



# Western Water Data Needs and the National Oceanic & Atmospheric Administration (NOAA)



“NOAA delivers regionally relevant climate and weather information to help state and local decision makers improve water planning and management, including reducing risks and minimizing impacts from extreme weather events.”

-Phil Ward, WSWC Chairman

products  
programs  
services  
projections  
predictions

## NOAA PROGRAMS & OFFICES

- NATIONAL WEATHER SERVICE (NWS)
  - CLIMATE PREDICTION CENTER
  - HYDROLOGIC DEVELOPMENT
  - RIVER FORECAST CENTERS
- OCEANIC AND ATMOSPHERIC RESEARCH (OAR)
  - CLIMATE PROGRAM OFFICE
  - REGIONAL INTEGRATED SCIENCE AND ASSESSMENTS (RISA)
  - MODELING, ANALYSIS, PREDICTIONS AND PROJECTIONS (MAPP)
  - NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)
  - RESEARCH LABS
  - HYDROMETEOROLOGY TESTBED

**The Western States Water Council (WSWC) supports observations and monitoring that are the backbone of weather and climate forecasting and decision support for water management.**

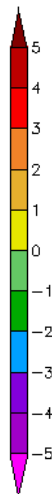
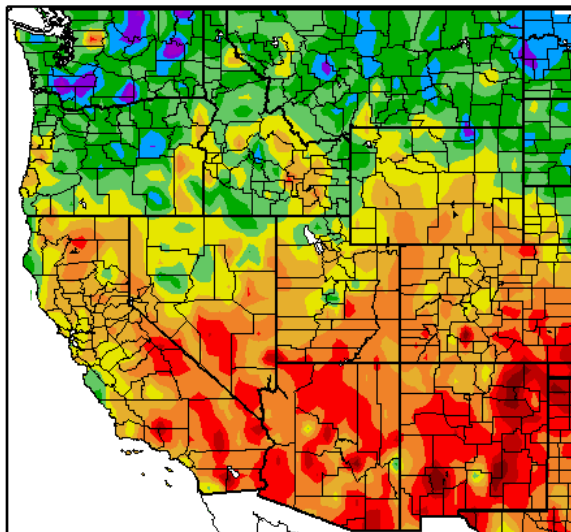
There is a need to maintain and improve existing monitoring networks that provide early warning systems as well as track the impacts of drought, floods and other extreme events. There is also a need for development of new monitoring technologies, such as remote sensing, that provide more timely and widely available data, and better spatial coverage. Further, more research and better tools are needed to assess probable impacts and predict extreme weather events in the West.

**NOAA works with partners across sectors to provide useful, and timely climate and weather information.** NOAA's climate and weather science, data and information improve the Nation's resilience by helping States, tribes, communities, businesses and citizens to better:

- **Prepare for drought, floods and other extreme events;**
- **Reduce vulnerability to extreme weather;**
- **Manage risks to coastlines, and infrastructure;**
- **Sustainably manage marine and riverine ecosystems;**
- **Balance present and future water needs and supplies; and**
- **Adapt to and mitigate or minimize climate impacts.**

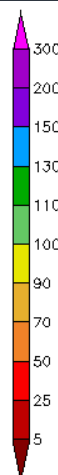
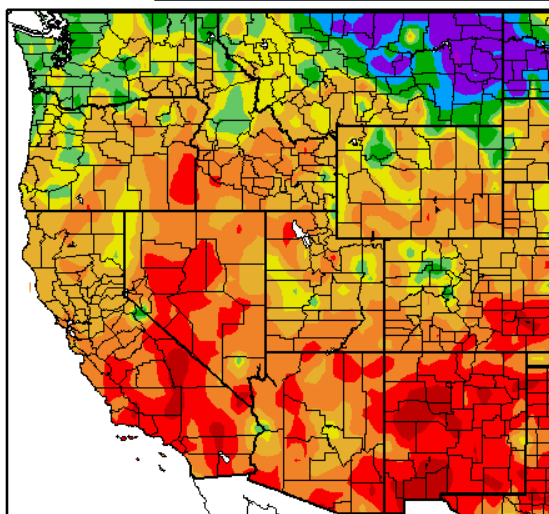


# OBSERVATION DATA EXAMPLES



## 30-Day Temperature Anomaly

NOAA scientists publish the 30-day departure from normal temperature (F) to provide insight about the relative warmth of the season throughout the West. Temperature affects the evaporation and evapotranspiration of water from the earth's surface and vegetation—an important variable for water planners.

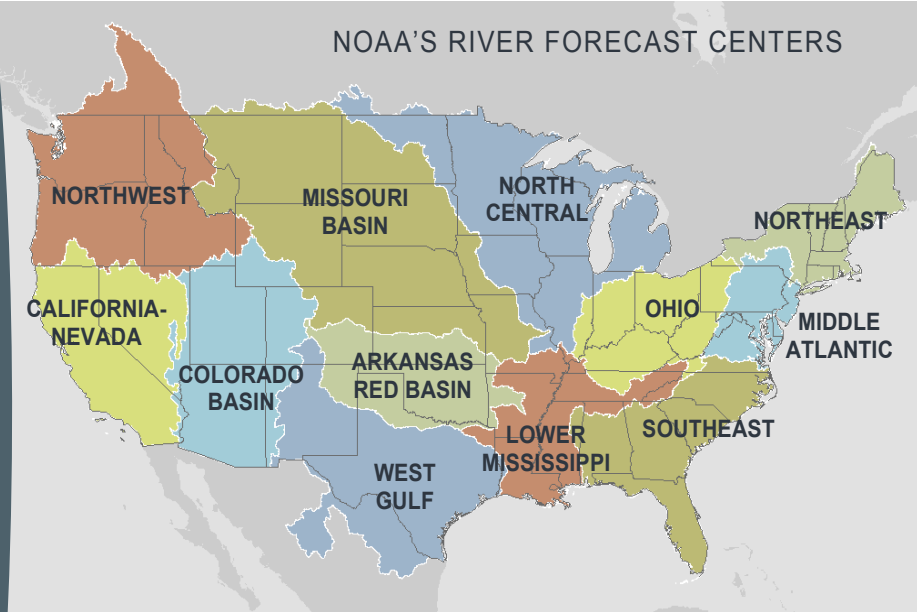


## Water Year Precipitation as a Percent of Average



Understanding the amount of precipitation that has fallen for a given time of year relative to normal precipitation is essential for water supply forecasting and for adaptively managing water storage throughout the West.

# NOAA tools and research improve predictive capabilities that the States need....



## Intraseasonal to Interannual Climate Prediction

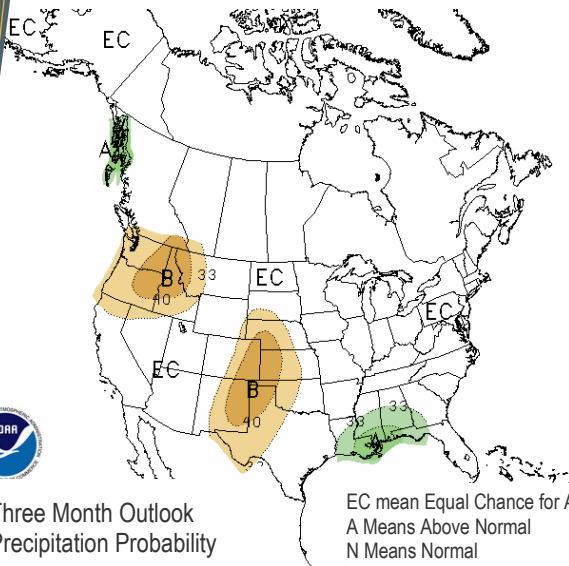
Addressing water supply planning and management challenges require an improved predictive capability. The National Academy of Science's 2010 report "*Assessment of Intraseasonal to Interannual Climate Prediction and Predictability*" recommended "best practices" as well as more research to improve upon the current intraseasonal to interannual climate prediction capability. Across time-scales, research is needed to objectively assess factors contributing to climate prediction skill, limiting predictive capability, and the potential for improvements within the limits of predictability.

## Advance Hydrologic Prediction Service

An important predictive component within the National Weather Service, the Advanced Hydrologic Prediction Service (AHPS) provides a new web-based suite of information-rich forecast products.



Three Month Outlook  
Precipitation Probability



EC mean Equal Chance for A, N, or B  
A Means Above Normal  
N Means Normal  
B Means Below Normal



### NOAA's RISA PROGRAM...

Eleven Regional Integrated Sciences and Assessments (RISA) teams and six Regional Climate Centers in coordination with local, tribal, state, regional, and federal partners, produce region-specific data products, tools, training opportunities and resources. The Council strongly supports the important work done by the RISAs throughout the West as a bridge between NOAA-funded research and actionable applied science for water management.



### OTHER VALUABLE NOAA PRODUCTS....



CURRENT SNOWPACK, STATE DROUGHT MONITORS, PRECIPITATION INDICES, STREAMFLOW FORECASTS, RESERVOIR STORAGE, AND EL NINO/LA NINA EVENTS



# NATIONAL WEATHER SERVICE DATA (NWS)



## NWS FORECASTING

THE REPORTING TIMESCALES HIGHLIGHTED BELOW ARE OF SPECIAL IMPORTANCE TO STATE WATER MANAGERS

INTER-ANNUALLY

SEASONALLY

MONTHLY

8—14 DAYS

6—10 DAYS

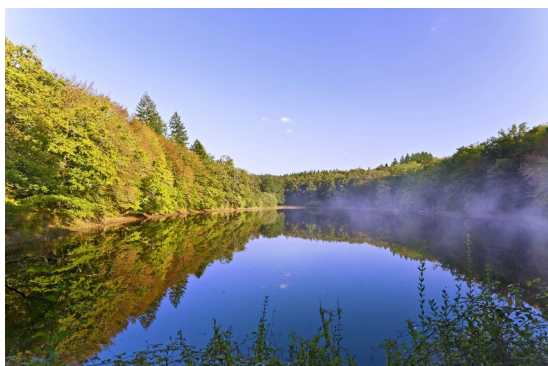
3—7 DAYS

0—48 HOURS

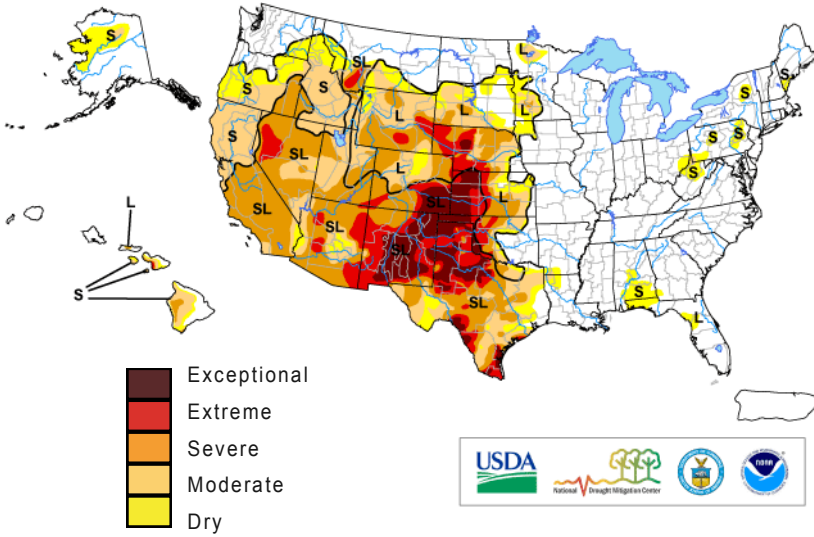
WATCHES & WARNINGS

NWS is charged with providing weather, water, and climate data warnings and forecasts. They deliver critical products and services used by myriad decision makers including emergency and water managers. NWS has observing systems (space, radar, and ground), modern information technology and the science expertise to provide short-term outlooks, and research is addressing monthly, seasonal and inter-annual timescales, improving NWS' analytical and predictive skills. NWS is posturing to blend forecasts into a seamless suite of products and services — accurate and timely products with a high resolution—in a format that will provide users the flexibility to tailor the information to their specific needs.

The NWS Office of Hydrologic Development enhances the value of NWS products using hydrologic science and operational techniques to meet the needs of water managers.



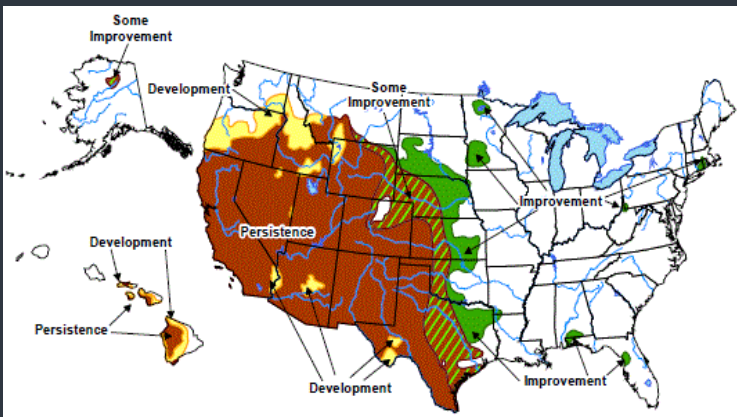
# NOAA: Drought and NIDIS



The National Integrated Drought Information System and the U.S. Drought Monitor provide up-to-date assessments of drought conditions by experts across federal agencies and other institutions. Related products show trends in dryness, and can highlight areas of the country that are dealing with prolonged drought. NOAA science and services help States prepare for and respond to drought. NIDIS is also charged with working towards the establishment of regional early warning systems and ultimately improving our drought prediction capability.

## U.S. Seasonal Drought Outlook

The Climate Prediction Center's Seasonal Climate Outlooks alert Americans to where temperatures and precipitation are likely to be well above or well below normal.



- Drought persists or intensifies
- Drought removal likely
- Drought remains but improves
- Drought development likely

BASIC SCIENCE  
TRANSLATING RESEARCH  
DECISION SUPPORT

No. 349

Position of the WESTERN STATES WATER COUNCIL urging the CONGRESS AND ADMINISTRATION TO PRIORITIZE FEDERAL PROGRAMS THAT TRANSLATE SCIENCE ON CLIMATE AND WEATHER EXTREMES TO WATER RESOURCES MANAGEMENT ACTIONS

Denver, Colorado

April 4, 2013

WHEREAS, climate and weather extremes have serious potential consequences for water resources planning and management, water rights administration, operation of state and local water projects, and future water use; and  
WHEREAS, there is growing concern, particularly in the Arid West, over our ability to continue to supply water of adequate quality in quantities needed to sustain current and future uses, including environmental uses, as is demonstrated by the release of the first (for the Colorado River Basin) of U.S. Bureau of Reclamation's Basin Studies prepared pursuant to the Secure Water Act of 2009; and  
WHEREAS, the failure to provide for such needs would have significant regional and national consequences; and  
WHEREAS, present water resources planning and sound future decision-making depends on our ability to understand, monitor, anticipate and adapt to droughts, floods, extreme storms, and other weather events; and  
WHEREAS, climate and weather extremes, such as the drought that gripped much of the West in the summer of 2012, cause millions of dollars in damages and present substantial obstacles and uncertainties to present and future water resources planning and management; and  
WHEREAS, most state, local and tribal water managers and water providers have a limited ability to undertake the necessary research to understand and develop adaptation strategies for extreme climate and weather events; and  
WHEREAS, important programs, such as the National Oceanic and Atmospheric Administration's Regional Integrated Sciences and Assessments (RISA) program, support research that addresses complex science issues of concern to water managers and administrators at the regional level;  
WHEREAS, the federal agencies participating in climate and weather research programs have historically concentrated heavily on basic scientific research, research that needs to be translated into decision support applications for water resources management and needs to be communicated to water managers through technology transfer institutions such as NOAA's RISAs; and  
NOW, THEREFORE, BE IT RESOLVED that the Western States Water Council urge the Administration and the Congress to give a high priority to federal programs, such as the RISAs that provide the translation function between basic scientific research on climate and weather extremes and the application of that research to real world water management situations at the regional, state, and local levels.



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