



# Development of an Extreme Precipitation Dashboard for Water Resource Managers and City Planners

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NOAA Satellite and Information Service | National Centers for Environmental Information





# Outline

- Partners
- Responding to User Needs
- Water Resources Dashboard
- Next Steps

# Current External Partners

- American Planning Association (APA)
- American Water Works Association (AWWA)
- Association of Metropolitan Water Agencies (AMWA)
- Water Environment Federation (WEF)
- Water Environment and Reuse Foundation (WERF)
- Water Research Foundation (WRF)





# Developing the Dashboard

- Background for Development
- General Approach:
  - Meet regularly
  - Agree upon goals
  - Re-evaluate goals
- Specific Approach:
  - Better understand the population
  - Develop survey
  - Identify most relevant constituents for inclusion in survey

# Survey

## Climate Data and Information Survey

Thank you for participating in our survey on Climate Data and Information Needs. Your feedback is important to the water, climate, and planning communities.

The survey asks about specific climatological/meteorological data sets used for climate and resilience preparedness. It is intended for those within your institution's climate change, resiliency planning, or emergency management/preparedness departments, among others.

The information you provide will primarily be used to help us identify areas for improvement in the collection, dissemination, and training on data relevant to planning for climate change and extreme weather events and creating a "one-stop-shop" for data needs.

Collective survey results may also be used in outreach efforts to members at participating organizations, to inform a sector working model for larger collaborative goals among water/planning groups, and/or as a source of information for efforts taken under the development of the White House's national Climate Resiliency Toolkit.

The survey should take ~20 minutes to complete. Participation is anonymous and voluntary. You do not need to provide contact information, and you may withdraw at any time. If do you not know the answer to a specific question (or part of a question), or do not want to answer it, please leave it blank.

If you have any questions, please contact the institution that sent you this survey:

**American Planning Association (APA):** James Schwab; JSchwab@planning.org  
**American Water Works Association (AWWA):** Adam Carpenter; acarpenter@awwa.org  
**Association of Metropolitan Water Agencies (AMWA):** Erica Brown; brown@amwa.net  
**Water Environment Federation (WEF):** Claudio Clemieden; clemieden@wef.org  
**Water Environment Research Foundation (WERF):** Katy Lackey; klackey@werf.org  
**Water Research Foundation (WRF):** Kenan Ozekin; kozekin@waterrf.org

**\*1) Do you currently use climate information for planning purposes at your institution?**

- ☐ Yes  
☐ No

**1a) Why not?**

**\*Do you plan to use climate information for planning purposes in the future?**

- ☐ Yes  
☐ No  
☐ Maybe





# Survey Statistics and Participants

- Online for 2 weeks, 11 multi-layered questions
- Asked questions such as:
  - Are people using climate data/information? What for?
  - What kind of climate data/information is being used?
  - What barriers exist? What other information and tools are needed?
- Sent to 745 people within institutional specialty groups
  - AMWA: Sustainability Committee
  - APA: Hazard Mitigation & Disaster Recovery Interest Group
  - AWWA: Climate Change Committee
  - WERF: Climate Change Listserv
  - WRF: Selected group with Climate Change interest
- 66 responses (10 thrown out) for 56 total responses
- 34 respondents completed all 11 questions



# Use of Climate Information

## Frequent (50%+)

- Understanding risk for water supply
- Planning for infrastructure/capital investments
- Using for operational purposes

## Frequent/Occasional (50%+)

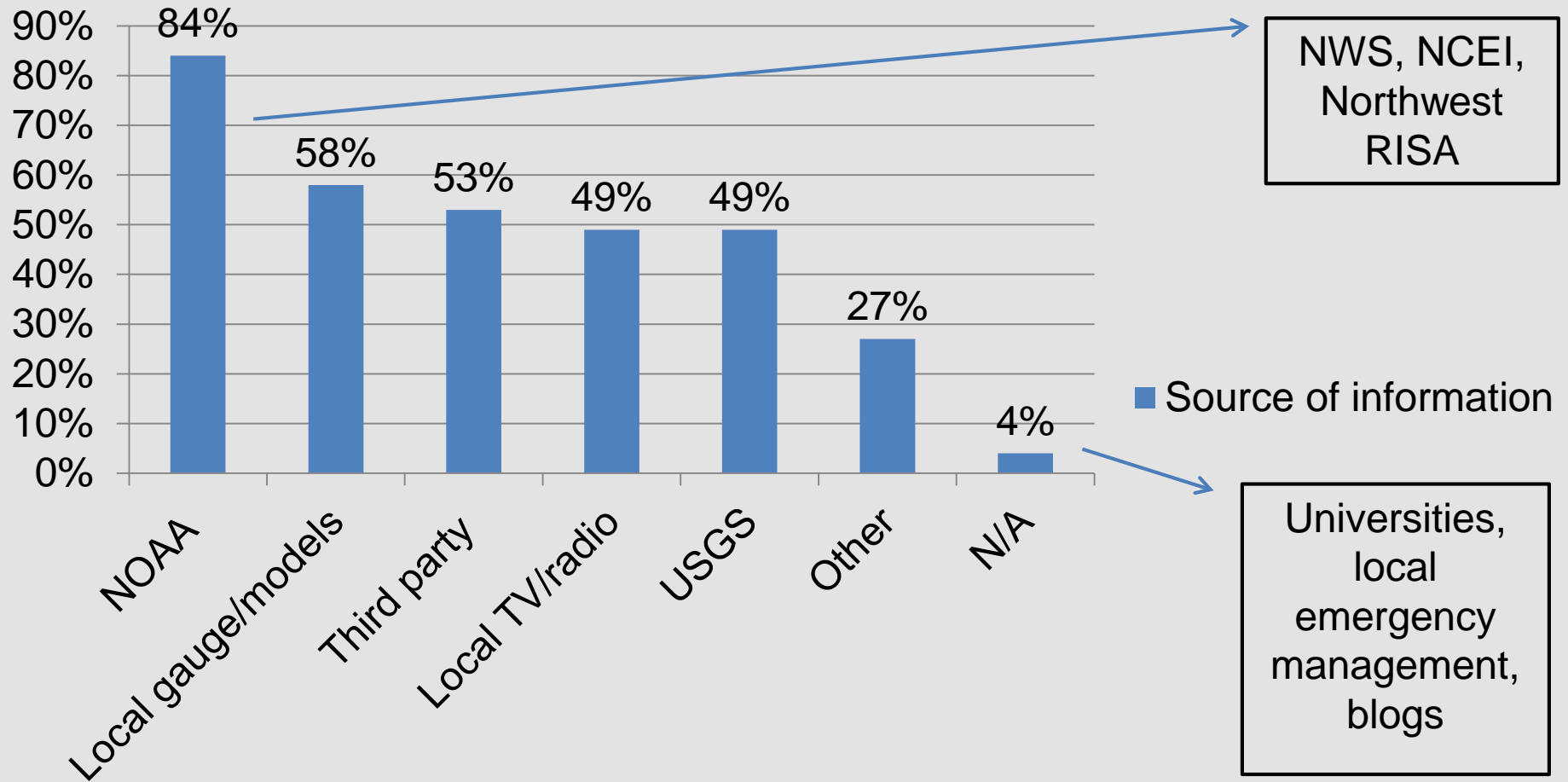
- Preparing for hazard mitigation/climate adaptation planning
- Using to develop impact reports & risk assessments
- Planning for extreme events
- Planning for an explicit forecast
- Planning for emergency/long-term response
- Other purposes

## Don't Use/May in Future (50%+)

- Rebuilding following an extreme event

# Sources, Scales, Types and Forms

## Where do you obtain climate/weather data?





# Water Resources Dashboard

<https://toolkit.climate.gov/topics/water/water-resources-dashboard>



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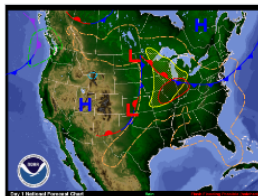
[Topics](#) > [Water](#) > [Water Resources Dashboard](#) >

## Water Resources Dashboard

Water resource managers and urban planners can use this dashboard to access maps and data that help them monitor the potential for extreme precipitation and drought in their regions. The [Acknowledgments](#) page lists the individuals who helped select our initial offerings.

Note that this is a dynamic page: the scope and content of dashboard entries are driven by input from users. We welcome your suggestions and additions to improve its usefulness. Please [email us](#) with your suggestions.

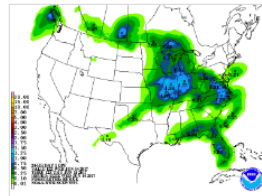
### Forecasts & Outlooks



#### NWS Forecasts

View current conditions and short- to medium-range (1-7 days) forecasts for precipitation, temperature, wind, and clouds. These forecasts often identify potential hazards such as heavy precipitation three or more days in advance.

[Visit data source >](#)

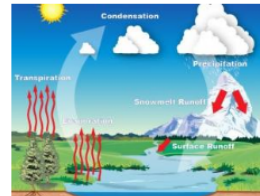


#### Quantitative Precipitation Forecasts

View forecasts of cumulative precipitation for periods from 6 hours to 7 days into the future. Monitoring this site can alert decision makers of the potential for wet weather and/or flooding.

[View tool demo >](#)

[Visit data source >](#)



#### National Water Model (NWM)

View streamflow for approximately 4,000 locations across the contiguous United States. Get short-range (hourly), medium-range (1-10 days), and long-range (up to 30 days) forecasts.

[Launch the NWM Experimental Image Viewer >](#)

[Visit data source >](#)

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# Current Observations

<https://toolkit.climate.gov/topics/water/water-resources-dashboard>

## Current Observations



### Daily Streamflow Conditions

Dots on this map indicate current streamflow: a quick look can show if water levels in your region are high, normal, or low. Click any region on the site, and then select stations to access graphs or raw data on streamflow and precipitation. Monitoring this site can help water managers judge short-term future supply.

[View tool demo >](#)

[Visit data source >](#)



### River Observations

View current and predicted flood status at more than 7,500 gauges in the United States. Click to zoom in on a region, and then roll your cursor over gauge locations to view hydrographs of recent and forecast discharge levels.

[View tool demo >](#)

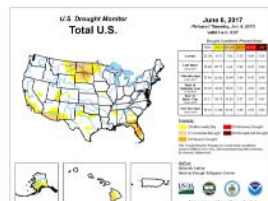
[Visit data source >](#)



### River Forecast Centers

View observed flow conditions across 13 regions of the contiguous United States. For each gauge location, access hydrographs showing observed and predicted water levels that account for upcoming weather and snowmelt.

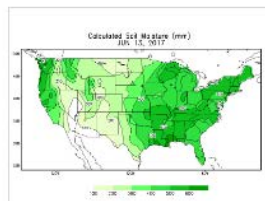
[Visit data source >](#)



### Current Drought

This weekly map—updated every Thursday—shows experts' assessments of regional conditions related to dryness and drought. The maps focus on broad-scale conditions, so local conditions may vary.

[View tool demo >](#)



### Soil Moisture

Access maps that show estimates of surface soil moisture. View Total, Anomaly, Percentile, or Change in soil moisture over the last month or season. Monitoring this site can help decision makers judge field conditions and the potential for drought development.



### Water Quality Information

WATERS (Watershed Assessment, Tracking, & Environmental Results System) provides comprehensive information about the quality of surface water across the nation.

[Visit data source >](#)

# Historical Observations

<https://toolkit.climate.gov/topics/water/water-resources-dashboard>

## Historical Observations



### Daily Summary Observations

Access summary observations from more than 90,000 land-based stations around the world. Data may include precipitation, maximum and minimum temperature, temperature at the time of observation, and/or snow depth. A How-to Guide provides assistance with selecting stations of interest in the map interface.

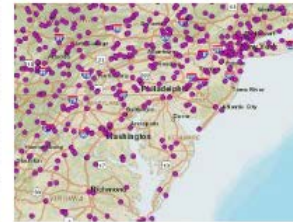
[Visit data source >](#)



### 1981-2010 Daily Normals by Weather Station

Use this GIS interface to select stations for which you want to view daily normals. Climate Normals are the latest three-decade averages of climatological variables, including temperature and precipitation. Hourly, monthly, and annual normals are also available.

[Visit data source >](#)



### Hourly Precipitation

Use this GIS interface to select from more than 5000 stations that indicate maximum observed rates of rainfall. You can consult these records to see historical extremes for locations of interest.

[Visit data source >](#)



### Extreme Events

Access various records of extreme events such as heat waves, droughts, tornadoes, and



# Map Layers from Data.gov

<https://toolkit.climate.gov/topics/water/water-resources-dashboard>

## Map Layers from Data.gov



Rivers, Streams, etc.

This tile cache base map combines the National Hydrography Dataset (NHD) and the Watershed Boundary Dataset (WBD). Use the data as an overlay in your own analysis software, or access it through the Climate Explorer.

[Visit data source >](#)

[Case Study >](#)

[View this layer in the Climate Explorer >](#)



Flood Hazard Zones

Local areas that carry an official designation of risk with respect to flooding show up on this map. The map highlights land that FEMA has judged to have a chance of flooding or lie within a regulatory floodway. Checking which areas of a community carry these designations is an important part of assessing vulnerability. View the layer in your own analysis software or the Climate Explorer.

[Visit data source >](#)

[View tool demo >](#)

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[View this layer in the Climate Explorer >](#)



Impervious Surfaces (2011)

Parking lots, rooftops, and roads block water from soaking into the ground. These impervious surfaces can increase stormwater runoff, promote flooding, and contaminate surface waters. Explore this tile cache base map of impervious surfaces in your own analysis software, or view it in the Climate Explorer.

[Visit data source >](#)

[Case Study >](#)

[View this layer in the Climate Explorer >](#)



Land cover (2011)

This satellite-derived map can help viewers figure out what is on the ground across a region. Colors show 21 different categories of natural vegetation, crops, and



Population Density (2000)

View estimates of the number of humans living within each square kilometer of the planet during the year 2000. Users can compare the locations of urban and rural

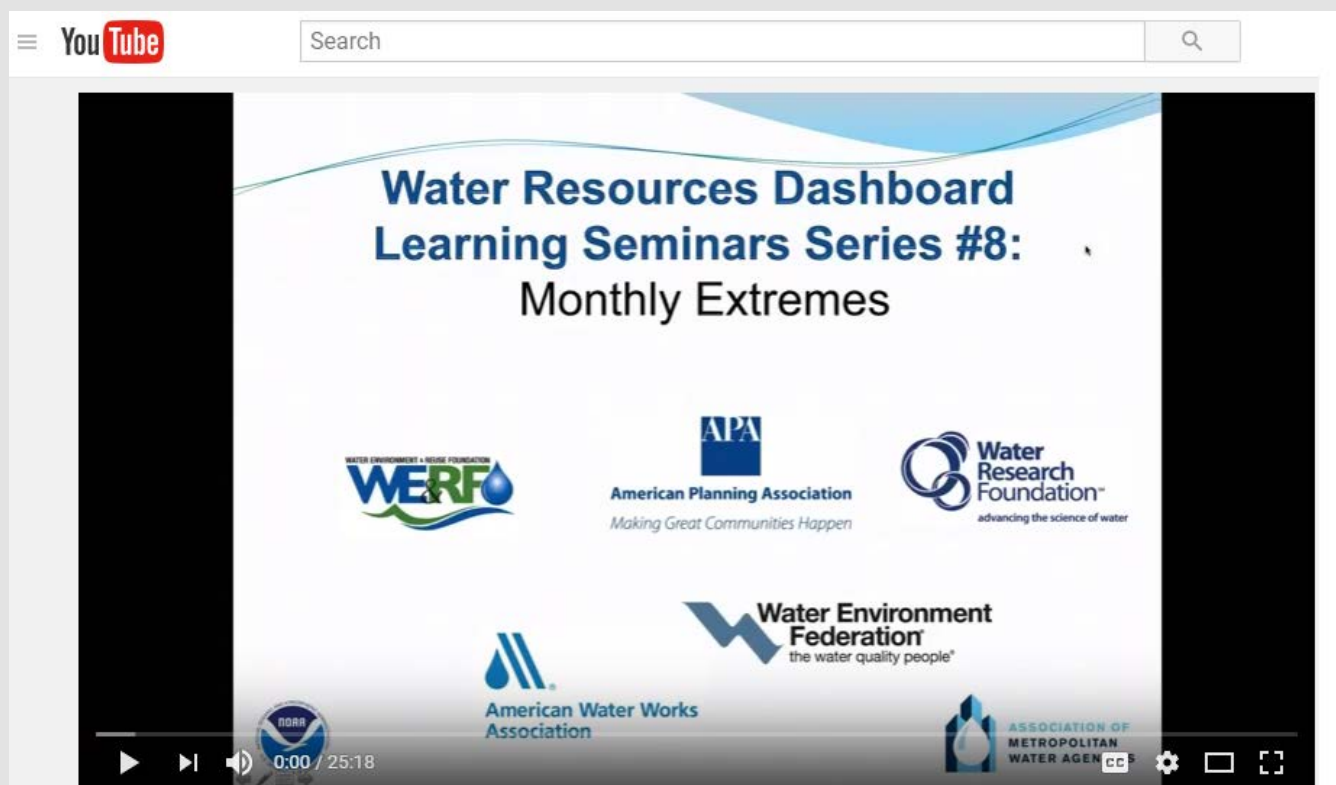


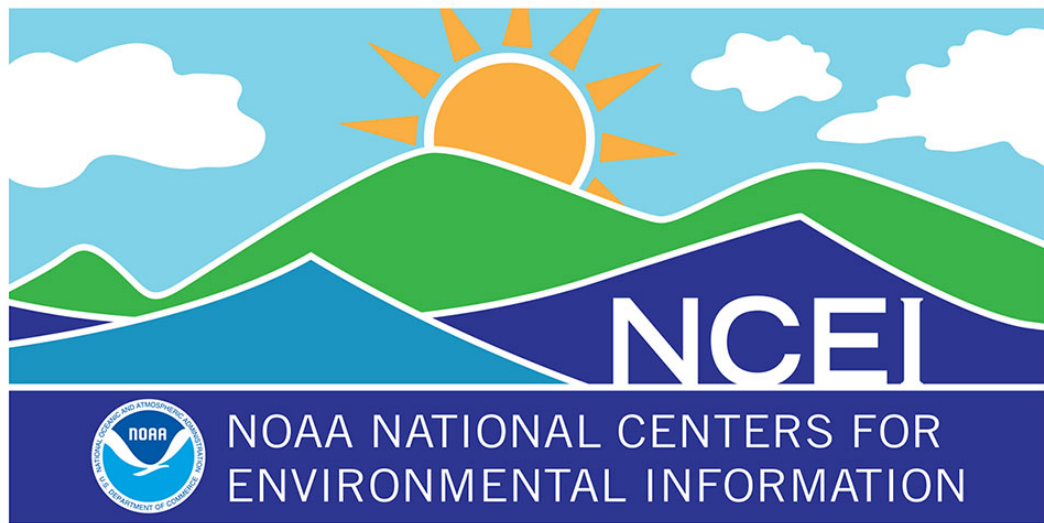
Social Vulnerability Index

This map shows communities' vulnerability to environmental hazards based on demographic measures drawn mostly from the 2010 Census. Local officials can

# Next Steps

- Learning Seminars
- Learning Progressions





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