

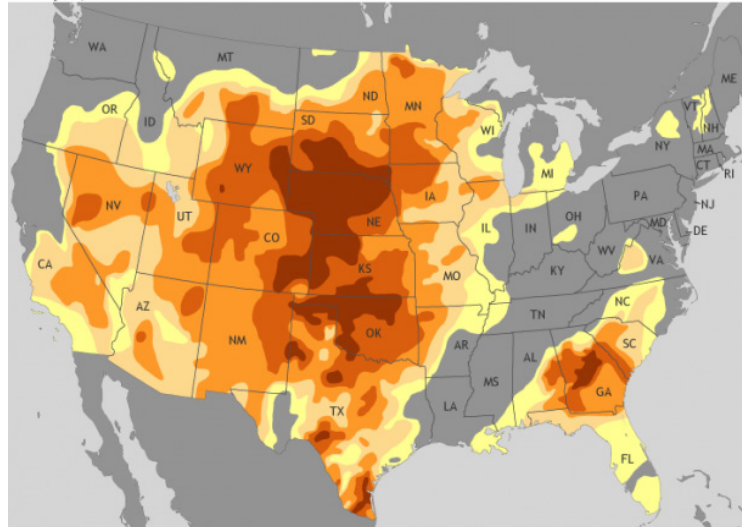


Preparing for Drought and Water Resource Challenges in a Changing Climate

All regions and economic sectors of our nation depend on adequate and reliable water supplies. Major problems arise when there is too little or too much water. For example, over the last three years, droughts across the United States caused more than \$42 billion in economic losses, mostly in the agriculture sector. In 2011, drought and heat waves across the south and southwest alone cost more than \$12 billion. These loss estimates do not include impacts to hydropower, tourism, transportation, recreation, and other economic sectors. At the same time, flooding can also affect communities and economies across the nation. In 2011, both the Missouri and Mississippi Rivers overran their banks, impacting tens of thousands of people and causing more than \$5 billion in damages to property and infrastructure.¹

To address these and other water-related challenges, Americans need information to help them understand the linkages between climate variability and change and water resources in their region. NOAA has seen a growing demand from people who want to know whether, how and why the frequency or intensity of droughts and flooding in their region is changing, and how to prepare and adapt to these impacts. Farmers, ranchers, city planners, resource managers, power companies, tourism operators, and concerned citizens all turn to NOAA for trusted information to help them make climate-smart decisions.

January 29, 2013



U.S. Drought Monitor

Abnormally Dry Moderate Drought Severe Drought Extreme Drought Exceptional Drought

On May 14, 2013, about 48% of the contiguous United States was in some level of drought while an additional 14% was classified as abnormally dry.

NOAA envisions a future in which communities and business are better prepared for water resource challenges.

Over the coming decades, many U.S. regions and economic sectors will experience water-related challenges, including water shortages, poor water quality, or flooding. NOAA envisions a nation that is more resilient to droughts and floods. Ensuring U.S. water security helps our nation fulfill its export roles in international markets while reducing import dependencies. To get there, resource managers, businesses, and communities must plan, prepare, and adapt to weather and climate impacts on water resources. NOAA will continue to monitor weather and climate patterns on local, regional, and national scales, and we will continue advancing scientific understanding of how climate variability and change affects water quality and availability. NOAA will leverage our data and scientific expertise to enhance drought predictions, and we will share this information with the nation through decision support tools and services to help prepare the nation for current and future water resource challenges.

NOAA helps the nation understand, prepare, and respond to drought, flooding, and other water resource challenges.

NOAA partners with international, federal, state, tribal and local government agencies and the private sector to develop science-based products, prediction capabilities, and services designed to help people make more informed decisions. For example:

- *We develop drought and flood early warning information systems* on past and present drought and flood conditions to put current events into perspective.
- *We assess risks and impacts to water resources* by conducting research on past and present climate, water resources and uses. We develop predictions and projections to assess how the water cycle could change over time.
- *We are improving predictions of future water resource and drought conditions* and we provide early warnings of possible changes, such as the onset of drought or flooding, to help people manage risks and opportunities.
- *We inform water resource management and planning* by partnering to develop decision-support tools, to coordinate monitoring efforts, and to integrate climate-related information into drought and water resources planning.
- *We increase awareness of capabilities to inform responses* through outreach and engagement programs such as Regional Integrated Sciences and Assessments (RISAs) and Regional Climate Centers.
- *We assess the impacts of drought to improve preparedness* through collaboration with partners via the National Integrated Drought Information System (NIDIS).
- *We collaborate with international partners* on ensuring and advancing the monitoring and the forecasting of global conditions

that affect drought and floods in the U.S. through the Global Climate Observing System (GCOS), Group on Earth Observations (GEO), World Climate Research Program (WCRP) and other organizations.

NOAA's unique scientific expertise helps the nation anticipate and respond to climate-related changes in water resources and water-related hazards such as droughts and floods.



NOAA

Climate change brings very heavy precipitation to some locations, which leads to peaks of increased stormwater runoff. Local water managers are assessing their infrastructure's capacity to accommodate sudden heavy flows, and whether adaptations are needed to prevent flash flooding

¹<http://www.ncdc.noaa.gov/billions/events.pdf>
(Consumer Price Index adjusted to 2013 dollars)