

WestFAST 2015-2016

Accomplishments

(July 1, 2015 to June 30, 2016)

WESTFAST AGENCIES & REPRESENTATIVES

U.S. BUREAU OF
RECLAMATION,
BECKY FULKERSON
(CHAIR)

U.S. ENVIRONMENTAL
PROTECTION AGENCY
ROGER GORKE,
(VICE CHAIR)

U.S. ARMY CORPS OF
ENGINEERS,
JOHN D'ANTONIO

U.S. FOREST SERVICE,
JEAN THOMAS

NATIONAL AERONAUTICS AND
SPACE,
BRAD DOORN

U.S. FISH &
WILDLIFE SERVICE,
ANDREW HAUTZINGER

NATIONAL RESOURCES
CONSERVATION
SERVICE,
MICHAEL STROBEL

NATIONAL OCEANIC &
ATMOSPHERIC
ADMINISTRATION,
ROGER PULWARTY

U.S. DEPARTMENT OF
ENERGY,
CRAIG ZAMUDA

U.S. GEOLOGICAL
SURVEY,
PIXIE HAMILTON

U.S. DEPARTMENT OF
DEFENSE,
MARC KODACK

U.S. BUREAU OF
LAND MANAGEMENT,
LARISA FORD

FEDERAL LIAISON,
PATRICK LAMBERT (USGS)



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WestFAST Accomplishments – July 2015 to June 2016

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1.0 INTRODUCTION

The Western States Federal Agency Support Team (WestFAST) promotes collaboration between the Western States Water Council (WSWC) and 12 federal agencies with water resource management responsibilities in the West.

WestFAST was established to support the WSWC, and the Western Governors' Association (WGA) in coordinating Federal efforts regarding water resources. WestFAST was formed in 2008 in response to recommendations made in the WGA report titled [Water Needs and Strategies for a Sustainable Future: Next Steps Report](#) (*Next Steps Report*). Specifically, **WestFAST was formed to promote collaboration among federal agencies, and between states and federal agencies.** WestFAST was intended to help the WSWC implement collaborative efforts outlined in its *Next Steps Report*.

In December 2013, the WGA adopted [Policy Resolution 2014-03](#) and [Policy Resolution 2014-4](#) in which the Western Governors re-asserted States' roles in water management and planning and the essential role of partnerships with federal agencies in western water management. These WGA policies listed the following as water management priorities: (1) state primacy; (2) new infrastructure; (3) innovative water management; and (4) reliable water data. Although these 2014 Policy Resolutions supersede policy resolutions of the *Next Steps Report*, the directions and recommendations given in that report, regarding federal-state interaction and information needs, remain relevant and continue to inform issues and goals defined in subsequent WGA resolutions.

In 2015-2016, WestFAST focused on many federal initiatives and promoted communication between federal agencies relevant to priority issues identified in the above-referenced WGA and WSWC reports and resolutions. WestFAST representatives reviewed WSWC committees' work plans and the WestFAST Work Plan to ensure a nexus of activities that could be promoted for 2015 to 2016. The Federal Liaison conferred with WSWC leadership and WestFAST leadership to correlate WestFAST actions to WSWC priority objectives.

2015-2016 Highlights:

- **Jointly sponsored and participated in nine WSWC water resource workshops**
- **Gave 6 presentations at 3 WSWC meetings**
- **Sponsored or facilitated, and participated in 5 focused WestFAST/WSWC water-resource issue workshops**
- **Sent monthly WestFAST Newsletter to more than 145 federal and state recipients.**
- **Initiated new WestFAST Collaboration Webinar Lecture Series and posted those to the website**
- **Supported a follow on WestFAST/WSWC Federal Non-Tribal Water Rights Workgroup and initiated Workgroup information clearing house.**
- **Held combined WestFAST Principals/WSWC Leadership meeting in Washington DC and a virtual Principals' meeting**

2.0 Coordination and Collaboration

In 2015-2016, WestFAST continued to promote the over-arching goal of improved collaboration among federal agencies, and between state and federal agencies engaged in western water-resource issues. Specific WestFAST activities in this area are captured below.

2.1 Interagency

The federal agencies that make up WestFAST all have unique roles within western water management. WestFAST provides a means for those agencies to collaborate in a way that they may not otherwise be able. WestFAST has worked in 2015-2016 in three key areas of collaboration.

- Information sharing
- Participation in cross-agency groups
- Outreach

2.1.1 Information Sharing

- In 2015-2016, WestFAST members met monthly through conference calls to discuss ongoing programs and coordinate interagency and federal-state collaboration and outreach opportunities. WestFAST “Water Data” Workgroup met periodically to work on specific planned actions in these areas.
- In 2015, WestFAST began hosting regular “Special Topics” seminars – information meetings, held mainly via webinar, on topics of interest to WestFAST member agencies and other water-resource managers, scientists, and stakeholders. WestFAST hosted 9 monthly webinars in this reporting period. The webinar series was established to provide overviews of WestFAST agency water-resource related programs briefings on “hot topics” in water-resource science and policy. Webinars specific to WestFAST agency correlation and information sharing in 2015 - 2016 included:
 - 7/29/2015 – U.S. Bureau of Reclamation collaborations in “Challenge & Prize Competition” programs for priority water resource solutions
 - 8/20/2015 – NASA – Watching Water in the West: An Overview of NASA Missions and Applied Science for Water Resources Management
 - 9/24/2015 – USGS – Water Programs and the National Water Census
 - 10/29/2015 – U.S. Forest Service Water Resource Roles and the USFS NorWest Stream Temperature Program
 - 1/28/2016 – Update on the National Drought Resilience Partnership, next steps, and WestFAST roles
 - 2/25/2016 – U.S. Fish and Wildlife Service Agency Overview and the Relevance of Water to the Agency’s Mission
 - 4/7/2016 – The Western State Water Council Water Data Exchange (WaDE)

- *5/13/2016 – The Importance of base flow in sustaining surface water flow in the Upper Colorado River Basin*
- *6/28/2016 – Improving Sub-Seasonal and Seasonal Precipitation Forecasting*
- WestFAST held a two Principals Meetings in this period. The first meeting was a virtual meeting held on October 1, 2015. This was a follow-on meeting that was held earlier in the year in March to touch base on critical issues. This meeting was focused on FY16 Budget issues and priorities of the agencies. NIDIS being newly reauthorized, Drought follow on issues, Seasonal to Sub-Seasonal Forecasting and the Water Data Exchange (WaDE) project were key topics of interest.
- The Second Principals meeting was held on March 24, 2016, in Washington DC, it was hosted by the Department of the Interior (DOI). WestFAST agency leaders reviewed the previous year's WestFAST activities and discussed priority tasks for continuing to enhance interagency coordination and to develop positive working relationships with western state partners and the WSWC. WestFAST Principals and representatives then met with WSWC leadership to discuss federal-state collaboration on western water issues.

2.1.2 Participation in cross-agency groups

- In 2015 and 2016, the WestFAST Federal Liaison continued working with the [Western Regional Partnership](#) (WRP) on the water-resource components of their programs. The (WRP) is a Department of Defense-led collaboration between federal, state, and tribal interests in 6 western states - Arizona, California, Colorado, Nevada, New Mexico, and Utah. The WestFAST Liaison is working with the WRP Natural Resources Committee assisting them in developing a coordinated water-resource action plan.
- WestFAST has continued working on [Open Water Data Initiative](#) (OWDI) activities and to provide links between western state initiatives and working groups so they can coordinate the use of spatial water data across all levels of government. The OWDI was proposed in 2014 by a working group comprised of leadership from the Secretary of the Interior's office, USGS, NOAA, and universities. The group proposed a new initiative to integrate disparate water information into a connected, national water data framework – an objective of great interest to the WSWC. The OWDI will be collaborative, building on the work of the Integrated Water Resources Science and Service (IWRSS) consortium, and engaging the Subcommittee on Spatial Water Data (SSWD), which is a shared subcommittee of the Federal Geographic Data Committee (FGDC) and the Advisory Committee on Water Information (ACWI). WestFAST has directly engaged, during the past year, in this initiative through participation in associated workgroups and subcommittees, such as the SSWD. The WestFAST Federal Liaison has work directly on the SSWD and WestFAST has brought in other WestFAST representatives and agency personnel to OWDI tasks and to subcommittees.

Bureau of Reclamation (BOR) has taken the lead in an OWDI Water Availability and Water Supply Use Case Project. Part of that activity includes assessing the interoperability of BOR data toward understanding the occurrence and impacts of drought in the Colorado River Basin. The WestFAST Liaison and several WestFAST representatives participated on this work team in beginning in 2014 through the release the Reclamation’s “[Interactive Web Tool to Show Effects of 16-Year Drought in the Colorado River Basin](#)” visualization tool in December 2015 the key product of the case study effort.

- During 2015-2016, the WestFAST Federal Liaison continued to work to coordinate federal agency science programs within the [Colorado River Basin Salinity Control Program](#) (SCP) toward informed development and operation of projects to reduce total dissolved solids in Colorado River Basin surface water supplies. The USDA, NRCS, BLM, and the BOR collaborate with basin states in this program. The WestFAST Federal Liaison is a member of SCP Science Team. Bob Doyle, WestFAST BLM alternate representative, also participated in SCP planning and coordination in 2015-2016 including spearheading the development of a BLM 5-year salinity strategy for the Colorado River Basin

2.1.3 Outreach

- In 2015-2016 WestFAST published a monthly newsletter distributed to more 145 federal agency staff and state and local partners.
- WestFAST continued to maintain a [WestFAST web site](#) containing information about WestFAST’s origins, goals and objective, and documentation of activities, reports, newsletters, and webinars.
- As noted previously in this report, in 2015, WestFAST began a monthly series of “Special Topic Seminars” held via webinar. One purpose of this webinar series is to disseminate information on federal interagency water resource programs to state and local partners. Webinar topics for 2015 and 2016 are listed in the “Information Sharing” and “Federal/State” sections of this report.

2.2 Federal/State

From July 2015 to June 2016, WestFAST sponsored and/or participated in 6 WSWC meetings and WSWC/WestFAST jointly-sponsored seminars and workshops. WestFAST agencies gave a combined 33 presentations during these events. These efforts were very beneficial to both the WSWC and the federal agencies, in that they provided a forum for discussion of a number of priority issues. Presentations and highlights from these events included the following:

- [Summer \(178th\) Council Meetings and commemoration of the WSWC’s 50th Anniversary was held in Lake Tahoe, Nevada on July 8-10, 2015](#)

- USGS – Pixie Hamilton gave a presentation on the USGS Streamflow Information Program highlighting the work to integrate surface and ground water monitoring networks nationwide.
 - USGS – Sonya Jones provided an update to the USGS National Water Census.
 - NASA – Michael Freilich provided information on work being done at NASA’s Jet Propulsion Laboratory on the use of satellite data for Water Resource Management.
 - Reclamation - Dionne Thompson – provided an update on drought response program and contingency planning funds and the major rehabilitation and replacement needs assessment work recently completed by the Bureau.
 - Pat Lambert - provided an update on WestFAST actions and agency news.
 - EPA – Multiple updates:
 - Jeanne Briskin – Hydraulic Fracturing Research Study findings
 - Joan Card – WOTUS
 - Joan Card – Section 518 and TMDL rule making efforts
 - Joan Card – Water transfers litigation
 - USFS – Jean Thomas – provided a briefing on USFS “Best Management Practices” program.
 - WestFAST Liaison – Pat Lambert and Michelle Bushman (WSWC) provided an update to the Legal Committee on the WSWC-WestFAST Federal Non-Tribal Water Rights Workgroup.
 - BLM – Steve Wells, Chief of the BLM Division on Fluid Minerals provided some information on the BLM Hydraulic Fracturing Rule.
 - DOI – Jennifer Gimbel, Principal Deputy Assistant Secretary for Water Science provided a briefing on the DOI’s “Water Resources Programs”.
 - WestFAST – Becky Fulkerson (Chair) - Work Plan Briefing 2014-2016 was briefed
- WSWC/NARF Symposium on the Settlement of Indian Reserved Water Rights Claims, August 25-27, 2015 in Reno, Nevada.

The Western States Water Council and the Native American Rights Fund held their fourteenth Symposium on the Settlement of Indian Reserved Water Rights Claims on August 25-27, at the Peppermill Resort in Reno, Nevada. The Symposium began on Tuesday, August 25, at 8:30 a.m. and continued throughout the day, with an evening reception. Discussions continued through the morning of August 26, followed by a review of the Pyramid Lake Paiute Tribe’s settlement, a field trip to view the settlement features along the Truckee River, and a dinner hosted by the Tribe at Pyramid Lake, 40 miles from Reno. The Symposium concluded on August 27 at noon, after a morning discussion panel.

- Fall (179th) Council Meetings and Water Quantity Water Quality (WQ2) Nexus Workshop, October 7-9, 2015 in Manhattan, Kansas.
 - USACE – Steve Stockton, Director of Civil Works provided some insight on the water resources priorities for FY16.
 - Bureau of Reclamation – Dionne Thompson, Dionne Thompson, Deputy Commissioner for External and Intergovernmental Affairs, provided an update to Reclamations response to the drought in the west.
 - NRCS – Verlon Barnes, NRCS Missouri Basin Coordinator provided an update on water-related programs across the Missouri Basin.
 - WestFAST Liaison – Pat Lambert (USGS), provided an update on water data coordination and linkages to the WSWC WaDE project.
 - EPA- (Region 8) Shaun McGrath, presented an update from across the region on EPA activities.
 - WestFAST – Roger Gorke (Chair) and Pat Lambert (Liaison) provided updates from across the agencies of importance to WSWC and WGA.
- Water Quantity Water Quality (WQ2) Nexus Workshop The first half of the workshop was introduced by J.D. Strong, Oklahoma Water Resources Board and was highlighted with three case studies on Water Reuse, Stormwater Runoff Rights, Stormwater Detention facilities, the limitations of the use of these water sources and the environmental impacts. The second part of the day focused on the permitting processes and use of water associated with Minerals Extraction, Aquifer Recharge, and Drought management with the use of wastewater and associated treatment. The WestFAST agencies linked to these activities and associated regulations formed a Federal Discussion Panel with:
 - Pat Lambert, US Geological Survey
 - Anita Tompkins, US Forest Service
 - Alan Ellsworth, National Park Service
 - Roger Gorke, Environmental Protection Agency
 - Bob Boyd, Bureau of Land Management

The following morning, was followed with a State Panel and breakout discussions with facilitation by J.D. Strong and Walt Baker with recommended next steps.

- Two WSWC/CDWR/NOAA Workshops on Advancing Sub-Seasonal to Seasonal Precipitation Forecasting for Water Resources:
 - October 21-22, 2015 – Salt Lake City, UT
 - December 15, 2015 – Las Vegas, NV

The Western States Water Council (WSWC), the California Department of Water Resources, and the National Oceanic and Atmospheric Administration (NOAA) cosponsored a workshop on advancing seasonal prediction for western water resources.

This workshop brought together WSWC members, representatives from water management agencies and federal agencies to address opportunities for and challenges to advancing forecasting capabilities and improving predictive skill with respect to seasonal forecasting. ([Link to minutes and resources](#))

- 180th Western State Water Council Meeting: March 22-24, 2016, Washington, DC
 - EPA - Water-Related Activities and Rules, Shaun McGrath, Regional Administrator, Region 8
 - NOAA - NIDIS Drought Update, Veva Dehaza, Drought Information Coordinator, and Roger Pulwarty, NIDIS Director
 - NRCS - National Water and Climate Center Activities and Needs, Mike Strobel, Director, National Water Climate Center
 - USGS – USGS Streamgage Program – Background and Status, Mike Norris, USGS National Streamflow Information Program Coordinator
 - NOAA - NOAA/WSWC Activities and Congressional Briefings, Timi Vann
 - USFS - Proposed Directives for Water-Quality Best Management Practices, James Pena, Associate Deputy Chief of the NSF
 - USFS - Groundwater Management Directive, James Pena Associate Deputy Chief of the NSF
 - USFS - Stewardship for Water Resources on National Forests and Grasslands/Update on Groundwater Resources Framework – Rob Harper, USFS National Director - Watershed, Fish, Wildlife, Air, and Rare Plants
 - NRCS - Water-Related Programs – Rob Sampson, NRCS National Water Management Engineer
 - USGS - Water Availability and Use Programs Progress – Sonya Jones, USGS, Coordinator Water Availability and Use Science Program
 - DOE - Drought & the Energy/Water Nexus – Diana Bauer, Director, Office of Energy Policy Analysis and Integration Office of Energy Policy and Systems Analysis
 - NOAA – NWS – CPC Sub-Seasonal Forecasting, Science & Technology – David DeWitt, Director, NOAA Climate Prediction Center
 - DOD - Natural Resources Program Water Needs Assessment – Becky Patton, U.S. Department of Defense, Program Managers, Climate Change Adaptation Integration
 - EPA/Montana DNRC – National Drought Resiliency Partnership Upper Missouri River Demonstration Project -- Tina Laidlaw (EPA, Region 8)

- NASA - LandSat Status and Other Missions – Brad Doorn, NASA, Program Manager, Water Resources Program Science Mission Directorate Earth Science Division
 - WSWC-WestFAST Federal Non-Tribal Water Rights Workgroup – Pat Lambert
 - WestFAST Report and Workplan – Roger Gorke, Environmental Protection Agency, WestFAST Chair and Pat Lambert, WestFAST Liaison
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- WestFAST Principals Meeting was held on March 24, 2015 in DOI's Rachel Carson Room, Main Interior Building, 1849 C Street, NW -*details in Principals' section below*
 - Two workshops on improving sub-seasonal to seasonal (S2S) precipitation forecasting
 - San Diego, CA June 6-9, 2016
 - College Park, MD April 29, 2016 – focus on advances

The Western States Water Council (WSWC), the California Department of Water Resources, and the National Oceanic and Atmospheric Administration (NOAA) cosponsored a workshop on advancing sub-seasonal to seasonal precipitation forecasting for western water management on April 29, 2016. This workshop addressed opportunities for and challenges to advancing NOAA's research and modeling to improve forecasting predictive capabilities. The workshop was held at the Center for Weather and Climate Prediction in College Park, Maryland.

- WestFAST Webinar Series: WestFAST also used selected topics from their new webinar series (described previously in this report) to share information about ongoing WestFAST agency programs with our state partners and to better understand state management of water and water resource issues. State participation was invited through the WSWC on the following webinar topics:
 - *7/29/2015 – U.S. Bureau of Reclamation collaborations in “Challenge & Prize Competition” programs for priority water resource solutions*
 - *8/20/2015 – NASA – Watching Water in the West: An Overview of NASA Missions and Applied Science for Water Resources Management*
 - *9/24/2015 – USGS – Water Programs and the National Water Census*
 - *10/29/2015 – U.S. Forest Service Water Resource Roles and the USFS NorWest Stream Temperature Program*
 - *1/28/2016 – Update on the National Drought Resilience Partnership, next steps, and WestFAST roles*
 - *2/25/2016 – U.S. Fish and Wildlife Service Agency Overview and the Relevance of Water to the Agency’s Mission*
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 - *6/28/2016 – Improving Sub-Seasonal and Seasonal Precipitation Forecasting*

- WestFAST/WSWC Principals' Meetings: The first meeting was a virtual meeting held on October 1, 2015. This was a follow-on meeting that was held earlier in the year in March to touch base on critical issues. This meeting was focused on FY16 Budget issues and priorities of the agencies. NIDIS being newly reauthorized, Drought follow on issues, Seasonal to Sub-Seasonal Forecasting and the Water Data Exchange (WaDE) project were key topics of interest.
- The Second Principals meeting was held on March 24, 2016, in Washington DC, it was hosted by the Department of the Interior (DOI). WestFAST agency leaders reviewed the previous year's WestFAST activities and discussed priority tasks for continuing to enhance interagency coordination and to develop positive working relationships with western state partners and the WSWC. WestFAST Principals and representatives then met with WSWC leadership to discuss federal-state collaboration on western water issues.

2.2.1 Proactive Collaboration in Policy and Rule Making

WestFAST agencies have continued to look for opportunities in proactive collaboration related to policy and rule-making in 2015-2016. In 2015 WestFAST facilitated discussion between the WSWC and BLM managers to improve understanding of the intent of the manual and its provisions, and also improve awareness of state laws that impact BLM's land management responsibilities, particularly those responsibilities involving water rights. The Western States very much appreciate the opportunity to provide input to BLM as they revised the manual. They found numerous positive references and sections related to encouraging federal-state collaboration, maintaining good working relationships with state agencies that grant water rights; coordinating surface and groundwater monitoring; sharing information and technical expertise, etc. WestFAST continues to work on similar lines of communication to foster federal-state collaboration including continued work with USFS in their stewardship of resources on National Forest System (NFS) lands.

2.2.2 Federal Non-Tribal Water Rights Workgroup

WSWC and WestFAST continued to be active in 2015-16, supporting follow up actions to the 2014 workshop in Helena, MT. The workshop generated a recommendation to convene a state-federal workgroup to help guide the development of the clearinghouse and to foster ongoing communication and collaboration between the states and federal agencies. Quarterly calls were initiated beginning in March of 2015 and planning began for another workshop to be held in July 13-15, 2016 in Bismarck, ND.

WestFAST and WSWC originally convened a state-federal workgroup in November 2014 and began work on gathering documents and other information on water-right issues and settlements. The workgroup has also planned for periodic webinars to review certain aspects of non-tribal water rights. The workgroup has selected and begun work on the first of these seminars which will review the McCarran Amendment from state and federal agency perspectives and review case studies of its application and relevance in the west.

2.2.3 Water Data

“Basic information on the status, trends and projections of water resource availability is essential to sound water management.” (*WGA Policy Resolution 2014-03 § 4*)

“Western Governors support federal efforts to coordinate water data gathering and information programs across multiple agencies.” (*WGA Policy Resolution 2014-03 § 4a*).

“The Western Governors’ Association and the Western States Water Council have worked together to create the Water Data Exchange, an online portal that will enable states to share their water data with each other, federal agencies, and the public via a common platform. The Governors encourage the use of state water data in planning for both the public and private sectors.” (*WGA Policy Resolution 2014-03 § 4d*)

“State and federal water resource agencies should work together to provide universal access to the water-related data collected by all state, local, and federal agencies, as well as tools and models that better enable the synthesis, visualization and evaluation of water-related data, including that to be shared with local governments.” (*Next Steps Report, #7*)

2015-2016 Activities:

- The Open Water Data Initiative - WestFAST and its Water Data Workgroup supported the efforts of agencies working in the Open Water Data Initiative (OWDI) established through the Advisory Committee on Water Information (ACWI) and the Federal Geographic Data Committee (FGDC). This initiative will seek to provide seamless access to water data using services-based approaches. It is following upon the principles of data sharing developed in the Water Quality Portal (a USGS/EPA/USDA water quality data sharing portal), the National Groundwater Monitoring Network (a USGS/EPA/State groundwater sharing network) and the Water Data Exchange (a project led by the Western States Water Council).

Specifically, the WestFAST Liaison and representatives have participated with the ACWI Subcommittee on Spatial Water Data (SSWD), which is charged with working on the OWDI, by facilitating WestFAST agency participation in working groups, and leveraging existing programs toward OWDI and SSWD goals. WestFAST has been involved in the implementation of a use case study as part of SSWC 2015-2016 OWDI activities. This project has targeted assessment to enable the exchange of critical information that is needed by water resource managers to make water supply decisions during a drought. The BOR continues to be in the lead in Drought Use Case. Part of that activity will include assessing the interoperability of BOR data.

- The WSWC Water Data Exchange (WaDE) – In 2015-2016, WestFAST continued to support the WSWC in the implementation of the Water Data Exchange (WaDE). WaDE is a cooperative effort between the WSWC, the WGA, and WestFAST. WaDE is a data framework/meta-data (not a data

repository) which provides a central catalog of state water data, specifically water use and supply data, which allows data to be discovered and accessed via web services.

WestFAST sees WaDE as a potential tool to support federal water resource programs, such as the National Water Census and sub-programs that include assessing national water use and availability. The WSWC is also interested in promoting and incorporating shared federal water-resource datasets (streamgage data, snowpack and streamflow forecasts, reservoir storage and gage elevations, etc.) into WaDE to assist the states and make their water planning efforts easier. The WestFAST Water Data Workgroup developed a pilot study plan to test WaDE's current utility in accessing water use and supply data, and to identify federal data sets that might be cataloged in WaDE.

- National Water Census and the USGS Water Use Data and Research Program - In 2015-2016 WestFAST assisted in the coordination of the water-use component of the [USGS National Water Census](#) with the WSWC and with the development and implementation of WaDE. The National Water Census and the USGS Water Use Data and Research Program (WUDR) are implemented through the Department of the Interior's WaterSMART initiative. The programs develop new water accounting tools and assess water availability at regional and national scales. WestFAST has continued facilitation and coordination between WUDR and WSWC WaDE developers and briefed the WSWC on the program. The WUDR program is providing financial assistance through cooperative agreements with State water resource agencies to improve the availability, quality, compatibility, and delivery of water-use data that is collected or estimated by States. WestFAST has assisted informing states, through the WSWC of the scope of these funding opportunities.
- The National Groundwater Monitoring Network – In 2015-2016, WestFAST provided support to states and federal agencies in engaging in the National Groundwater Monitoring Network (NGWMN). The NGWMN Data Portal provides access to groundwater data from multiple, dispersed databases in a web-based mapping application. The NGWMN is a product of the [Subcommittee on Ground Water](#) (SOGW) of the Federal Advisory Committee on Water Information ([ACWI](#)). The WestFAST Federal Liaison worked with the SOGW in 2014-2015 and the work performed this past years was follow-on activities to support state and local participation in implementation of the NGWMN.

2.2.4 Water Availability and Drought

“Basic information on the status, trends and projections of water-resource availability is essential to sound water management.” (*WGA Policy Resolution 2014-03, Water Resource Management in the West*)

[Federal agencies should] “Ensure there is an accurate assessment of the Nation’s water availability and water demands, with the goal of integrating the information into state water resources planning, recognizing that a truly national assessment must begin at the state and local level with appropriate technical and financial support from the federal government.” (*Next Steps Report*)

“The Council will continue working with member states, USGS and various federal agencies to gather and disseminate water resources data using WaDE and other resources. The Council will continue to participate with USGS efforts to advance a National Water Assessment.” (*Draft Water Resources Committee Work Plan 2014-2015*)

- In 2015-2016 WestFAST members and the WestFAST Federal Liaison participated in the in a number of workshops for Seasonal to Sub-Seasonal Forecasting and Atmospheric Rivers Research. Although these are not directly drought topics, these are two aspects of the weather forecasting process that will help in the forecasting, preparation for and the response to droughts by having additional information on precipitation and linkage to the drought and impacts. The following were Federal participants in these workshops:

Federal Participants:

- NOAA - National Weather Service Western Region – Grant Cooper, Western Regional Director, National Weather Service, NOAA
- NOAA WSWC Workshop – Opening – Kevin Werner, Western Regional Climate Services Director, NOAA and Jeanine Jones - Interstate Resources Manager, California Department of Water Resources
- NOAA/NWS - Hurricane Forecast Improvement Project Overview – Fred Toepfer, Physical Scientist, Office of Science and Technology Integration
- NOAA - Seasonal Precipitation Forecast Improvement Project and Seasonal Climate Forecasting: Background, Current State, and Prospects for Future Improvement – David DeWitt, Director, Climate Prediction Center
- BLM - Snow Survey and Water Supply Forecasting Reports – Julie Suhr Pierce, Great Basin Socioeconomic Specialist
- NOAA - Navigating the Budget Process – Aria Remondi, Budget Analyst
- NOAA – Kevin Werner – overview of past, present and expectations for Seasonal to Sub-Seasonal Forecasting
- USGS – Pat Lambert, WestFAST – Workshop Presentation for WestFAST
- BOR - Colorado River Basin: Overview of Determining Lake Powell and Lake Mead Annual Operational Tiers, Dan Bunk.
- NOAA/NWS - Interpreting and Using Climate Prediction Center (CPC) Outlooks – Roger Pierce, Meteorologist-in-Charge and Alex Tardy, Warning Coordination Meteorologist and Decision Support Services Lead, San Diego Weather Forecast Office
- NASA - Next Generation Earth System Prediction: Strategies for Subseasonal to Seasonal Forecasts – Duane Waliser, Chief Scientist, Earth Science & Technology Directorate, NASA Jet Propulsion Laboratory (JPL)
- NOAA/OAR/GFDL - Towards Improving Hydroclimate S2S Prediction – Sarah Kapnick, Physical Research Scientist, NOAA’s Geophysical Fluid Dynamics Laboratory

- NOAA/NWS/NCEP/CPC - Background and Framework for Establishing a Seasonal Precipitation Forecast Improvement Project (SPFIP) – David DeWitt, Director, NOAA Climate Prediction Center
- NASA - Subseasonal Atmospheric River Research & Prediction – Duane Waliser, Chief Scientist, JPL
- NOAA/OAR - Subseasonal-to-Seasonal Prediction Initiatives and Scientific Opportunities in High-Resolution Modeling – Heather Archambault, Program Manager, NOAA Climate Program Office
- BOR - Reclamation S2S Forecasting Activities – Kenneth Nowak, Water Availability Research Coordinator, US Bureau of Reclamation

Federal Science Panel Presentations:

- NOAA/OAR Climate Program Office – Dan Barrie
- NOAA/NWS/NCEP/Climate Prediction Center – Jon Gottschalck and Dave DeWitt
- NOAA/ESRL/PSD – Andy Hoell
- NOAA/Geophysical Fluid Dynamics Laboratory – Sarah Kapnick
- NOAA/NWS/WR/STID – Mike Staudenmaier, Andy Edman

Advances in Seasonal to Sub-Seasonal Precipitation Forecasting workshop

- NOAA/NWS - Working Together to Build a Weather and Water-Ready Nation – Louis Uccellini, Director, National Weather Service
- NOAA/OAR Science Supporting S2S Prediction – Michael Farrar, Acting Deputy Assistant Administrator, Laboratories and Cooperative Institutes
- NOAA/NESDIS - Review of WSWC and NOAA Discussions on S2S Precipitation Forecasting – Kevin Werner, Director of Office of Organizational Excellence, NWS, and Jeanine Jones, Interstate Resources Manager, California Department of Water Resources
- NOAA/NWS - Informing Decisions for a Water-Prepared Nation – Ed Clark, Director, Geo-Intelligence Division of the National Water Center
- NOAA/OAR Research on S2S Predictability and Prediction – Dan Barrie, MAPP Program Manager, NOAA’s Climate Program
- NOAA/NWS/NCEP/CPC - Background And Framework for Establishing a Seasonal Precipitation Forecast Improvement Project – David DeWitt, Director, Climate Prediction Center

WestFAST provided a follow up with the WGA in relation to the Drought Forum Summary report of 2014-15 and responded to related actions. All WestFAST member agencies contributed to the review providing comment, mainly, on the open data needs identified in the Forum meetings and case studies.