

A Review of the 2011 Water Year in Colorado

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FYI -- Mike Gillespie
USDA-Natural Resources Conservation Service
Long-time Snow Survey Supervisor
and co-author recently RETIRED

<http://ccc.atmos.colostate.edu>

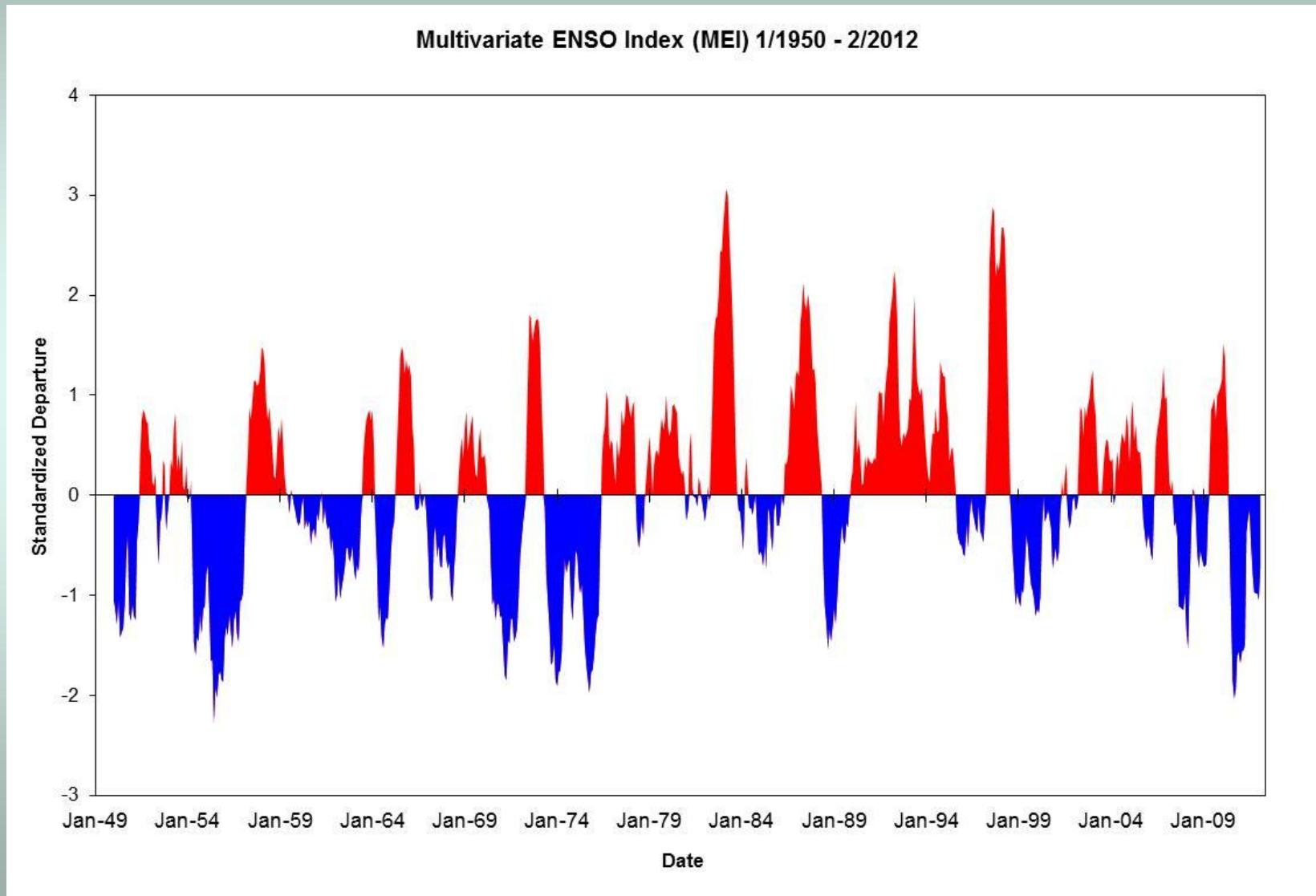
Presented at 32nd Annual CSU Hydrology Days
Fort Collins, Colorado
22 March 2012



Topics we are covering

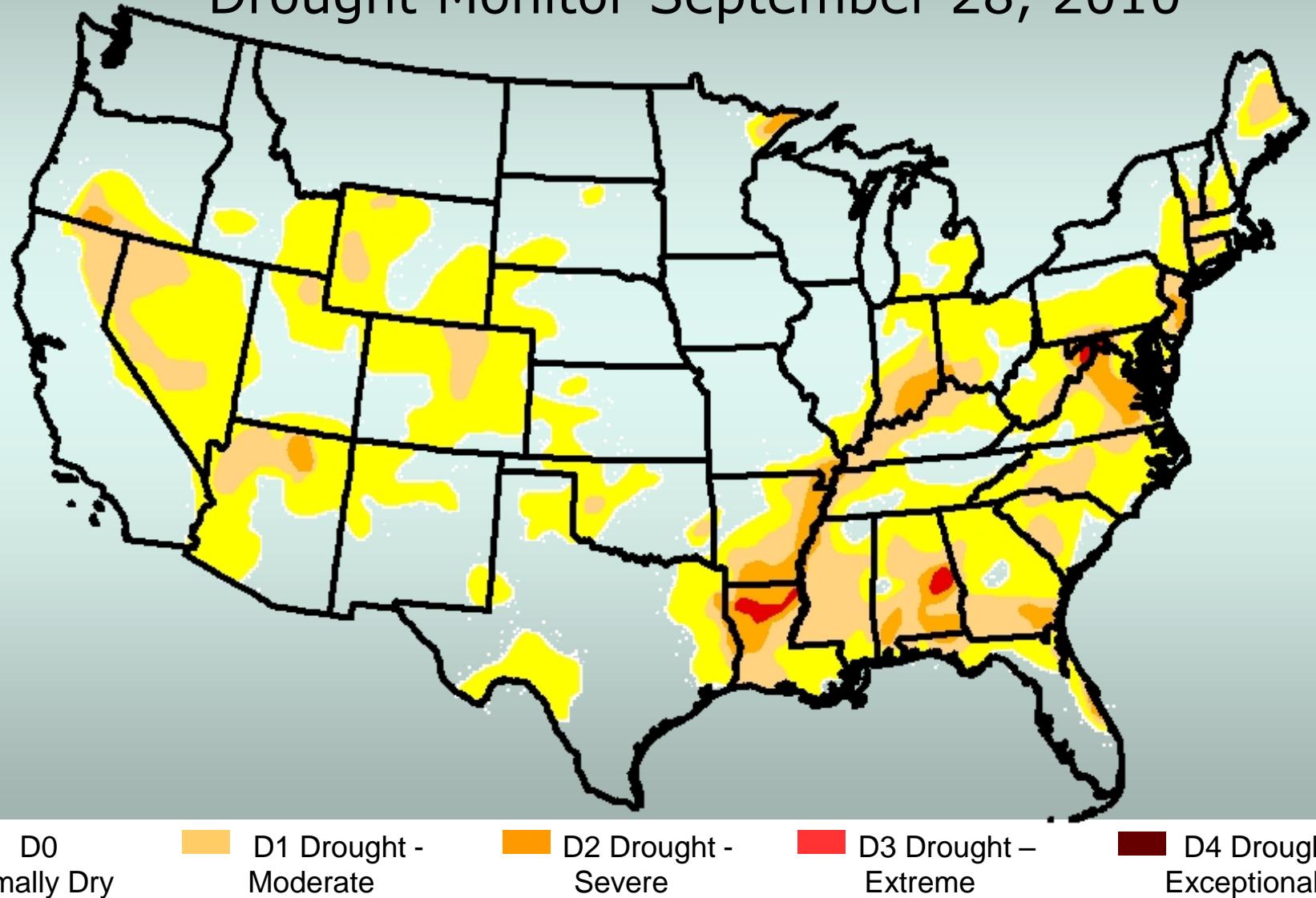
- Colorado's observed Hydroclimatic conditions Oct. 2010 – Sep. 2011
- Where 2011 fits in historic perspective
- “Water 2012” and some special opportunities

La Nina conditions persist for a second year



Nationwide drought status at beginning of 2011 Water Year

Drought Monitor September 28, 2010

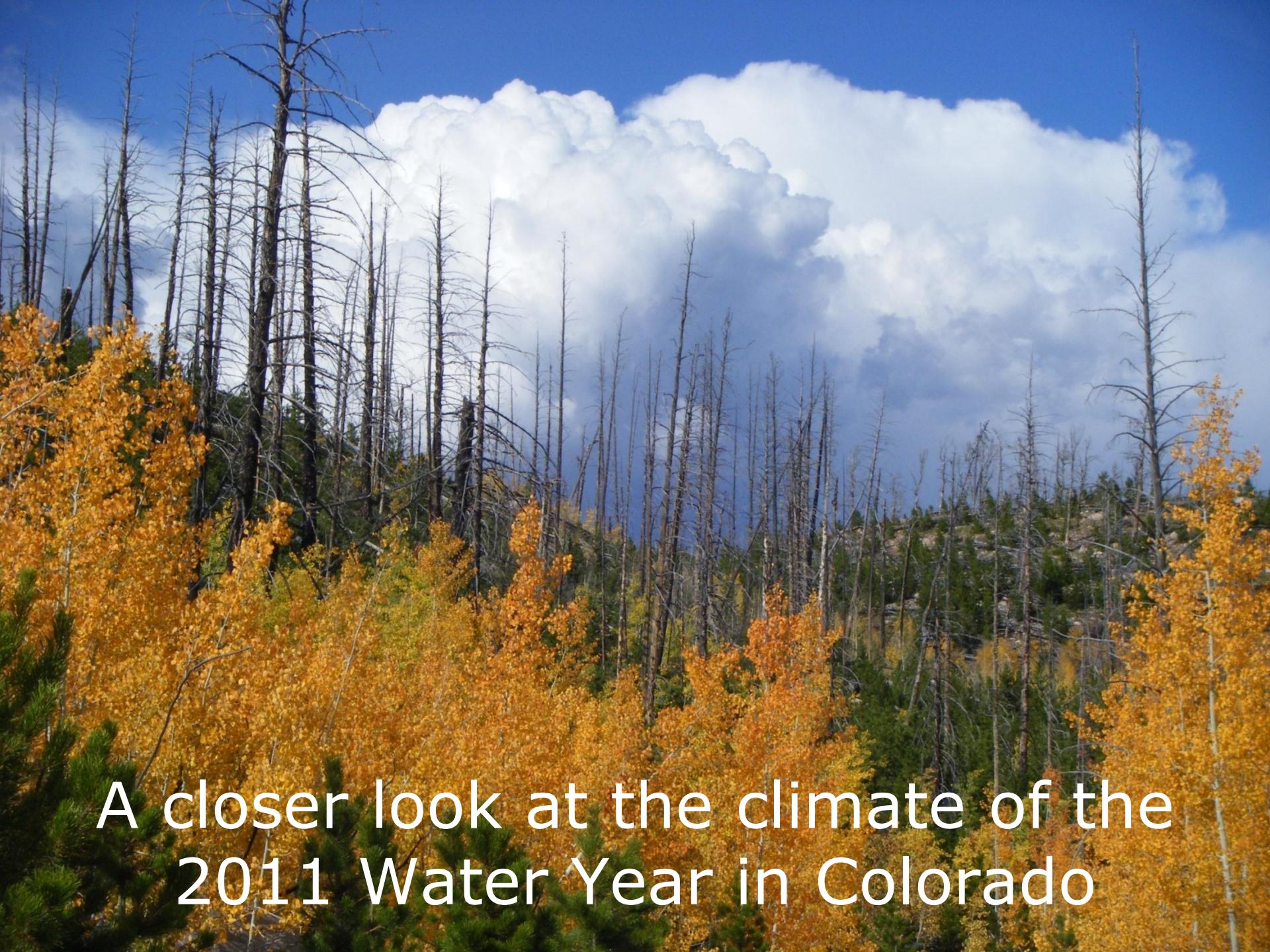


Highlights of the 2011 Water Year in Colorado

- **Very large snow accumulations over the Northern and Central mountains.**
- **Very dry winter with little snow east of the mountains and in the San Luis Valley**
- **April and May brought much-needed moisture to alleviate drought conditions in the NE plains, but missed the SE and SLV where drought worsened**
- **A dry June with near normal temperatures kept runoff from excessive snowpack under control.**

More Highlights of the 2011 Water Year in Colorado

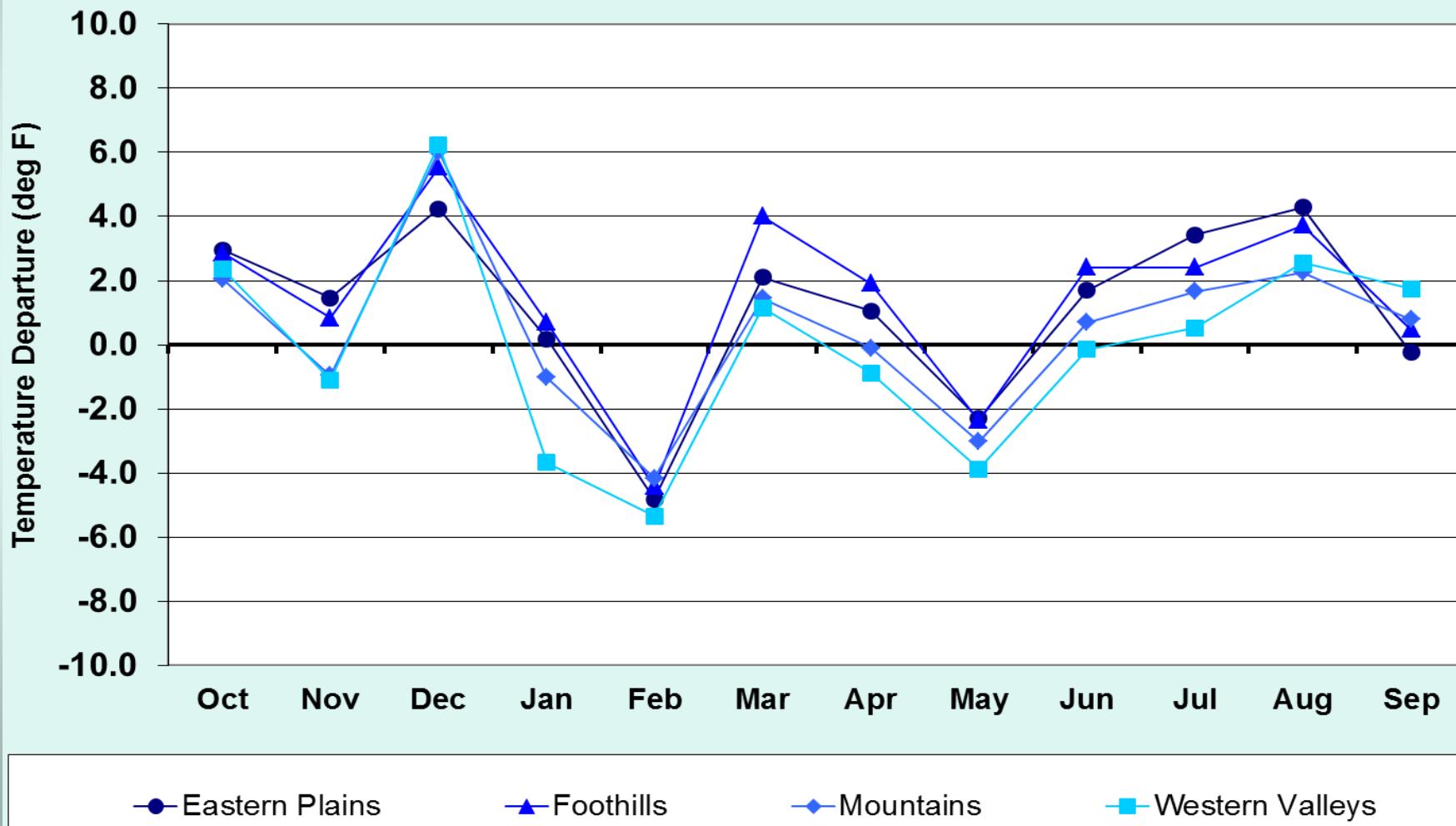
- Heavy storms Denver area in early July caused high water on the S. Platte
- Record heat in August with many stations reporting the warmest August on record.
- Whopping storm near Colorado Springs in mid September – otherwise year ended dry.



A closer look at the climate of the
2011 Water Year in Colorado

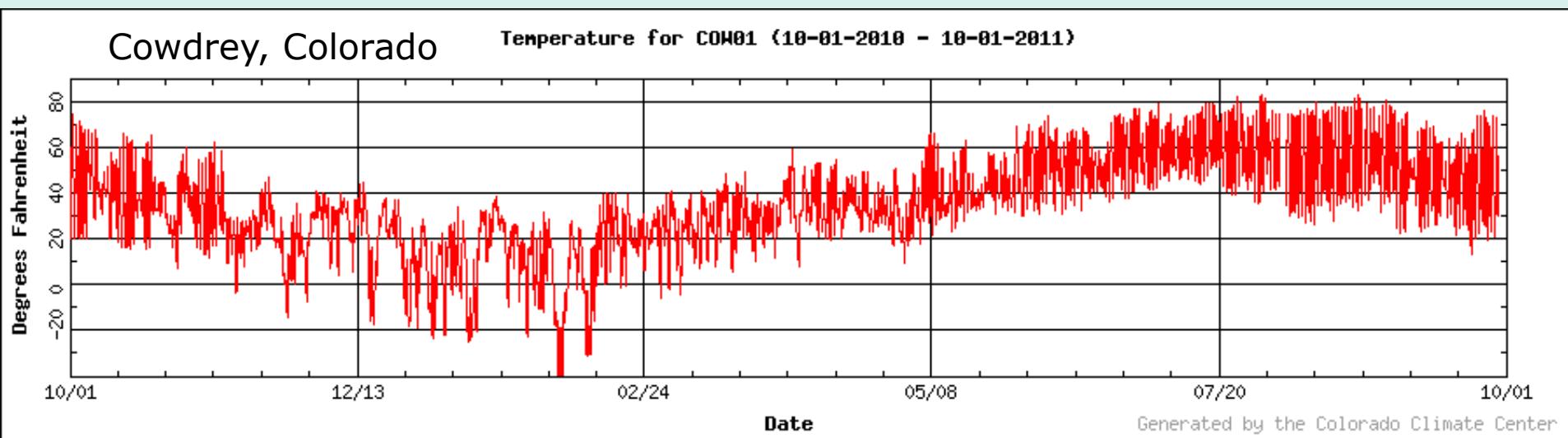
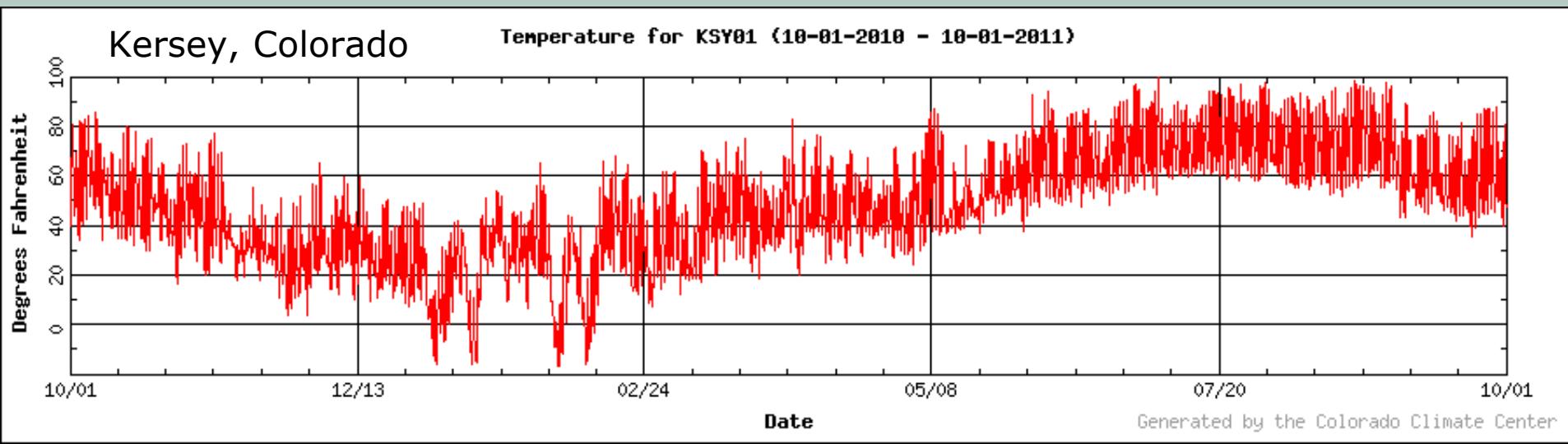
Water Year 2011 Temperature Departures From 1971-2000 Average

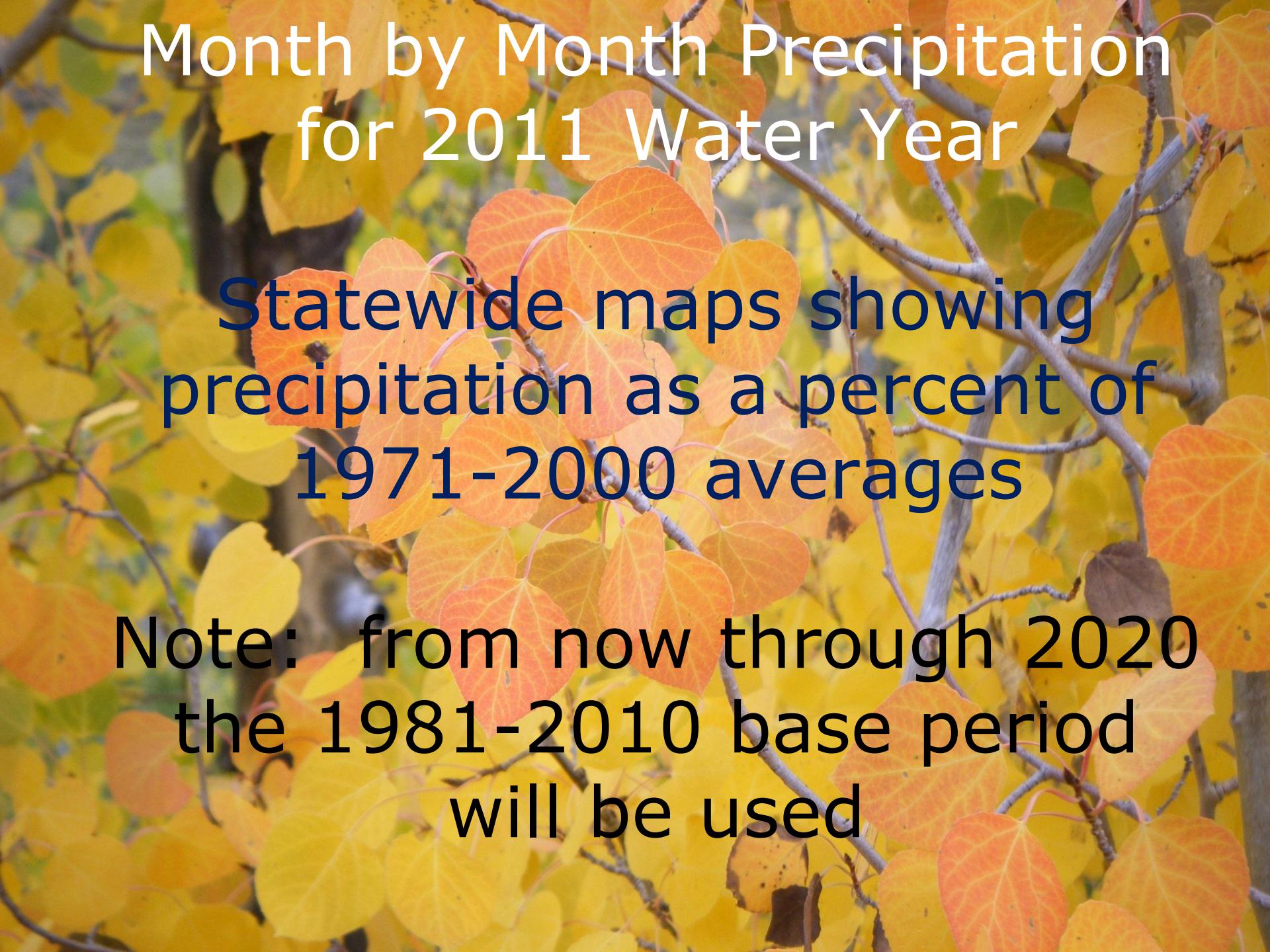
Water Year 2011



CoAgMet Temperatures

Weld County – Water Yr. 2011



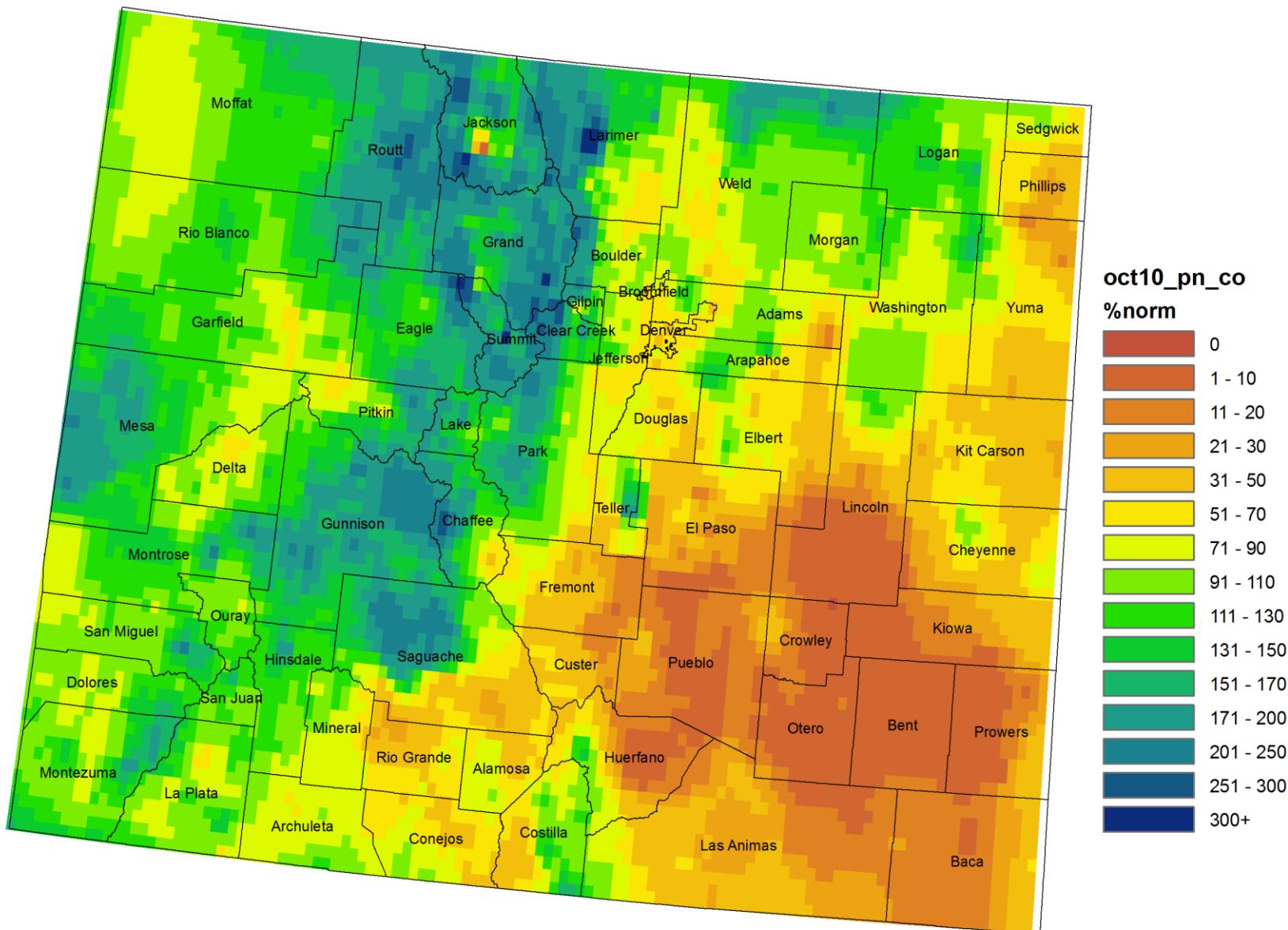
A close-up photograph of autumn leaves on a tree branch. The leaves are primarily yellow and orange, with some green and brown ones interspersed. They are attached to thin, light-colored branches.

Month by Month Precipitation for 2011 Water Year

Statewide maps showing
precipitation as a percent of
1971-2000 averages

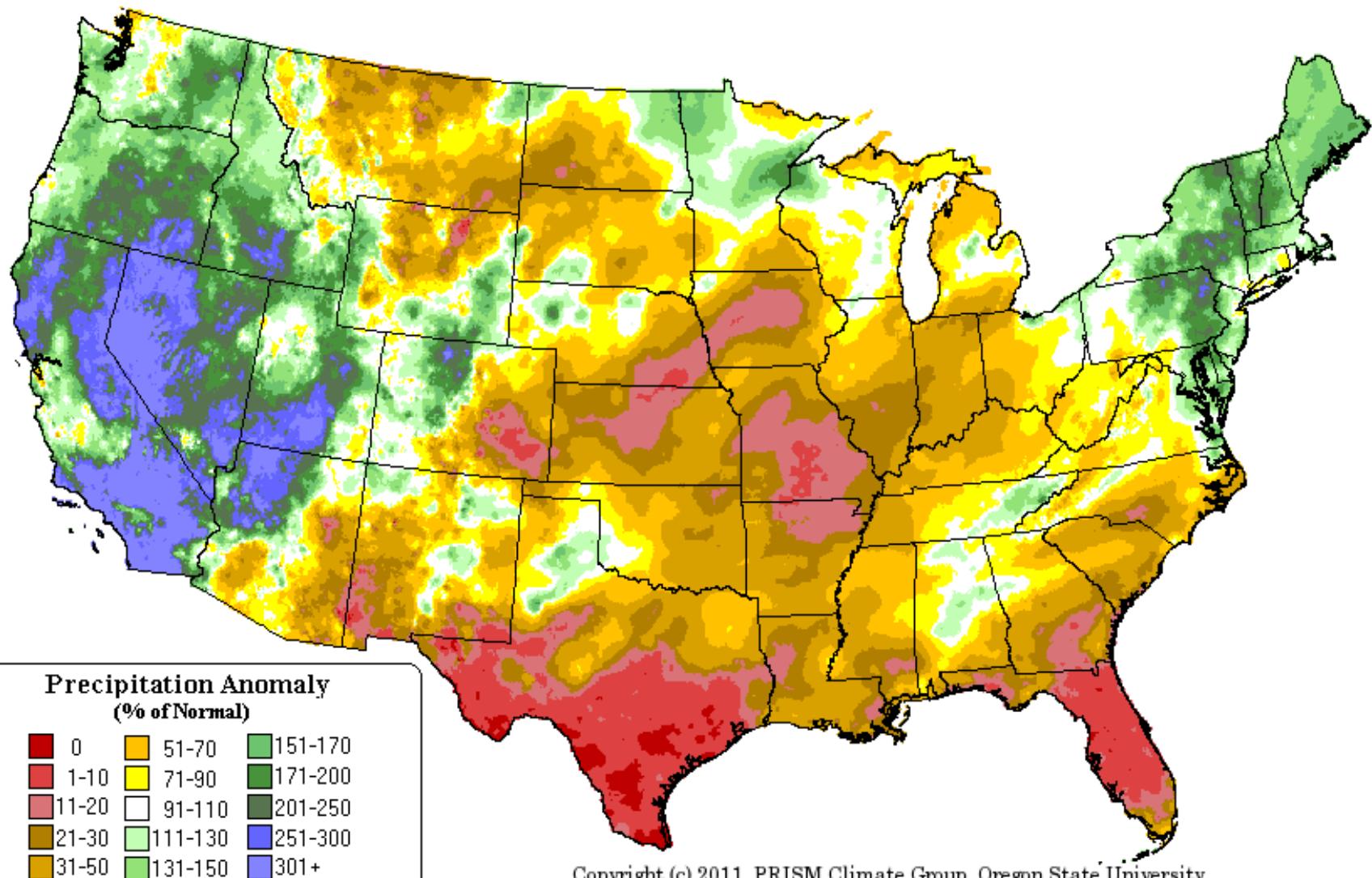
Note: from now through 2020
the 1981-2010 base period
will be used

Colorado October 2010 Precipitation as Percentage of Average

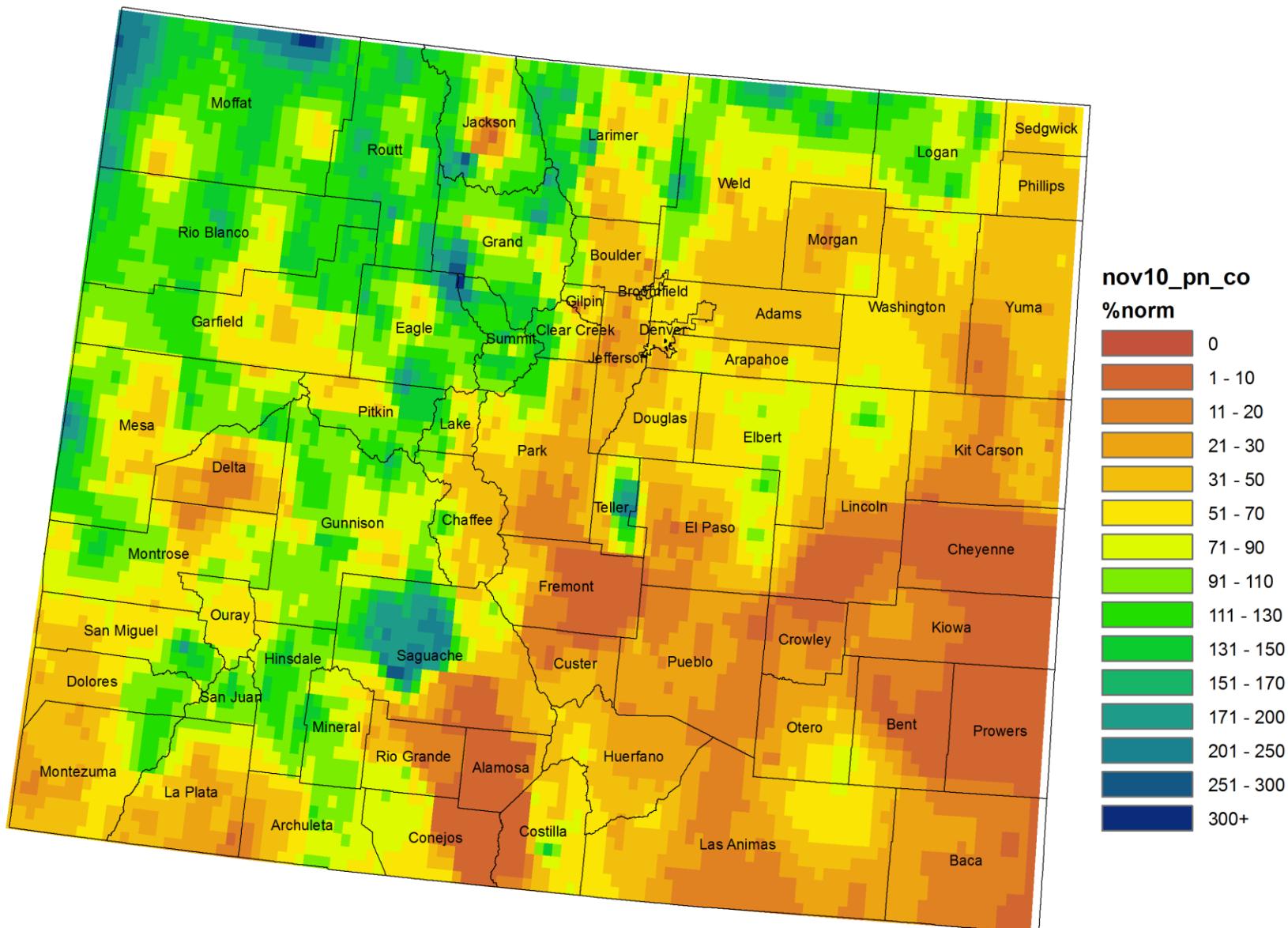


Oct 2010 Percent of Normal

Precipitation Anomaly: Oct 2010
Final Data

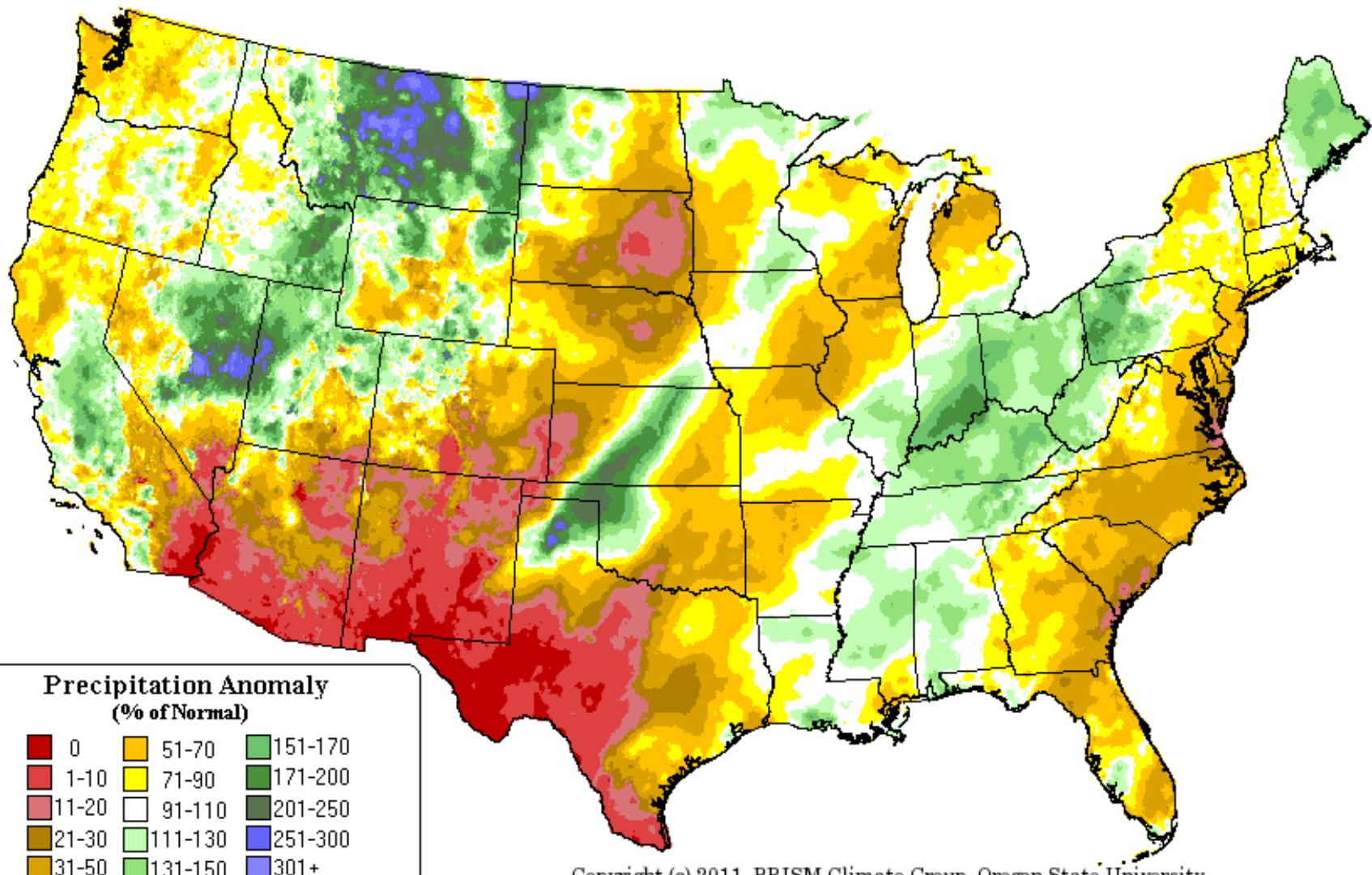


Colorado November 2010 Precipitation as Percentage of Average

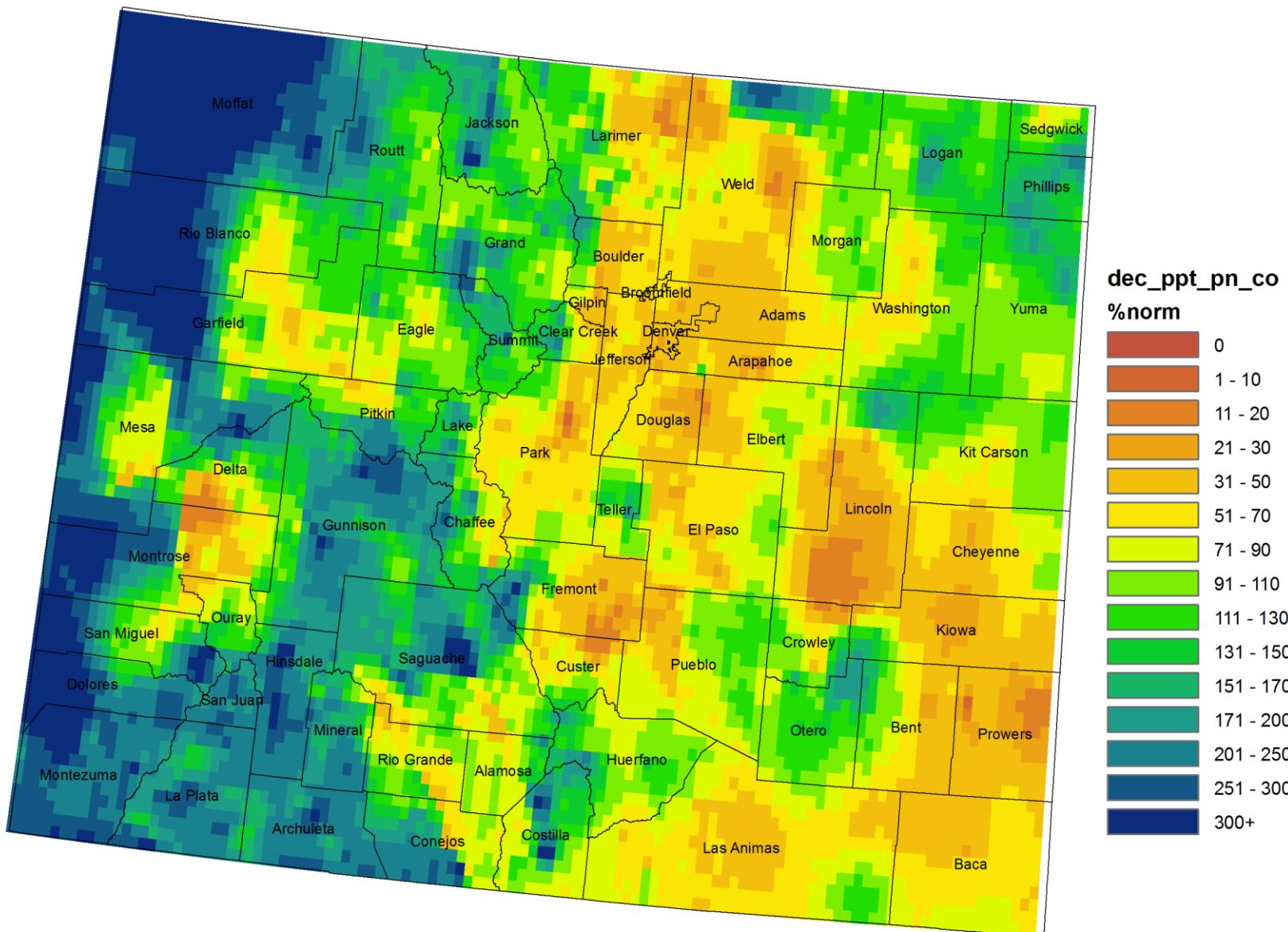


US Nov 2010 Percent of Normal

Precipitation Anomaly: Nov 2010
Final Data

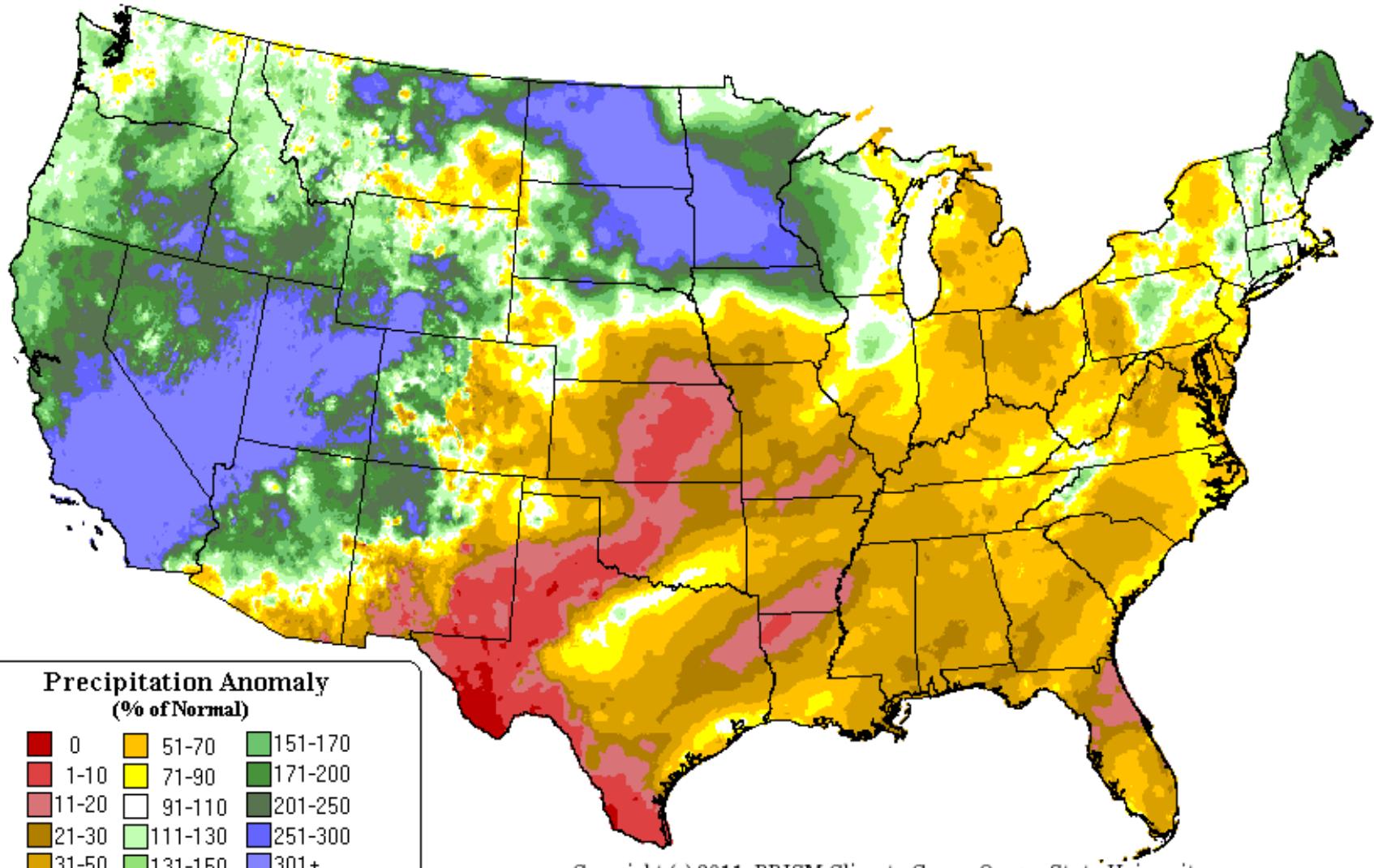


Colorado December 2010 Precipitation as Percentage of Average



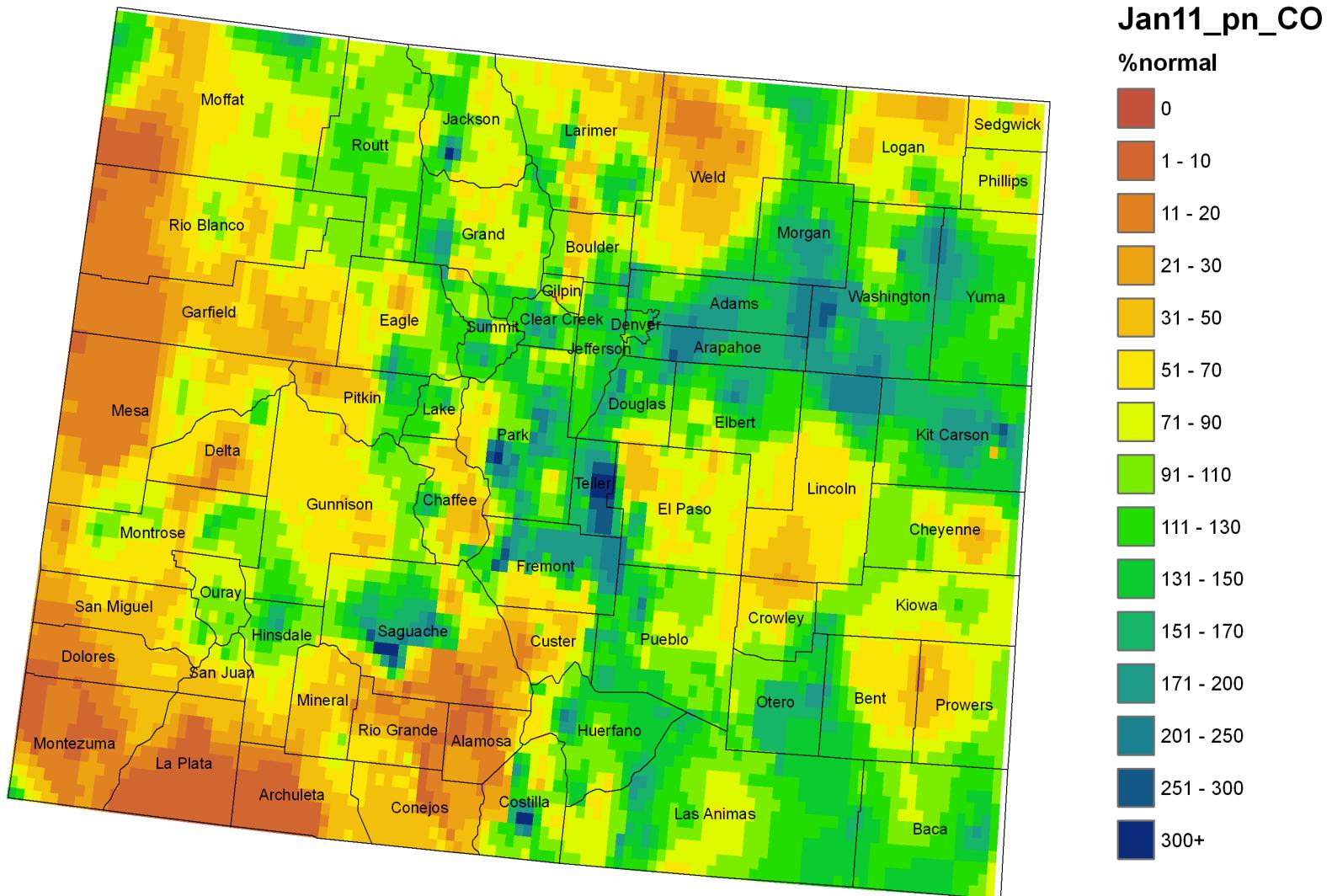
Dec 2010 Percent of Normal

Precipitation Anomaly: Dec 2010
Final Data



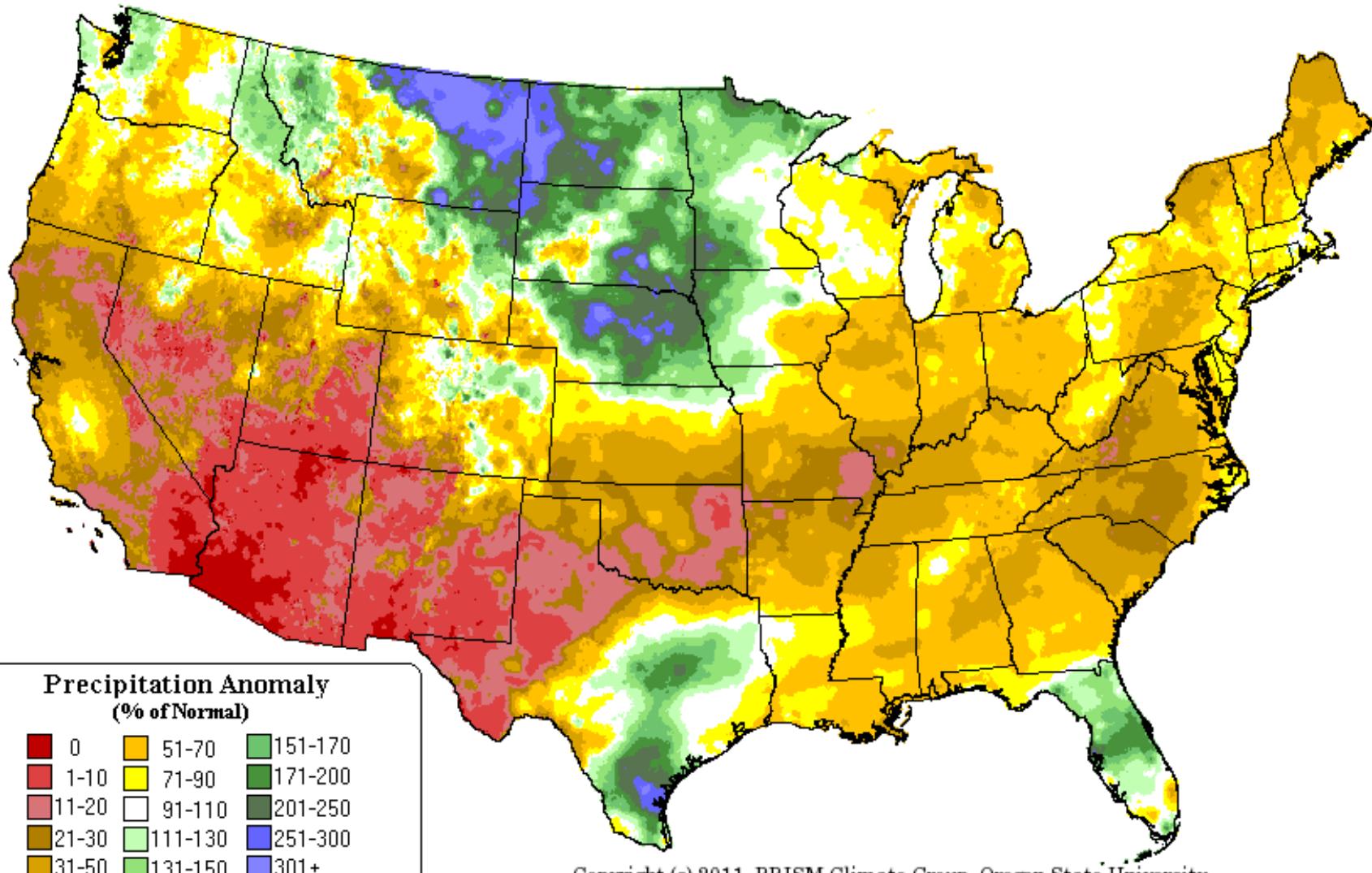
Colorado Precipitation as Percentage of Normal

January 2011

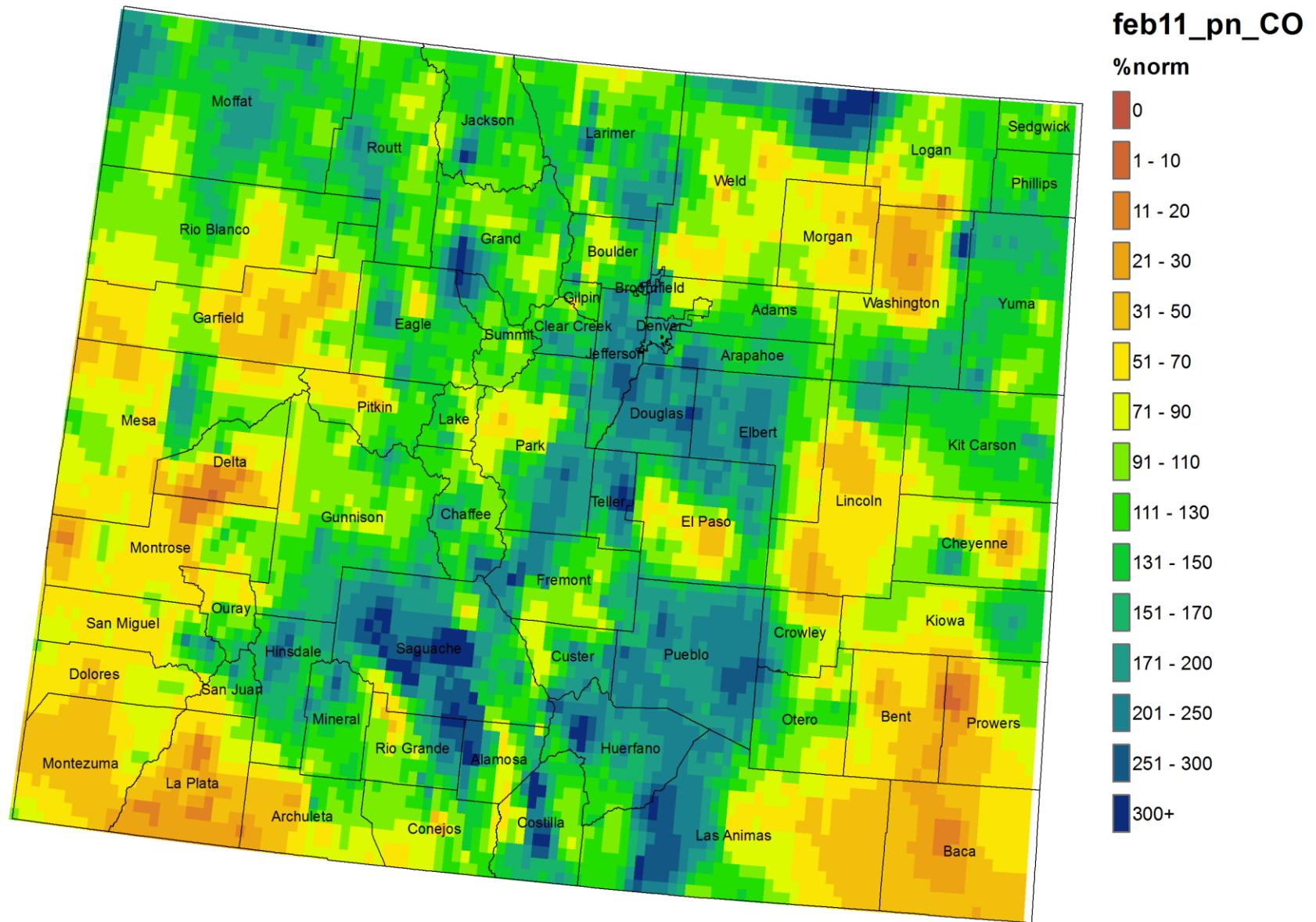


Jan 2011 Percent of Normal

Precipitation Anomaly: Jan 2011
Final Data

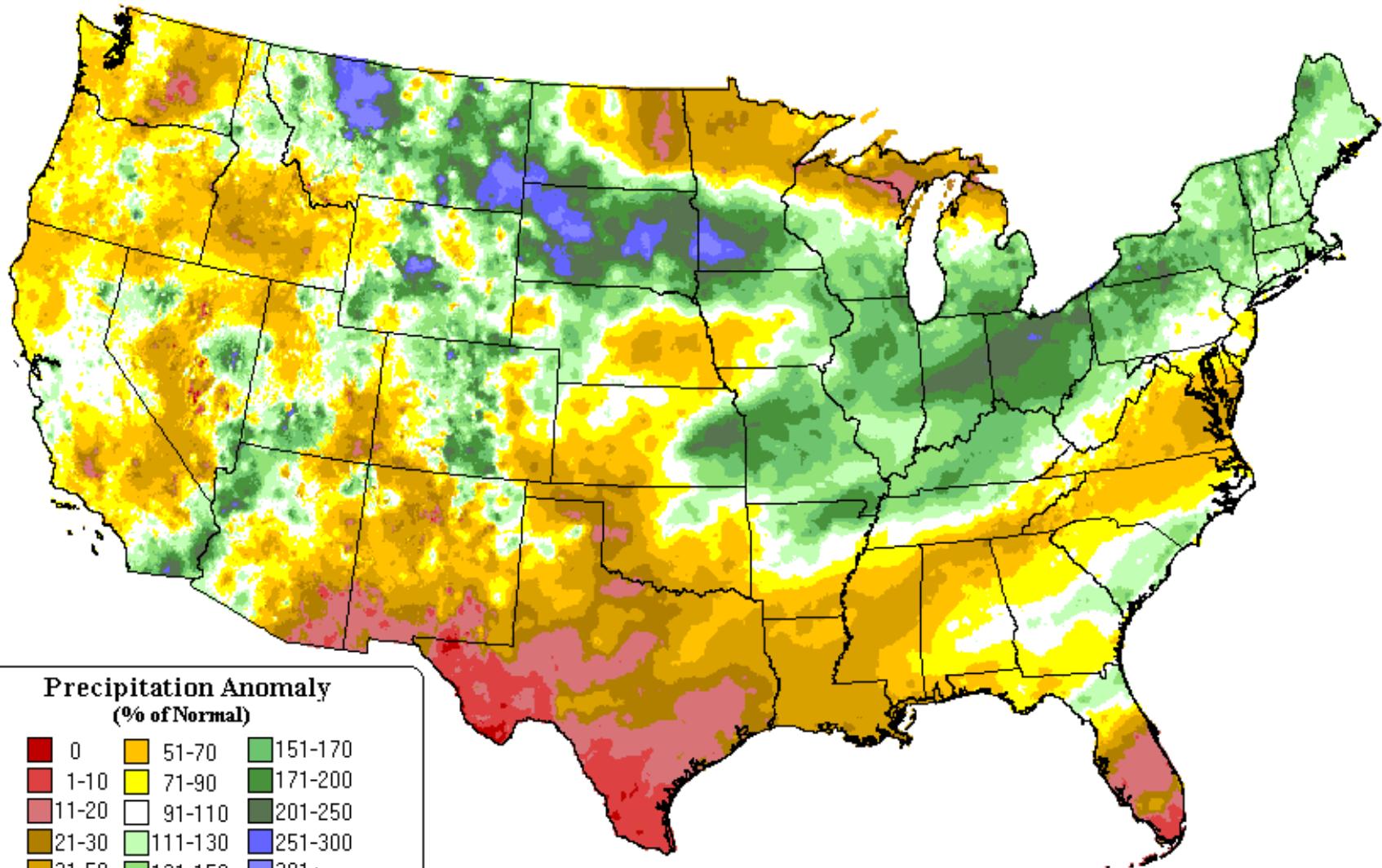


Colorado February Precipitation as Percentage of Normal

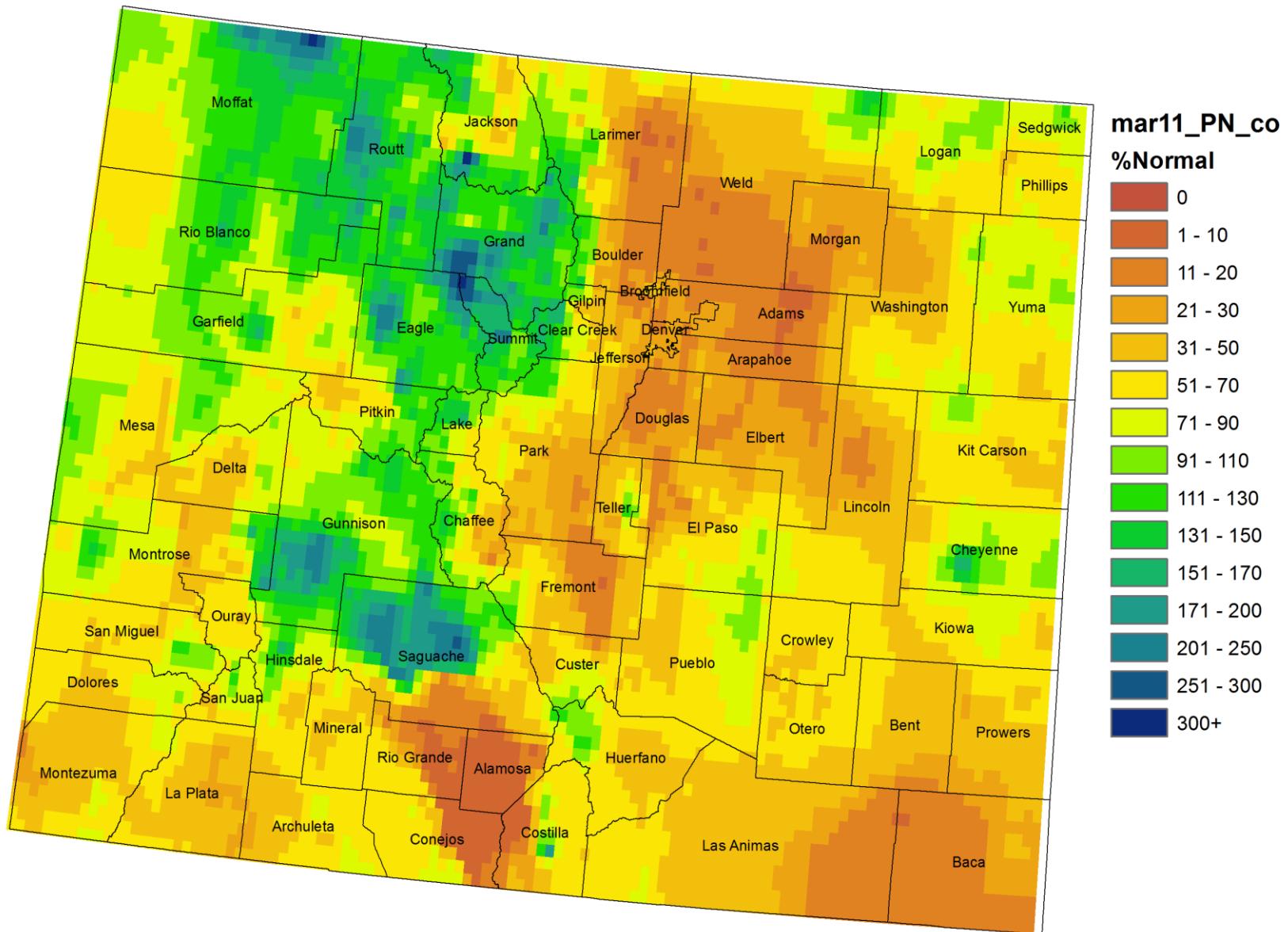


Feb 2011 Percent of Normal

Precipitation Anomaly: Feb 2011
Final Data

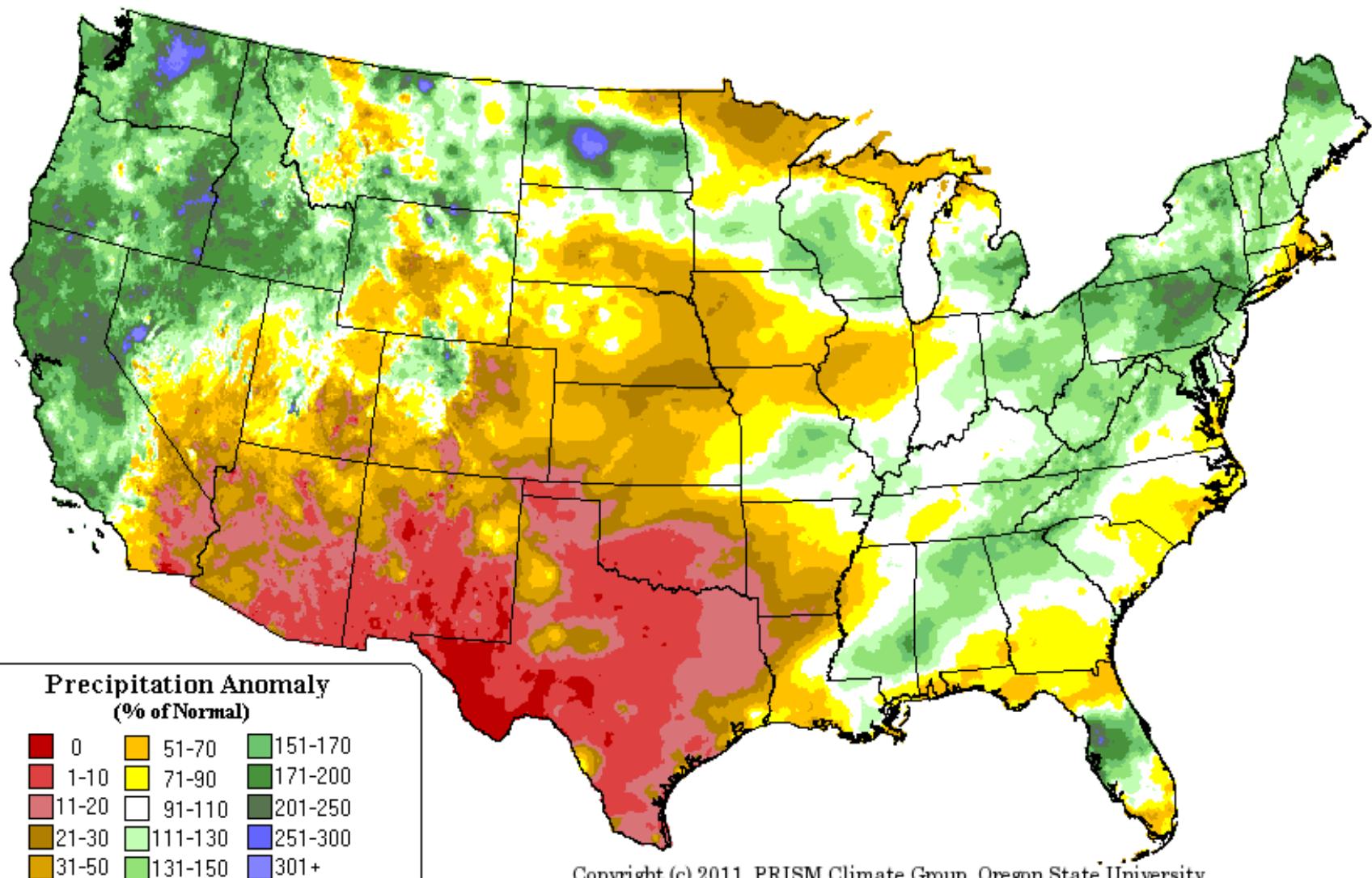


Colorado March Precipitation as Percentage of Normal



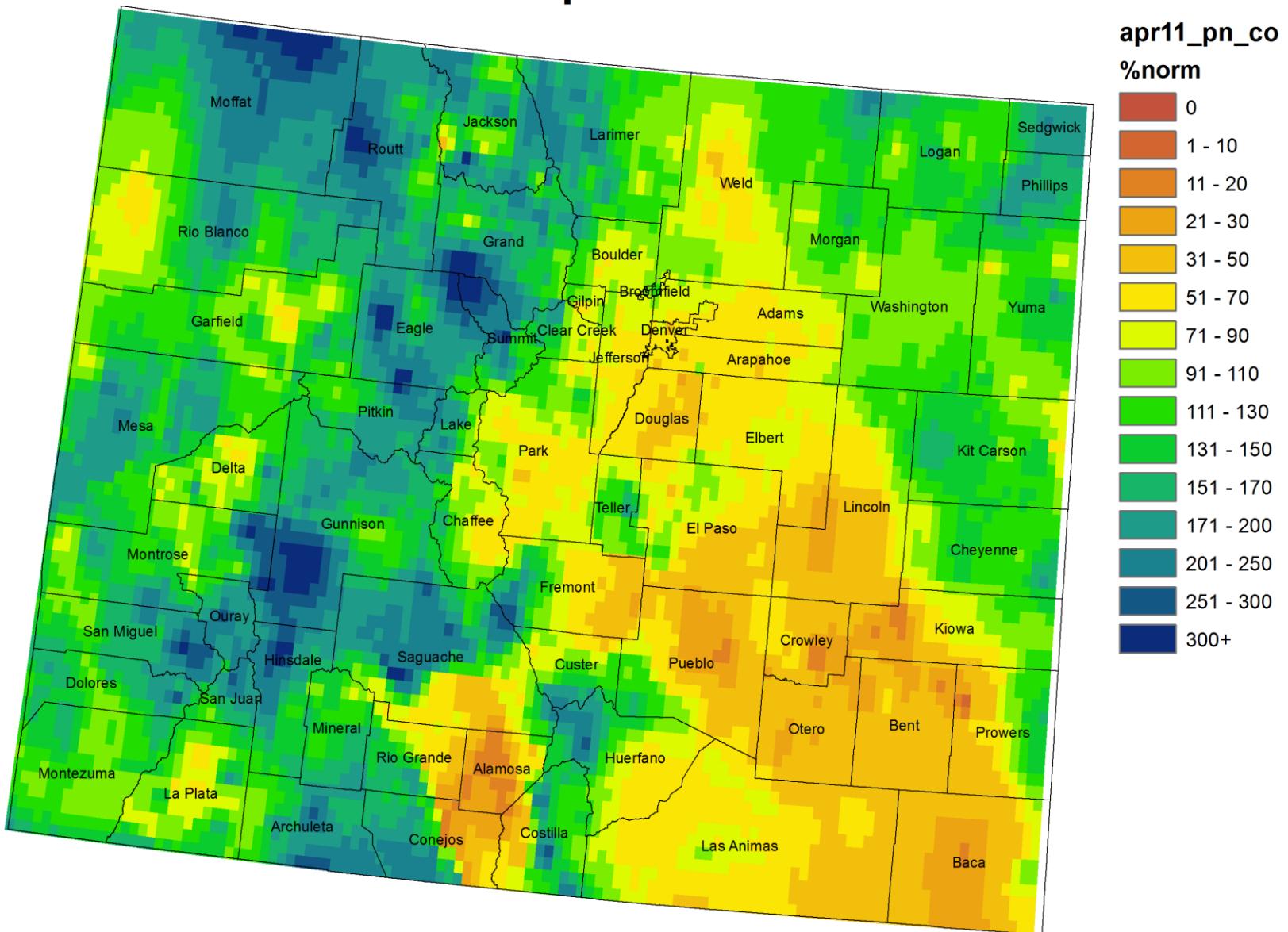
Mar 2011 Percent of Normal

Precipitation Anomaly: Mar 2011
Final Data



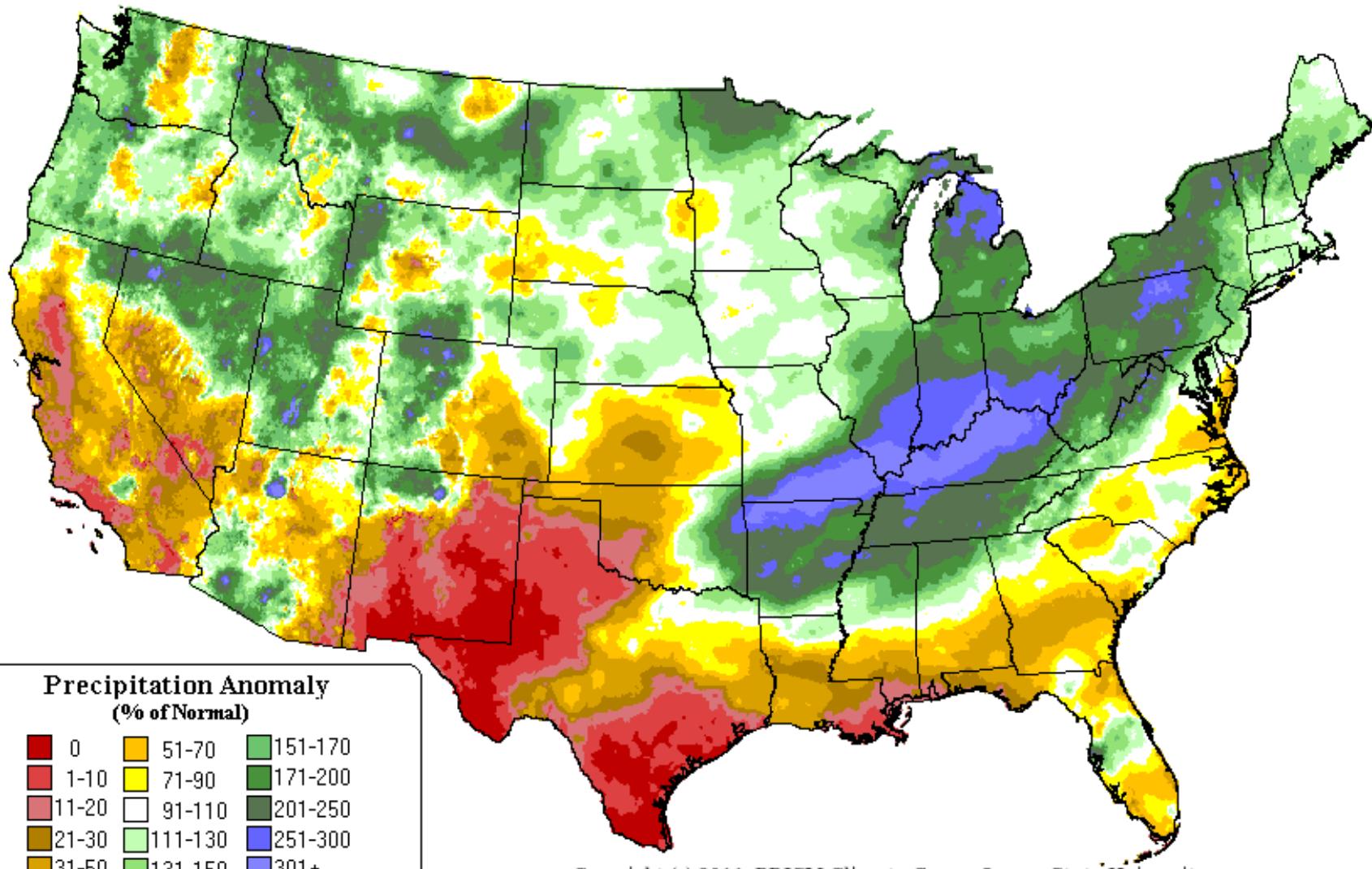
Colorado Precipitation as Percentage of Normal

April 2011

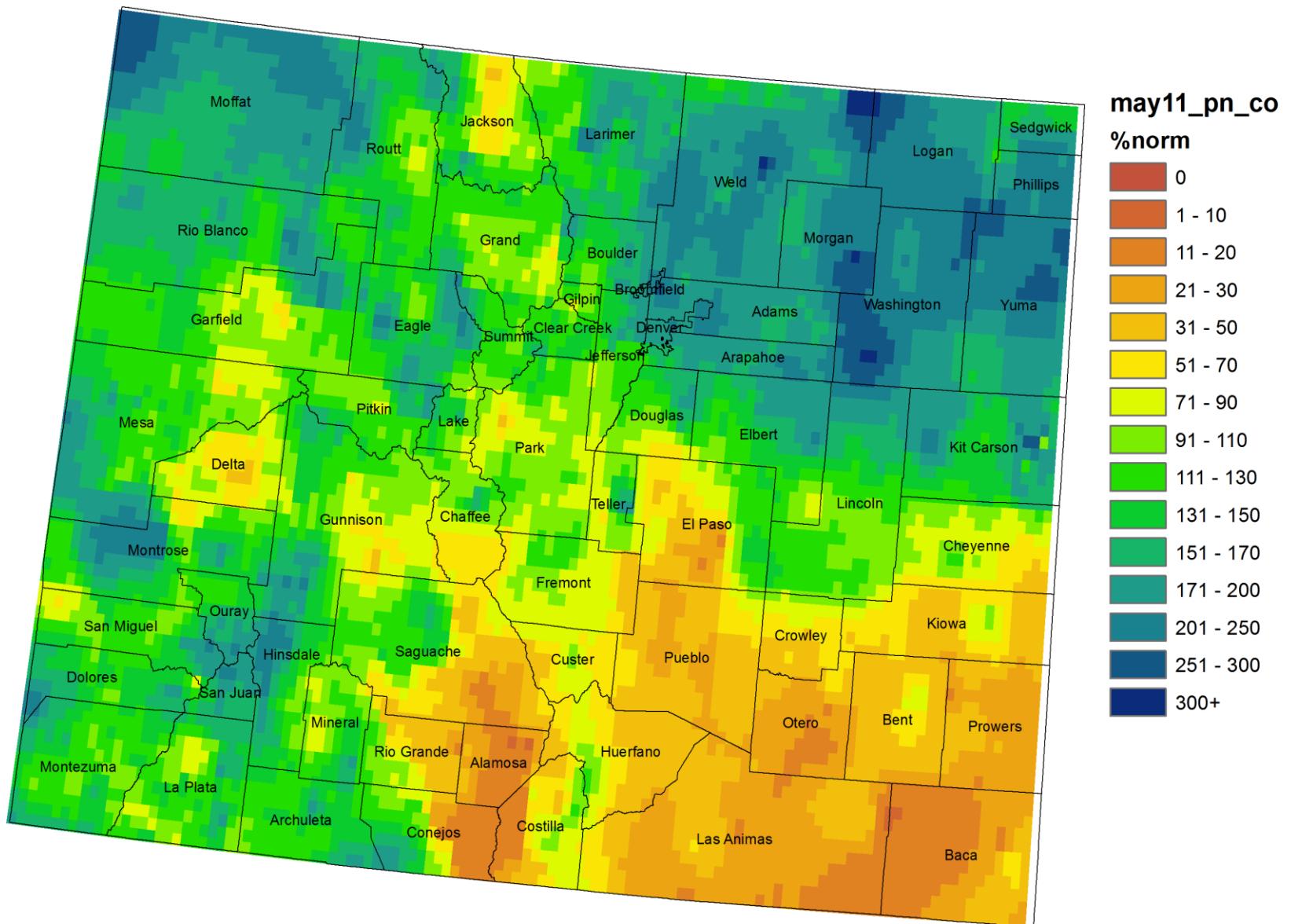


Apr 2011 Percent of Normal

Precipitation Anomaly: Apr 2011
Final Data

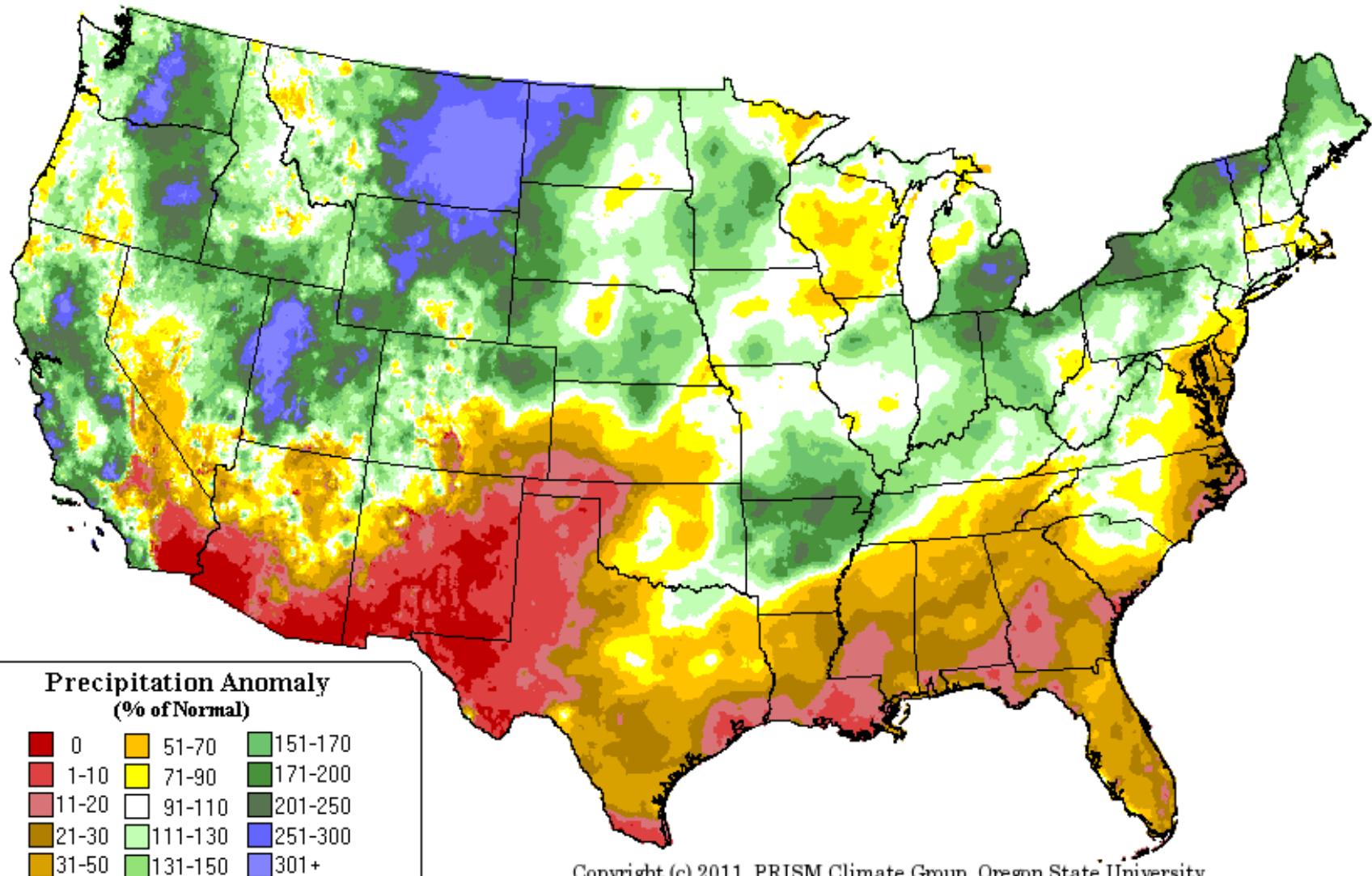


Colorado May 2011 Precipitation as Percentage of Normal



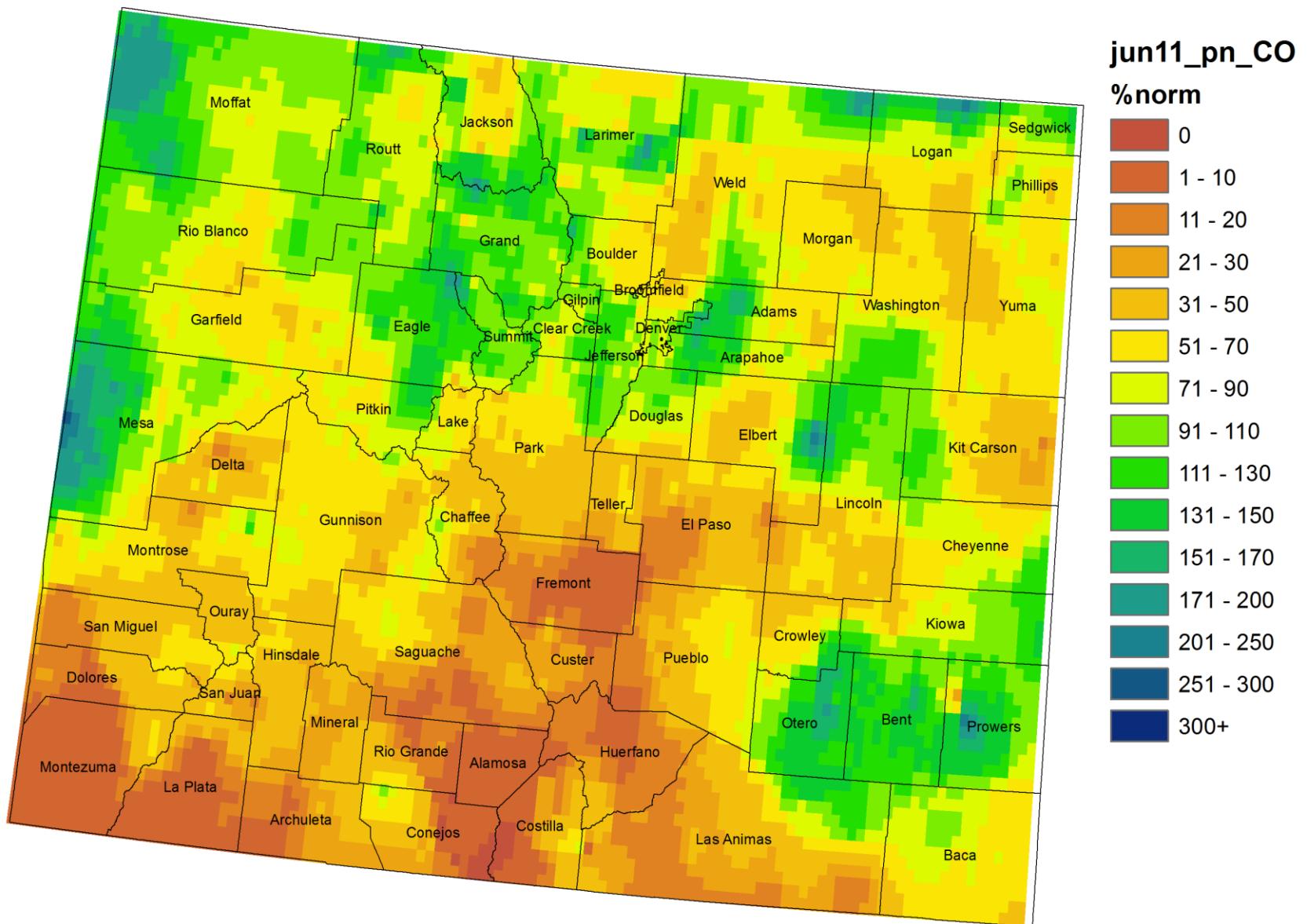
May 2011 Percent of Normal

Precipitation Anomaly: May 2011
Provisional Data



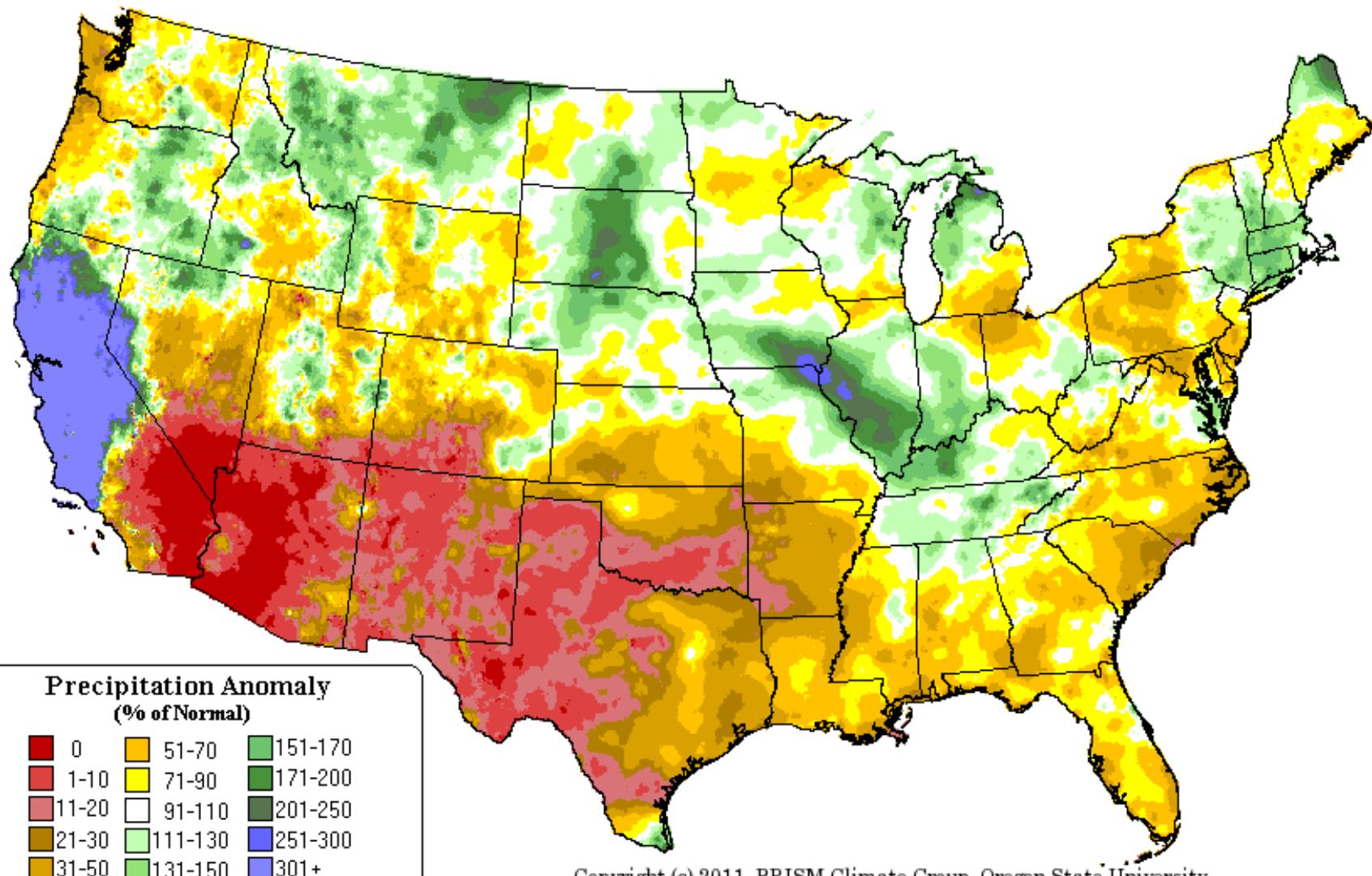
Colorado Precipitation as Percentage of Normal

June 2011



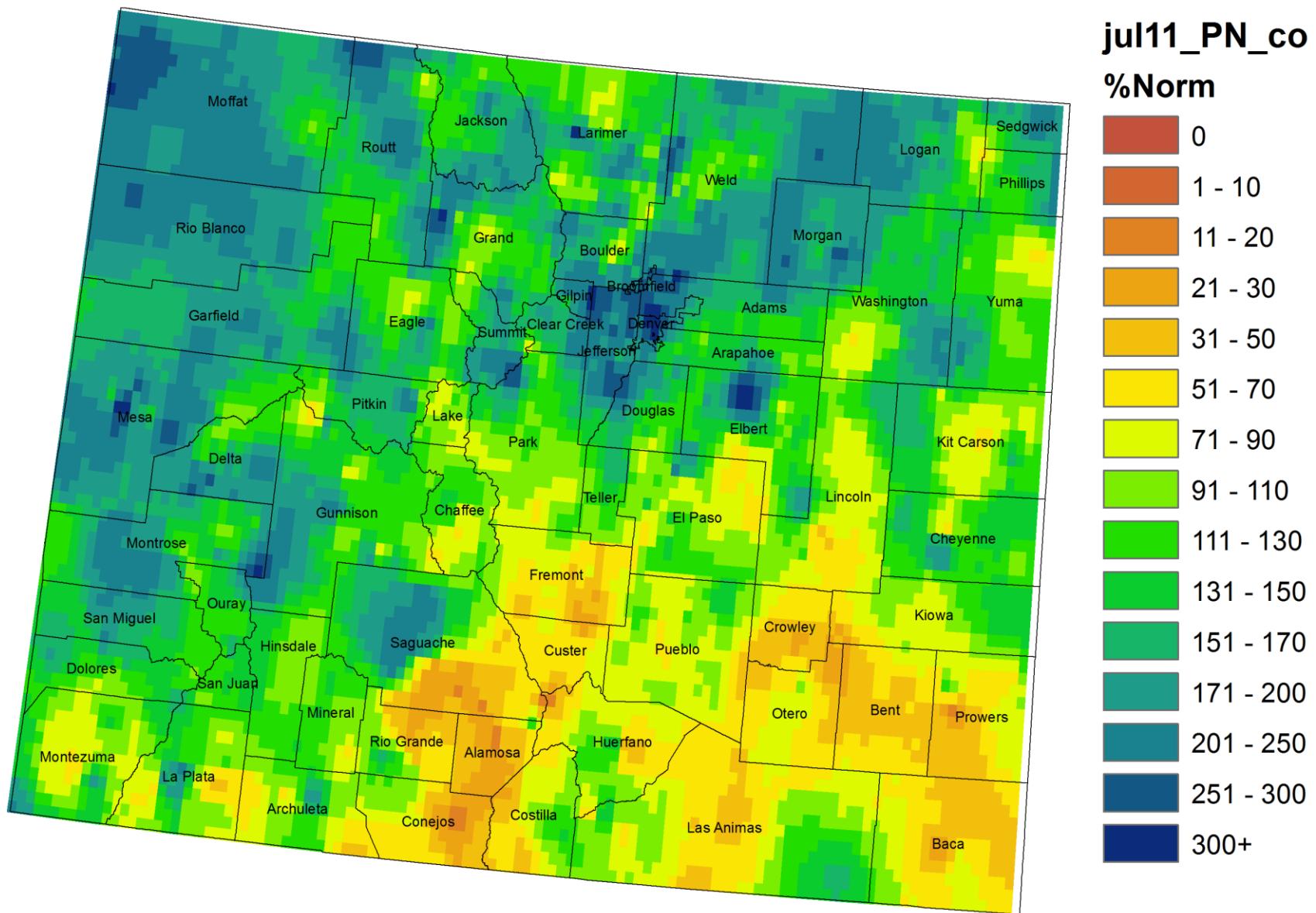
Jun 2011 Percent of Normal

Precipitation Anomaly: Jun 2011
Provisional Data



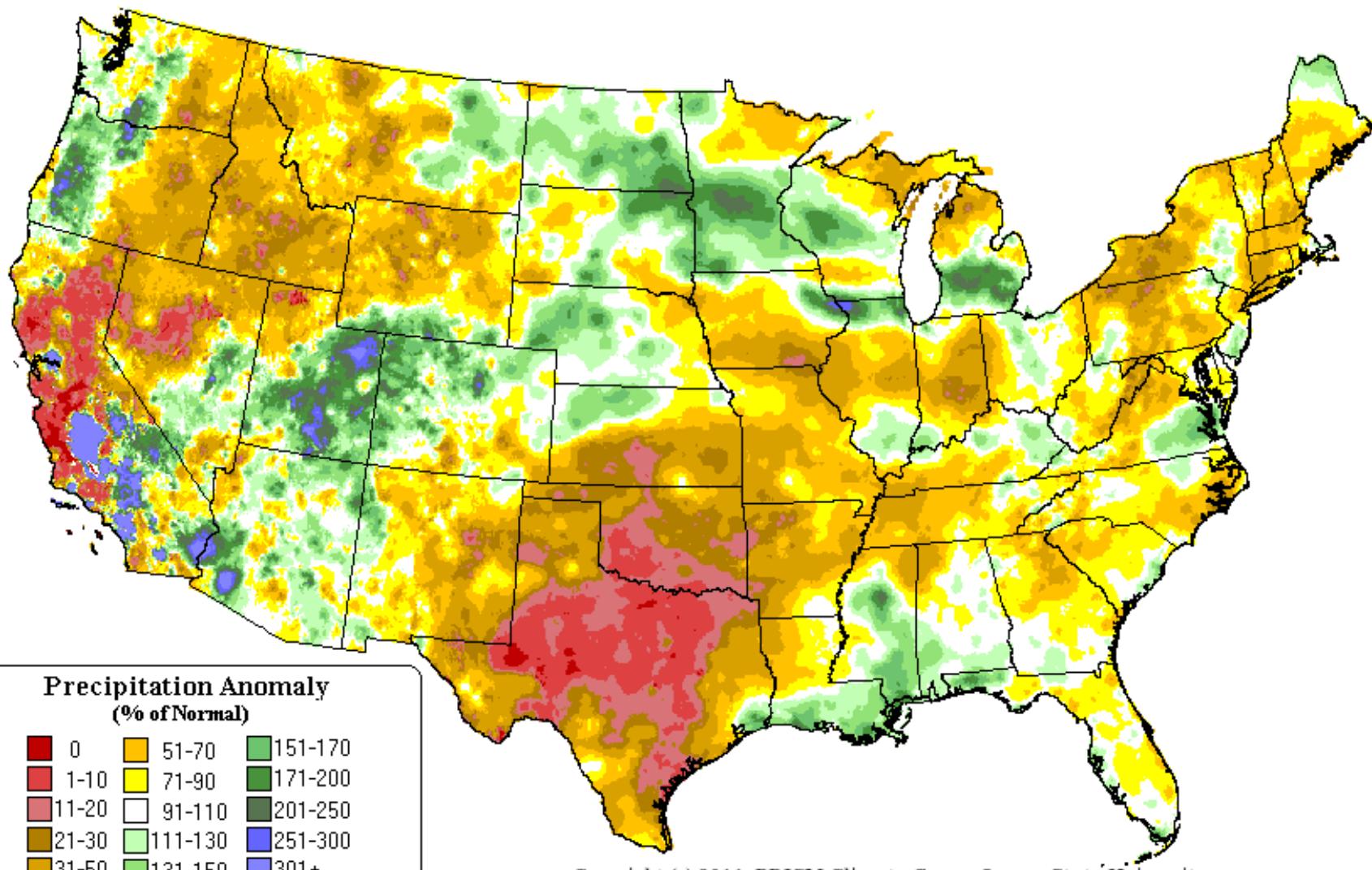
Colorado Precipitation as Percentage of Normal

July 2011



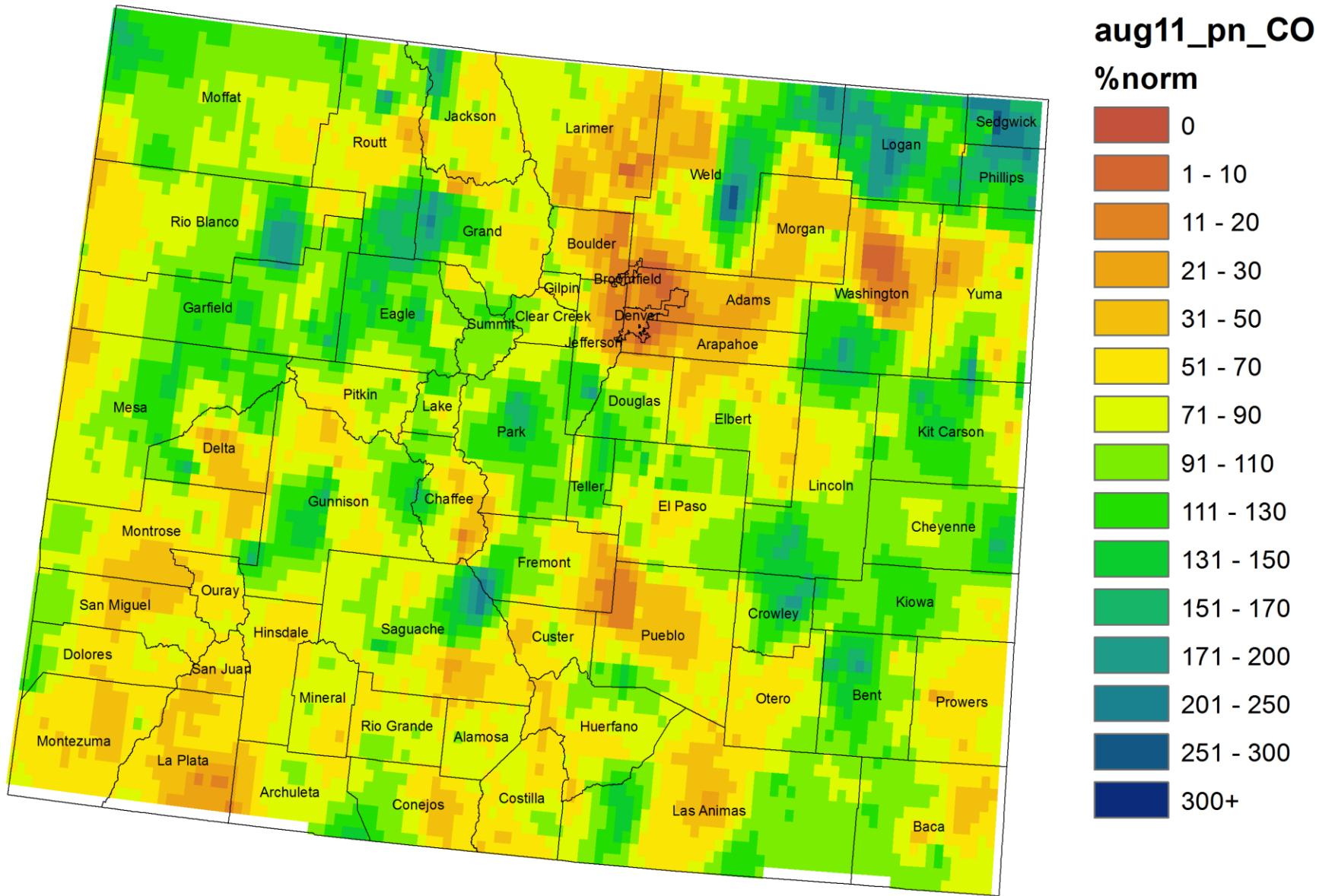
Jul 2011 Percent of Normal

Precipitation Anomaly: Jul 2011
Provisional Data



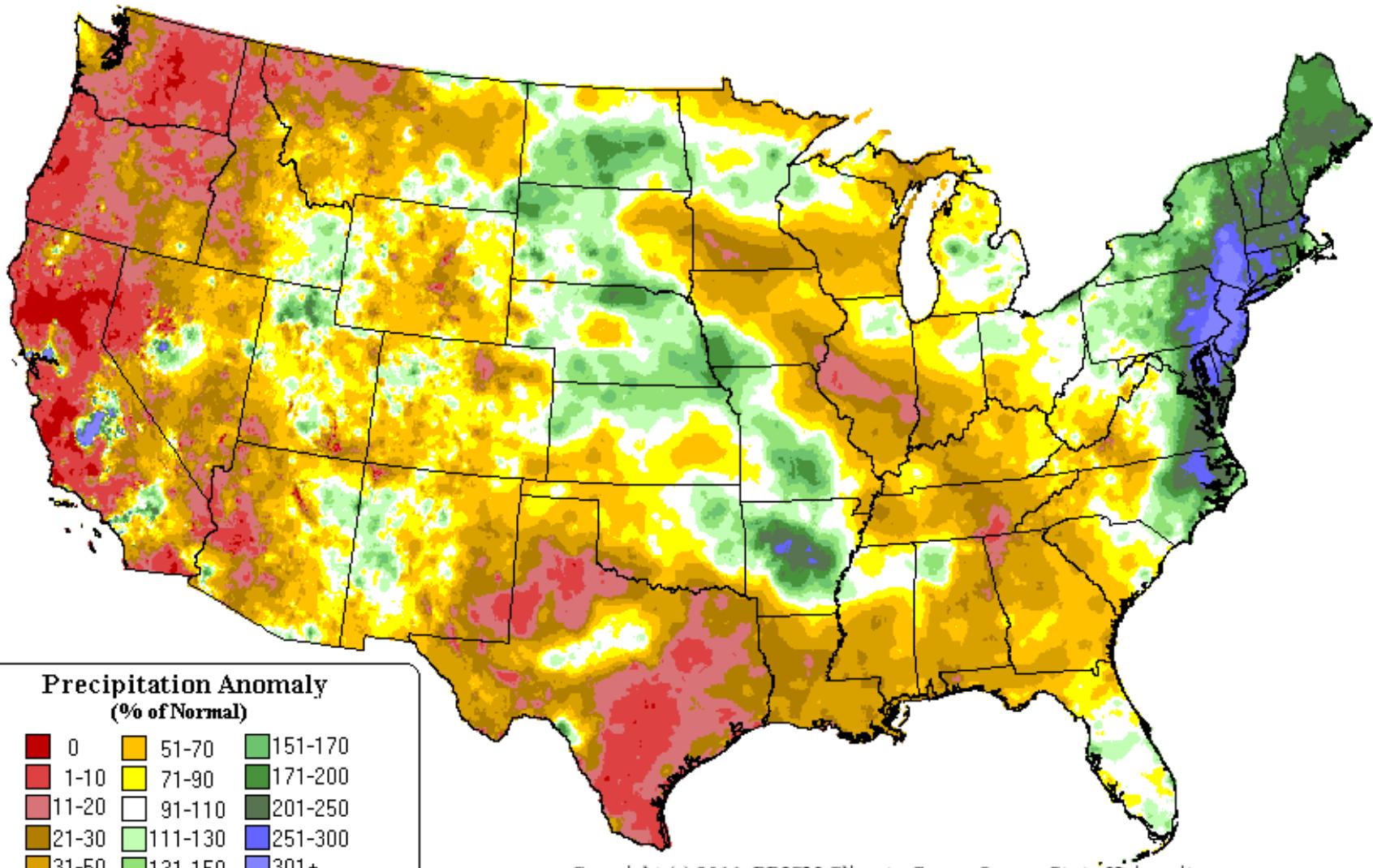
Copyright (c) 2011, PRISM Climate Group, Oregon State University
<http://prism.oregonstate.edu> - Map created Sep 01 2011

Colorado August 2011 Precipitation as Percentage of Normal

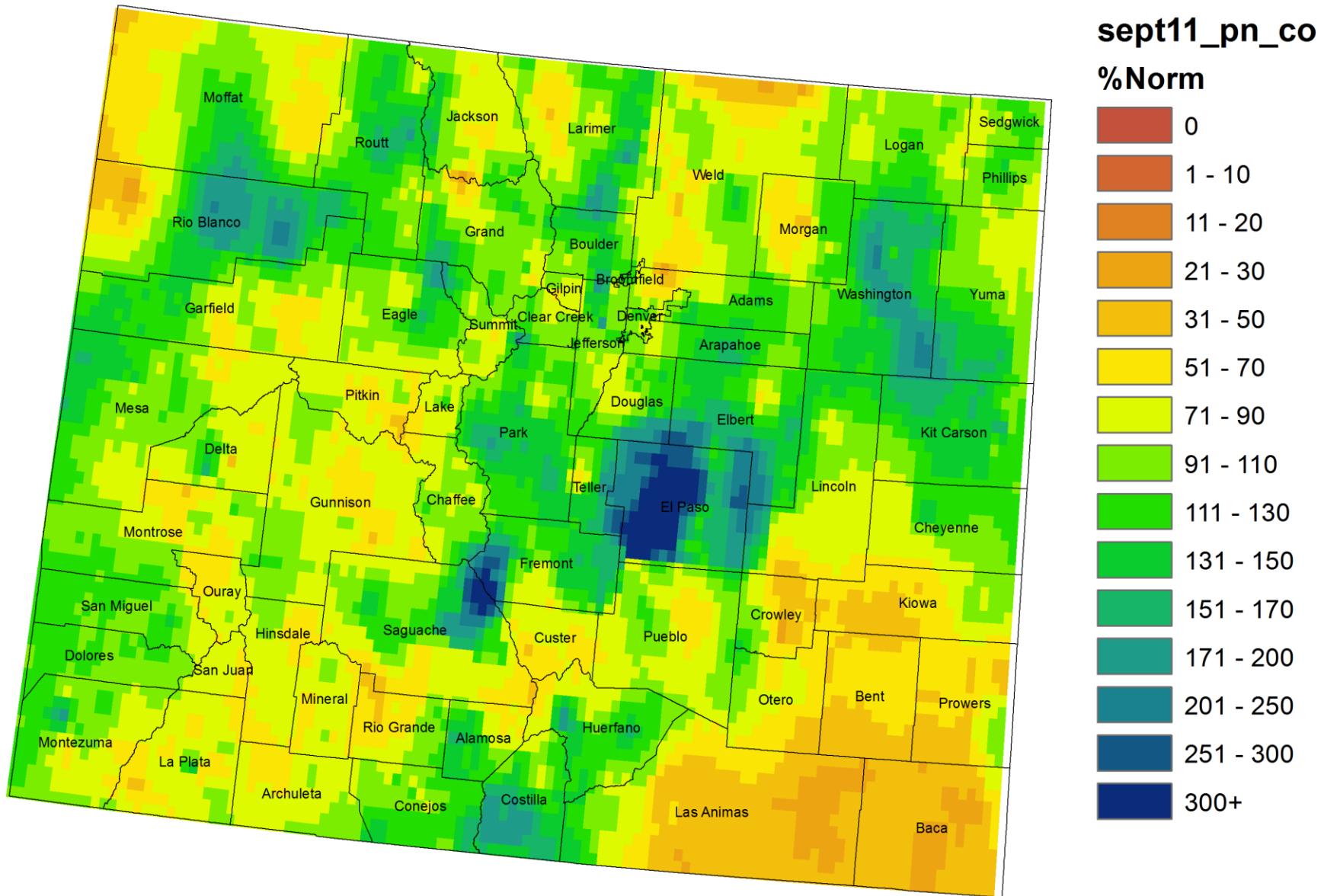


Aug 2011 Percent of Normal

Precipitation Anomaly: Aug 2011
Provisional Data

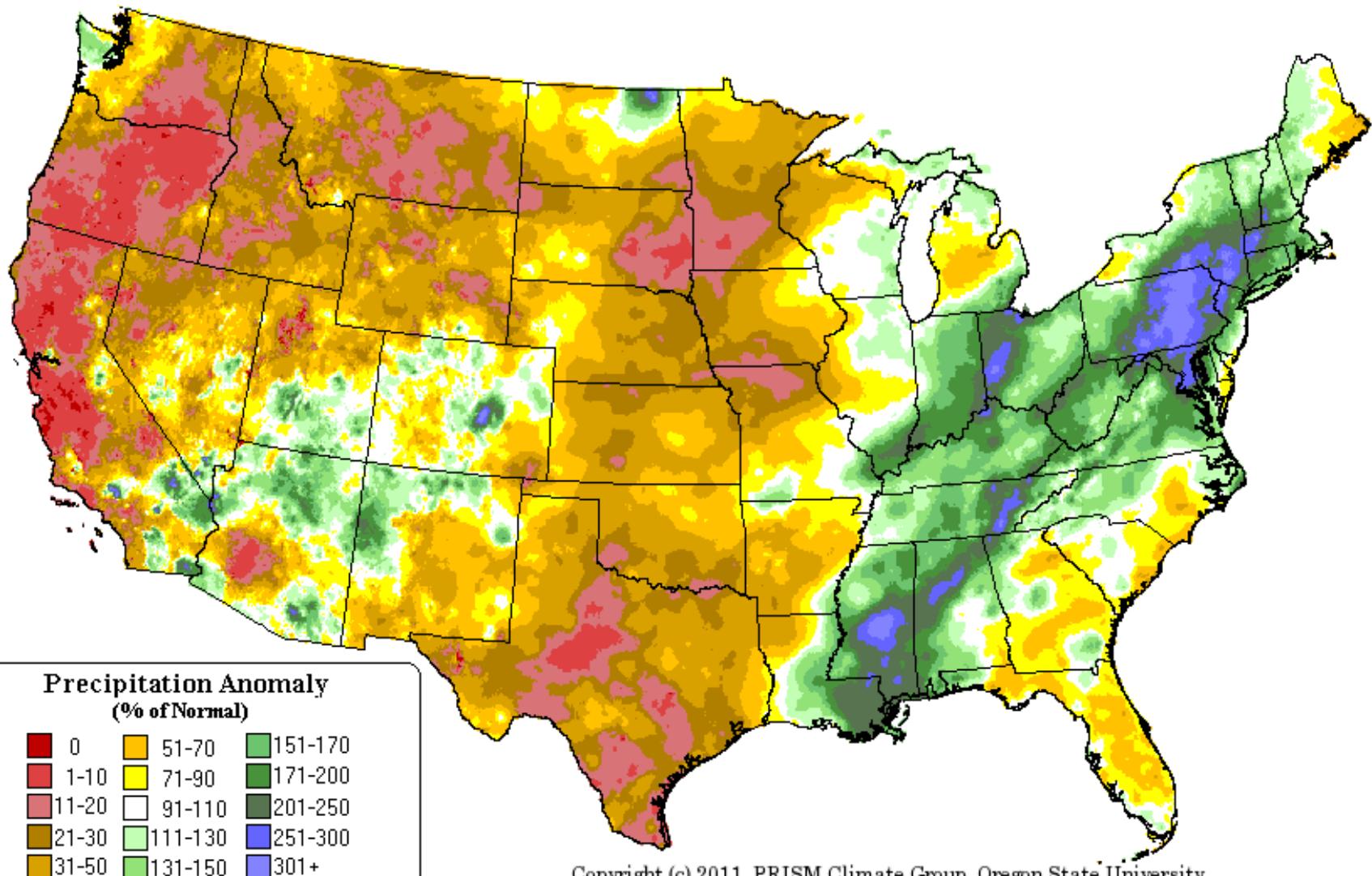


Colorado September 2011 Precipitation as Percentage of Normal

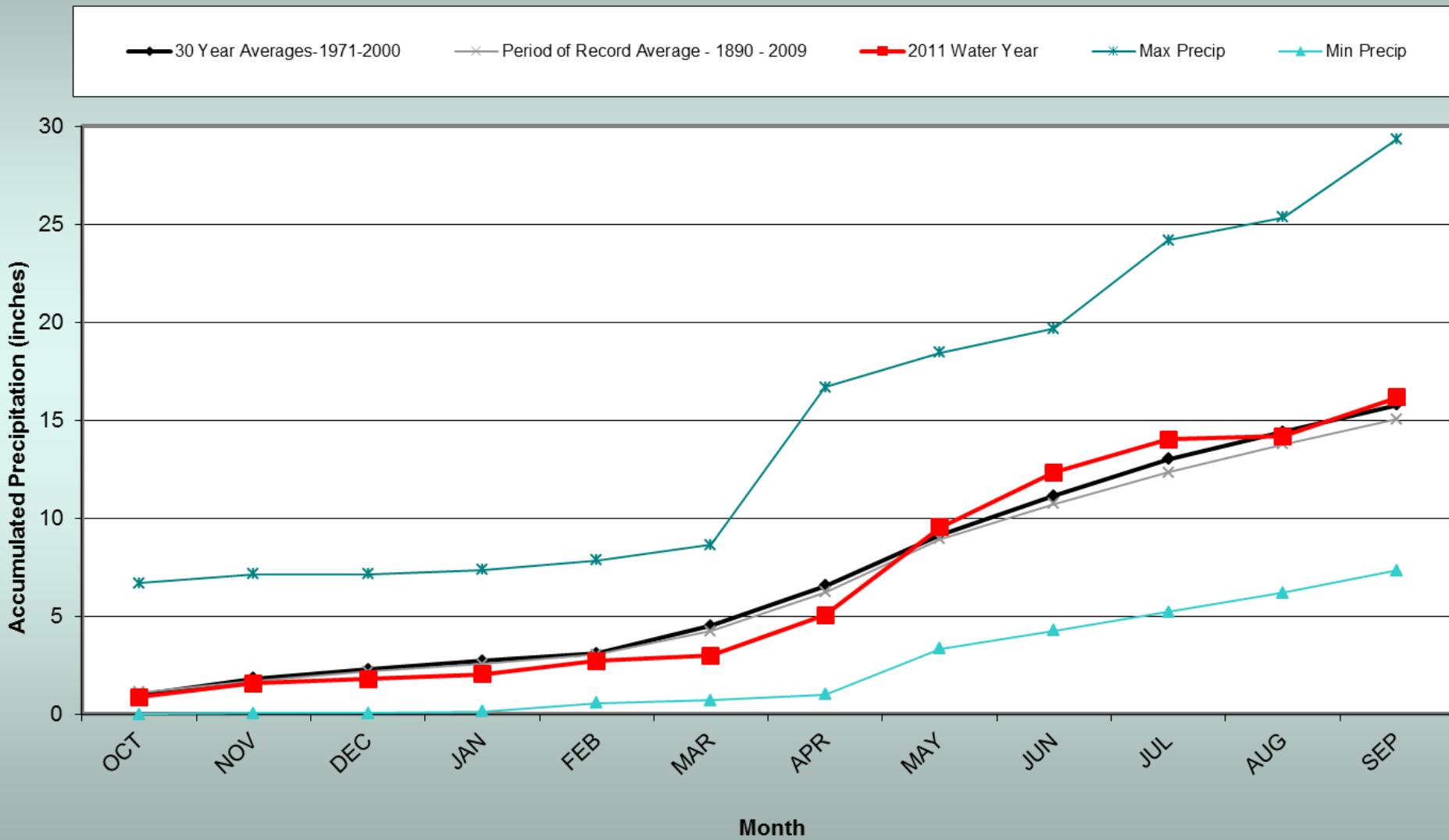


Sep 2011 Percent of Normal

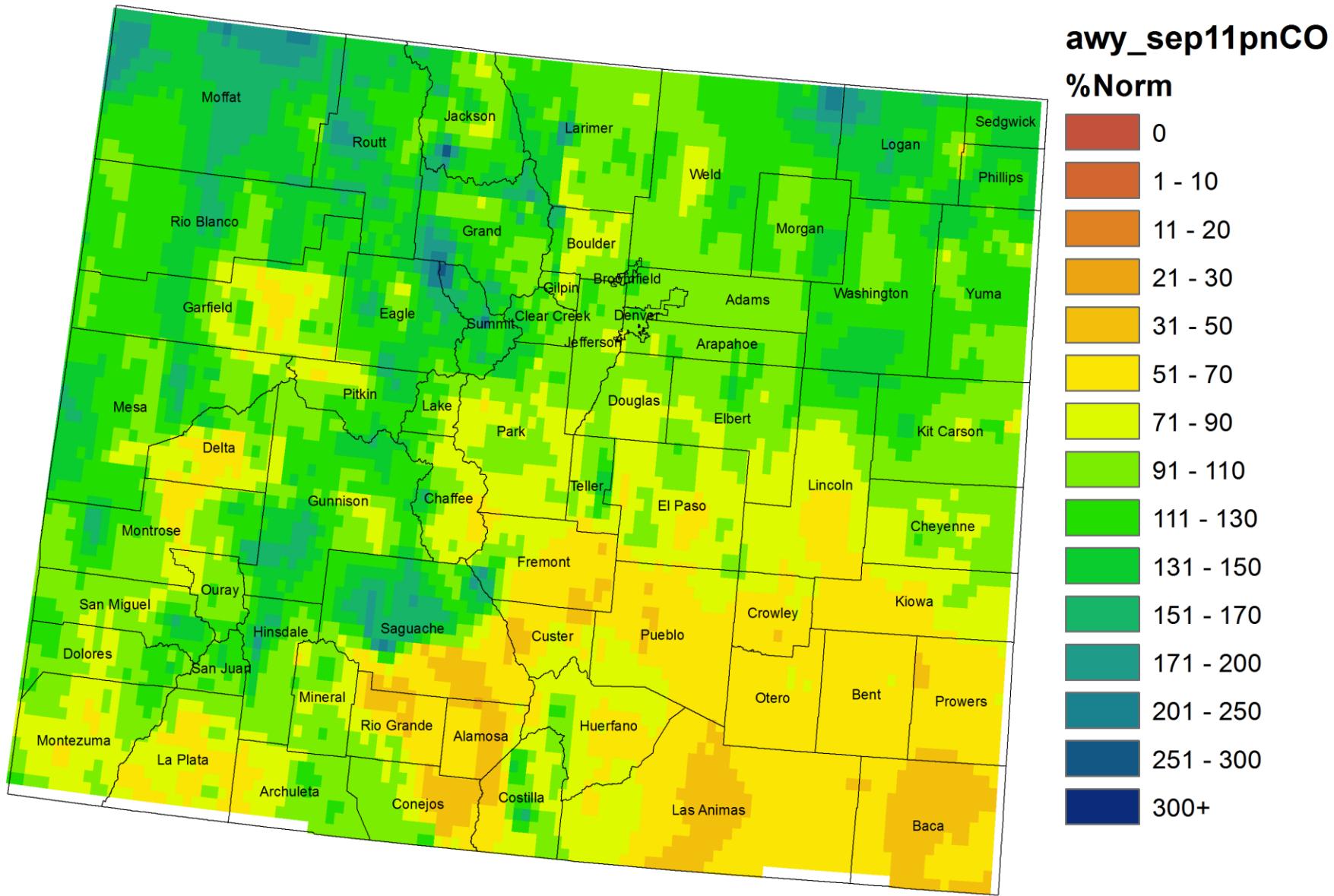
Precipitation Anomaly: Sep 2011
Provisional Data



Fort Collins 2011 Water Year

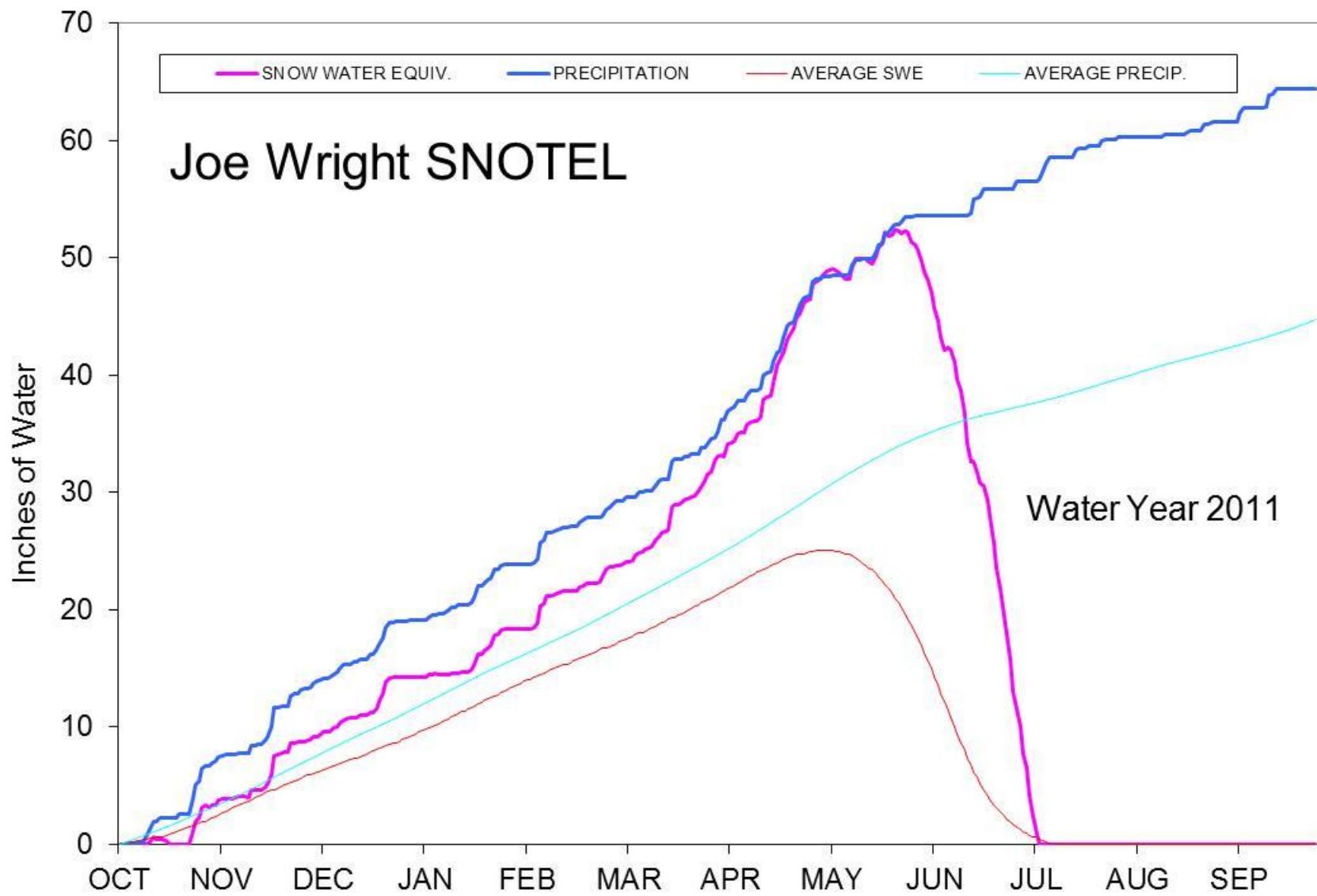


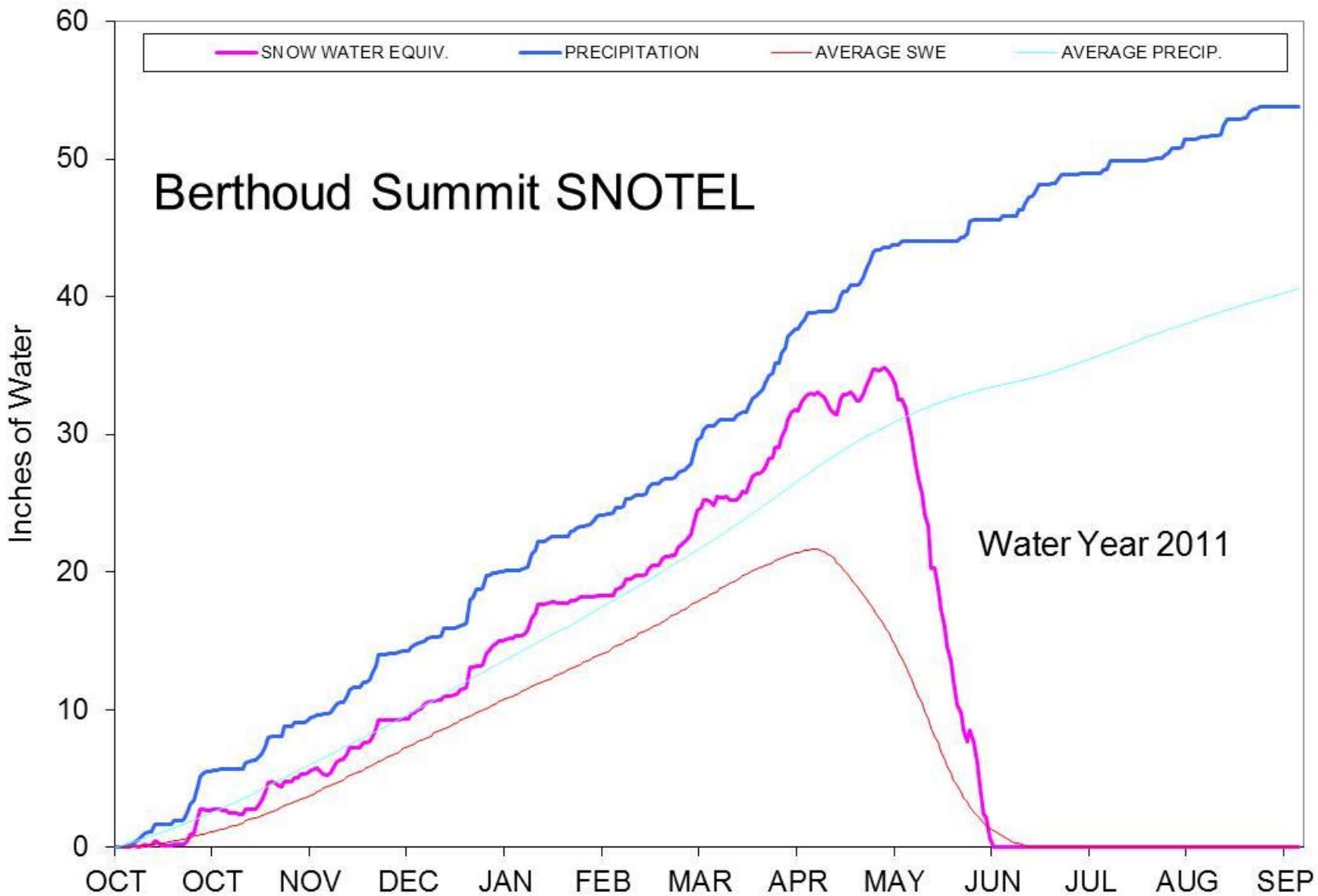
Colorado Water Year 2011 Precipitation as Percentage of Normal (Oct 10 - Sept 11)

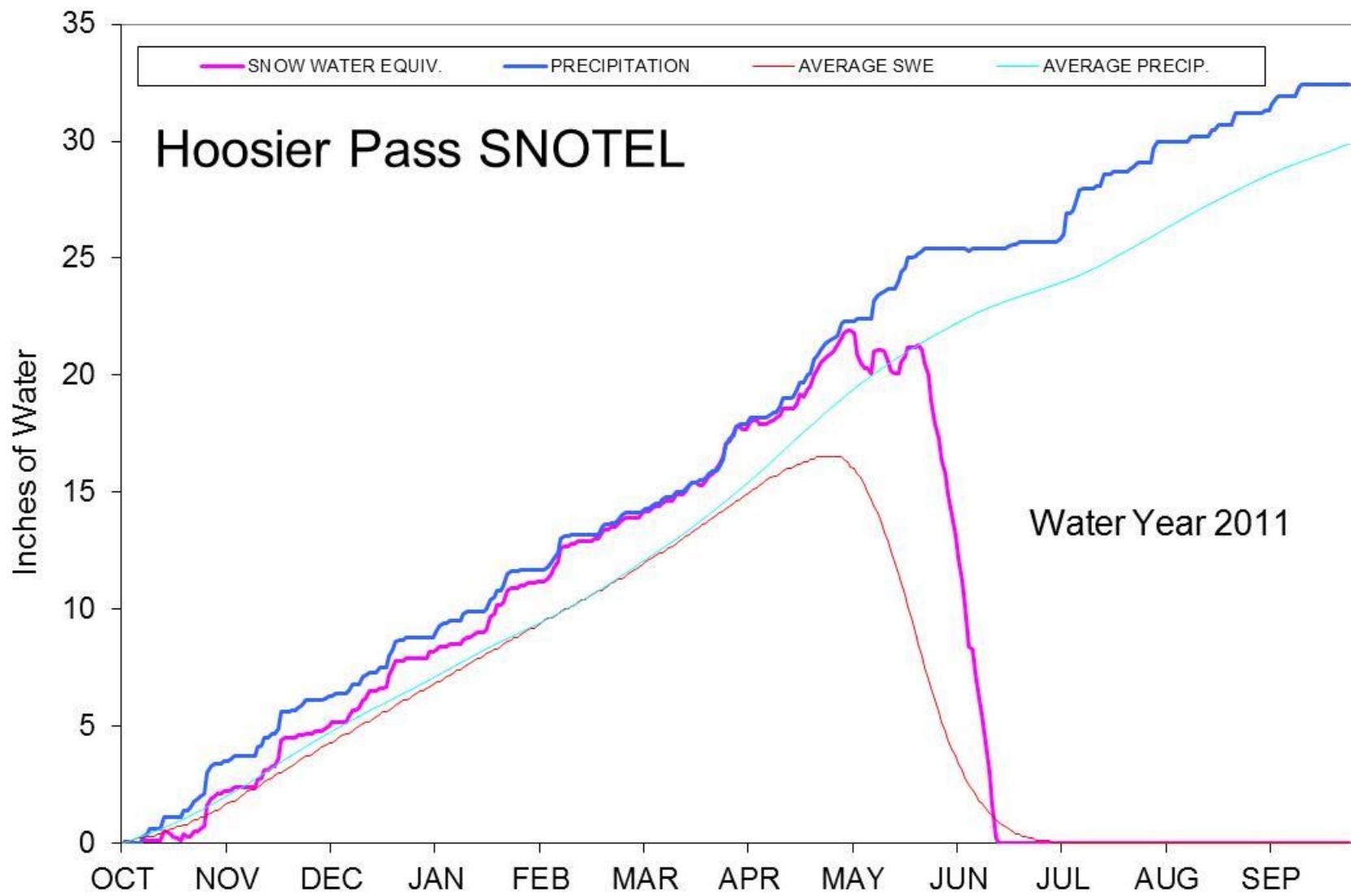


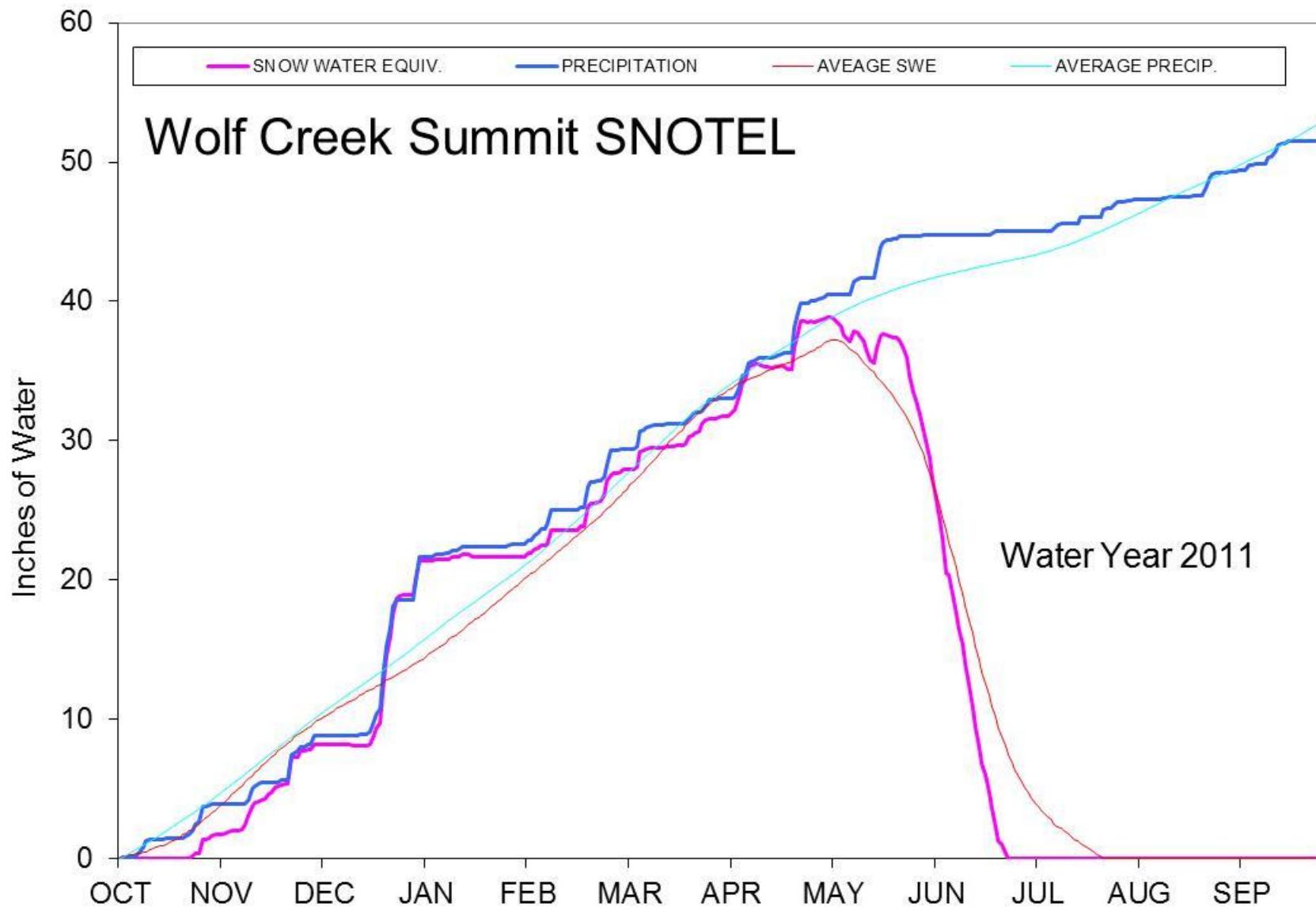
WY2011 Snowpack Accumulation and Meltout



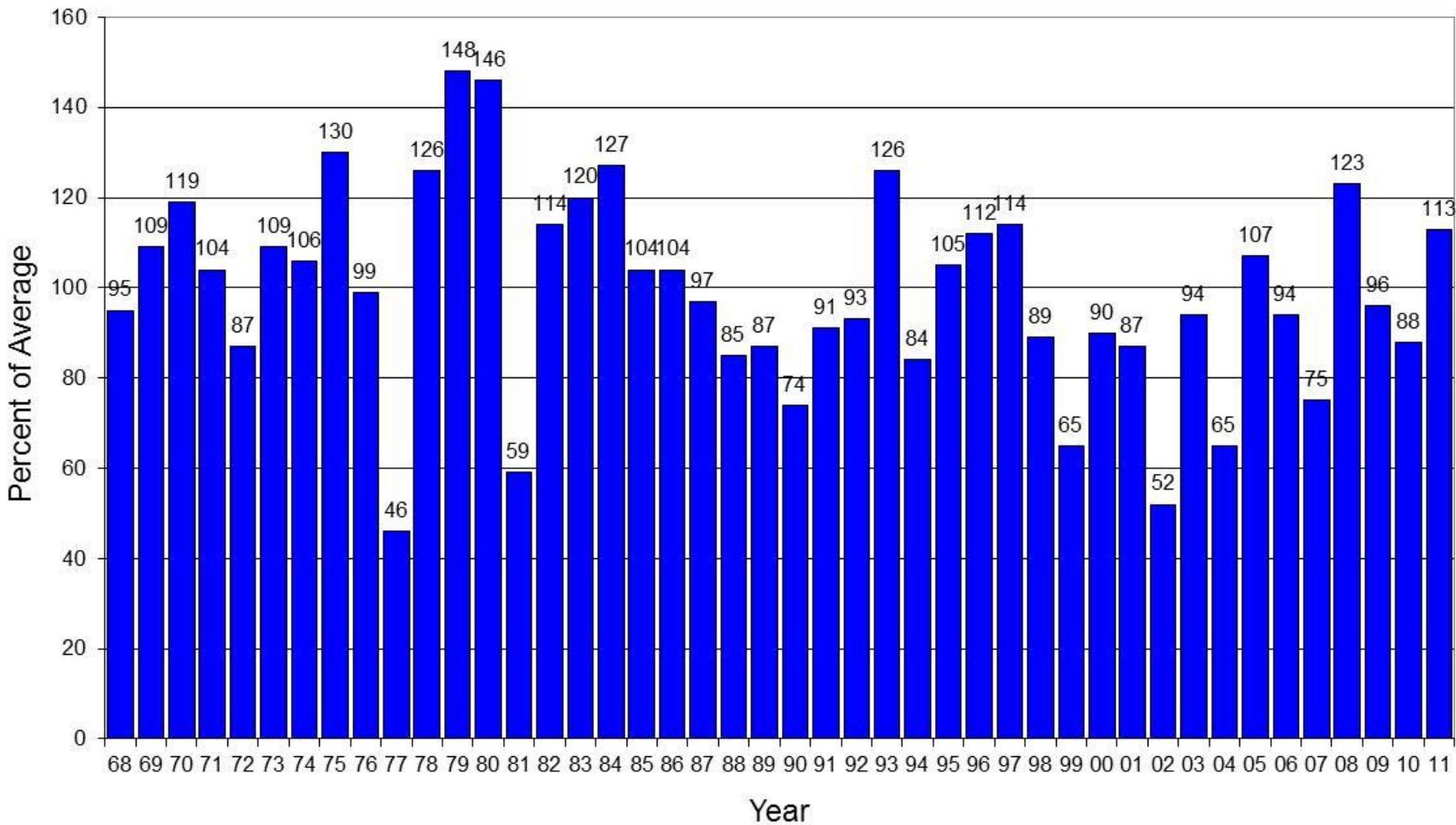








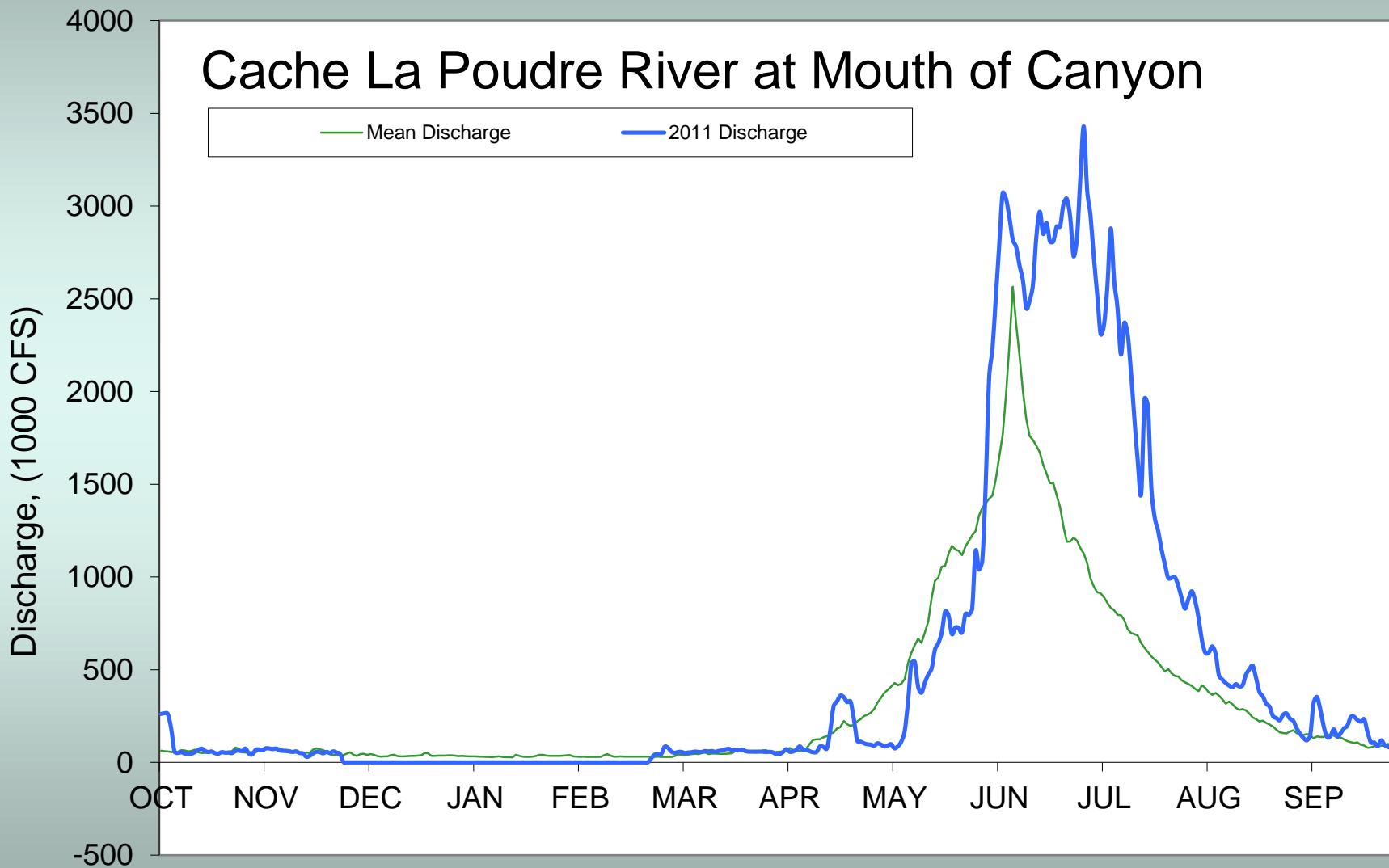
APRIL 1 SNOWPACK COLORADO STATEWIDE



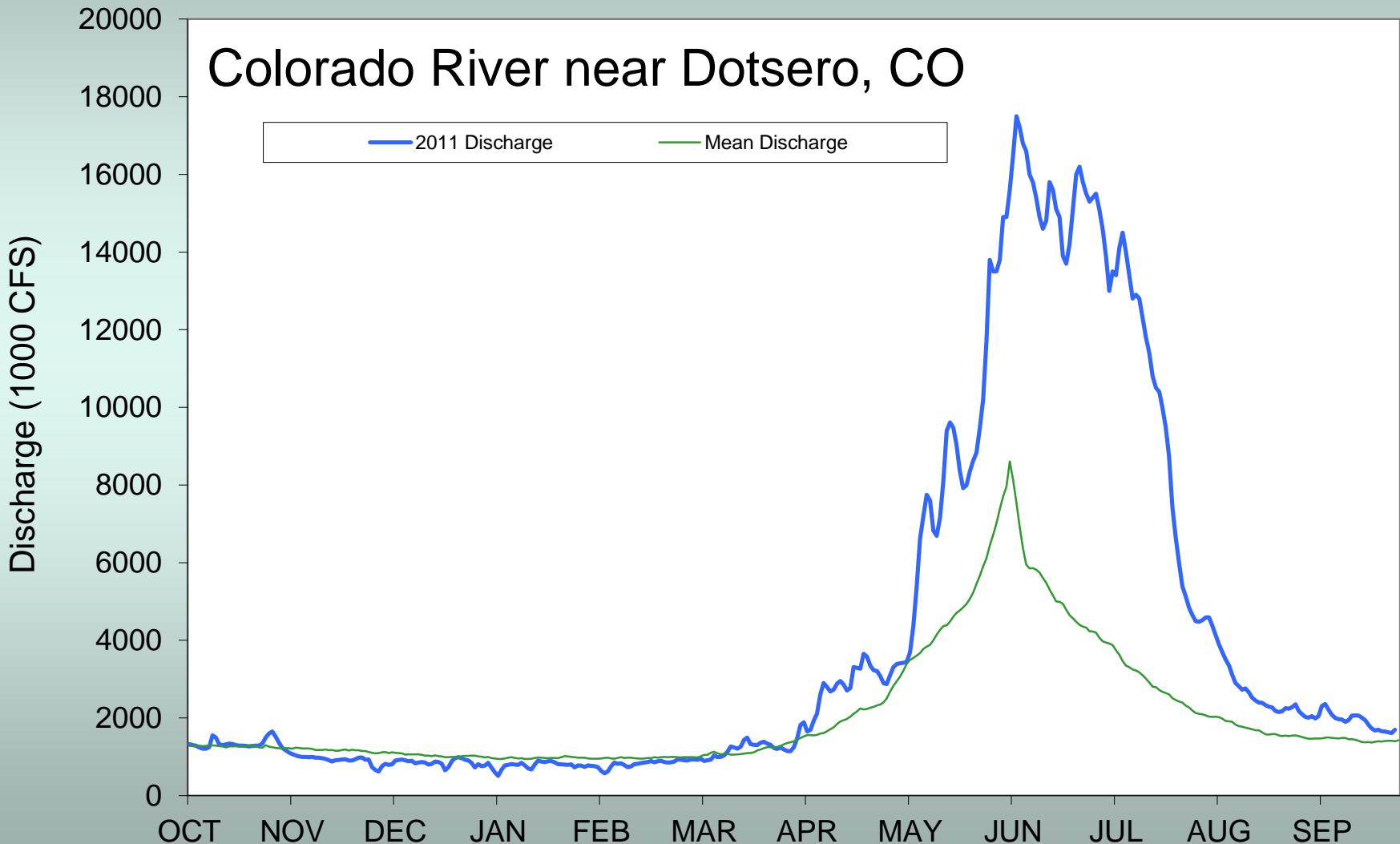
A photograph of a forest stream flowing over mossy rocks. The water is clear and flows rapidly. The banks of the stream are covered in green moss and small plants. In the background, there is a dense forest of tall evergreen trees. The foreground is framed by the bark of two large pine trees on the left and right sides.

Streamflow

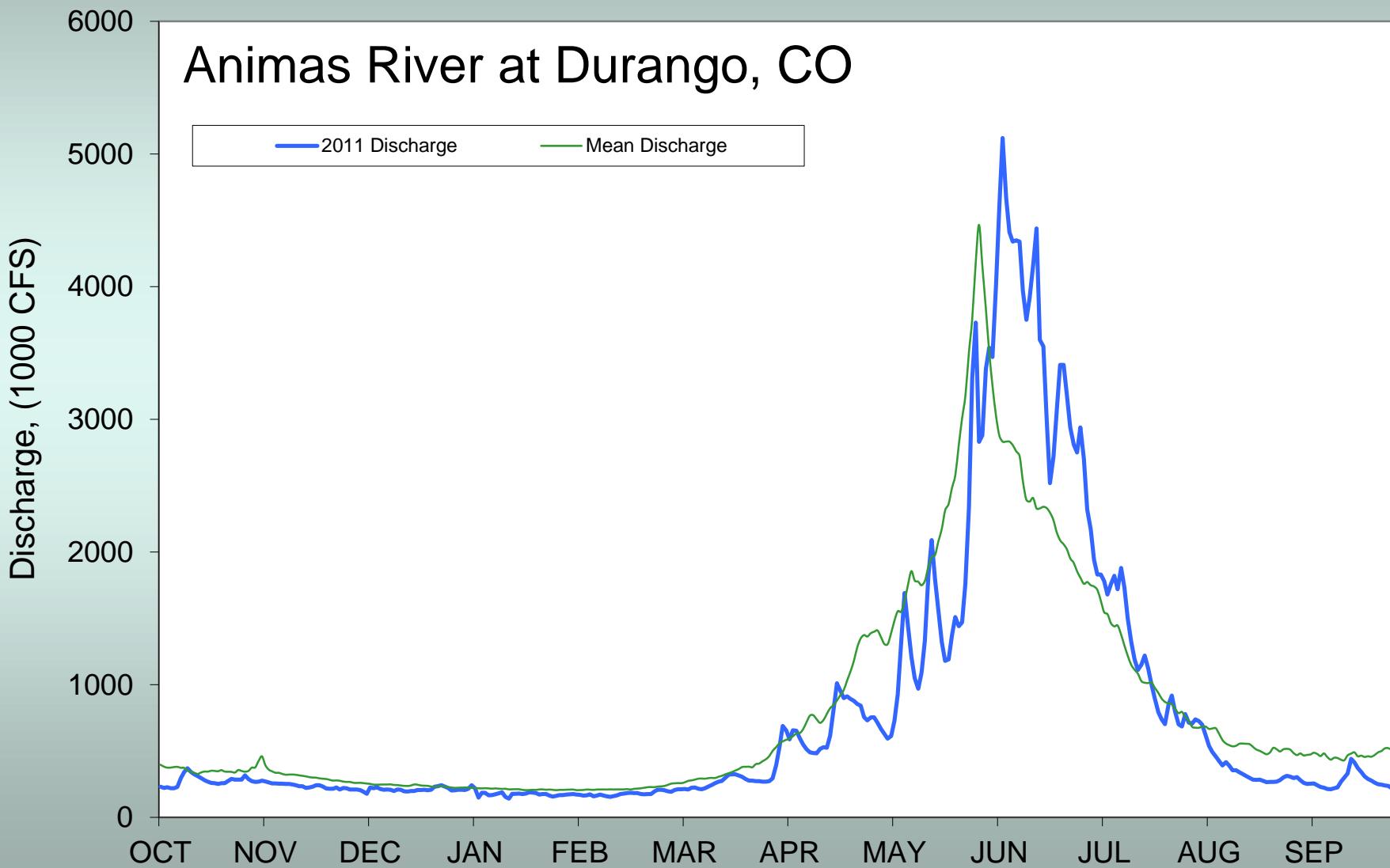
Water Year 2011 Daily Discharge



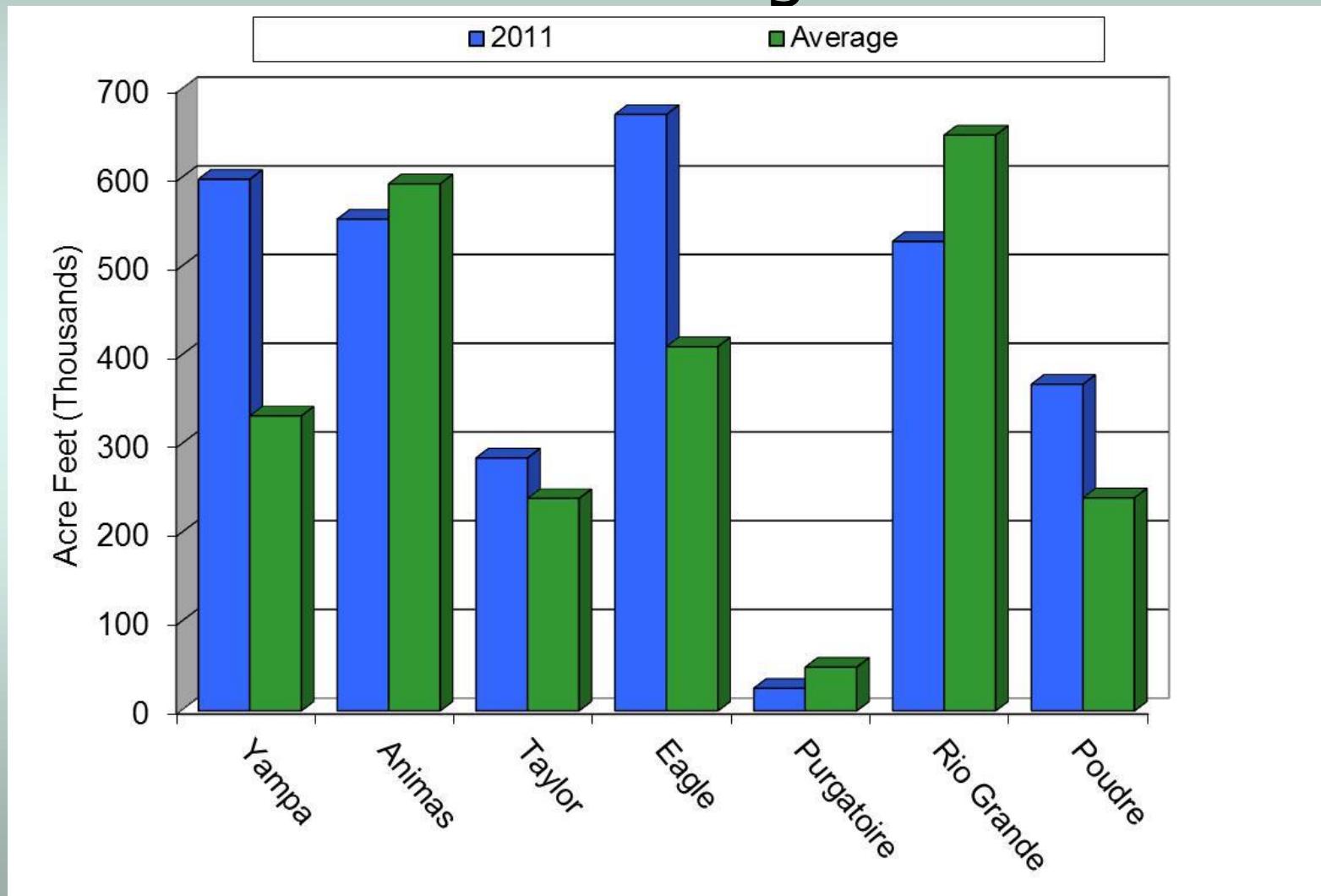
Water Year 2011 Daily Discharge



Water Year 2011 Daily Discharge

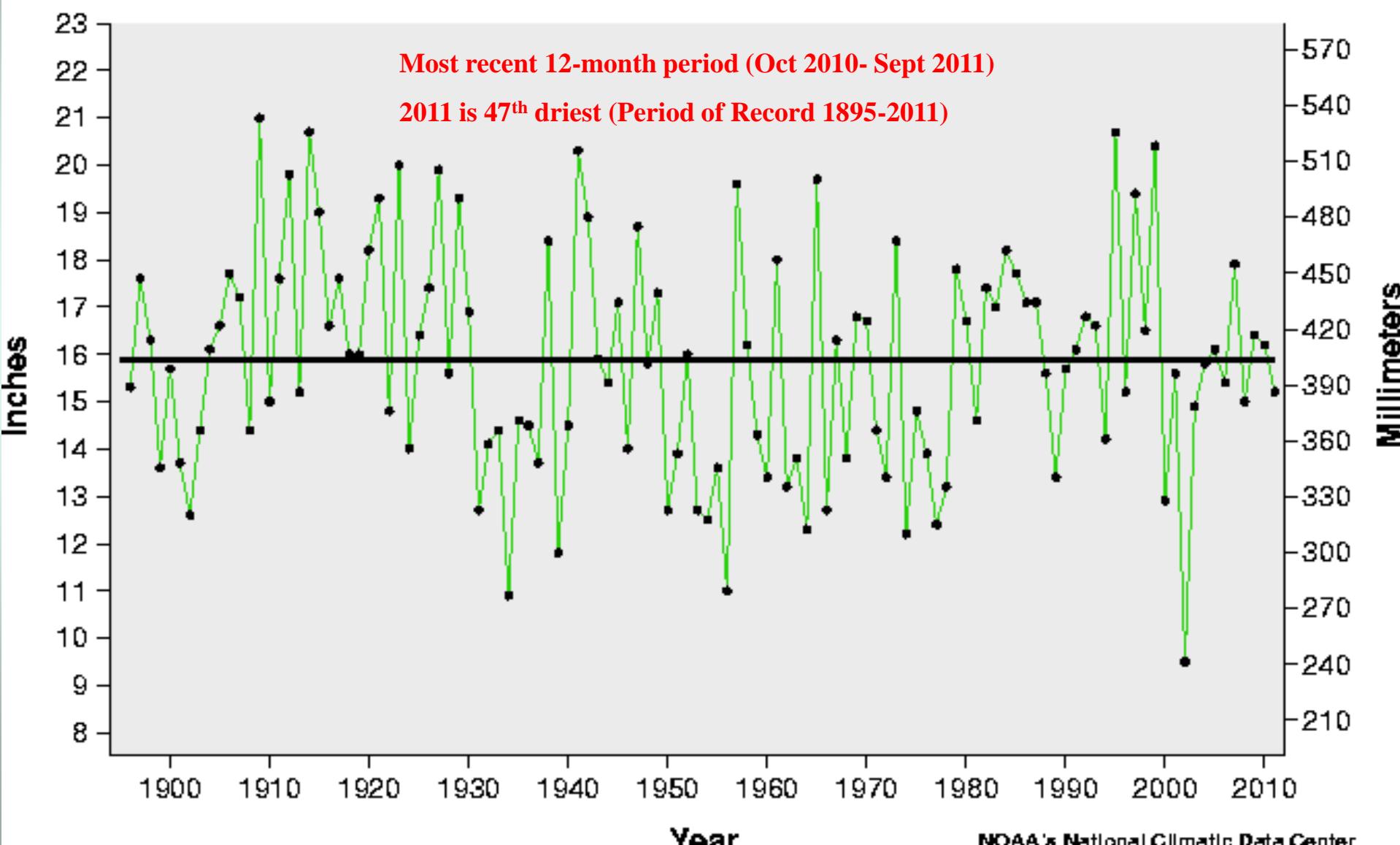


WY2011 Streamflow volumes for selected rivers in Colorado compared to average



Colorado WY2011 Precipitation in Historic Perspective

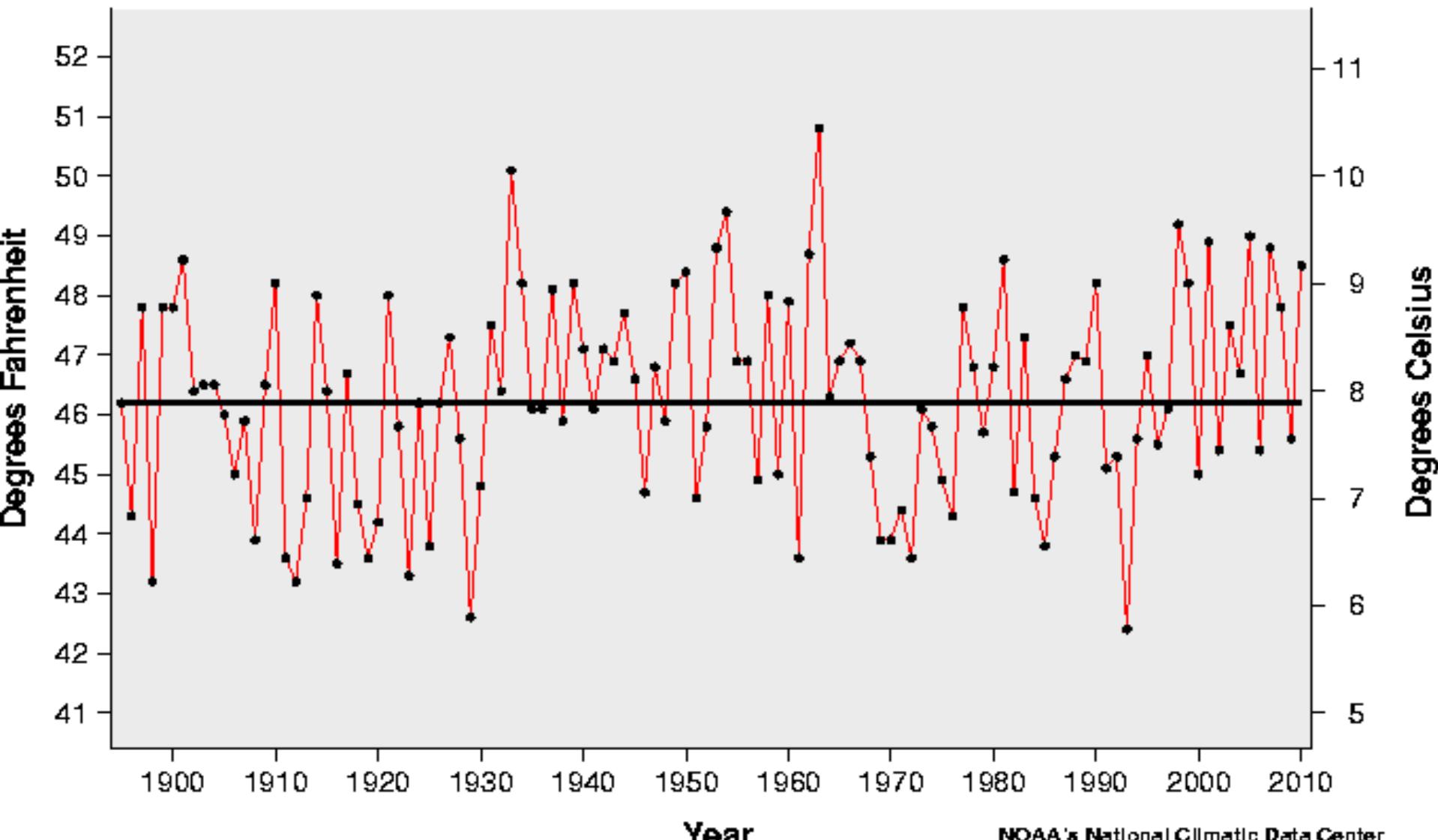
Actual Precipitation
Average Precipitation



Colorado Mean Autumn (SON) Temperatures

Actual Temperature
Average Temperature

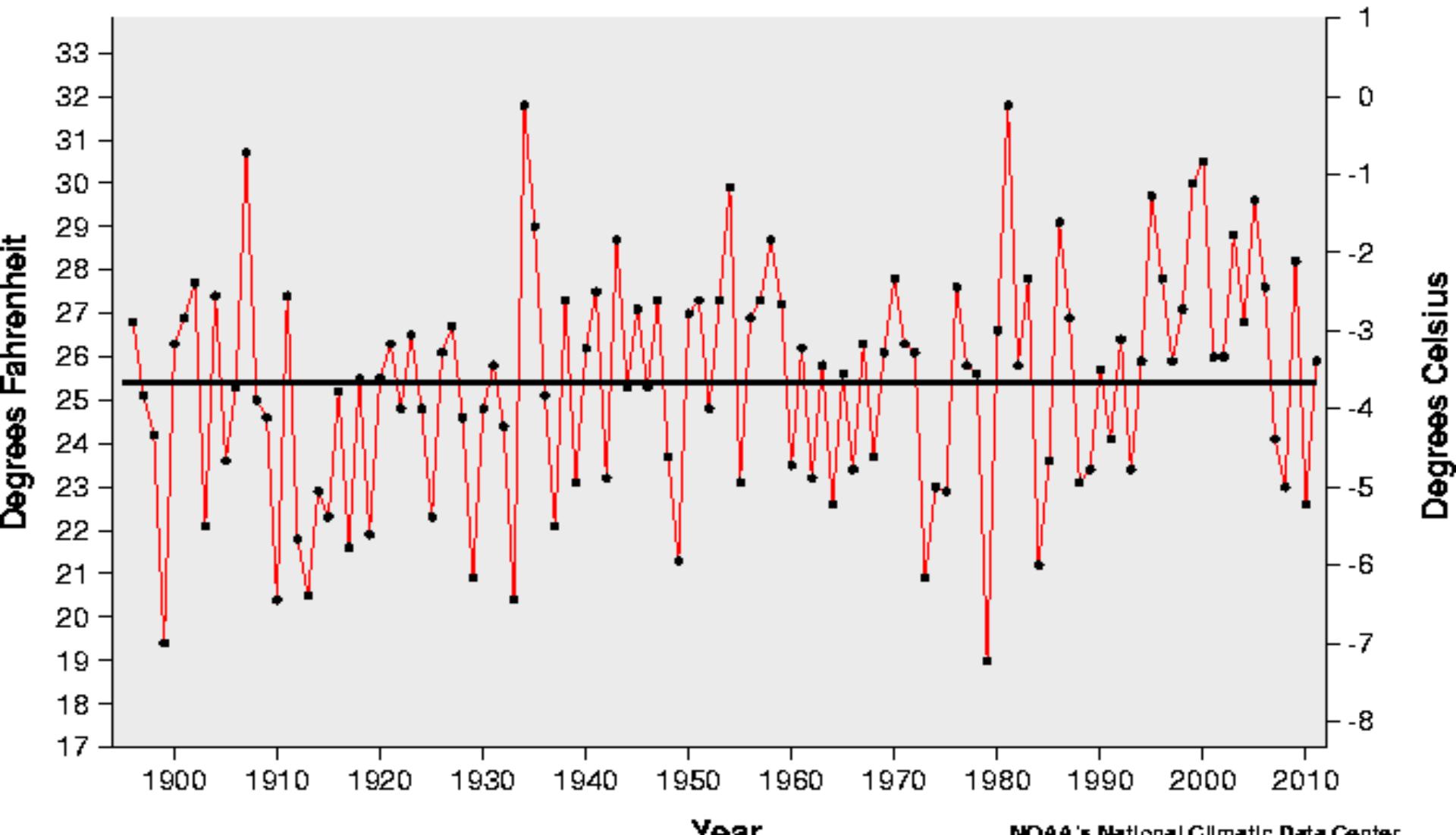
11th Warmest Autumn
(1895-2010)



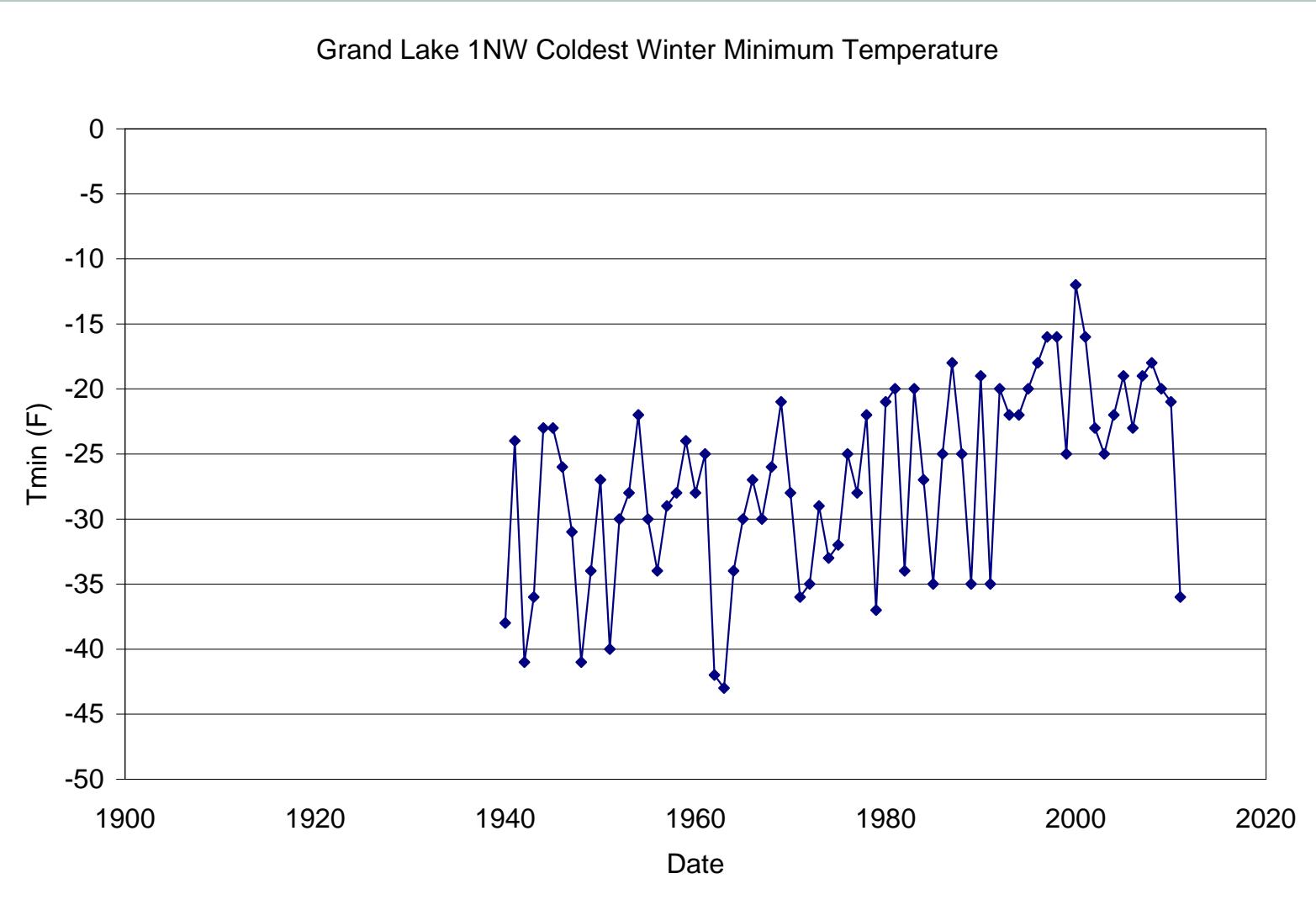
Colorado Mean Winter (DJF) Temperatures

Actual Temperature
Average Temperature

64th Coldest Winter
(1895-2011)



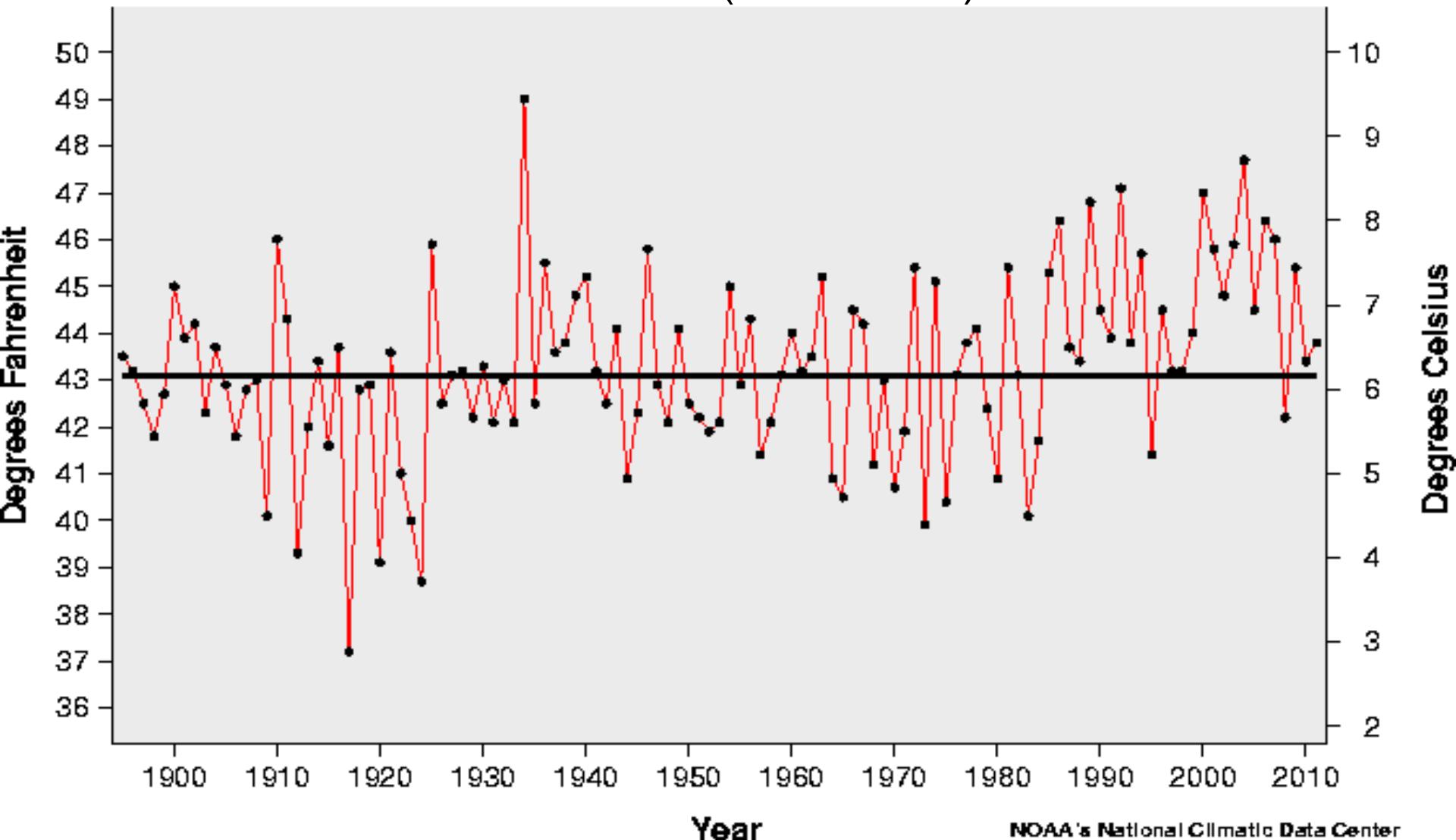
First extreme winter cold in 20 years for the mountains



Colorado Mean Spring (MAM) Temperatures

Actual Temperature
Average Temperature

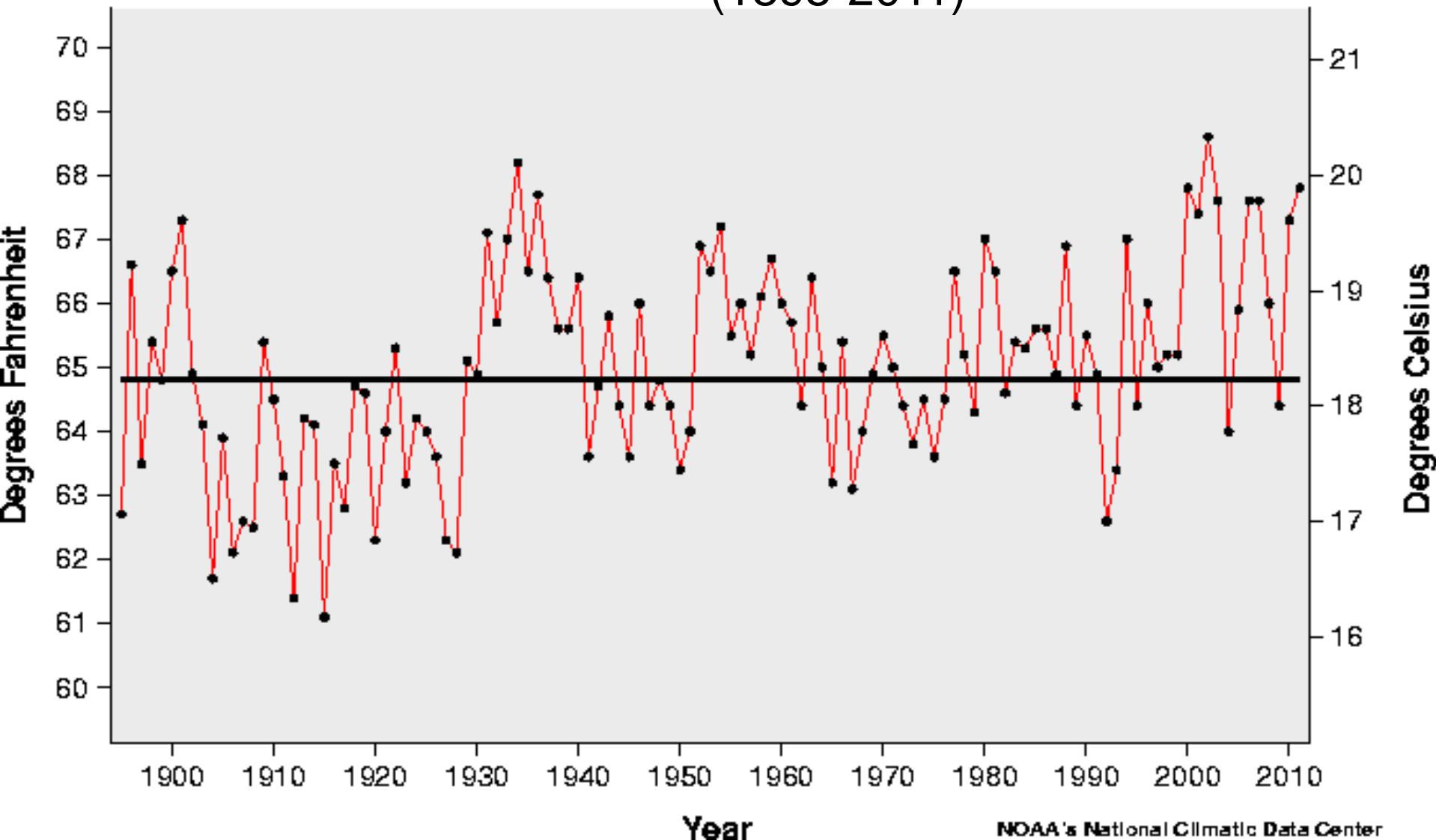
41st Warmest Spring
(1895-2011)



Colorado Mean Summer (JJA) Temperatures

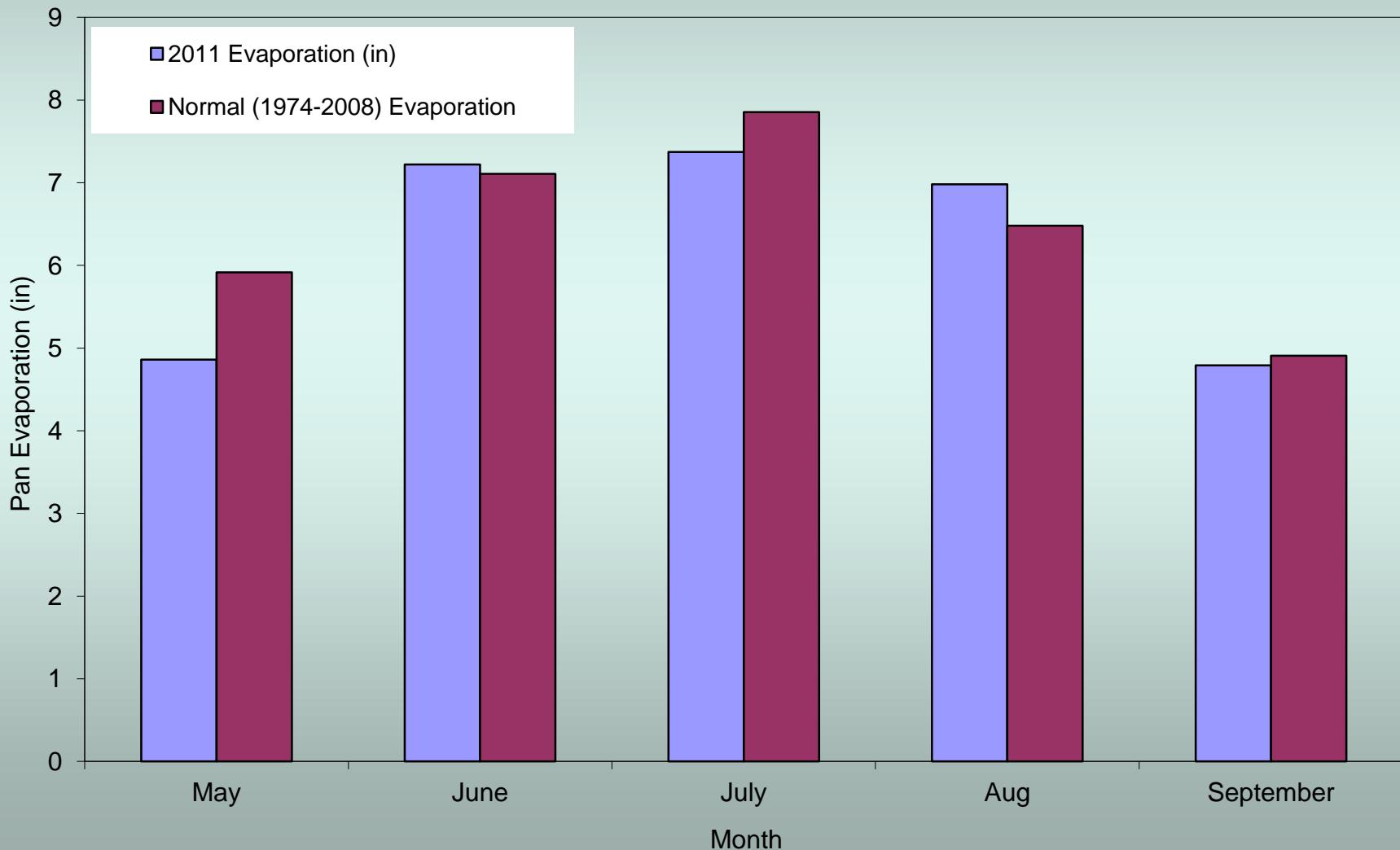
Actual Temperature
Average Temperature

3rd Warmest Summer!!!
(1895-2011)



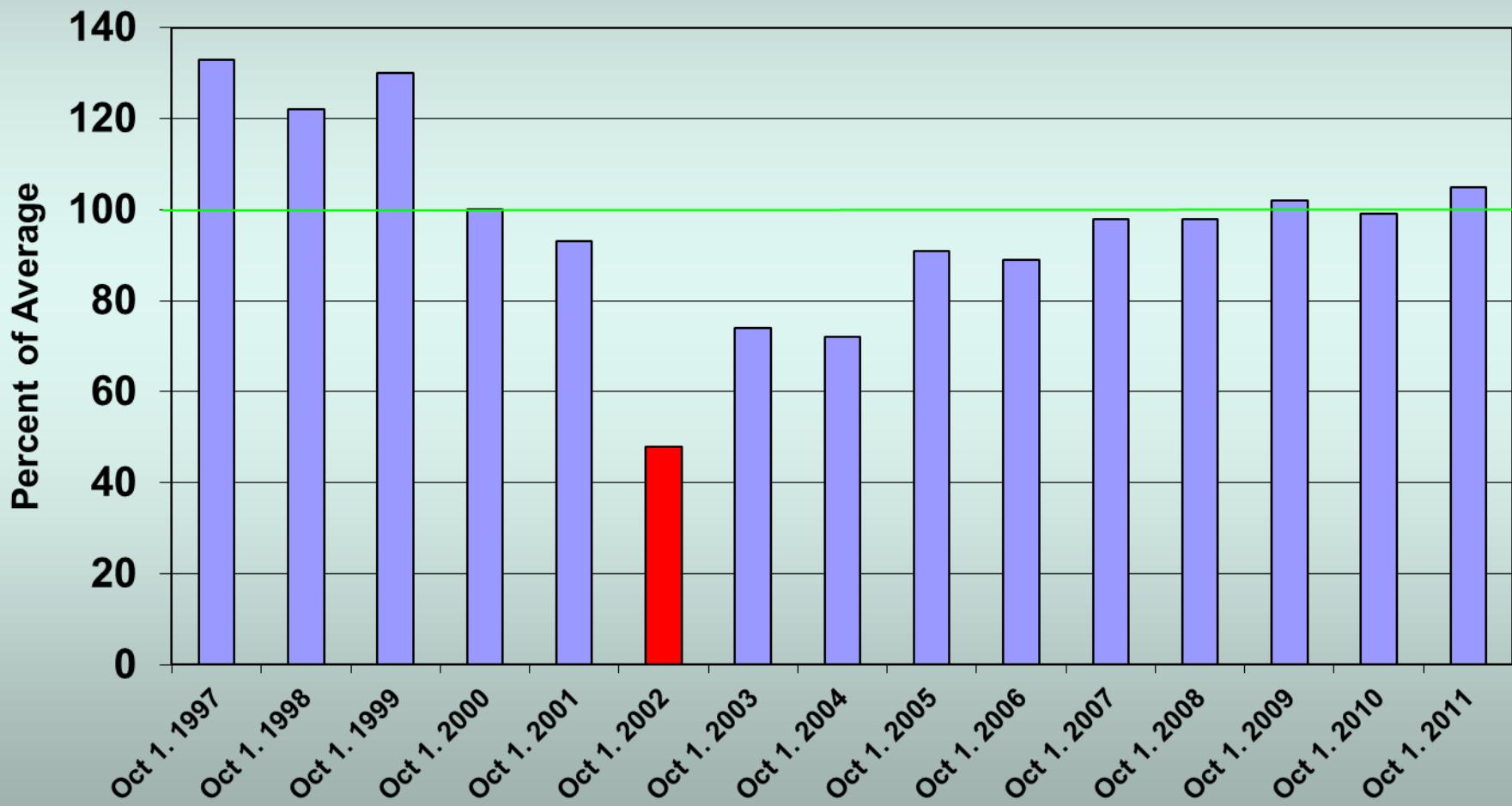
2011 Growing Season Pan Evaporation

Fort Collins, CO Pan Evaporation Compared to Normal

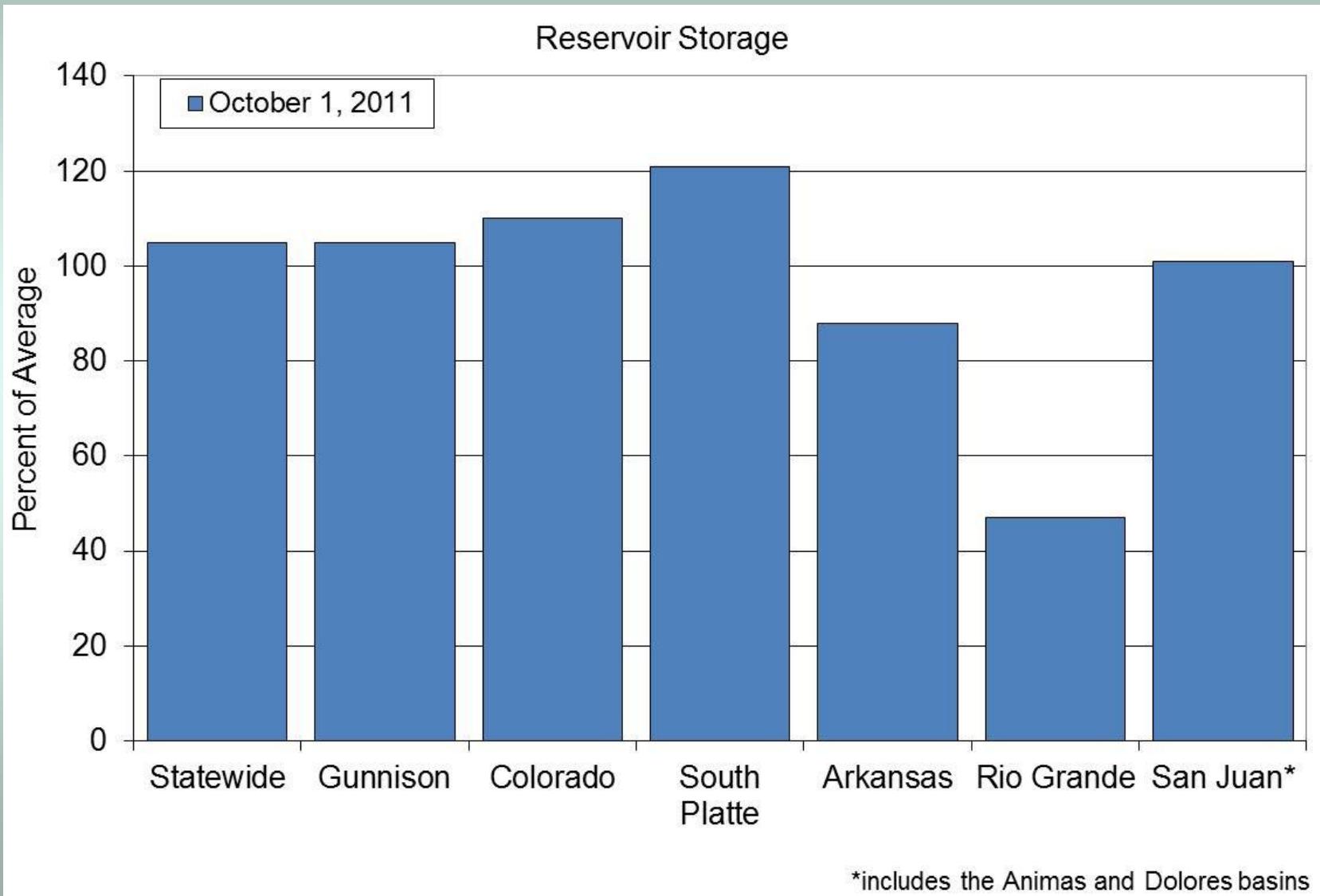


Reservoir Storage Levels

**Colorado Statewide Reservoir Levels on October 1st
for Years 1997- 2011**

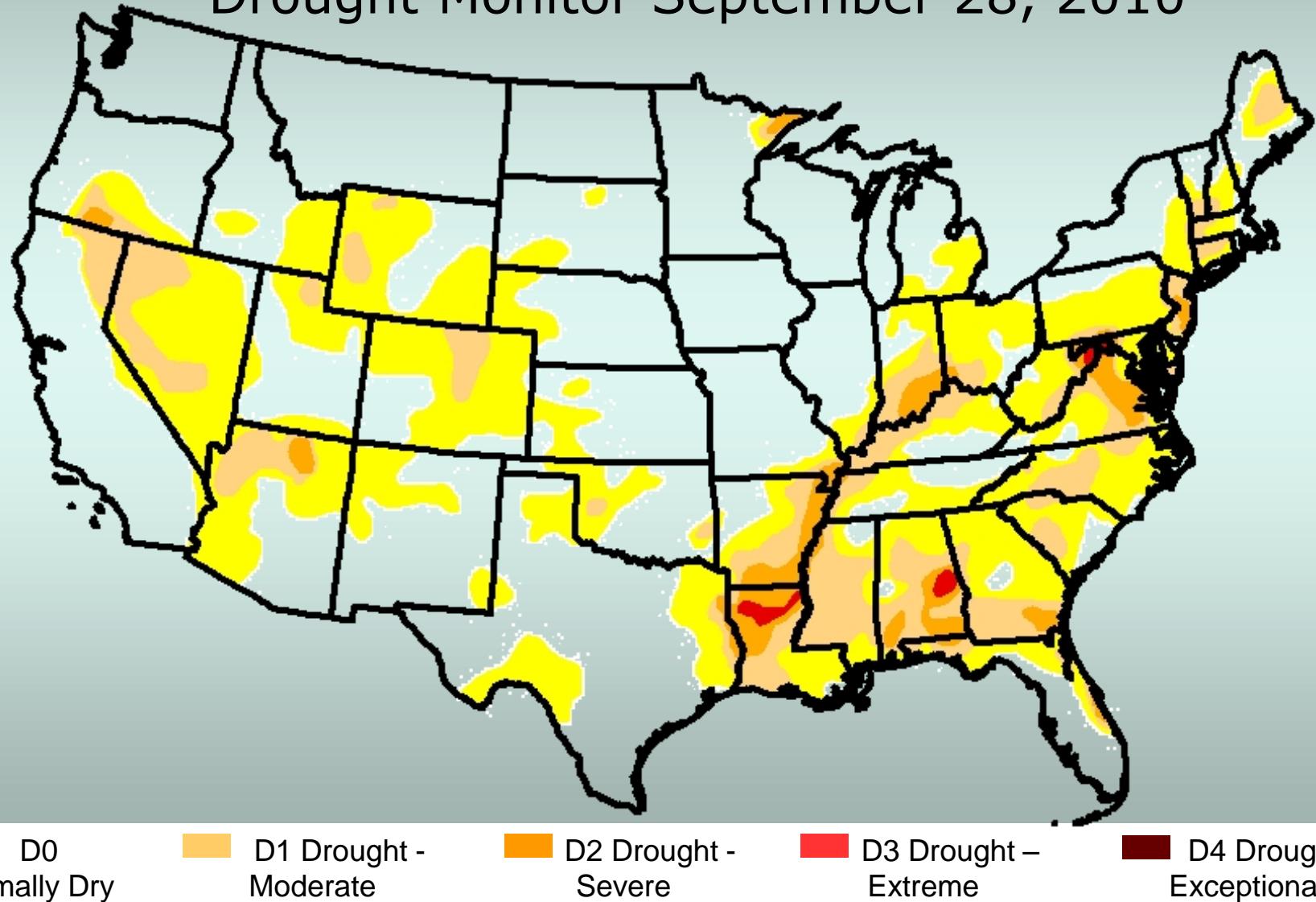


Reservoir Storage (% of Average) by basin at end of WY2011



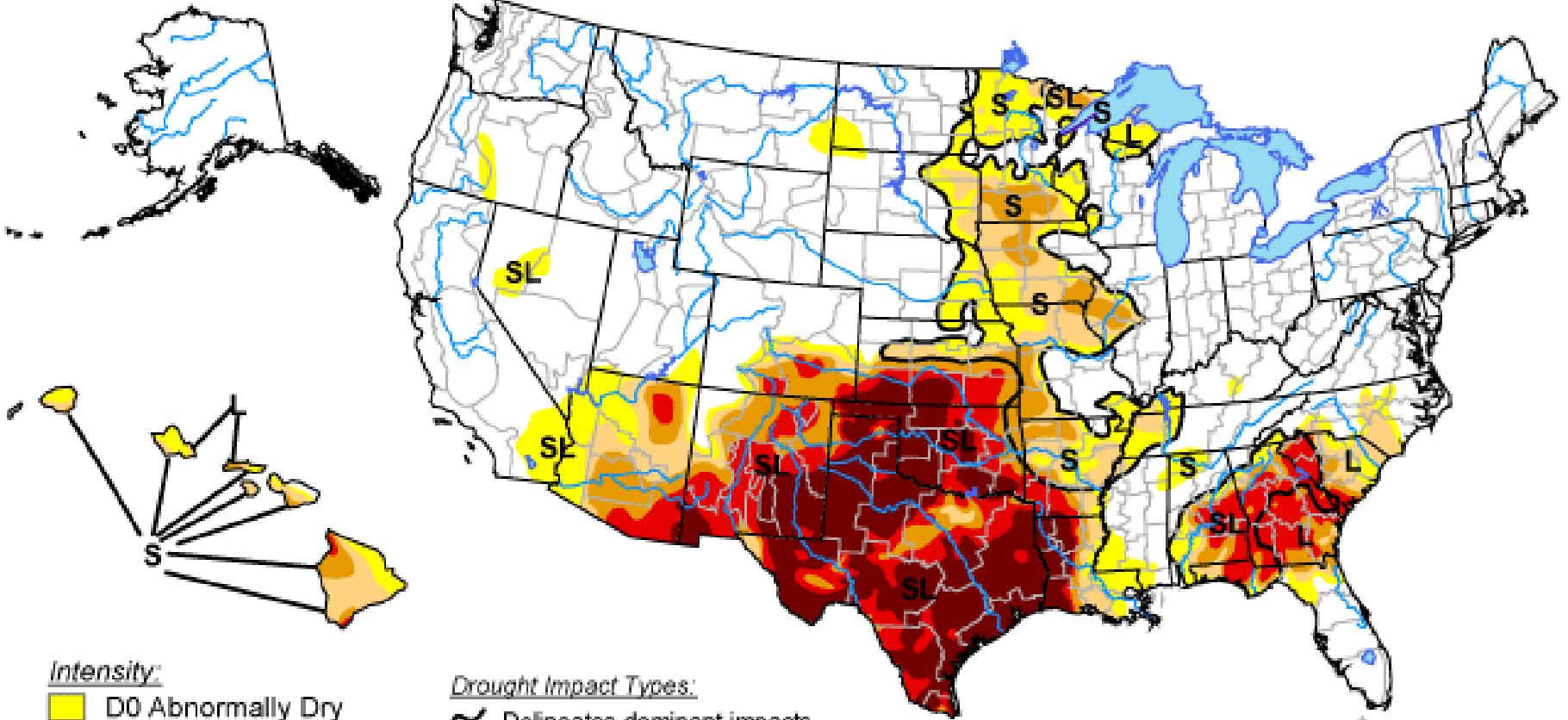
Nationwide drought status at beginning of 2011 Water Year

Drought Monitor September 28, 2010



U.S. Drought Monitor

October 25, 2011
Valid 8 a.m. EDT



The Drought Monitor focuses on broad-scale conditions.
Local conditions may vary. See accompanying text summary
for forecast statements.

<http://droughtmonitor.unl.edu/>

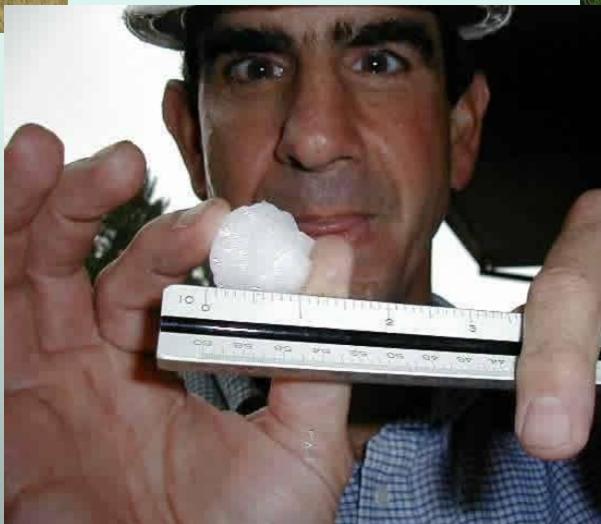


Released Thursday, October 27, 2011
Author: David Miskus, NOAA/NWS/NCEP/CPC

CoCoRaHS

Community Collaborative Rain Hail and Snow Network

Volunteers Tracking Precipitation

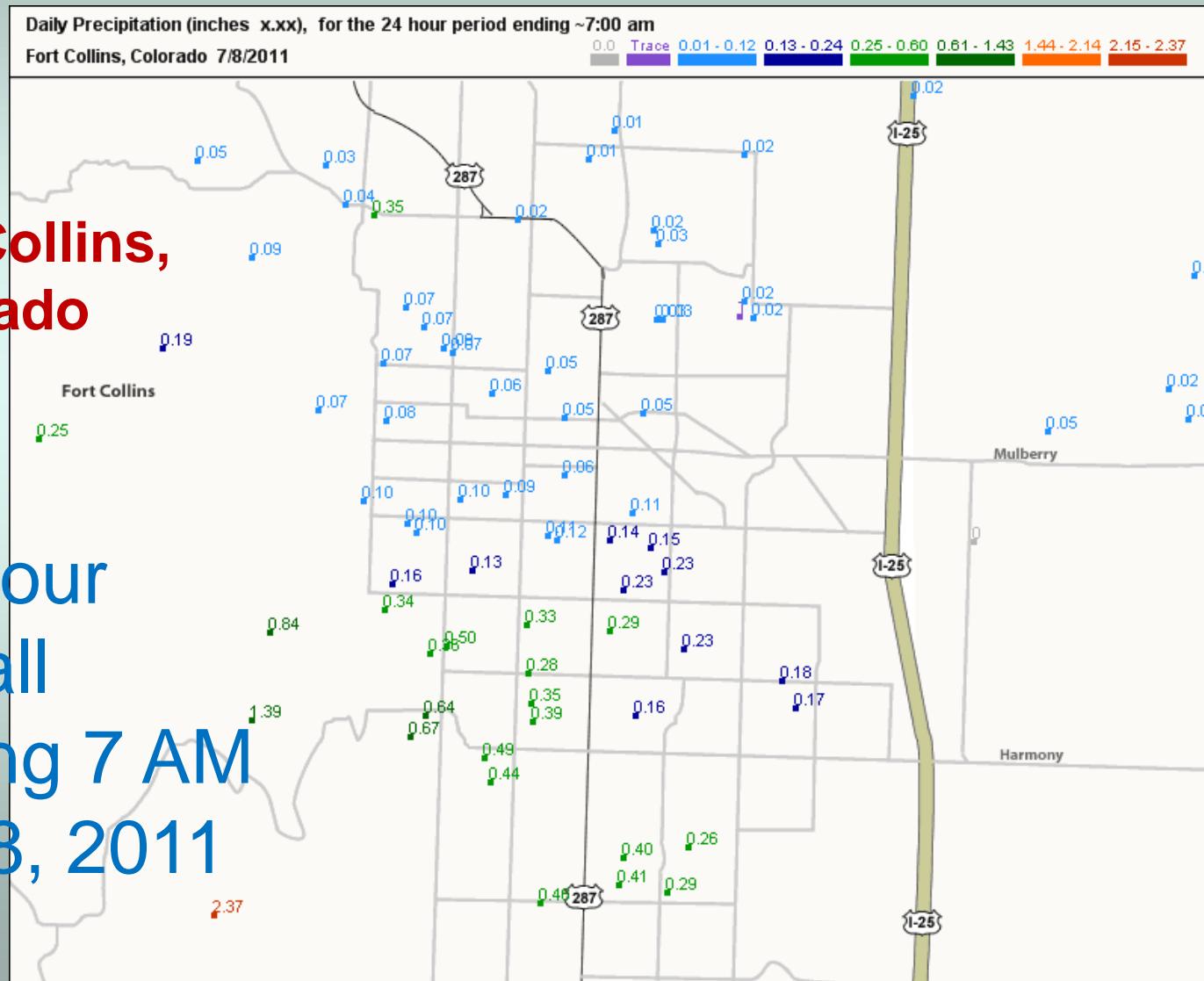


<http://www.cocorahs.org>

Three cheers for our CoCoRaHS Volunteers!!

Fort Collins,
Colorado

24- hour
rainfall
Ending 7 AM
July 8, 2011



The big year is here “Water 2012”



www.water2012.org

- The mission of Water 2012 is to engage all Coloradans in a statewide celebration of water: past, present, and future.

“A Rain Gauge at Every School”

We are still seeking:

- Sponsors to purchase gauges
- Mentors to assist/train teachers
- Teachers to participate with students



If you're interested in helping, see me today
or contact Noah Newman: noah@cocorahs.org

Colorado Climate Center

Data and Power Point Presentations
available for downloading -- and more

<http://ccc.atmos.colostate.edu>

