NOAA's National Climatic Data Center

World's Largest Archive of Climate and Weather Data

Presented to: Coastal Environmental Disasters Data Management Workshop September 16, 2014

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Protecting the past... Revealing the future

NCDC Strategic Vision

MISSION

Steward the Nation's Climate Information

NCDC is responsible for preserving, monitoring, assessing, and providing public access to the Nation's treasure of climate and historical weather data and information.

VISION

Be the Nation's Trusted Authority on Climate and Historical Weather Information

NCDC will be the most comprehensive, accessible, and trusted source of state-of-the-art climate and historical weather data, information, and climate monitoring.

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NCDC Geographic Locations

- **160 Federal Employees**
  - Alaska, Colorado, Hawaii, Maryland, Missouri, New York, North Carolina, Texas, Washington, Wisconsin
- **153 NCDC Headquarter Contractors**
- **6 Regional Climate Centers**
- **2 Cooperative Institutes**

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Rising Demand for Climate Information

Sustainability of Marine Ecosystems

Coasts and Climate Resilience

Climate Impacts on Water Resources

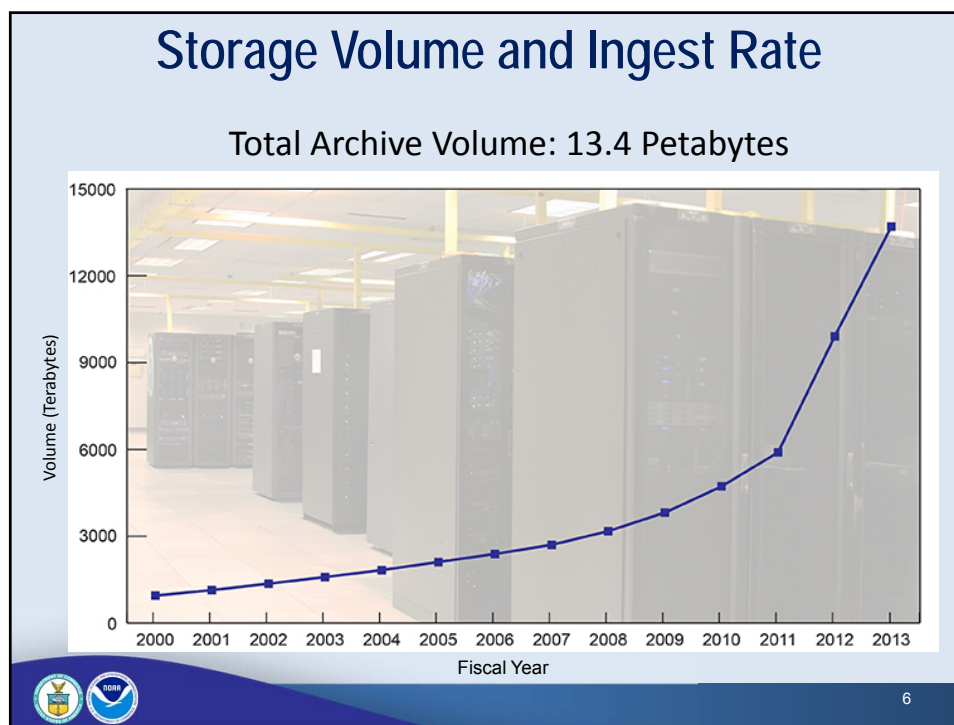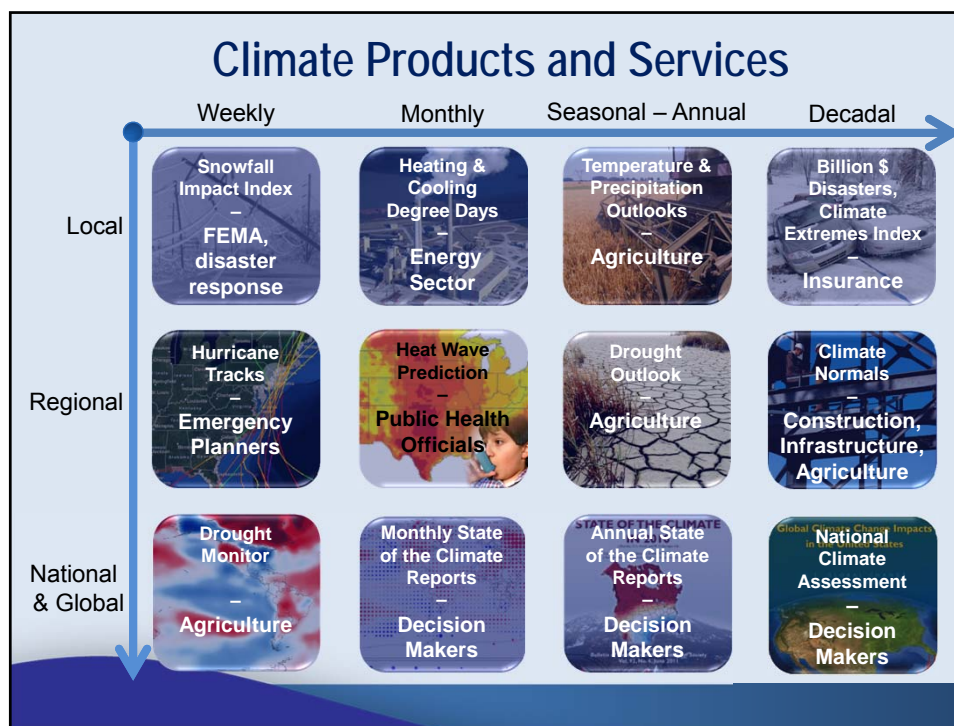Changes in Extremes of Weather and Climate

Agriculture

Energy

Health

Transportation

Climate Products and Services

Storage Volume and Ingest Rate

Total Archive Volume: 13.4 Petabytes

NCDC Access to Data Received from Many Sources

Voluntary U.S. Observers
Global Weather Reports
NCEP Weather Charts & Models
Ship, Buoy Reports
Rocketsonde
Weather Balloons
Storm Data
Doppler Radar
(GOES, POES, NPOESS, and many other Satellites)
Aircraft Observations
Wind Profiler
Airport Weather Reports (ASOS)
U.S. Climate Reference Network
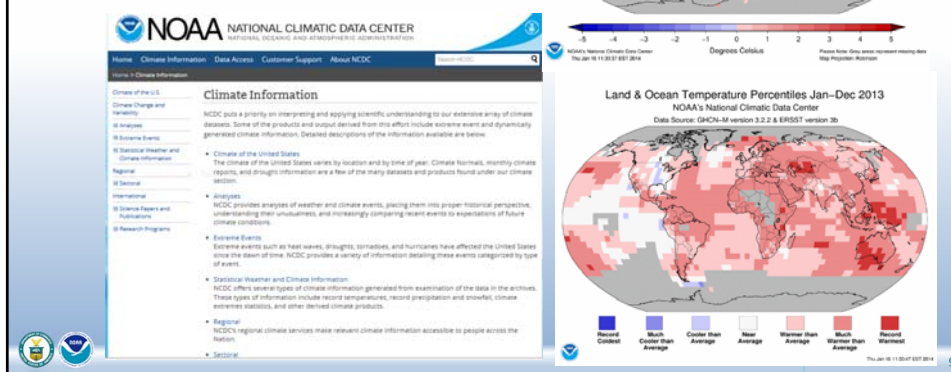Climate Models
Paleoclimate Data

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NCDC Homepage/Website

- www.ncdc.noaa.gov
- New site design implemented in 2012 with continued enhancements since then
- Provides access to NCDC datasets, products, and services
- NCDC's regional partners are also featured
- Data are accessed from disk (Storage Area Network) and tape (robotics system)
- Google Analytics used to provide usage statistics and patterns
- Drupal Content Management System provides the website content infrastructure
- Contact information is provided so that customers can call or email as needed

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Monitor and Describe the Climate

- **http://www.ncdc.noaa.gov/climate-information**
- **Numerous monitoring products at the US and global levels**
- **Products related to extreme events, hurricanes, tornadoes, etc**
- **Temperature and precipitation data monitored in detail, regarding climate variability and change**

Data Access Portals
NOAA Climate.gov Portal, Drought Portal, Model Portal

- www.climate.gov, www.drought.gov, nomads.ncdc.noaa.gov
- Ongoing development and integrated to provide one-stop access to widely distributed datasets, products, services
- Drought Portal geared toward providing critical information to decision-makers
- Climate.gov Portal designed to reach a very wide segment of users – scientists, businesses, decision/policy-makers, news media, public, etc
- Model Portal provides access to reanalyses and numerical model output
- Many partners involved across NOAA, other agencies, and at the regional/state level

Data Access
Climate Data Online (CDO) System

- Centralized access to numerous US and global datasets and products
- Web Services allow users direct machine-to-machine access for use in applications
- "Batch" process allows users to submit orders for data (eg, by station, state, country, etc), then receive email with link to the data
- Underlying structure includes Oracle databases with tiered server infrastructure
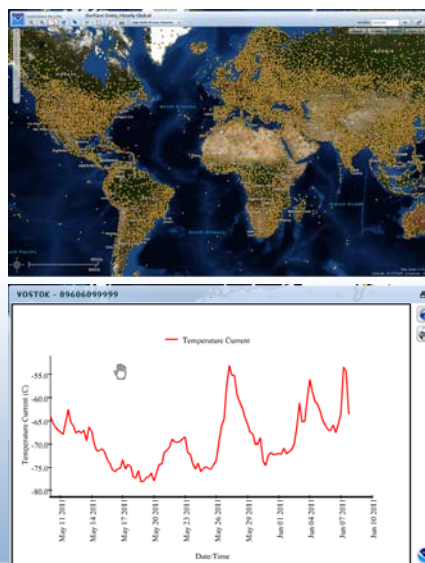- Services continue to be built-out for additional datasets and products
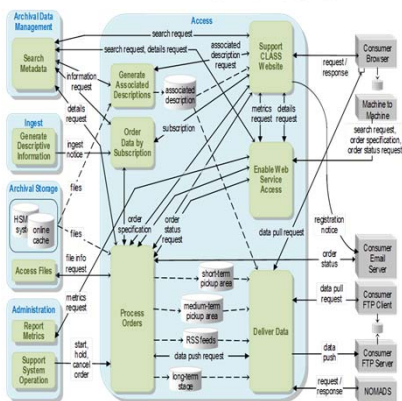

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Data Access
Map/Web Services and Data Visualization

- GIS Map Services provide centralized access to numerous US and global datasets and products
- Web Services such as WMS, WFS, KML/KMZ (for Google Earth, etc)
- Access to the data and metadata, including machine to machine access
- Data visualization via tools such as *Multigraph* provide graphical display of various parameters
- Services continue to be built-out for additional datasets and products

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CLASS *Data Access*

The CLASS Website

- CLASS Website
  - The CLASS Web Interface provides users with access to CLASS information holdings.
  - Displays the CLASS welcome page and help pages
  - Manages user login
  - Maintains each user's contact information and preferences for searching and ordering
  - Receives users' requests for information
  - Obtains requested information from other functions (e.g. browse images from Generate Associated Descriptions, result sets from the Data Management, metrics reports from Administration)
  - Maintains result sets and shopping carts for users
  - Forwards order specifications to the Process Orders function
  - HTML pages generate requested information, and return responses to users
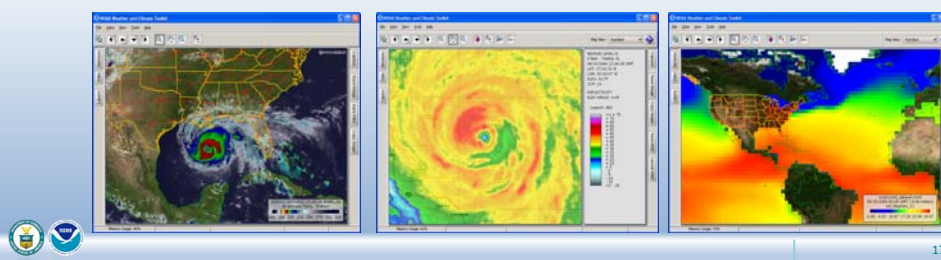 - Software components: Cocoon, Tomcat, HTTPD

www.class.noaa.gov
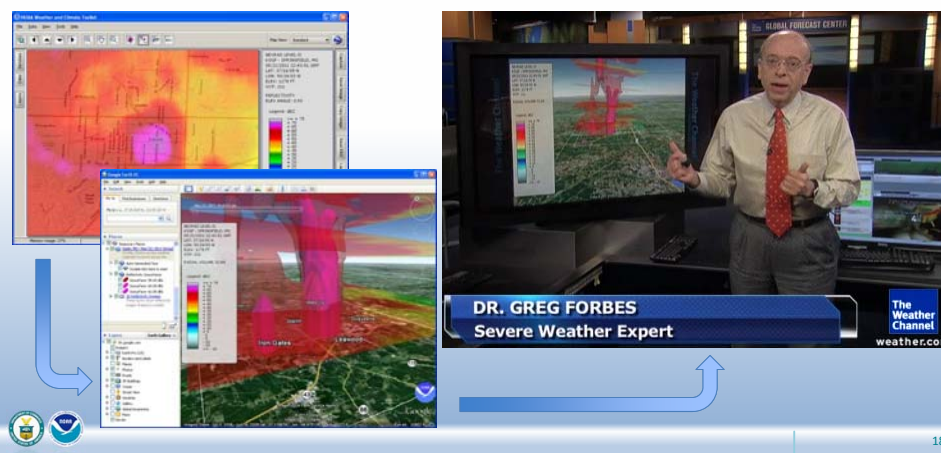
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Data Access
Weather and Climate Toolkit

- Desktop application providing simple visualization and data export of weather and climate data
- Supports 22 data formats (Model, Satellite and Radar)
- Based on community developed tools and standards
- Data interoperability with diverse user communities
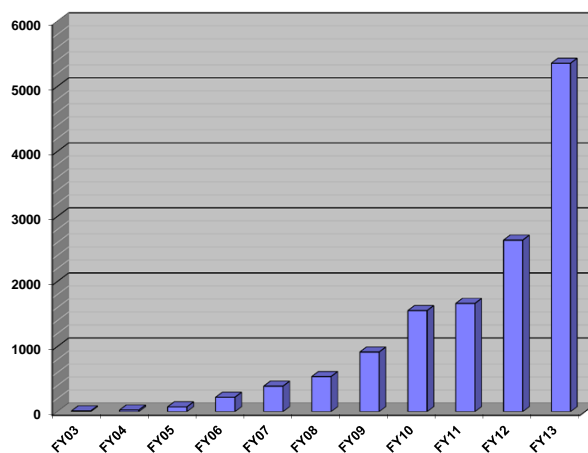- Export data to GIS, KMZ, NetCDF and text formats

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Data Access
Interoperability with Google Earth

- Weather and Climate Toolkit export of 3D Radar sweeps and isosurfaces for Google Earth visualization

DR. GREG FORBES
Severe Weather Expert

The Weather Channel
weather.com

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Data Access
NOAA National Data Centers –
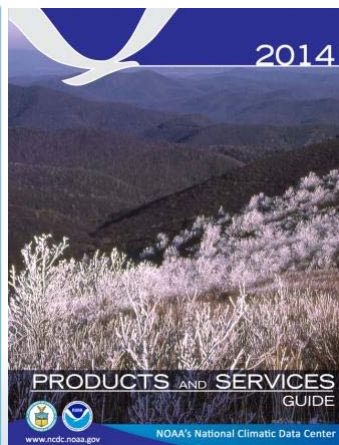### Annual Data Downloaded in Terabytes

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2014 Products and Services Guide Available Online

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 to universities and government agencies engaged in climate research.
Services offered include data resource consultations, publications, copies of original records, certifications, and a wide range of online datasets, products, and reports. Services are delivered on a variety of media including online access, CD-ROM, DVD, computer tabulations, maps, and publications.
The NCDC 2014 Products and Services Guide provides a good overview of everything we have to offer. A free PDF copy of the guide is available on the NCDC website. Free hard copies of the guide are also available for order via the Online Store.

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