as DVDs, posters, etc.

NOAA Climate Services Portal —

<http://www.climate.gov/#dataServices>

A completely revamped Data and Services section of the Portal, with integrated map services and new search capabilities.

Satellite Data

The National Oceanic and Atmospheric Administration (NOAA) manages a constellation of geostationary and polar-orbiting meteorological satellites. These satellites are distributed among three operational programs: the Suomi NPOESS Preparatory Project (NPP), the Geostationary Operational Environmental Satellite Program (GOES), and the Polar Operational Environmental Satellite Program (POES).

The Defense Meteorological Satellite Program (DMSP) satellites are operated by the U.S. Department of Defense and the data are archived and distributed by NOAA's NCDC under the Shared Processing Program. Access to the most popular satellite data is through the Comprehensive Large Array-data Stewardship System (CLASS) at www.class.noaa.gov

contain four, five, six, or ten minutes of base data depending on the volume coverage pattern. There are 41 Level-III products routinely available from NCDC, including precipitation estimates, storm relative velocity, and echo tops.

Example data products: Raw radiance data from instruments (POES Level 1b, GOES GVAR, DMSP TDR, etc.) and various satellite products, imagery, movies, and animations.



<http://www.ncdc.noaa.gov/satellite-data>



<http://www.ncdc.noaa.gov/radar1-data>

Radar Data

All NEXRAD Level-II data are available through NCDC. Data are collected and recorded in units of files, which typically

Example data/information: Visualization tools, decoding software, radar data access system, storm events, etc.

Model Data

The NOAA Operational Model Archive and Distribution System (NOMADS) project is a repository of weather model output datasets, model input datasets (assimilation), and a limited subset of climate model datasets generated by NOAA. NCDC provides near-real-time access to these weather model forecast data in addition to historical model data.



<http://www.ncdc.noaa.gov/model-data>

Example data products: Model Datasets, reanalysis, climate prediction, derived, etc.



<http://www.ncdc.noaa.gov/weather-balloon-data>

Weather Balloon Data

Weather data from the atmosphere, beginning at three meters above the Earth's surface, are considered weather balloon or upper air data. These data are obtained from radiosondes, which are instrument packages tethered to balloons that are launched from the ground, ascend through the troposphere into the stratosphere, and transmit back to a receiving station on the ground. These observations include vertical profiles of temperature, humidity, wind speed and direction, atmospheric pressure, and geopotential height.

Example data products: Upper Air Charts, NOAA Operational Model Archive and Distribution System (NOMADS), Integrated Global Radiosonde Archiv (IGRA), etc

Marine / Ocean Data

NCDC receives and archives meteorological data from ships at sea, moored and drifting buoys, coastal stations, rigs, and platforms. The temporal frequency of the observations range from sub-hourly to 6-hourly synoptic and are global in spatial coverage.

Example data products: International Comprehensive Ocean-Atmosphere Data Set Project (ICODAS), Global Buoy Data, Voluntary Observing Ship Climate Project (VOSclim), etc.



<http://www.ncdc.noaa.gov/marineocean-data>



Paleoclimatology Data

Paleoclimatic, or past climate and environmental data, derived from natural sources such as tree rings, ice cores, corals, and ocean and lake sediments extend the archive of weather and climate back hundreds of millions of years. These data include geophysical or biological measurement time series and some reconstructed climate variables such as temperature and precipitation.

<http://www.ncdc.noaa.gov/paleoclimate-data>

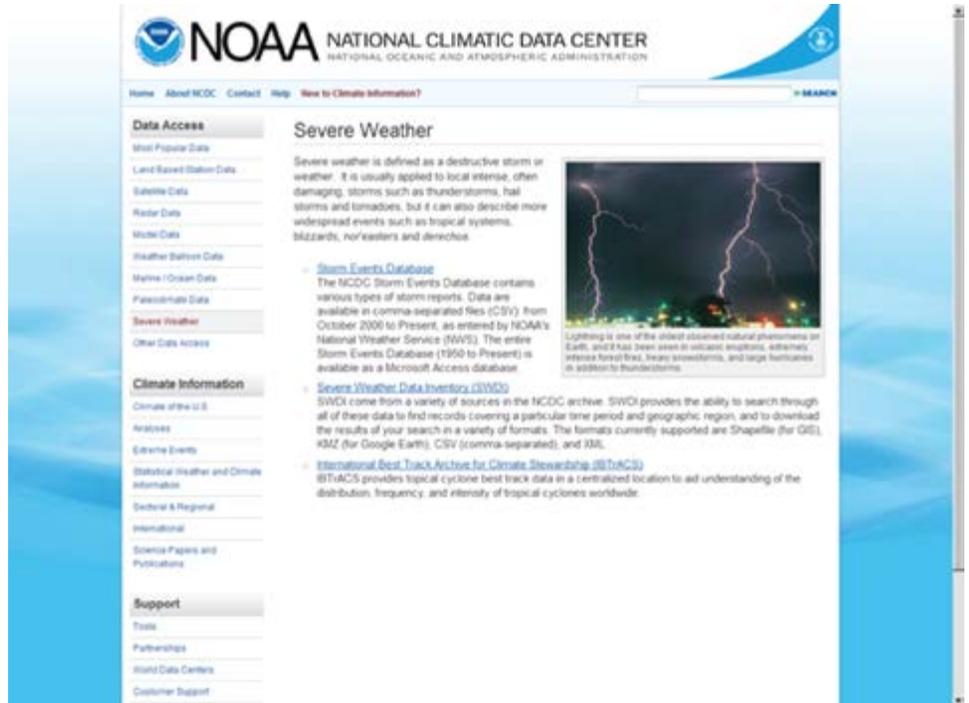
Example data/information: Paleoclimatology Proxy Data, Climate Reconstructions, Climate Model output, and Climate Synthesis products.

Severe Weather

Severe weather is defined as a destructive storm or weather. It is usually applied to local, intense, often damaging, storms such as thunderstorms, hail storms and tornadoes, but it can also describe more widespread events such as tropical systems, blizzards, nor'easters and derechos.

Example data/information:

Storm Events Database, Severe Weather Data Inventory (SWDI), IBTrACS.



<http://www.ncdc.noaa.gov/severe-weather>



Other Data Access

NCDC provides links to other data and access systems that can be easily reached from this web page. Services and systems include Service Record Retention System (SRRS), FTP bulk data access, Hierarchical Data Storage System (HDSS), HAS, etc.

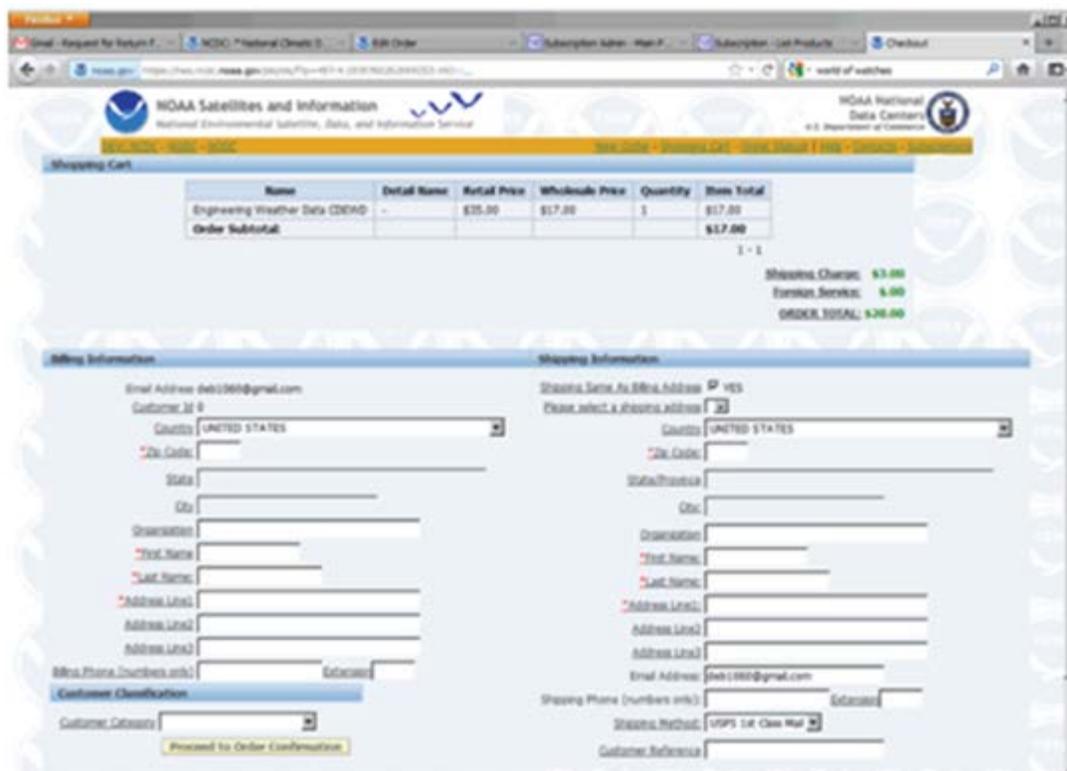
<http://www.ncdc.noaa.gov/other-data-access>

NOAA National Data Centers Online Store

Online Store

NCDC's online data are now free to all users; however, we have a variety of items such as CD-ROMs, DVDs, posters, etc., that may be ordered and paid for online through our online store. Also, certified copies of pdf data requested through the Climate Data Online (CDO) system may be ordered through the online store. The Online Store also provides service for our partner Data Centers The National Oceanographic Data Center (NODC) and the National Geophysical Data Center (NGDC)

Direct entry page to the Online Store:



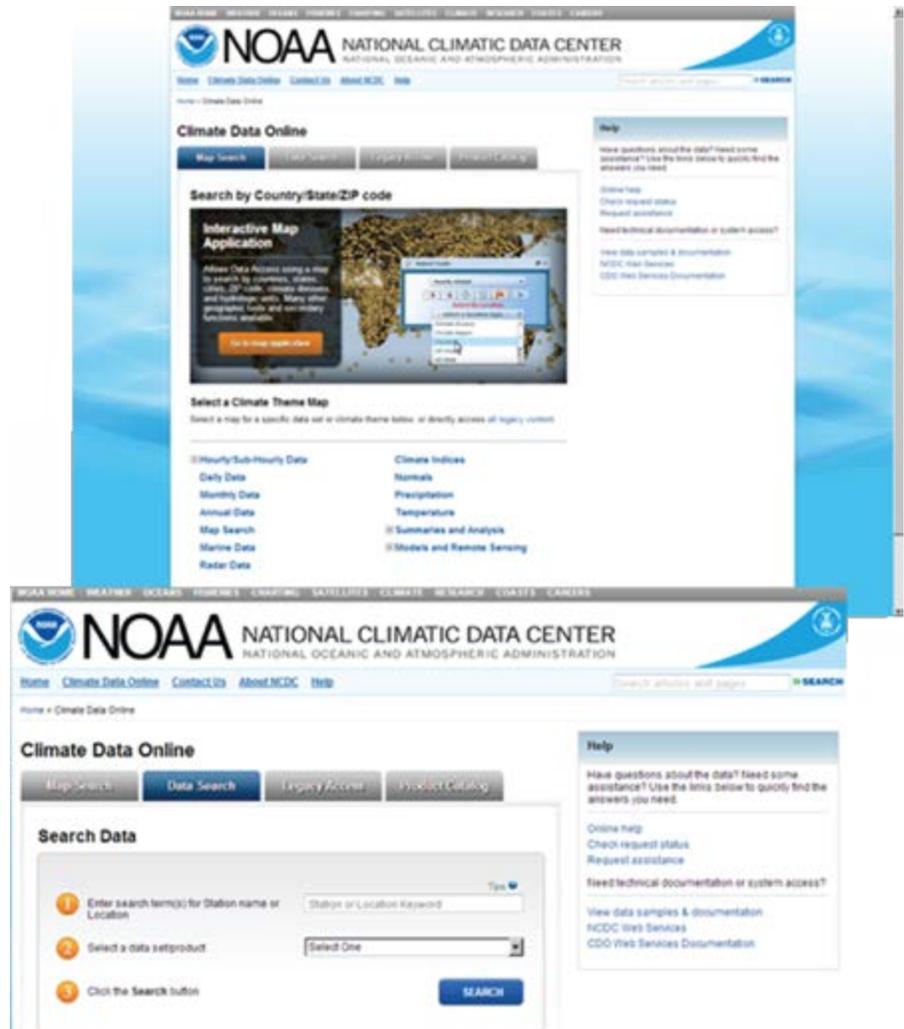
<https://nes.ncdc.noaa.gov/plnes/plsql/olstore.main?look=1>

Climate Data Online (CDO) system

NCDC significantly changed access to climate data in recent months by retiring old datasets and systems and making new ones available. **Climate Data Online (CDO)** version 2.0 was released in December 2011 with three primary entry points for data acquisition: data search, dynamic maps, and web services. All three of these methods have an integrated underlying data model, which allows development of a consistent user interface and provides access to all products and services through a single system. Over the coming months, NCDC will continue to transition more datasets and systems to the new acquisition service. The scope of data archived and serviced at NCDC not only includes products related to global *in situ* station data, but also balloon, radar, satellite, and model data. Our goal is to provide users a consistent approach to data discovery across all of these data networks.

The data search functionality allows users to search by common station name, station identifier, zip code, country, county, state, or hydrologic unit. The search results can be categorized by either representing a single station or by location (a group of stations). For example, a search on “Charlotte, NC” will return results showing stations and locations that match the search term. Users can then filter or sort the results to meet their needs. Users can select stations or locations, data types, and a time range of interest and order the data in CSV, ASCII text, and PDF output forms.

By means of dynamic mapping applications, users can visually discover NCDC data through a Geographic Information System (GIS). As a starting point, maps display the station distribution of the various data networks archived at NCDC. Users can display these stations by the frequency of collection or summarization (hourly/sub-hourly, daily, monthly, or annually) or by climate theme (temperature, precipitation, drought, snowfall). A number of tools allow users to select stations by location (country, state, county, zip code, hydrologic unit), by freehand (rectangle/polygon),



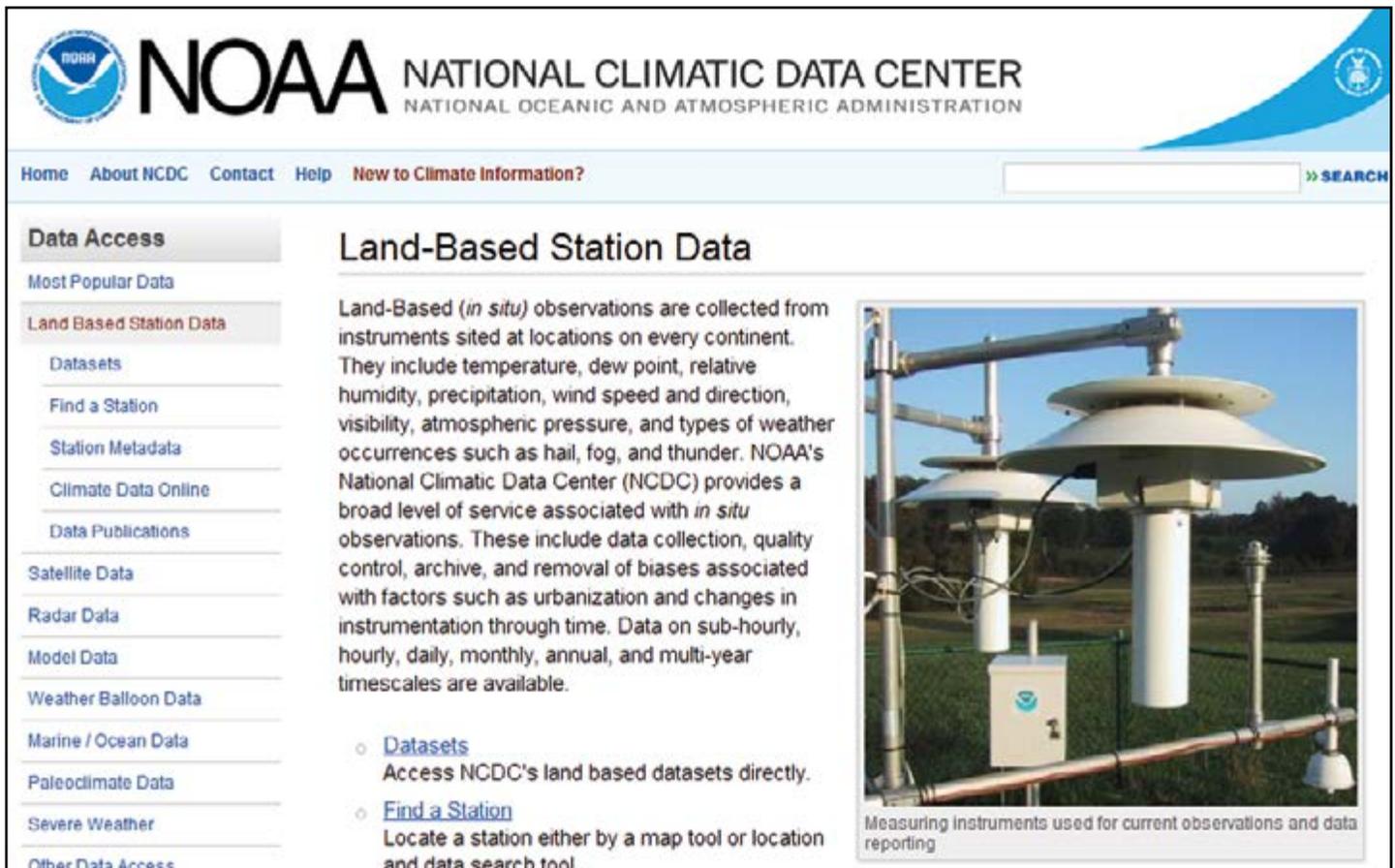
<http://www.ncdc.noaa.gov/cdo-web/>

by proximity from a point, or by gazetteer (geographic name search). The user can also order the data from the resulting station search.

NCDC constructed CDO Web services in a “RESTful” style, allowing users to write their own client software to access NCDC datasets. Users who have limited and well-defined data requirements will benefit from this type of access. These services do not replace bulk data download, which is available through File Transfer Protocol (FTP). See <http://www.ncdc.noaa.gov/cdo-web/webservices> for details.

CDO version 2.3 was released in the fall of 2012 with additional data products and features. Future releases will include advanced searching and filtering capabilities, tighter map/search integration, and additional datasets, products, and services.

In Situ Data



NOAA NATIONAL CLIMATIC DATA CENTER
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Home About NCDC Contact Help [New to Climate Information?](#) [» SEARCH](#)

Data Access

- Most Popular Data
- Land Based Station Data**
 - Datasets
 - Find a Station
 - Station Metadata
 - Climate Data Online
 - Data Publications
- Satellite Data
- Radar Data
- Model Data
- Weather Balloon Data
- Marine / Ocean Data
- Paleoclimate Data
- Severe Weather
- Other Data Access

Land-Based Station Data

Land-Based (*in situ*) observations are collected from instruments sited at locations on every continent. They include temperature, dew point, relative humidity, precipitation, wind speed and direction, visibility, atmospheric pressure, and types of weather occurrences such as hail, fog, and thunder. NOAA's National Climatic Data Center (NCDC) provides a broad level of service associated with *in situ* observations. These include data collection, quality control, archive, and removal of biases associated with factors such as urbanization and changes in instrumentation through time. Data on sub-hourly, hourly, daily, monthly, annual, and multi-year timescales are available.

- [Datasets](#)
Access NCDC's land based datasets directly.
- [Find a Station](#)
Locate a station either by a map tool or location and data search tool.

Measuring instruments used for current observations and data reporting

<http://www.ncdc.noaa.gov/land-based-station-data>

General Information

1. The periods of record for these datasets vary considerably depending on data type and station.
2. All references to QC pertain strictly to data checking and corrections performed within the Federal Climate Complex. Other gross QC is usually performed at the point of origin such as NCEP and AFWA.
3. The media available are: CD-ROM, DVD, and FTP transfer. These options vary depending on the dataset.
4. Cost to customer varies depending on data volume and the processing required for order.
5. This is only a summary of the major digital datasets available from NCDC. Many other datasets/data types (in addition to those listed below) are available. See <http://www.ncdc.noaa.gov/doctlib> for a complete list and documentation for datasets.
6. NCDC's website at <http://www.ncdc.noaa.gov> has links to numerous online datasets and data inventories. NCDC makes frequent updates to its website; users are encouraged to review it periodically.
7. Points of contact for information, cost estimates, and data requests: National Climatic Data Center, User Engagement & Services Branch, 151 Patton Avenue, Asheville, NC 28801-5001. Phone: 828-271-4800, Fax: 828-271-4876; Email: ncdc.orders@noaa.gov

- **DATASET: Worldwide surface observations (hourly/synoptic) --DSI3505**—Integrated Surface Data (ISD)-worldwide stations.
- **Data Type:** ASCII character data.
- **Quality Control:** Extensive automated QC (all data); additional manual QC for USAF, Navy, and NWS stations.
- **Data Origin:** An integration of data from numerous sources, comprising all stations available historically.
- **Content/Elements:** About 20,000 stations currently active. Includes wind speed and direction, wind gust, temperature, dew point, cloud data, sea level pressure, altimeter setting, station pressure, present weather, visibility, precipitation amounts for various time periods, snow depth, and various other elements as observed by each station; Observational practices vary by country.
- **Period of Record:** 1901 to present (varies greatly by station). See <http://www.ncdc.noaa.gov/doclib> for further details. The complete dataset for 1995-1999 is available with annual updates for all stations for the period 2000-2012. Online – <http://www.ncdc.noaa.gov/cdo-web/search>

The screenshot shows the NOAA National Climatic Data Center website. The main header features the NOAA logo and the text "NOAA NATIONAL CLIMATIC DATA CENTER NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION". Below the header is a navigation menu with links for Home, About NCDC, Contact, Help, and New to Climate Information?. A search bar is located on the right side of the navigation menu. The main content area is titled "Integrated Surface Database (ISD)". On the left side, there is a "Data Access" sidebar with a list of data sets, including OCLCD, COOP, Climate Normals, USHCN, GHCN, GSOD, USCRN, GOSIC, ISD (highlighted), ASOS, AWOS, Solar Radiation, Find a Station, Station Metadata, Climate Data Online, and Data Publications. The main content area contains a description of the ISD, stating that it consists of global hourly and synoptic observations compiled from numerous sources into a single common ASCII format and common data model. It also mentions that the database comprises over 20,000 stations worldwide, with some having data as far back as 1901. Two links are provided: "User Interface Page" and "Direct FTP Access".

<http://www.ncdc.noaa.gov/land-based-station-data/integrated-surface-database-isd> or via FTP at <ftp://ftp.ncdc.noaa.gov/pub/data/noaa/>

DATASET: Global ship and buoy observations (hourly/synoptic). The International Comprehensive Ocean Atmosphere Data Set (ICOADS) and NCDC Global Marine Data.

- **Data Type:** ASCII character data.
- **Quality Control:** Undergoes automated QC.
- **Data Origin:** Data originate from Global Telecommunications Systems (GTS) + some key-entered data.
- **Content/Elements:** Includes elements observed by ships, buoys and Coastal Marine Automated Network (CMAN) stations--temperature and dew point, wind direction and speed, visibility, present weather, sea level pressure, sea surface temperature, cloud data, ice data, and wave/swell heights and periods; Generally, buoys and CMAN stations only observe temperature, wind, pressure, sea surface temperature, and wave/swell data; while some ship reports include other elements; Elements vary considerably by station.
- **Period of Record:** As early as 1662 to present.
- **Notes:** See <http://www.ncdc.noaa.gov/doclib> for further details.
- **Online:** <http://www7.ncdc.noaa.gov/CDO/CDOMarineSelect.jsp> & <http://has.ncdc.noaa.gov/pls/plhas/HAS.FileAppSelect?datasetname=1173> ICOADS Release 2.5 (1662-2007) augmented by preliminary Near-Real-Time (NRT) extensions (2008-present) is available in monthly files via NCDC ftp access. These observations can be retrieved from the following location: <ftp://ftp.ncdc.noaa.gov/pub/data/icoads2.5/>.

For information on the ICOADS R2.5 monthly files, please read the following file prior to using the data: http://www1.ncdc.noaa.gov/pub/data/icoads2.5/Documentation/R2.5-README_ICOADS_NCDC_20120215.pdf

Beginning sometime during 2013, NCDC will offer a new ICOADS NRT product consisting of a blend of NCDC and the National Centers for Environmental Prediction (NCEP) Marine Surface Global Telecommunication System (GTS) observations. The new product will merge the two streams, remove duplicates, and retain all unique and best duplicate observations for a more complete dataset.

For official ICOADS data access at NCDC, the user must select data type "icoads2.5." NCDC offers only "enhanced" R2.5 observations, which were derived using 4.5 standard deviation "trimming" (quality control screening) limits, so as to accommodate more extreme climate events, and using a broad collection of marine observations including ships, buoys and near-surface oceanographic profile temperatures. All three U.S. ICOADS Partners (NOAA/ESRL, NOAA/NCDC, NCAR) offer various data access and format options. To review all available options, please see the ICOADS Products Website at <http://icoads.noaa.gov/products.html>, under the "Observations" section.

For general ICOADS information, please visit the ICOADS home page at <http://icoads.noaa.gov/index.shtml>.

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National Climatic Data Center
U.S. Department of Commerce

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[Marine Data](#) / [NDC CDO](#) / [Product Search](#) / [Help](#)

NDC CLIMATE DATA ONLINE

Marine Data, Hourly Global:

Select Bin/Grid Scheme:
 10-degree bins

Select Marine Data Type:

Callsign/Ship ID Search:

 012103762* 18901016 18901024
 01212660D* 18900117 18900120
 013890...* 18720924 19790131
 01432...* 19490117 19510531
 01433...* 19490312 19560219
 (returns the first 1000 matches)

<input type="checkbox"/>	Common Marine Format documentation
<input type="checkbox"/>	COADS-IMMA Data format documentation <small>Note: This is the format of the archive (see tables C0, C1, and C2). Delimited output formats have comma or space separations between the archive fields.</small>
<input type="checkbox"/>	WMO Publication No. 47 <small>International List of Selected, Supplementary and Auxiliary Ships</small>
<input type="checkbox"/>	Common Marine Format data sample
<input type="checkbox"/>	COADS-IMMA Comma Delimited data sample
<input type="checkbox"/>	COADS-IMMA Space Delimited data sample
<input type="checkbox"/>	COADS-IMMA data sample
Data and pricing (if applicable) details at the CDO Help Page	

<http://www7.ncdc.noaa.gov/CDO/CDOMarineSelect.jsp>

DATASET: Global ship observations (hourly/synoptic).

Voluntary Observing Ship Climate (VOSclim) Project.

- **Data Type:** ASCII character data.
- **Quality Control:** Undergoes automated QC; additional QC is performed by the UKMET Office against corresponding model fields.
- **Data Origin:** Data originates from Global Telecommunications Systems (GTS) + some key-entered data.
- **Content/Elements:** Includes elements observed by ships--temperature and dew point, wind direction and speed, visibility, present weather, sea level pressure, sea surface temperature, cloud data, ice data, and wave/swell heights and peri-

ods; Background model fields for sea level pressure, air temperature, sea surface temperature, winds and relative humidity are also included.

- **Period of Record:** 2001 to present.
- **Notes:** See <http://www.ncdc.noaa.gov/oa/documentlibrary/vosclim/imma.pdf> for data format details.
- **Online:** Fleet Ship List: <http://www1.ncdc.noaa.gov/pub/data/vosclim/vosclimshiplist.xls>
Monthly ASCII Files: <http://www.ncdc.noaa.gov/oa/climate/vosclim/vosclimdata.html>
Database Access for subsetting Purposes: <http://www7.ncdc.noaa.gov/CDO/CDOMarineSelect.jsp>

NOAA National Climatic Data Center
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Search Field: Search NCDC

VOSclim Home / NCDC Marine Data Home

About VOSclim VOSclim Datasets VOSclim Data Monitoring VOSclim Ship Information

Voluntary Observing Ship Climate (VOSclim) Fleet

Image courtesy of Seatrade Reefer Chartering

VOS Voluntary Observing Ship Climate
VOS Climate Fleet

<http://www.ncdc.noaa.gov/oa/climate/vosclim/vosclim.htm>

DATASET: Hourly precipitation data for NWS and cooperative U.S. stations--DSI3240.

- **Data Type:** ASCII character data.
- **Quality Control:** Undergoes automated and manual quality control.
- **Data Origin:** Various sources including ASOS and punched tape from stations.
- **Content/Elements:** Hour-by-hour precipitation amounts; About 2,800 stations currently active.

- **Period of Record:** Generally 1948 to present.
- **Notes:** See <http://www.ncdc.noaa.gov/doclib> for further details. Data are also available on a CD-ROM set.
- **Online:** <http://www.ncdc.noaa.gov/cdo-web/search>

The screenshot shows the NOAA National Climatic Data Center website. At the top, there is the NOAA logo and the text "NOAA NATIONAL CLIMATIC DATA CENTER NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION". Below this is a navigation menu with links for "Home", "About NCDC", "Contact", "Help", and "New to Climate Information?". A search bar is located on the right side of the navigation menu. The main content area is titled "Climate Data Online: Map & Application Search" and features four tabs: "Map Search", "Data Search", "FTP & Legacy Access", and "Metadata Search". The "Data Search" tab is active, showing a "Free Data Search & Ordering" section. This section includes three numbered steps: 1. Enter search term(s) for station name, location name, ZIP code, etc. (with a text input field); 2. Select a data set or product to search (with a dropdown menu showing "Precipitation Hourly"); 3. Click the SEARCH button (with a blue "SEARCH" button). A "Help" sidebar is located on the right side of the page, containing links for "Climate Data Online help", "Check order status", "Request assistance", "View data samples & documentation", "NCDC Web Services", and "CDO Web Services Documentation".

<http://www.ncdc.noaa.gov/cdo-web/#t=secondTabLink>

DATASET: 15-Minute precipitation data for NWS and Cooperative U.S. stations--DSI3260.

- **Data Type:** ASCII character data.
- **Quality Control;** Undergoes automated and manual QC.
- **Data Origin:** Various sources including ASOS and punched tape from stations.
- **Content/Elements:** Precipitation amounts for

15-minute increments; About 2,400 stations currently active.

- **Period of Record:** Generally 1971 to present.
- **Notes:** See <http://www.ncdc.noaa.gov/doclib> for further details.
- **Online:** <http://www.ncdc.noaa.gov/cdo-web/search>

The screenshot shows the NOAA National Climatic Data Center website. At the top, there is a navigation bar with links for NOAA HOME, WEATHER, OCEANS, FISHERIES, CHARTING, SATELLITES, CLIMATE, RESEARCH, COASTS, and CAREERS. Below this is the NOAA logo and the text 'NOAA NATIONAL CLIMATIC DATA CENTER NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION'. A search bar is located on the right side of the header. The main content area is titled 'Climate Data Online' and features four tabs: 'Map Search', 'Data Search', 'Legacy Access', and 'Product Catalog'. The 'Data Search' tab is active. Below the tabs is a 'Search Data' section with three numbered steps: 1. Enter search term(s) for Station name or Location (with a text input field containing 'Station or Location Keyword' and a 'Tips' link); 2. Select a data set/product (with a dropdown menu showing 'Precipitation 15 Minute'); 3. Click the Search button (with a blue 'SEARCH' button). To the right of the search area is a 'Help' section with the text 'Have questions about the data? Need some assistance? Use the links below to quickly find the answers you need.' and several links: 'Online help', 'Check request status', 'Request assistance', 'Need technical documentation or system access?', 'View data samples & documentation', 'NCDC Web Services', and 'CDO Web Services Documentation'.

<http://www.ncdc.noaa.gov/cdo-web/#t=secondTabLink>

DATASET: United States Historical Climatology Network (USHCN).

- **Data Type:** ASCII character data.
- **Quality Control:** Monthly mean maximum, minimum and average temperature and total precipitation are quality controlled. Temperature data are bias corrected to remove non-climatic artifacts associated with station moves and changes in observer practices, instrumentation and environment that occur through time.
- **Data Origin:** NOAA Cooperative Observer Program (COOP) Network Data.
- **Content/Elements:** USHCN stations comprise a subset of the NOAA Cooperative Observer Program (COOP) network that have been selected based on spatial coverage, record length, data completeness and historical stability; As of October 2012, USHCN Version 2.5 replaced version 2.0, incorporating modifications to the underlying database as well as coding changes to the pairwise homogenization algorithm (PHA) that improve its overall efficiency.
- **Period of Record:** The dataset consists of 1,218 stations with Periods of Record generally 1895 to present.
- **Online:** <http://www.ncdc.noaa.gov/oa/climate/research/ushcn/>



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The USHCN Version 2 Serial Monthly Datasets

National Oceanic and Atmospheric Administration

National Climatic Data Center

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- [Version 2 Data Processing Steps](#)
 - [Quality Evaluation and Database Construction](#)
 - [Time of Observation Bias Adjustments](#)
 - [Homogeneity Testing and Adjustment Procedures](#)
 - [Estimation of Missing Values](#)
 - [Urbanization Effects](#)
- [Station siting and U.S. surface temperature trends](#)
- [Data Access](#)
- [Pairwise Homogeneity Adjustment Software](#)
- [References](#)

<http://www.ncdc.noaa.gov/oa/climate/research/ushcn/>

DATASET: Global Historical Climate Network-Daily (GHCN-Daily) – Summary Of the Day (SOD) Data from NOAA's National Weather Service (U.S.), Community Collaborative Rain, Hail and Snow Network {CoCoRaHS (U.S.)}, Department of Defense (U.S. and Foreign) and Global Sites.

- **Data Type:** ASCII character data.
- **Quality Control:** All datasets undergo automated QC.
- **Data Origin:** Various sources including ASOS, directly from stations, and key-entry.
- **Content/Elements:** Includes maximum/minimum temperatures, precipitation, snowfall and snow

depth; Some U.S. stations have additional data such as evaporation and soil temperature; Element content varies greatly by station; Approximately 28,000 stations are regularly updated; over 84,000 stations have available historical data.

- **Period of Record:** Generally 1890s to present, with the earliest observations beginning in the 1830s.
- **Notes:** See <http://www.ncdc.noaa.gov/doclib> for further details.



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National Climatic Data Center
U.S. Department of Commerce

Global Historical Climatology Network - Daily

Access
Data
Metadata

Description
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Description - Introduction

GHCN (Global Historical Climatology Network)-Daily is an integrated database of daily climate summaries from land surface stations across the globe. Like its monthly counterpart (GHCN-Monthly), GHCN-Daily is comprised of daily climate records from numerous sources that have been integrated and subjected to a common suite of quality assurance reviews.

GHCN-Daily now contains records from over 75000 stations in 100 countries and territories. Numerous daily variables are provided, including maximum and minimum temperature, total daily precipitation, snowfall, and snow depth; however, about two thirds of the stations report precipitation only. Both the record length and period of record vary by station and cover intervals ranging from less than year to more than 175 years.

The dataset is regularly reconstructed (usually every weekend) from its 20-plus data source components to ensure that GHCN-Daily is generally in sync with its growing list of constituent sources. During this process, quality assurance checks are applied to the full dataset. On most weekdays, GHCN-Daily station data are updated when possible from a variety of data streams, which also undergo a suite of quality checks.

Each updated and fully reprocessed copy of the GHCN-Daily dataset is assigned a unique version number, and each dataset version is then archived at NOAA/NCDC for potential future retrieval. GHCN-Daily and its processing system also serve as the official archive and processing system for U.S. Cooperative Observer data, which have been comprehensively integrated into the dataset along with other U.S. daily data sources.

Users of U.S. data are encouraged to see further notes on the [Source Data](#) page regarding real-time versus time-delayed, archive quality updates. In general, real-time, update data streams are replaced by archive-quality sources 45 to 60 days after the close of a data month.

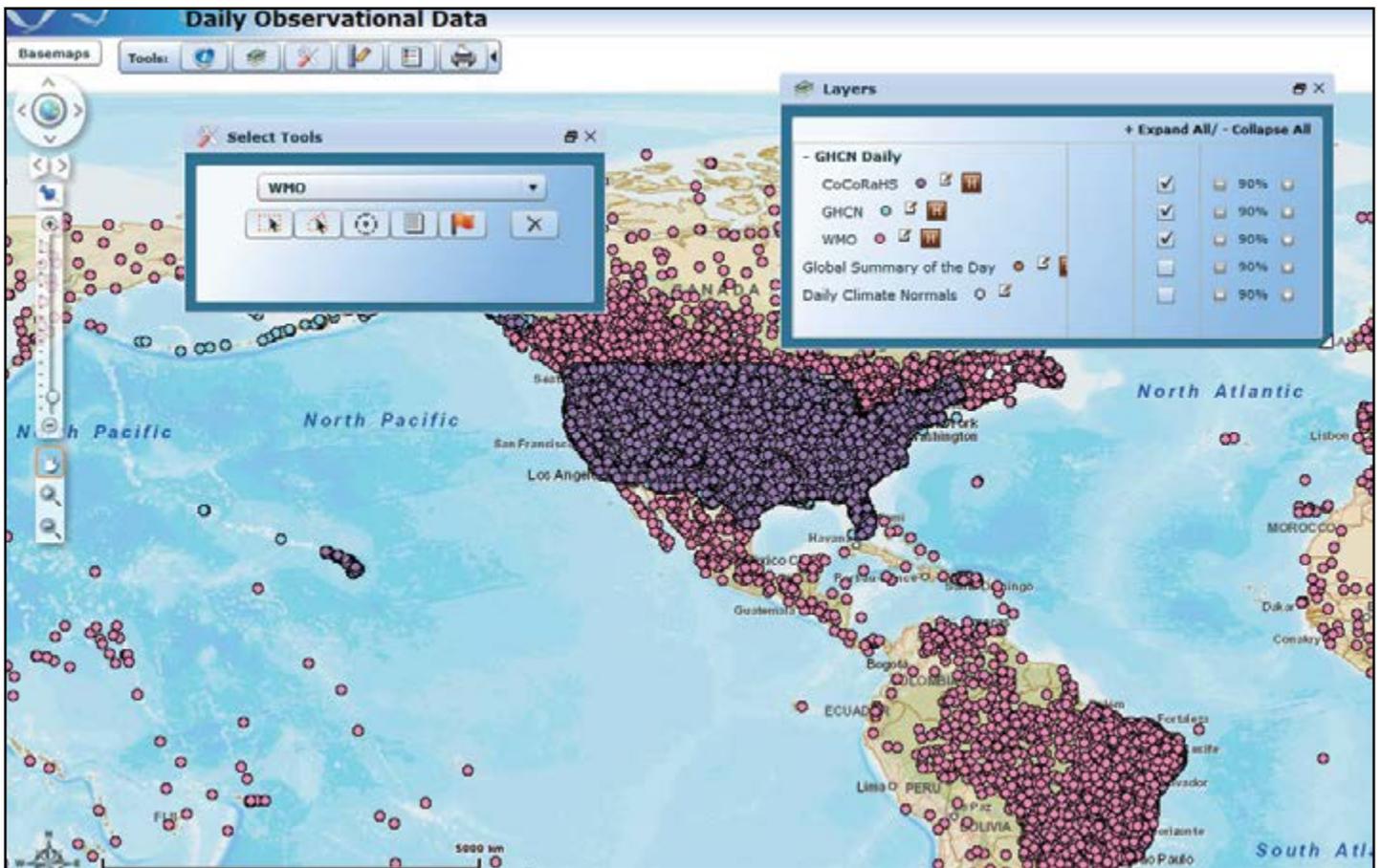
Major changes to the processing system as well as announcements of significant data additions to GHCN-Daily are provided via an RSS feed and in the GHCN-Daily status reports. GHCN-Daily data documentation is provided in the [readme.txt](#) file, which includes a definition of the data quality and data source flags that accompany each datum.



Photo courtesy Grant Goodge/NCDC

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Enter Search Term(s):
Search NCDC

<http://www.ncdc.noaa.gov/oa/climate/ghcn-daily/index.php>



<http://www.ncdc.noaa.gov/cdo-web/#t=firstTabLink> (select 'Daily Data')

DATASET: NOAA's 1981-2010 U.S. Climate Normals

- **Data Type:** ASCII character data.
- **Quality Control:** Undergoes some automated QC.
- **Data Origin:** Various sources including the GHCN-Daily Dataset and Standardized Monthly Temperature Data.
- **Content/Elements:** The 1981-2010 U.S. Climate Normals provides available Climate Normals for over 9,800 stations and replaces the 1971-2000 U.S. Climate Normals Product; 7,500 stations have Temperature-related Normals; Precipitation Normals for 9,300 stations; Additionally, 6,400 stations have Snowfall Normals, and 5,300 stations have Snow Depth Normals; Hourly Normals for Wind, Pressure, Cloud Cover, etc., are available for 262 stations. The

1981-2010 U.S. Climate Normals are available for data elements such as Temperature, Precipitation, Wind, Cooling and Heating Degree Days, Pressure, Cloud Cover, etc. Additionally, the periods of time available for this dataset include, but are not limited to Annual, Seasonal, Monthly, Daily and Hourly.

- **Period of Record:** 1981-2010.
- **Notes:** See <http://www1.ncdc.noaa.gov/pub/data/normals/1981-2010/readme.txt> for further details regarding available files for the 1981-2010 U.S. Climate Normals.
- **Online:** <http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html>



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NOAA's 1981-2010 Climate Normals

NOAA's National Climatic Data Center (NCDC) released the 1981-2010 Normals on July 1, 2011. Climate Normals are the latest three-decade averages of climatological variables, including temperature and precipitation. This new product replaces the 1971-2000 Normals product. Additional Normals products; such as frost/freeze dates, growing degree days, population-weighting heating and cooling degree days, and climate division and gridded normals; will be provided in a supplemental release by the end of 2011.

Obtaining the 1981-2010 Climate Normals

Users can access the 1981-2010 Climate Normals via [ftp](#) or [http](#). It is highly recommended that users first download and read the [readme.txt](#) file which describes all file information and where each file is located.

Pre-release Webcast

NCDC hosted a webcast on June 13, 2011 with over 150 participants. This webcast focused on what users can expect to see when the 1981-2010 Climate Normals are released on July 1, 2011. Presentation materials for this webcast are available here:

[Normals-Webcast-061311.pdf](#)

For more information on this webcast, such as viewing a recorded version of the webcast, please contact [Robin Evans](#).

<http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html>

DATASET: Summary of month data for U.S. and global sites {Global Historical Climate Network (GHCN-Monthly)}.

- **Data Type:** ASCII character data.
- **Quality Control:** All datasets undergo automated QC.
- **Data Origin:** Various international sources. Updated monthly primarily from CLIMAT messages.
- **Content/Elements:** Includes monthly mean temperature, monthly maximum/ minimum temperatures, and monthly total precipitation; Element content varies greatly by station; Approximately 20,000

stations with precipitation data and 7,280 stations with monthly mean temperature.

- **Period of Record:** Generally late 1800s to present, with the earliest observations beginning in the 1700s.

- **Online:** <http://www.ncdc.noaa.gov/ghcnm/>

Disclaimer: As of September 2012, the version of GHCN-Monthly for temperature variables is V.3.2; for precipitation variables, the version is v.2.0. The latest information about GHCN-Monthly Version Availability is accessible from the GHCN-Monthly Website. <http://www.ncdc.noaa.gov/ghcnm/>


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Climate Monitoring |
GHCN Monthly |
Help

GHCN Monthly

National Oceanic and Atmospheric Administration

National Climatic Data Center

Effective September 2012, the [GHCN-M version 3.2.0](#) dataset of monthly mean temperature replaced the [GHCN-M version 3.1.0](#) monthly mean temperature dataset. Beginning with the August 2012 Global monthly State of the Climate Report, released on September 17, 2012, GHCN-M version 3.2.0 is used for NCDC climate monitoring activities, including calculation of global land surface temperature anomalies and trends. For more information about this newest version, please see the [GHCN-M version 3.2.0 Technical Report](#).

*The GHCN-M version 3.1.0 Technical Report was revised on September 5, 2012 to accurately reflect the changes incorporated in that version. Previously that report incorrectly included discussion of changes to the Pairwise Homogeneity Algorithm (PHA). Changes to the PHA are included in version 3.2.0 and described in the version 3.2.0 Technical Report. Please see the [Frequently Asked Questions](#) to learn more about this update.

- [Version 3](#)
- [Version 2](#)

Contact Information

For more information about content specific to this page, please [Contact Us](#).

Climate Monitoring |
GHCN Monthly |
Help

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

DATASET: National Solar Radiation Database 1991-2005 for the U.S., Guam, and Puerto Rico--DSI3284.

- **Data Origin:** National Renewable Energy Laboratory (NREL)
- **Content/ Elements:** The 1991 – 2005 National Solar Radiation Database (NSRDB) contains hourly solar radiation (including global, direct, and diffuse) and meteorological data for 1,454 stations. This update builds on the 1961-1990 NSRDB, which contains data for 239 stations. This includes the conventional time series for NSRDB ground stations as well as a one-tenth-degree gridded dataset that contains hourly

solar records for 8 years (1998 – 2005) for the United States (except Alaska above 60° latitude) for about 100,000 pixel locations (at a nominal 10-km-by-10-km pixel size).

- **Period of Record:** 1991 to 2005
- **Notes:** See <ftp://ftp.ncdc.noaa.gov/pub/data/nsrdb-solar/solar-only/documentation/NSRDBusermanual.pdf> for further details
- **Online:** <http://ols.nndc.noaa.gov/plolstore/plsql/olstore.prodspecific?prodnum=C00668-TAP-A0001>



A national laboratory of the U.S. Department of Energy
Office of Energy Efficiency & Renewable Energy

Innovation for Our Energy Future

The 1991–2005 National Solar Radiation Database

The success of any solar energy installation depends largely on the site's solar resource. Therefore, detailed knowledge of an area's solar resource is critical to installation planning and siting. To help with these efforts, the National Renewable Energy Laboratory (NREL) and the National Climatic Data Center (NCDC) have updated the National Solar Radiation Database (NSRDB). Since 1992, the database has provided solar planners and designers, building architects and engineers, renewable energy analysts, and countless others with extensive solar radiation information.

The 1991–2005 NSRDB contains hourly solar radiation (including global, direct, and diffuse) and meteorological data for 1,454 stations. This update builds on the



Distribution of 1961–1990 NSRDB sites and 1991–2005 NSRDB sites by class and measured solar data

DATASET: ASOS 1-minute and 5-minute data DS16401-6406.

- **Data Type:** ASCII character data.
- **Quality Control:** Undergoes automated QC.
- **Data Origin:** Data originate from ASOS ingest process.
- **Content/Elements:** Includes most surface elements observed in the U.S. (wind speed and direction, temperature, dew point, cloud data, sea level pressure, altimeter setting, station pressure, present weather, visibility, precipitation amount, etc). About 900 stations currently active.
- **Period of Record:** Generally 1998 to present (2000 to present online).
- **Notes:** <http://www.ncdc.noaa.gov/doclib>
- **Online:** <http://www.ncdc.noaa.gov/oa/climate/climatedata.html#asosminutedata>

**Surface Data: 1-Minute/5-Minute**

(Minute readings of temperature, precipitation, winds, pressure, etc)

ASOS 1-Minute Data [FTP](#) [Sample](#)

(2000 - present, DSI 6405/page 1 and DSI 6406/page 2 data)

ASOS 5-Minute Data [FTP](#) [Sample](#)

(2000 - present, DSI 6401 data)

<http://www.ncdc.noaa.gov/oa/climate/climatedata.html#asosminutedata>

DATASET: Service Records Retention System (SRRS) data.

- **Data Type:** ASCII character and binary data.
- **Quality Control:** No quality control performed.
- **Data Origin:** Data originate from ingest of NWS products.
- **Content/Elements:** Includes: 1) all surface, upper-air, forecast, warning, and other text bulletins received via SRRS processes; 2) many National Weather Service (NWS)/Na-

tional Centers for Environmental Prediction (NCEP) Model-Generated Charts and Analyses; and 3) the National Digital Forecast Database (NDFD).

- **Period of Record:** Late 2000 to present.
- **Notes:** These are the "raw" data as received from NCEP and NWS.
- **Online:** <http://nomads.ncdc.noaa.gov/ncep/NCEP>



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National Climatic Data Center
U.S. Department of Commerce

SRRS Analysis and Forecast Charts

Chart Type Selection

The Service Records Retention System (SRRS) is an archive and access system for selected National Weather Service (NWS) operational products maintained at the National Climatic Data Center.

NOTE: This system provides National Weather Service charts that are archived at the National Climatic Data Center. Additional charts from earlier years are available for [offline ordering](#).

- North American Analysis
- North American Forecast
- Northern Hemisphere Analysis
- Northern Hemisphere Forecast
- Ocean Analysis
- Ocean Forecast
- Southern Hemisphere Analysis
- Tropical Analysis
- US Radar Summary

[Define chart terms](#) (opens in new window)

<http://nomads.ncdc.noaa.gov/ncep/NCEP>

DATASET: Worldwide upper-air observations—Integrated Global Radiosonde Archive (IGRA).

- **Data Type:** ASCII character data.
- **Quality Control:** Undergoes some automated QC.
- **Data Origin:** Various sources including digital data from the stations (U.S. plus some from Mexico), key-entered data, digital data from source countries, and GTS.
- **Content/Elements:** Replaced Comprehensive Aerological Reference Dataset (CARDS)—DS 6305. Includes

all elements observed in upper air soundings—generally temperature, dew point depression, atmospheric pressure, wind direction and speed. About 1,500 globally distributed stations; 900 of the stations are currently active.

- **Period of Record:** Generally 1938 to present.
- **Notes:** See <http://www.ncdc.noaa.gov/oa/climate/igra/index.php> for further details.
- **Online:** <http://www.ncdc.noaa.gov/oa/climate/igra/index.php>



NOAA Satellite and Information Service
National Environmental Satellite, Data, and Information Service (NESDIS)



National Climatic Data Center
U.S. Department of Commerce

Integrated Global Radiosonde Archive

Data Access
ASCII Files (FTP)
Maps/Charts
Metadata

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Source Data
Data Coverage

Methods
Data Integration
Quality Control
Bias Adjustment

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Related Projects
Status Reports
NCDC Upper Air Data

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Introduction

The Integrated Global Radiosonde Archive (IGRA) consists of radiosonde and pilot balloon observations at over 1500 globally distributed stations (Figure 1). Observations are available for standard, surface, tropopause and significant levels. Variables include:

- Pressure
- Temperature
- Geopotential Height
- Dewpoint Depression
- Wind Direction
- Wind Speed

The period of record varies from station to station, with many extending from 1970 to present (Figure 2). Station records are updated daily and are available online at no charge.



Photo courtesy of National Weather Service

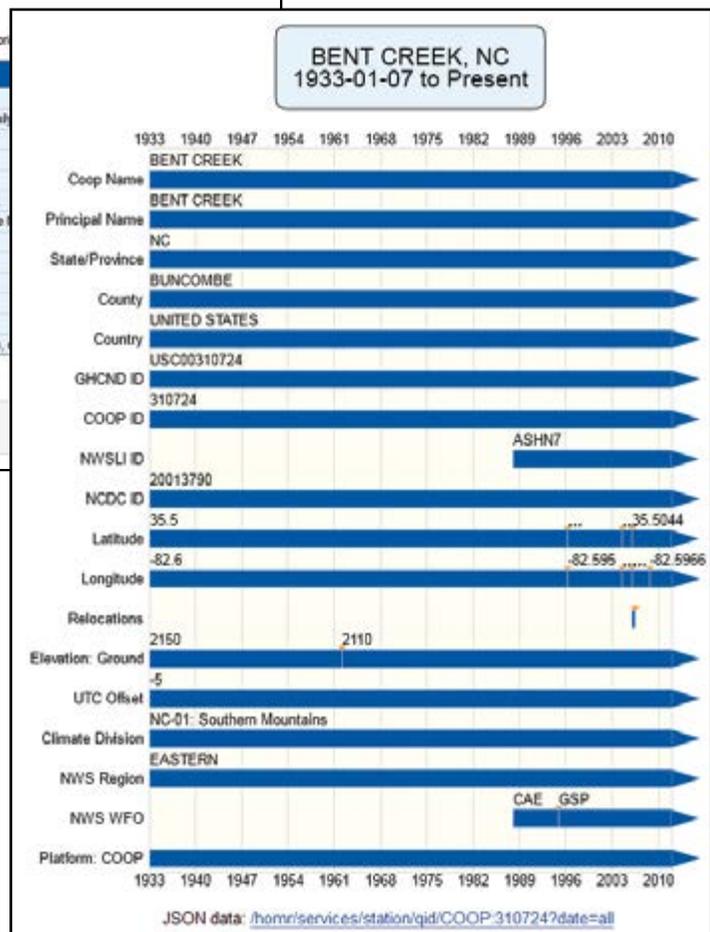
DOC > NOAA > NESDIS > NCDC
Enter Search Term(s):
Search NCDC

<http://www.ncdc.noaa.gov/oa/climate/igra/index.php>

DATASET: Historical Observing Metadata Repository (HOMR). HOMR is NCDC's integrated Station History database that provides land-based station metadata in support of NCDC research, reporting, publications, data products and web applications.

- **Content/Elements:** Includes current and historical station metadata for various land-based networks when available. Details include station identifiers, names, location, elements, and equipment.

- **Master Station History Report (MSHR):** Digital listing of basic, historical identifier / location information for every station in the Station History database.
- **Publication History Report (PHR):** Digital compilation of elements observed and/or reported for all published stations in National Weather Service's Cooperative network.
- **Online -** <http://www.ncdc.noaa.gov/homr/>
- **Station History Visualization:** Provides a graphical overview of station-level metadata attributes and their changes over time.



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

Specialized *In Situ* Products

General Information

These Specialized Products can be provided on CD/DVD or as paper copy (unless otherwise indicated). Please call 828-271-4800 or email "ncdc.orders@noaa.gov" for further details. There are charges involved for these services.

Cooperative Station Extremes Tabulation: This tabulation shows daily and monthly extremes for the entire period of record (generally 1948 to 2010) for U.S. cooperative and National Weather Service sites. There are currently over 8,000 active stations. The elements included are maximum/minimum temperature, precipitation, and snowfall.

Wind Rose Summary: This summary provides a statistical summary of wind speed vs. wind direction for any station (U.S. or foreign) reporting adequate observational data. Data are tabulated in incremental 'bins' such as 0-3 miles per hour, 4-7 miles per hour, etc., and can be run for periods of record through 2009.

Mixing Height Summary: This summary provides a day-by-day estimate of the mixing height for the boundary layer by using surface and upper air observational data. It's often used for pollution and air dispersion models. This product is provided for U.S. sites only and can be run for periods of record through 2009.

Stability Array: This provides month-by-month averages of surface-based stability in Pasquill stability categories. Hourly or synoptic surface observations are used as input and can be run for periods of record through 2009.

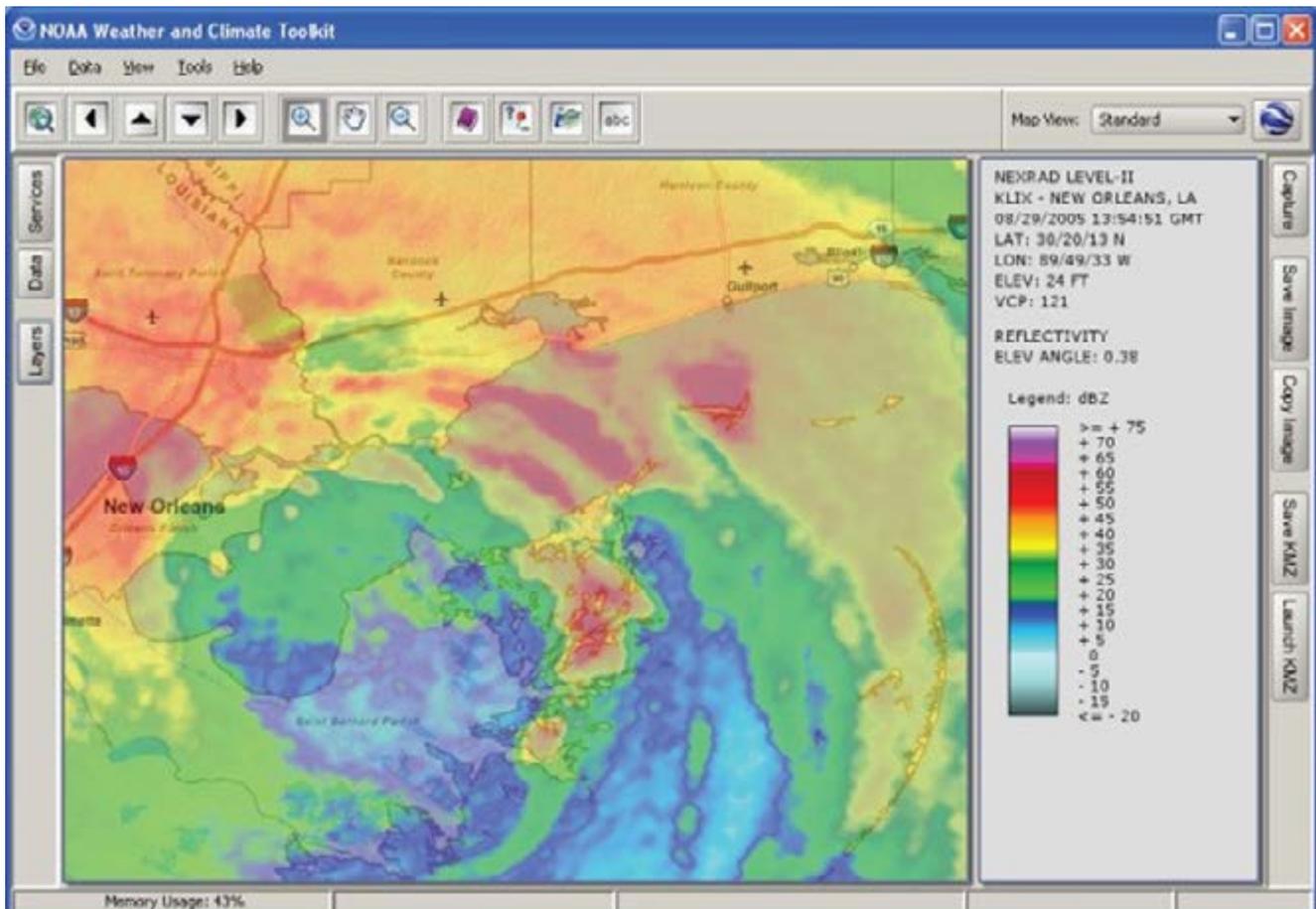
NEXRAD Products

NCDC archives and disseminates data from the Next Generation Weather Radar (NEXRAD) system. Comprised of 160 Weather Surveillance Radar to 1,988 Doppler (WSR-88D) sites throughout the United States and select overseas locations, NEXRAD is a joint effort of the United States Departments of Commerce (DOC), Defense (DOD), and Transportation (DOT). The controlling agencies are the National Weather Service (NWS), Air Force Weather Agency (AFWA) and Federal Aviation Administration (FAA), respectively. Level II data include the six meteorological base data quantities: reflectivity, mean radial velocity, spectrum width, differential reflectivity, correlation coefficient

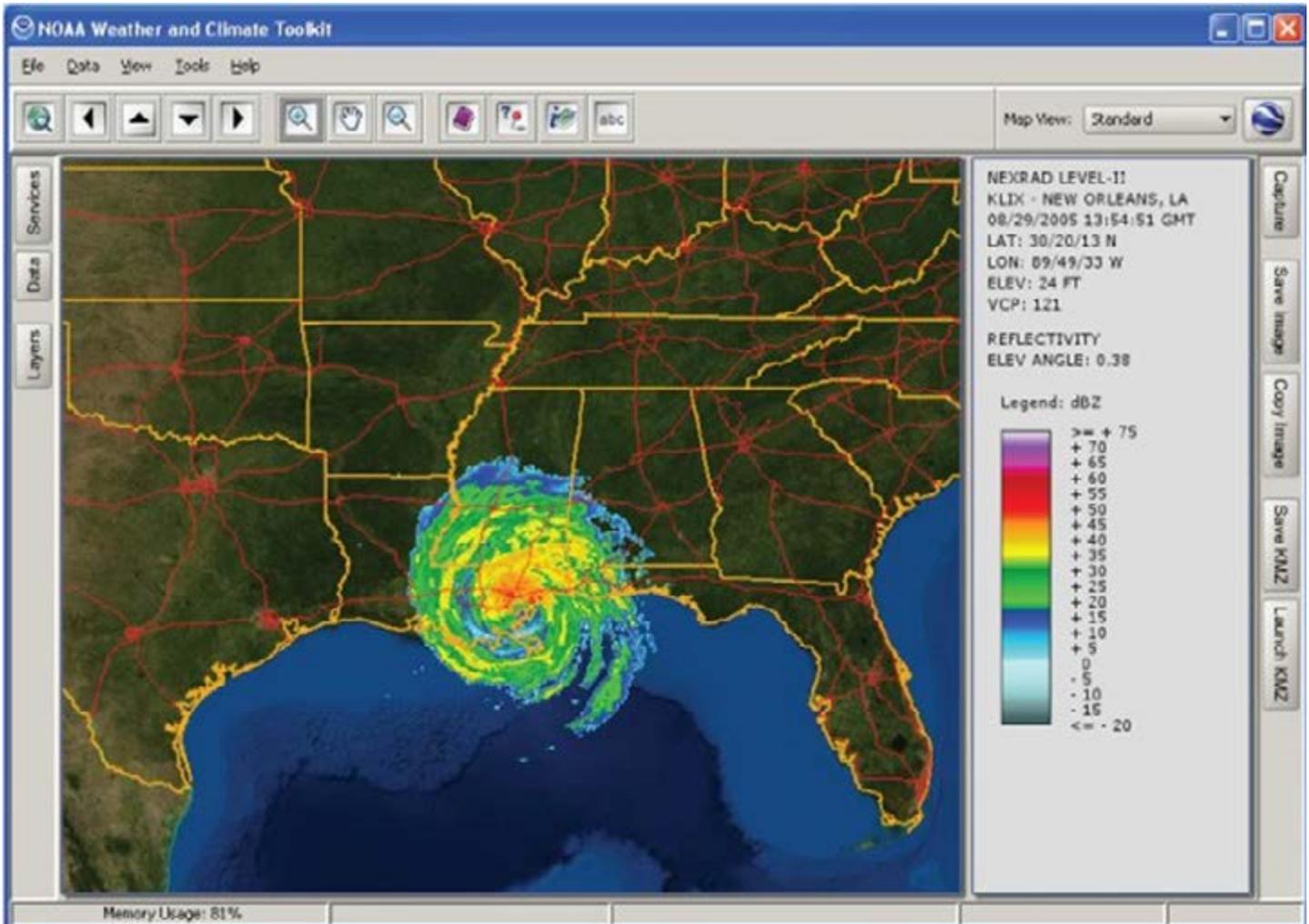
and differential phase. From these quantities, computer processing generates numerous meteorological analysis products known as Level III data. Level II data are recorded at all NWS and several select CONUS DOD WSR-88D sites. Level III products are recorded at 156 of the 160 sites. All WSR-88Ds are expected to complete the modification to implement dual polarization capability in 2013. This new technology allows the WSR-88D to simultaneously transmit and receive in the horizontal and vertical planes, providing an additional dimension of weather features and giving the weather forecaster additional and improved tools to serve the public.

<http://www.roc.noaa.gov/WSR88D/PublicDocs/DualPol/DPstatus.pdf>

<http://www.roc.noaa.gov/WSR88D/PublicDocs/DualPol/DPSchedule.pdf>



NEXRAD Level-II Base Reflectivity Image with ESRI background map



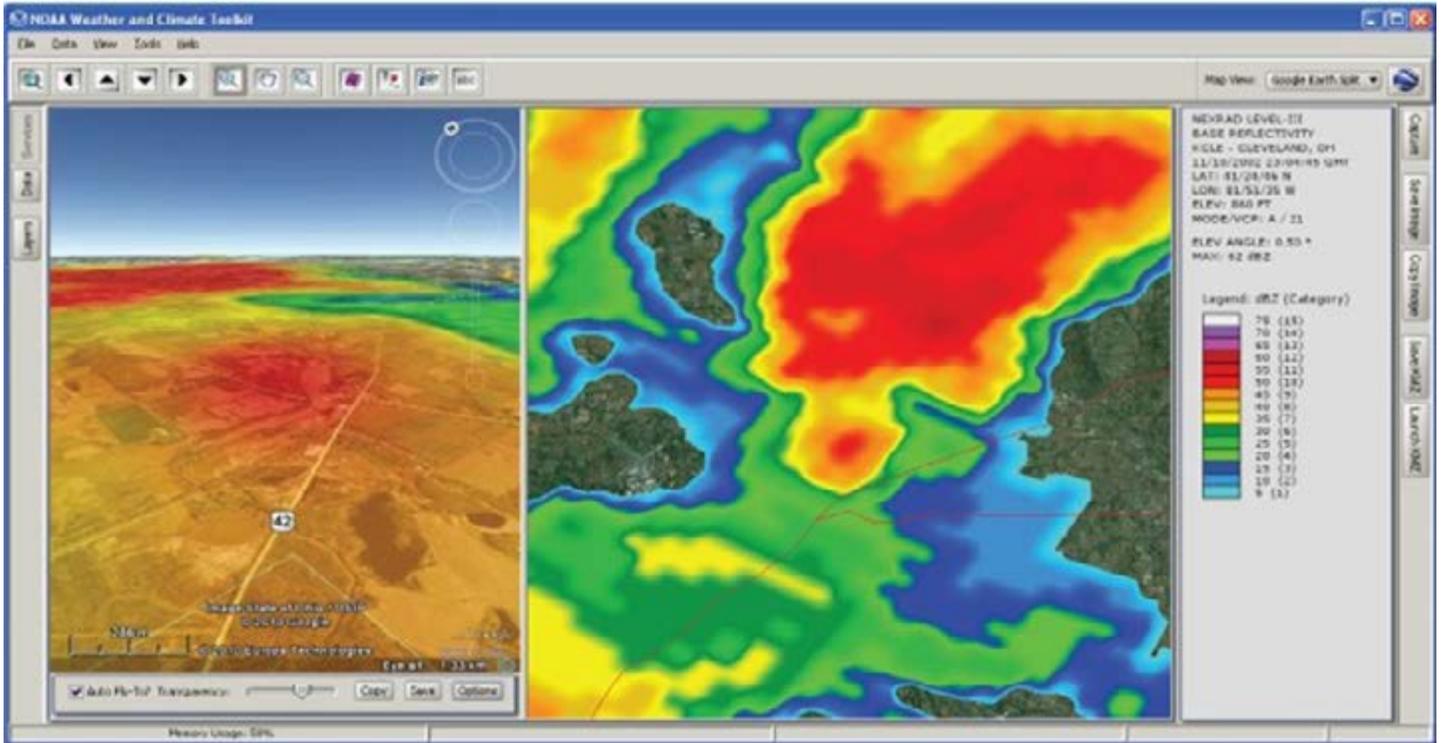
NEXRAD Level-II Base Reflectivity Image with ESRI imagery

A list of all NEXRAD Level III products, including the new dual polarization products, can be found at the following site:

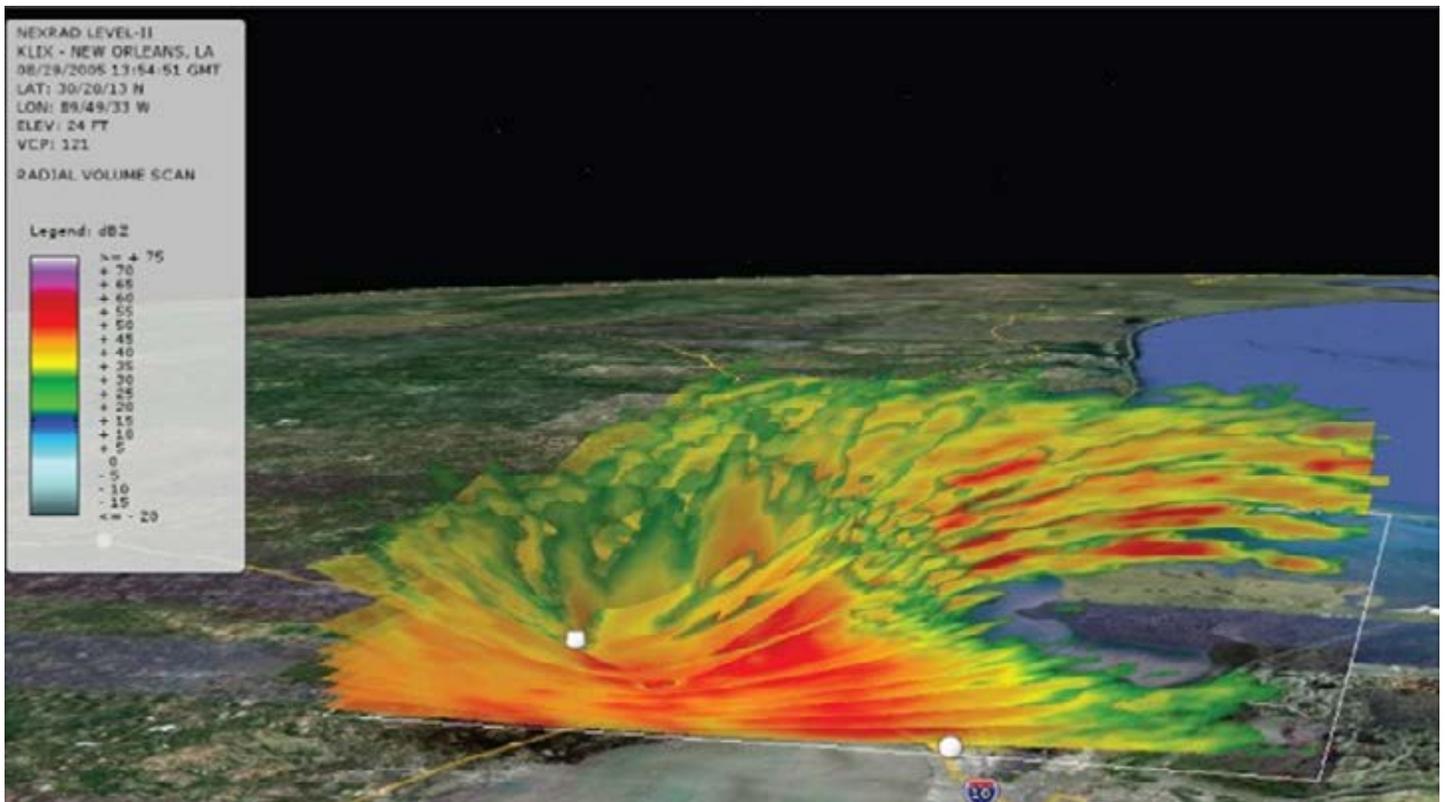
<http://www.ncdc.noaa.gov/oa/radar/radarproducts.html>

NCDC provides a radar viewer and data export toolkit called NOAA's Weather and Climate Toolkit. It is free software that visualizes WSR-88D Level-II and Level-III NEXRAD Radar data from NCDC's Archives on Windows, Mac, and Linux platforms.

Hurricane Katrina: 3-D volume scan KMZ output rendered in Google Earth



Level-III Base Reflectivity with internal Google Earth plug-in



NOAA Satellite and Information Service
National Environmental Satellite, Data, and Information Service (NESDIS)

National Climatic Data Center
U.S. Department of Commerce

DOC > NOAA > NESDIS > NCDC Search Field: Search NCDC

NCDC Radar Resources

About Radar Resources

Download/View Radar Data

Products

Data Inventory / Order Data

Online Document Library

Contact Information

Other Resources

Welcome to the NCDC Radar Page

Please hover your mouse over the links to the upper left, or simply scroll down the page to select and view more content from this area of the NCDC website. This is the first in a series of steps we're taking to improve our site. Should you have something specific to look for, submit a search in the golden search bar above.

Current Events
[About NCDC](#)
[In the Spotlight](#)
[What's New](#)

Data & Products
[Products and Services](#)
[Find a Station](#)
[Search by Map](#)
[Free Data](#)
[Data Access tools](#)
[CD-ROM Products](#)
[Climate Inventories](#)
[Metadata](#)
[Help/FAQ](#)

Purchase
[Most Popular](#)
[Subscriptions](#)
[Order Status](#)
[Online Store](#)

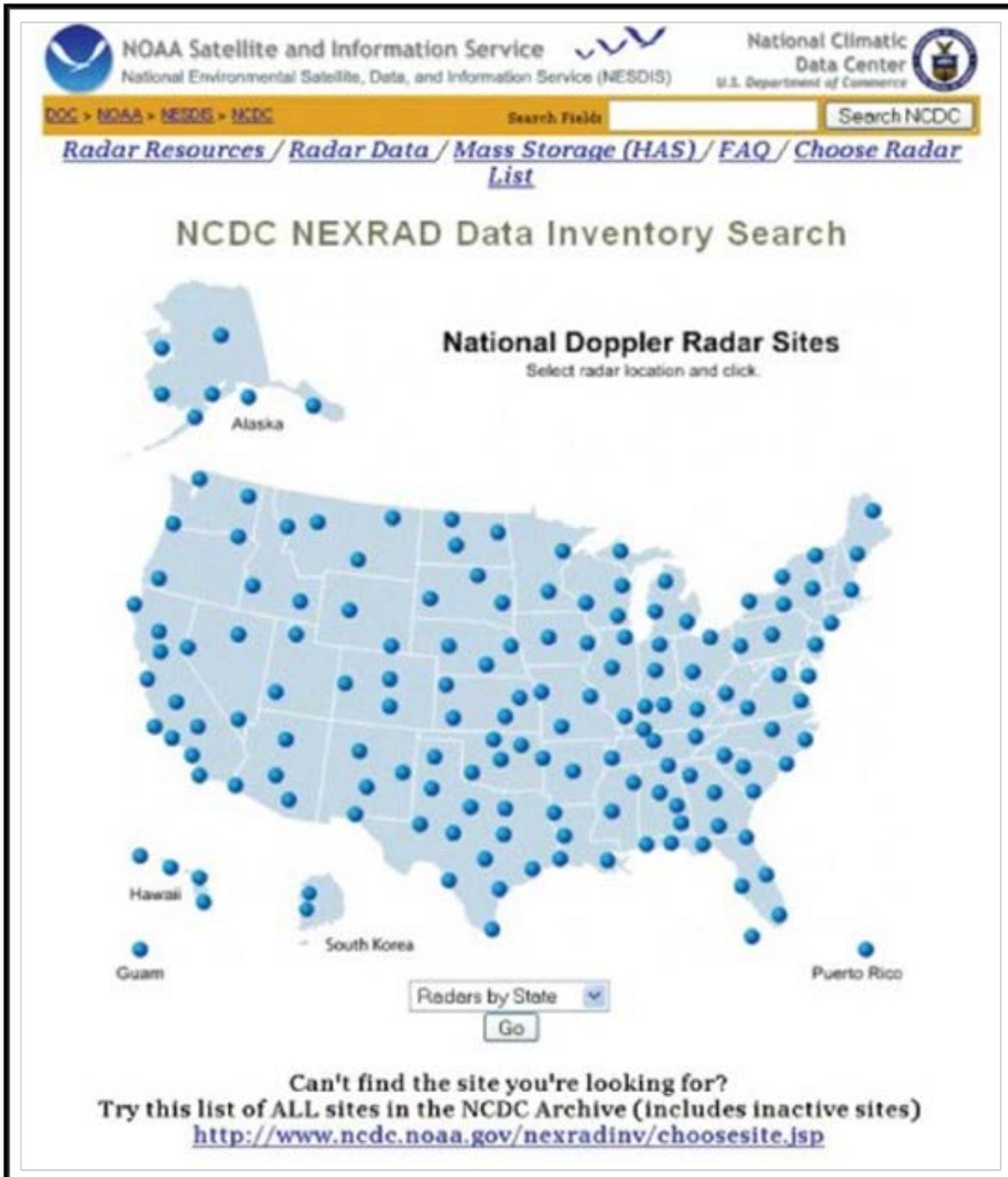
Climate Info
[Regional Climate Centers](#)
[Research](#)
[Monitoring](#)
[Extremes](#)
[Global Hazards](#)

Latest News
[Weather and Climate Toolkit](#)
[Level-II Format Change - Technical Information Notice](#)
[Level-II Format Change - Notification](#)
[Dual-Polarization Sample Data!](#)
[Korean Data Available](#)

NCDC Radar Resources Web page <http://www.ncdc.noaa.gov/oa/radar>

The following two sites provide access to NEXRAD Level II and III data:

- 1) The NEXRAD Inventory and Ordering System:
<http://www.ncdc.noaa.gov/nexradinv> - this site is designed for ordering data for a specific day and site using a simple interface.
- 2) The HAS system: <http://has.ncdc.noaa.gov/>- this site is designed for bulk orders and allows one year of data to be ordered at a time.



Website screenshot of <http://www.ncdc.noaa.gov/nexradinv/>

The screenshot shows the NOAA Satellite and Information Service (NESDIS) website. At the top, there are logos for NOAA Satellite and Information Service, National Climatic Data Center, and the U.S. Department of Commerce. Below the logos is a navigation bar with the text "DOC > NOAA > NESDIS > NCDC" and a search field labeled "Search Field:" with a "Search NCDC" button. The main heading is "HDSS Access System". Below this is a table with a green header and a brown "Radar (-)" column. The table lists two data products: "NEXRAD Level II" and "NEXRAD Level III", each with links for "access", "info", "inv", and "docs", and a date range.

HDSS Access System			
Radar (-)	NEXRAD Level II	access info inv docs	06/05/1991 - 12/08/2008
	NEXRAD Level III	access info inv docs	05/07/1992 - 12/07/2008

Website screenshot of <http://has.ncdc.noaa.gov/>

The Weather and Climate Toolkit

can generate simple visualization and data export of weather and climatological data archived at NCDC. The Toolkit also provides access to weather/climate web services from NCDC and other organizations, as well as community standard data formats. The Viewer offers tools for displaying custom data overlays, Web Map Services (WMS), animations and basic filters. The export of images and movies is provided in multiple formats. The Data Exporter allows for data export in both vector point/line/polygon and raster grid formats. Additional visualization capabilities include constant altitude slices of radial volume scans and isosurface export to Google Earth.

Recent updates added support for:

- NEXRAD Dual-Polarization support (Level-II moments and Level-III products)
- Isosurface export to Google Earth (KMZ format)

- CAPPI (Constant Altitude Plan Position Indicator) - a constant altitude cross-section of Radar data.

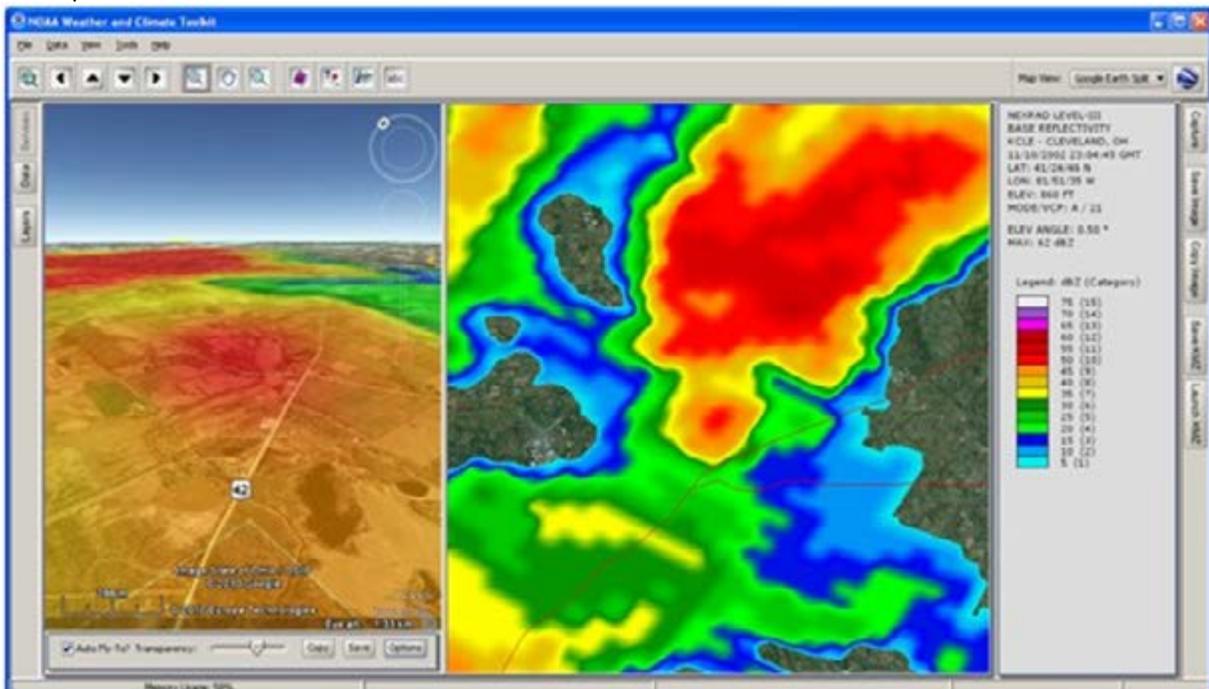
Current data types supported:

- NEXRAD Radar Data (Level-II and Level-III)
- GOES Satellite AREA Files
- Gridded NetCDF, OPeNDAP and HDF following Climate-Forecast (CF) conventions.
- NCML (NetCDF Markup Language)
- GRIB, GINI, Gempak formats

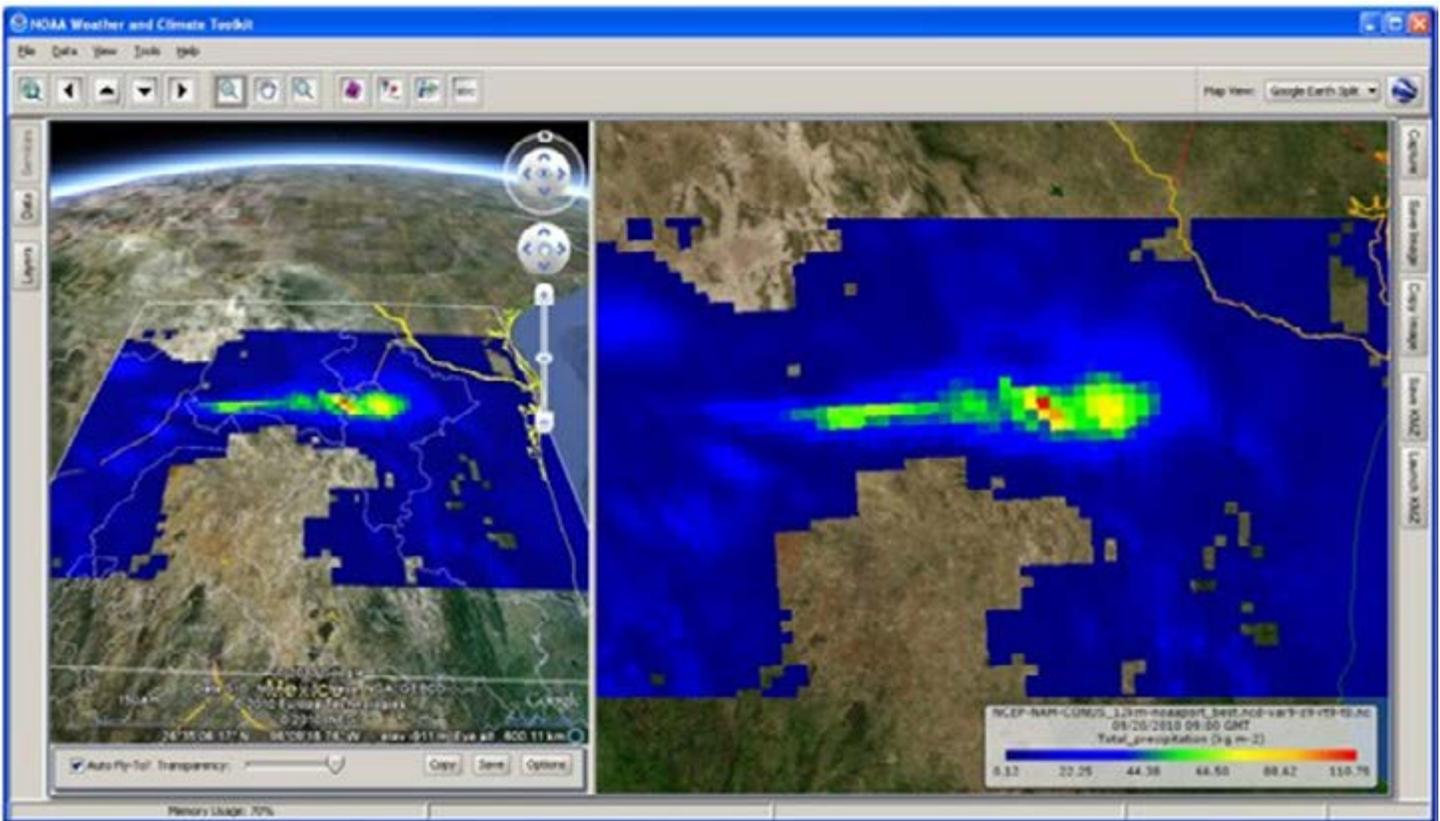
Current data services:

- U.S. Drought Monitor Service (from the National Drought Mitigation Center (NDMC))

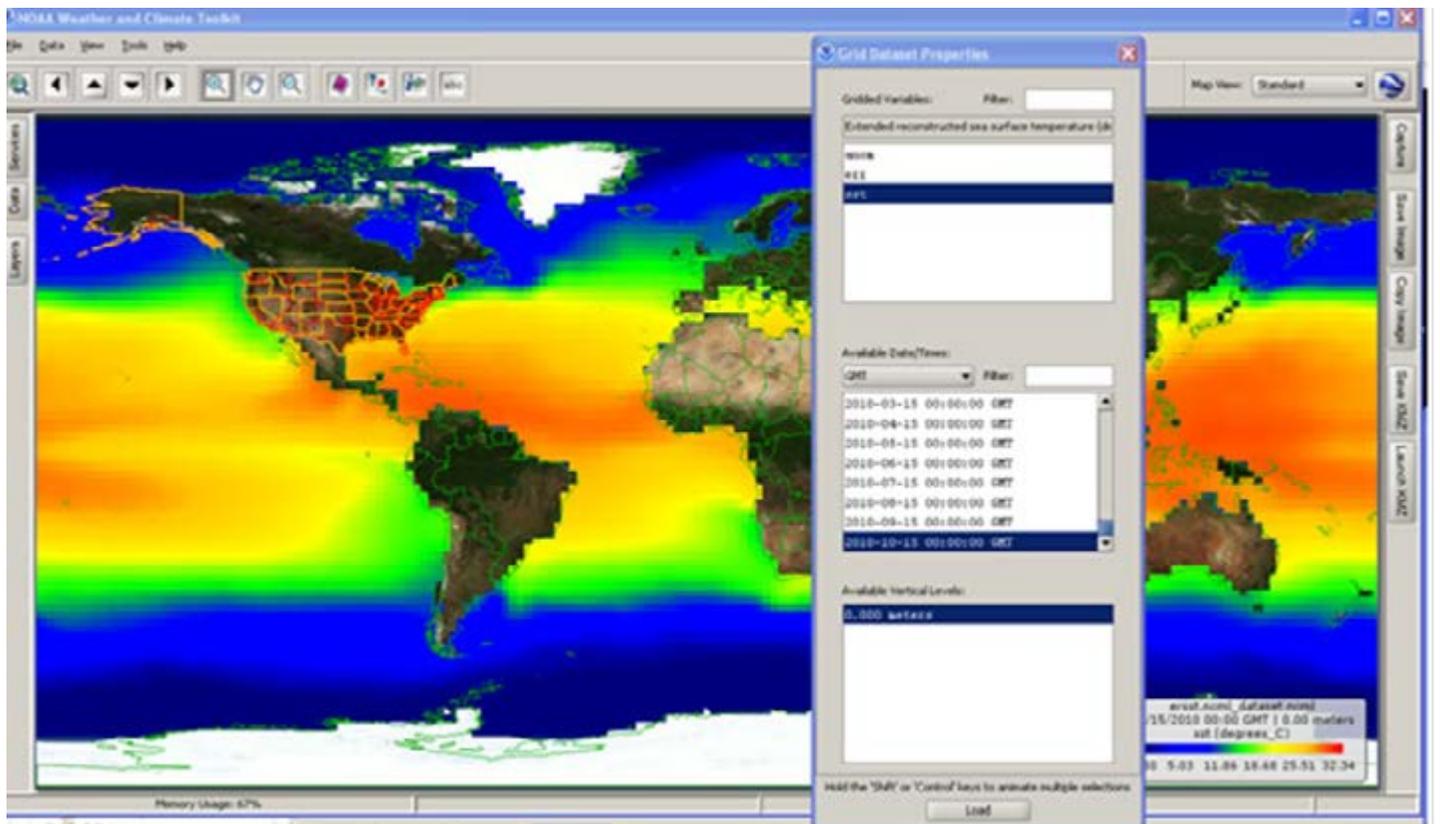
Example screenshots:



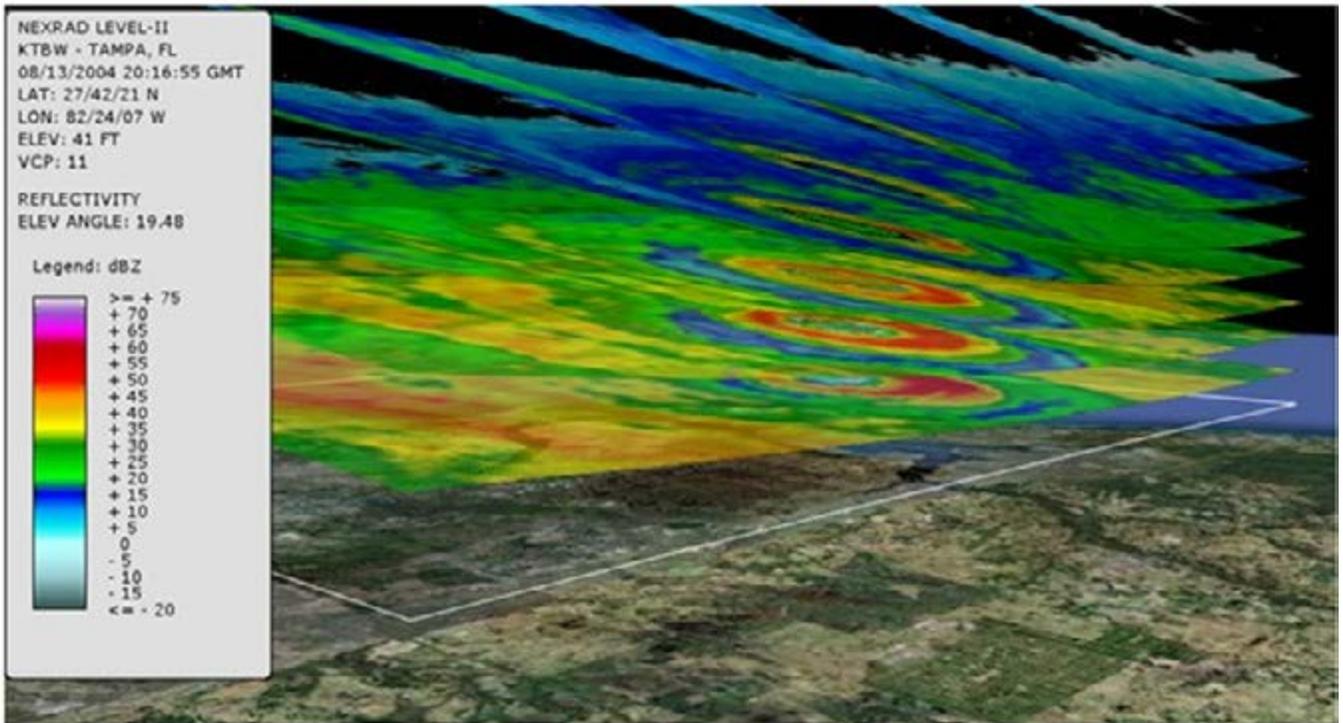
Level-III Base Reflectivity with Google Earth plug-in



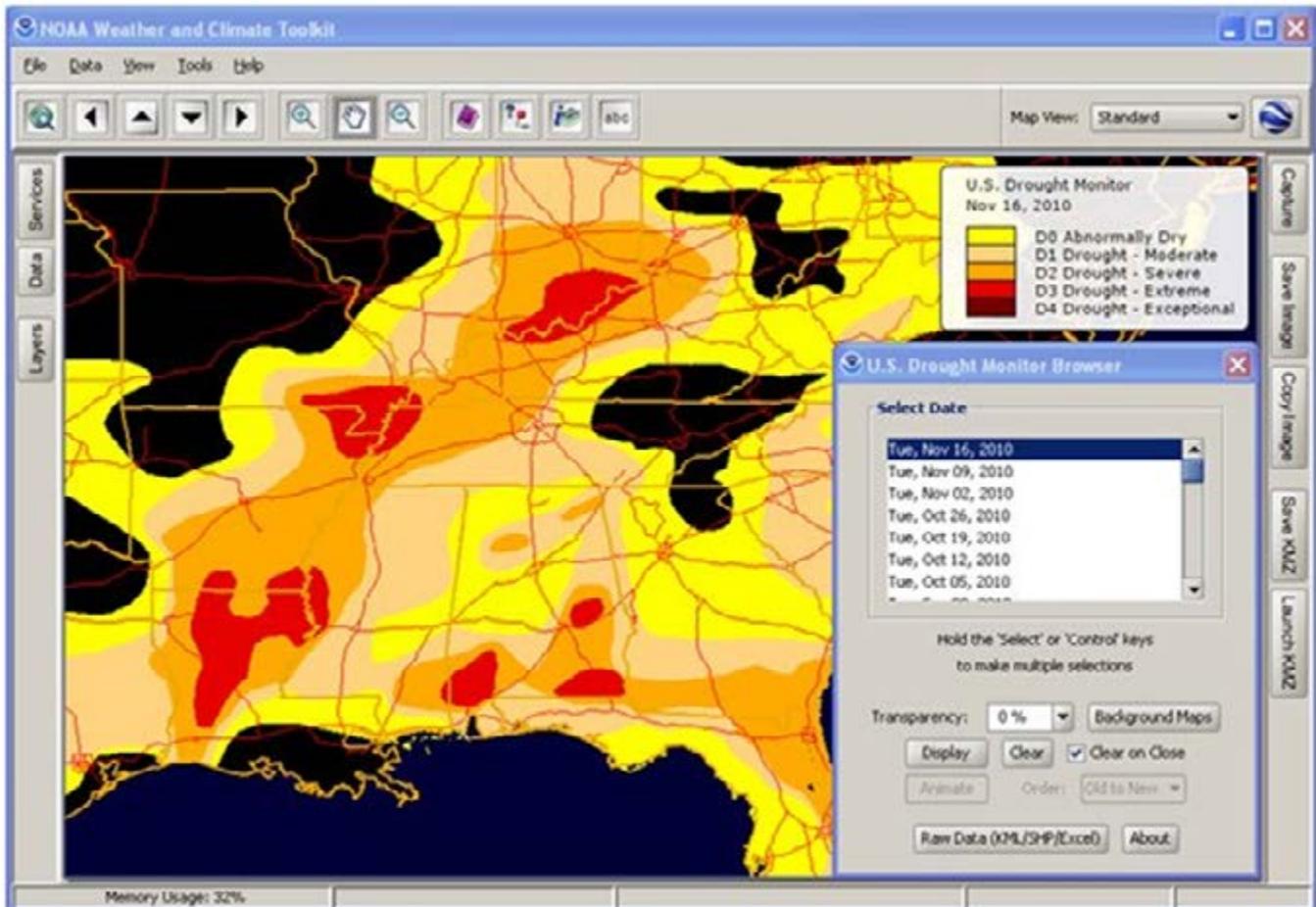
NCEP North American Model (NAM) spatial subset with Google Earth plug-in



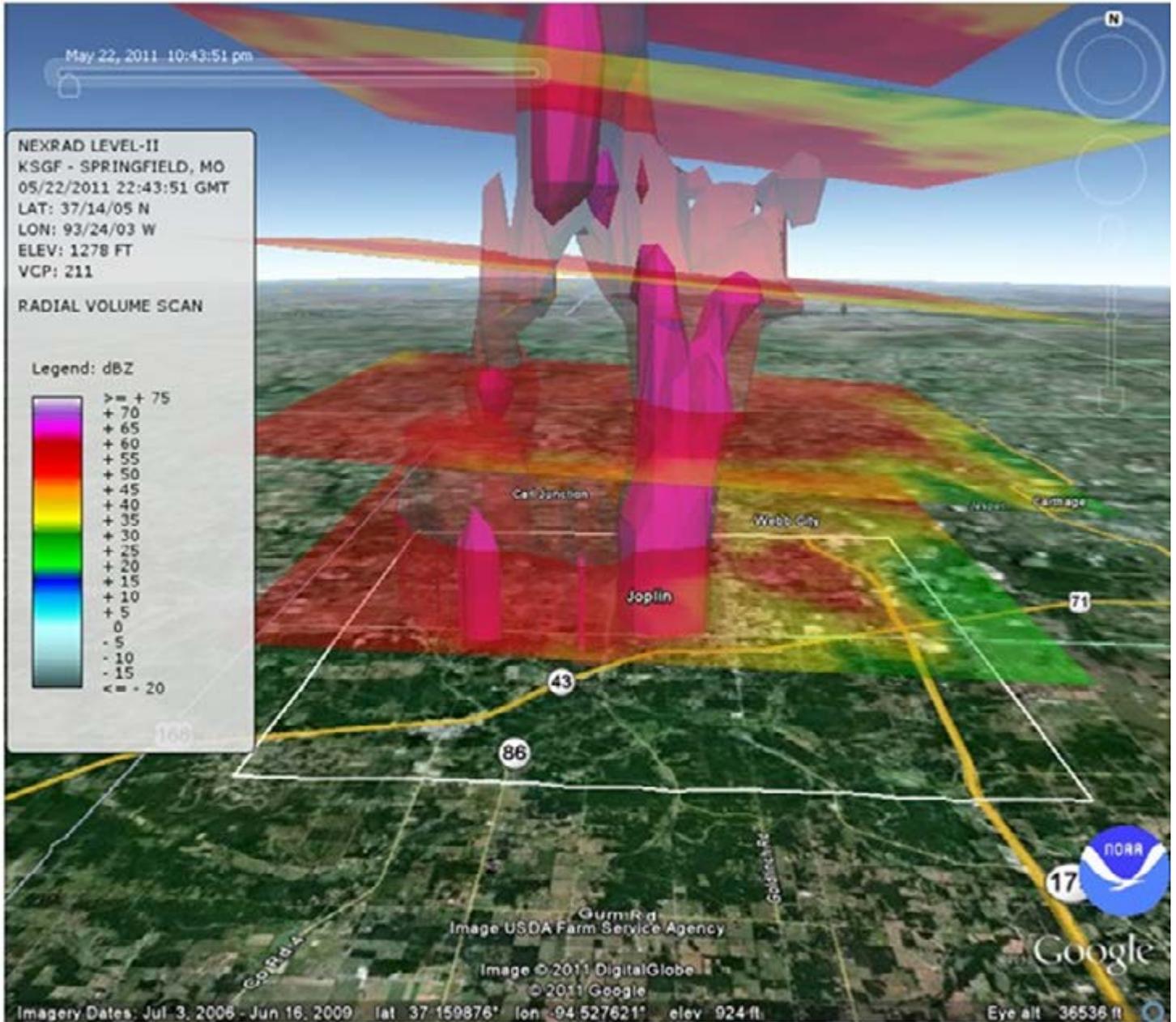
Sea Surface Temperature (remote OPeNDAP dataset)



Hurricane Charley: 3-D volume scan KMZ output rendered in Google Earth



U.S. Drought Monitor—Web Map Service



Isosurface visualization in Google Earth of May 22, 2011 Joplin, MO tornado

Satellite Data, Products & Service

Satellite data and derived products from NOAA's satellites are available through NOAA's National Climatic Data Center (NCDC) and the Comprehensive Large Array-data Stewardship System (CLASS). NOAA's three primary satellite systems are the Geostationary Operational Environmental Satellite (GOES), the Polar-orbiting Operational Environmental Satellite (POES), and the new Suomi National Polar-orbiting Partnership (S-NPP). We also distribute data and products from the Defense Meteorological Satellite

Program (DMSP) and European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) Metop satellite. Follow the link below to access the many new blended products in common data formats that have been developed for long-term climatological studies.





NOAA NATIONAL CLIMATIC DATA CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



Home About NCDC Contact Help [New to Climate Information?](#)
 » SEARCH

Data Access

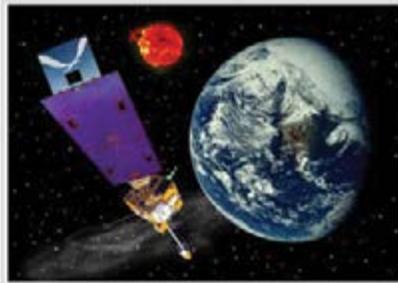
- [Most Popular Data](#)
- [Land-Based Station Data](#)
- [Satellite Data](#)
- [Datasets](#)
- [Sorted by Satellite/Instrument](#)
- [Satellite Imagery](#)
- [Datasets in Development](#)
- [Radar Data](#)
- [Model Data](#)
- [Weather Balloon Data](#)
- [Marine / Ocean Data](#)
- [Paleoclimate Data](#)
- [Severe Weather](#)
- [Other Data Access](#)

Climate Information

- [Climate of the U.S.](#)
- [Analyses](#)
- [Extreme Events](#)
- [Statistical Weather and Climate Information](#)
- [Sectoral & Regional](#)
- [International](#)

Satellite Data

The National Oceanic and Atmospheric Administration (NOAA) manages a constellation of geostationary and polar-orbiting meteorological spacecrafts. These satellites are distributed among three operational programs: the Suomi NPOESS Preparatory Project (NPP), the Geostationary Operational Environmental Satellite Program (GOES), and the Polar Operational Environmental Satellite Program (POES). The Defense Meteorological Satellite Program (DMSP) satellites are operated by the U.S. Department of Defense and the data are archived and distributed by NOAA's National Climatic Data Center (NCDC) under the Shared Processing Program.



Geostationary satellite above Earth with the Sun in the background (artist's conception)

Geostationary and polar-orbiting satellites provide raw radiance data that are collected by ground stations and archived by NCDC. These continuous global environmental observations are then derived to produce various geophysical variables that help to describe the Earth's atmospheric, oceanic, and terrestrial domains.

Geostationary satellites help monitor and predict weather and environmental events including tropical systems, tornadoes, flash floods, dust storms, volcanic eruptions, and forest fires. Polar-orbiting satellites collect data for weather, climate, and environmental monitoring applications including precipitation, sea surface temperatures, atmospheric temperature and humidity, sea ice extent, forest fires, volcanic eruptions, global vegetation analysis, as well as search and rescue. NOAA's satellite data improve the Nation's resilience to climate variability, maintain our economic vitality, and improve the security and well-being of the public.

[Satellite Data Access by Dataset](#)

<http://www.ncdc.noaa.gov/satellite-data>

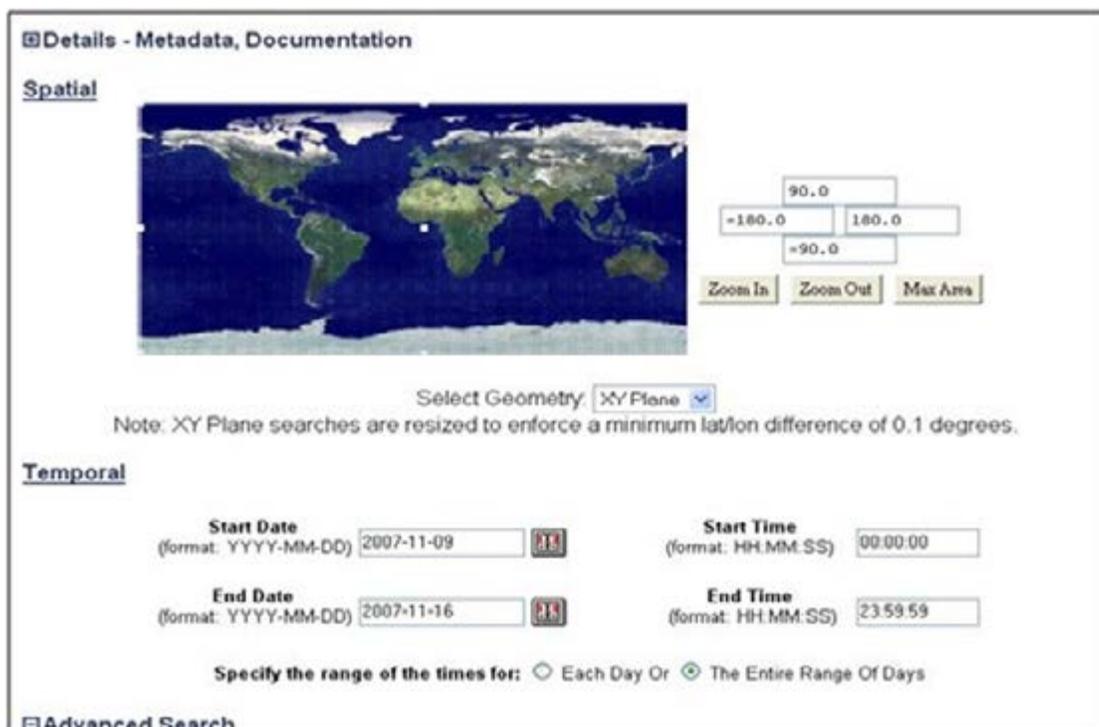
Online Satellite Data - Comprehensive Large Array-data Stewardship System (CLASS)

An IT component of the NOAA Data Centers, CLASS is an electronic library of NOAA environmental data. It enables users to perform collection level as well as granule level discovery and ordering of Level 0 through Level 3 satellite products observed and processed by NOAA, the Department of Defense Meteorological Satellite Program, and

EUMETSAT (MetOp-A and MetOp-B). Data delivery options include FTP, HTTP, and physical digital media. The former two options are free within the constraints provided via the web interface. Subscription services for near real-time data and high-volume orders can be requested through the CLASS Help Desk. A tutorial with step-by-step instructions for ordering data from CLASS can be accessed from its home page. Below are a few views of the CLASS web system.



CLASS Home Page—www.class.noaa.gov



CLASS Search Criteria Page

Search Results - AVHRR

Currently you have 25 hits out of 880740 entries.
There are 0 (AVHRR) items in your shopping cart. The shopping cart limit is 100.

Shopping Cart: Page 1 Jump To

View Details	Shopping Cart	Inventory ID	Datatype	Orbit	Start Time	End Time	Satellite	Dataset Name
<input type="button" value="1"/>	<input checked="" type="checkbox"/>	9833923	AVHRR_GAC	49430	2007-11-15 22:35:42.612	2007-11-16 00:30:11.105	N15	NSS_GHRR_NK_D07319_S2235_E0030_B4942931_GC
<input type="button" value="2"/>	<input checked="" type="checkbox"/>	9834223	AVHRR_GAC	5574	2007-11-15 23:18:43.005	2007-11-16 01:01:36.504	M02	NSS_GHRR_M2_D07319_S2318_E0101_B0557374_SV
<input type="button" value="3"/>	<input checked="" type="checkbox"/>	9834233	AVHRR_FRAC	5574	2007-11-15 23:18:43.005	2007-11-16 01:01:36.671	M02	NSS_FRAC_M2_D07319_S2318_E0101_B0557374_SV
<input type="button" value="4"/>	<input type="checkbox"/>	9834563	AVHRR_GAC	20034	2007-11-16 02:05:41.247	2007-11-16 03:53:13.247	N17	NSS_GHRR_NM_D07320_S0206_E0353_B2803335_WI
								NSS_HRPT_NM_D07320_S0211_E0223_B2803434_MI
								NSS_HRPT_NM_D07320_S0212_E0227_B2803434_WI
								NSS_GHRR_NN_D07320_S0518_E0711_B1282930_WI
								NSS_HRPT_NN_D07320_S0531_E0643_B1282929_WI
								NSS_HRPT_NN_D07320_S0539_E0645_B1282929_MI
								NSS_GHRR_NN_D07320_S0705_E0836_B1283031_SV

http://www.class.noaa.gov - Comprehensive Large Array data Stewardship Syst...

File Edit View History Bookmarks Tools Help



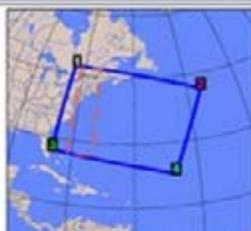
Lat: 36.650
Lon: 285.500
Resize: 10 deg

Zoom Factors: 1.4472095
Zoom In
Zoom Out
Global
Fit Storage

Please note, any data sets that share the same coordinates will be shifted for visibility.

CLASS Search Results Page with Separate Map Window

Overlapped Region of Geographic Search:



Click on the thumbnail to view the full image.

Temporal (Geographic Overlap):	
Start Date: 2007-11-16 14:34:45.392	End Date: 2007-11-16 14:40:29.33
Seconds: 344	Direction: Descending

Spatial (Geographic Overlap):	
1. NW Lat,Long: 47.14, -77.98	2. NE Lat,Long: 41.38, -41.05
3. SW Lat,Long: 27.3, -78.83	4. SE Lat,Long: 22.75, -50.61

Data Set Browse Imagery:

Channel 2



Channel 4



Click on a thumbnail to the left to open a window with a full sized browse image. You may then use the controls above to manipulate the full sized browse image.

Note, thumbnail images have been Histogram Equalized, are in the jpeg format at quality 50% and size 50%. Full browse images are in the jpeg format at quality 100% and sized 200% to bring out more details.

CLASS Detail Page showing Metadata and Browse Images

Shopping Cart

Total size of selected data sets: 113664 Bytes You will be notified at:

Number of data sets: 3 Order Comment:

Cost: Delivery Method: ▼

AVHRR							
Order	Dataset Name	Include Digital Signature	Include Archive Header	Scan Line Selection	Bits/Pixel	Channel Number	Spatial Resolution
<input checked="" type="checkbox"/>	Click on a dataset name to see the dataset details	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8 10 16	1 2 3 4 5	
<input checked="" type="checkbox"/>	AVHRR_GAC NSS.GHRR.NK.D07319.S2235.E00.30.B4942931.GC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	8 10 16	1 2 3 4 5	4
<input checked="" type="checkbox"/>	AVHRR_GAC NSS.GHRR.M2.D07319.S2318.E01.01.B0557374.SV	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	8 10 16	1 2 3 4 5	4
<input checked="" type="checkbox"/>	AVHRR_FRAC NSS.FRAC.M2.D07319.S2318.E01.01.B0557374.SV	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	8 10 16	1 2 3 4 5	1

CLASS Shopping Cart—Order Page

International Satellite Cloud Climatology Project (ISCCP)

Ongoing research at NCDC is progressing toward producing a new satellite resource for climate science. Originating from the International Satellite Cloud Climatology Project (ISCCP), the data are observations from all channels on the GOES series, the European Meteorological satellite (Meteosat) series, the Japanese Geostationary Meteorological Satellite (GMS) series and the Chinese Fen-yung 2C (FY2) series. The period of record covers 1979 through the present, yet its total size is less than two terabytes since the data are sampled to 10-km and 3-hour resolution. Because the original data were archived in various formats, a consistent format has been developed for easier access to the datasets. For scientific

researchers who need a high-resolution global gridded dataset, the new ISCCP B1 product (described below) is likely the one they'll need. <http://www.ncdc.noaa.gov/oa/rsad/isccpb1/index.php>

Global ISCCP B1 Browse System (GIBBS)

As a by-product of an effort to recreate a streamlined, user-friendly ISCCP B1 product, NCDC has produced a satellite browse dataset containing full-earth images beginning as early as 1974 and updated daily. The GIBBS contains over one million browse images for every three hours from all geostationary satellites around the world. Follow the Satellite Imagery link on the Satellite Data page.



NOAA Satellite and Information Service
National Environmental Satellite, Data, and Information Service (NESDIS)



National Climatic Data Center
U.S. Department of Commerce

DOC > NOAA > NESDIS > NCDC
Search Field:
Search NCDC

[Satellite Data](#) > Global ISCCP B1 Browse System

GIBBS: Global ISCCP B1 Browse System

Select year...	YEAR (# of images)		1974 (985)	1975 (0)	1976 (2)	1977 (0)	1978 (5394)	1979 (19361)	
1980 (10467)	1981 (21626)	1982 (30417)	1983 (31581)	1984 (17181)	1985 (16150)	1986 (15779)	1987 (20175)	1988 (19349)	1989 (15903)
1990 (17339)	1991 (17559)	1992 (20419)	1993 (27079)	1994 (26505)	1995 (25309)	1996 (31851)	1997 (32264)	1998 (36901)	1999 (41512)
2000 (42348)	2001 (42484)	2002 (42362)	2003 (42376)	2004 (43235)	2005 (55018)	2006 (58140)	2007 (49085)	2008 (48299)	2009 (44103)
2010 (52716)	2011 (54514)	2012 (40225)							

1116013 total satellite images
Last Updated: Mon Oct 22 2012, 04:05:07 EDT

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

Hurricane Satellite ISSCP B1 (HURSAT-B1)

HURSAT-B1 data is derived from International Satellite Cloud Climatology Project (ISCCP) B1 data spanning over 30 years. Version 5 is the newest version of-

ferred. It provides coverage of global tropical cyclones at 8-km spatial resolution and 3-hour temporal resolution. Also, visitors can access downloadable images and view hurricane movies via HURSAT.

Hurricane Satellite (HURSAT) Data

- ▶ Introduction
- ▶ HURSAT-B1
 - Details
 - Revisions
 - Data
- ▶ HURSAT-MW
 - Details
 - Revisions
 - Data
- ▶ HURSAT-AVHRR
 - Details
 - Revisions
 - Data
- ▶ HURSAT-GOES
- ▶ Google Earth Imagery
 - Storms to Reanalyze
- ▶ Other information
 - Bibliography
 - Links
 - Contacts



Introduction

The purpose of the HURSAT project is to provide Tropical Cyclone-"centric" satellite data. The goal is to keep data small and portable. In doing so, HURSAT data are gridded and stored using the netCDF file format.

The HURSAT data project began with HURSAT-B1, but there was a need for HURSAT data from other satellite data sources (which have different temporal and spatial resolutions).

<http://www.ncdc.noaa.gov/oa/rsad/hursat/>

International Best Track Archive for Climate Stewardship

IBTrACS provides tropical cyclone best track data in a centralized location to aid our understanding of the distribu-

tion, frequency, and intensity of tropical cyclones worldwide. Data availability was resolved by working directly with all the Regional Specialized Meteorological Centers and other international centers and individuals to create a global best track dataset, merging storm information from multiple centers into one product and archiving the data for public use.

The screenshot shows the IBTrACS website interface. At the top, there is a breadcrumb trail: "NCDC > WDC-Meteorology > IBTrACS" and a search bar with the NCDC logo. The main heading is "International Best Track Archive for Climate Stewardship (IBTrACS)".

Navigation Menu (Left):

- Introduction
 - Status
 - Principles
 - Workshops
 - Previous versions
 - Registration
- IBTrACS Data
- Browse IBTrACS
- Data Sources
 - Original data
- FAQ
- Terms of Use
- Bibliography
- Contact

News Section (Left):

- Oct. 1, 2012**
IBTrACS
[IBTrACS v03r04 released](#)
- Sep. 27, 2012**

[Cyclonecenter.org launched!](#)

Main Content Area:

World Data Center for Meteorology, Asheville (with ICSU logos)

IBTrACS

Vision

Providing tropical cyclone best track data in a centralized location to aid our understanding of the distribution, frequency, and intensity of tropical cyclones worldwide.

Introduction

The intent of the IBTrACS project is to overcome data availability issues, and to freely disseminate this new global dataset. This was achieved by working directly with all the Regional Specialized Meteorological Centers and other international centers and individuals to create a global best track dataset, merging storm information from multiple centers into one product and archiving the data for public use.

IBTrACS and the WMO

The World Meteorological Organization [Tropical Cyclone Programme](#) has endorsed IBTrACS as an official archiving and distribution resource for tropical cyclone best track data.

Why use IBTrACS?

The IBTrACS project:

- Contains the most complete global set of historical tropical cyclones available
- Combines information from numerous tropical cyclone datasets
- Simplifies inter-agency comparisons by providing storm data from multiple sources in one place
- Provides data in popular formats to facilitate analysis
- Checks the quality of storm inventories, positions, pressures, and wind speeds, passing the information on to the user

<http://www.ncdc.noaa.gov/oa/ibtracs/index.php>

Climate Data Records (CDR) Program

The Climate Data Records (CDR) program is part of NOAA's mandate to provide the nation with objective data and tools to help characterize, understand, predict, mitigate, and adapt to climate change and variability. CDRs are the result of the Scientific Data Stewardship (SDS) Project, an

interagency partnership originated in 2002 to develop and implement a robust, sustainable and scientifically defensible approach to producing and preserving climate records from satellite data. In 2009, the SDS Project was renamed the CDR Program (CDRP). Currently, there are 11 operational products offered from NCDC with more on the way. Please follow the link below for access and documentation to the CDR Program.

NOAA NATIONAL CLIMATIC DATA CENTER
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Home | Operational CDRs | Developmental CDRs | Opportunities | Library | SEARCH NCDC

CLIMATE DATA RECORD PROGRAM

Welcome to NCDC's CDR Program

NOAA's National Climatic Data Center (NCDC) recently initiated a satellite Climate Data Record (CDR) program to continuously provide objective climate information derived from weather satellite data that NOAA has collected for more than 30 years. These data comprise the longest record of global satellite mapping measurements in the world, and are complemented by data from other sources including NASA and Department of Defense satellites as well as foreign satellites.

The mission of NOAA's Climate Data Record Program is to develop and implement a robust, sustainable, and scientifically defensible approach to producing and preserving climate records from satellite data.

WHAT ARE CDRs?
The National Research Council (NRC) defines a CDR as a time series of measurements of sufficient length, consistency, and continuity to determine climate variability and change. ([National Research Council, 2004](#)).

For the first time, NOAA is applying modern data analysis methods, which have advanced significantly in the last decade, to these historical global satellite data. This process will unravel the underlying climate trend and variability information and return new economic and scientific value from the records. In parallel, NCDC will maintain and extend these Climate Data Records by applying the same methods to present-day and future satellite measurements.

WHY ARE CDRs IMPORTANT?
The results will provide trustworthy information on how, where and to what extent the land, oceans, atmosphere and ice sheets are changing. In turn, this information will be used by energy, water resources, agriculture, human health,

Serving the Public

- Energy
- Water
- Disaster
- Agriculture

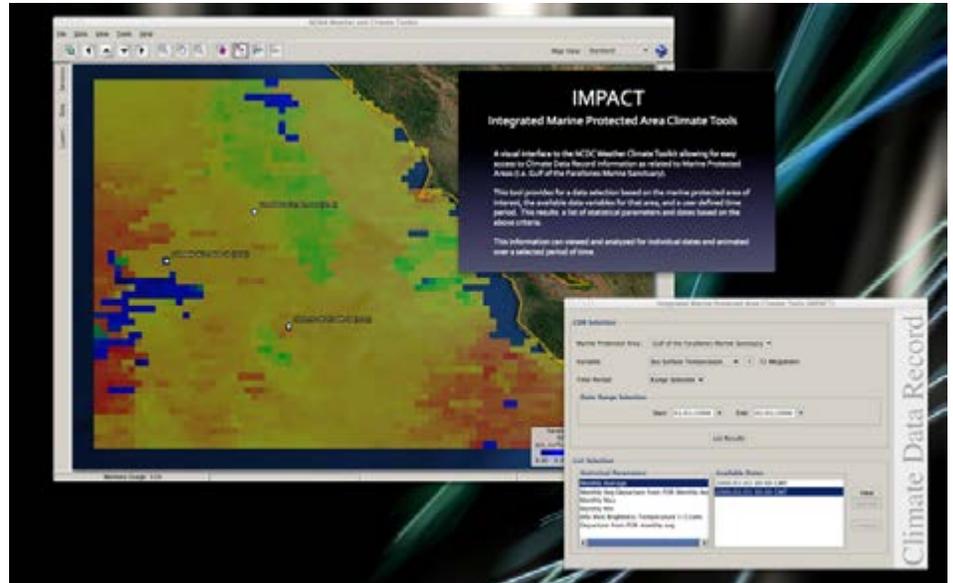
News

- NPP
- samsi

• [NOAA's Climate Portal](#)
• [United States Global Change Research Program](#)
• [Globe on Earth Observations](#)

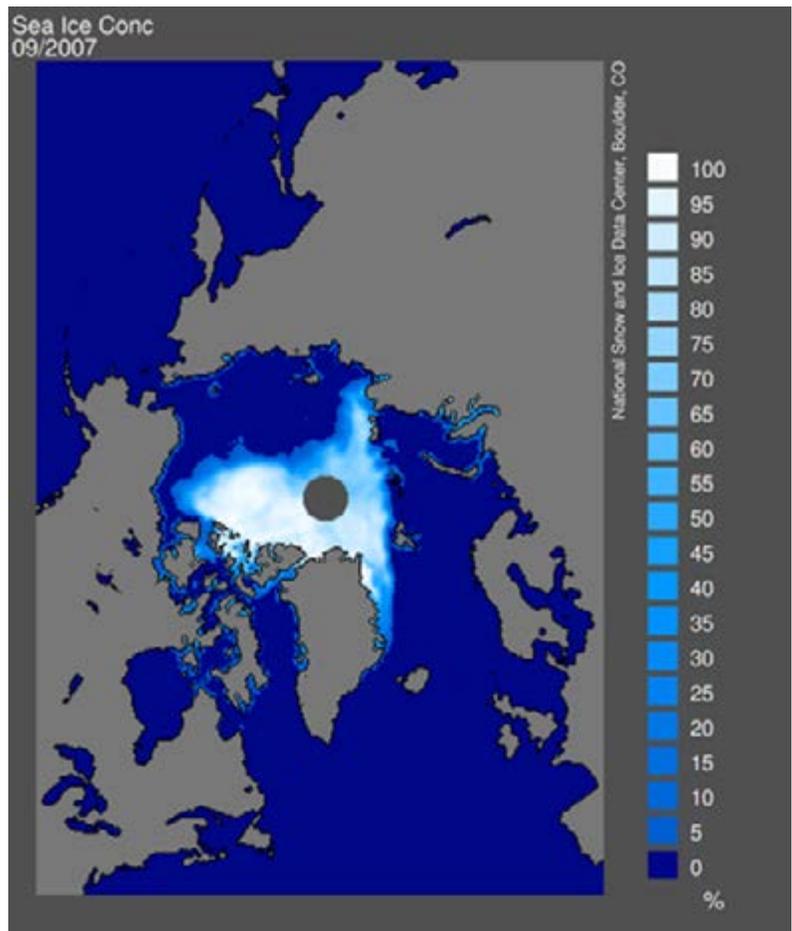
<http://www.ncdc.noaa.gov/cdr/index.html>

The NSIDC Climate Data Record (CDR) of sea ice concentration is available at 25-km spatial resolution in daily or monthly time steps for 1987-2007 (the example below is from September 2007). The CDR provides a spatially and temporally consistent measure of sea ice suitable for studies of climate variability and change as well as for applications useful to the shipping, energy, and tourism sectors, among others. The CDR is produced by reprocessing data from the Special Sensor Microwave Imager (SSM/I), a sensor flown on Department of Defense satellites since 1987. NSIDC applies two different methods, dubbed the NASA Team and Bootstrap algorithms, to determine sea ice concentration. Quality-control processes are applied throughout. For more detailed information see <http://climatedataguide.ucar.edu/guidance/noansidc-climate-data-record-passive-microwave-sea-ice-concentration>.



This CDR is used by (1) climate scientists to determine the accuracy and reliability of computer-generated climate projections, (2) shipping companies to aid in anticipating and selecting passages through the Arctic, (3) energy development companies assessing access to new reserves, (4) meteorologists in support of near-real time weather prediction, and (5) environmental groups concerned with the migration patterns and habitat changes of Arctic wildlife.

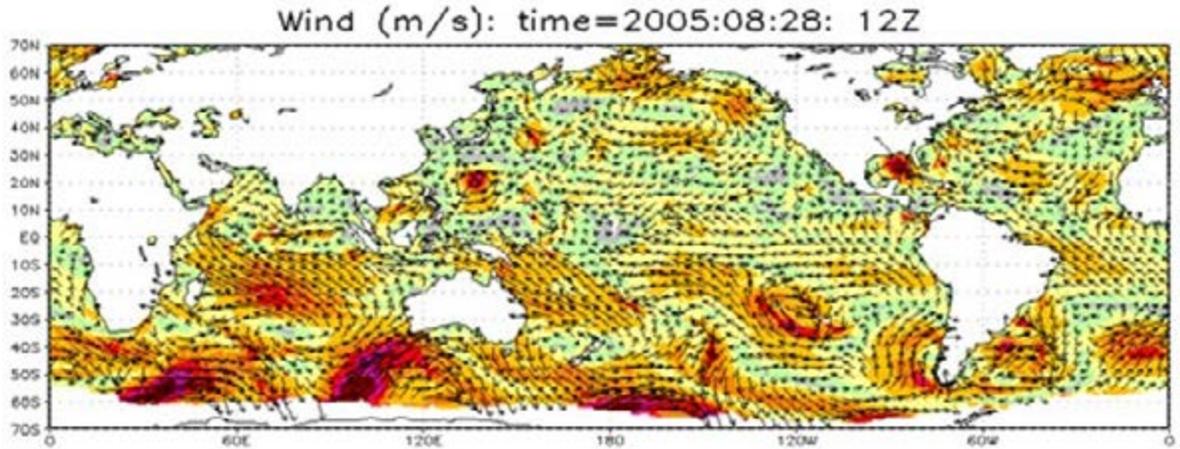
To support access, uptake and use of CDRs, the Program led the development of a generic climate data tool kit. The pilot application of the kit is the Integrated Marine Protected Area Climate Tools (IMPACT). Designed to support NOAA's Gulf of the Farallones National Marine Sanctuary (NMS), IMPACT provides climate change impact data, information, and analysis to a wide range of stakeholders in coastal California. The image below shows a projection of the Sea Surface Temperature CDR over the Gulf of the Farallones NMS. IMPACT allows seamless integration and spatial/temporal analysis of satellite and *in situ* data as well as CDRs and resource management data, including unique user-supplied datasets. The IMPACT framework can be readily adapted to suit other areas, sectors, and needs.



Sea Winds

The Blended Sea Winds product contains globally gridded, high-resolution ocean surface vector winds and wind stresses on a global 0.25° grid, and in multiple time resolutions of 6-hourly, daily, monthly, and a 11-year (1995-2005)

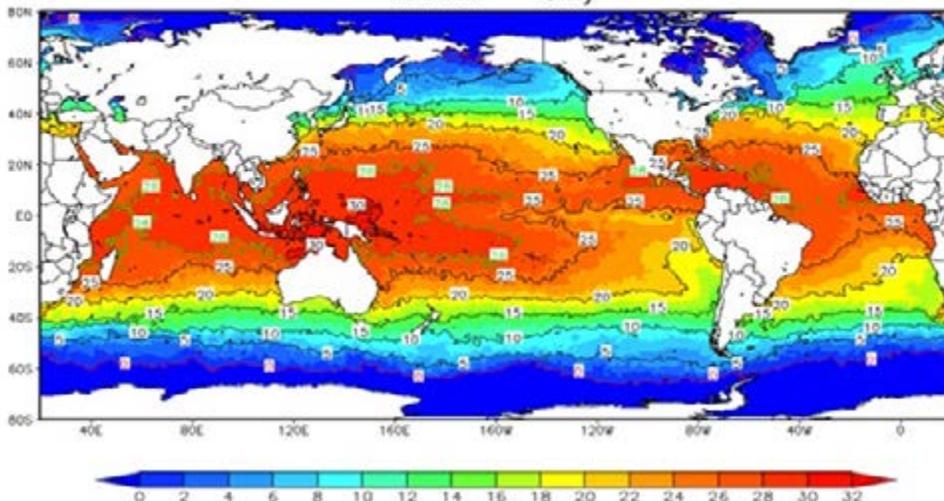
climatological monthly analyses. The period of record is July 9, 1987 to present. Data are accessible through FTP or OPeNDAP/THREDDS Data Server. See <http://www.ncdc.noaa.gov/oa/rsad/air-sea/seawinds.html>



NOAA Optimum Interpolation

1/4 Degree Daily Sea Surface Temperature Analysis

Daily OISST Intv2: 28NOV2011
AVHRR - only



The optimum interpolation (OI) sea surface temperature (SST) analysis is produced daily on a 0.25° grid. The analysis uses *in situ* and satellite SST's plus SST's simulated by sea ice cover. Before the analysis is computed, the satellite data is adjusted for biases.

Custom Satellite Images:

NCDC provides custom satellite imagery from NOAA satellites based on user-specified criteria. The images also can be certified for court use. Please contact NCDC for details on ordering and image-enhancement options.

The screenshot displays the NOAA Satellite and Information Service website interface. At the top, it features the NOAA logo and the text 'NOAA Satellite and Information Service National Environmental Satellite, Data, and Information Service (NESDIS)'. To the right is the 'National Climatic Data Center U.S. Department of Commerce' logo. A navigation bar includes 'NOAA > NESDIS > NCDC', a 'Search Fields' input box, and a 'Search NCDC' button. Below the navigation is a link to 'Return to Satellite Data Page' and a main heading 'Sample GOES Image Products'. A menu of links includes 'Sector Coverages', 'Resolution', 'Mapping', 'Enhancements', and 'Specialized Services'. The main content area is titled 'GOES-EAST/WEST Sector Coverages' and contains a paragraph explaining that the following table of images shows geographical coverages for GOES-East and GOES-West satellites, with links to reveal scheduled times and additional imagery for smaller areas. Below the text is a grid of eight satellite image thumbnails, each with a caption: 'GOES-8 Full Disk Sector', 'GOES-8 CONUS Sector', 'GOES-8 Ext N. Hemisphere Sector', 'GOES-8 South America Sector', 'GOES-q Full Disk Sector', 'GOES-q PACUS Sector', 'GOES-q Northern Hemisphere Sector', and 'GOES-q Southern Hemisphere Sector'.

<http://www.ncdc.noaa.gov/oa/rsad/netcdf-access/index.php>

Service Fees: NCDC recently announced that all of its on-line data is now available for download free of charge. Requests and orders for certain products and those shipped on physical media still require pre-payment, however. Our two most popular media are external disk drives and LTO tapes. Also, service fees may apply to very large orders in excess of 100 GB, which must be manually processed and either copied to physical media or placed on FTP server. These types of orders can take several weeks to be completed and shipped. Before using the contact information below, please read the instructions at <http://www.ncdc.noaa.gov/customer-support> to determine if your product needs have a fee associated with them.

Contact information for satellite data and products:

Telephone: 828-271-4850 x3183

Facsimile: 828-271-4876

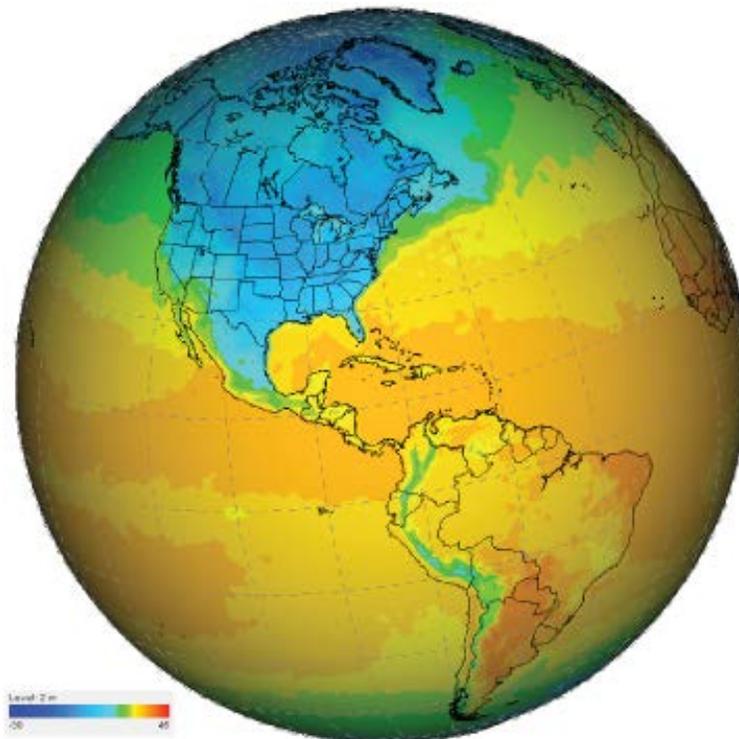
E-mail: ncdc.satorder@noaa.gov

Model Data, Products & Service

National Climate Model Portal

The National Climate Model Portal (NCMP) is being developed to provide reliable, consistent, long-term public access, interoperability, and intercomparison of climate reanalysis products and observational datasets for all levels of expertise and will be the initial access point for model data under NOAA's Climate Services Portal (NCSP). With the development of tools for improvement and use of model data and information underway, an important early NCMP contribution is access to several reanalysis datasets, including the NCEP Climate Forecast System Reanalysis (CFSR) and North American Regional Reanalysis (NARR). For example, Global CFSR data in the figure below

depict the very impressive arctic air mass in place over North America on Christmas Day, 1983, under which numerous temperature records were broken and citrus crop damage measured in the billions. The NCMP website—currently under development and available at <http://ncmp.ncdc.noaa.gov>—will direct users to advanced model data services and information.



**12 UTC 25 December 1983
CFSR 2 m Temperature (°C)
Generated from NCMP/NOMADS data with Unidata IDV**

NOAA National Operational Model Archive and Distribution System (NOMADS)

To address the growing need for real-time and retrospective access to a wide spectrum of model data, NOAA's National Climatic Data Center (NCDC), National Centers for Environmental Prediction (NCEP) and Geophysical Fluid Dynamics Laboratory (GFDL) initiated NOAA's National Operational Model Archive and Distribution System (NOMADS). The model dataset archive established by NOMADS includes:

- Numerical Weather Prediction (NWP) models [GFS, NAM, RUC, RAP]
- Multi-member ensembles [GENS]
- Global Data Assimilation System (GDAS) model input and restart files

Methods of access for data and derived products:

- Distributed format independent access via OPeNDAP
- FTP and HTTP access to data subsets in their native format
- Web plotting and aggregation service
- Live Access Server (LAS) and GrADS Data Server (GDS)
- Unidata's THREDDS Data Server (TDS) services including OpenGIS Web Coverage Service (WCS) and Web Map Service (WMS)

Additionally, NOMADS provides customer support for users of advanced model data and information. Contact information: phone: (828) 271-4800; email: NOMADS.ncdc@noaa.gov

NOAA National Operational Model Archive & Distribution System

Data
[Access](#)
[Inventory](#)

Documentation
[User Guide](#)

NOMADS Project
[About NOMADS](#)
[Partners](#)
[Publications & Presentations](#)
[Service Records Retention System](#)

Contact Us
[Contact Info](#)

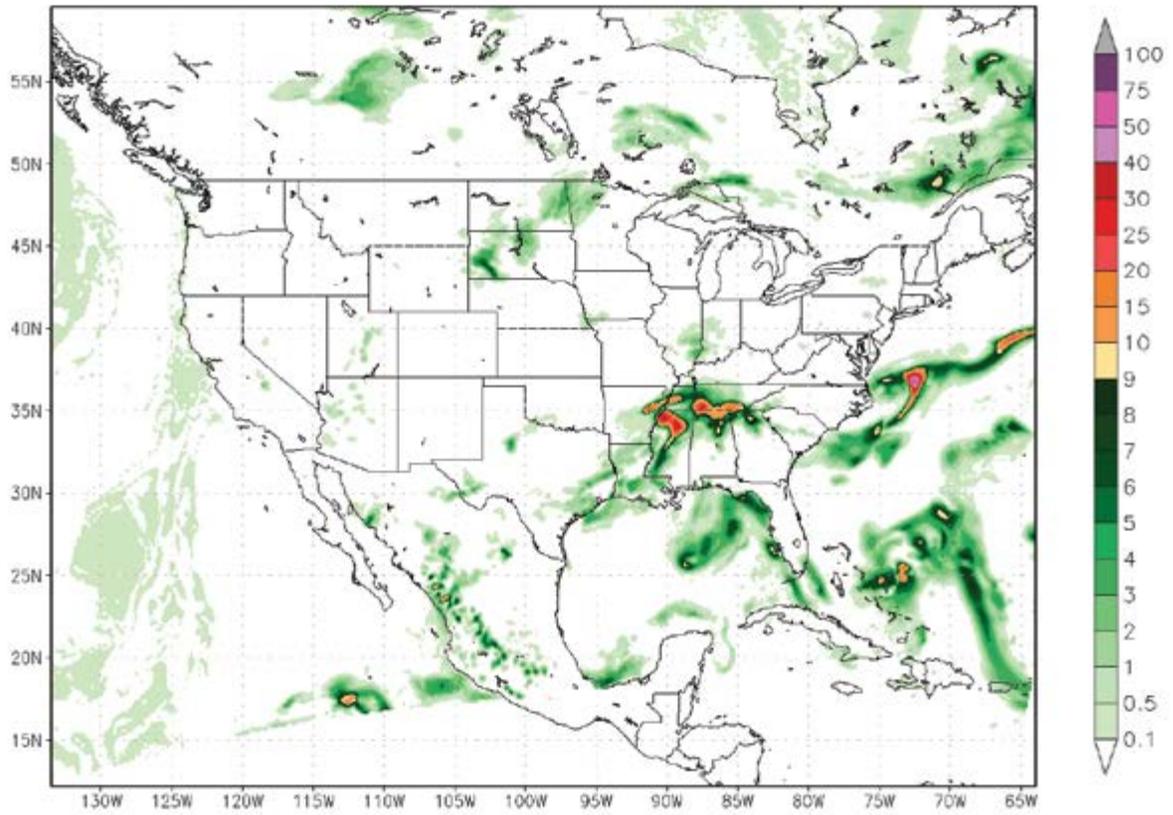
The NOAA National Operational Model Archive and Distribution System (NOMADS) is a Web-services based project providing both real-time and retrospective format independent access to climate and weather model data.

DOC > NOAA > NESDIS > NCDC

Search Field:
Search NCDC

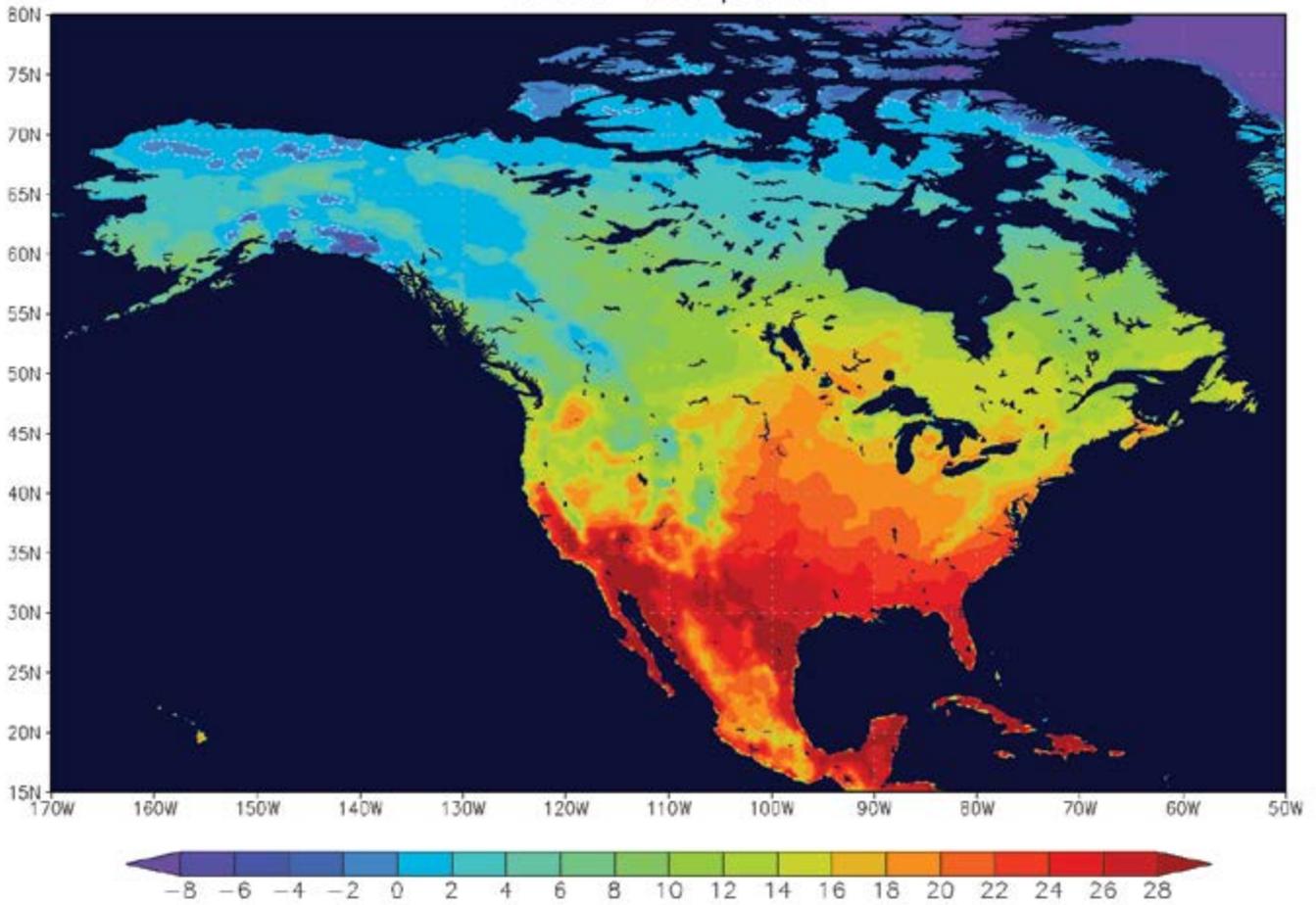
NOMADS Home Page - <http://nomads.ncdc.noaa.gov/>

NAM Total Surface 3-Hourly Precipitation (mm)
00Z10JUL2012+060Hrs



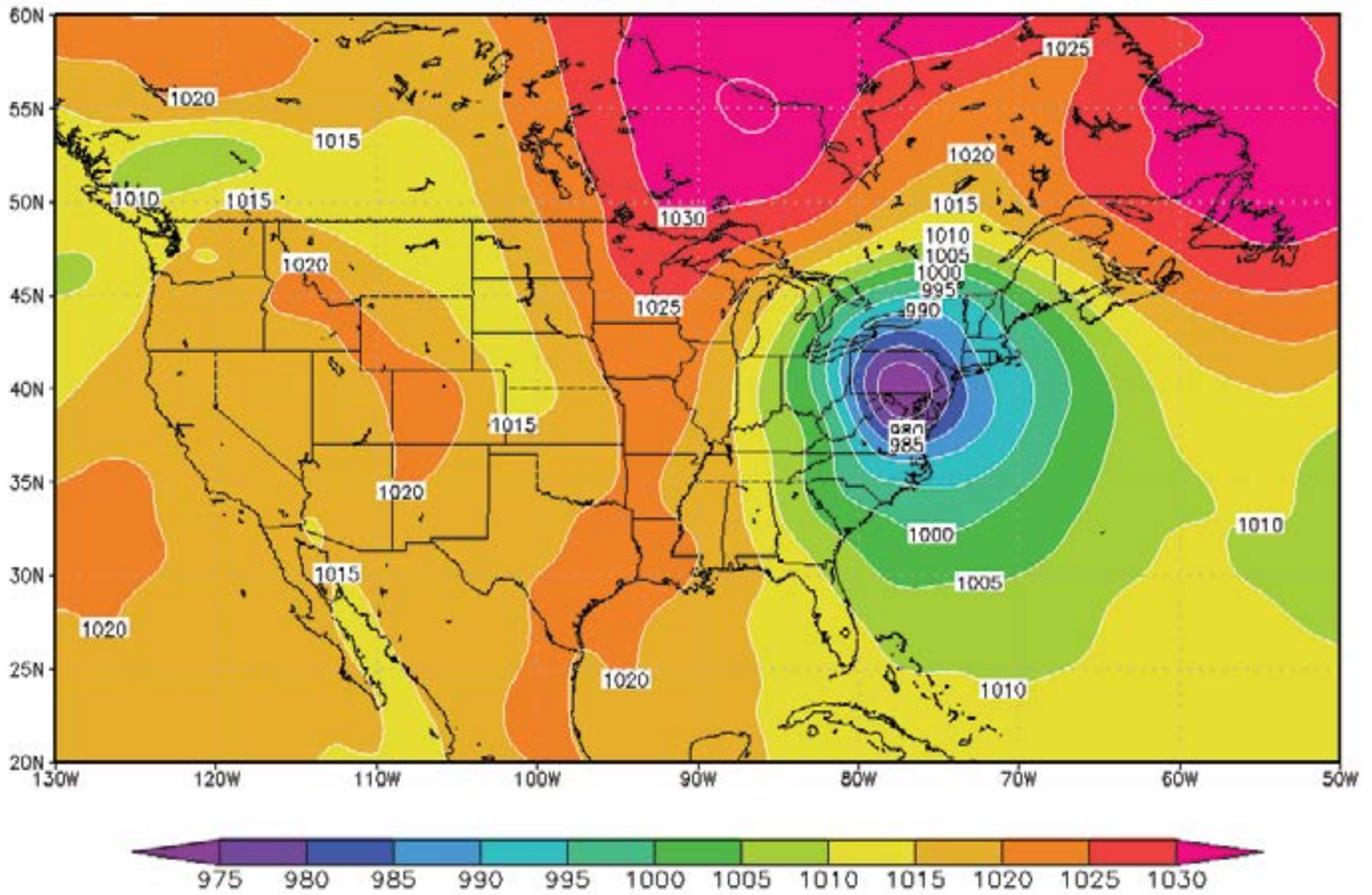
North American Mesoscale (NAM) total surface 3-hourly precipitation

NARR 10–40cm Underground Soil Temperature (C)
18UTC 18Sep2003

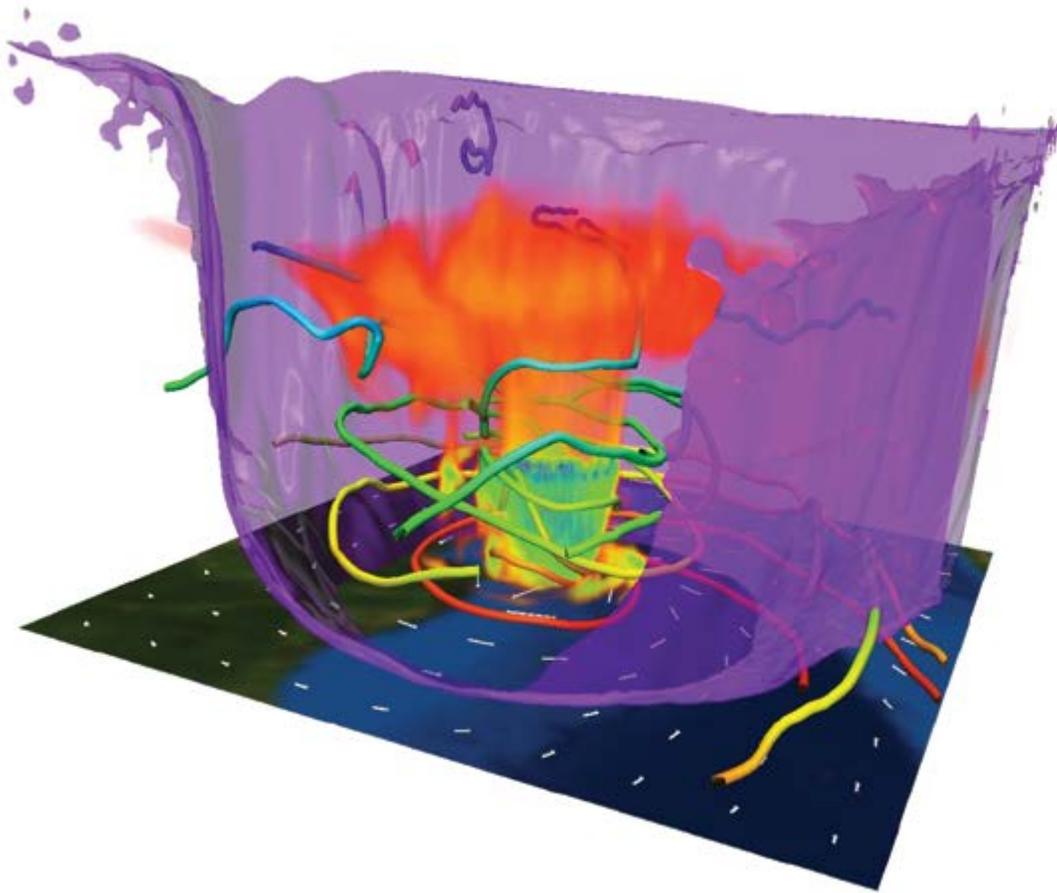


**North American Regional Reanalysis (NARR) underground soil temperature
(a layer from 10cm to 40cm below ground)**

Global Forecast System MSL Pressure (hPa) 30 Oct 2012 @ 06UTC



Global Forecast System (GFS) mean sea level pressure showing super-storm 2012

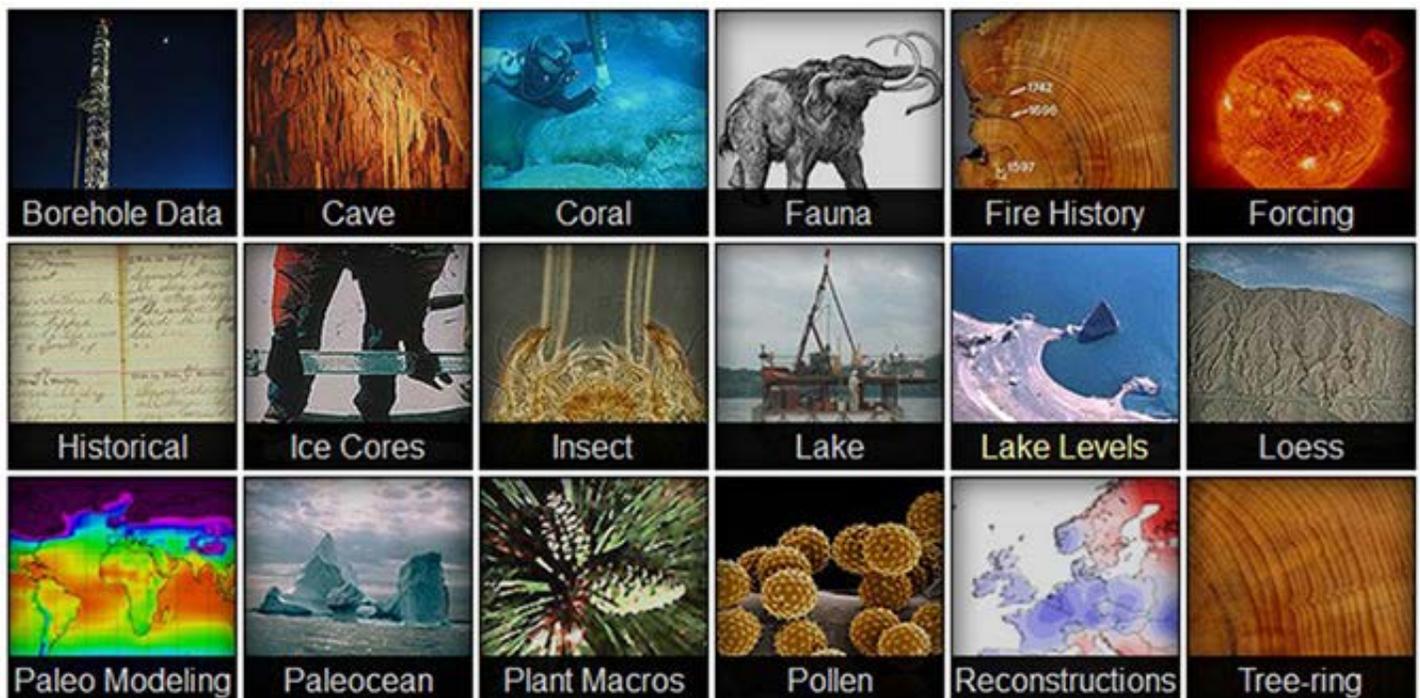


Downscaled Global Forecast System (GFS) model data showing Hurricane Katrina making landfall on August 29, 2005

Paleoclimate Data

DATABASE: Paleoclimate Data—data about past climate and environment derived from a diverse range of proxies such as tree rings and ice cores. The data are time series of geophysical or biological measurements, and some include reconstructed climate variables such as temperature and precipitation.

- **Data Type:** ASCII character data;
- **Quality Control:** Undergoes publication peer review and some manual QC
- **Data Origin:** Academic and Government researchers
- **Content/Elements:** Time series of geophysical or biological measurements, processed average proxy values such as tree growth indices, and reconstructed climate variables
- **Period of Record:** All time periods prior to instrumental weather records, extending from hundreds to millions of years before present.
- **Online**—<http://www.ncdc.noaa.gov/paleo/paleo.html>



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

NOAA's Regional Climate Centers

The National Oceanic and Atmospheric Administration's (NOAA) Regional Climate Centers (RCCs) are a federal–state cooperative effort. The RCC Program is managed by NOAA's National Climatic Data Center (NCDC). The RCC Program directly supports the following legislative mandates:

National Climate Program Act of 1978 (15 U.S.C. 2901, 2908 (PL 95-367))—mandate “...to improve the use and dissemination of climatic data and information for the economic benefit and well-being of the United States.”

U.S. Global Change Research Act of 1990 (PL 101-606)—calls for the Federal Government to “...combine and interpret data from various sources to produce information readily usable by policymakers attempting to formulate effective strategies for preventing, mitigating, and adapting to the effects of global change.”

The six centers that comprise the RCC Program are engaged in the timely production and delivery of useful climate data, information, and knowledge to decision makers and other users at the local, state, regional, and national levels. The RCCs support NOAA's efforts to provide operational climate services while leveraging improvements in technology and collaborations with partners to expand quality data dissemination capabilities. The RCCs respond annually to tens of thousands of requests for data and information from citizens, state and federal agencies, and weather-sensitive businesses (agriculture, transportation, risk management, etc.). More than 100 million requests for information are received annually through RCC online data systems. Information tailored to specific regional needs is generated at the RCCs and is shared with NCDC, National Weather Service (NWS) offices, and other agencies to ensure an integrated approach to climate analyses, planning, and dissemination for the benefit of all climate information users. RCC data delivery to the larger climate community relies on a nimble combination of near-real-time relational databases and Web-based information resources.

The current configuration of RCCs includes six centers located at Cornell University in Ithaca, New York; the University of North Carolina at Chapel Hill; Louisiana State University in Baton Rouge; The University of Nebraska in Lincoln; the Illinois State Water Survey in Champaign; and the Desert Research Institute in Reno, Nevada. The figure on the following page illustrates the location of the six RCCs, representing each geographic region of the United States.

ACIS (<http://rcc-acis.org/>) is the RCC backbone for disseminating NCDC climate information to partners and a host of regional and state climate data users. In recent years, requests for climate information from the RCCs have grown rapidly as products have been developed for many sectors, including risk management, energy production, agricultural planning, transportation services, and the general public.

NOAA's Regional Climate Services Partnership

Changing climate conditions impact our lives in both subtle and measurable ways. Whether we are facing extreme precipitation events, earlier snowmelt, increased frequency and duration of drought, alterations to the growing season, or rising sea levels, the key to anticipating and responding to these changes is having the right kinds of climate information at a scale appropriate for community decision-making.

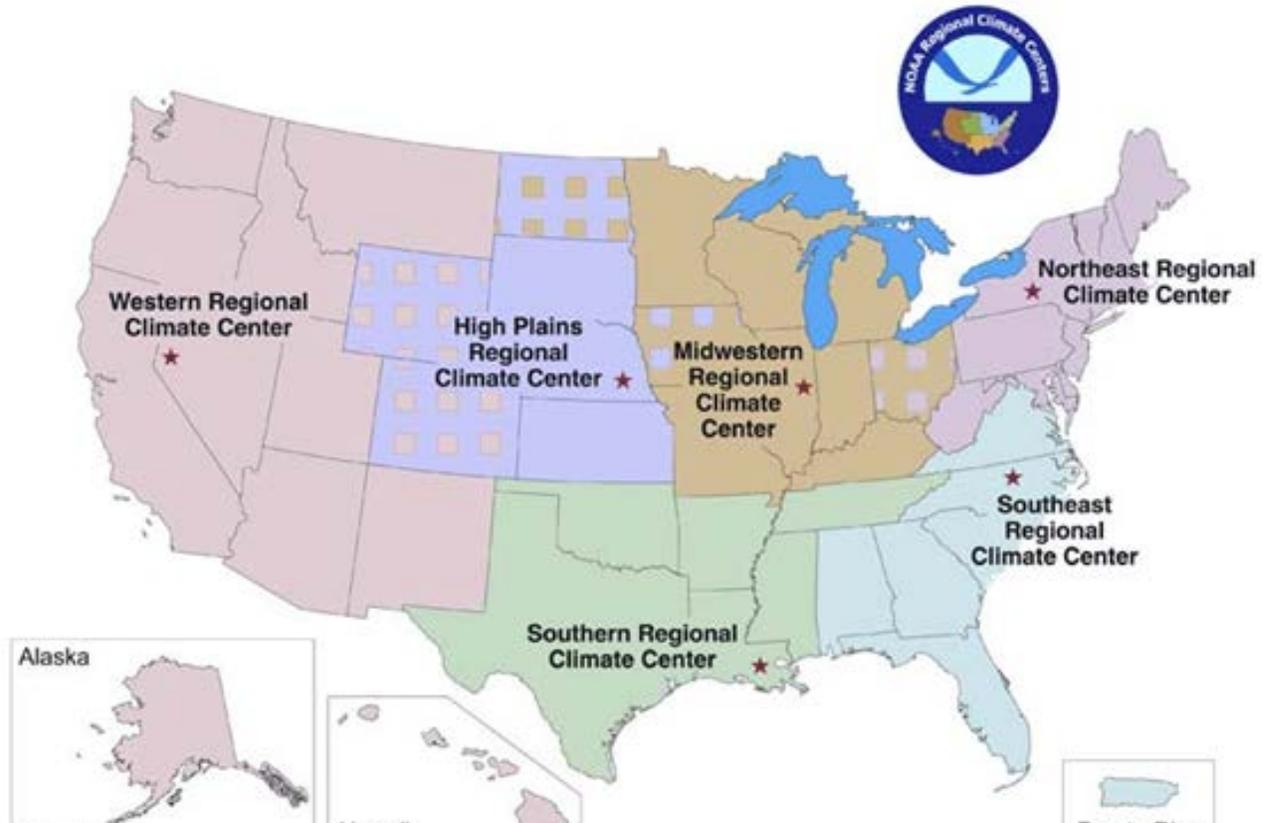
NOAA's Regional Climate Services Partnership makes climate information relevant and accessible to people from coast to coast. From engineers to insurers, gardeners to public health officials, people who use climate data, forecasts, products, and services will find that NOAA's Regional Climate Services Partnership is the one stop shop for their information needs.

This Partnership reflects NOAA's commitment to healthy ecosystems, communities and economies that are resilient in the face of variable and changing climate conditions. It seeks to assess regional needs and vulnerabilities, and

then develop and deliver timely climate services that aid mitigation and adaptation choices. The Partnership also works to build a climate-literate public that understands its vulnerabilities so that it can appropriately plan ahead.

Anchorage, AK / Honolulu, HI
Kansas City, MO / Fort Worth, TX
Bohemia, NY / Salt Lake City, UT

Learn more about the RCSDs at: <http://www.noaaideacenter.org/rcsd/>



<http://www.ncdc.noaa.gov/oa/climate/regionalclimatecenters.html>

CD-ROM/DVD Products

NCDC has produced a suite of CD-ROMs and DVDs with diverse environmental data ranging from global tropical cyclone tracks, to worldwide climatologies, to hourly surface data. Below is a listing with descriptions of some of the more popular discs we offer. A more extensive listing, further details concerning these discs, as well as an online ordering system (with discounted prices vs. those listed below), are accessible via:

<http://ols.nndc.noaa.gov/plolstore/plsql/olstore.prodlist?category=C&subcatc=01&groupin=CDV>

Integrated Surface Hourly Observations:

The global surface hourly observations contained on this CD-ROM/DVD set are integrated from all of the NCDC and Navy surface hourly data, NCDC hourly precipitation, and Air Force surface hourly data. Hourly and synoptic type data for approximately 12,000 global stations are available for 1995–2005. There are 24 volumes (1995–2002) separated by geographic region and time period. Global extraction software, including a map interface, is provided to aid in identifying and easily selecting the data in either full Integrated Surface Hourly format or delimited/abbreviated format. Various elements such as temperature, dew point, wind speed and direction, sea level pressure, visibility, cloud ceiling, present weather, precipitation, snowfall, snow depth, altimeter setting, station pressure, etc., are available. The disks also contain a data inventory file showing the number of observations for each month of the year for each station. Each volume contains all the software, support files, and documentation so that each volume may be used alone or in combination with other volumes for each time period. An additional nine volumes (no extraction software included) on DVD cover 2003–2011 with each year available on a single DVD. \$35 per volume.

International Station Meteorological Climate Summary (ISMCS) Ver. 4.0:

This product provides detailed climatological summaries for 2,600 locations worldwide. These locations include National Weather Service stations, domestic and overseas Navy and Air Force sites, and numerous foreign stations. Limited summaries also are given for approximately 4,000

additional worldwide sites. This version also contains year/month information and long-term mean precipitation data for 1,000 foreign locations. Tabular or statistical data can be printed or exported to a spreadsheet. This dataset is a joint NCDC, USAF, and U.S. Navy product. Please note that the non-U.S. data cannot be redistributed for commercial purposes by users of the CD. \$35.

NCDC Cooperative Station Data:

These CD-ROMs contain ASCII data files and associated station history files for the Cooperative Summary of the Day dataset. This dataset is a compilation of daily observations from more than 20,000 cooperative weather stations in the United States, U.S. Caribbean Islands, U.S. Pacific Islands, and Puerto Rico. It includes air and soil temperatures, rainfall, snowfall, and evaporation elements. A map interface is available on the Eastern, Central, and Western Disks. The period of record on these disks varies among stations but falls within the period from the 1850s through 2001. The update disk contains compressed files for 2002–2006 and also includes data for the “first-order” National Weather Service sites, with some additional data elements that are not reported by cooperative stations. The files are in the raw, archive format without any software for conversion to a spreadsheet-ready format. \$105 for full set/\$35 per volume/update disk.

Engineering Weather Data:

This CD-ROM contains an update of a very popular publication that was first printed by the Air Force in 1967 and republished in 1978. As compared to the original Engineering Weather Data publication, the new interactive CD-ROM database contains updated meteorological tables, new, summarized parameters, and graphical displays. Approximately 800 worldwide stations have been summarized. For each station, the data and information on this CD-ROM include: summarized design criteria data for dry and wet bulb temperatures and humidity ratios, average annual climate summaries, psychrometric summaries, binned temperature data, annual temperature and humidity summaries, heating and cooling degree data summaries for building envelop loads, ventilation and infiltration loads, solar radiation data, and seasonal wind direction and wind speed summaries. Please note that

the non-U.S. data cannot be redistributed for commercial purposes by users of the CD. \$35.

Important Notes:

Some NCDC CD-ROM products were produced for use in a 'DOS' or Windows PC environment and will not work in an Apple 'MAC' environment. In addition, some of the NCDC CD-ROMs were produced in a pre-Windows 95/98/XP/7 environment and may not work without configuration. If you have technical questions, email ncdc.orders@noaa.gov.

NCDC's User Engagement Service's Branch is responsible for distribution of NCDC CD-ROM/DVD products.

Ordering information—by mail, by phone, by email, or via NCDC's Online Store:

Attn: User Engagement
Services Branch
National Climatic Data Center
151 Patton Ave, Asheville
NC 28801-5001
Telephone: 828-271-4800
Fax: 828-271-4876
Internet: ncdc.orders@noaa.gov

Online Store: <http://ols.nndc.noaa.gov/plolstore/plsql/olstore.main?look=1>

Prepayment must accompany orders. We accept payment by Visa, MasterCard, American Express, Discover, wire transfers, and Automated Clearing House. For domestic orders, please add \$3.00 service charge per order; foreign orders, add \$39.00 per order.

Publications

A number of NCDC Climatic Summaries, Publications, and Documents are available online.

Climatic Summaries, Publications & Documents

- [Annual Climatological Summaries](#) (Monthly/Annual Summaries for U.S. Locations)
- [Climatological Data](#) (Daily/Monthly Data for ~ 8,000 U.S. Locations)
- [Climate Variations Bulletin](#) (Monthly Reports of U.S. Climate)
- [Climatic Data for Frost-Protected Shallow Foundations](#)
- [Climate Maps for the United States](#) (Over 700 Maps of Climate Normals)
- [Comparative Climatic Data](#) (Climatological Averages for U.S. Cities)
- [Climates of the World](#) (PDF format, Regional Narratives and Climatic Tables by City)
- [Climatology of the U.S. - Supp #3](#) (Maps of Temperature, Precip, Degree Days)
- [Climatology for Southwest Asia](#) (Many Data Sources and Summaries)
- [COOP Data/Record Of Climatological Observations Form](#)
- [Dynamic Normals](#) (19 products—e.g., Daily Cooling Degree Days)
- [Freeze/Frost Data for the U.S.](#) (PDF format)
- [Frost Free Maps for the U.S.](#) (Based on 28°F and 32°F Temperatures)
- [Heating and Cooling Degree Days](#) (Monthly State, Regional, and National Degree Days)
- [Historical Climate Publications](#) (Publications and CD-ROMs—for sale at a very reduced price)
- [Hourly Precipitation Data](#) (Hourly Precip Data for over 2,500 U.S. Locations)
- [Hourly Rainfall Event Statistics](#) (Frequency Distributions for Hourly Rainfall)
- [Integrated Surface Hourly \(ISH\) Summaries](#) (Summaries of Temperature, Wind, Ceiling/Visibility, etc. Note: Choose Advanced Options at Accessing data selection screen, then Data Summary as output on following screen.)
- [Local Climatological Data](#) (Hourly/Daily Data for nearly 300 U.S. Cities)
- [Monthly Climatic Data for the World](#) (Selected Worldwide Cities' Climate Summaries)
- [Monthly Extremes](#) (30 products—e.g., Maximum Precipitation by Month)
- [Monthly Weather Review](#) (American Meteorological Society Summary)
- [Rainfall Frequency Atlas of the U.S.](#) (Frequency Distributions for Heavy Rainfall)
- [Storm Data Publication](#) (Monthly Reports of Damaging Weather)
- [U.S. Climate Normals](#) (The New U.S. Climatological Normals)

<http://www.ncdc.noaa.gov/oa/climate/climateproducts.html#PUBS>

Historical and offline publication requests should be directed to NCDC Customer Service at the following contact information:

Phone: 828-271-4800

Fax: 828-271-4876

E-Mail: NCDC.Orders@noaa.gov

Climate Monitoring

One very important role of NOAA’s National Climatic Data Center (NCDC) is to monitor and assess the state of the Earth’s climate in near real-time, providing data and information on climate trends and variability—including perspectives on how the climate of today compares to the past—to decision-makers at all levels of the public and private sector. In that role, NCDC’s Climate Monitoring Branch at routinely produces climate assessments on a monthly, seasonal, and annual basis. The purpose of these reports, which are available back to 1998, is to provide scientific insight into the Earth’s climate and historical perspective on its variability and change.

The Climate Analysis reports, which place the conditions for the past month, season, and year-to-date period into historical perspective, are provided as data become available. Parts of the report are available online as early as the 5th of each month, and the full report is released on the 15th (or next business day). Each report includes hundreds of graphics and text summaries of global and U.S. climate conditions with historical perspective provided by more than 100 years of instrumental observations and hundreds of years of paleoclimate data from sources such as tree rings, ice cores, and sedimentary records. The reports consist of several sections summarizing conditions on both a U.S. and global scale.

NOAA NATIONAL CLIMATIC DATA CENTER
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Home About NCDC Contact Us Help

Search articles and pages SEARCH

Home > Climate Monitoring

Climate Monitoring

Monthly Climate Report

BAMS State of the Climate

Temp, Precip, Drought

Extremes

Societal Impacts

Snow and Ice

Teleconnections

GHCN Monthly

Special Reports

FAQ

Our Mission

Welcome to Climate Monitoring at NOAA's National Climatic Data Center. Our mission is to monitor and assess the state of the Earth's climate in near real-time, providing decision-makers at all levels of the public and private sectors with data and information on climate trends and variability including perspectives on how the climate of today compares to the past. Use the menu on the left to navigate our available products.

The old Climate Monitoring Page will still be accessible for a limited time.

Popular Products

Monthly Climate Reports
National Overview
Global Analysis

Temperature, Precipitation, and Drought
Monthly Temp and Precip Ranks
Temp, Precip, and Palmer Indices Time Series
U.S. Drought Portal
U.S. Drought Monitor

National Highlights

standard | metric

September 2012	Value	Rank
Temperature	65.25°F	16 th Warmest
Precipitation	-2.40"	48 th Driest

[More info...](#)

Global Highlights

standard | metric

September 2012	Anomaly	Rank
Land	+1.81°F	3 rd Warmest
Ocean	+0.88°F	3 rd Warmest
Land+Ocean	+1.24°F	2 nd Warmest

[More info...](#)

U.S. Drought

% Area for U.S., including AK, HI & PR
(As of 10.23.2012)
Info Source: National Drought Mitigation Center

None D0 D1 D2 D3 D4

[More info...](#)

The section on global conditions includes data on surface and upper air temperatures, precipitation, ENSO conditions, sea ice, and snow cover.

A U.S. National section provides statewide, regional, and national rankings for mean temperature and precipitation. User-friendly graphics and short explanatory discussions make determination of conditions quick and easy.

What follows are more prominent analyses sought after by NCDC customers.

<http://www.ncdc.noaa.gov/climate-monitoring/index.php>

U.S. Climate at a Glance

The U.S. Climate at a Glance web page is a popular and easy-to-use source of climate information on national, regional, statewide, and city temperature and precipitation trends and rankings. Here, users can view a number of different statistics in addition to a bar or line graph: temperature or precipitation values for any month or season from 1895 to present; the respective ranking for each year from warmest to coldest or driest to wettest; the climatological average for any selected base period; and the linear trend over the period selected. Mapping of statewide temperature and precipitation values for any month or season during the period of record is also possible.

U.S. Climate at a Glance

These data are primarily intended for the study of climate variability and change. Whenever possible, observations have been adjusted to account for the artificial effects introduced into the climate record by factors such as instrument changes, station relocations, observer practice changes and urbanization. As a result, some values available on this site differ from the official observations. For official station observations, please contact the NCDC Climate Services and Monitoring Division at ncdc.orders@noaa.gov.

September 2012 Temperature Departure from Normal

(Departure from the 1961 - 2010 Normal)

Departure from Normal

8°F
6°F
4°F
2°F
0°F
-2°F
-4°F
-6°F
-8°F

- National
- Regional
- Statewide
- Cities

Links to current and historical temperature and precipitation data

Select from these options and then click "submit" to view U.S. temperature and precipitation maps for any past month and year. (Please wait 20 - 30 seconds.)

Element:	Year:	Period:	
<input type="text" value="Mean Temperature"/>	<input type="text" value="2012"/>	<input type="text" value="January"/>	<input type="button" value="Submit"/>

Please see our [ftp site](#) for statewide [temperature](#) and [precipitation](#) data which are used in making these maps.

Information for users [experiencing problems](#) receiving requested output

<http://www.ncdc.noaa.gov/oa/climate/research/cag3/cag3.html>

State of the Climate Drought September 2012

**National Oceanic and Atmospheric Administration
National Climatic Data Center**

Use the form below to access monthly reports:

Report:
Year: Month:

Issued 15 October 2012

Contents Of This Report:

- National Drought Overview
- Detailed Drought Discussion
 - Overview
 - Synoptic Discussion
 - Palmer Drought Index
 - Standardized Precipitation Index
 - Agricultural & Hydrological Indices and Impacts
 - Regional Discussion
 - Primary Corn and Soybean Belt
 - Regional Climate Center Reports
 - Pacific Island Drought
- State/Regional/National Moisture Status
- Drought Indicators
- Contacts & Questions

Palmer Z Index
Short-Term Conditions
September 2012

National Climatic Data Center, NOAA

The U.S. Drought section provides numerous drought indicators and summaries of national, regional, and local drought conditions during the past month with perspective on how the conditions compare with those during the preceding centuries.

<http://www.ncdc.noaa.gov/sotc/?report=drought>

The North America Drought Monitor (NADM) is a co-operative effort between drought experts in Canada, Mexico and the United States to monitor drought across the continent on an ongoing basis.

North American Drought Monitor

**National Oceanic and Atmospheric Administration
National Climatic Data Center**

- [NADM Overview](#)
- [NADM maps](#)
- [NADM maps \(limited access\)](#)
- [ArcGIS Archive \(limited access\)](#)
- [Drought Monitoring Indices and Data](#)
- Other Drought Monitoring Indices
 - NESDIS Satellite VHI
 - CPC Modeled Soil Moisture
 - U.S. NWS Precipitation Analysis
- [Geographical Reference Maps](#)
- [Climatology Maps](#)
- [Associated Links](#)

<http://www.ncdc.noaa.gov/temp-and-precip/drought/nadm/>

NCDC produces the Regional Snowfall Index (RSI) for significant snowstorms that impact the eastern two thirds of the United States. The RSI ranks snowstorm impacts on a scale from 1 to 5, similar to the Fujita scale for tornadoes or the Saffir-Simpson scale for hurricanes.

Regional Snowfall Index

National Oceanic and Atmospheric Administration National Climatic Data Center

[Overview](#) | [RSI and Societal Impacts](#) | [Historic Storms](#) | [FAQ](#) | [NESIS](#) | [References](#) | [Contact](#)

Overview

NOAA's National Climatic Data Center is now producing the Regional Snowfall Index (RSI) for significant snowstorms that impact the eastern two thirds of the U.S. The RSI ranks snowstorm impacts on a scale from 1 to 5, similar to the Fujita scale for tornadoes or the Saffir-Simpson scale for hurricanes.



Category	RSI Value	Description
1	1-3	Notable
2	3-6	Significant
3	6-10	Major
4	10-18	Crippling
5	18.0+	Extreme

The RSI differs from these other indices because it includes population. RSI is based on the spatial extent of the storm, the amount of snowfall, and the juxtaposition of these elements with population. Including population information ties the index to societal impacts. Currently, the index uses population based on the 2000 Census.

<http://www.ncdc.noaa.gov/snow-and-ice/rsi/>

U.S. Records

National Oceanic and Atmospheric Administration National Climatic Data Center

Records Look-Up

Look up daily records set on a given day for a month, day, or all-time.

Time Scale: Parameter:

Month: Day: Year:

Filter by State/Territory:

Only return ASOS stations Return Trace values (Precip/Snow)

Recent Records Totals

[Daily](#) | [Monthly](#) | [All-Time](#)

Period		Hi Max	Hi Min	Lo Max	Lo Min	Precip*	Snow*
Yesterday	Oct 10, 2012	5	3	41	20	22	2
Last 7 Days	Oct 4 - 10, 2012	76	158	1,336	647	194	74
Last 30 Days	Sep 11 - Oct 10, 2012	571	712	1,898	1,245	1,881	91
Last 365 Days	Oct 12, 2011 - Oct 10, 2012	32,492	30,337	9,136	6,465	29,492	4,341
Month to Date	Oct 1 - 10, 2012	172	350	1,405	676	515	83
Year to Date	Jan 1 - Oct 10, 2012	29,690	26,663	7,210	5,220	21,726	2,744
Last Year to Date	Jan 1 - Oct 10, 2011	23,810	25,974	13,735	8,199	25,942	7,540

*Precipitation and Snow totals DO NOT include trace values.

The U.S. Records page provides an easy and quick way to search for temperature, precipitation and snowfall station records set on a given day or month.

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

The Global Hazards/Climate Extremes page was first presented in 2003 as a framework to summarize weather-related hazards and disasters around the world in recent months. The page is updated on a weekly basis and is focused on the following events: drought, excessive heat,

flooding, severe storms, tropical cyclones, extratropical cyclones, and severe winter weather. The information provided is a compilation from media news with satellite images and/or graphs that are relevant to the story.

State of the Climate Global Hazards August 2012

National Oceanic and Atmospheric Administration National Climatic Data Center

Use the form below to access monthly reports.

[« July 2012 Hazards Report](#)

Report:

Year: Month:

Please note: Material provided in this report is chosen subjectively and included at the discretion of the National Climatic Data Center (NCDC). The ability to report on a given event is limited by the amount of information available to NCDC at the time of publication. Inclusion of a particular event does not constitute a greater importance in comparison with an event that has not been incorporated into the discussion. Data included in this report are preliminary unless otherwise stated. Links to supporting information is valid at the time of publication, but they are not maintained or changed after publication.

Updated 21 Sep 2012

August 2012 Rains flooded central African nations. [read more](#)

August 2012 Torren

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

NCDC is the Nation's scorekeeper in terms of addressing severe weather/climate events in their historical perspective. As part of its responsibility of monitoring and assessing the climate, NCDC tracks and evaluates climate events in the U.S. and globally that have great economic and societal impacts. NCDC is frequently called upon to

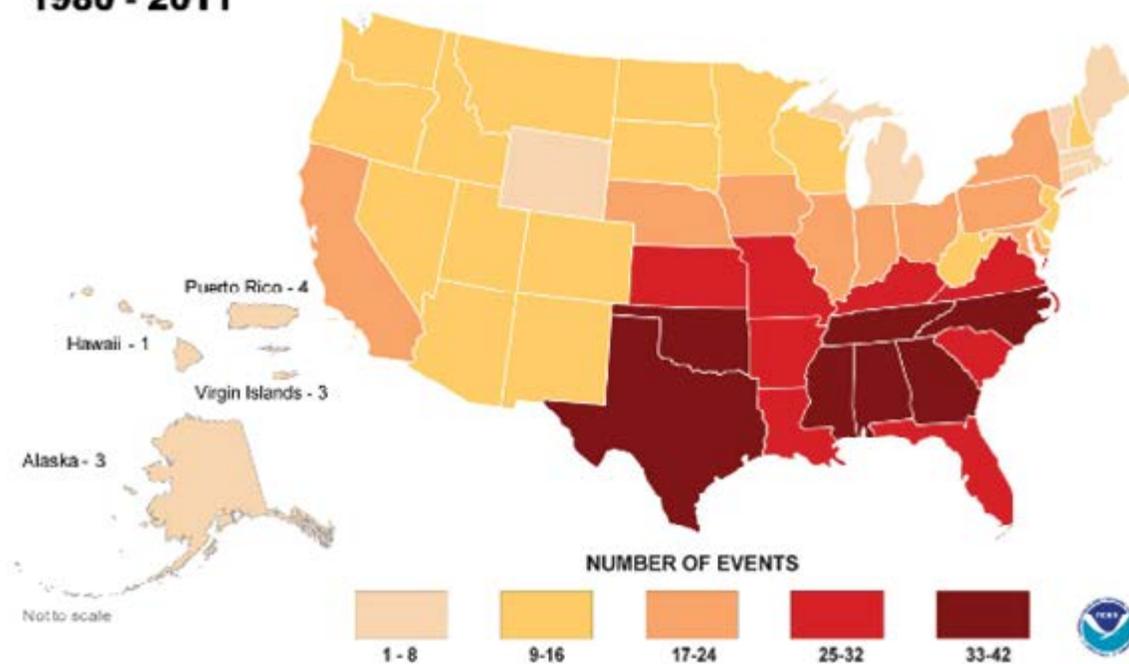
provide summaries of global and U.S. temperature and precipitation trends, extremes, and comparisons in their historical perspective. Found here are the weather/climate events that have had the greatest economic impact from 1980 to 2011. Updates will coincide with the annual State of the Climate published in the *Bulletin of the American Meteorological Society*.

Billions Dollar Weather/Climate Disasters National Oceanic and Atmospheric Administration National Climatic Data Center

[Overview](#) | [Time Series Chart](#) | [Summary Statistics](#) | [Billions Dollar Events](#)

Summary Statistics

Billions Dollar Weather/Climate Disasters 1980 - 2011



Please note that the map reflects a summation of billion dollar events for each state affected (i.e., it does not mean that each state shown suffered at least \$1 billion in losses for each event).

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

NCDC Sectoral and Regional Engagement



As part of its desire to reach out to climate-sensitive users, NCDC has expanded its services to include sectoral- and regional-specific resources. The **Sectoral & Regional** <http://www.ncdc.noaa.gov/sectoral-regional> web page introduces information of interest to various sectors and entities. The web page also houses the Residential Energy Demand Temperature Index (REDTI), a valuable tool for explaining year-to-year fluctuations in energy demand for residential heating and cooling. In addition, the description of and links to the activities, climate information and workshops in the Pacific Region are provided. Updates planned include details from the other five regions and engagement workshops hosted or co-hosted by NCDC.

User Engagement Fact Sheets by Sector

Downloadable information sheets suitable for further distribution provide an overview of the sector, key stake-

holders, examples of sector needs, and NCDC data and products relevant to the sector.

- Agriculture
- Forests and Forest Ecosystems
- Civil Infrastructure
- Construction
- Coastal Hazards
- Energy
- Health
- Insurance
- Litigation
- Marine and Coastal Ecosystems
- National Security
- Tourism
- Transportation
- Water Resources

NCDC Customer Service Contacts

NCDC provides a wide range of services to various users, ranging from large engineering firms designing the latest in safe, energy efficient structures, to the attorney documenting a weather event, to the individual planning a retirement move.

Services offered include data resource consultations, subscription items and publications, copies of original records, certifications, generation of specialized climate studies, and a host of other climate-related activities. Services are delivered on a variety of media, including online access, CD-ROM's, DVDs, computer tabulations, maps, and publications.

Customer Support

For specific information regarding NCDC products and services, customer support is only an email, fax, or call away. The customer support center is open Monday through Friday from 8:00 a.m. to 6:00 p.m. Eastern Time except Federal Holidays.

For Weather and Climate Data and Products:

Phone: 1-828-271-4800 then press "2"

Fax: 1-828-271-4876

TTY: 1-828-271-4010

Email: ncdc.orders@noaa.gov

For Satellite Data and Products:

Phone: 1-828-271-4850 then press "1"

Fax: 1-828-271-4876

TTY: 1-828-271-4010

Email: ncdc.satorders@noaa.gov

NCDC's Tax ID is #520821608.

Data Issues

If you have issues to report regarding the quality of NOAA data and you are a NOAA employee, you may file a report

here. Non-NOAA employees can send an email to ncdc.orders@noaa.gov.

Website Issues

Web page functionality problems (includes broken links and/or missing images). Users must be aware that the spam filters block messages with no subject line and subject lines that appear to be spam. Be sure to include the address of the page that you are contacting us about.

Email: ncdc.webmaster@noaa.gov

Media Contact

If you are a member of the media interested in talking to an NCDC staff member, please contact:

Katy Vincent

Email: katy.vincent@noaa.gov

