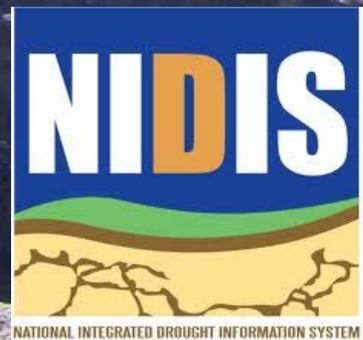


NIDIS UPPER COLORADO RIVER BASIN PILOT PROJECT

Wendy Ryan, Nolan Doesken, and
Rebecca Smith
Colorado Climate Center

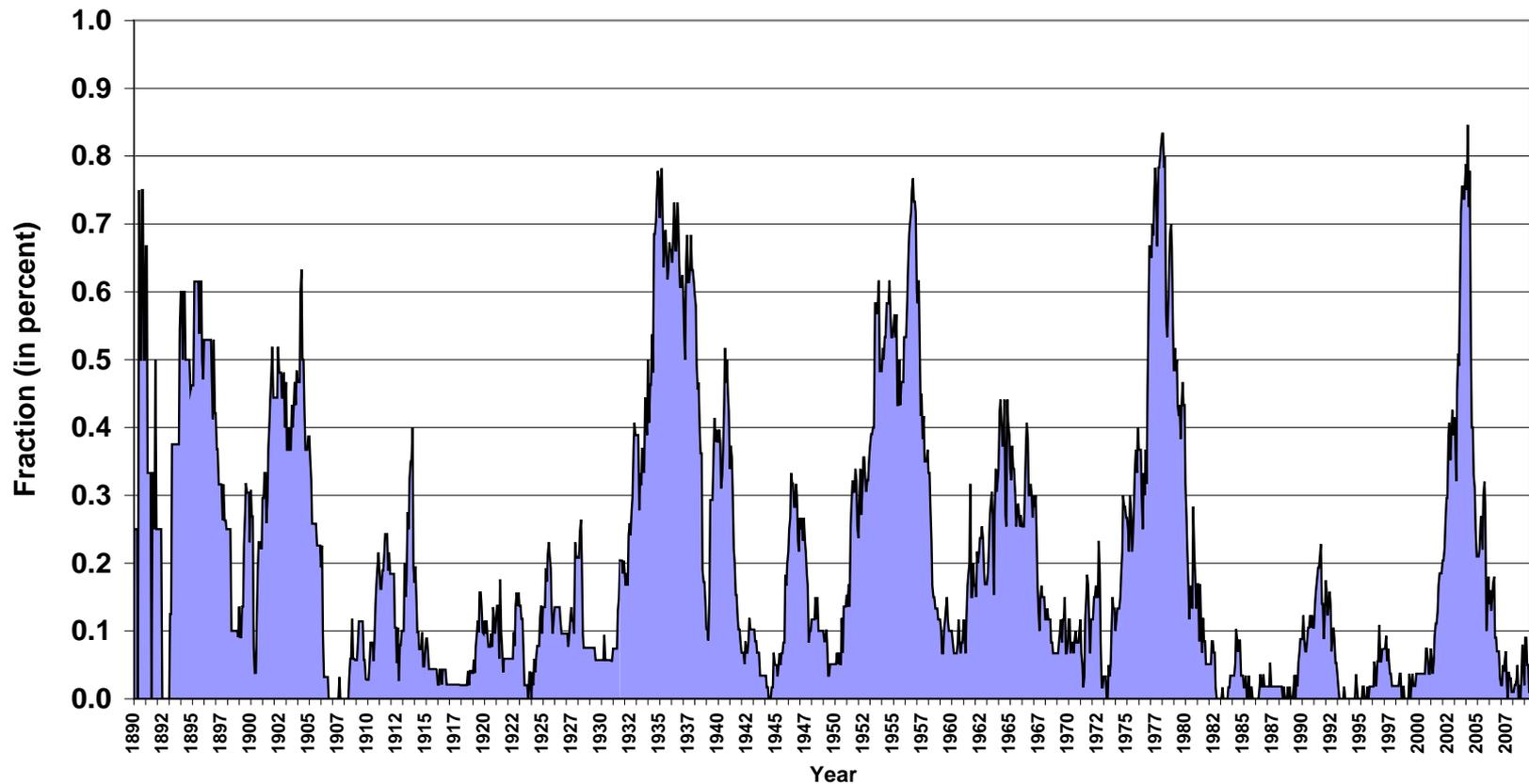


Background

- ▣ 1977: Systematic statewide multi-agency drought monitoring began in Colorado.
- ▣ 1981: Colorado Drought Response Plan institutionalized multi-agency drought monitoring and response.
- ▣ 1982-1999: was a WET period for Colorado
- ▣ 1996: Western Governors Association began expressing the need for national legislation for improved drought management and planning.
- ▣ 2006: NIDIS is born!
- ▣ 2007-2008: NIDIS selected the Upper Colorado River Basin as a pilot project
- ▣ 2009: Colorado Climate Center began formal efforts with NIDIS pilot.

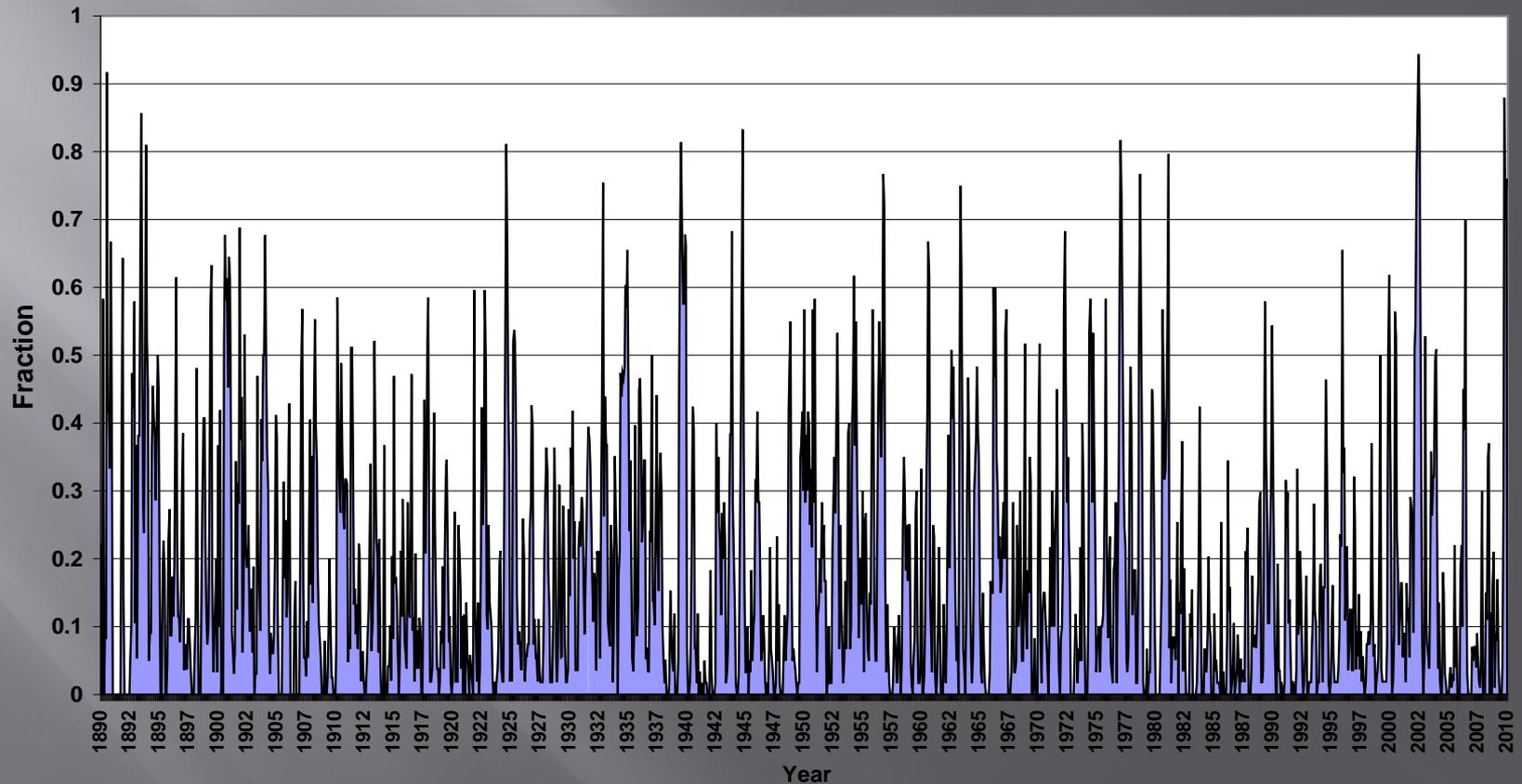
Realistic Perspective - Drought Happens

Fraction of Colorado in Drought
Based on 48 month SPI
(1890 - July 2009)



Drought “almost happens” often

Fraction of Colorado in Drought
Based on 3 month SPI
(1890 - December 2009)



Pilot Focus

- ▣ Development of a drought early warning system.
- ▣ Enhance local, state, and regional expertise and capabilities.
- ▣ Address stakeholder needs by building better partnerships.
- ▣ Identify what a “drought portal” should be.
- ▣ Give local expertise to the USDAM.

Accomplishments and Progress

- ▣ Nolan conducted stakeholder interviews in 2009.
 - Water users and providers, resource managers and watershed protectors in the UCRB.
 - ▣ Drought Triggers and Indices
 - ▣ Monitoring Gaps
 - ▣ Favorite data, products, etc. Find out what they use.



Interviews and Focus Groups

conducted by the Colorado Climate Center between May and December 2009 exploring drought indicators, triggers and data needs by sector

- USBR (Grand Junction and Loveland offices)
- Colorado Division of Wildlife
- Colorado DNR (state and local)
- Denver Water and other smaller water providers
- Northwest Council of Governments (water quality)
- Watershed protection groups
- USDI (BLM, NPS) and other resource managers
- Colorado River Water Conservation District
- Northern Colorado Water Conservancy District
- EXCEL Energy
- Grand County interest group
- Summit County interest group
- Fraser Experimental Forest
- Water Availability Task Force
- Winter Park Resorts and other ski area representatives
- Other (discussed with WY and UT State Climatologists but did not conduct interviews with users outside of Colorado)

Interview Findings

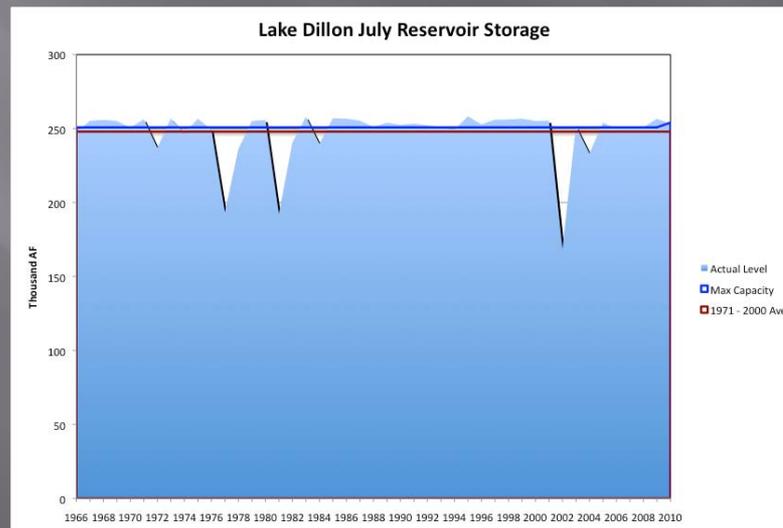
- ▣ Responses vary by sector and individual user based on “exposure to drought risk”.
- ▣ Most track widely available data sources at critical times of year.
- ▣ Remote sensing products not trusted for LOCAL drought monitoring and water management.
- ▣ Water law, water rights and the prior appropriation doctrine dictates “exposure and potential risk and impacts” for pretty much all surface water users. River “calls” are the ultimate drought triggers.

Interview Findings

- ▣ Reservoir operators: “Our jobs are easiest during drought, but our critical decisions and errors are made during high flows, affecting our capability to deal with future drought”
- ▣ Surface Water Interests: “Not worried about a drought until it is a 3-year drought”
- ▣ USDM is popular, but used to assess drought in OTHER areas.
- ▣ Users want more data all in one place “one stop shopping”
- ▣ Users want better long range forecasts (2 years) with some skill.

Interview Findings

- Different sectors have their own “drought triggers”
 - Lake Dillon reservoir levels:
 - Only depleted during very dry periods.
 - Colorado River summer water temperatures
 - Springtime dryness east of divide means greater demand for west slope water.
 - Forest and range conditions.

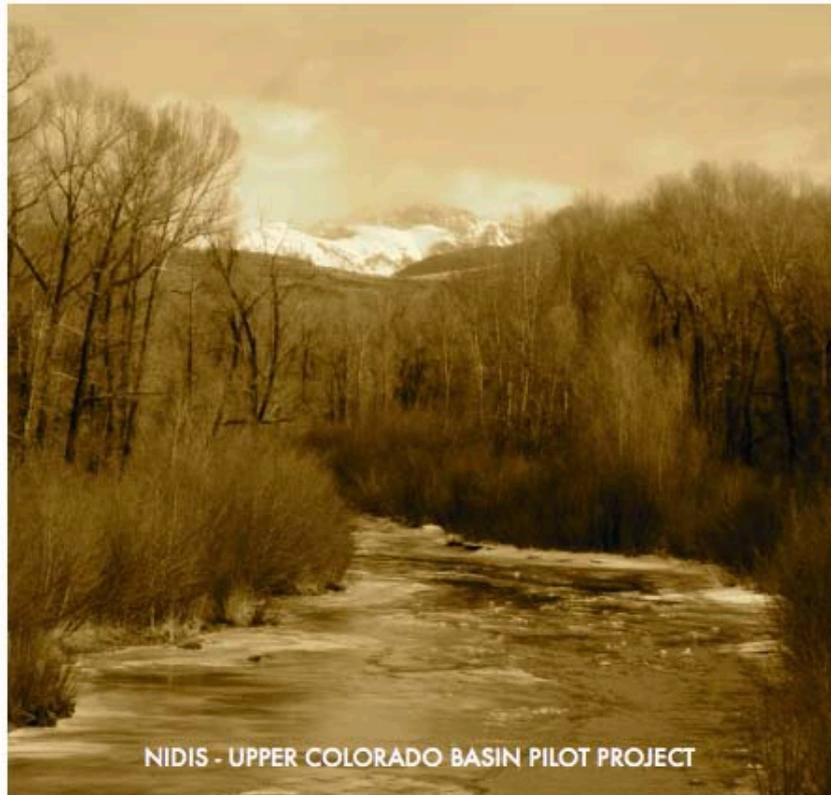


Requested Information from Users

- ▣ More detailed local monitoring.
 - More SNOTEL
 - More gages on unmanaged, representative streams.
- ▣ Better forecasts
- ▣ Interpretation of complex drought information (i.e. not everyone understands SPI)
- ▣ Better elevational depiction of precipitation.
- ▣ Historical perspective on streamflow and reservoir data.
- ▣ One-stop shopping for all information
- ▣ Information on water demand.

You got it! CCC Weekly Drought and Water Assessments

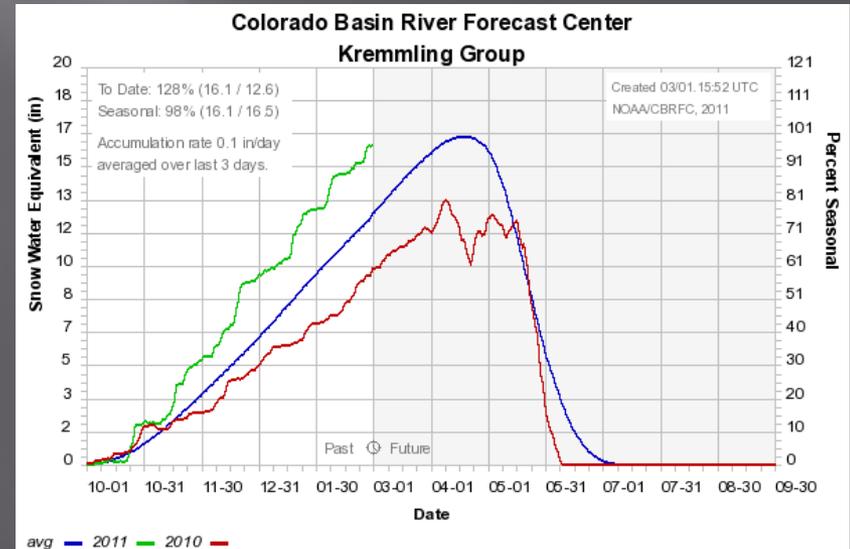
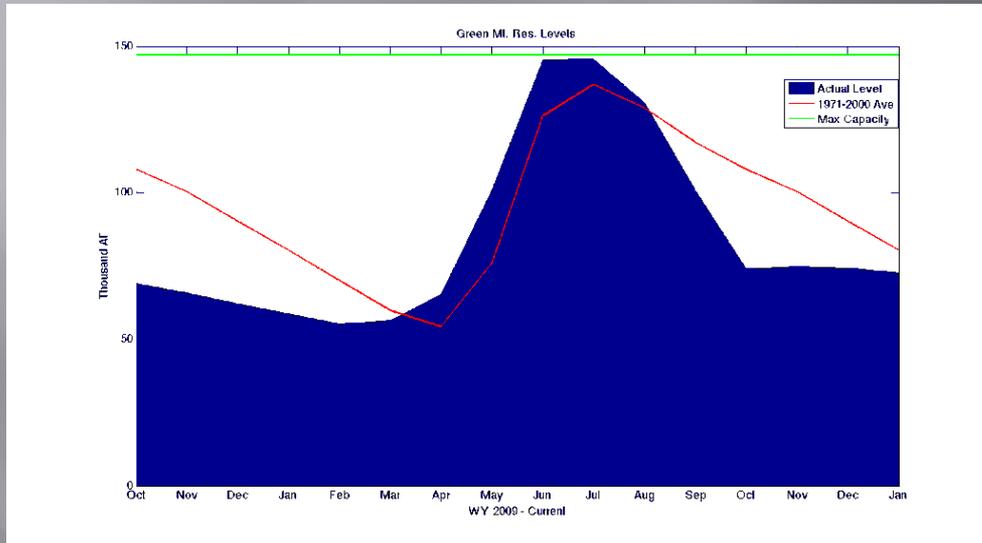
Winter
2010



NIDIS - UPPER COLORADO BASIN PILOT PROJECT

Weekly Climate, Water & Drought Assessment

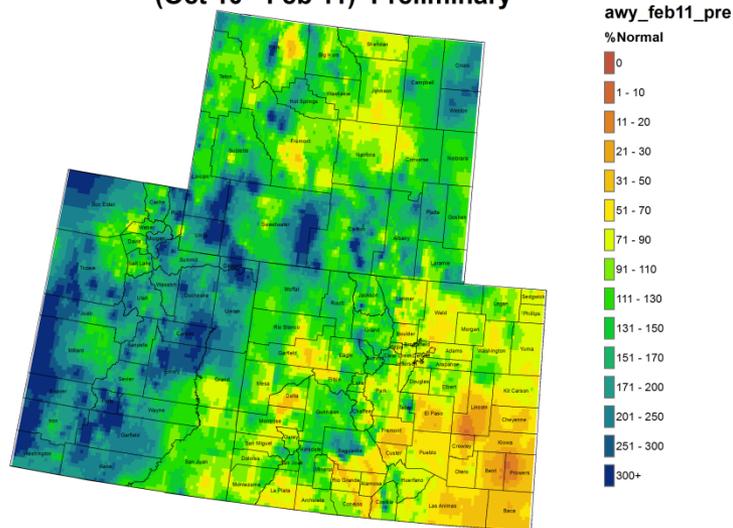
Learning to put current hydrologic information into historical perspective for diverse users



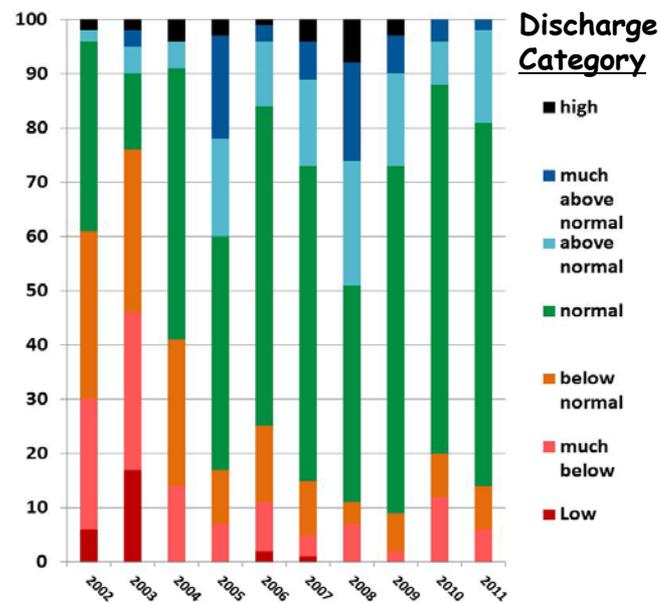
Local Expertise

- CCC and other local agencies provide updates on current conditions.
 - USGS puts streamflow data into context.
 - NWS provides weather forecasts

Colorado, Utah and Wyoming Water Year to Date
Precipitation as Percentage of Average
(Oct 10 - Feb 11) Preliminary

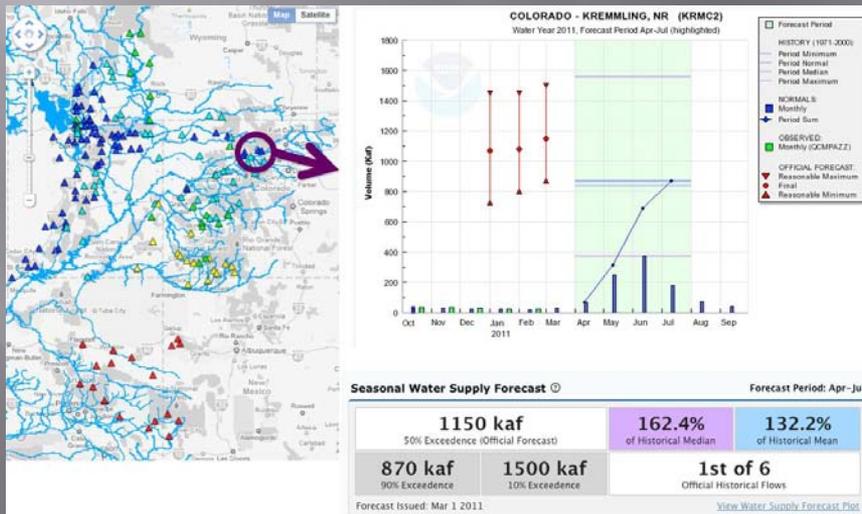


Percentage of streamgages in
discharge category



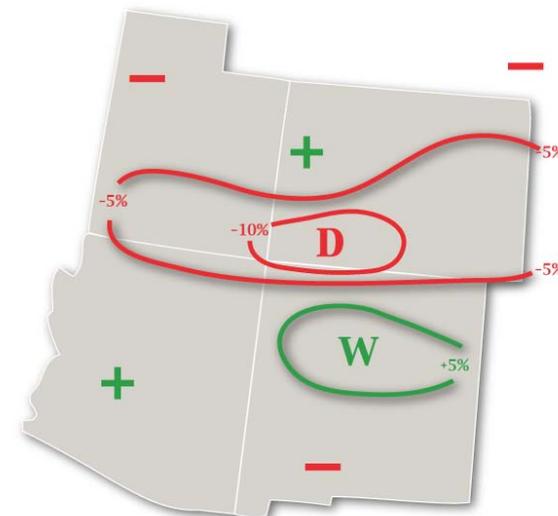
Regional Expertise

- ▣ Regional experts provide less frequent, but desirable updates.
 - CBRFC provides water supply and peak flow forecasts.
 - Klaus Wolter provides long range climate outlooks.



Experimental PSD Precipitation Forecast Guidance

APR - JUN 2011 (Issued March 11, 2011)



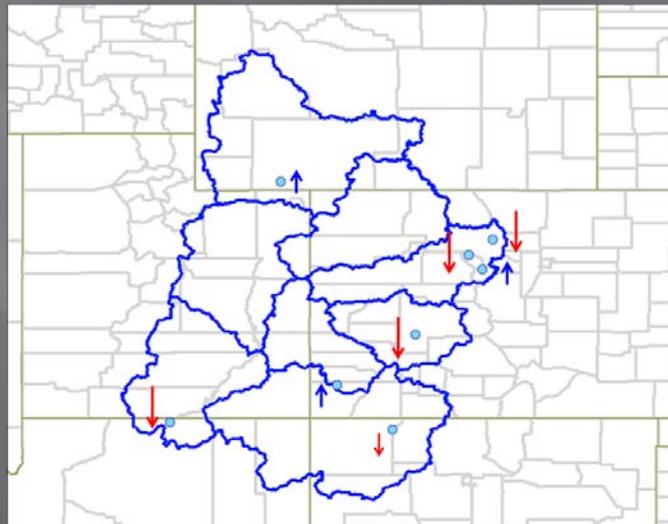
Weekly Drought and Water Assessments

- ▣ During critical times of year (Feb – June), weekly webinars are held at 10AM on Tuesdays.
- ▣ Normally 15-20 participate on the call and the USDM author is invited to attend.
 - Greater attendance with long range climate outlooks/streamflow forecasts.
- ▣ Approximately 15 minutes in length, covering precipitation, streamflow, reservoir levels, snowpack conditions, water demand and NWS forecast.
- ▣ Ends with discussions of the USDM and any needed changes.

Weekly Drought and Water Assessments

- ▣ Content is dynamic, it changes based on user input and current conditions.
- ▣ After the call, summaries are sent out to a larger email list of about 150 people.
- ▣ Suggestions and feedback are encouraged!

Reservoir Level Weekly Change – 3/6/2011



Challenges

- ▣ Competing needs, changing priorities.
- ▣ Difficult to maintain interest in certain sectors unless disaster is looming.
- ▣ Fundamental conflict between Rec/Tourism and Ag/Municipal
 - To the tourism sector, drought is a 4-letter word.
- ▣ Boundaries!
 - Tough for us to cross state lines
 - Tough for us to EXCLUDE half of Colorado, so we include it anyway!
- ▣ Water Law controls the distribution of surface water, but many scientists don't fully understand it.

What's Next?

- ▣ Webinar evaluation and stakeholder follow-up
 - Follow up with initial interviews, are we addressing the gaps?
 - Is the USDMM better now with more local input and contributions?
 - Survey to go out late June/early July after peak runoff to the full email list.
 - Survey questions are still being finalized.
- ▣ Work toward a UCRB drought monitor that addresses user defined indicators and triggers.

Thanks!

- ▣ For more information contact:

Becky Smith: smithre@atmos.colostate.edu

Wendy Ryan: wendy.ryan@colostate.edu

- ▣ Webinar Registration:

- http://ccc.atmos.colostate.edu/drought_webinar_registration.php

- ▣ Archive of Weekly Assessments:

- http://ccc.atmos.colostate.edu/drought_webinar.php

