

**Written Testimony of the  
WESTERN STATES WATER COUNCIL**

**Submitted to the  
House Science, Space & Technology Committee**

**on  
THE FUTURE OF FORECASTING:  
BUILDING A WEATHER-READY NATION ON ALL FRONTS  
and  
Improving Subseasonal and Seasonal Forecasts**

**October 14, 2021**

On behalf of the Western States Water Council (WSWC), a government entity advising the governors of eighteen states, we wish to express our appreciation for the Committee's leadership and our strong support for the U.S. Weather Research Program within the National Oceanic and Atmospheric Administration's (NOAA) Office of Oceanic and Atmospheric Research (OAR).

NOAA's Weather Ready Nation effort has helped the U.S. be better prepared for managing impacts of short-term weather disasters. We respectfully request that the Committee encourage NOAA to expand its efforts in helping the U.S. be better prepared for managing the impacts of longer-term weather disasters, particularly droughts. Time is critical in making water management decisions and water agencies need longer lead times to support drought response and preparedness. These longer lead times can only be achieved by improving the skill of sub-seasonal to seasonal (S2S) precipitation forecasts. NOAA's Precipitation Prediction Grand Challenge strategy recognizes the need to improve precipitation forecasting at all time scales, but a more focused effort is needed to make progress at the S2S time scale. The skill of the National Weather Service Climate Prediction Center's precipitation forecasts and outlooks is not sufficient to support water management decision-making for drought response and preparedness.

The Weather Research and Forecasting Innovation Act of 2017 (Public Law 115-25), reauthorized in 2019, along with the National Integrated Drought Information System (NIDIS), directed NOAA to "collect and utilize information in order to make usable, reliable, and timely foundational forecasts of subseasonal and seasonal temperature and precipitation." The statute further required submission of a report to Congress that described "specific plans and goals for the continued development of the subseasonal and seasonal forecasts" and "an identification of research, monitoring, observing, and forecasting requirements" needed to meet the statutory goals.

In 2020, NWS submitted to Congress the report, *Subseasonal and Seasonal Forecasting Innovation: Plans for the Twenty-First Century*. Developed with input from federal, regional, state, tribal, and local government agencies, research institutions, and the private sector, the report outlines innovations needed to improve the skill of S2S precipitation forecasts. The report recommended four pilot projects for improving S2S forecasts, including one to improve winter precipitation forecasts (as snowpack in mountain areas sustains water supplies in the West), and one for summer precipitation forecasting in the Plains States. Given the exceptional continuing

drought in the West, the winter precipitation pilot should be the first priority. The WSWC urges the Committee to encourage NOAA to request the resources needed to begin these pilot projects. This year over a dozen House members supported a \$15 million increase in OAR's U.S. Weather Research program (see attached letter) for the western pilot project.

As of October 12, nearly half (47.45%) of the lower 48 States are suffering from drought (drought.gov). Currently, all 17 western states are abnormally dry, with all recording pockets of moderate to severe drought and many suffering from severe to exceptional drought, the driest condition represented on the U.S. Drought Monitor scale. Agricultural interests are hit hardest as crops, feed, and forage deteriorate and rise in cost, threatening farmers, ranchers, and dairies.

In 2015, NOAA released its first-ever service assessment for drought, after California's third year drought. NOAA assessments evaluate its performance after significant hydro-meteorological, oceanographic, or geologic events. The California drought assessment's top finding, given the input received from numerous stakeholders, emphasized the need for an improved seasonal prediction capability focused on cool-season mountain precipitation, both in California and in the Colorado River Basin. "A majority of the stakeholders interviewed for this assessment noted one of the best services NOAA could provide is improved seasonal predictions with increased confidence and better interpretation."

The international Colorado River Basin has experienced prolonged drought conditions, for over 20 years, resulting in declining reservoir elevations in Lake Mead and Lake Powell. Water agencies in the seven Colorado River Basin states have been taking unprecedented steps to manage the risk of shortage, including executing historic drought contingency plans with the Department of the Interior in 2019. Now, a first-ever Lower Basin shortage is expected in 2022. Arizona, Nevada, and the country of Mexico have already experienced cuts in 2021 as part of drought contingency planning. Drought risk management programs in the contingency plans cost money and/or water. Skillful seasonal precipitation forecasts would help support decision-making to balance costs and the risks of shortage.

Better S2S forecasts would inform decision-making and help mitigate such losses. Again, the Western States Water Council urges the Committee to encourage NWS to request the resources needed to start the western pilot project to improve S2S precipitation forecasting.

# Congress of the United States

## Washington, DC 20515

April 28, 2021

The Honorable Matt Cartwright  
Chairman  
House Appropriations Committee  
Subcommittee Commerce, Justice, Science,  
and Related Agencies  
1016 Longworth House Office Building  
Washington, DC 20515

The Honorable Robert Aderholt  
Ranking Member  
House Appropriations Committee  
Subcommittee Commerce, Justice, Science,  
and Related Agencies  
1203 Longworth House Office Building  
Washington, DC 20515

Dear Chairman Cartwright and Ranking Member Aderholt,

As you begin your work on the Fiscal Year 2022 Commerce, Justice, Science, and Related Agencies Appropriations bill, we write to express our strong support to increase funding for the U.S. Weather Research Program in order to implement a pilot project to improve forecasting and support water management in the West. **Specifically, we request an increase of \$15,000,000 to the U.S. Weather Research Program, with that \$15,000,000 being directed towards the implementation of a pilot project for subseasonal to seasonal (S2S) precipitation forecasts for water management in the western U.S.**

There is a grave need to improve S2S forecasting in the West and it was made clear in the National Oceanic and Atmospheric Administration's (NOAA) 2020 report to Congress on S2S forecasting as required by the Weather Research and Forecasting Innovation Act of 2017. Within NOAA's report, regional pilot projects were highlighted as being a way to improve predictive skill and allow NOAA to continue its efforts to accelerating forecasting improvements.

Forecasts at the S2S time scale are needed to support water project operations, drought preparedness and response, and innovative water management strategies such as forecast-informed reservoir operations. The National Weather Service's Climate Prediction Center has been issuing S2S precipitation outlooks since the mid-1990s. Their skill for the Western U.S. has been minimal, just slightly better than predicting average weather conditions, and has shown little improvement over time. Improving longer-range forecasts in the West would allow for better management of extreme droughts and floods and the ability to store water and manage it during dry years.

Forecasting precipitation at the S2S timescale has received little federal research support and with almost 80% of the Western U.S. in drought conditions, we believe there needs to be a robust investment towards improving and advancing forecasting. We request that the Subcommittee include a \$15,000,000 increase to the U.S. Weather Research Program and direct that funding go towards the implementation of a pilot project focused on S2S forecasting in the western United

States. The pilot project should be carried out in coordination with the NWS Climate Prediction Center, Earth System Prediction and Innovation Center, and Environmental Modeling Center. The pilot should be modeled after NOAA's Hurricane Forecasting Improvement project, with a focus on measurable objectives for operational forecast improvement and should include forecasts of seasonal mountain snowpack accumulation as well as total seasonal precipitation.

Improving precipitation forecasting at longer lead times is essential for helping state and local water agencies manage both current and future droughts. Local water agencies in California and in Oregon's Klamath Basin are expecting cutbacks in supplies from state and federal projects, while users in Nevada and Arizona have already seen a reduction in their Colorado River supplies pursuant to the Lower Basin Drought Contingency Plan. Other parts of the West are similarly afflicted by severe to exceptional drought conditions.

We ask that as you draft the FY22 Commerce, Justice, Science and Related Agencies Appropriations bill, that you include an increase of \$15,000,000 for the U.S. Weather Research Program and for that \$15,000,000 to be directed towards the implementation of the pilot project for S2S precipitation forecasts for water management in the West.

Sincerely,



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Grace F. Napolitano  
Member of Congress

Also Signed By:

/s/ Raúl Grijalva  
Member of Congress

/s/ Zoe Lofgren  
Member of Congress

/s/ Mary Gay Scanlon  
Member of Congress

/s/ Jerry McNerney  
Member of Congress

/s/ Jared Huffman  
Member of Congress

/s/ Greg Stanton  
Member of Congress

/s/ Dianna DeGette  
Member of Congress

/s/ Ro Khanna  
Member of Congress

/s/ Mike Levin  
Member of Congress

/s/ Julia Brownley  
Member of Congress

/s/ Nanette Diaz Barragán  
Member of Congress

/s/ Jimmy Panetta  
Member of Congress

/s/ Mark DeSaulnier  
Member of Congress