NOAA Climate Services
Prepared for Missouri Basin Regional Climate Collaboration
March 8, 2011

The Climate Service (CS)

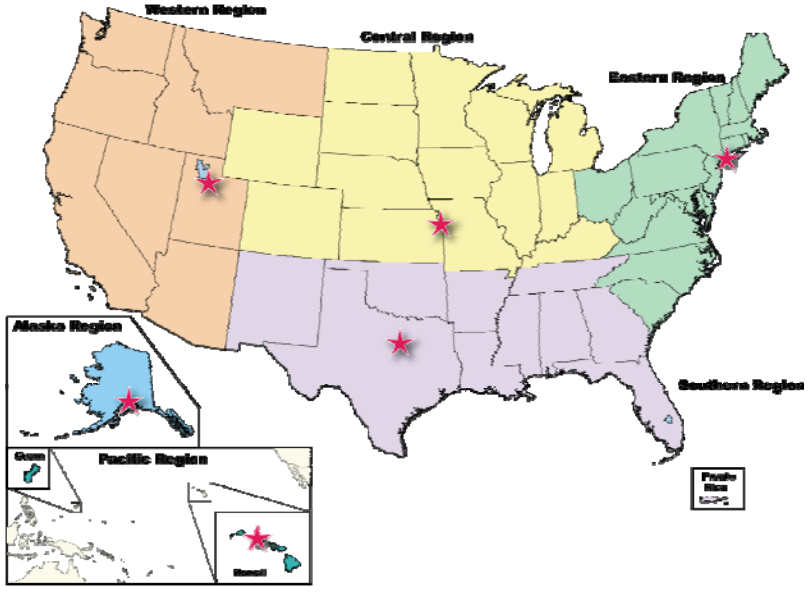
Vision

By providing science and services, the CS envisions an informed society capable of anticipating and responding to climate and its impacts.

Mission

Improve understanding and prediction of changes in climate and promote a climate-resilient society by:

- Monitoring climate trends, conducting research, and developing models to strengthen our knowledge of the changing climate and its impacts on our physical, economic, and societal systems
- Providing authoritative and timely information products and services about climate change, climate variability, and impacts
- Informing decision making and management at the local, state, regional, national, and international levels



The CS delivers products and services in collaboration with public, private, and academic partners in six regions to maximize social, economic, and environmental benefits and is consistent with Climate objectives from NOAA's Next Generation Strategic Plan:

- Improved understanding of the changing climate system and its impacts
- Integrated assessment of current and future states of the climate system that identify potential impacts and inform science, services, and decisions
- Mitigation and adaptation choices supported by sustained, reliable, and timely climate services
- A climate-literate public that understands its vulnerabilities to a changing climate and makes informed decisions.

Initial Priorities for The Climate Service

National Priorities

- Sustainability of Marine Ecosystems
- Coasts and Climate Resilience
- Climate Impacts on Water Resources
- Changes in Extremes of Weather and Climate

Regional Priorities

- Assess Needs, Create Action Plan, Collaboration, Steering Committee(s)
- Problem Focused and Place Based Services
- Informing Adaptation/Mitigation/Resilience/Sustainability **across all time scales**
- Connecting users to climate information & developing new

NOAA Resources and Information

NOAA Climate Services (Portal) – www.climate.gov
A seamless view of climate information available across NOAA and partners…still a work in progress and meant to be dynamic. This site is also designed to share relevant information from other agencies.

National Climatic Data Center (NCDC) www.ncdc.noaa.gov
NCDC is the world's largest active archive of weather/climate data. NCDC produces numerous climate publications and responds to data requests from all over the world. NCDC operates the World Data Center for Meteorology which is co-located at NCDC in Asheville, NC and the World Data Center for Paleoclimatology, which is located in Boulder, CO.

NCDC User Engagement Fact Sheets: These fact sheets provide an overview of the sector, key stakeholders, examples of sector needs, and NCDC data and products of particular interest to the sector. Sectors include: Agriculture, Forests and Forest Ecosystems, Civil Infrastructure, Construction, Coastal Hazards, Energy, Health, Insurance, Litigation, Marine and Coastal Ecosystems, National Security, Tourism, Transportation, and Water Resources- http://www.ncdc.noaa.gov/oa/userengagement/userengagement.html

Climate Monitoring Summaries: International, national, state and climate division summaries of recent monthly averages – http://www.ncdc.noaa.gov/climate-monitoring/

Climate Prediction Center (CPC) – www.cpc.ncep.noaa.gov
Home of the official U.S. climate outlooks and products which include the climate predictions from a week to a year in advance. In addition they produce ENSO, drought, hurricane and international outlooks as well.

Geophysical Fluid Dynamics Laboratory (GFDL) – www.gfdl.noaa.gov
The Geophysical Fluid Dynamics Laboratory (GFDL) develops and uses mathematical models and computer simulations to improve our understanding and prediction of the behavior of the atmosphere, the oceans, and climate. Since 1955 GFDL has set the agenda for much of the world's research on the modeling of global climate change and has played a significant role in the World Meteorological Organization, the Intergovernmental Panel on Climate Change assessments, and the U.S. Climate Change Science Program. GFDL scientists focus on model-building relevant for society, such as hurricane research, prediction, and seasonal forecasting, and understanding global and regional climate change.

NOAA's Earth System Research Laboratory (ESRL) – www.esrl.noaa.gov
ESRL was formed to pursue a broad and comprehensive understanding of the Earth system. This system comprises many physical, chemical, an biological processes that need to be dynamically integrated to better predict their behavior over scales from local to global and periods of minutes to millennia. ESRL is working toward a greater stewardship of the Earth through a number of themes aimed at understanding the Earth system processes and changes. These themes include:

- *Understanding atmospheric mechanisms that drive the Earth's climate:* aerosols (climate), carbon cycle science, radiative forcing of climate by non-CO2 atmospheric gases, surface and boundary layer processes
- *Assuring the continuing health and restoration of atmospheric resources*: Aerosols (air quality), stratospheric ozone layer recovery, tropospheric ozone and air quality
- *Improving predictions through expanded climate and weather products:* the weather-climate connection, climate and water systems, regional and local-scale assimilation and modeling, global weather assimilation and modeling, hydrometeorological testbed
- *Advancing national research capabilities:* building a service based grid computing infrastructure, information systems, and observing system design, simulation, and demonstration

Attribution Studies – www.esrl.noaa.gov/psd/csi
Climate attribution is an attempt to provide an explanation of evolving climate conditions and to assess impacts (particularly at regional or local levels).

U.S. Drought Portal – www.drought.gov
The U.S. Drought Portal is part of the interactive systems to:

- Provide early warning about emerging and anticipated droughts
- Assimilate and quality control data about droughts and models
- Provide information about risk and impact of droughts to different agencies and stakeholders
- Provide information about past droughts for comparison and to understand current conditions
- Explain how to plan for and manage the impacts of droughts
- Provide a forum for different stakeholder to discuss drought-related issues

Climate Literacy Brochure -
http://www.climate.noaa.gov/index.jsp?pg=/education/edu_index.jsp&edu=literacy
This brochure is available in several formats and reflects a broad and current effort to define climate literacy.

National Weather Service – www.weather.gov
The NWS has 122 forecast offices across the country, each with a climate focal point to assist users with obtaining weather and climate information. Weather information is gridded and available on an hourly basis out to 7 days in advance for many weather variables. Radar, recent data, watches/warning (e.g. tornadoes), river forecasts, and much more is available across the country.

Missouri River Basin Forecast Center – www.crh.noaa.gov/mbrfc/
Part of the network of thirteen River Forecast Centers across the United States that forecast streamflow daily for many rivers across the nation. Forecasts are available from one week to three months in advance.

NOAA Central Region Collaboration Team –**http://www.regions.noaa.gov/central/climate.html**
The Team's Climate page under construction but will provide regional information and materials from meetings, including this one!

Core Partners

High Plains Regional Climate Center – www.hprcc.unl.edu
A Regional Climate Center working with NCDC to provide real-time and historical climate data and value-added products to users.

State Climatologists – www.stateclimate.org
An applied resource for climate information covering many sectors and needs. The official site for the American Association of State Climatologists provides contact information for every state climatologist.

Western Water Assessment – http://wwa.colorado.edu
A NOAA funded Regional Integrated Sciences & Assessments (RISA) team focused on providing novel, useful results to stakeholders across the Intermountain West. RISAs take science/research and shape it into useful information.

National Drought Mitigation Center (NDMC) – www.drought.unl.edu
The NDMC provides information to help people and institutions reduce vulnerability to drought, stressing prevention and risk.

Examples of NOAA Projects in the Missouri Basin:
Current and/or planned climate studies and research we are aware of in the Missouri Basin that is NOAA sponsored.

- Useful to Usable (U2U) Transforming Climate Variability and Change Information for Cereal Crop Producers
- An Assessment of Decadal Drought Information Needs of Stakeholders and Policymakers in the Missouri River Basin for Decision Support (http://www.decvar.org/MRB_project/MRB_project.html)
- An climate assessment of the climate in the Red River of the North to determine attribution and longevity of the current situation
- Assessment of agriculture's needs for climate information – High Plains Regional Climate Center
- Corn and Climate Report-an overview of climate science in the service of Midwestern Agriculture http://www.gpisd.net/vertical/Sites/%7B1510F0B9-E3E3-419B-AE3B-582B8097D492%7D/uploads/%7BE04C2BE0-5193-40DF-9B04-CB77EEE462D6%7D.PDF

- **Many** additional projects through NOAA Labs, NIDIS, RISAs, Regional Climate Centers, and NOAA Regional Collaboration Teams.

United States Global Change Research Program www.globalchange.gov

The U.S. Global Change Research Program (USGCRP) coordinates and integrates federal research on changes in the global environment and their implications for society. The USGCRP began as a presidential initiative in 1989 and was mandated by Congress in the Global Change Research Act of 1990 (P.L. 101-606), which called for "*a comprehensive and integrated United States research program which will assist the Nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change*." The requirement is to produce such an assessment every four years (the next is slated for 2013).

Led by a team of Principals from each of the USGCRP's 13 participating agencies, the USGCRP engages in a variety of activities aimed to strengthen and strategically direct climate change research in the United States, and improve the flow of that information to policy-makers, federal, state, and local decision-makers, and the public. These activities include international events, large-scale program elements, and smaller thematic interagency working groups. To find out about more of our current activities, please see the menu to the left.

Global Climate Change Impacts in the Unites States
http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts

- Referred to as "the Impacts Report" or "the Report" this is the most recent U.S. Assessment
- Written in plain language, it focuses on climate change impacts in different regions of the U.S. and on various aspects of society and the economy

Funding Opportunities

NOAA Climate Program Office (CPO) http://www.climate.noaa.gov/opportunities/

The CPO funds high –priority climate research to advance understanding of atmospheric and oceanic processes as well as climate impacts resulting from drought and other stresses. This research is conducted in most regions of the United States and at national and international scales, including in the Arctic. Recognizing that climate science literacy is a prerequisite for putting this new knowledge into action at all levels of society, the CPO also helps to lead NOAA's climate communication, education, and professional development and training activities

Opportunities related to the following areas can be found at
http://www.cpo.noaa.gov/index.jsp?pg=/opportunities/opp_index.jsp&opp=2011/program_elements.jsp#comp

- Climate Observations and Monitoring
- Earth System Science
- Modeling, Analysis, Predictions, and Projections
- Climate and Societal Interactions

NOAA Grant Opportunities - https://grantsonline.rdc.noaa.gov

The one-stop site to find and apply for federal grants available through NOAA.

Contacts for more information

Doug Kluck, NOAA Regional Climate Services Director for Central Region, 816-994-3008, Doug.Kluck@noaa.gov

Bethany Hale, NOAA Central Region Coordinator, 816-268-3133, Bethany.A.Hale@noaa.gov