

A Partnership in Building Resilience: NIDIS Pacific Northwest Drought Early Warning System (PNW DEWS)

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Deputy Director

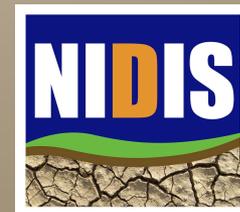
The National Integrated Drought Information System

NOAA

Boulder, CO



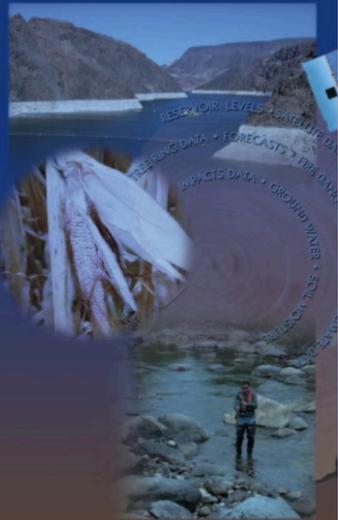
February 2, 2016
Portland, OR



The creation of NIDIS began with a partnership

Creating a Drought Early Warning System for the 21st Century

The National Integrated Drought Information System



Western Governors' Association • June 2015

Water Needs and Strategies for a Sustainable Future



Western Governors' Association • June 2015

Water Needs and Strategies for a Sustainable Future: Next Steps



Western Governors' Association • June 2015

SPECIAL REPORT
JUNE 2015

Western Governors' Drought Forum

Chairman's Initiative of Nevada Gov. Brian Sandoval



WESTERN GOVERNORS' ASSOCIATION

westgov.org/drought-forum



NIDIS 2014: Public Law 113-86

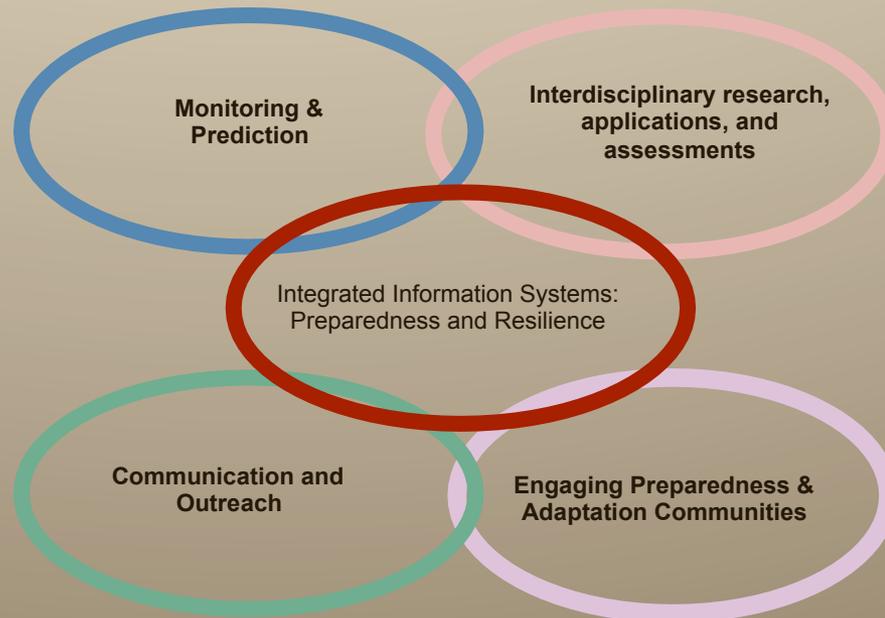
“Today, I signed the National Integrated Drought Information System Reauthorization Act into law.....to help communities better prepare for droughts..., and prevent the worst impacts on families and businesses”

March 6, 2014. President Obama



“develop and expand the Regional Drought Early Warning Information Systems”

May, 2014



From Risk to Resilience: Research-based Integrated Information Systems

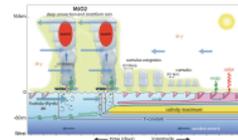


- Develop and coordinate partnerships: networks of practitioners public-private: map decision-making arrangements
- Advance earth system observations and prediction capabilities
 - Construct risk profiles: the role of rates of change in trends, frequency, and magnitude of extremes at different scales
- Capacity and Coordination: Integrate Research, Observations, and Assessments into early warning information on critical transitions and capacity for response
- Overcoming impediments
 - Do this for a long time

Science for Resilience

NOAA Climate Program Office's research programs and expertise help the nation understand, anticipate and respond to climate-related changes in water resources and water-related hazards.

Prediction Skill

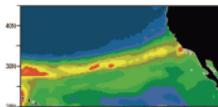


NOAA works to advance understanding and modeling of the climate system to improve forecast reliability—and usability—for droughts and floods.

LINKS AND RESOURCES

- CPO's Climate Observations and Monitoring Program: bit.ly/ClimateObs
- CPO's Climate Variability & Predictability Program: bit.ly/ClimateCVP
- Modeling, Analysis, Predictions, & Projections Projects: bit.ly/MAAPPProjects
- Madden-Julian Oscillation: bit.ly/ExplainingMJO
- North American Multi-Model Ensemble: bit.ly/NA-MME

Better Understanding



Atmospheric river making landfall in Colorado.

NOAA aims to improve understanding of the role precipitation events and land surface conditions have on amplifying or reducing drought and flood impacts.

LINKS AND RESOURCES

- Report: Origins of the 2012 Great Plains Drought: bit.ly/2012Drought
- SARP Case Studies: Water Resource Strategies and Information Needs in Response to Extreme Weather and Climate Events: bit.ly/ExtremeEventsCaseStudies
- Pacific Northwest RISAs: powerinc.org/projects

Communication Tools



U.S. Drought Monitor - April 7, 2015

NOAA is developing timely, accessible communication tools to inform preparedness and adaptation

LINKS AND RESOURCES

- U.S. Drought Monitor: droughtmonitor.unl.edu
- Managing Drought Risk on the Ranch: bit.ly/RanchDrought
- Colorado Floods: Western Water Assessment: bit.ly/ColoradoFloods
- Climate and Water Resources Data in the Klamath Basin: bit.ly/KlamathClimate
- SECC: Climate of the Southeast United States: bit.ly/SECC2014Report

Improved Coordination



NOAA coordinates across multiple partners, sectors, and regions to inform drought and flood risk management from watersheds to the nation's coasts.

LINKS AND RESOURCES

- Floodplains by Design: www.floodplainsbydesign.org/partnerships
- Regional Integrated Sciences and Assessment (RISA): bit.ly/RISAS
- Weekly Colorado Drought Assessment Webinars: bit.ly/ColoradoDroughtWebinars
- Drought Impacts Reporter: droughtreporter.noaa.gov/
- NDIS portal: www.ndis.gov

Crafting an Integrated Information System



To make the best decisions, stakeholders need access to more than just one piece of the puzzle. Integrated Information Systems are designed to evolve over time, offer opportunities for diverse participation, and integrate what we learn through practice.

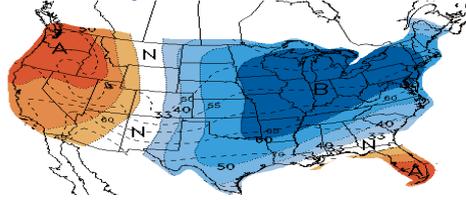
Define Demand



NOAA sustains engagement between climate and public health communities to **identify needs, develop solutions, and inform decisions.**

- **RISA and Heat Health**
In New York City: www.CCRUN.org
In North Carolina: www.CISA.SC.edu
In Arizona: www.CLIMAS.arizona.edu
- **CDC Climate and Health Program:**
www.CDC.gov/climateandhealth

Improve Forecasts



NOAA works to **improve current heat forecasts** based on user need and to extend heat projections from weeks to months and beyond.

- **Climate Variability & Predictability Program (CVP):**
bit.ly/AboutCVP
- **Modeling, Analysis, Predictions, & Projections Program (MAPP):** bit.ly/MAPPprojects
- **Madden-Julian Oscillation:** bit.ly/MJOandTemp
- **Climate Prediction Center Temperature Outlooks:**
www.CPC.NCEP.NOAA.gov

Observe & Monitor



NOAA works to sustain observations that support **improved understanding of the role of climate on extreme heat** and enhance operational efforts.

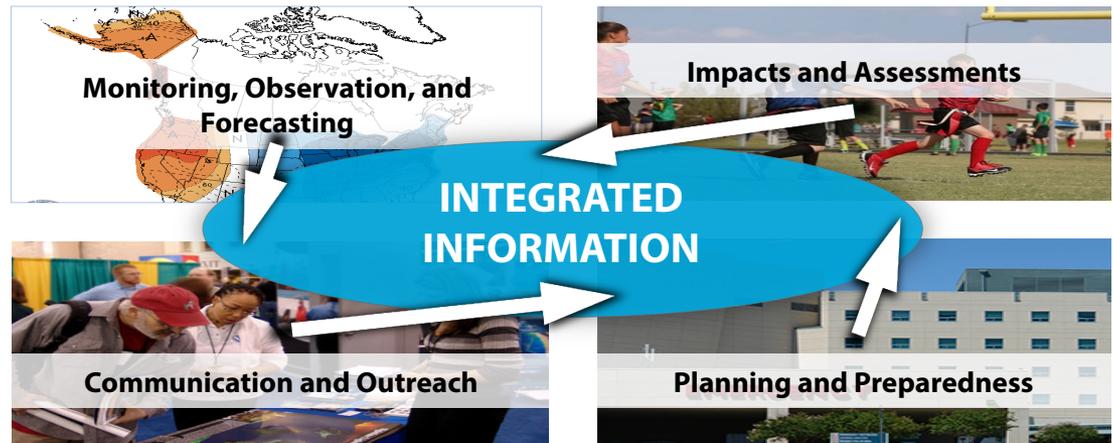
- **Climate Observations and Monitoring (COM):**
bit.ly/ClimateObs
- **CDC National Environmental Public Health Tracking Program:**
bit.ly/CDC-NEHTP

Understand & Communicate

NOAA research **enhances understanding** and impact of extreme heat events across time scales, **builds capacity** across climate and public health communities, and develops timely and accessible communication tools **to inform preparedness and adaptation.**

- **U.S. Climate Resilience Toolkit and Human Health:**
toolkit.climate.gov/topics/human-health
- **Regional Integrated Sciences and Assessment (RISA):**
bit.ly/CPORISA
- **Coastal and Ocean Climate Applications Program (COCA):**
bit.ly/CPO-COCA

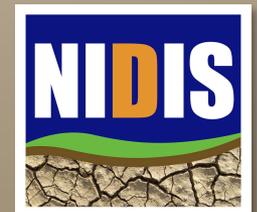
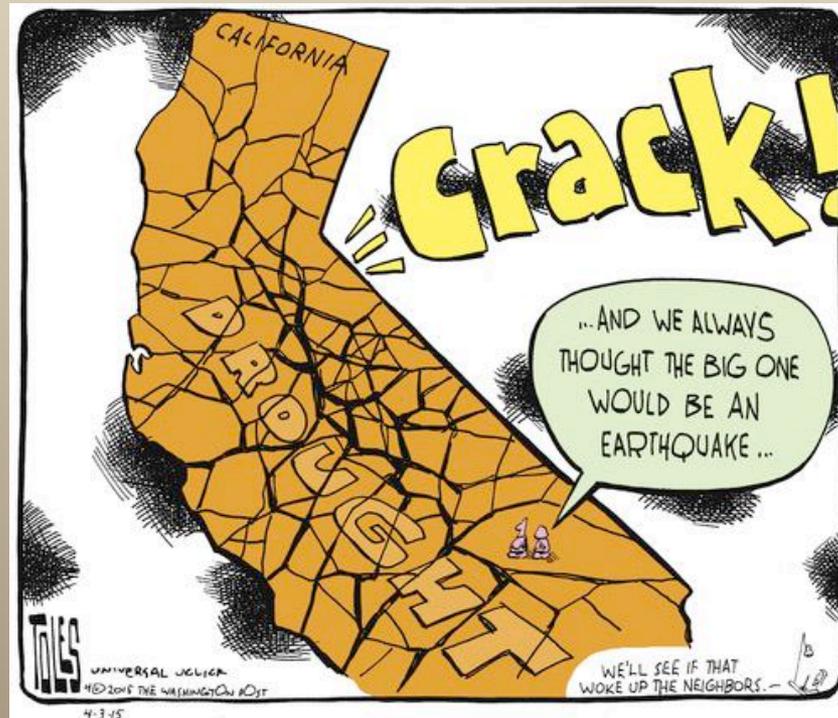
Crafting an integrated information system



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What *really* is Drought Early Warning?

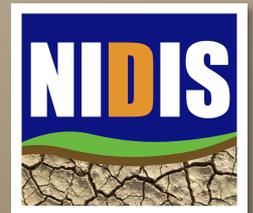
Provision of timely and effective information, through identified institutions, that allows individuals exposed to a hazard to take action to avoid or reduce their risk and prepare for effective response¹



¹International Strategy for Disaster Reduction

What is a NIDIS Drought Early Warning System?

A DEWS utilizes new and existing partner networks to optimize the expertise of a wide range of federal, tribal, state, local and academic partners in order to make climate and drought science and impact data readily available, easily understandable and usable for decision makers; and to improve the capacity of stakeholders and economic sectors to better monitor, forecast, plan for and cope with the impacts of drought at all spatial and time scales.



NIDIS Goals

Drought information, research, education, policy and networking come together through the National Integrated Drought Information System.

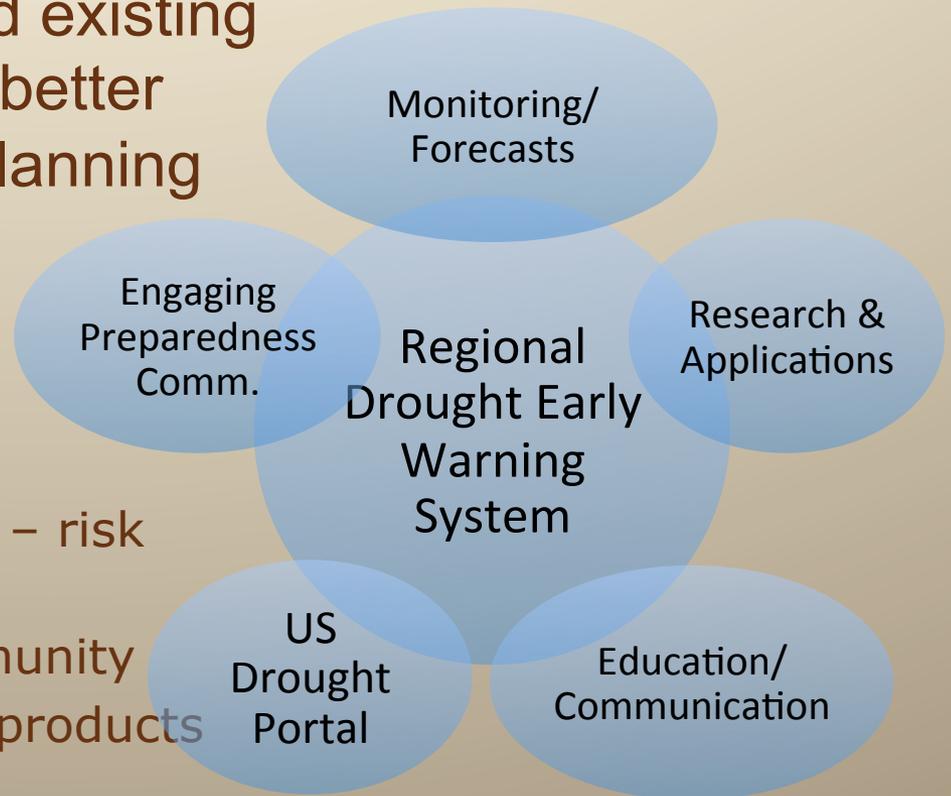
- Leadership and networking among all sectors of the economy and services to monitor, forecast, plan for and cope with the impacts of drought
- Support for research on the science of drought, including indicators, impacts, risk assessment and resilience
- Creation of regional early warning systems for drought
- Developing educational resources, interactive systems, and tools to promote sound decision making, drought awareness, and response



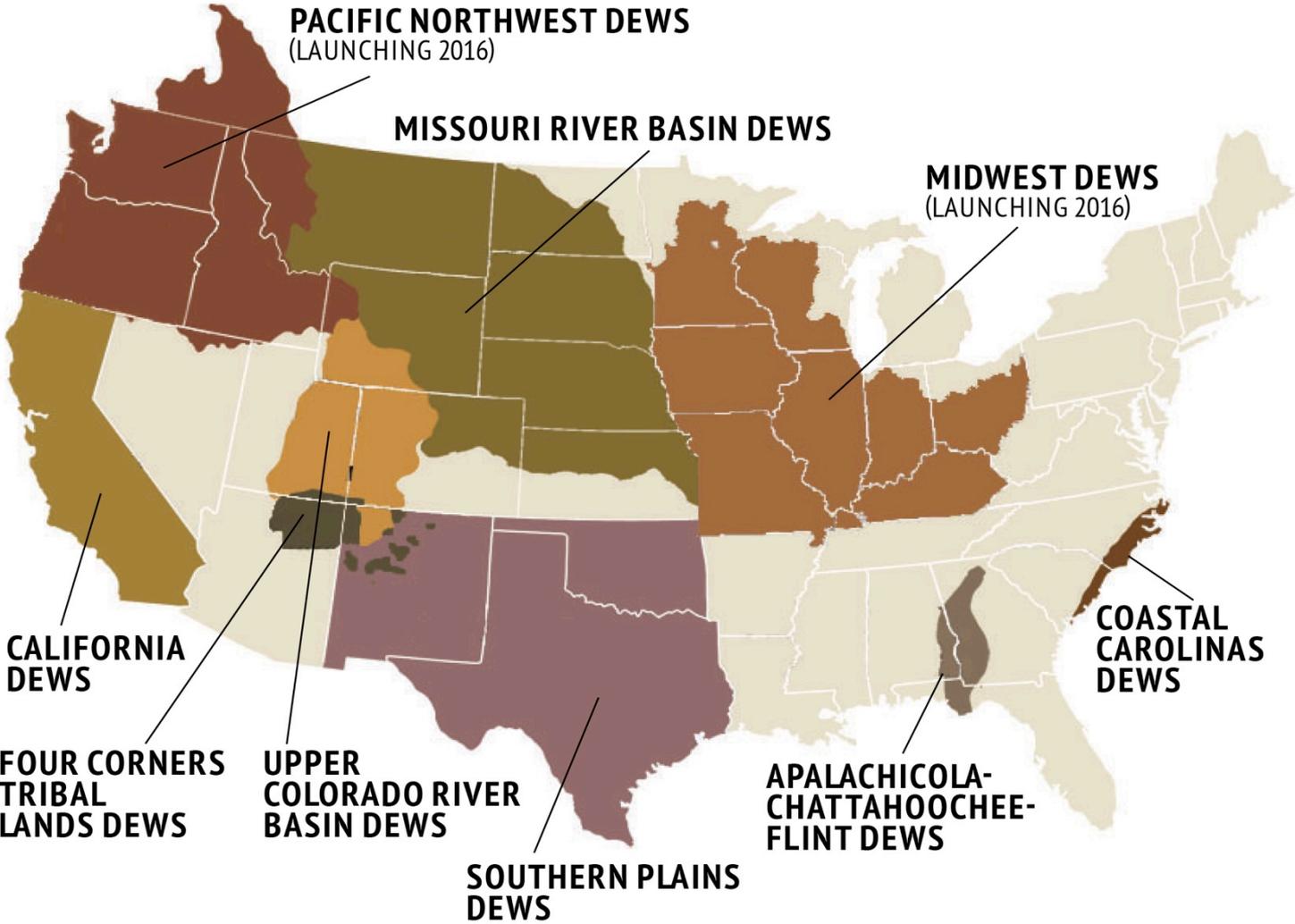
Regional Drought Early Warning Systems (DEWS)

Working with communities and existing networks to build capacity for better decision making for drought planning and mitigation.

- ❑ Drought assessments
- ❑ Climate outlook forums
- ❑ Education and outreach webinars – risk management
- ❑ Engaging the preparedness community
- ❑ Builds capacity to utilize existing products



NIDIS Drought Early Warning Systems



Examples of DEWS Activities

▪ Upper Colorado River Basin

- Snowpack monitoring workshops in CO, UT and WY
- Monthly/biweekly webinars
- Capacity development on the Wind River Reservation to support drought planning decision support tools

▪ Four Corners/Tribal Lands

- Effort to increase monitoring capacity using CoCoRaHS by USDA, NWS and Colorado Climate Center
- University of Arizona (supported by NOAA SARP/NIDIS) is working with Hopi Dept. of Natural Resources to develop a drought status-monitoring program

▪ California

- Drought/ENSO outlooks and outreach
- Sub-regional focus on research and activities



Examples of DEWS Activities

▪ Southern Plains

- Texas and Oklahoma Inter-agency Climate Extremes Workshop
- San Antonio Multi-Hazard Tournament

▪ Apalachicola-Chattahoochee-Flint (ACF) Basin

- Series of sub-regional workshops and one basin-wide workshop
- Monthly webinar series

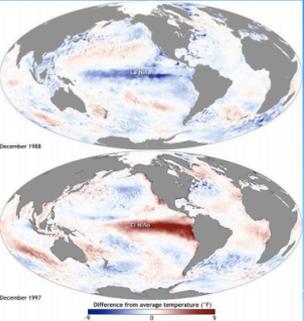
▪ Coastal Carolinas

- CoCoRaHS Citizen Science Conditions Monitoring project
- Coastal Drought Index

▪ Missouri River Basin

- Tribal capacity building for drought plans, vulnerability assessment, leveraging federal resources
- Monthly webinar series

Upper Missouri Basin Climate/Drought Early Warning Webinar: El Niño



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NIDIS
National Integrated Drought Information System

NARR
National Centers for Environmental Prediction

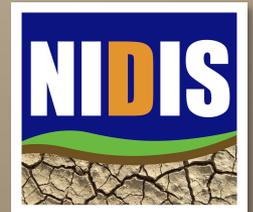
AASC
AMERICAN ASSOCIATION OF STATE CLIMATOLOGISTS

Photo taken Feb. 2000

Sea Surface Temperatures - 1988 La Niña and 1998 El Niño

Status of PNW DEWS Development Process

- May 4, 2015:
 - Inland Drought Outlook in Boise, ID
- September 22, 2015:
 - Coastal Drought Outlook in Vancouver, WA
- November 5, 2015:
 - Listening Session at PNW Climate Science Conference in Coeur d'Alene, ID
- February 2-3, 2016:
 - PNW DEWS Kickoff Meeting in Portland, OR



Year 1: Scoping the Drought Early Warning Information System

Gap analyses: What information exists and how is it being coordinated and used? Characterize and communicate risks across timescales-with existing information for 2-3 critical issues

Develop subteams to assess (1) Monitoring and forecasting; (2) Impact indicators and triggers (3) Preparedness and education:

Assemble drought-sensitive planning indicators and management triggers database; Assess present drought information coordination partnerships and processes

Identify Federal and state-level partnerships, decision support tools and actions needed (to improve information development, coordination and flow for preparedness and risk reduction)

Develop an operational plan for designing and implementing an EWS process

Year 2. Implementation of the Drought Early Warning System (seasonal, multi-year, longer term trends):

**Develop drought sub-portals
Embed information into preparedness and adaptation plans
Establish network for ongoing briefings on impacts and projections across climate timescales**

Initiate development of a region or basin specific Drought Information Monitor and Portal (as a subset of the U.S. Drought Portal)

Develop decision support tools for demand projections and revise triggering criteria
Prototyping: **Given better data and information coordination would responses have been improved for past events? Assess (1) value of improved information using past conditions, (2) responses for projections/ scenarios (decadal, climate change), (3) feedback on priorities (e.g. data gaps) to Executive Council.**

Feedback into regional Drought Monitor and Portal. Early Warning System maintenance (Fed-state-tribal) and transfer to other sub-basins

Questions?

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