Federal Climate Collaboration in the Missouri Basin

Winter 2015 MRBIR Meeting – Omaha, NE

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Topics

- Two GAO Studies (Upper Basin Monitoring & NOAA/USACE Interactions)
- National Integrated Drought Information System (NIDIS) Actions: KS Tribal Effort, MT NDRP
- Missouri Basin Federal Climate Collaboration (MBFCC)
- Outlook (if time)

Pancake Ice – KC 2015

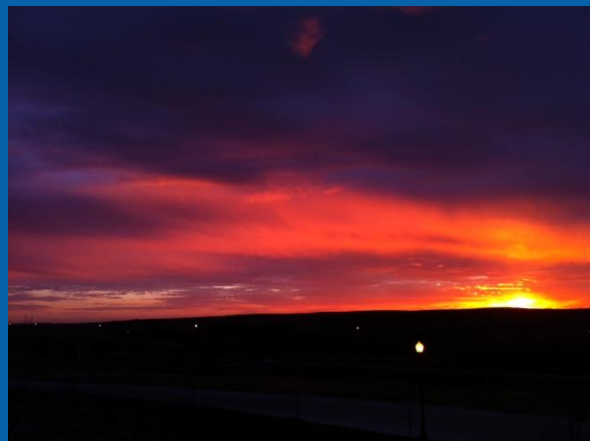
GAO Annual Update: Upper Basin Soil Moisture & Snow Water Equivalent Network

- Under WRRDA Language Annual Update
- No appropriations just authorized
- Thus no progress
- Based on the Feb. 2013 report
- USACE w/NOAA, NRCS, USGS mentioned

- Questions: Should we prep in case funds are found? Who leads? Who owns? Who runs/maintains? Funding elsewhere? Plenty of planning to do.

2nd GAO Review: Army Corps management of water resources in response to floods, storms, and droughts

- …the extent to which operations addresses water resources infrastructures risk of future flood, drought and storm damage
- planning processes for new water …"
- existing water resources…"
- NOAA is being asked to comment on how we are providing information and data



National Integrated Drought Information System (NIDIS) Missouri Basin

- Collaborative (fed, state, etc..) approach to building a drought early warning system (DEWS) and resiliency
- State Initiatives:
  - Montana/National Drought Resiliency Partnership
  - Kansas and South Dakota in 2015
- Missouri Basin Drought Portal
  - http://drought.gov/drought/regional-programs/mrb/missouri-river-basin-home

MO Basin Tribal Efforts (NIDIS)

- Missouri Basin Tribal Meeting – Sep. ’14
  - Feds: FEMA, USACE, NRCS, NOAA, BIA, NASA
- Kansas Based Tribes: drought early warning and preparedness meeting Nov. ‘14
  - Feds: USACE, FEMA, EPA, USDA, NOAA
  - Next steps: Apr. 1-2 (Lincoln)

NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM
MISSOURI RIVER BASIN
DROUGHT EARLY WARNING SYSTEM

TRIBAL ENGAGEMENT WORKSHOP, RAPID CITY, SEPT. 17-18, 2014

Participants from 18 tribes, academic institutions and federal and state agencies gathered at the Journey Museum and Learning Center in Rapid City for the two-day Missouri River Basin Tribes Workshop on Extreme Events and Drought Resiliency.

Tribes share observations, concerns, needs to develop drought resilience

Tribes in the Plains live in some of the most highly variable climatic locations in the U.S. The Missouri River Basin is known for extreme weather and climate variability, as evidenced by the stark contrast between flooding in 2011, followed by drought in 2012. Drought is a normal part of climate throughout the Basin, causing devastating impacts during the 1930s Dust Bowl, the 1950s, 1988-89, 2000-06, and 2012-13.

Extreme events, such as drought, flooding, and other climate and weather phenomena, will profoundly exacerbate growing demand on finite tribal resources. These extremes create new challenges and opportunities for problem-solving in Indian Country to ensure tribal sustainability and resiliency into the 21st Century.

In September 2014 tribal representatives, scientists, academicians and members of both state and federal governments gathered in Rapid City, S.D., to discuss drought and climate change, drought impacts, early warning systems, and planning for extreme events.

The meeting, sponsored by the National Integrated Drought Information System (NIDIS), focused on engagement with the tribes in the Missouri River Basin. Sixteen of twenty-eight tribes from the Basin were represented, as well as two tribes from Oklahoma with Missouri Basin roots.

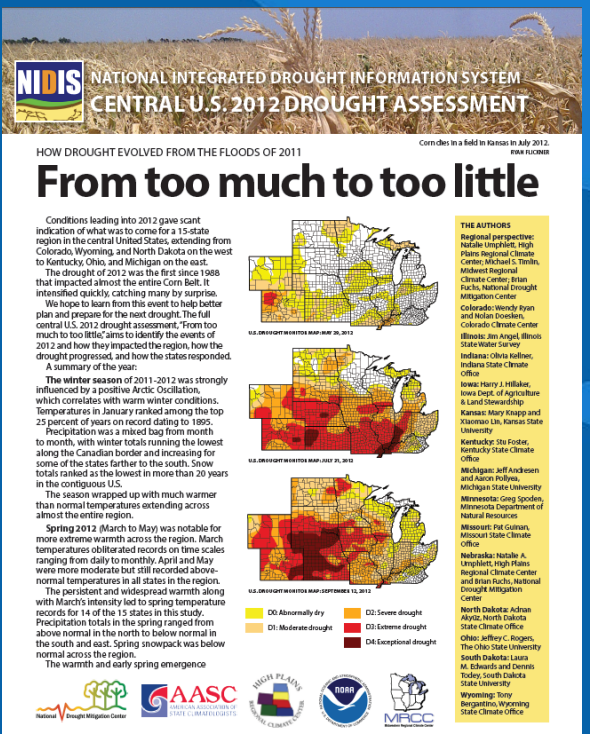
A goal of the workshop was for NIDIS and its partners to share information about the history and culture of the tribes which reside within the Missouri River drainage, specifically about local weather and

PARTICIPATING TRIBES
Standing Rock Sioux Tribe
Sisseton Wahpeton Sioux Tribe
Flandreau Santee Sioux Tribe
Crow Creek Sioux Tribe
Lower Brule Sioux Tribe
Rosebud Sioux Tribe
Oglala Sioux Tribe
Ponca Tribe of Nebraska
Santee Sioux Tribe
Iowa Tribe of Kansas and Nebraska
Sac and Fox Nation of Missouri in Kansas and Nebraska
Crow Tribe
Gros Ventre & Assiniboine of Ft. Belknap
Eastern Shoshone and Northern Arapaho Tribes of Wind River
Kickapoo Tribe in Kansas
Cheyenne River Sioux Tribe
Cheyenne & Arapaho
Iowa Tribe of Oklahoma

OTHER PARTICIPANTS
US Army Corps of Engineers
Kiksapa Consulting, LLC
Montana Department of Natural Resources and Conservation
NOAA National Weather Service
Louis Berger
Syntropy Energy / RE-AMP
United States Department of Agriculture – Agricultural Research Service
Little Big Horn College
South Dakota State University Extension
United States Department of Agriculture – Natural Resources Conservation Service – Central Technology Center
United States Department of Agriculture – Forest Service
National Oceanic and Atmospheric Administration
National Drought Mitigation Center, University of Nebraska – Lincoln
American Indian Higher Education Consortium
NOAA Climate Program Office
Bureau of Indian Affairs
North Central Climate Science Center, Colorado State University
National Aeronautics and Space Administration
Federal Emergency Management Agency – Mitigation Division
High Plains Regional Climate Center
Wolf Mountain Environmental
South Dakota State University / South Dakota State Climate Office

2012 Drought Assessment

- State by state assessment of impacts
- Economic damages
- Causes


NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM
CENTRAL U.S. 2012 DROUGHT ASSESSMENT

HOW DROUGHT EVOLVED FROM THE FLOODS OF 2011

Corn dies in a field in Kansas in July 2012. RYAN FLEDNER

From too much to too little

Conditions leading into 2012 gave scant indication of what was to come for a 15-state region in the central United States, extending from Colorado, Wyoming, and North Dakota on the west to Kentucky, Ohio, and Michigan on the east.

The drought of 2012 was the first since 1988 that impacted almost the entire Corn Belt. It intensified quickly, catching many by surprise.

We hope to learn from this event to help better plan and prepare for the next drought. The full central U.S. 2012 drought assessment, "From too much to too little," aims to identify the events of 2012 and how they impacted the region, how the drought progressed, and how the states responded.

A summary of the year:

The winter season of 2011-2012 was strongly influenced by a positive Arctic Oscillation, which correlates with warm winter conditions. Temperatures in January ranked among the top 25 percent of years on record dating to 1895.

Precipitation was a mixed bag from month to month, with winter totals running the lowest along the Canadian border and increasing for some of the states farther to the south. Snow totals ranked as the lowest in more than 20 years in the contiguous U.S.

The season wrapped up with much warmer than normal temperatures extending across almost the entire region.

Spring 2012 (March to May) was notable for more extreme warmth across the region. March temperatures obliterated records on time scales ranging from daily to monthly. April and May were more moderate but still recorded above-normal temperatures in all states in the region.

The persistent and widespread warmth along with March's intensity led to spring temperature records for 14 of the 15 states in this study. Precipitation totals in the spring ranged from above normal in the north to below normal in the south and east. Spring snowpack was below normal across the region.

The warmth and early spring emergence

U.S. DROUGHT MONITOR MAP | MAY 26, 2012

U.S. DROUGHT MONITOR MAP | JULY 31, 2012

U.S. DROUGHT MONITOR MAP | SEPTEMBER 13, 2012

D0: Abnormally dry
D1: Moderate drought
D2: Severe drought
D3: Extreme drought
D4: Exceptional drought

THE AUTHORS

Regional perspective: Natalie Umphlett, High Plains Regional Climate Center; Michael S. Timlin, Midwest Regional Climate Center; Brian Fuchs, National Drought Mitigation Center

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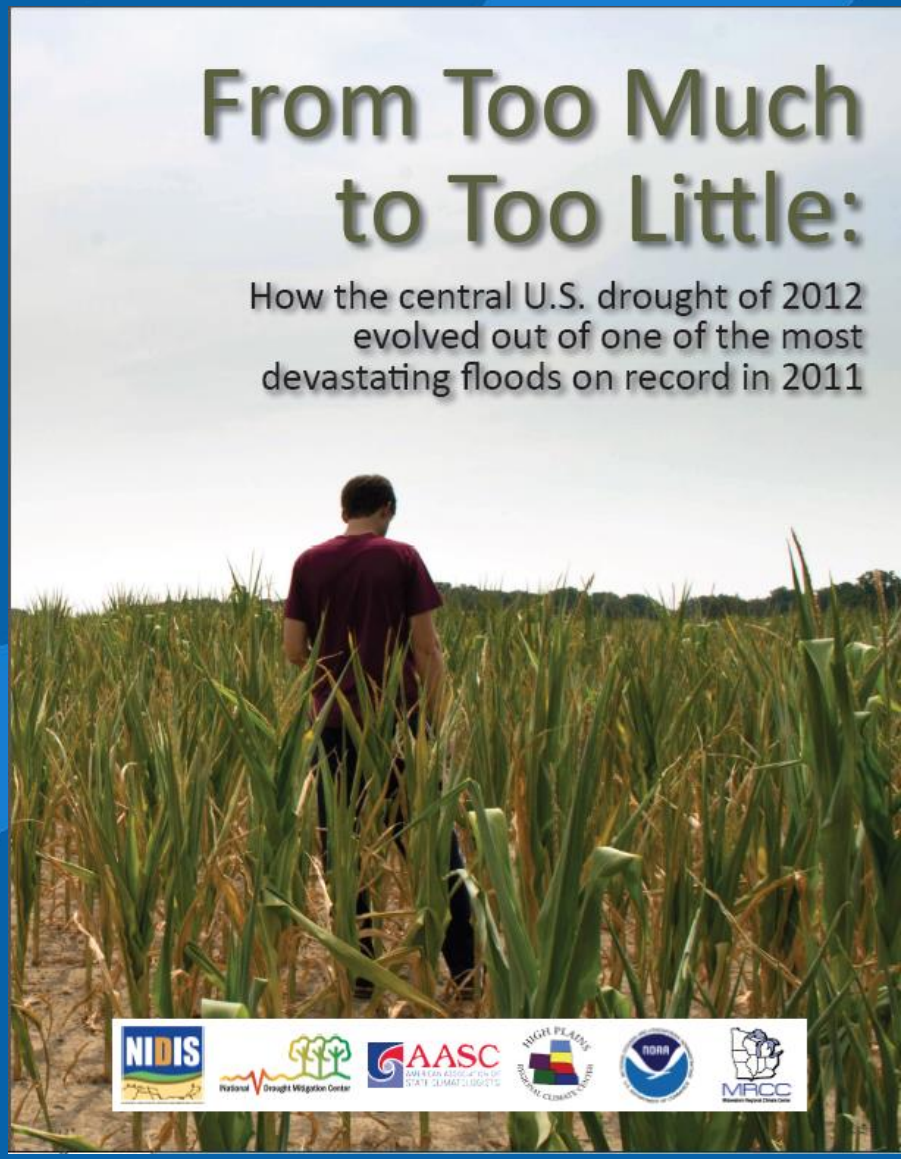


(http://www.drought.gov/drought/content/resources/reports)

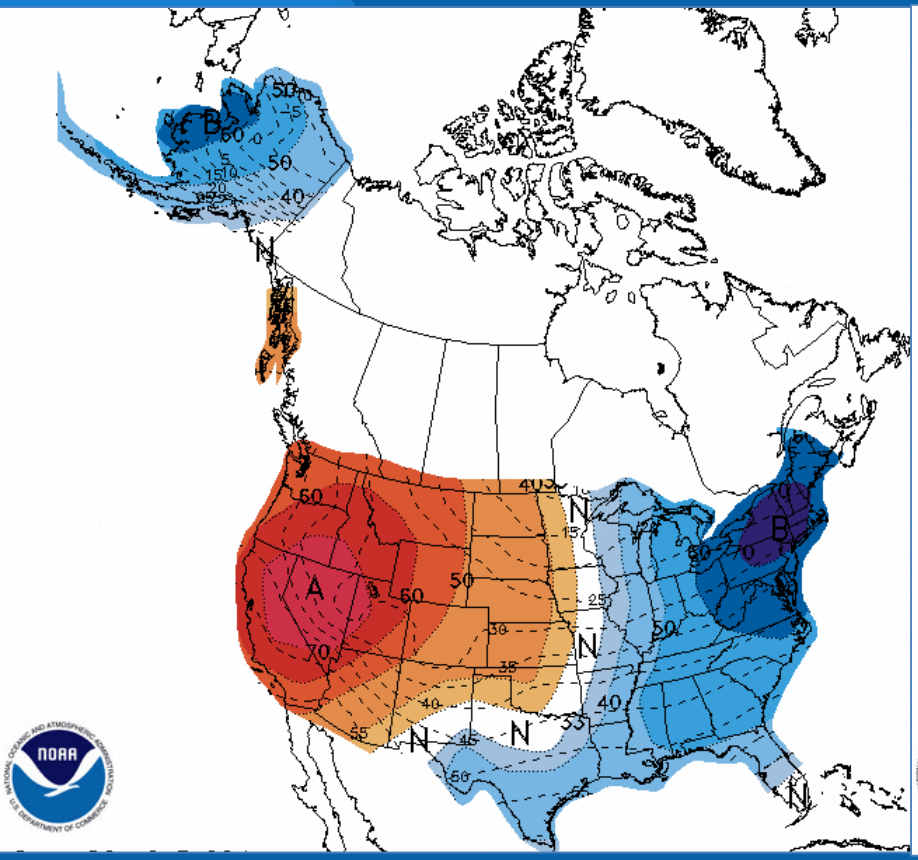
MO Basin Federal Climate Collaboration (MBFCC)

- Current awareness of issues/threats/indicators for drought and flood mainly
- Latest on WRRDA, GAO inquiries, agency updates
- New information via regional or national scene (e.g. U.S. Climate Resiliency Toolkit - toolkit.climate.gov)
- Upcoming related meetings

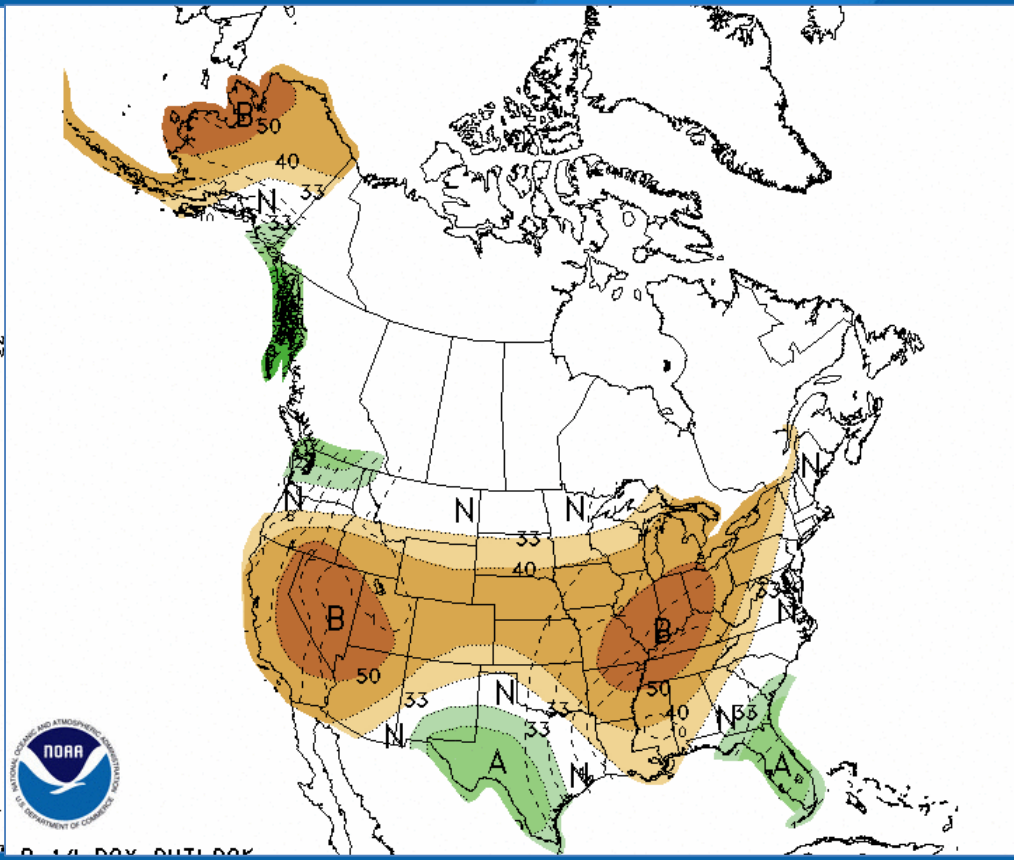
- Question: What else would you suggest we cover? (informing others, awareness, leveraging)

Outlooks

- Week 2 – Feb 3 – 9

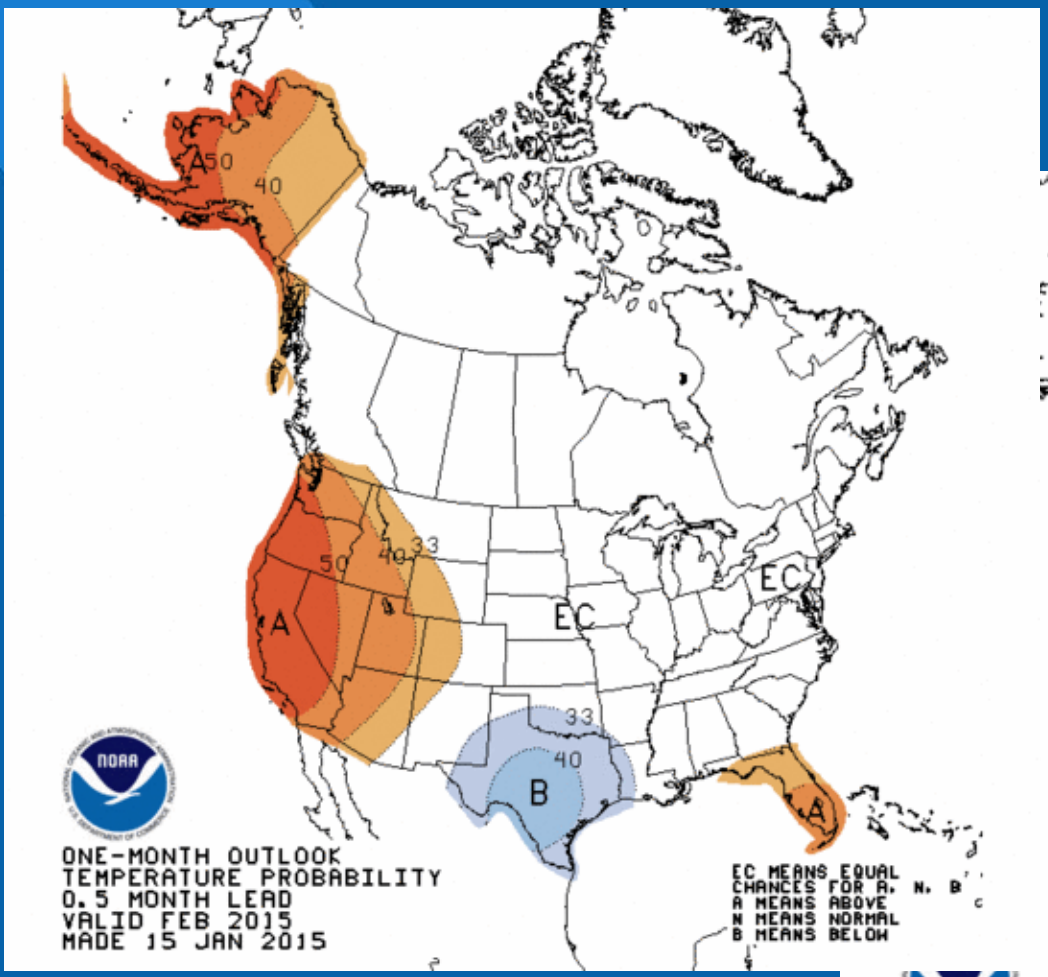


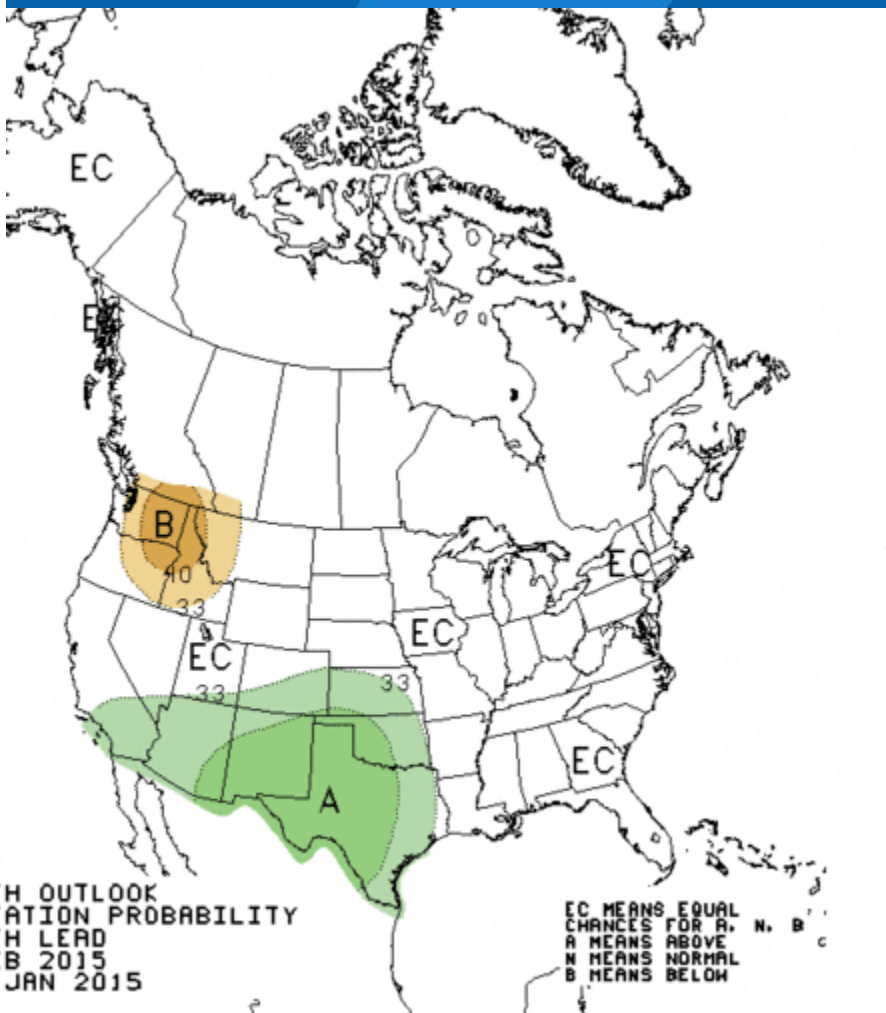
Temperature Probabilities



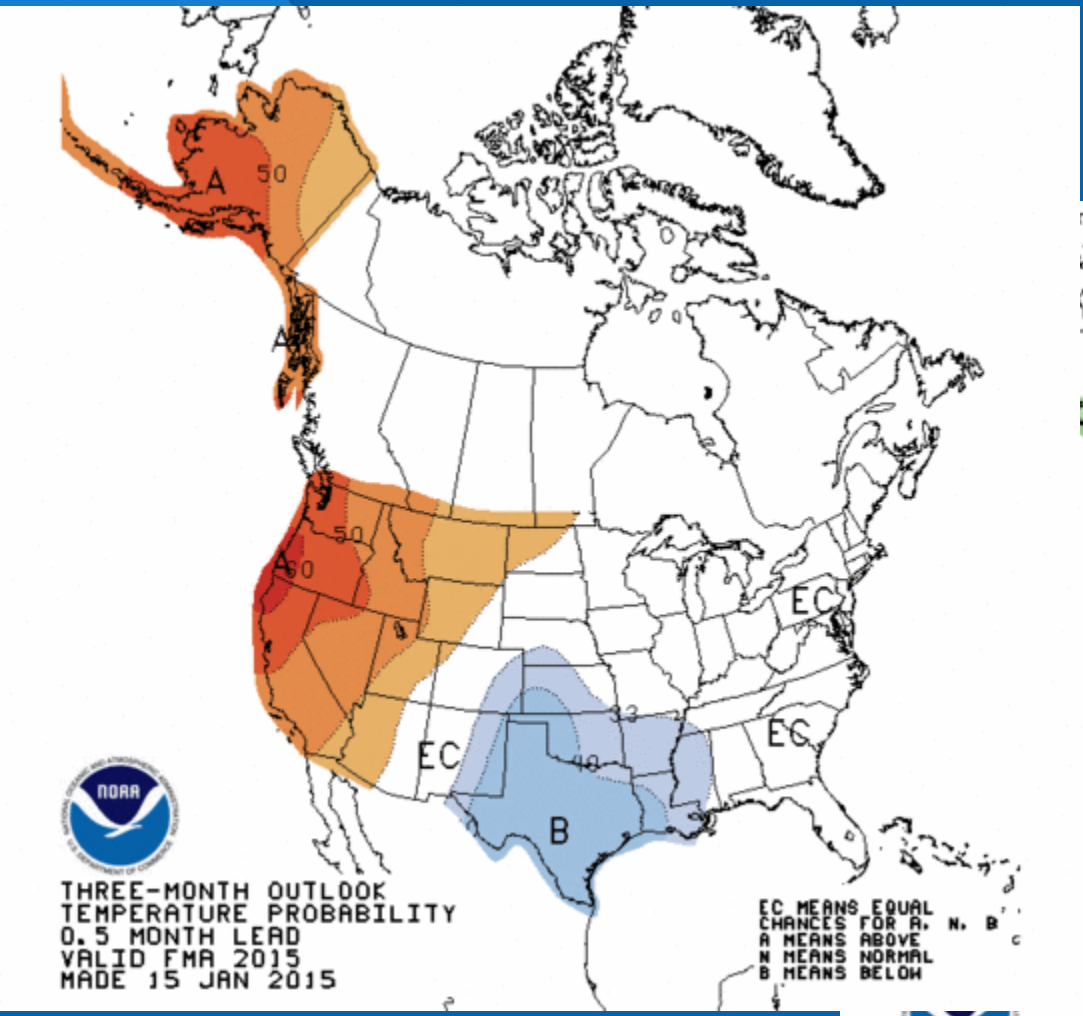
Precipitation Probabilities

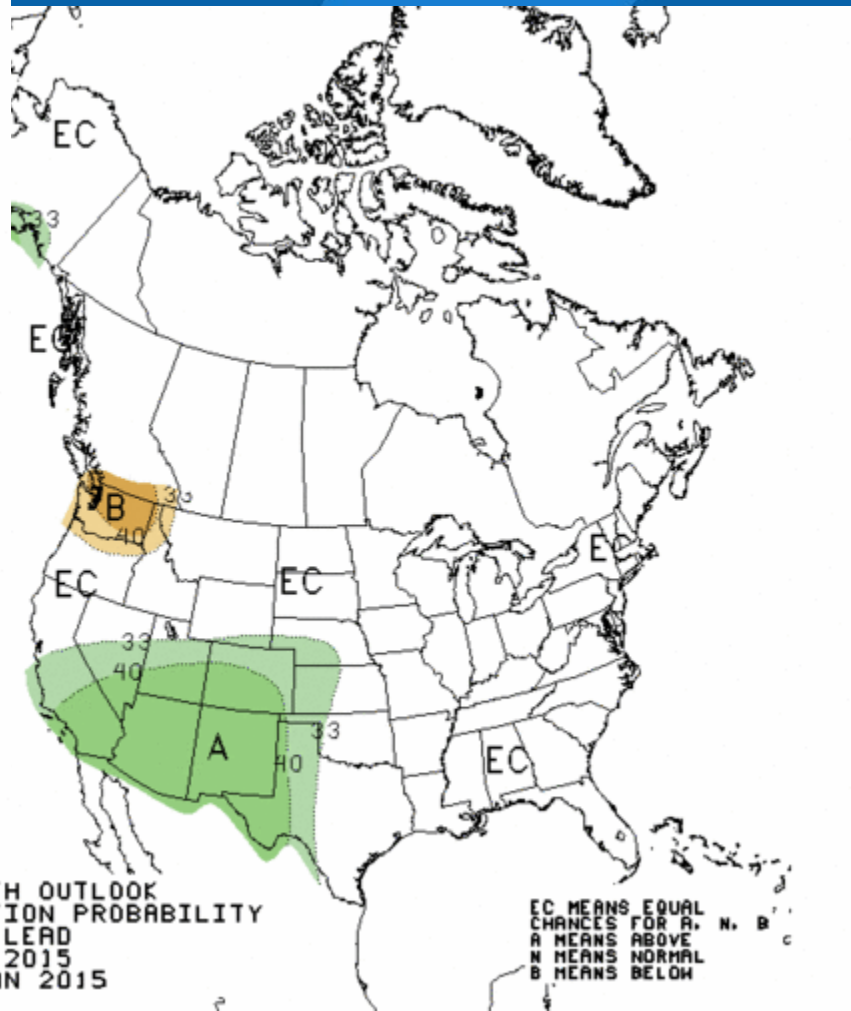
February Temps and Precip



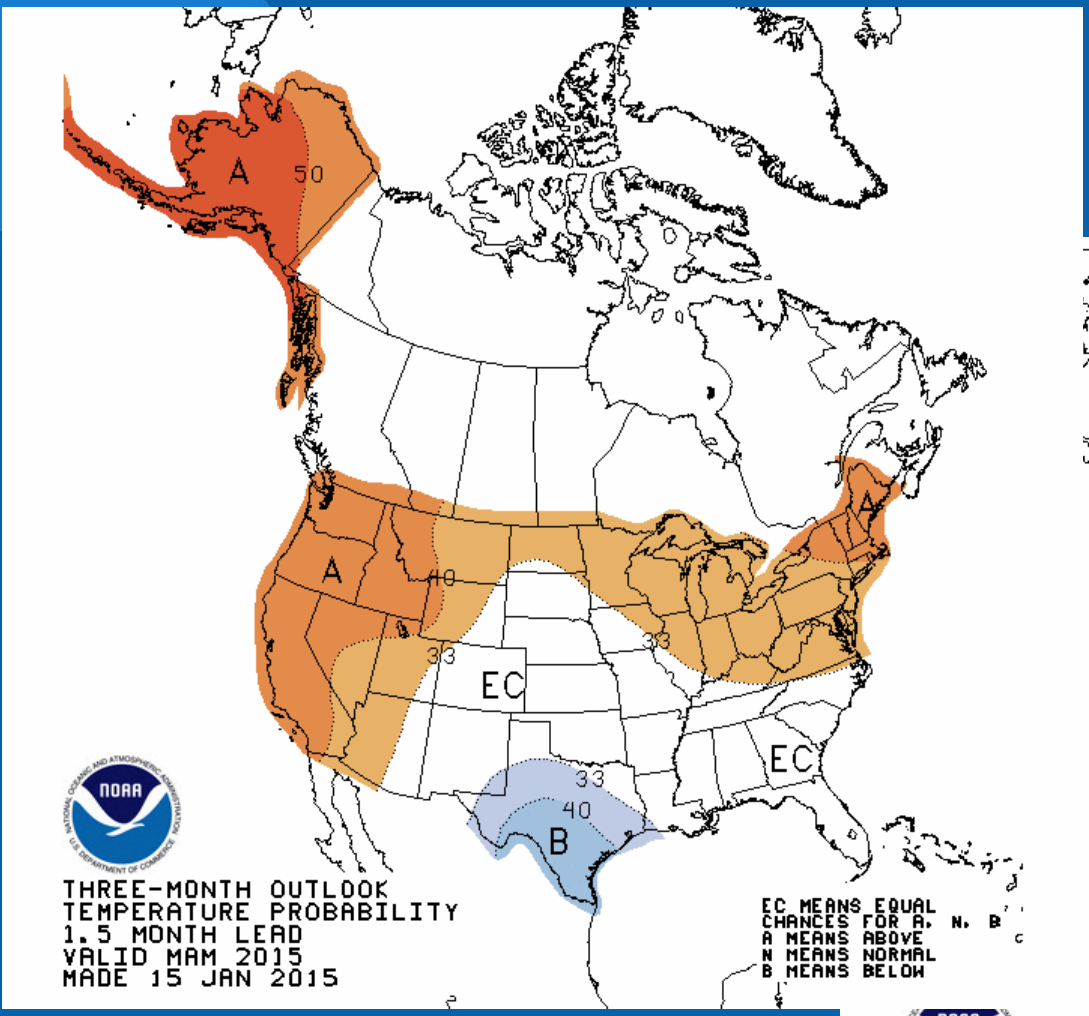


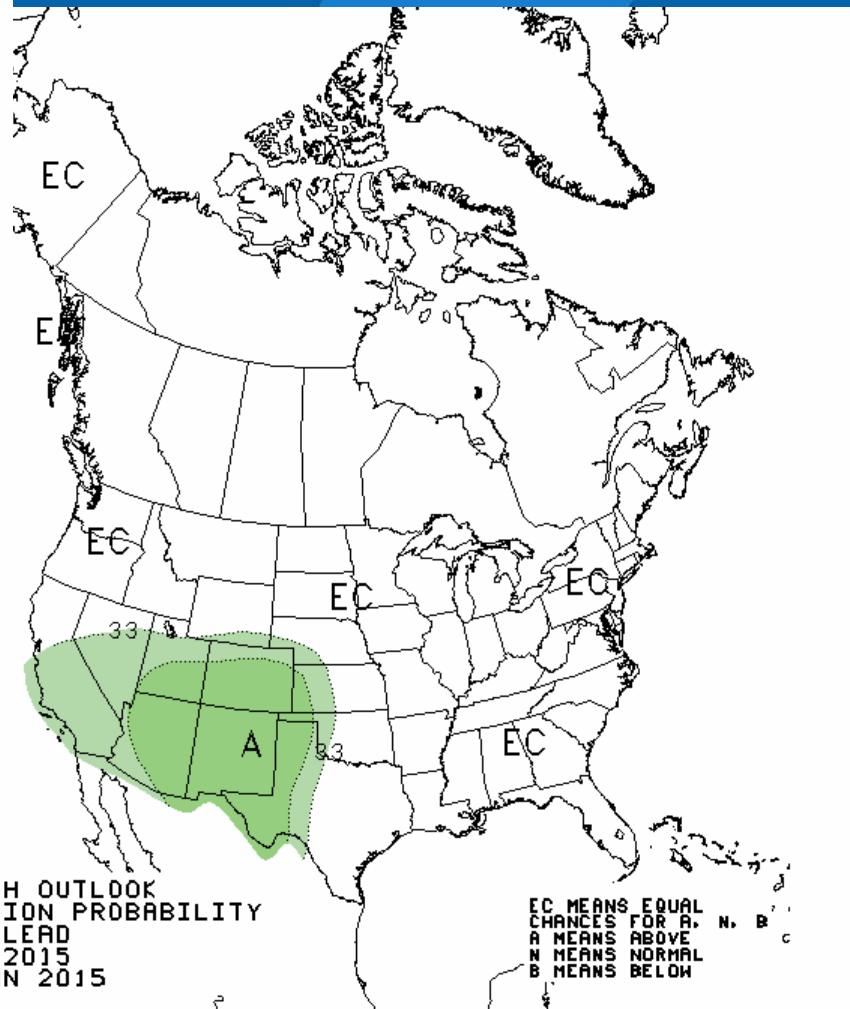
Feb – Apr Temps and Precip



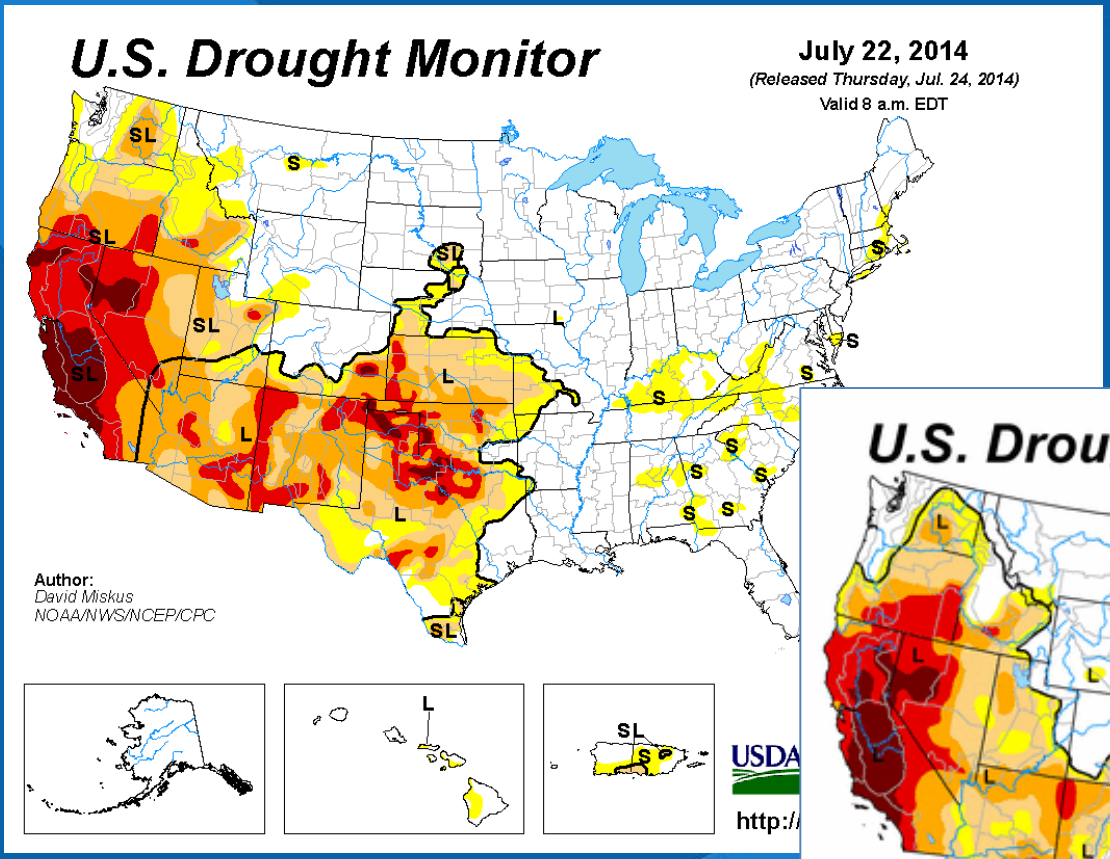


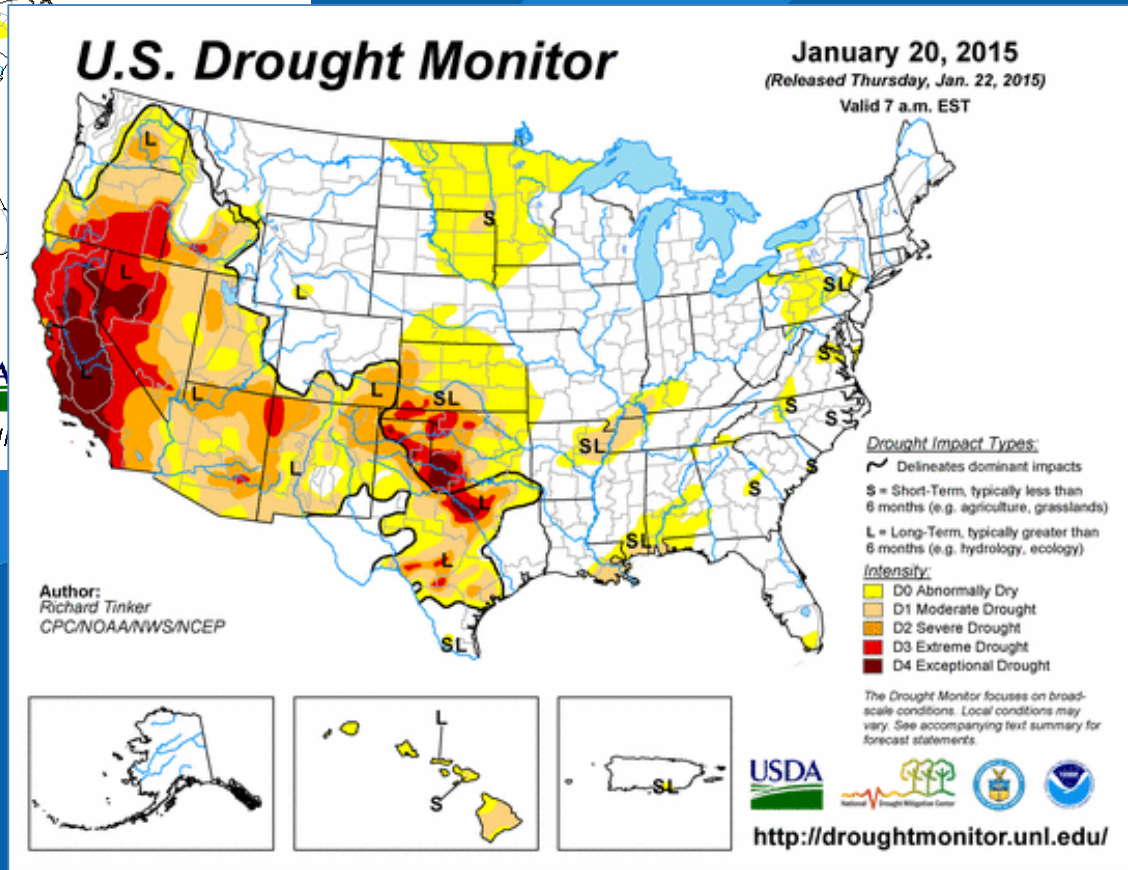
Mar – May Temps and Precip





Drought July 2014 and Now





Thanks (the man and bear got away)

Extra Slides

Federal Collaboration

- The objectives of this committee are to ***maximize communication, awareness and coordination*** among regional federal agencies while minimizing redundancy.

- USDA (RMA, ARS, NRCS, USFS), DOI (BLM, FWS, NPS, BOR, BIA, USGS), DOE (WAPA), EPA, DOC (NOAA), DOD (USACE), DHS (FEMA)

8 Primary Goals

- Exchange of information, create awareness, build capacity
- Provide a broader context and guidance for the various activities in the region
- Inform MRBIR on Missouri River Basin climate related activities
- Address national climate policy
- Support the collection, storage, instrumentation and maintenance of climate and weather data
- Response to extreme climate and weather events with communication and information delivery
- Recognized network of regional climate expertise and capacity
- Unified federal committee to coordinate with national programs and initiatives