

## **Workshop Participant Survey**

### **Purpose of the Survey:**

The survey is designed to (1) assess the accessibility and utility of water & climate forecasts and data, (2) assess participants' perceptions and knowledge about water & climate, and (3) evaluate user needs and the gaps in existing water & climate forecasts and data.

These survey questions will be used to assess needs among NOAA stakeholders from different parts of the country and from various groups with interests in water resources.

We appreciate your time and effort. All information obtained from the survey will help provide feedback to NOAA for input into the development of current and future water and climate products. Information collected will also be used by WWA & CLIMAS to develop their models related to meeting user needs for climate information.

The following page is a consent form. We want you to understand what you are being asked to do and what risks and benefits—if any—are associated with the study. This should help you decide whether or not you want to participate.

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### **PROCEDURES:**

It is entirely your choice to participate in this study. You will be asked to complete 30-35 multiple choice questions and a few open-ended questions that will gauge your perceptions and knowledge about water and climate as well as how you use related information for decision-making purposes. Participating should take 20-30 minutes of your time through this online survey tool.

### **RISKS AND DISCOMFORTS:**

There are no potential risks if you take part in this study. You will only be asked questions that assess your knowledge and use of climate and water information in management and planning decisions.

### **BENEFITS:**

By participating in this survey, you will help NOAA improve their understanding of existing gaps in water and climate information and help them identify which water and climate information and products are useful. In addition, this information will provide NOAA with input to help develop new water and climate products and training strategies.

### **COST TO PARTICIPANT:**

There are no direct costs to you for participation in this study.

### **ENDING YOUR PARTICIPATION:**

You have the right to withdraw your consent or stop participating at any time. You have the

right to refuse to answer any question(s) or to stop completing the survey at any time.

**CONFIDENTIALITY:**

We will make every effort to maintain the privacy of your data. Your answers to this survey will remain anonymous.

**QUESTIONS?**

If you have any questions regarding your participation, you may ask the NOAA staff person administering this survey. If you have questions or concerns during or after your participation, please contact [kevin.werner@noaa.gov](mailto:kevin.werner@noaa.gov) (or other NOAA staff administering this particular survey).

**YOU MAY SKIP ANY QUESTION BY CLICKING THE "NEXT" BUTTON**

**YOU MAY EXIT THE SURVEY AT ANYTIME: WHEN YOU CLICK ON THE LINK IN YOUR EMAIL AGAIN IT WILL TAKE YOU TO THE PAGE WHERE YOU LEFT OFF.**

**AUTHORIZATION:**

By clicking the "Next" button below, I acknowledge that I have read this page about the study or it was read to me. I know the possible risks and benefits. I know that being in this study is voluntary. I choose to be in this study. I know that I can withdraw at any time.

**1. Please identify your geographic region(s) of interest. Select all that apply.**

- Arizona
- Colorado
- New Mexico
- Utah
- Wyoming
- Southwest region (Arizona, New Mexico, Colorado, Utah)
- Colorado River Basin
- Western U.S.
- National
- U.S.-Mexico border
- Global
- Other (please specify)

**2. Identify the sector which best describes your affiliation. Please select one.**

- Agriculture
- Development/Home Building
- Energy
- Forestry & Ecosystem Management
- Industry
- Media
- Planning
- Public Health
- Public Interest and Education
- Ranching
- Real Estate
- Research
- Tourism & Recreation
- Water Management
- Wildlife & Fisheries Management
- Other (please specify)

**3. How at risk do you feel your sector is to the impacts of...**

...climate variability?	No risk	Medium Risk	Significant Risk	N/A
...climate change?	No risk	Medium Risk	Significant Risk	N/A

**4. What organization do you represent most of the time? Please select one.**

- Federal Government
- State Government
- Local Government
- Tribal Government
- Non-profit Organization
- Private Organization
- Other (please specify)

**5. Thinking about your job responsibilities at your organization, how at risk do you feel to the impacts of...**

...climate variability?	No risk	Medium Risk	Significant Risk	N/A
...climate change?	No risk	Medium Risk	Significant Risk	N/A

**6. What is your job title?**

The next few questions are about water supply information and forecasts. In this context, WATER SUPPLY INFORMATION refers to observed measures such as streamflow, soil moisture, and snowpack, as well as water supply forecasts. WATER SUPPLY FORECASTS refer specifically to projections of seasonal snow melt streamflow volumes in the western US. These forecasts are typically issued monthly between January and July.

**7. What are your sources for water supply INFORMATION?**

NOAA-NWS River Forecast Centers (RFC)  
National Resource Conservation Service (NRCS)  
Not applicable - I don't use water supply information  
Other (please specify)

**8. Do you use water supply FORECASTS to guide decision-making?**

Yes (Continue to Q. 9)  
No (skip to Q. 11)

**9. If yes, when are you most likely to use water supply forecasts?**

During WET years  
During DRY years  
During AVERAGE years  
During WET, DRY, and AVERAGE years equally  
Other (please specify)

**10. How do you use water supply forecasts to guide your decision-making?**

**11. Please describe one major water-related challenge you faced (professionally or personally) in the past 5 years:**

**12. What information helped you address this challenge? How?**

**13. What types of information would you HAVE LIKED TO HAVE USED to address this challenge?**



(NRCS)								
National Weather Service River Forecast Centers (RFC)								
National Weather Service Weather Forecast Offices (WFO)								
Southern Regional Climate Center (SRCC)								
Western Regional Climate Center (WRCC)								
Western Water Assessment (WWA)								
Your State Climatologist								

**16. Do you currently use climate information in any aspect of your work?**

Yes  
No

**17. How often do you use the following sources to find climate information?**

	1 (Very Often)	2 (Often)	3 (Occasionally)	4 (Rarely)	5 (Never)
Magazine or Popular Journal					
Newspaper					
Scientific Journals					
Talk Radio					
Television					
Federal or state supported websites, data portals, or publications					
Non-governmental organization websites, data portals, or publications					
University websites, data portals, publications or products					

**18. How credible do you consider the climate information from these different sources?**

Please choose on a scale of 1-5, 1 = High credibility and 5 = No credibility.

	1 (High Credibility)	2	3	4	5 (No credibility)







**22. Do you have all the water and climate information you need to make a well-informed decision or plan?**

Yes

No

**23. What additional water and/or climate information do you need to make a well-informed decision or plan?**

**24. How would you rate: (1 = Expert, 3 = Average, 5 = None)**

...your own knowledge of climate science? 1 2 3 4 5

...the climate science knowledge of people who work in your sector? 1 2 3 4 5

...the climate science knowledge of people who work in your organization? 1 2 3 4 5

**25. Experts frequently make predictions with uncertain information or under uncertain conditions. Below are a series of predictions under uncertainty. We are interested in your opinion of these predictions as there is no "correct" answer for these issues. For each one, indicate how much confidence you have in each prediction.**

	1 (Very confident)	2	3 (Neither confident nor unconfident)	4	5 (No confidence at all)
Predictions about the weather in your area for the next 5 days					
Predictions about precipitation and temperature trends for your area over the next 3 months					
Predictions about seasonal streamflow and water supply in your watershed(s) for the spring runoff period					

**26. Which of the following most accurately depicts your trust in 5-day weather forecasts?**

They are just about useless

They are reliable enough to schedule routine maintenance, but not to plan special projects

They are reliable enough to use to plan necessary 1- to 3- day work related projects, but it is best to have a contingency plan in case they fail

They are reliable enough to plan necessary work-related activities with little fear of failure

I know nothing about 5-day weather forecasts

**27. Which of the following most accurately depicts your trust in climate forecasts for the next three months?**

They are just about useless

They are reliable enough to schedule routine maintenance, but not to plan special projects

They are reliable enough to use to plan necessary 1- to 3- day work related projects, but it is best to have a contingency plan in case they fail

They are reliable enough to plan necessary work-related activities with little fear of failure  
I know nothing about 3-month climate forecasts

**28. Which of the following most accurately depicts your trust in seasonal streamflow and water supply forecasts in your watershed(s) for the spring runoff period?**

They are just about useless

They are reliable enough to schedule routine maintenance, but not to plan special projects

They are reliable enough to use to plan necessary 1- to 3- month work related projects, but it is best to have a contingency plan in case they fail

They are reliable enough to plan necessary work-related activities with little fear of failure

I know nothing about seasonal water supply forecasts

**29. Which of the following most accurately depicts your trust in climate projections for the next 20-50 years in your area?**

They are just about useless

They are reliable enough to motivate discussions about the future but not for long term planning

They are reliable enough to guide investments in large infrastructure projects

I know nothing about long-term climate projections

Thank you for providing valuable information regarding your use of water and climate information. You are now ready to take the climate knowledge component of this survey. This section is comprised of a few questions to assess your understanding of global and regional climate concepts and characteristics. It is also designed to identify climate knowledge gaps across sectors and regions.

Please note that if you DO NOT know the answer to the question, please select the "I don't know" option. This minimizes random guessing by participants and should remove pressure to select an answer that looks familiar or sounds correct.

**30. Please write a definition for science:**

**31. Which of the following best describes science? Please select one.**

An ongoing process where peer-review provides assurance about the quality of research

A systematic approach to answer questions with concrete answers

I don't know

**32. What is the difference between climate and weather? Please select one.**

Weather is a day-to-day event while climate is a consistent pattern over a year or longer

Weather is predictable but climate is not

Weather includes more variables like moisture and wind while climate just focuses on temperature and precipitation

I don't know

**33. Which of the following has had the least influence on large-scale global climate over the last 30 years? Please select one.**

- Greenhouse gases
- The ozone hole
- Vegetation
- Land use
- Volcanic eruptions
- I don't know

**34. Complete the following sentence:**

**The difference between climate variability and climate change is...**

**35. The natural greenhouse effect: Please select one.**

- Is produced by the accumulation of atmospheric gases
- Is a warming effect produced solely by pollution
- Is caused by the ozone hole
- Can only be replicated by computer models
- I don't know

**36. El Niño conditions are best characterized by: Please select one.**

- Anomalously warm water in the eastern Pacific Ocean
- Anomalously cold water in the eastern Pacific Ocean
- Changes in circulation of all the global oceans
- Higher tides
- I don't know

**37. Which of the following best characterizes climate throughout the Western US? Please select one.**

- Average temperatures and total annual precipitation have increased in the last 30 years
- Average temperatures have increased, and total annual precipitation has decreased in the last 30 years
- Average temperatures have increased in the last 30 years, and precipitation trends have increased, decreased, or have not been detected depending on location
- No change in average temperatures or total annual precipitation have been detected in the last 30 years
- I don't know

**38. Are the following observations about the global hydrological cycle over the last several decades true or false?**

- Changes in the hydrologic cycle have been observed
- The frequency of heavy precipitation events has not changed

- Precipitation has increased in some places, and decreased in others

- There have been significant declines in Northern Hemisphere snowpack, but high-altitude (>8000ft) have not changed

**39. How can trees tell us about past climate variability? Please select one.**

Conifers drop their cones more often in wet years

Trees grow larger rings during drought conditions to store moisture

Small growth rings usually indicate dry years, while large growth rings indicate wet years

Climate variability cannot be seen in tree rings

I don't know

**40. Please finish the following statement: The main driver of drought in the West is...**

**41. Which of the following about climate models is true? Please select one.**

Climate models do not represent the complex geography and climatology of the Western U.S., and are therefore useless

Climate projections derived from models can help decision-makers evaluate potential decisions

Projections become more consistent among models as spatial scales decrease

I don't know

**42. Which of the following is NOT true about projections of climate and water in the Western U.S.? Please select one.**

Floods and water quality issues are likely to be amplified by climate change

There may be major declines (>80%) in high-elevation (>8000 ft) snowpack in the Rocky Mountains by 2025

Runoff in the Upper Colorado River Basin may decline by 5-15% by 2025

Average annual precipitation is likely to increase in Pacific Northwest, and decrease in the Southwest

I don't know

**Paperwork Reduction Act Statement**

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other suggestions for reducing this burden to [kevin.werner@noaa.gov](mailto:kevin.werner@noaa.gov). Notwithstanding any other provisions of the law, no person is required to respond to, nor shall any person be subjected to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number.