RESOLUTION
of the
WESTERN STATES WATER COUNCIL
supporting
NOAA DATA, FORECASTING, AND RESEARCH PROGRAMS

Reno, Nevada
May 24, 2023

WHEREAS, federal agency data and research programs provide an important foundation for supporting water management decision-making by western federal, state, and local agencies and tribes; and

WHEREAS, the National Oceanic and Atmospheric Administration (NOAA) collects weather and climate data through in-situ and remotely sensed observations, issues forecasts and outlooks of precipitation and temperature and weather hazard warnings, and conducts research to improve forecasting and

WHEREAS, line agencies within NOAA – including the National Weather Service (NWS), Office of Atmospheric Research (OAR), National Environmental Satellite Data and Information Service (NESDIS), and National Centers for Environmental Information (NCEI) – manage the programs that collect data, issue forecasts, and conduct research; and

WHEREAS, the information obtained through these programs supports water management and preparing for and responding to the extremes of drought and flooding; and

WHEREAS, water management in the West is both defined by and challenged by high annual variability in precipitation and by the extremes of drought and flooding; and

WHEREAS, recent billion-dollar weather disasters in the West have included: recent western flooding and mudslides, severe weather and wildfires (2023): extensive West and Midwest drought, heatwave, and wildfires, as well as severe Central weather and North Central and South Central hail (2022): Western drought, heatwave and wildfires, with California flooding, as well as Central and South Central severe storms and cold wave (2021); continued drought, heatwave, wildfires, as well as severe storms and hail (2020);Missouri River and northern Great Plains flooding (2019):;Colorado hail storms (multiple years), drought in the southern Great Plains (2018); California and Nevada flooding (2017),;severe multi-year drought in California and much of the West (2012-16); Texas and Oklahoma flooding (2015); and flooding in Texas resulting from Hurricane Harvey (2017); drought across the southern Great Plains (2011); Missouri River and northern Great Plains flooding (2011); and

WHEREAS, the Colorado River Basin is experiencing a 20+year drought, one of the more severe in the tree-ring record, and tree ring data shows that there have been numerous multi-decadal or mega-droughts in the basin and some suggest drought may be the new normal for the region; and

WHEREAS, the NWS Cooperative Observer Program has provided the only long-record spatially dense precipitation observing system in rural areas and especially in mountain regions where precipitation is highly variable, but is not being supported and modernized in proportion to the high value it provides for measuring extreme precipitation; and

WHEREAS, NWS River Forecast Centers (RFCs) play an important role in using weather and climate data to produce streamflow forecasts, and in delivering forecast products to end users; and

WHEREAS, weather forecasts are operationally issued out to about two weeks but most of the forecast skill is in the first seven days; and

WHEREAS, research observing systems developed through OAR's Hydrometeorology Testbed program have demonstrated the potential for improving weather forecasts through innovative instrumentation; and

WHEREAS, the skill of precipitation forecasts at the sub-seasonal to seasonal (S2S) time scale (two weeks to two years) is minimal and is insufficient to support water management decision-making at these lead times important for flood and drought preparedness and response; and

WHEREAS, the Weather Research and Forecasting Innovation Act of 2017 (WRFIA) directed NOAA to improve its S2S forecasting ability and to submit a report to Congress on research and resources needed to improve forecasting; and

WHEREAS, a coordinated effort by the NWS Climate Prediction Center (CPC), NWS Office of Weather and Air Quality Research, and OAR and its Laboratories is needed to improve S2S precipitation forecasting; and

WHEREAS, improving S2S precipitation forecasting will require targeted observations, dedication of high-performance computing resources, focused research, and improvements to dynamical and statistical modeling; and

WHEREAS, the production of NWS' existing S2S precipitation outlooks began in the mid-1990s and has shown no significant increase in skill since that time, pointing to the need for new approaches and focused pilot projects to improve forecasting skill; and

WHEREAS, OAR's testbed programs (Climate Testbed, Hydrometeorology Testbed) have an important role in transitioning research to operational forecasting: and

WHEREAS, OAR's information delivery programs (Regional Integrated Services and Assessments, National Integrated Drought Information System) help translate research to end user communities; and

WHEREAS, improving drought prediction entails research supported through OAR on climate dynamics and process studies, developing and applying paleoclimate data sets, and regionally focused pilot research projects; and

WHEREAS, NCEI's Regional Climate Centers (RCCs) provide special-purpose, customized data products such as daily plots of mountain freezing elevations or precipitation anomalies for regional water and agricultural stakeholders; and

WHEREAS, the satellite data collected by NESDIS' Geostationary Operational Environmental Satellites (GOES) program is foundational to modern weather forecasting, with GOES-17 just having transitioned to operations as GOES-West in 2020; and

WHEREAS, OAR supports the collection and acquisition of tropical ocean temperature profiles and other data from sources such as the TAO/Triton array of moored buoys, data that are used for monitoring El Nino-Southern Oscillation status; and

NOW, THEREFORE, BE IT RESOLVED, that NWS should preserve and modernize the NWS Cooperative Observer Program.

BE IT FURTHER RESOLVED, that OAR should sustain and expand its Hydrometeorology Testbed – West program to build upon progress made in that program for developing and installing new technologies for precipitation observations, and should continue and expand ocean observations that are critical for weather and S2S forecasting.

BE IT FURTHER RESOLVED, that NOAA should place a priority on implementing the provisions of WRFIA regarding improving S2S precipitation forecasting skill, and should submit the report to Congress on S2S forecasting required by WRFIA.

BE IT FURTHER RESOLVED, that the Western States Water Council urges the NWS-OAR development of regional pilot projects to improve S2S precipitation forecasting, including a pilot on cool season precipitation forecasting in the mountain West and a pilot on summer precipitation forecasting in the Plains.

BE IT FURTHER RESOLVED, that the Western States Water Council supports the NWS CPC's efforts to improve the utility and skill of its S2S outlooks.

BE IT FURTHER RESOLVED, that the Western States Water Council supports the climate data products provided by the NCEI's RCCs, and urges NCEI to fully fund the RCCs.

BE IT FURTHER RESOLVED, that the Western States Water Council supports OAR programs to transition research to operations, and NWS and OAR programs to deliver information to end users.

BE IT FURTHER RESOLVED, that the Western States Water Council will work with NOAA in supporting efforts on improving weather and S2S forecasting.