

Western States Federal Agency Support Team (WestFAST) is a collaboration between 13 Federal agencies with water management responsibilities in the West. WestFAST was established to support the Western States Water Council (WSWC) and the Western Governors' Association (WGA) in coordinating Federal efforts regarding water issues.

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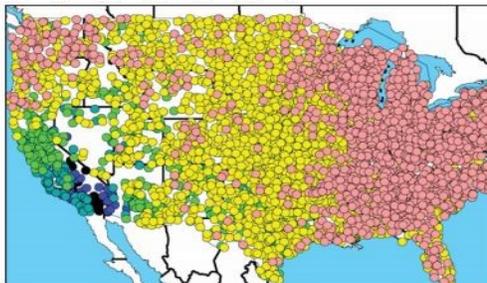


WestFAST Agencies Continue to Look at S2S Precipitation Forecasting

The Western States Water Council (WSWC) believes that the current accuracy of forecasts (generally referred to as forecast skill) for the sub-seasonal to seasonal (S2S) time frame is not adequate to support water management decision-making. In a recent WSWC report, the WSWC notes that “although the skill of conventional weather forecasts, which go out as far as two weeks in advance, has greatly improved over the past several decades, the same cannot be said for the critical longer-term forecasts important to water managers.”

S2S forecasts include environmental predictions with forecast ranges from 2 weeks to 12 months. In their recent report, the WSWC states that “managing water in the West is about managing for the extremes of droughts and floods, and the need to store water when available to manage it during dryer times for cities, farms, and the environment. Better longer-term precipitation forecasts are a necessary tool for more efficient resource management.”

Coefficient of Variation, Water Year 1951-2008
0.1 0.2 0.3 0.4 0.5 0.6 0.7



Map showing comparative variability of Western precipitation (courtesy of Mike Dettinger, USGS)

To explore the possibilities in meeting this forecast need, the WSWC and the California Department of Water Resources (CDWR) are cosponsoring a series of workshops on advancing S2S precipitation with the National Oceanic and Atmospheric Administration (NOAA) and other Federal agencies. The most recent workshop was held April 29th at the NOAA Center for Weather and Climate Prediction in College Park, Maryland. Kevin Werner, of NOAA and the current Vice Chair of WestFAST, and Jeanine Jones, CDWR and a WSWC member, conducted the meeting which included presentations and discussion on unique characteristics of precipitation in the west and current NOAA research on S2S predictability and prediction.

The next of these forecast workshops will be held in San Diego on June 7-9 and will include a review of National Aeronautics and Space Administration (NASA) programs related to climate and water-supply forecasting. Other WestFAST agencies will attend and assess the potential benefits of improved S2S forecasting to their water resource programs and missions. For more information on the June workshop click [here](#).

Secretary Jewell Offers Vision for Next 100 Years of Conservation in America (DOI, 4/19)

In remarks at the National Geographic Society on April 19, 2016, U.S. Secretary of the Interior Sally Jewell laid out a vision for actions the nation can take to build upon America's rich conservation legacy and pass on healthy public lands and waters to the next generation.

The Secretary delivered the remarks during National Park Week to help mark the 100th birthday of the National Park Service. During the speech, Jewell called for a “course correction” for conservation that includes inspiring all Americans from all backgrounds to connect with public lands; implementing smart, landscape-level planning to support healthy ecosystems and sustainable development; and greater investments in national parks and public lands to prepare for the next century of conservation.

During her remarks, Jewell also announced that the federal government will undertake a first-of-its-kind study to analyze the impact outdoor recreation has on the nation's economy. The Commerce Department's Bureau of Economic Analysis feasibility study will present detailed and defensible data on the importance of outdoor recreation as a distinct component of the economy that can help inform decision making and management of public lands and waters.

“By producing credible data on the tangible economic benefits of public lands, we can help the public and Members of Congress better understand the benefits of investing in them,” Jewell said. “Industry estimates show that consumer spending for outdoor recreation is greater than household utilities and pharmaceuticals combined – and yet the federal government has never fully recognized or quantified these benefits. This project is the start of a multi-year effort to count these contributions in a comprehensive and impartial way.”

Click here to [Watch Secretary Jewell's speech](#).



Two New Klamath Basin Agreements Signed *(DOI, 4/6)*

The U.S. Department of the Interior, U.S. Department of Commerce, PacificCorp, and the states of Oregon and California signed an agreement on April 6 that, following a process administered by the Federal Energy Regulatory Commission (FERC), is expected to remove four dams on the Klamath River by 2020, amounting to one of the largest river restoration efforts in the nation.

State and federal officials also signed a new, separate agreement with irrigation interests and other parties known as the 2016 Klamath Power and Facilities Agreement (KPFA). This agreement will help Klamath Basin irrigators avoid potentially adverse financial and regulatory impacts associated with the return of fish runs to the Upper Klamath Basin, which are anticipated after dams are removed.

This new agreement acknowledges that additional work is necessary to fully restore the Klamath Basin, advance the recovery of its fisheries, uphold trust responsibilities to the tribes, and sustain the region's farming and ranching economy. Many of these efforts will require Congressional action, and the agreement commits the signatories to actively cooperate with all Klamath Basin stakeholders – Members of Congress, tribes, farmers and others – to develop additional agreements over the next year to offer comprehensive solutions to these issues.

The signing ceremony took place at the mouth of the Klamath River on the Yurok Indian Reservation in Klamath. California Gov. Edmund G. Brown Jr., Oregon Gov. Kate Brown, U.S. Secretary of the Interior Sally Jewell, NOAA Administrator Dr. Kathryn Sullivan, and President and CEO of Pacific Power Stefan Bird participated in the event, along with Congressman Jared Huffman, tribes, water

users and non-governmental organizations from the Klamath Basin community.

The newly amended dam removal agreement, which uses existing nonfederal funding and follows the same timeline as



The Klamath River flows 263 miles through Oregon and northern California, emptying into the Pacific Ocean. (Photo by Tami Heilemann, DOI)

the original agreement, will be filed with FERC on or about July 1 for consideration under their established processes. Under the agreement, dam owner PacificCorp will transfer its license to operate the Klamath River dams to a private company known as the Klamath River Renewal Corporation. This company will oversee the dam removal in 2020. PacificCorp will continue to operate the dams until they are decommissioned.

“Today is a historic day where the parties who have worked for decades to restore the Klamath Basin are reaffirming their commitment to each other for the shared vision of fisheries restoration and irrigated agriculture co-existing as we move into the future,” said Secretary Jewell. “This agreement is an important initial step as we work toward a comprehensive set of actions to advance long term restoration and sustainability for tribes, fisheries, and agriculture and water users across the Klamath Basin.”

“These agreements are more than ink and paper, they are a roadmap

to the future of the Klamath Basin and of the people who live there,” said Governor Kate Brown. “I’m proud to be a part of a plan that invokes the spirit of collaboration to ensure the recovery of the Klamath’s historic fishing grounds while sustaining the region’s farming and ranching heritage.”

“PacificCorp continues to support the Klamath settlement as a fair way forward for our electricity customers in Oregon, California and beyond,” said Stefan Bird, president and CEO of Pacific Power, a division of PacificCorp. “The company is committed to continuing to work with our settlement partners to fully enact this important agreement.”

In 2010, Klamath Basin stakeholders signed the Klamath Basin Restoration Agreement (KBRA) and the Klamath Hydroelectric Settlement Agreement (KHSAs). In 2014, the Upper Klamath Basin Comprehensive Agreement (UKBCA) was signed. Members of the California and Oregon delegations introduced legislation in the past two Congresses to advance the hard-fought KHSAs and two related Klamath agreements. However, the U.S. Congress adjourned last year without authorizing them. The expiration of the KBRA last December caused uncertainty in moving forward with the KHSAs and UKBCA.

In early 2016, the parties, who have spent years negotiating the pacts, resolved to find a new path forward. The amended KHSAs and the 2016 Klamath Power and Facilities Agreement are the result of those collaborative discussions.

The four PacificCorp dams on the Klamath River are operated for hydroelectric power generation. Modern environmental laws require that the dams need to be retrofitted to provide fish passage for salmon, steelhead and other fish. The Oregon and California public utility commissions found that the original KHSAs was a prudent alternative for PacificCorp’s customers.

New USGS Flood Preparedness App *(USGS, 4/28)*

During the recent Texas flooding, the U.S. Geological Survey (USGS) unveiled a new tool that gives users real-time water, weather and National Weather Service (NWS) flood forecast information all in one place. When water levels are rising, it can be hard to quickly get all the information you need about your area, especially when you’re not in front of a computer.

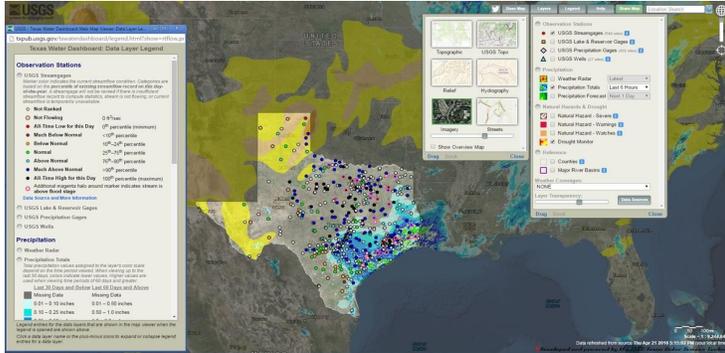
The new [USGS Texas Water Dashboard](#) is a cutting-edge map that provides critical current water information and NWS forecast data at your fingertips on a desktop, smartphone or other mobile device. This is a first-generation product that brings real-time USGS data together in a web mashup with information from the NWS and other sources. Real-time groundwater levels can also be found on the map. This information could be useful for water managers in making informed decisions about local resources.

The USGS will explore the potential value of this product to the public, and could possibly expand its reach to include the rest of the nation in the future.

With the help of Twitter, The USGS has also developed two new fully-autonomous feeds distribute water level and precipitation data: USGS TX FloodWatch ([@USGS_TexasFlood](#)) and USGS TX RainWatch ([@USGS_TexasRain](#)). The FloodWatch feed automatically sends out tweets anytime one of about 300 selected



USGS streamgages throughout the state rises above the NWS-defined flood level, and delivers information within minutes. The RainWatch feed tweets when rainfall exceeds a rate of 0.4 inches per hour.



Texas Water Dashboard App showing places with increasing versus decreasing flow (click the map to read more).

The Twitter feeds and Texas Water Dashboard can do more than assist residents during flooding. Understanding weather and streamflow can help determine the best places to go boating, fishing or hiking. It can also help recreationalists and landowners understand if stream levels are rising or falling at any given time.

To read more on these applications click the above map.

Forest Service Study Shows Mountain Streams Offer Climate Refuge *(USFS, 4/4)*

A new study offers hope for cold-water species in the face of climate change. The [study](#), published April 4, 2016 in the Proceedings of the National Academy of Sciences addresses a longstanding paradox between predictions of widespread extinctions of cold-water species and a general lack of evidence for those extinctions despite decades of recent climate change.

The paper resulted from collaborative research led by the U.S. Forest Service with partners including the U.S. Geological Survey (USGS), National Ocean and Atmospheric Administration (NOAA), University of Georgia and the Queensland University of Technology. The research team drew information from huge stream-temperature and biological databases contributed by over 100 agencies and a USGS-run regional climate model to describe warming trends throughout 222,000 kilometers (138,000 miles) of streams in the northwestern United States.

The scientists found that over the last 40 years, stream temperatures warmed at the average rate of 0.10 degrees Celsius (0.18 degrees Fahrenheit) per decade. This translates to thermal habitats shifting upstream at a rate of only 300-500 meters (0.18-0.31 miles) per decade in headwater mountain streams where many sensitive cold-water species currently live. The authors are quick to point out that climate change is still detrimentally affecting the habitats of those species, but at a much slower rate than dozens of previous studies forecasted. The results of this study indicate that many populations of cold-water species will continue to persist this century and mountain landscapes will play an increasingly important role in that preservation.

“The great irony is that the cold headwater streams that were believed to be most vulnerable to climate change appear to be the least

vulnerable. Equally ironic is that we arrived at that insight simply by amassing, organizing and carefully analyzing large existing databases rather than collecting new data that would have been far more expensive,” said Dr. Daniel Isaak, lead author on the study with the U.S. Forest Service.

The results also indicate that resource managers will have sufficient time to complete extensive biological surveys of ecological communities in mountain streams so that conservation planning strategies can adequately address all species.

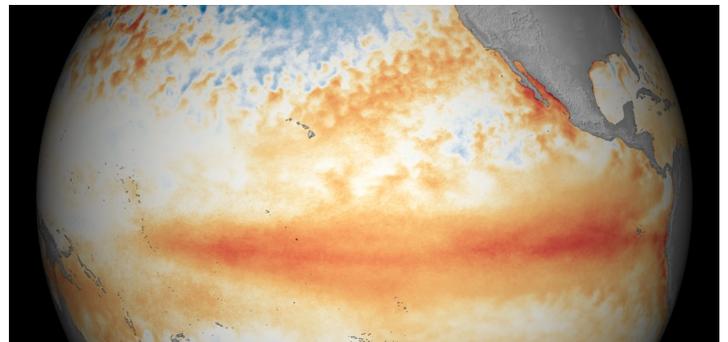
“One of the great complexities of restoring trout and salmon under a rapidly changing climate is understanding how this change plays out across the landscape. Dr. Isaak and his colleagues show that many mountain streams may be more resistant to temperature change than our models suggest and that is very good news. This provides us more time to effect the changes we need for long term persistence of these populations,” said Dr. Jack Williams, Senior Scientist for Trout Unlimited.

This study is complementary and builds upon the [Cold-Water Climate Shield](#). This new study is unique as it describes current trends rather than relying on future model projections and addresses a broad scope of aquatic biodiversity in headwater streams (e.g., amphibians, sculpin, trout, etc.). In addition, the data density and geographic extent of this study is far greater than most previous studies because over 16,000 stream temperature sites were used with thousands of biological survey locations to provide precise information at scales relevant to land managers and conservationists.

El Niño Weakens, But His Sister Might Be Coming *(NOAA, 4/14)*

Weather and climate patterns around the globe will see some changes as the 2015–16 strong El Niño is on the decline and predicted to end by early summer. On its heels, potentially, is La Niña.

In its April update, NOAA forecasters issued a La Niña watch, meaning that conditions were favorable for La Niña to develop within the next six months. While chances are greater that La Niña



Click the image to read more on El Niño and La Niña

could develop by fall, not all El Niños are followed by La Niñas.

La Niña — the opposite of El Niño — is a natural ocean-atmospheric phenomenon marked by cooler-than-average sea surface temperatures in the central Pacific Ocean near the equator. During the winter, typical La Niña effects include drier and



warmer-than-average temperatures over the southern United States, and cooler-than-average temperatures in the southern tier of Alaska, Pacific Northwest and across the Midwest.

Both El Niño and La Niña influence Atlantic hurricane formation. El Niño often leads to fewer hurricanes because of stronger wind shear which rips potential hurricanes apart. La Niña tends to reduce that wind shear — potentially meaning more hurricanes.

WestFAST Reviews USGS Study on the Importance of Base Flow in Colorado River Basin Streams and Rivers

WestFAST representatives collaborate among themselves to improve efficiency in carrying out their agencies' water-related missions. In this role, WestFAST initiated a "Special Topics" Webinar Series to present, and allow discussion on a range of WestFAST federal agency water-resource activities with the objective of improving awareness of and collaboration in water programs.

On May 13th WestFAST will provide a briefing from the USGS on a recent study of the importance of base flow in sustaining surface water flow in the Upper Colorado River Basin. USGS Research Hydrologist Matthew Miller will discuss how scientists used a new method to more accurately estimate the percentage of groundwater in streamflow, finding that more than half of the streamflow in the Upper Colorado River Basin originates as groundwater. A model has been developed to assess the spatial distribution of base flow, the fraction of streamflow supported by base flow, and estimates of and potential processes contributing to the amount of base flow that is lost during in-stream transport in the Upper Colorado River Basin. Study findings and resulting modeling tools can aid decision makers in effectively managing current and future water resources in the Colorado River Basin.

Click [here](#) to get webinar information and to see presentation slides.

Federal News

4/4: [New Tool and Knowledge to Aid Columbia Basin Water Managers](#)

4/4: [Cold Mountain Streams Offer Climate Refuge](#)

4/8: [NOAA Satellite Data Aids the Nation's Agricultural Forecasts](#)

4/8: [Near Normal Snowpack in Most of the West](#)

4/8: [Reclamation Issues Snowmelt Forecast for North Platte](#)

4/8: [Reclamation Releases 2016 Klamath Project Water Allocation and Operations Plan](#)

4/11: [Methane from Some Wetlands May Lower Benefits of](#)

[Carbon Sequestration](#)

4/13: [New Willamette River Flood Inundation Maps to Aid Residents and Emergency Managers](#)

4/15: [Technical Manual to Help Inform River and Stream Professionals in Management of Wood Projects Throughout the United States Now Available from Bureau of Reclamation](#)

4/19: [For 11th straight month, the globe was record warm](#)

4/19: [Reclamation and U.S. Army Corps of Engineers to Re-release 2016 Annual Operating Plan for Middle Rio Grande](#)

4/20: [Mystery Solved: Traits Identified for Why Certain Chemicals Reach Toxic Levels in Aquatic Food Webs](#)

4/20: [Community flood protection may also help endangered salmon to thrive](#)

4/20: [Secretary Jewell Announces Nearly \\$49 Million in Grants to Protect Waterfowl, Other Bird Species in United States, Canada and Mexico](#)

4/26: [San Joaquin River Restoration Program Extends Comment Period for South Valley Groundwater Banking Project](#)

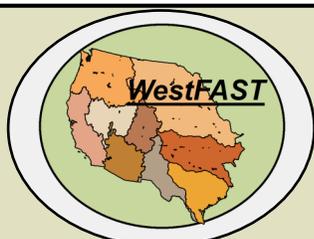
4/26: [NRCS to Help Farmers Measure Conservation Impacts on Water Quality](#)

4/28: [Nitrogen in Lakes Connected to Groundwater](#)

4/29: [Mapping Water Use: Landsat and America's Water Resources](#)

Upcoming WSWC Meetings & Events

- May 24-26, 2016, [National Soil Moisture Network Workshop](#), Boulder CO
- June 7-9, 2016, [Workshop on Advancing Sub-seasonal to Seasonal \(S2S\) Precipitation Forecasting](#), San Diego Doubletree Downtown, San Diego CA
- June 11-14, 2016, [Western Governors Association Annual Meeting](#), Jackson Hole, WY
- July 12-15 [Western States Water Council 181st \(Summer\) Council Meeting](#), Bismarck, ND



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