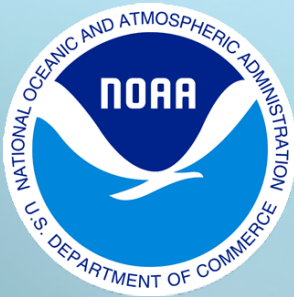


Alternative Climate Normals Workshop

Introduction and NCDC Overview



Thomas R. Karl

Director, National Climatic Data Center

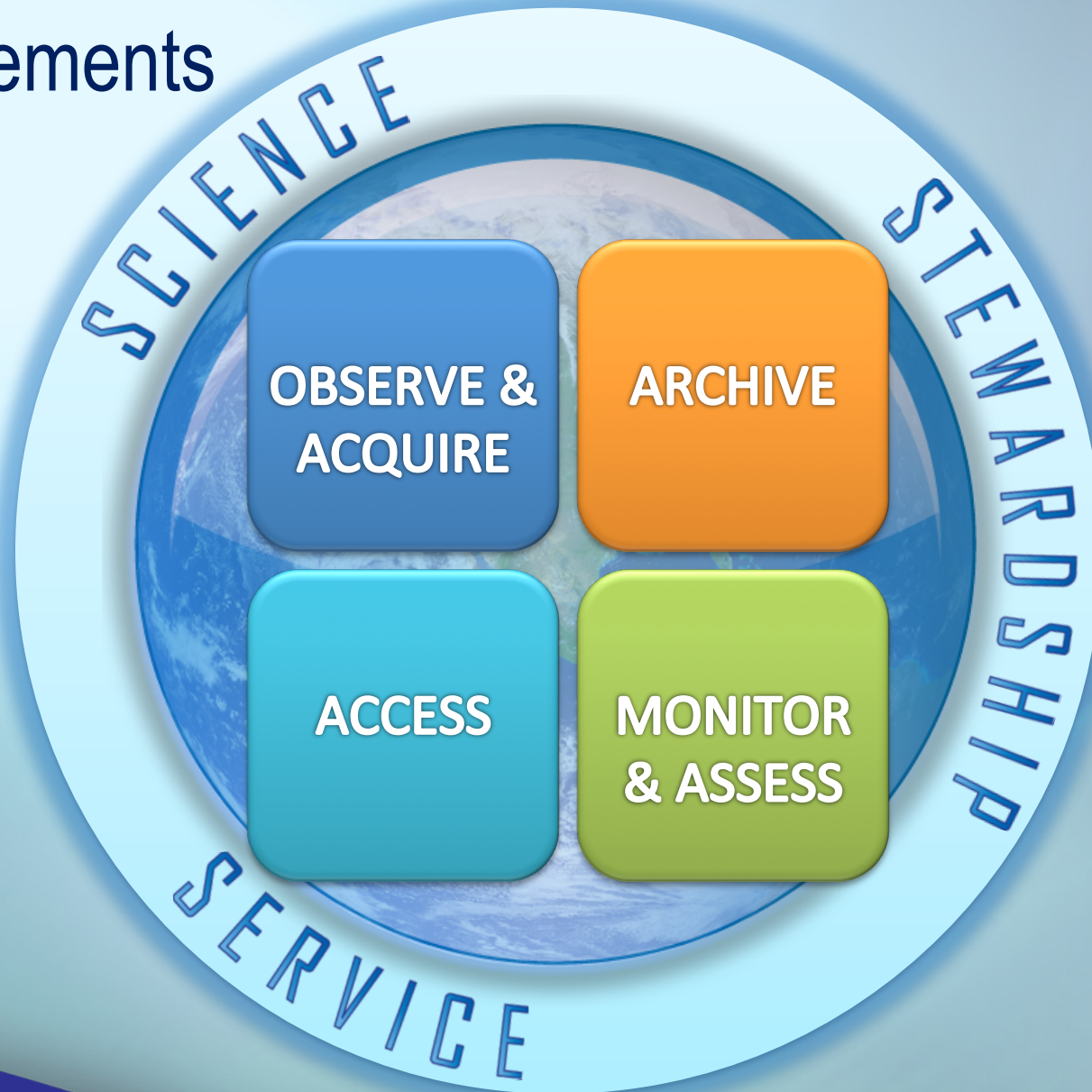
April 2012

Protecting the past... Revealing the future

Overview

- Overview of the National Climatic Data Center (NCDC)
 - Review of capabilities which may be potentially relevant to the topic of normals and energy industry impacts
- Motivation for this workshop
 - Ten Indicators of a Non-stationary Climate
 - Example: migration of planting zones
 - Key Challenges

NCDC fulfills much of the Nation's climate data requirements





Mandated Functions of NCDC's Mission

**OBSERVE
&
ACQUIRE**

1

Acquire and ingest data

ARCHIVE

2

Archive and scientific stewardship of the Nation's meteorological data - national and international

ACCESS

3

Provide access to data, metadata (information about the data), and products

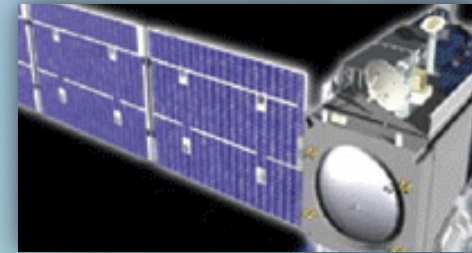
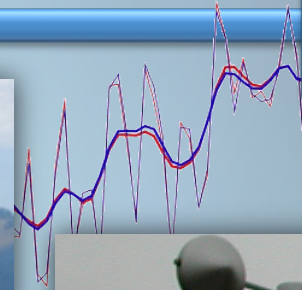
**MONITOR
& ASSESS**

4

Monitor and describe the national and global Climate

Climate Data Received from Many Sources

OBSERVE
&
ACQUIRE



A Sense of Scale

FY 2011:

- Safe Storage of over 5,600 terabytes of climate data

**6.5 Billion
Kindle
books**

- Over 750 terabytes of data added to the archive

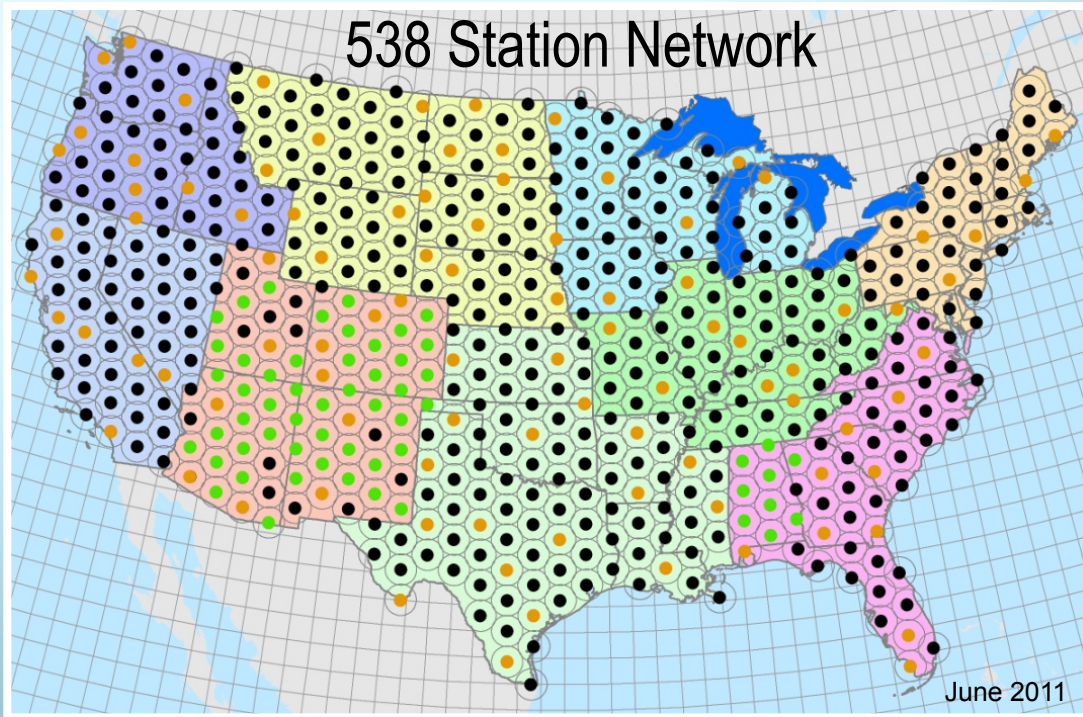
- Data Download of 1,250 terabytes for the year

**4 Million Kindle book
downloads daily**



Climate Reference Network (CRN/USRCRN)

OBSERVE
&
ACQUIRE



- Grid Points - USRCRN Sites
- Grid Points - USCRN Sites
- Grid Points



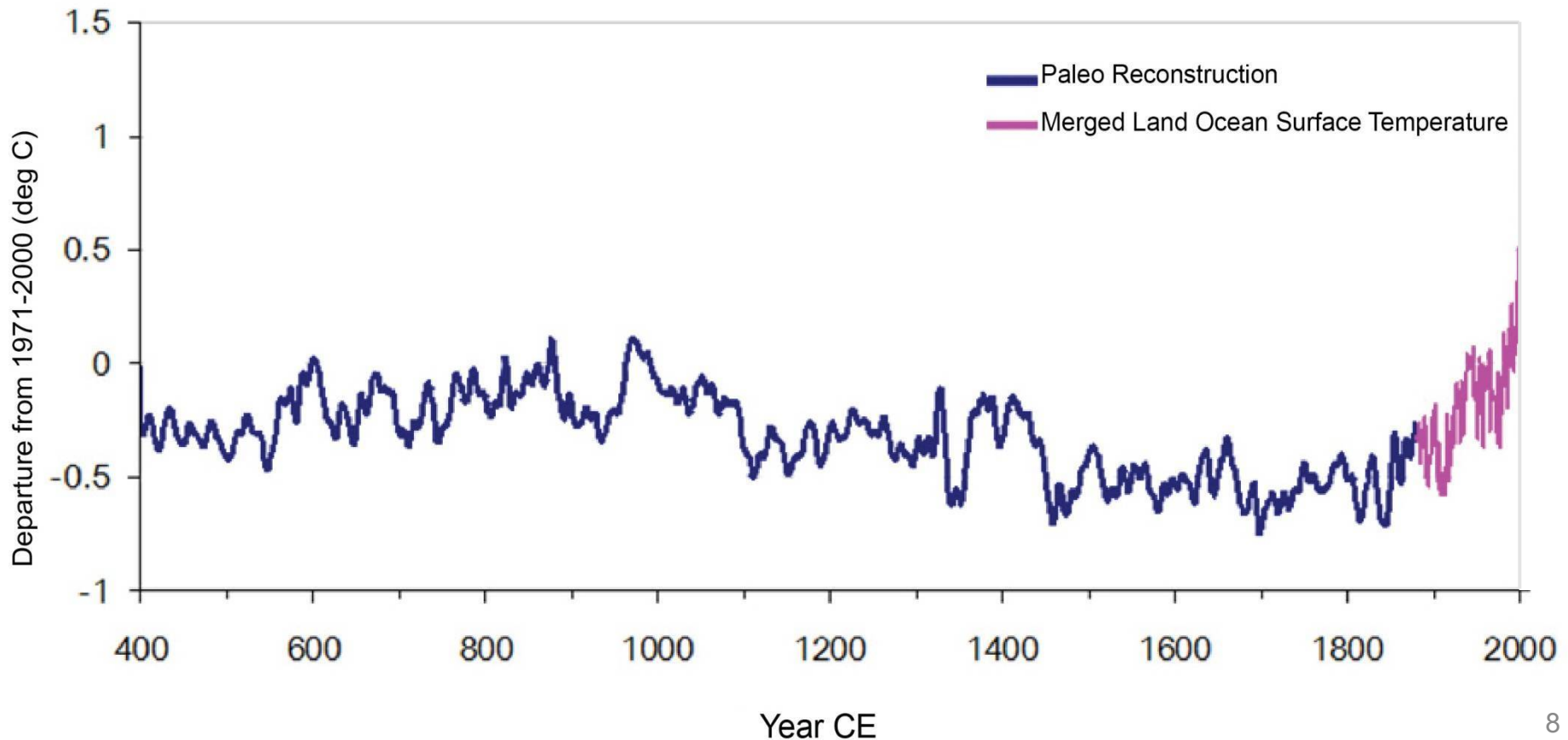
Reference Networks offer climate-quality information for assessing long-term climate change and variability from national to regional scales with higher confidence/lower uncertainty.

Observe and Acquire

OBSERVE
&
ACQUIRE

Blended Paleoclimate data & In-situ Observations

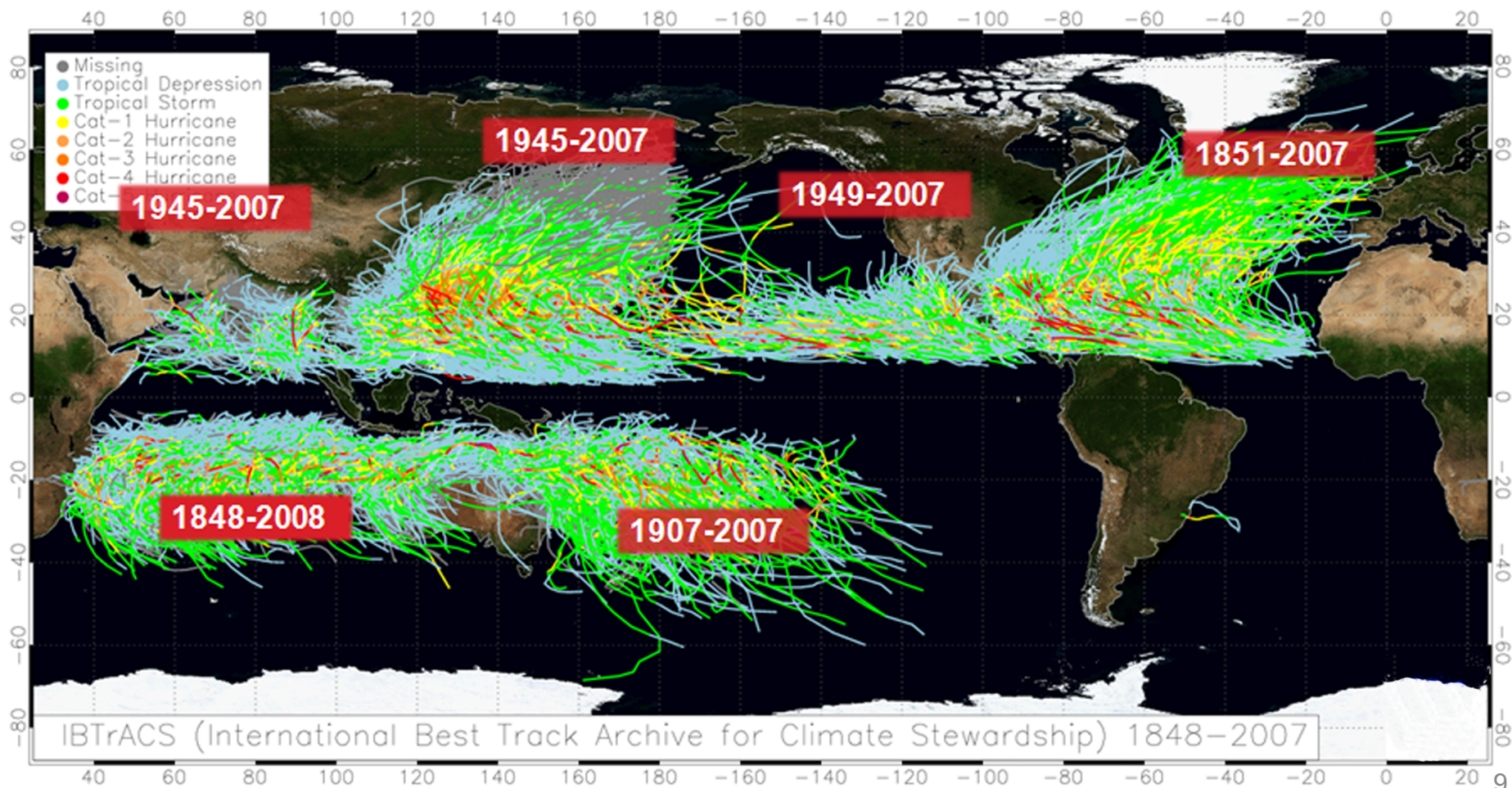
Northern Hemisphere Temperature: Paleoclimate Network, Merged Land and Ocean Surface Temperature, and Climate Reference Network



Observe and Acquire

OBSERVE
&
ACQUIRE

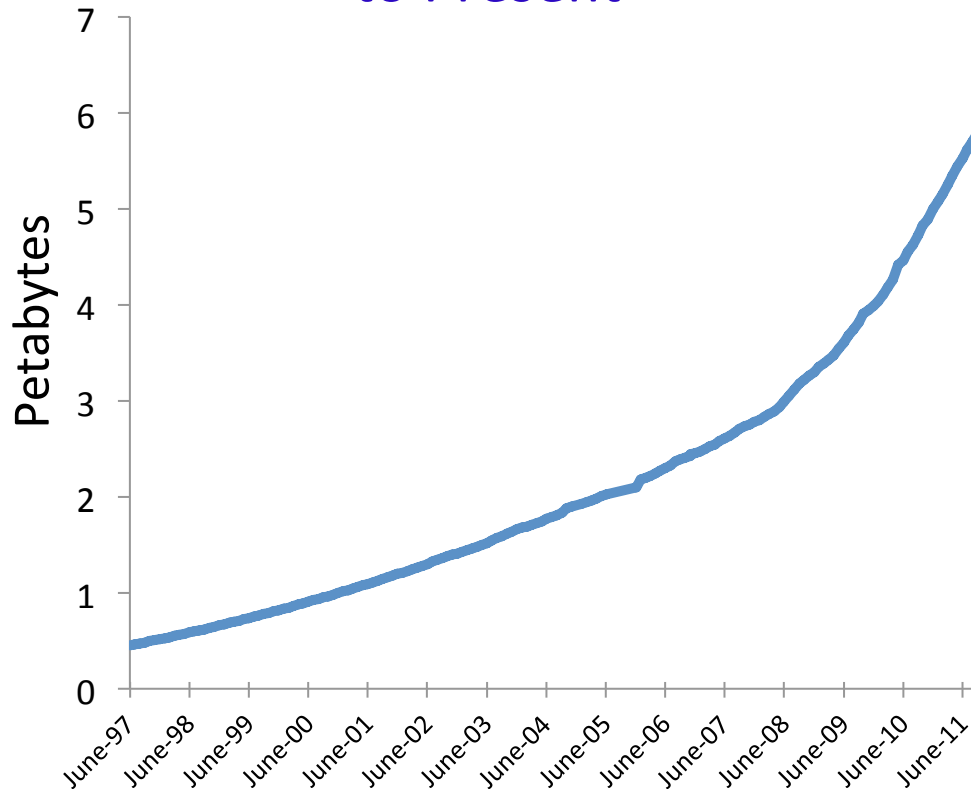
International Coordination



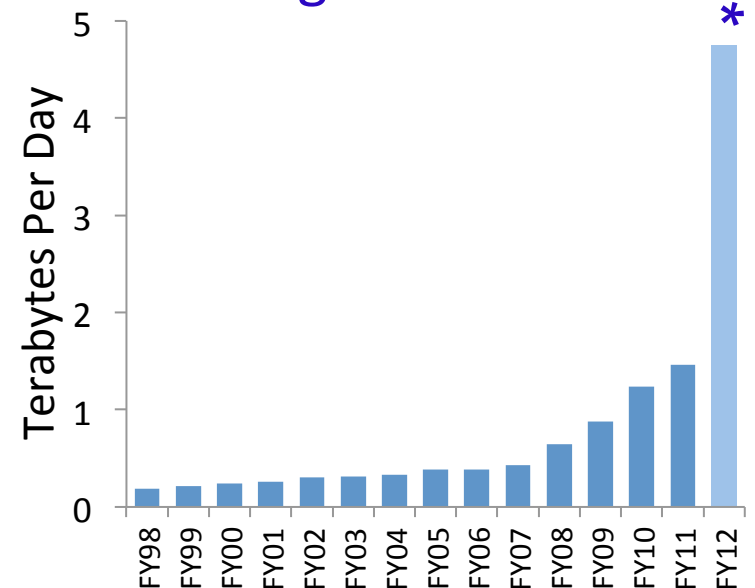
Storage Volume and Ingest Rate

ARCHIVE

NCDC Storage Volume 1997 to Present



Average Daily Onsite Ingest Rate



*NPP will increase Daily Ingest/Archive Volume from 1TB/day to 4.5TB/day [*FY12 Projected]*

Data Storage and Stewardship

ARCHIVE

Comprehensive Large Array-Data Stewardship System


- CLASS is a secure storage of NOAA environmental data.
- It offers a basic access capability for NOAA's rapidly expanding holdings of in-situ and remotely-sensed data for a breadth of scientific and commercial applications.




Climate.gov Portal

ACCESS

NOAA HOME WEATHER OCEANS FISHERIES CHARTING SATELLITES CLIMATE RESEARCH COASTS CAREERS

 **NOAA** CLIMATE SERVICES
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION


Prototype 

Explore: [ClimateWatch Magazine](#) [Data & Services](#) [Understanding Climate](#) [Education](#) 

Integrated Map Application

Access multiple layers of free, searchable climate data quickly and easily through the integrated data set map application.

[Go to map now >>](#)



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Featured Products

Global Summary of the Day	Local Climatological Data
Global Hourly Data	Climate Predictions
Global Hourly Summaries	Historical Hurricane Tracks


Global Maps

Observation maps that cover records across the entire planet



United States Maps

Maps that cover the United States and surrounding territories



Regional Maps


Observational data grouped by specific region





Drought Monitoring

ASSESS



National Integrated Drought Information System

U.S. Drought Portal

www.drought.gov

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Area Drought Information

Select State...

Select Region...

Maps & Tools

- [Map & Data Viewer - new!](#)
- [Geodata Portal](#)
- [Drought Monitor Graphics](#)
- [CRN Soil Data](#)

Events & Announcements

- [Risk Management Meeting 11/2011](#)
- [ACF Climate Outlook Forum and Pilot Review Meeting 2011](#)
- [Engaging Preparedness Communities Webinar, Dec 13th 1-2 PM EST](#)

[View Archive](#) | [Portal Release Notes](#)

Regional Drought Webinars

- [ACF Briefing Presentation - January 17th, 2012](#)
- [Managing Drought in the Southern Plains](#)
- [ACF Briefing Presentation - November 15th, 2011](#)
- [Colorado - weekly, 12PM EDT](#)
- [South Central Drought Briefing - November 10th, 11 AM CDT](#)

Drought In The News

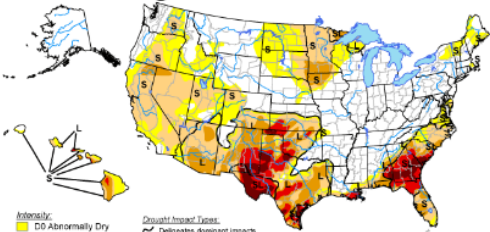
- [Report: Drought costs state \\$5.2B in 2011](#)
- [Cattle inventory drops to lowest since 1952 on drought](#)
- [Drought Crisis Leads To Increased hay Prices](#)
- [Drought raises market for heifers to possible record level](#)
- [Oklahoma Sale Barns Setting Record Prices For Cattle](#)
- [Kansas Farmers Claim \\$1 Billion In](#)

Featured Products

[Where are Drought Conditions Now?](#)
[How is the Drought Affecting Me?](#)
[Will the Drought Continue?](#)

U.S. Drought Monitor

February 21, 2012
Valid 7 a.m. EST







Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- ✓ Delineates dominant impacts
- S = Short-Term, typically <6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically >6 months (e.g. hydrology, ecology)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Released Thursday, February 23, 2012
Author: Mark Svoboda, National Drought Mitigation Center

<http://droughtmonitor.unl.edu/>

NIDIS Feature

INTERMOUNTAIN WEST CLIMATE SUMMARY

A product of the Western Water Assessment

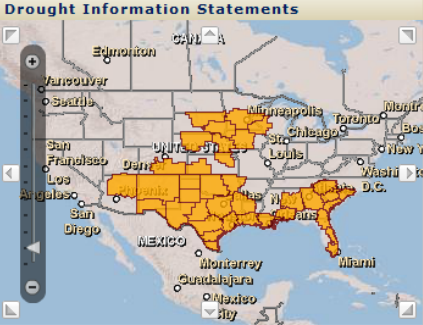
Issued January 17, 2012, Vol. 8, Issue 1

Sridhar - UNIDIS
Jeff Leake - Pro-Header, Steven Jantz, The Weather - PhotoStation
Katie Wolfe - Day, Glenn - Map, Editor

[Full Report \(PDF, 1.1 MB\)](#)

[Intermountain West Climate Summary](#) >>

Drought Information Statements




Click on a highlighted area to view the current NWS Drought Information Statement or [Click Here](#) to select from a list


[View larger map](#)

Drought Monitor Time Series


%Area for U.S., including AK, HI & PR



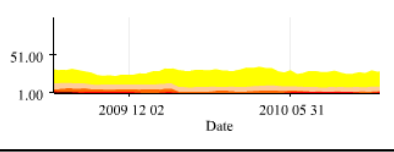
D3-D4



D2-D4



D1-D4



Date

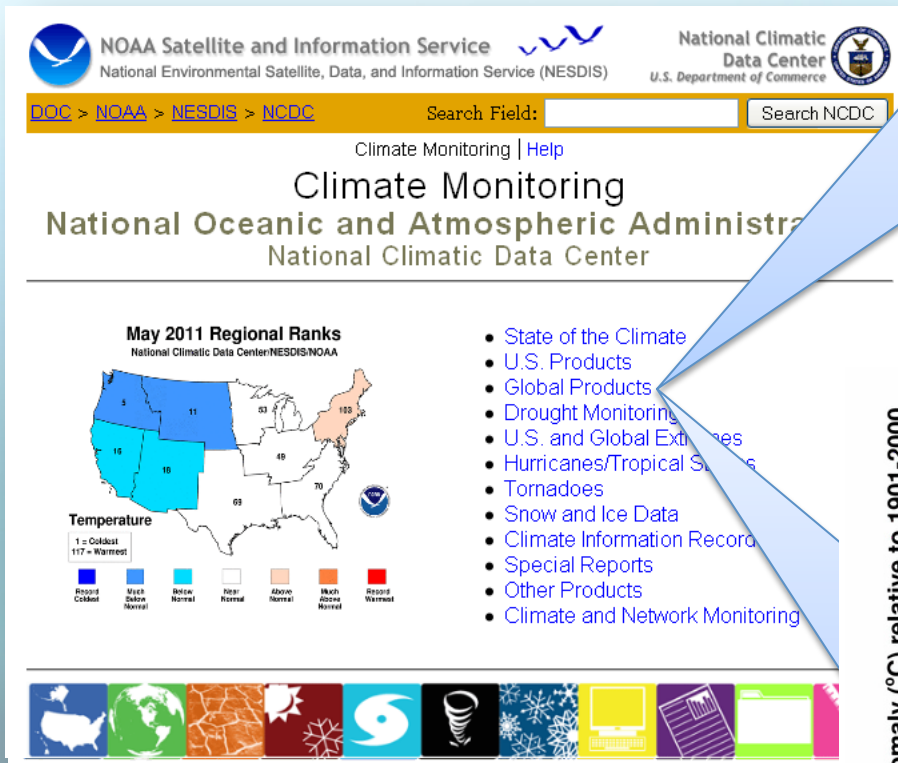
Drought Classifications | [Larger View](#)



Creating datasets used to analyze the State of the Climate

ASSESS

Climate Monitoring Web Access



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

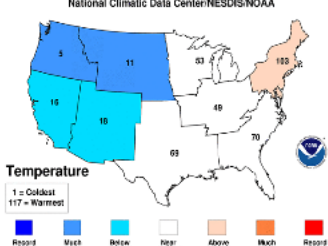
Climate Monitoring | [Help](#)

Climate Monitoring

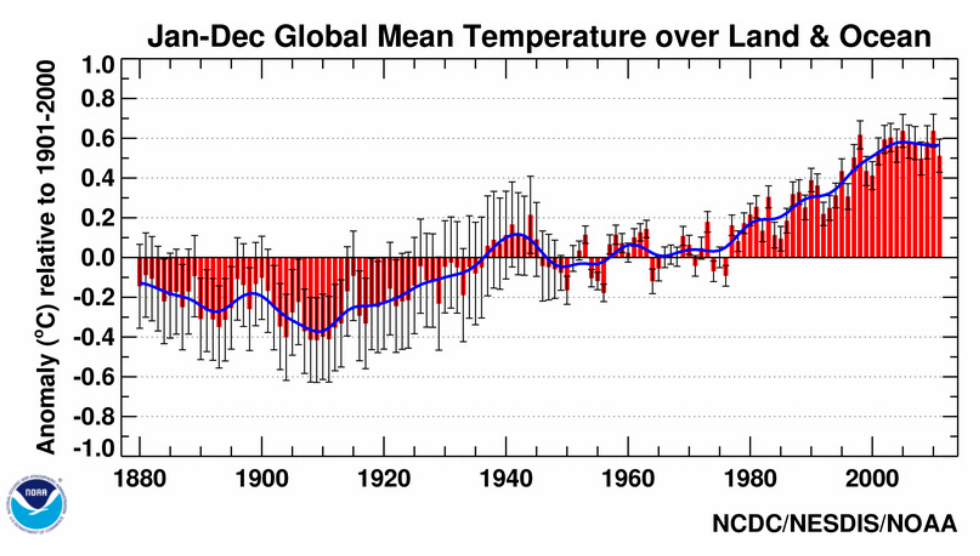
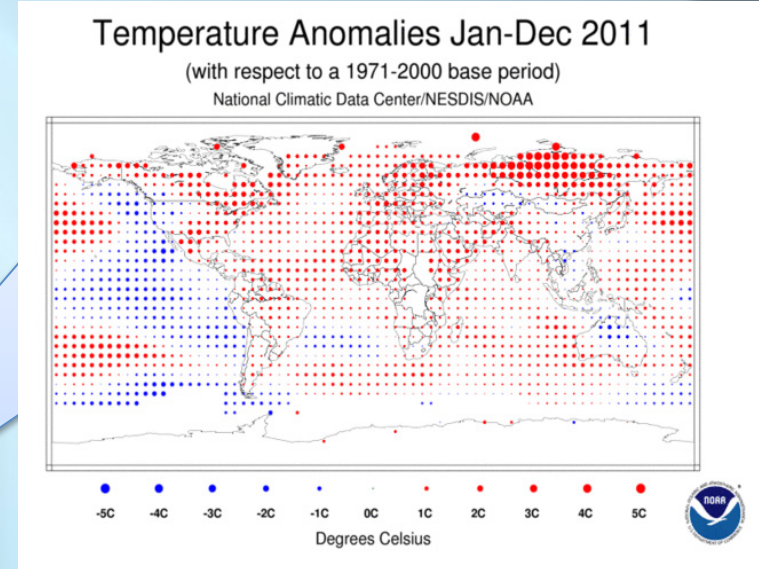
National Oceanic and Atmospheric Administration
National Climatic Data Center

May 2011 Regional Ranks

National Climatic Data Center/NESDIS/NOAA



- State of the Climate
- U.S. Products
- Global Products
- Drought Monitoring
- U.S. and Global Extremes
- Hurricanes/Tropical Storms
- Tornadoes
- Snow and Ice Data
- Climate Information Records
- Special Reports
- Other Products
- Climate and Network Monitoring



Assessments

ASSESS

Nov 1990

The Global Change Research Act is incorporated.



2000

First National Assessment



2009

Global Climate Change Impacts Report



2013

Scheduled release of next National Climate Assessment

1990's

2000's

2010's

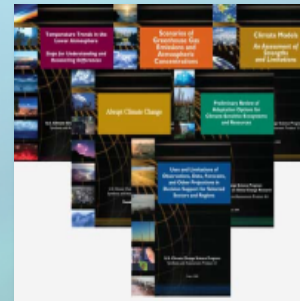
1997 - 2003

Workshops and assessment reports for 14 regions



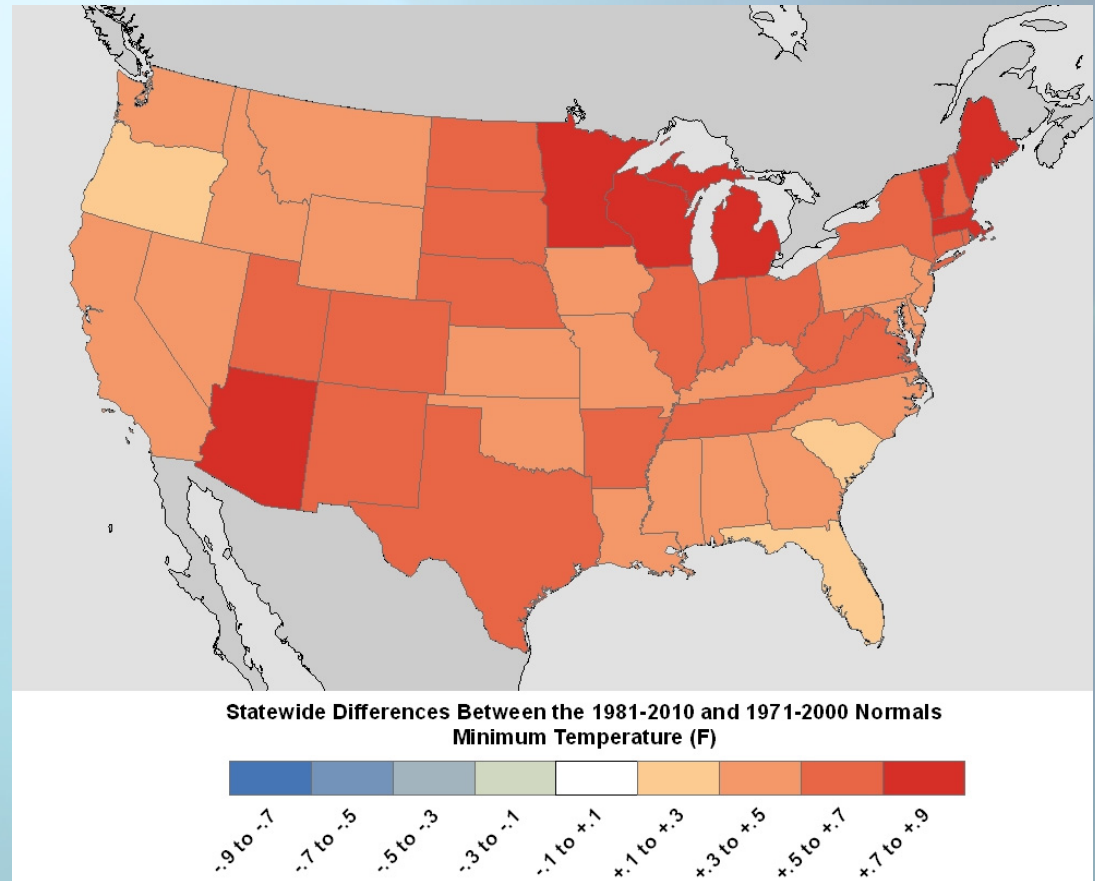
2004-2008

21 Synthesis and Assessment Products



Climate Normals

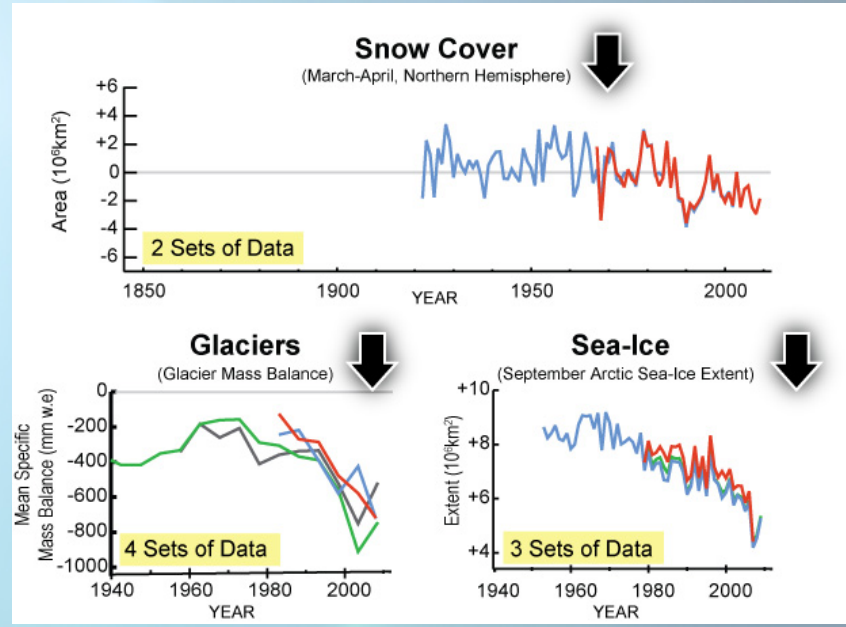
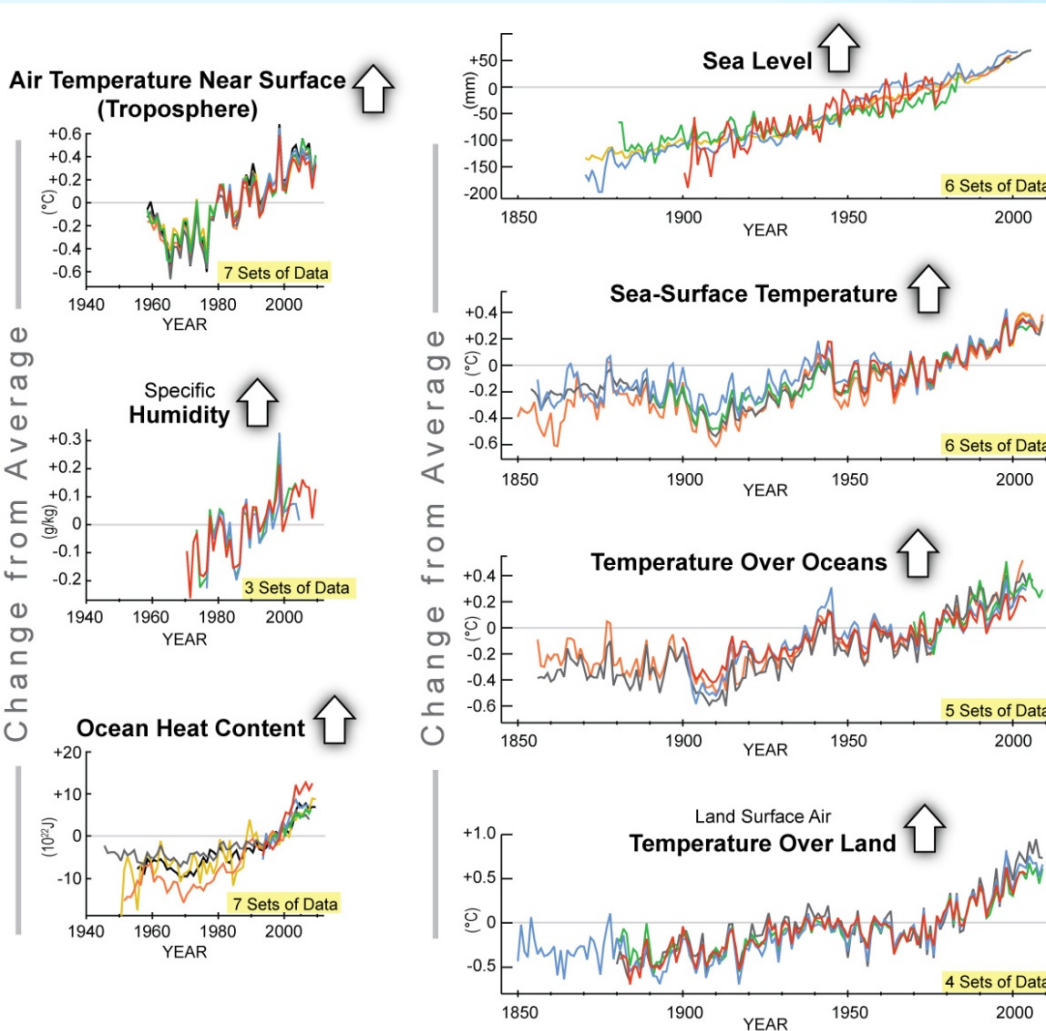
- The New 1981-2010 Climate Normals for 9,800 stations were released in 2011
- The Normals were computed using standardized and corrected monthly temperature data and new statistical techniques



Ten Indicators of a Non-stationary Climate



Ten Indicators of a Non-stationary Climate

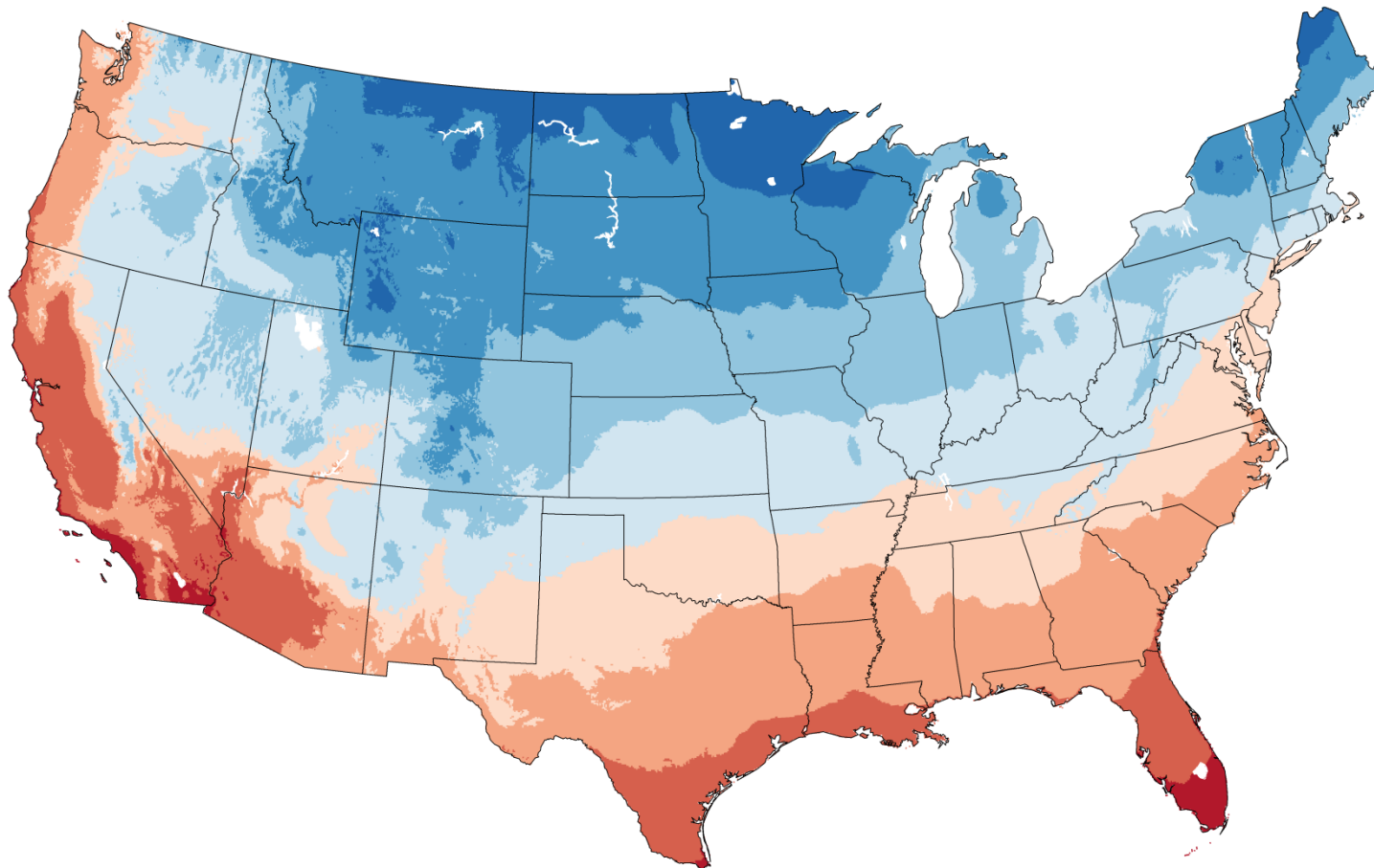


From the 2009 State of the Climate Report



Climate-Related Planting Zones: 1971-2000

Based on Current 30-Year Normals



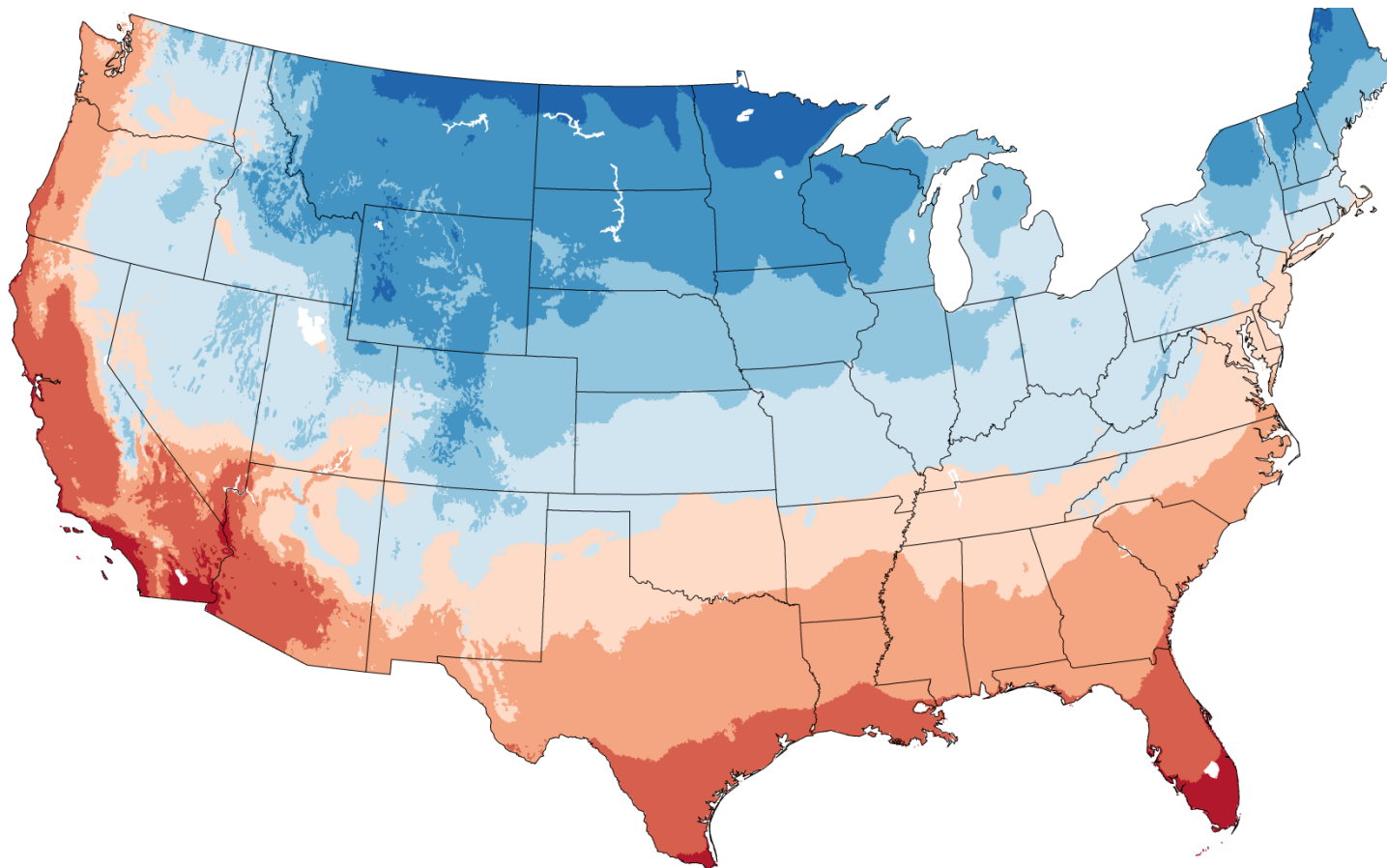
Average Annual Minimum Temperature by Climate-Related Planting Zone



Disclaimer: This illustration of nationwide patterns and changes in climate-related planting zones for gardeners was created as a special service to the American Public Gardens Association by the National Oceanic and Atmospheric Administration (NOAA). The official Plant Hardiness Zone map was prepared by the U.S. Department of Agriculture (USDA) in 1990 using data collected and distributed by NOAA. USDA is currently updating its official map, which will soon be available via the Internet.

Climate-Related Planting Zones: 1981-2010

Based on New 30-Year Normals (Published July 1, 2011)



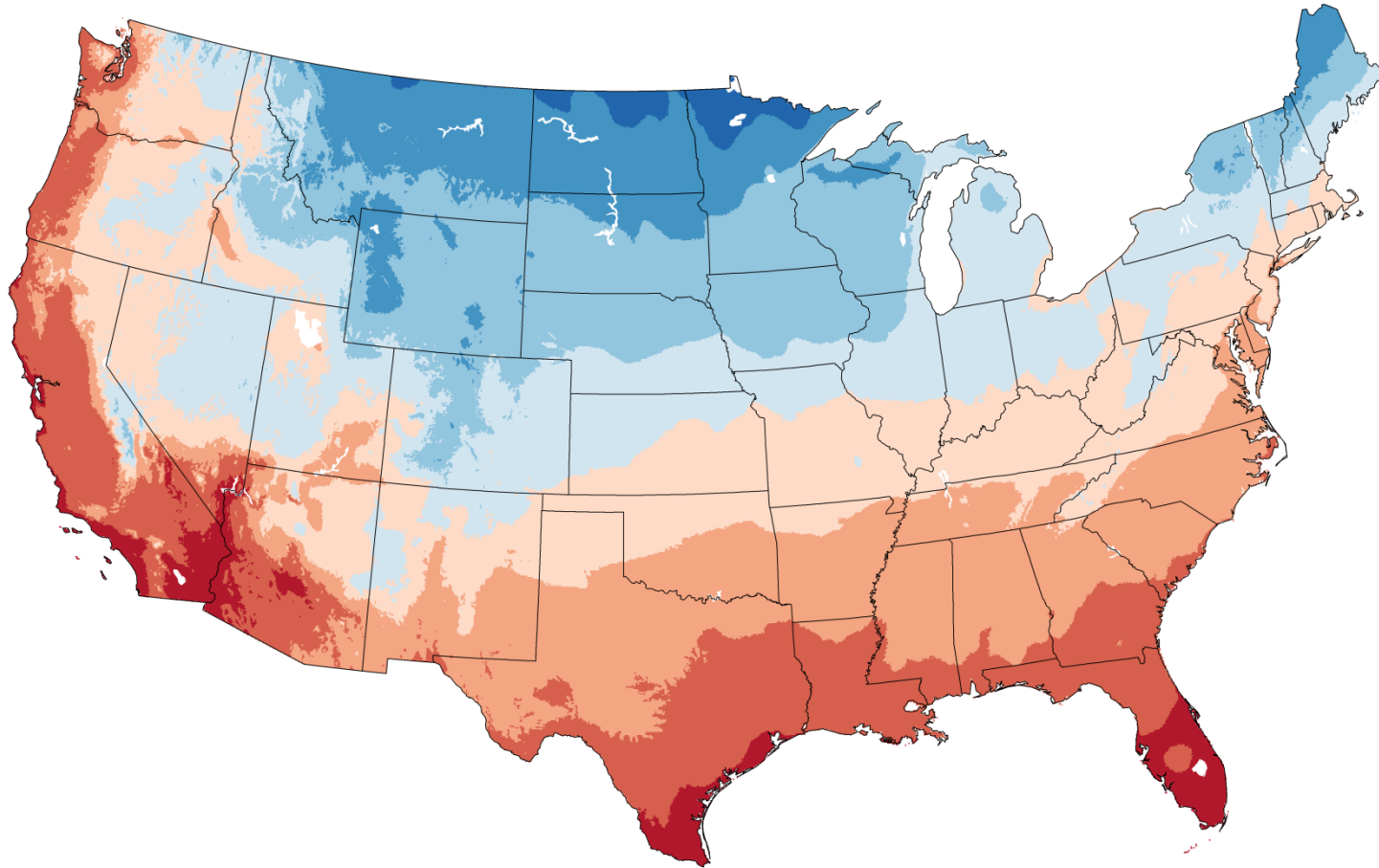
Average Annual Minimum Temperature by Climate-Related Planting Zone



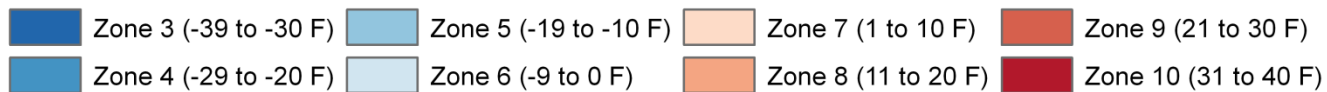
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Projected Planting Zones: 2011-2040

Derived from Historical Data for 1971-2010



Average Annual Minimum Temperature by Climate-Related Planting Zone



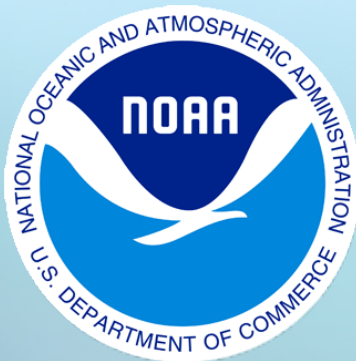
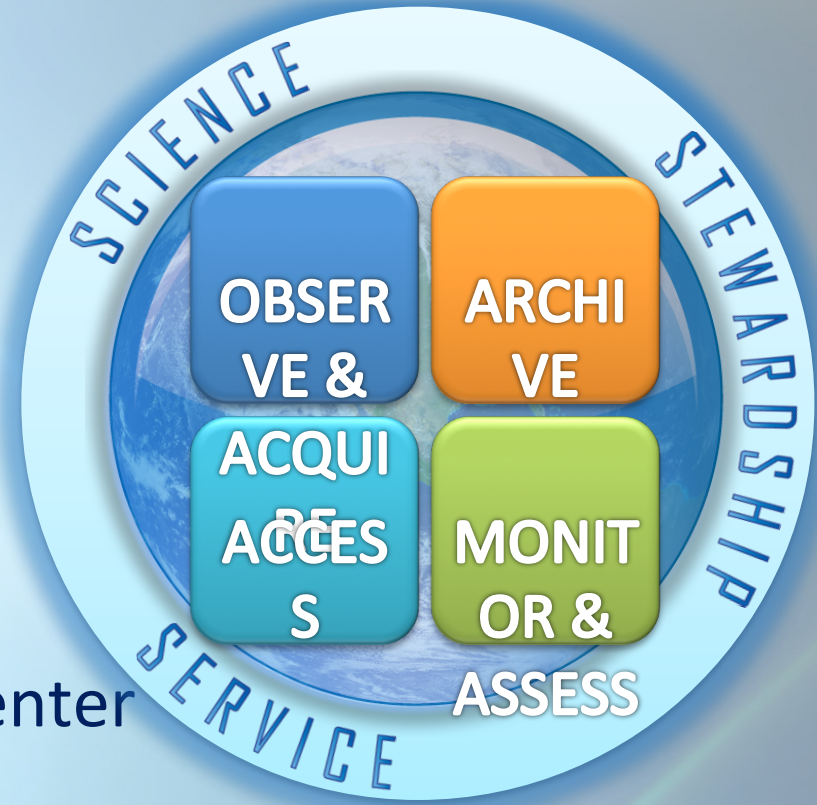
Disclaimer: This illustration of nationwide patterns and changes in climate-related planting zones for gardeners was created as a special service to the American Public Gardens Association by the National Oceanic and Atmospheric Administration (NOAA). The official Plant Hardiness Zone map was prepared by the U.S. Department of Agriculture (USDA) in 1990 using data collected and distributed by NOAA. USDA is currently updating its official map, which will soon be available via the Internet.

Key Challenges

- Understanding stakeholder needs
 - The current and future uses of normals
 - How could normals be more valuable?
- How can users effectively use normals in a changing climate?

Questions?

NOAA's National Climatic Data Center



Protecting the past... Revealing the future