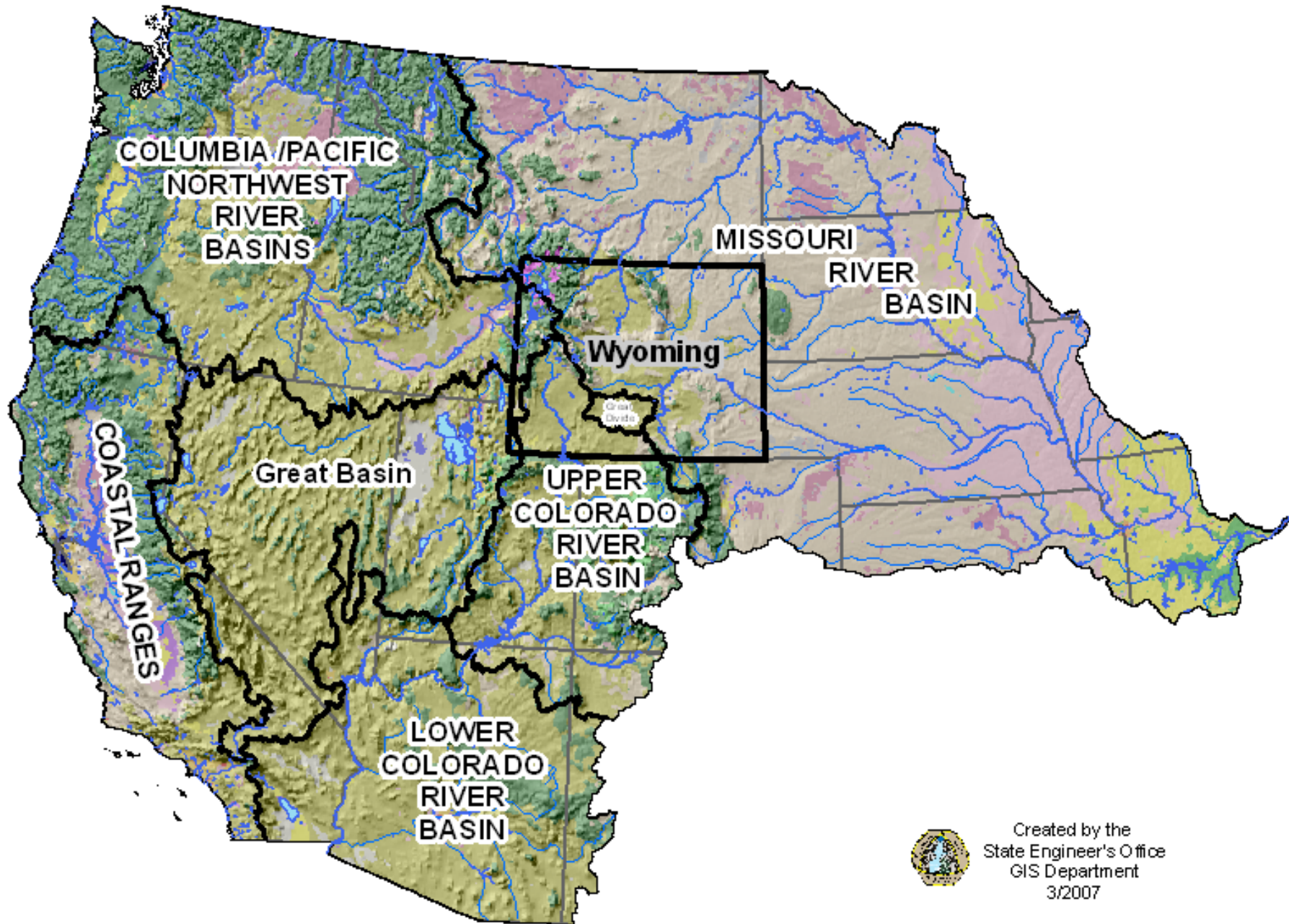




# What do we need? A State Water Rights Agency Perspective

Sue Lowry  
Wyoming State Engineer's Office  
September 5, 2012

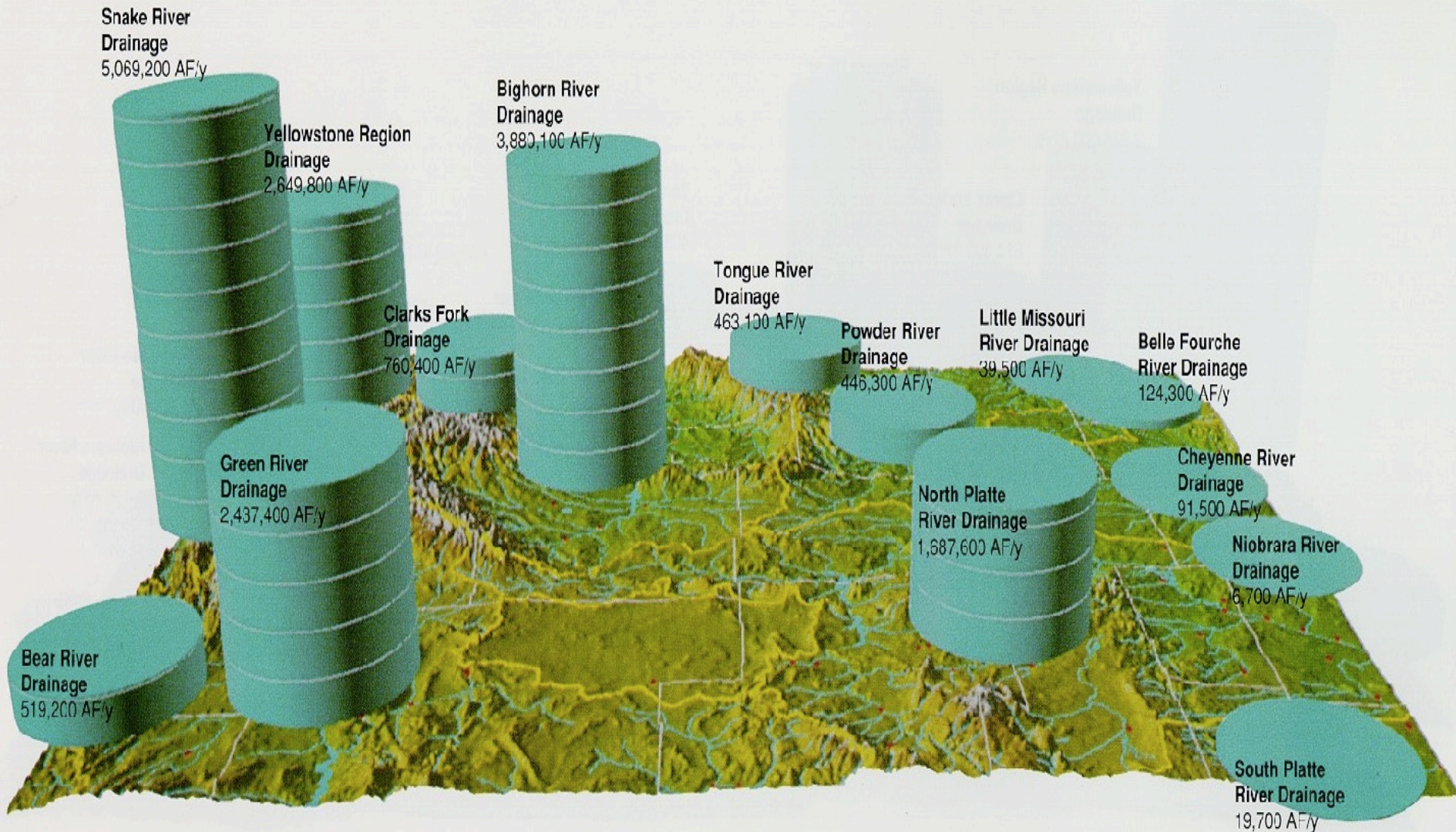


Created by the  
State Engineer's Office  
GIS Department  
3/2007

# Topics to Cover

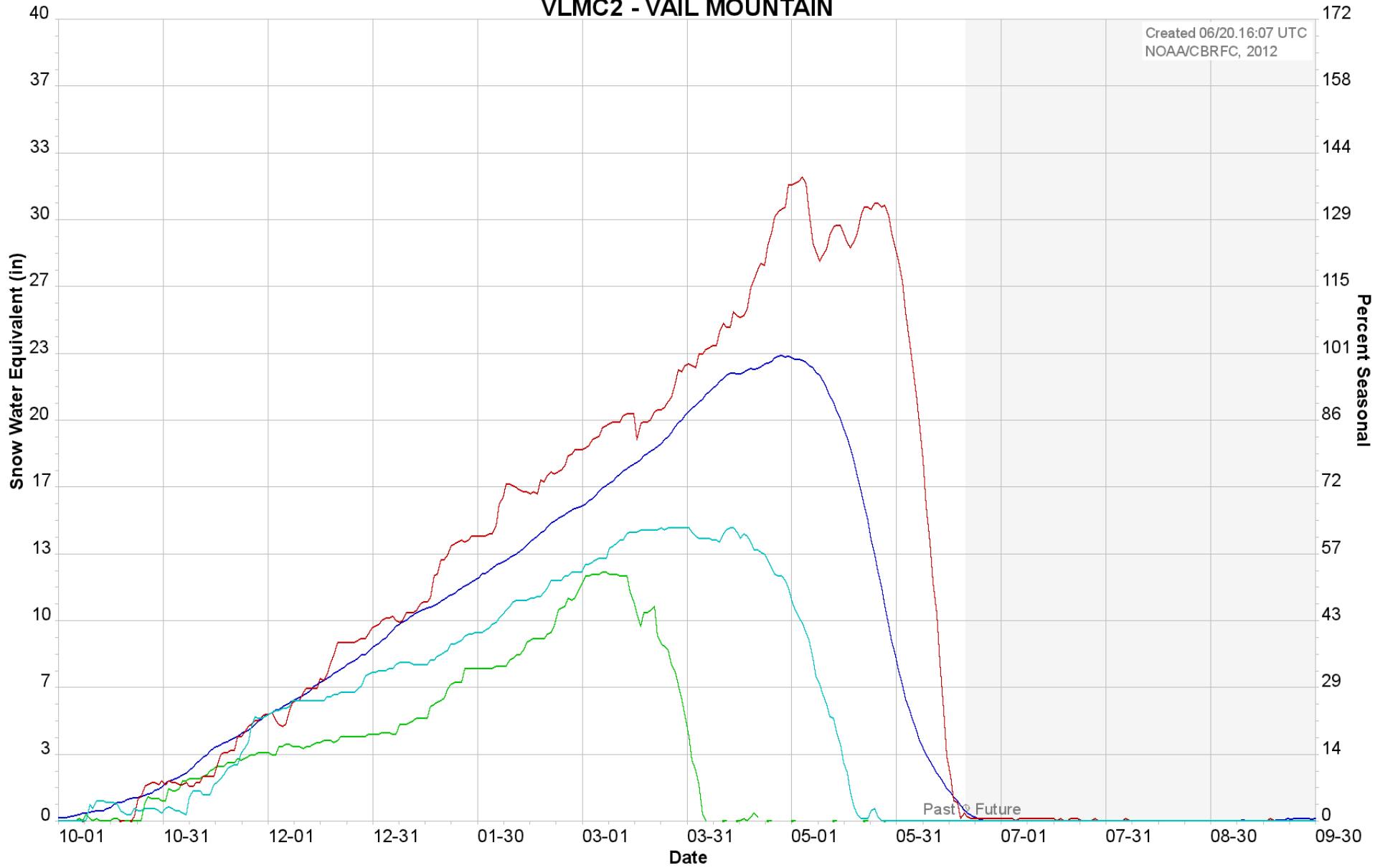
- What modeling results from the CI-Water Grant would be most helpful
- More accurate forecasting further into the future
- Better understanding of relationship of snowfall/snowpack and runoff volume and timing
- Interstate Compact Management Implications and Needs

# State-Line Outflow—Variability between basins, seasons and years



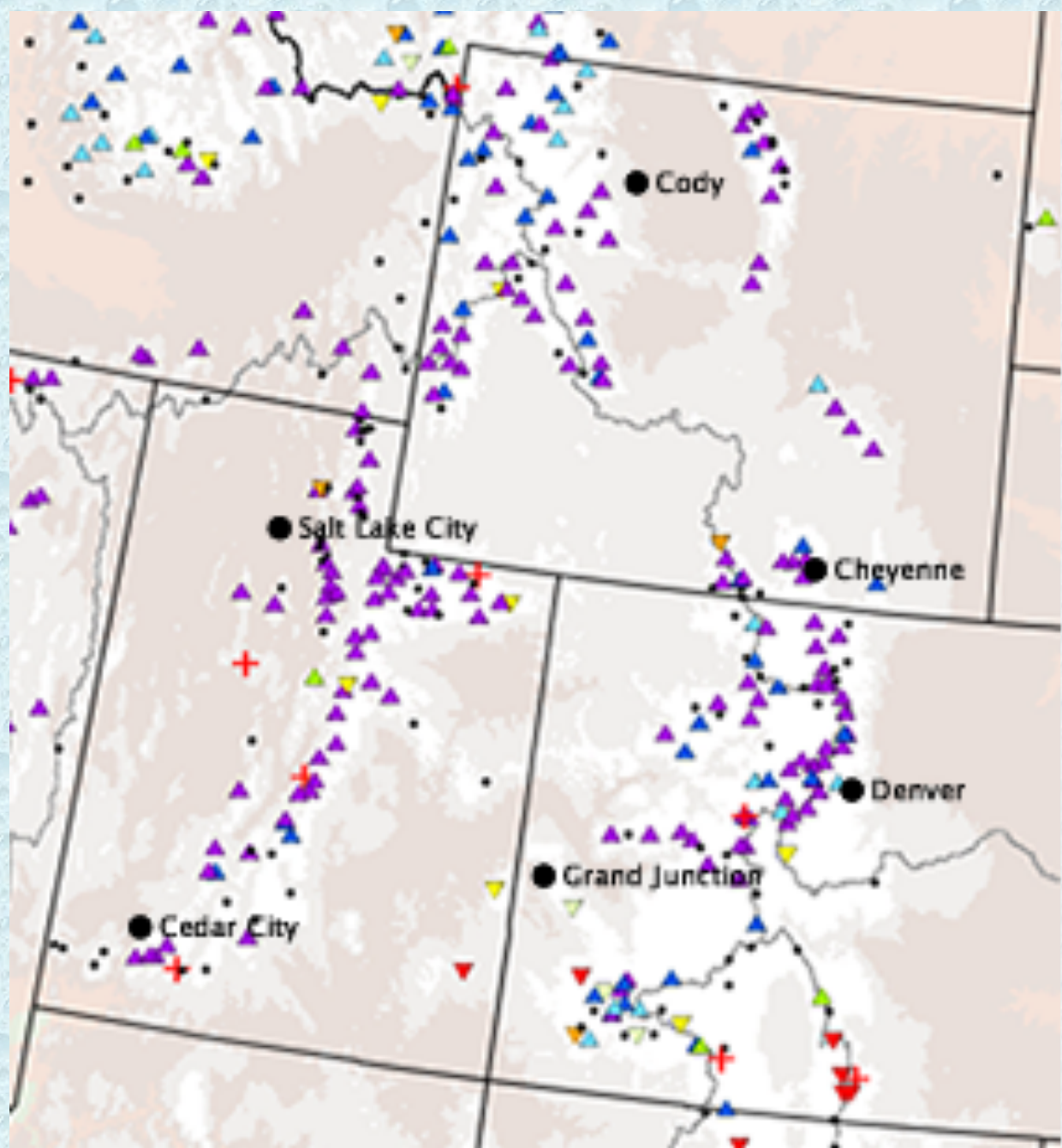
# Colorado Basin River Forecast Center VLMC2 - VAIL MOUNTAIN

Created 06/20.16:07 UTC  
NOAA/CBRFC, 2012













Average 1981-2010 — 2012 — 2011 — 2002 —

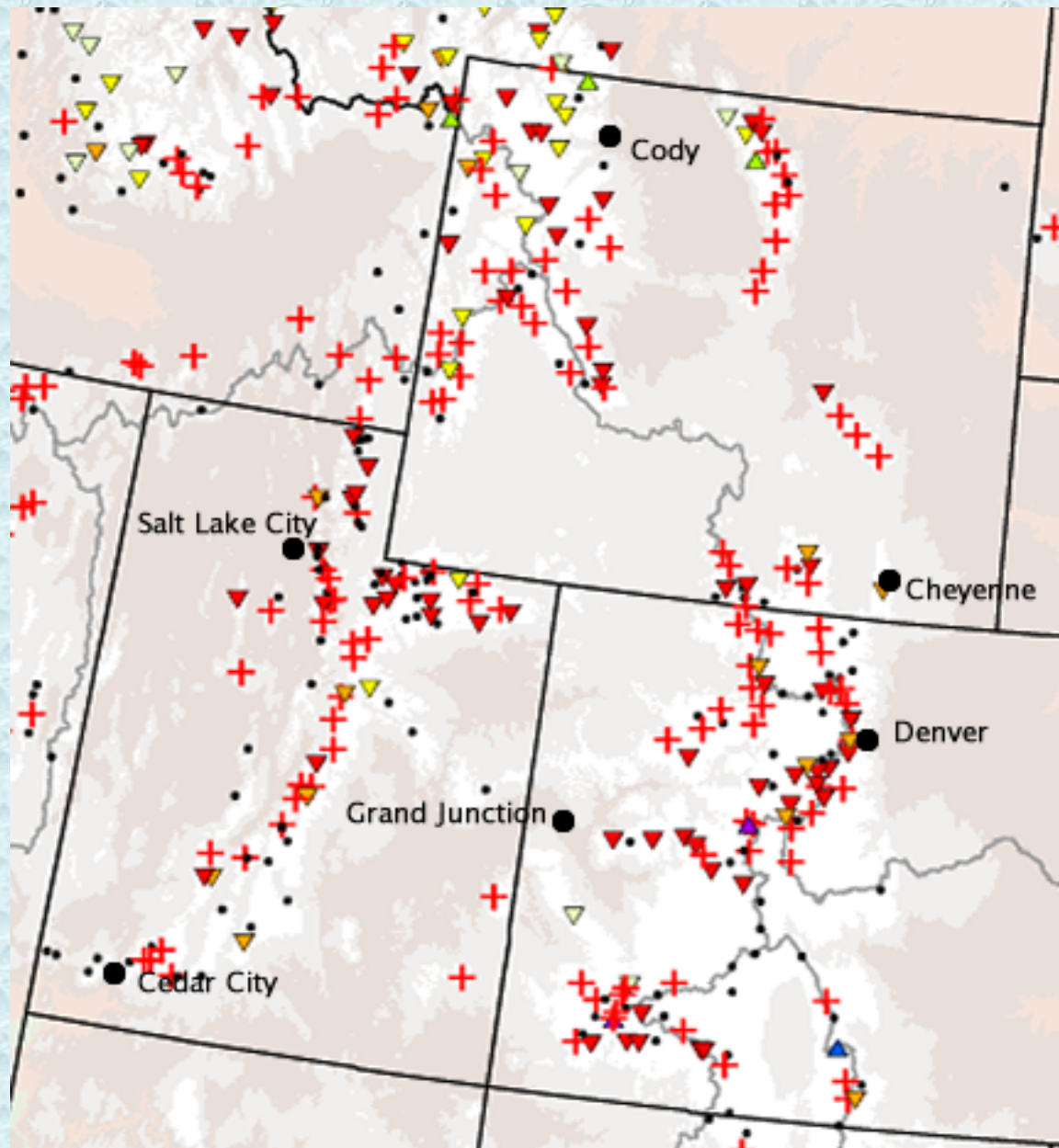
May 2011



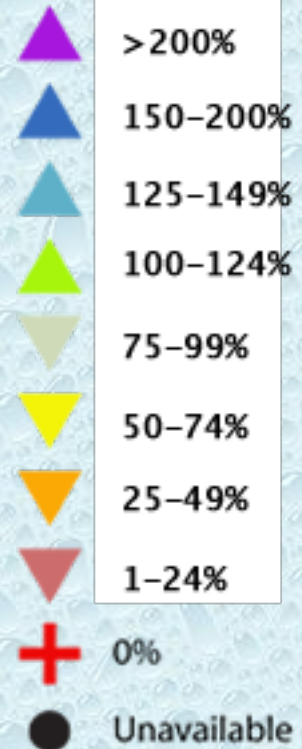
**Current Snow Water Equivalent  
% of Average**

-  >200%
-  150-200%
-  125-149%
-  100-124%
-  75-99%
-  50-74%
-  25-49%
-  1-24%
-  0%
-  Unavailable

May 2012



**Current Snow Water Equivalent  
% of Average**



# South Brush Creek flood-July 19, 2011





# Missing section of Highway 130



# Dipper Lake-Snowy Range Mountains- still frozen July 20, 2011



SEO field staff  
flew with CAP  
to see if  
reservoirs  
were  
damaged in  
large rain-on-  
snow event

# High water caused significant infrastructure damage



# US 14A-Bighorn Mountains



# Opening Hwy 14A--May, 2011



# Debris above causeway-Bighorn Reservoir



# Annual Runoff above Sioux City, IA

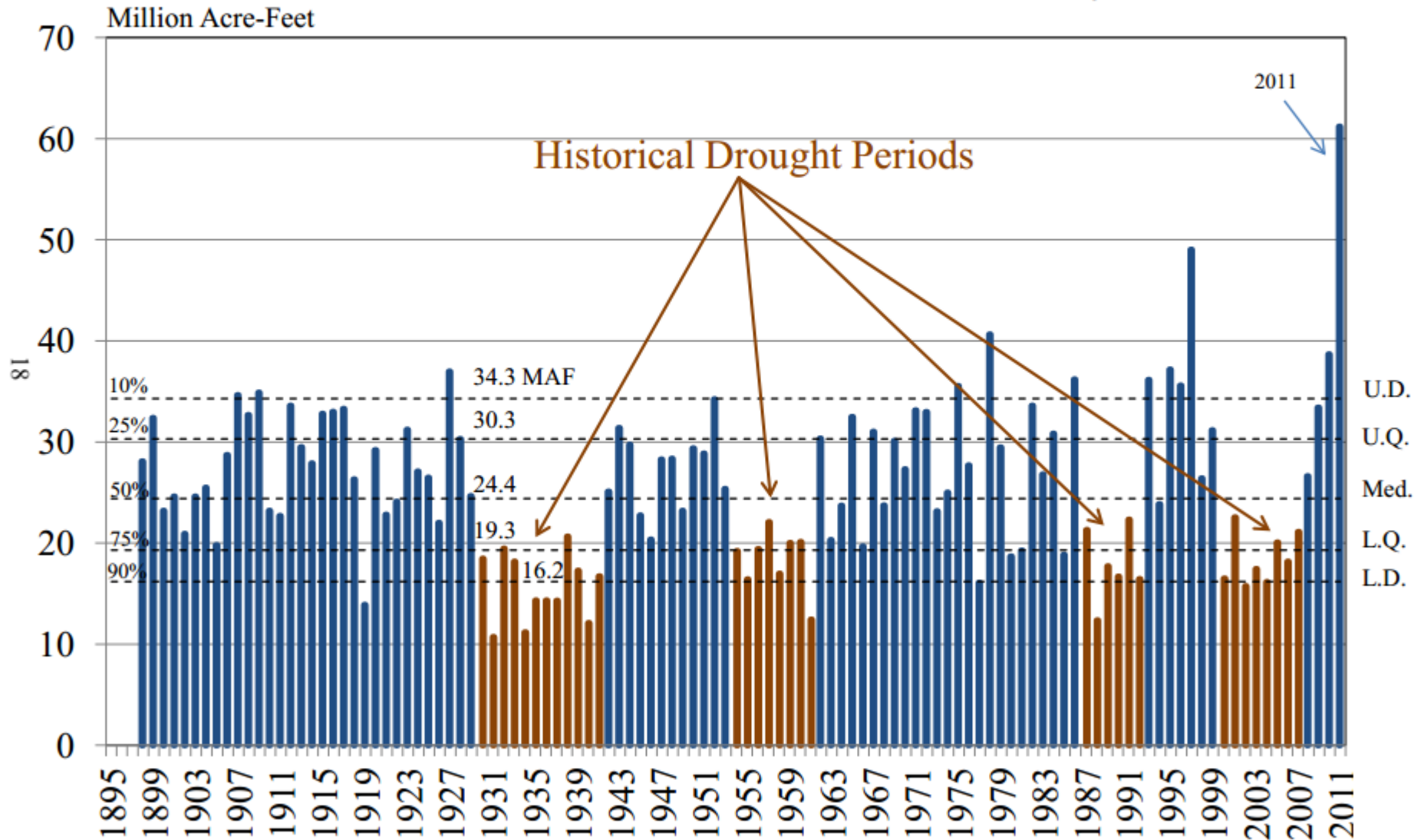
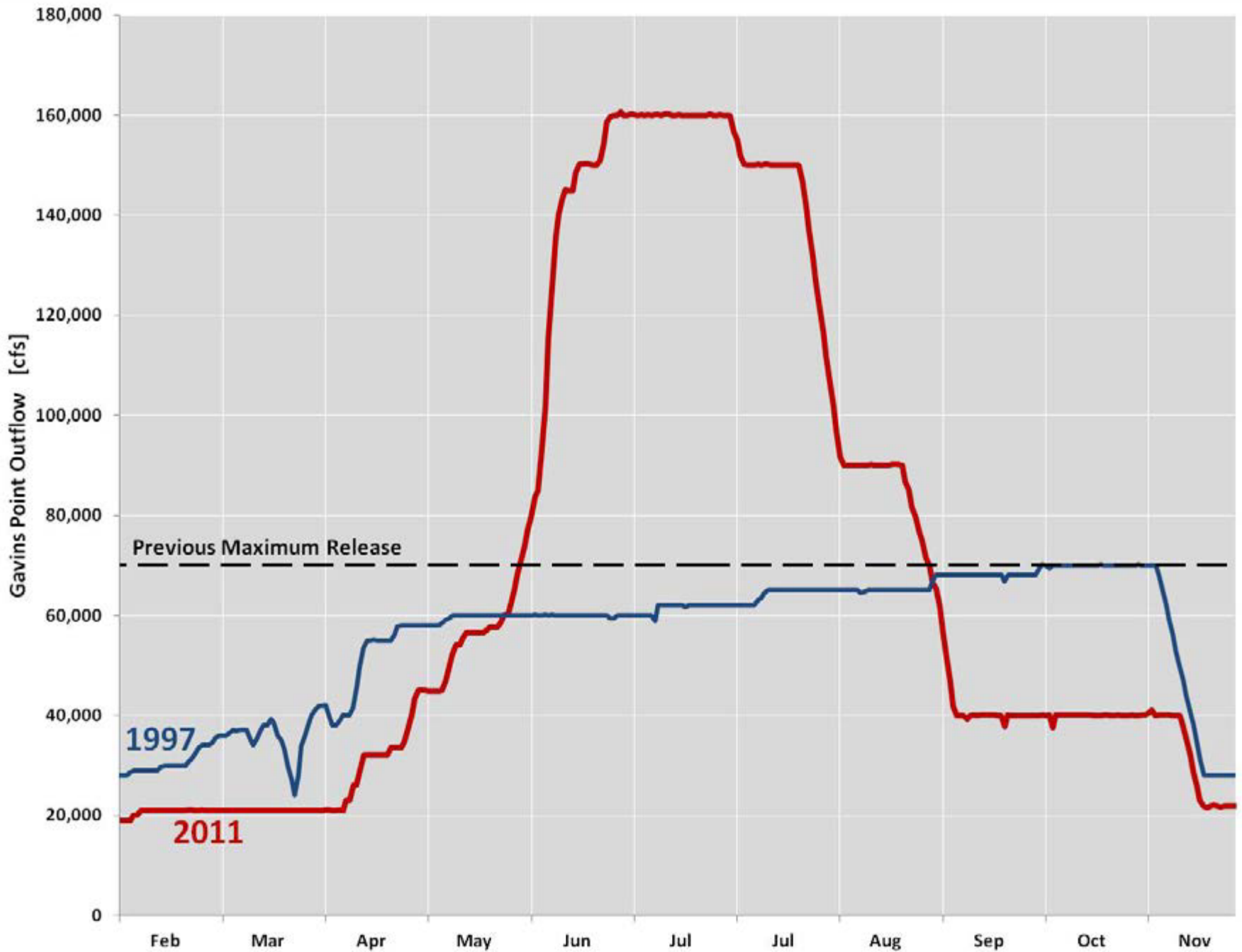
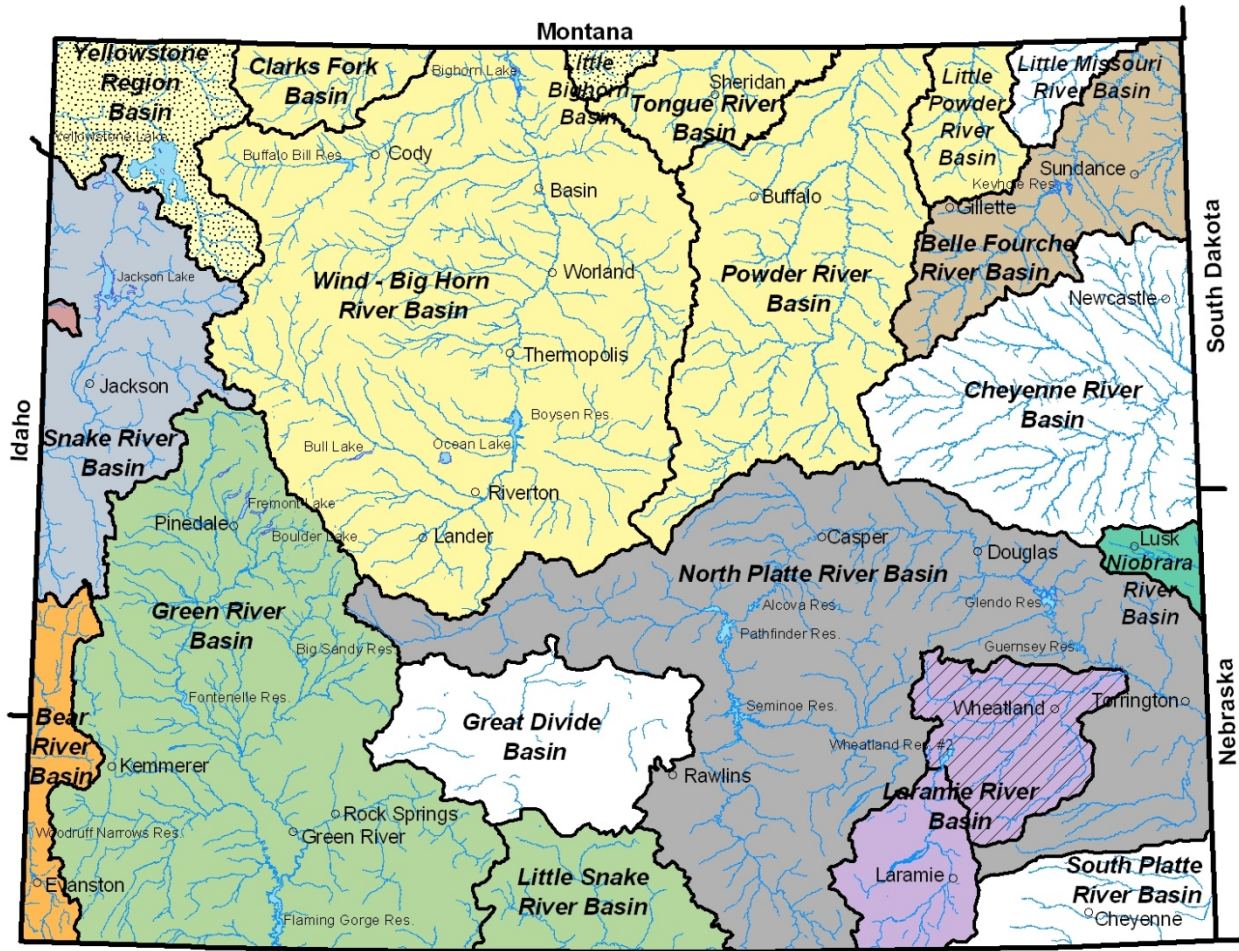


Figure 8. Missouri River annual runoff above Sioux City, IA





# Wyoming River Basin Compacts and Decrees

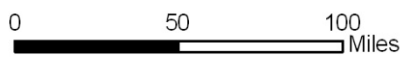


## Legend

- Cities
- Major Streams
- Lakes/Reservoirs

## Compacts and Decrees

- Amended Bear River Compact, 1978
- Colorado River Compact, 1922  
Upper Colorado River Compact, 1948
- Snake River Compact, 1949
- Yellowstone River Compact, 1950
- Exceptions within the Yellowstone River Compact Area
- Belle Fourche River Compact, 1943
- Upper Niobrara River Compact, 1962
- North Platte River Decree, 1945 (modified 2001)
- Laramie River Decree, 1922
- Roxana Decree, 1941
- No compacts or Decrees
- modified North Platte Decree, 2001



# Final Thoughts

- Compact Allocations generally based on percentages—wide variation in our western basins, making adequate network of real-time data critical
- Improved Forecasting at all various time-scales
  - Rain on Snow events
  - Runoff season volumes
- Institutional/Administrative changes may be necessary to accommodate changes in timing, amount and frequency

Thanks!





