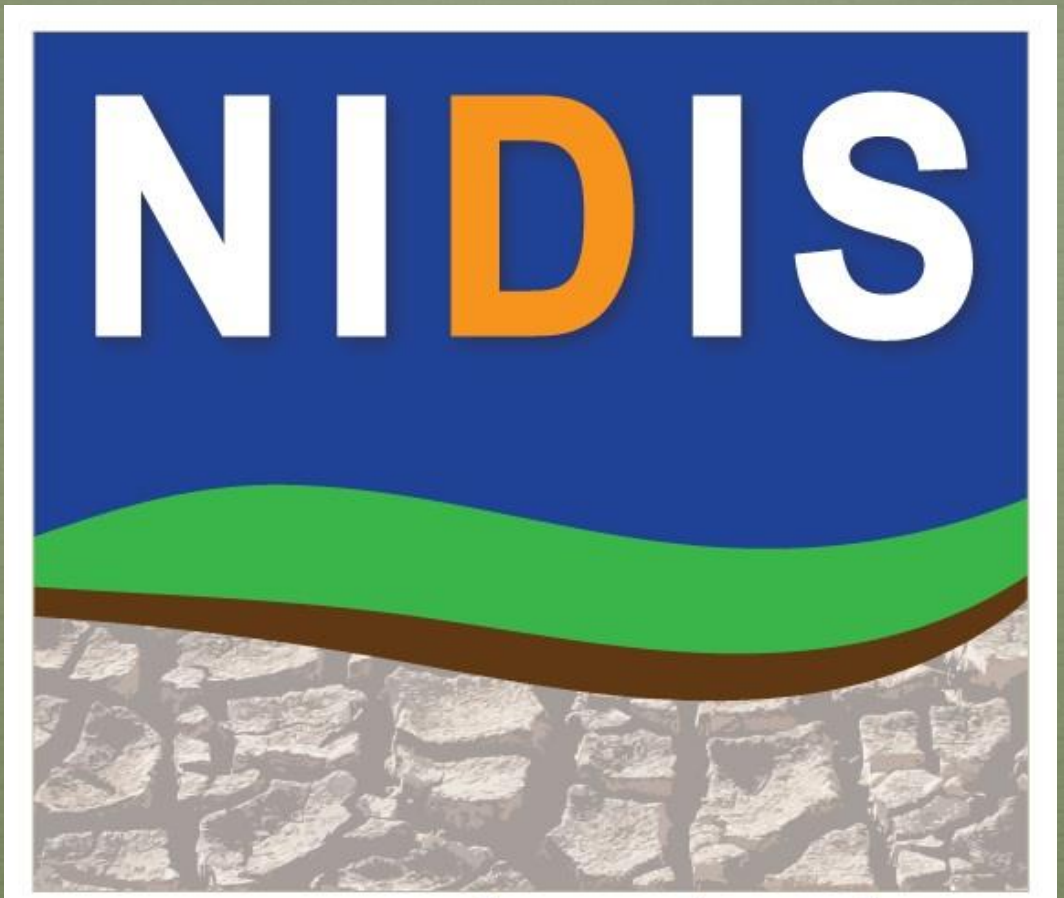


Upper Colorado River

Regional Drought Early Warning System

Weekly Climate, Water & Drought Assessment

October 25, 2016

Announcements

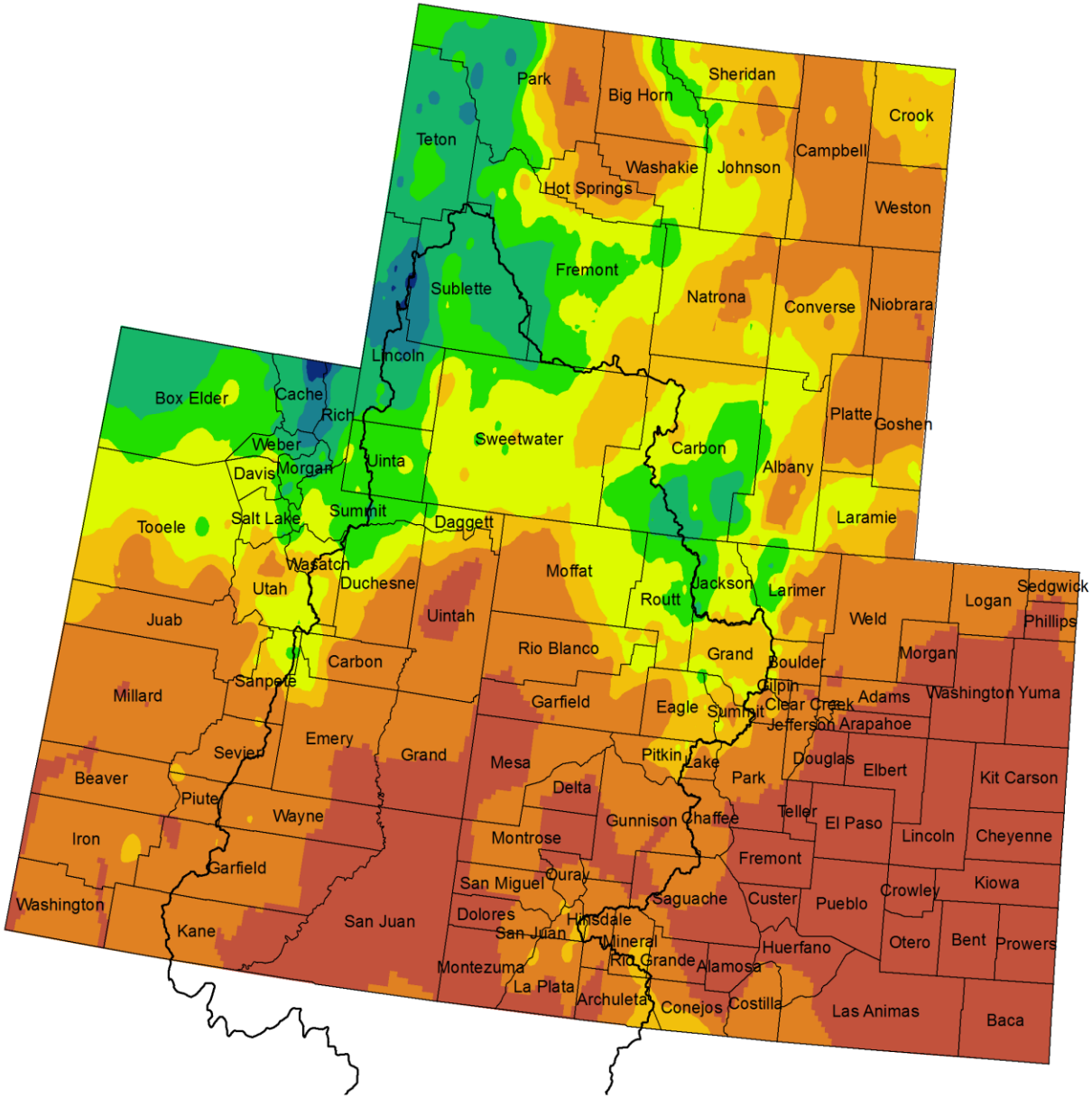
Upcoming Webinar

November 1st at 10:00 AM MDT

December 6th at 10:00 AM MST

Precipitation/Snowpack Update

Colorado, Utah and Wyoming 7 Day Precipitation
16 - 22 October 2016

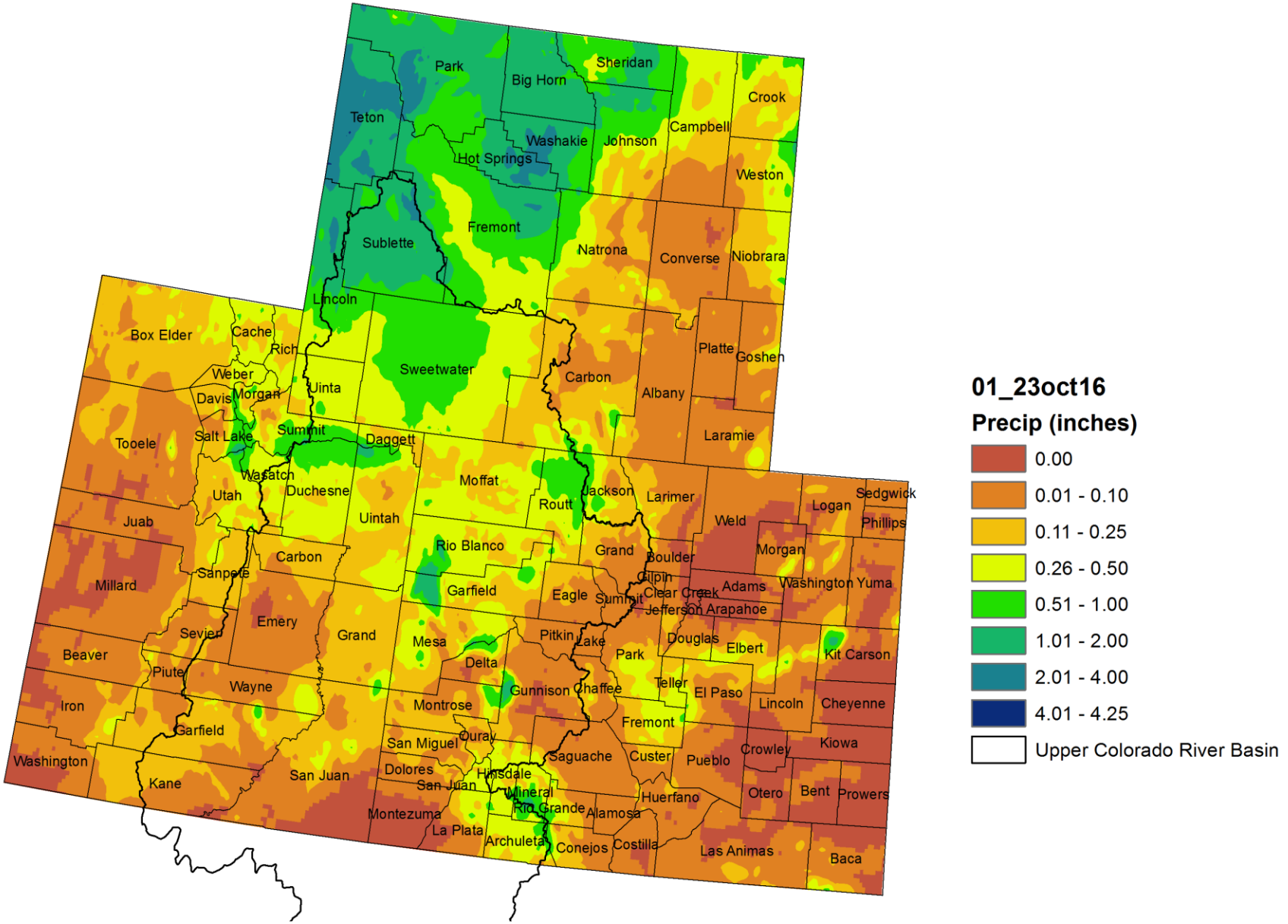


16_22oct16x

Precip (inches)

- 0.00
- 0.01 - 0.10
- 0.11 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 3.00
- 3.01 - 3.91
- Upper Colorado River Basin

Colorado, Utah and Wyoming Month to Date Precipitation
1 - 22 October 2016

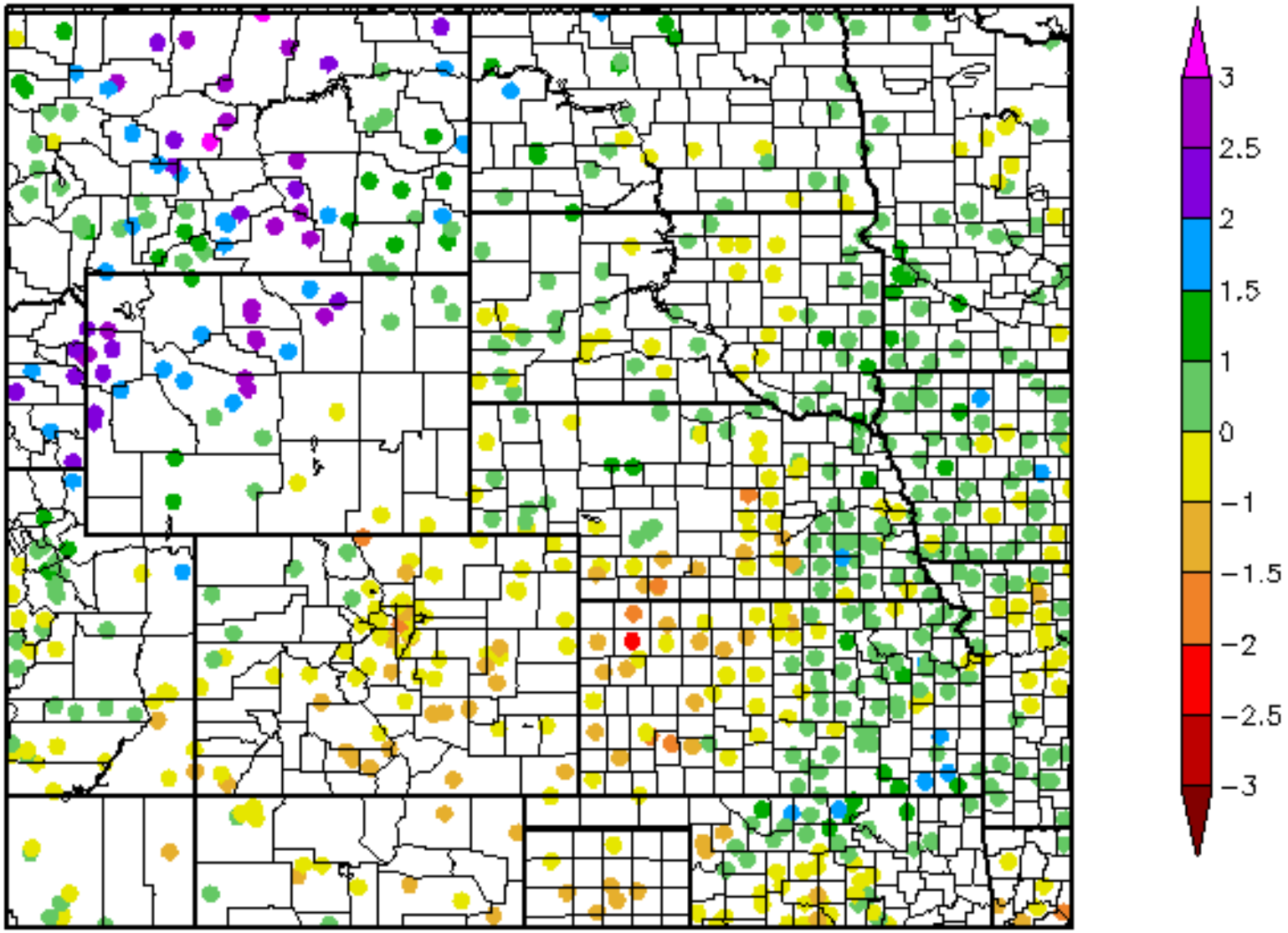


01_23oct16

Precip (inches)

- 0.00
- 0.01 - 0.10
- 0.11 - 0.25
- 0.26 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 4.00
- 4.01 - 4.25
- Upper Colorado River Basin

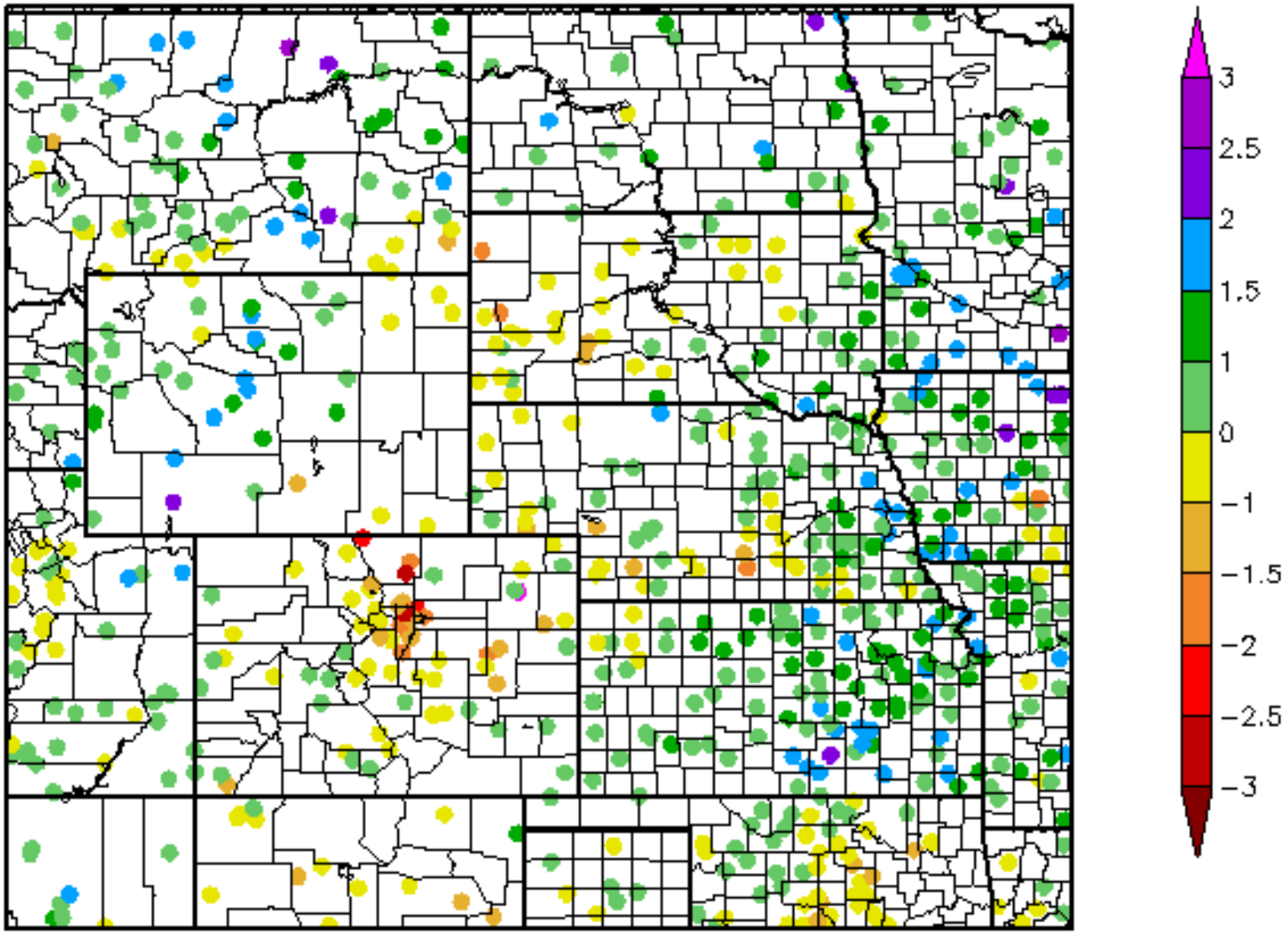
30 Day SPI
9/24/2016 – 10/23/2016



Generated 10/24/2016 at HPRCC using provisional data.

Regional Climate Centers

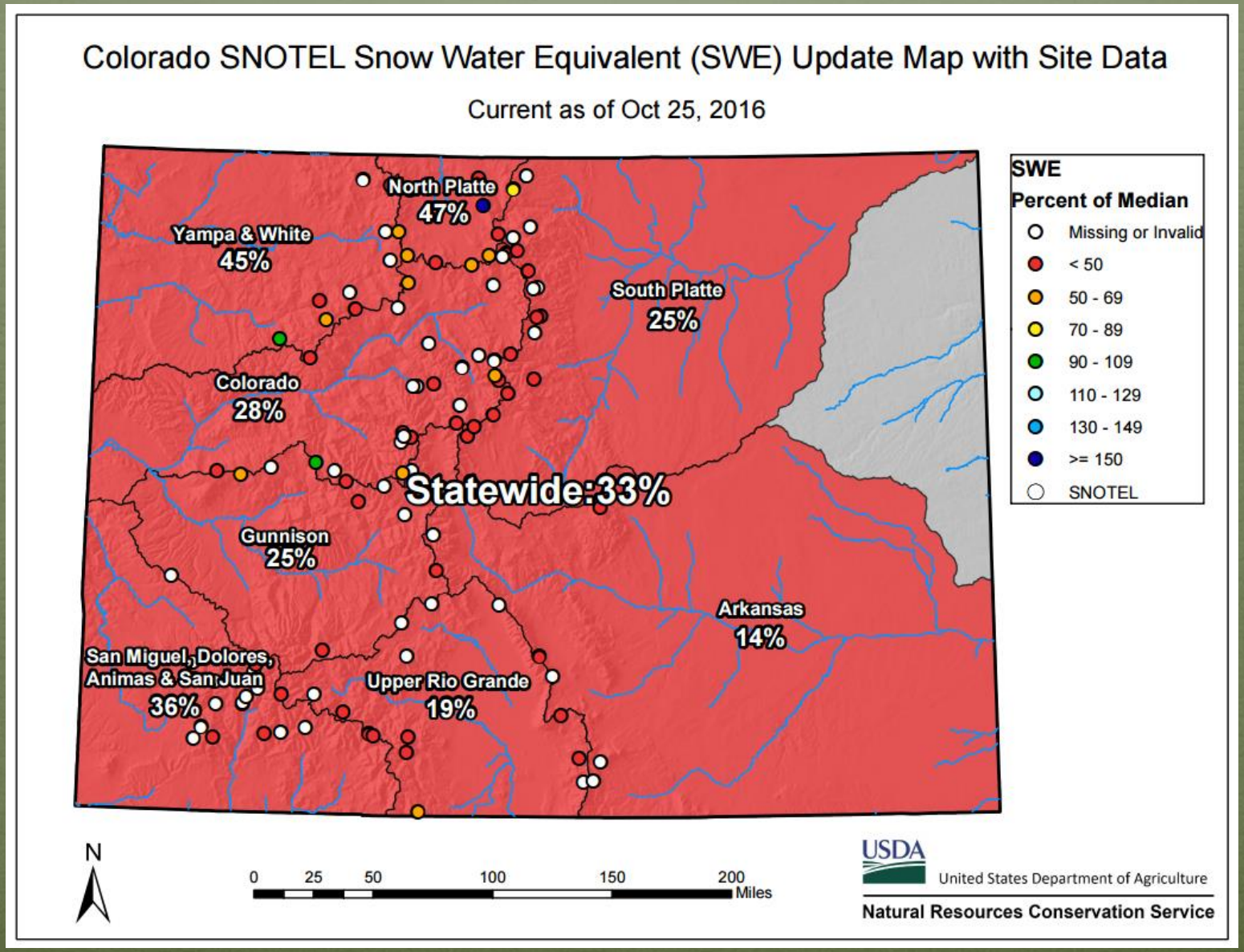
6 Month SPI
4/24/2016 – 10/23/2016



Generated 10/24/2016 at HPRCC using provisional data.

Regional Climate Centers

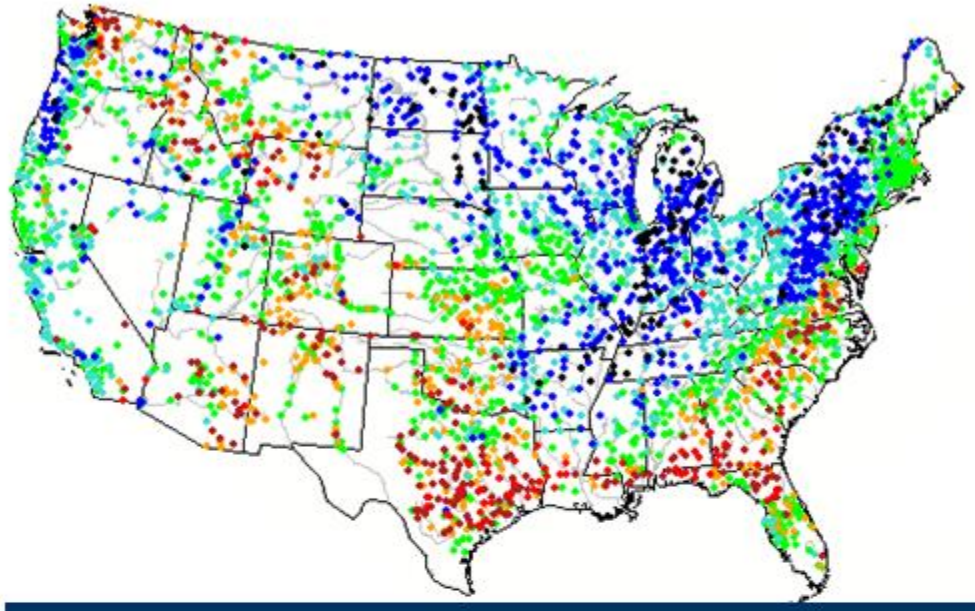
Snowpack (or lack thereof!)



Streamflow Update

Streamflow conditions using USGS streamgages

2011

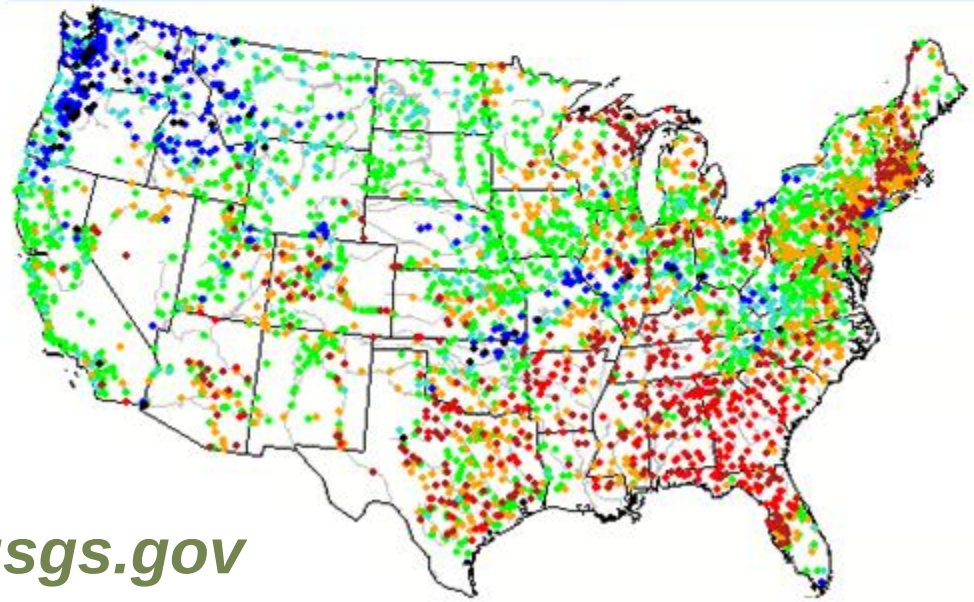


Percentile classes

Record Low	< 10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	Record High

May

2012

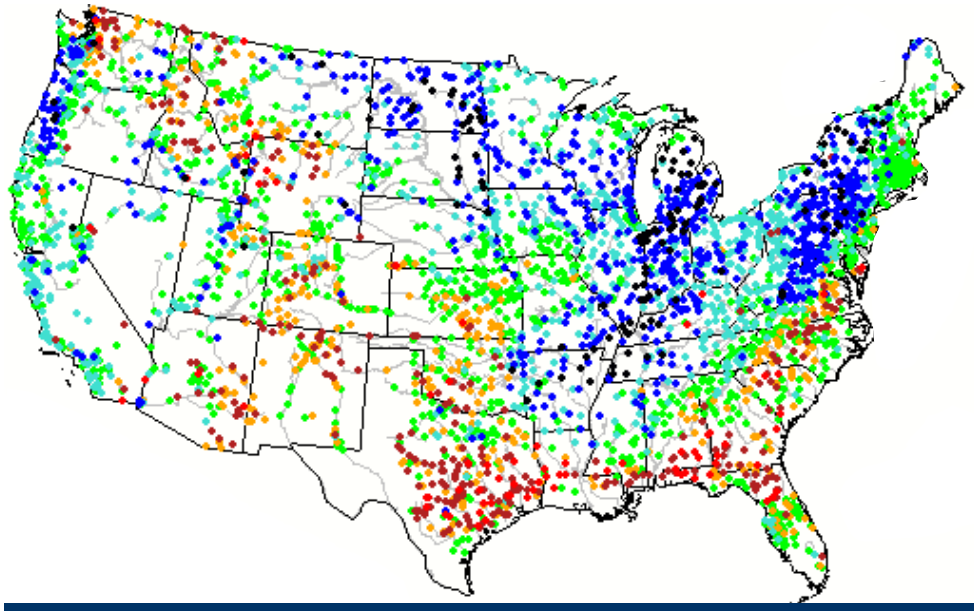


http://waterwatch.usgs.gov

USGS science for a changing world

Streamflow conditions using USGS streamgages

2011

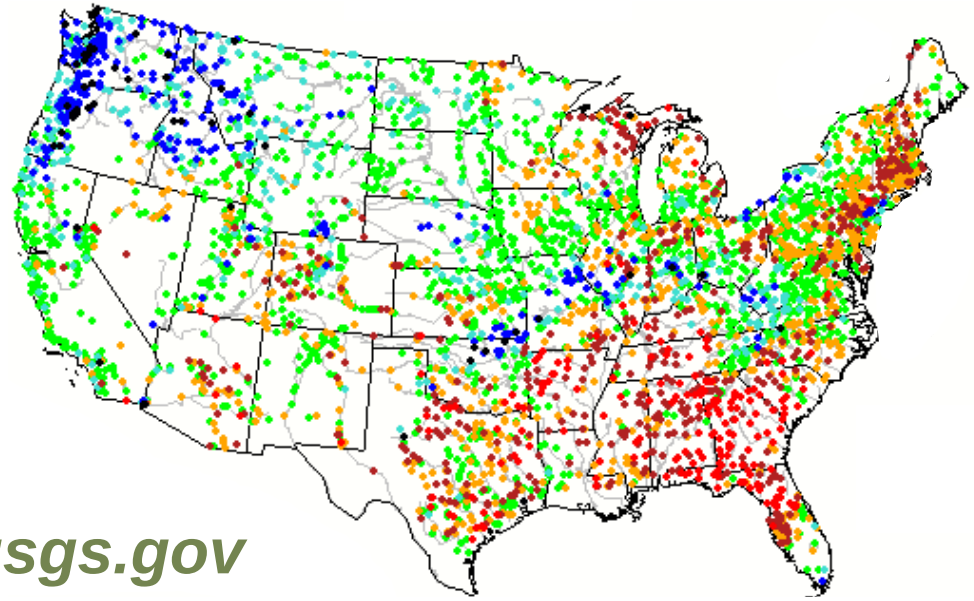


Percentile classes

Record Low	< 10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	Record High

May

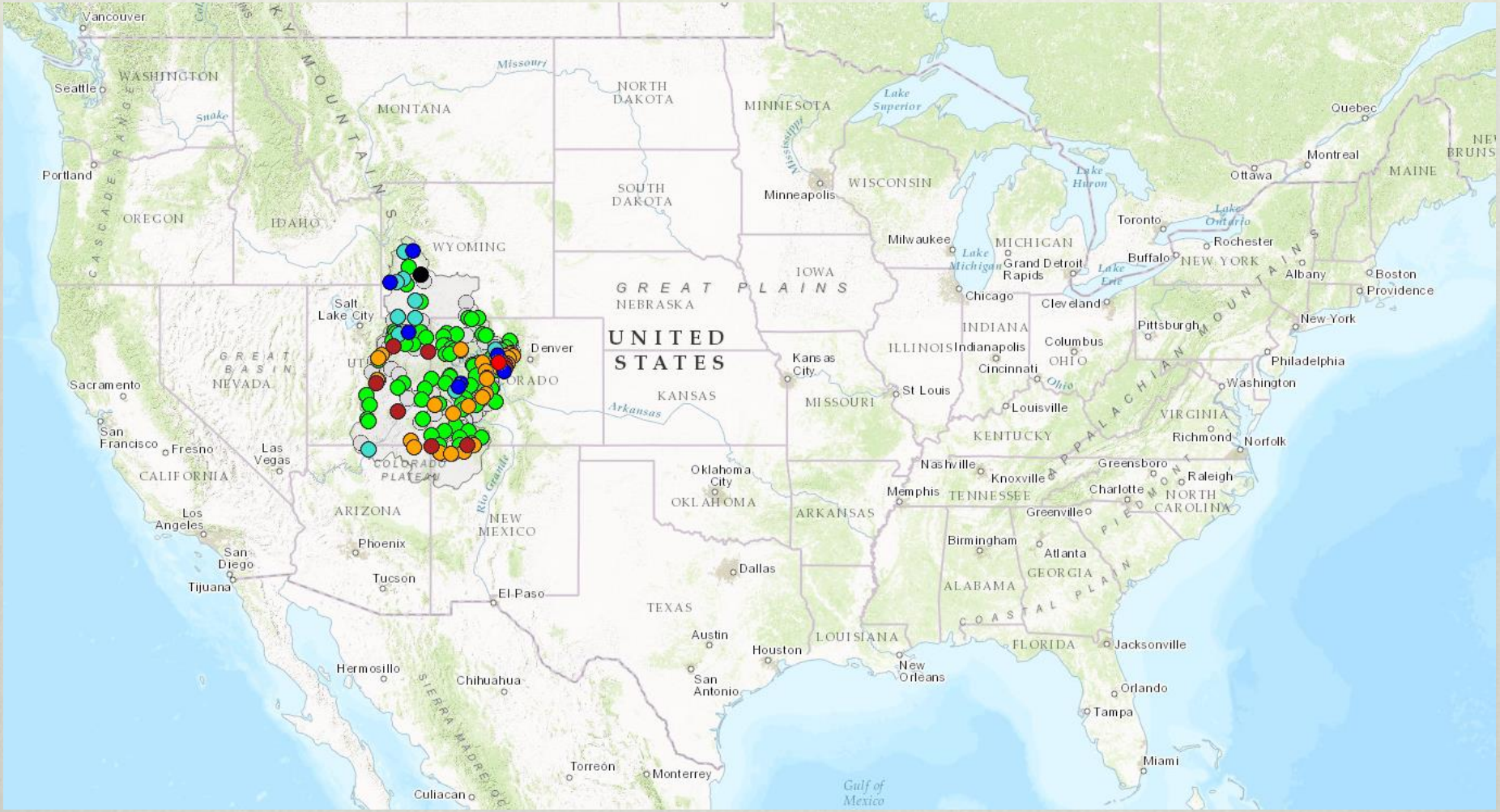
2012



http://waterwatch.usgs.gov

USGS science for a changing world

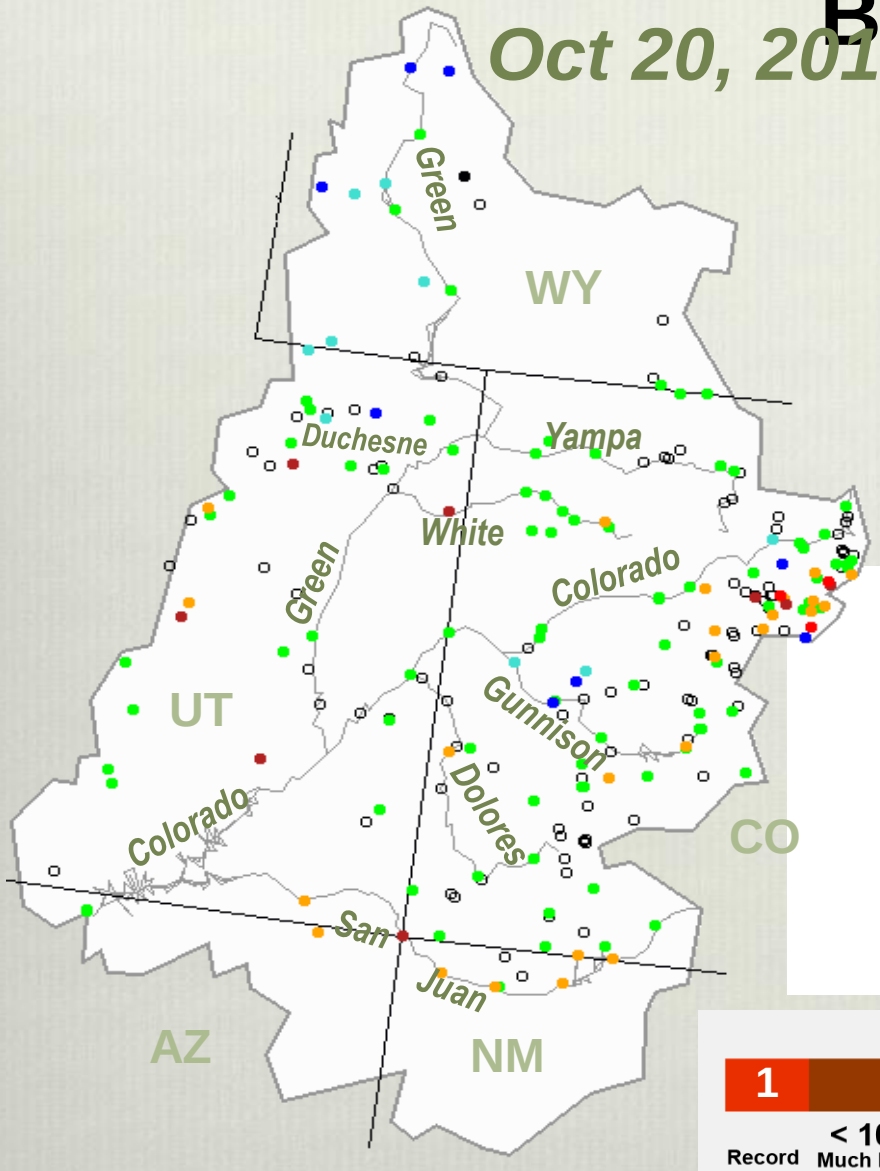
Streamflow Conditions in the Upper Colorado River Basin

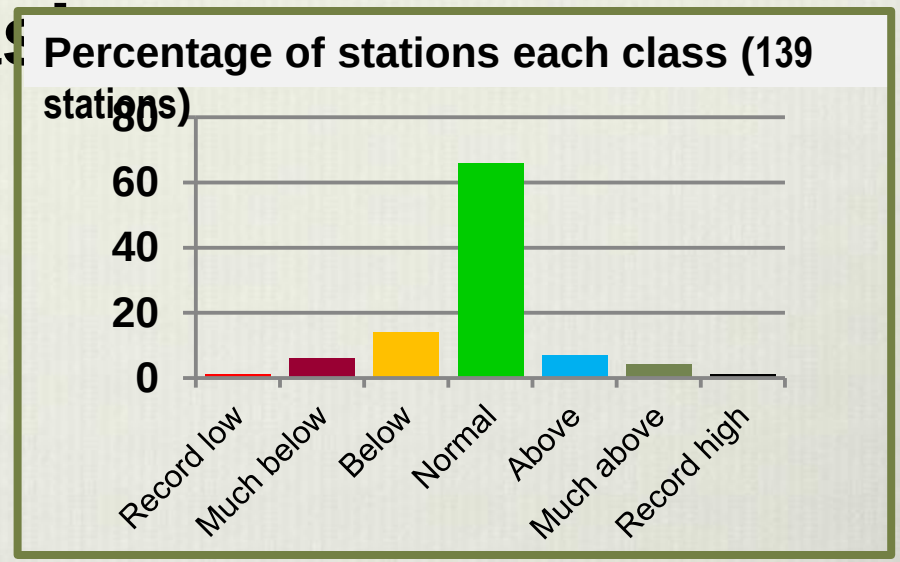


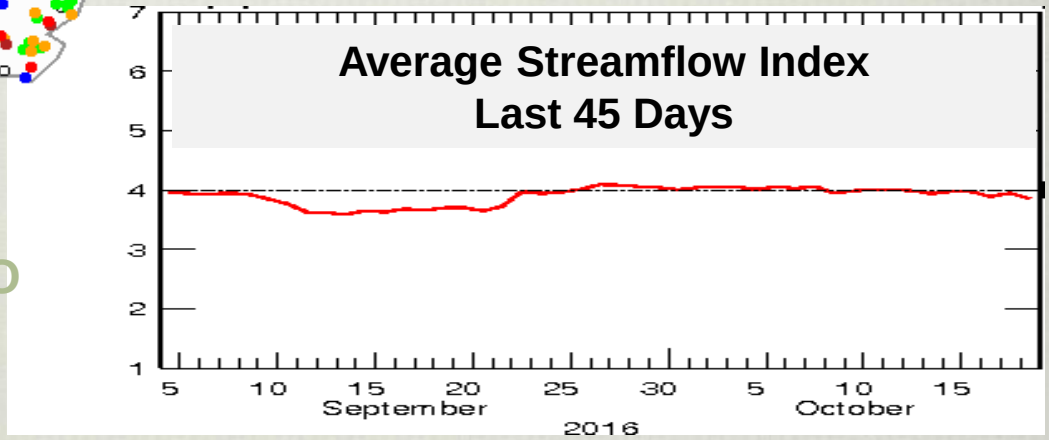
USGS
science for a changing world

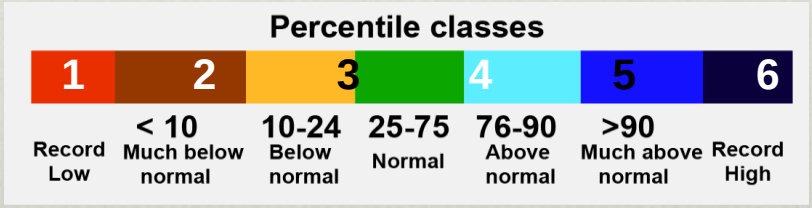
7 Day Average Streamflow, Upper Colorado Basin

Oct 20, 2016





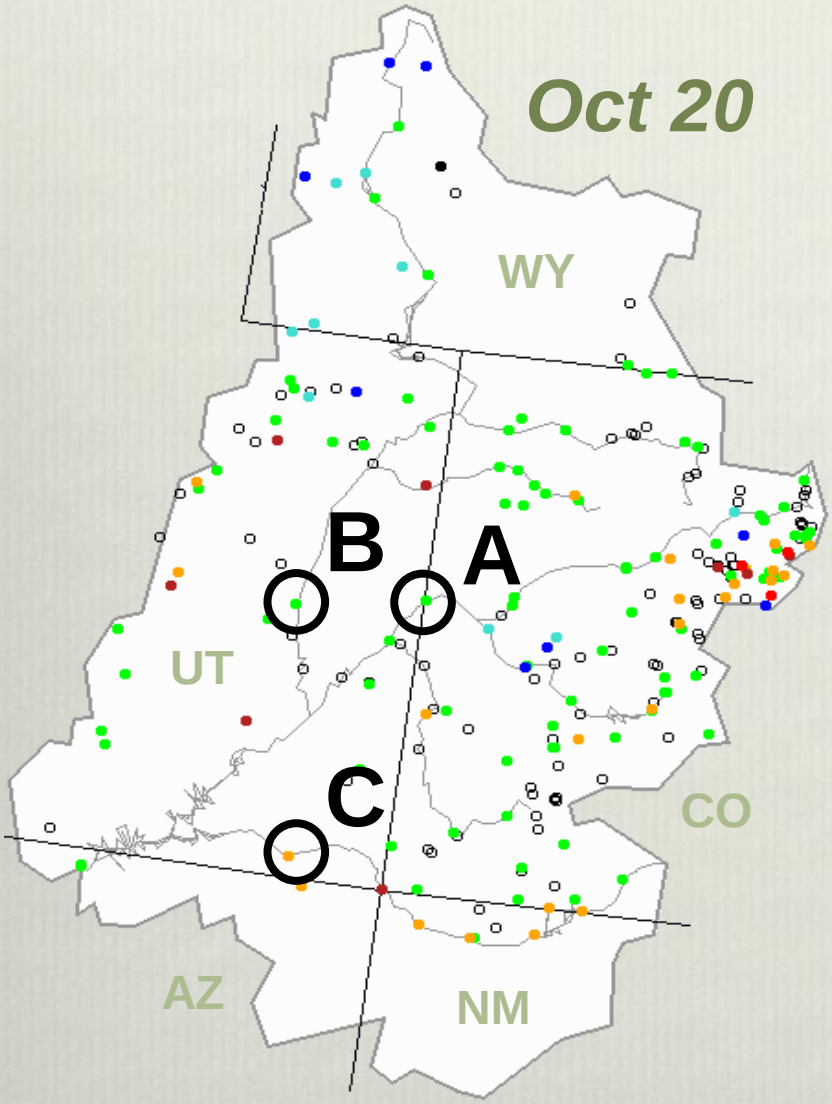


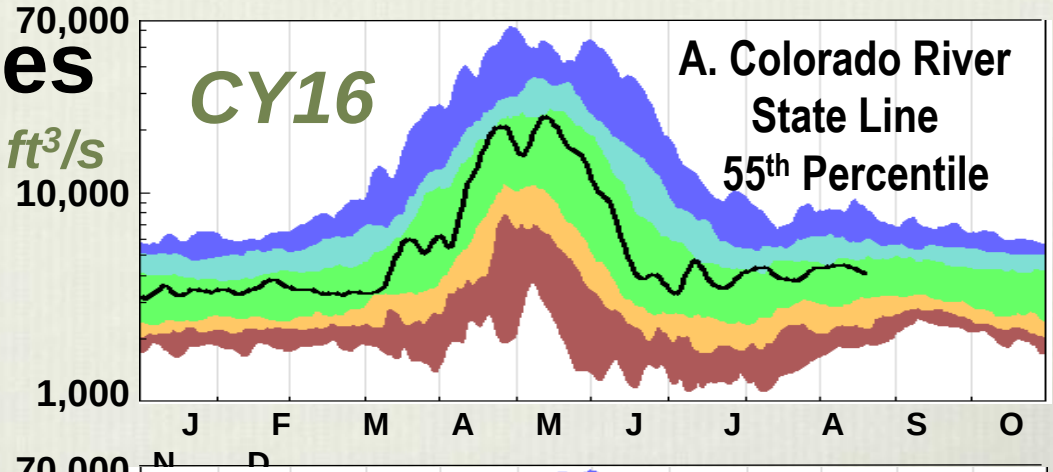


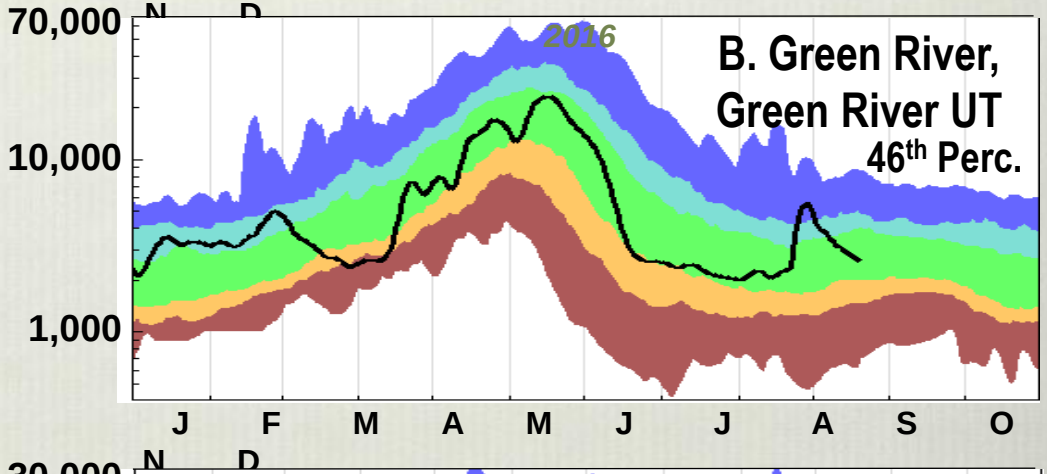
USGS science for a changing world

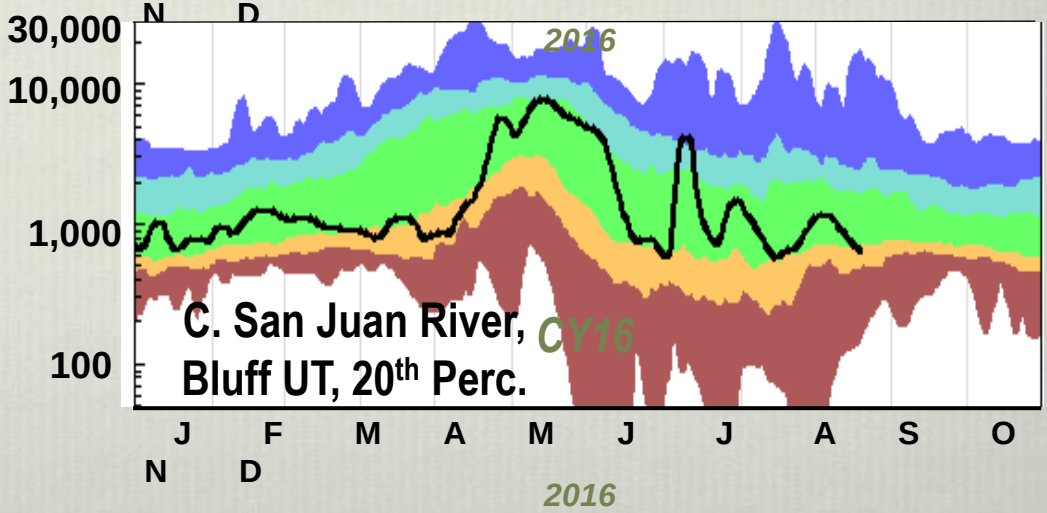
Streamflow at Key Sites

7 Day Average Streamflow, in ft³/s







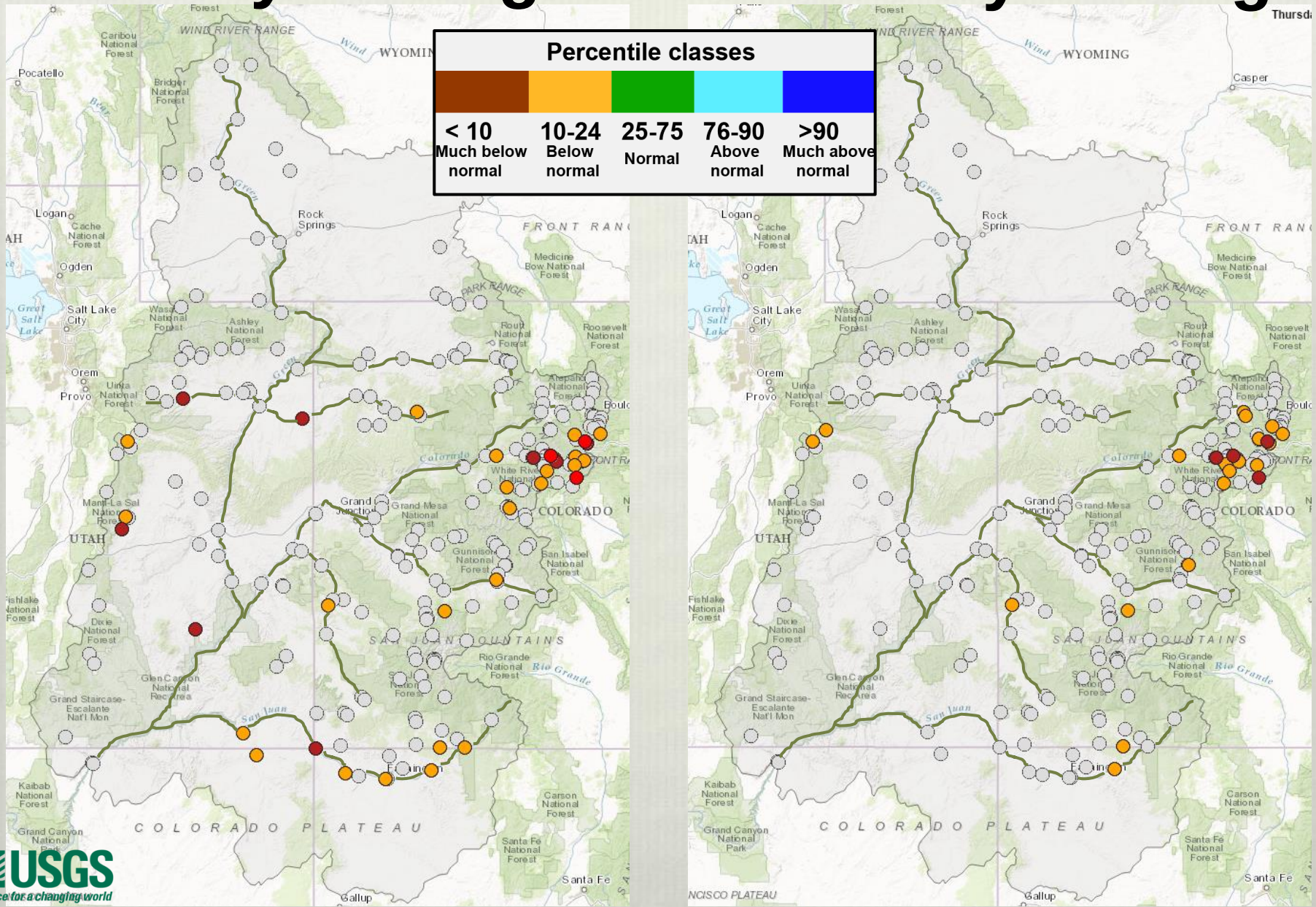


USGS
science for a changing world

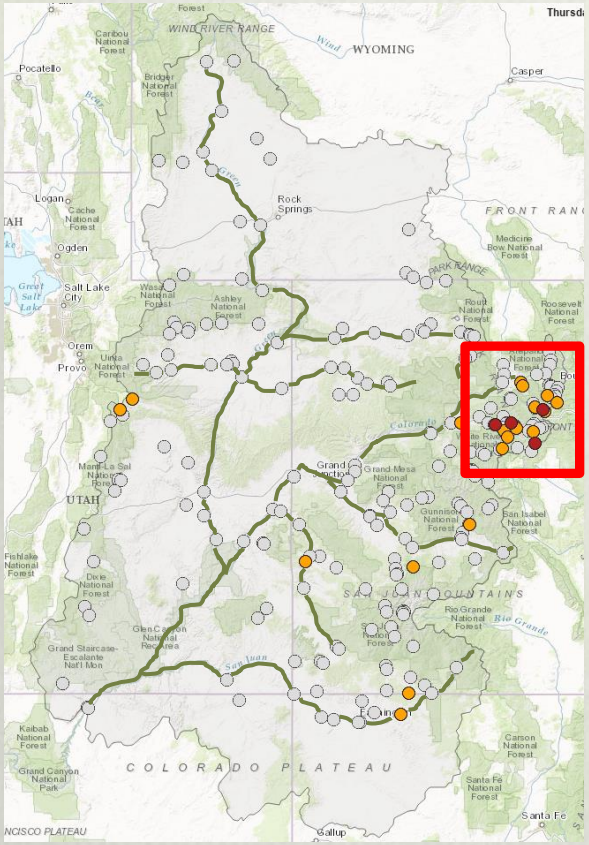
Oct 20, 2016

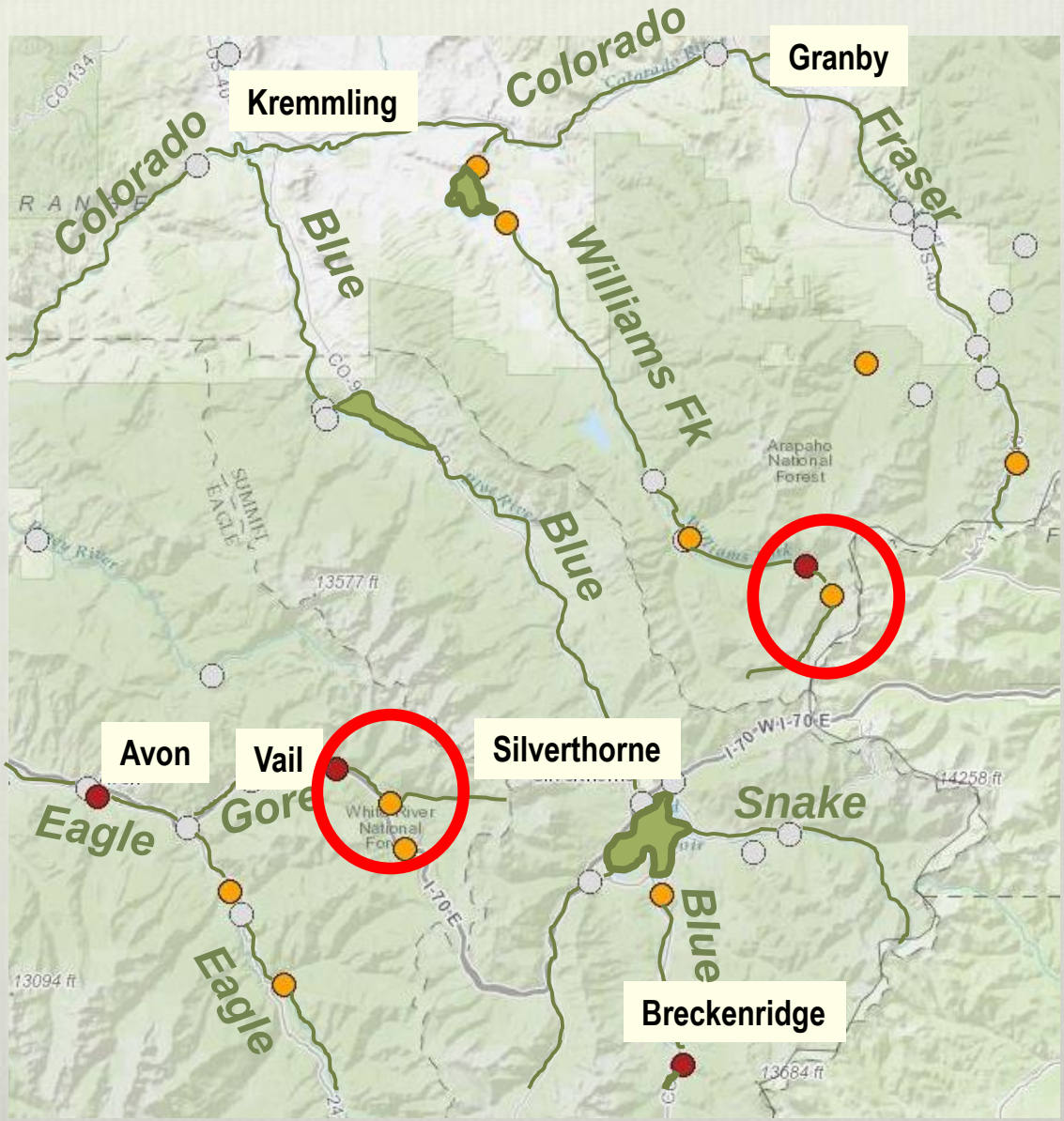
7 Day Average

28 Day Average



Streamflow Conditions, Upper Colorado Main

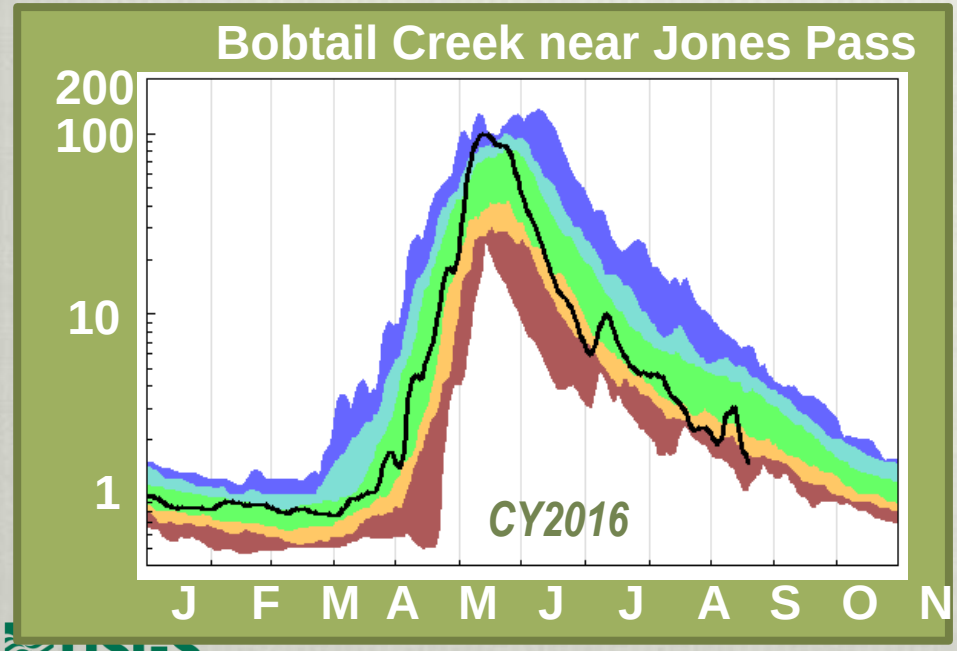


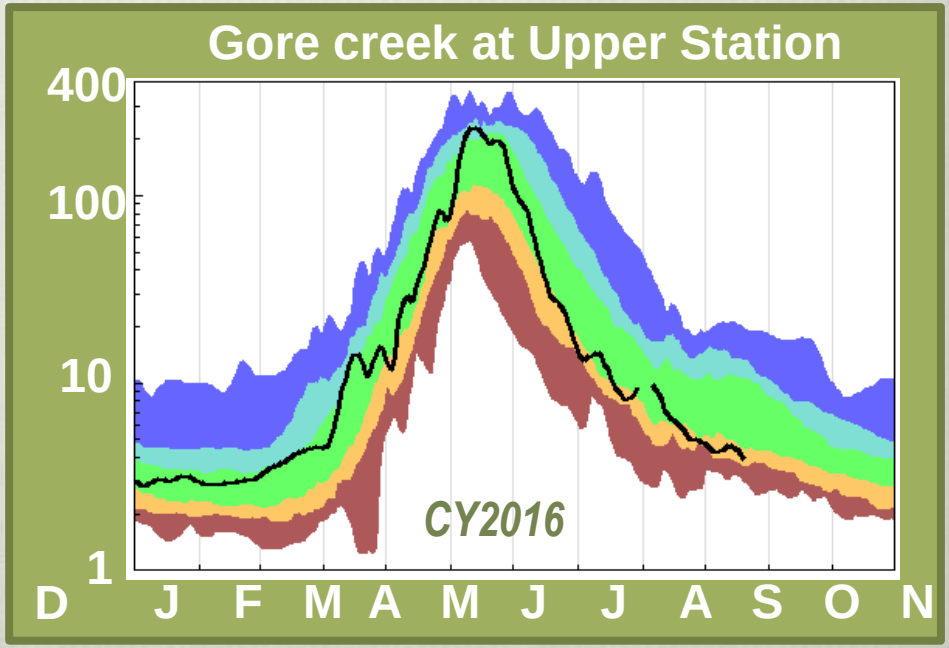


USGS
science for a changing world

Streamflow Conditions, Upper Colorado Main

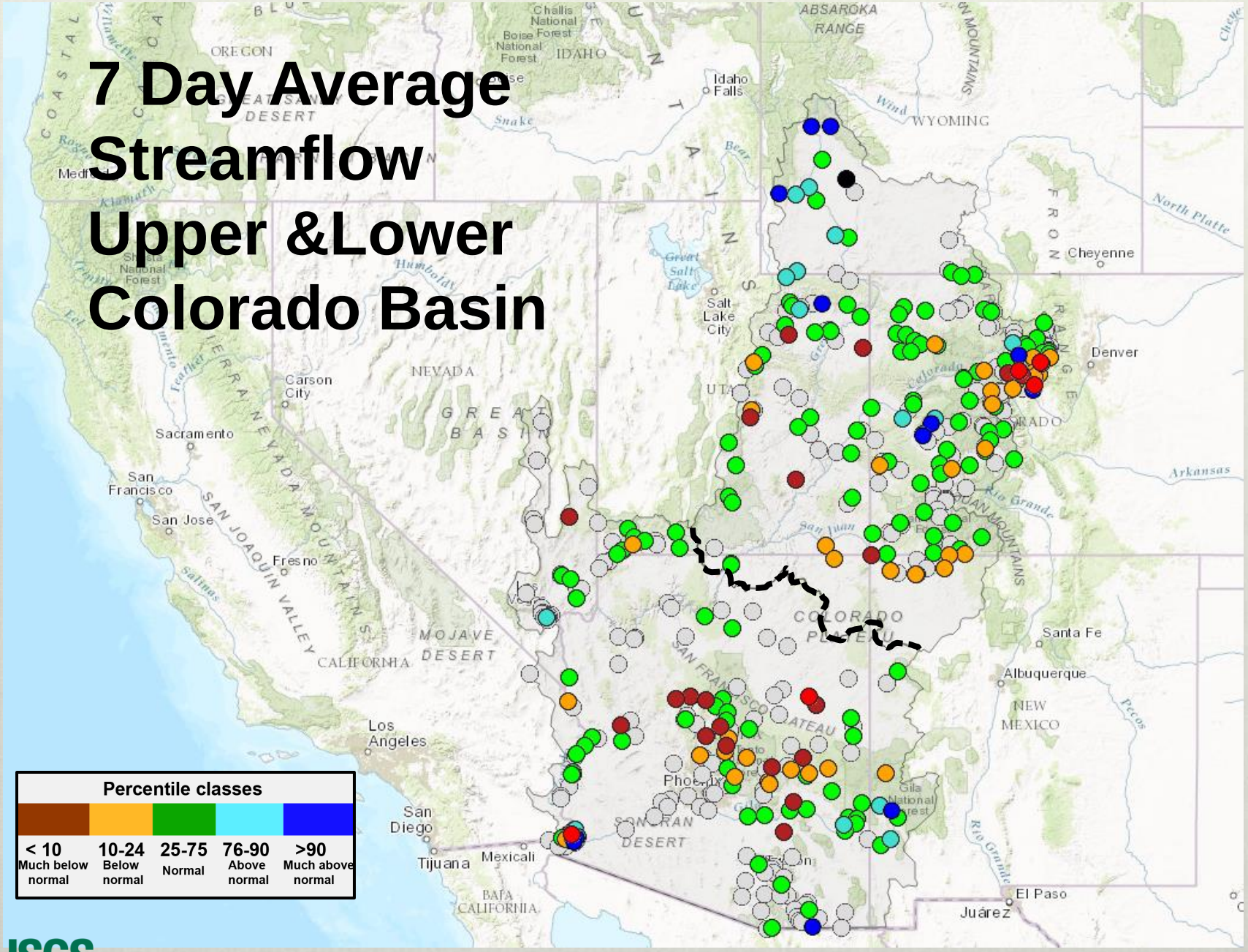
7 Day Average Streamflow, in ft^3/s





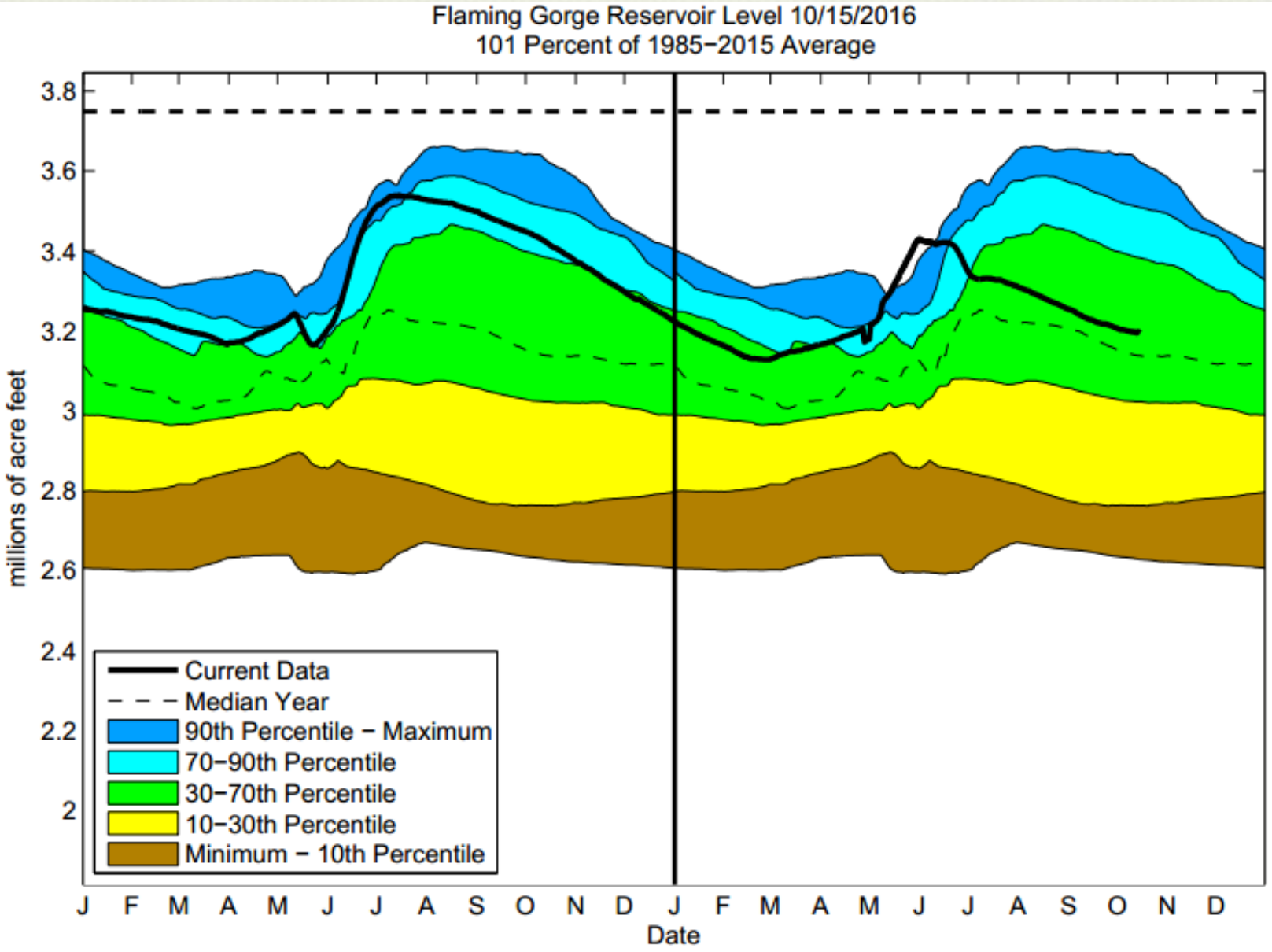
USGS
science for a changing world

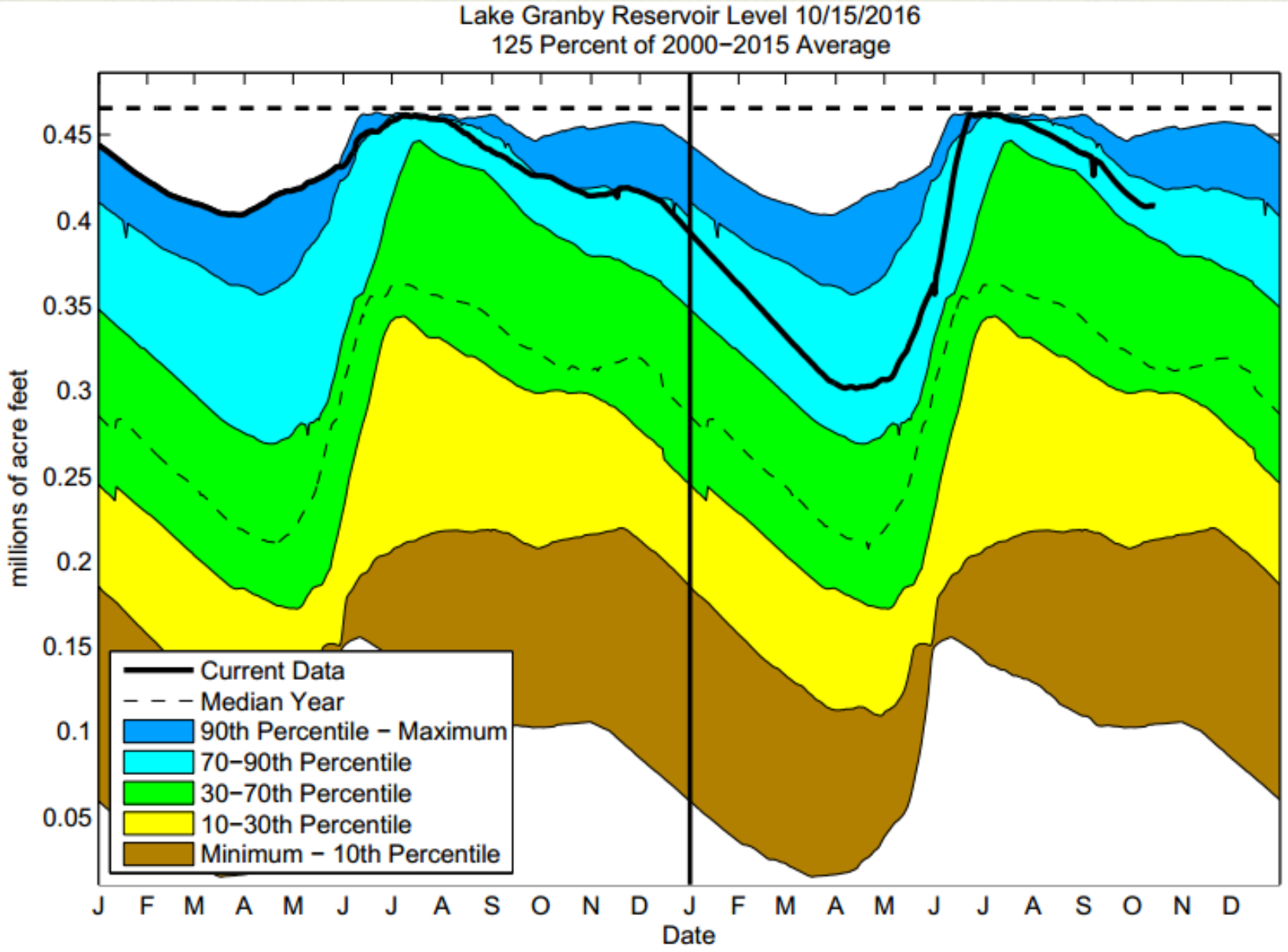
7 Day Average Streamflow Upper &Lower Colorado Basin

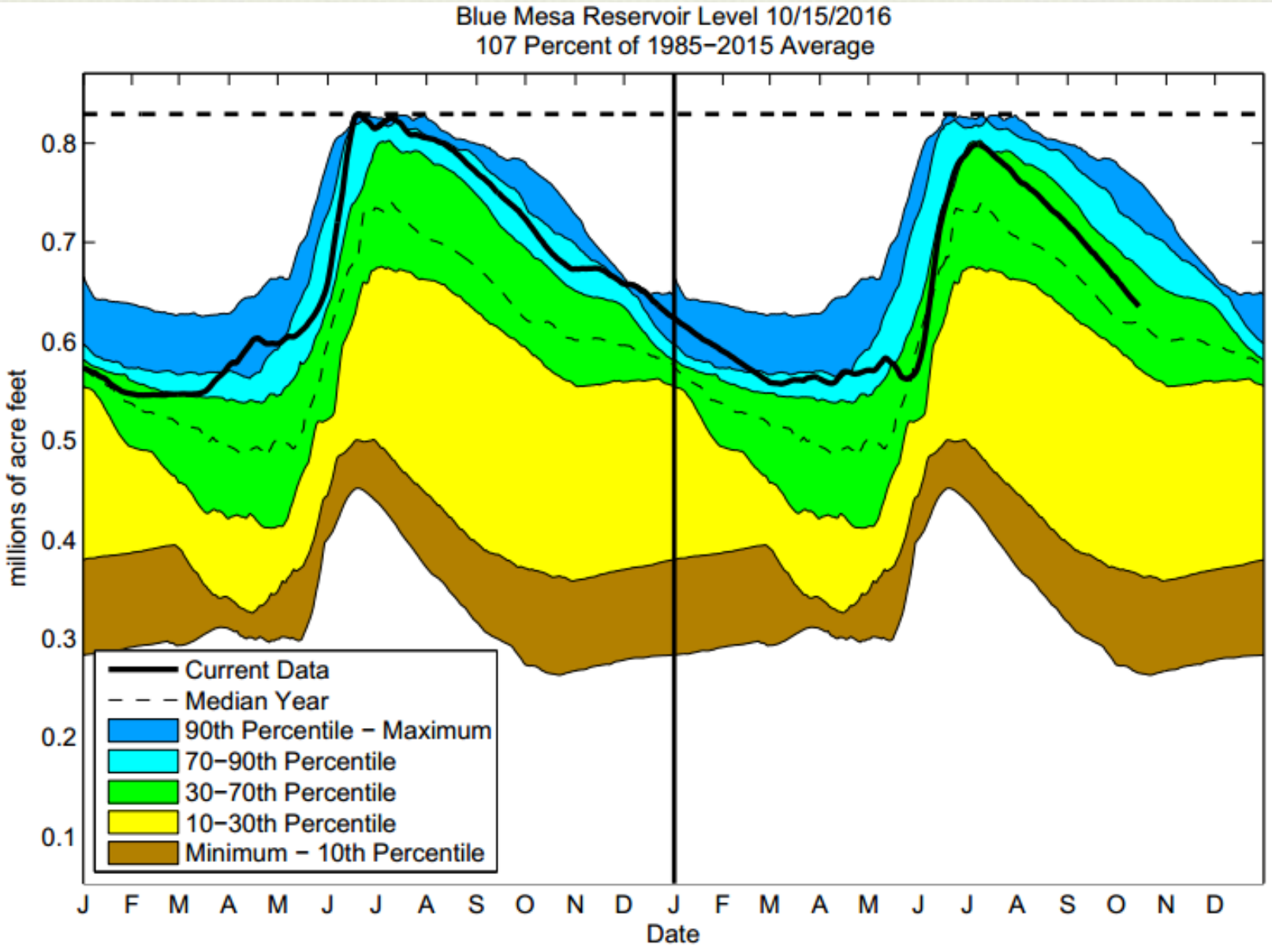


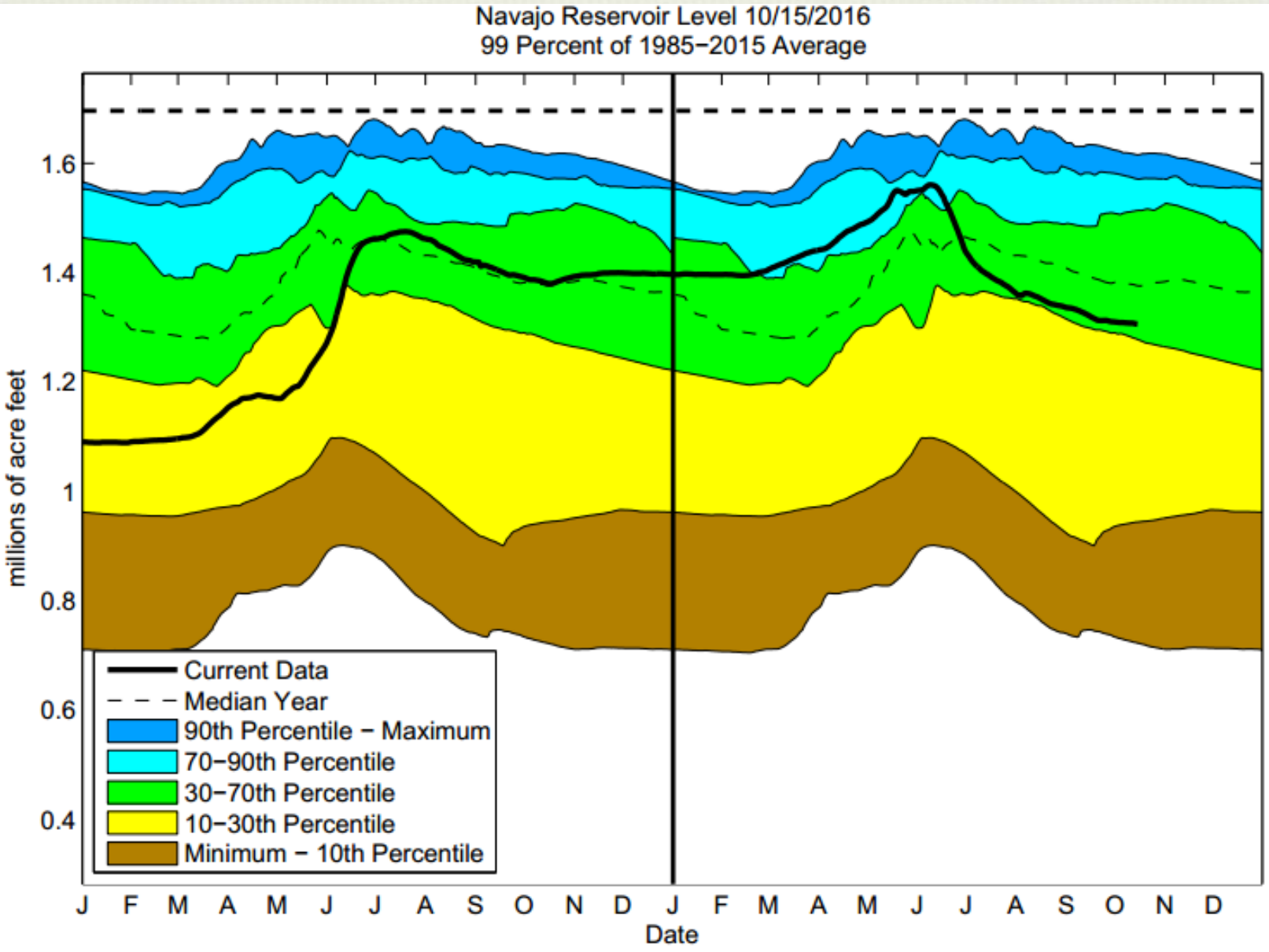
USGS
science for a changing world

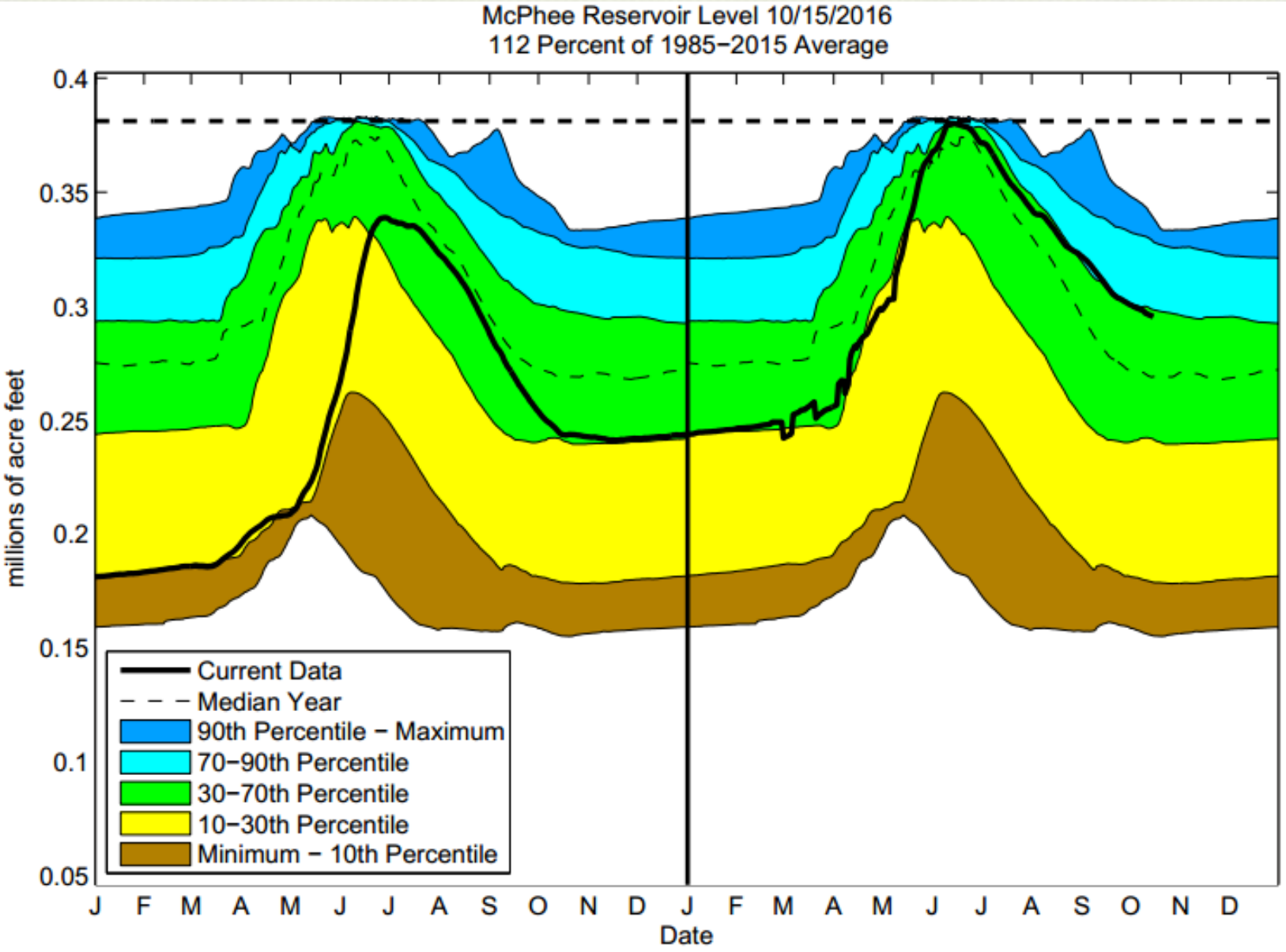
Reservoir Update

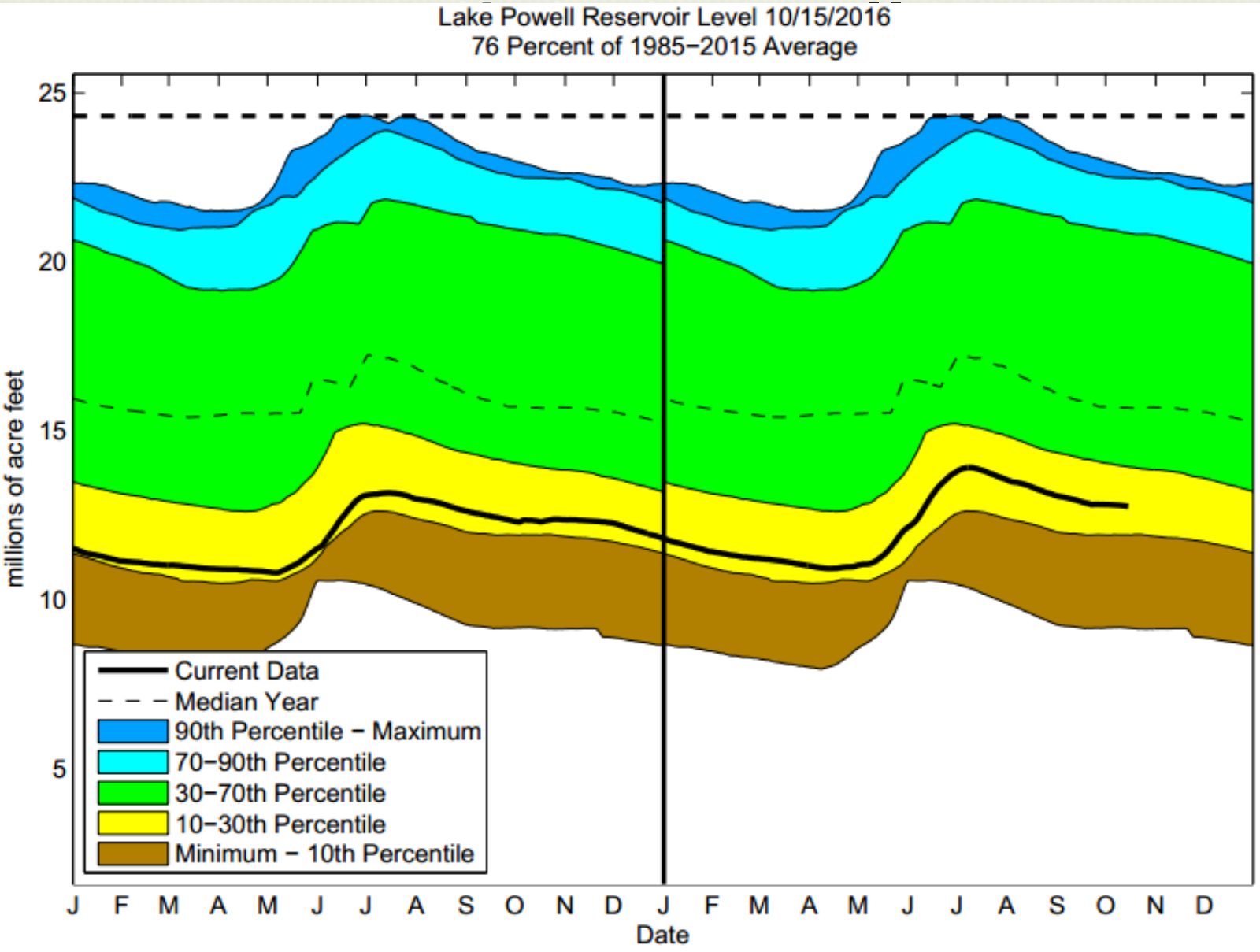

Flaming Gorge Reservoir Level 10/15/2016
101 Percent of 1985−2015 Average
millions of acre feet
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
Current Data
Median Year
90th Percentile − Maximum
70−90th Percentile
30−70th Percentile
10−30th Percentile
Minimum − 10th Percentile
J F M A M J J A S O N D J F M A M J J A S O N D
Date


Lake Granby Reservoir Level 10/15/2016
125 Percent of 2000−2015 Average
millions of acre feet
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
Current Data
Median Year
90th Percentile − Maximum
70−90th Percentile
30−70th Percentile
10−30th Percentile
Minimum − 10th Percentile
J F M A M J J A S O N D J F M A M J J A S O N D
Date

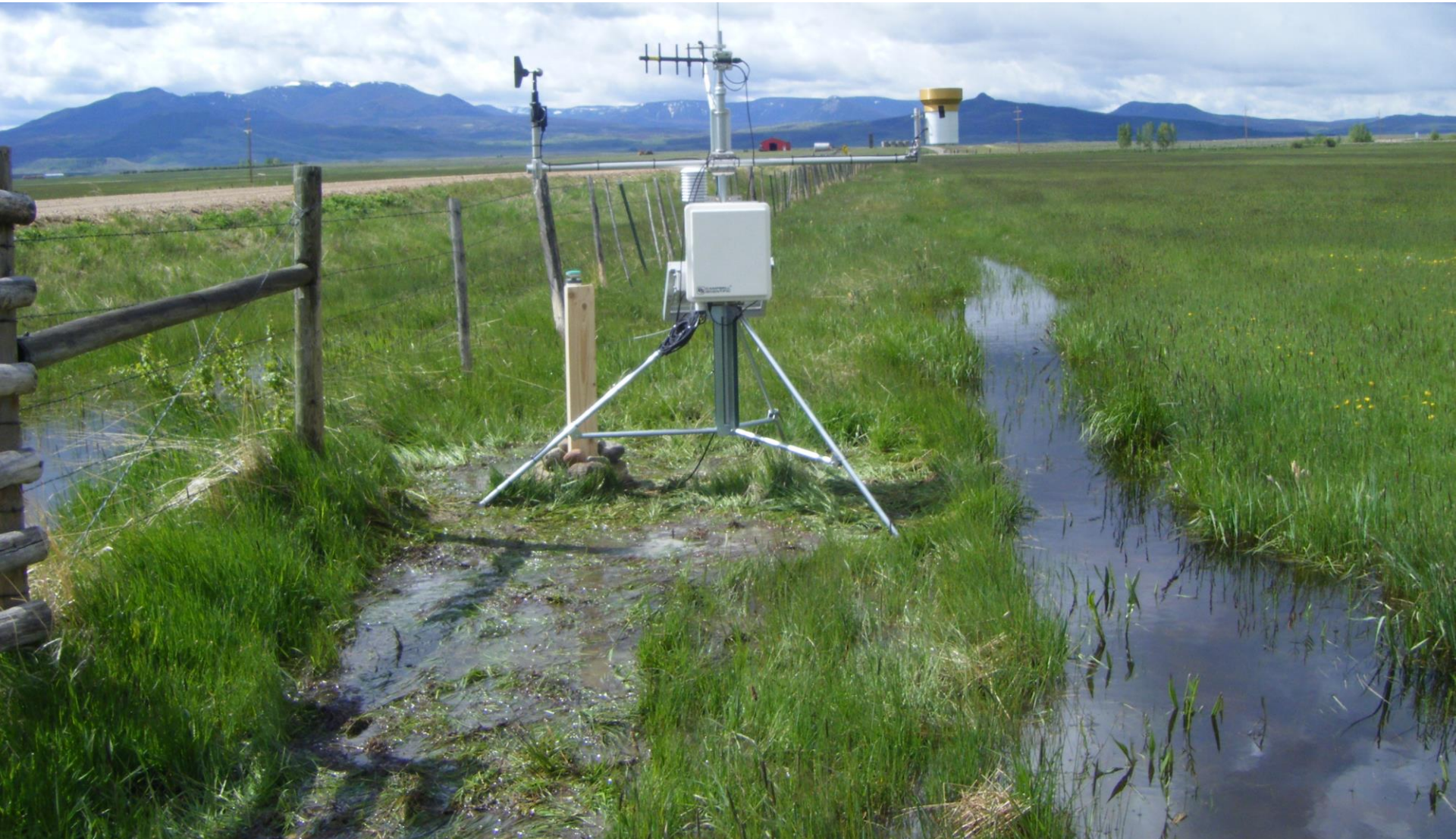

Blue Mesa Reservoir Level 10/15/2016
107 Percent of 1985−2015 Average
millions of acre feet
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Current Data
Median Year
90th Percentile − Maximum
70−90th Percentile
30−70th Percentile
10−30th Percentile
Minimum − 10th Percentile
J F M A M J J A S O N D J F M A M J J A S O N D
Date


Navajo Reservoir Level 10/15/2016
99 Percent of 1985−2015 Average
millions of acre feet
1.6
1.4
1.2
1
0.8
0.6
0.4
Current Data
Median Year
90th Percentile − Maximum
70−90th Percentile
30−70th Percentile
10−30th Percentile
Minimum − 10th Percentile
J F M A M J J A S O N D J F M A M J J A S O N D
Date

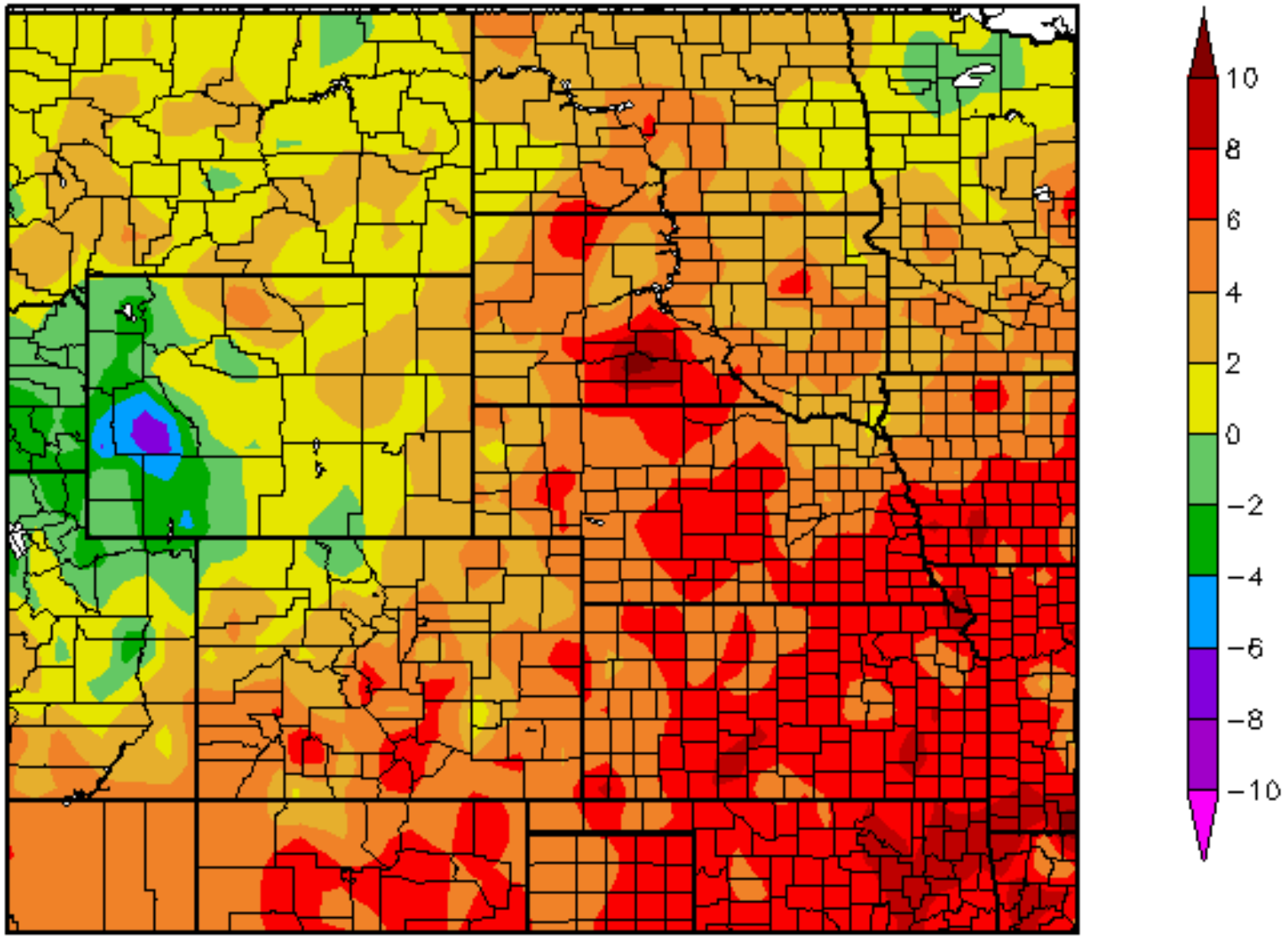

McPhee Reservoir Level 10/15/2016
112 Percent of 1985−2015 Average
millions of acre feet
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
Current Data
Median Year
90th Percentile − Maximum
70−90th Percentile
30−70th Percentile
10−30th Percentile
Minimum − 10th Percentile
J F M A M J J A S O N D J F M A M J J A S O N D
Date


Lake Powell Reservoir Level 10/15/2016
76 Percent of 1985−2015 Average
millions of acre feet
25
20
15
10
5
Current Data
Median Year
90th Percentile − Maximum
70−90th Percentile
30−70th Percentile
10−30th Percentile
Minimum − 10th Percentile
J F M A M J J A S O N D J F M A M J J A S O N D
Date

Water Demand



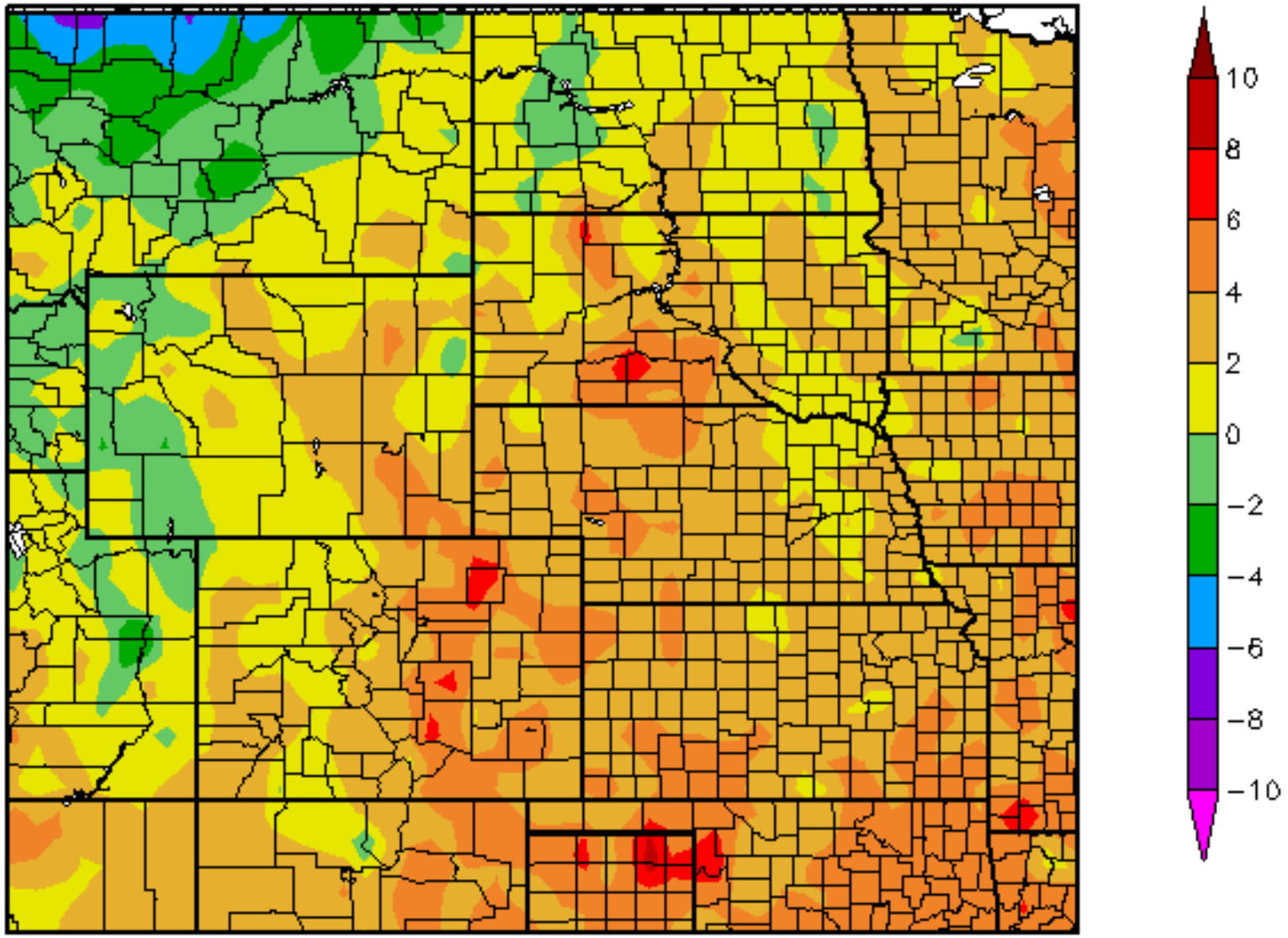
Departure from Normal Temperature (F)
10/17/2016 – 10/23/2016



Generated 10/24/2016 at HPRCC using provisional data.

Regional Climate Centers

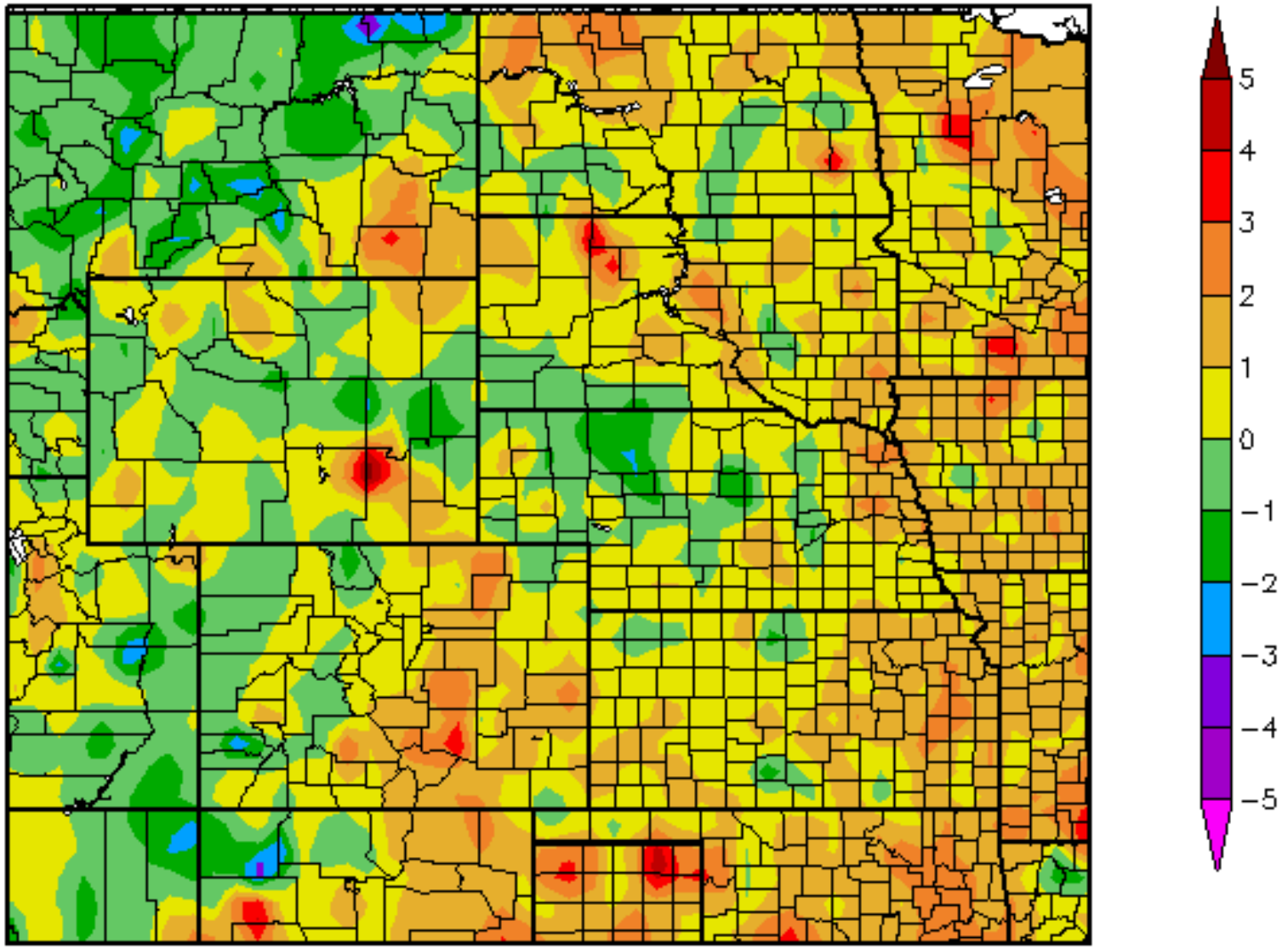
Departure from Normal Temperature (F)
10/1/2016 – 10/23/2016



Generated 10/24/2016 at HPRCC using provisional data.

Regional Climate Centers

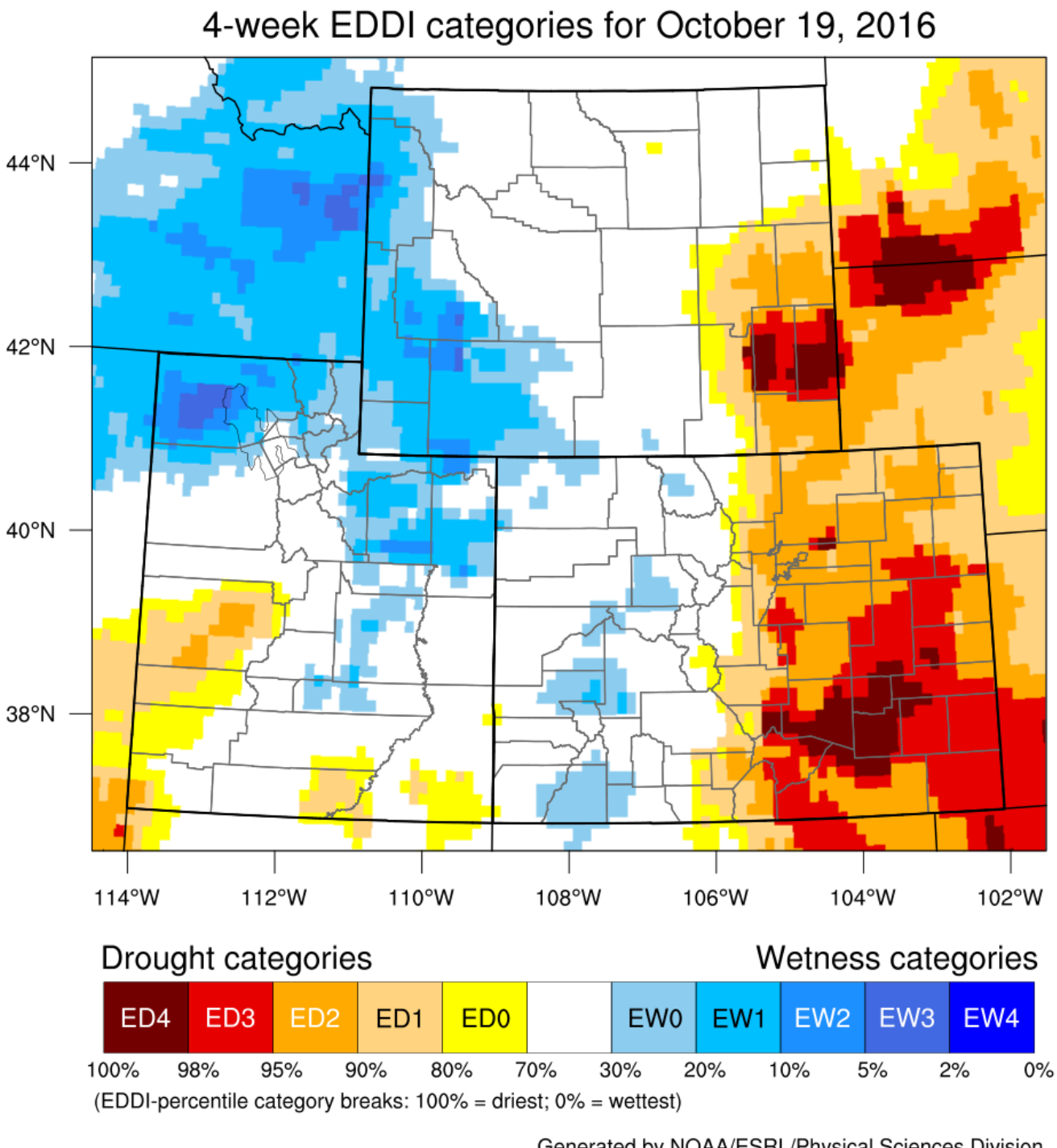
Departure from Normal Temperature (F)
7/1/2016 – 9/30/2016



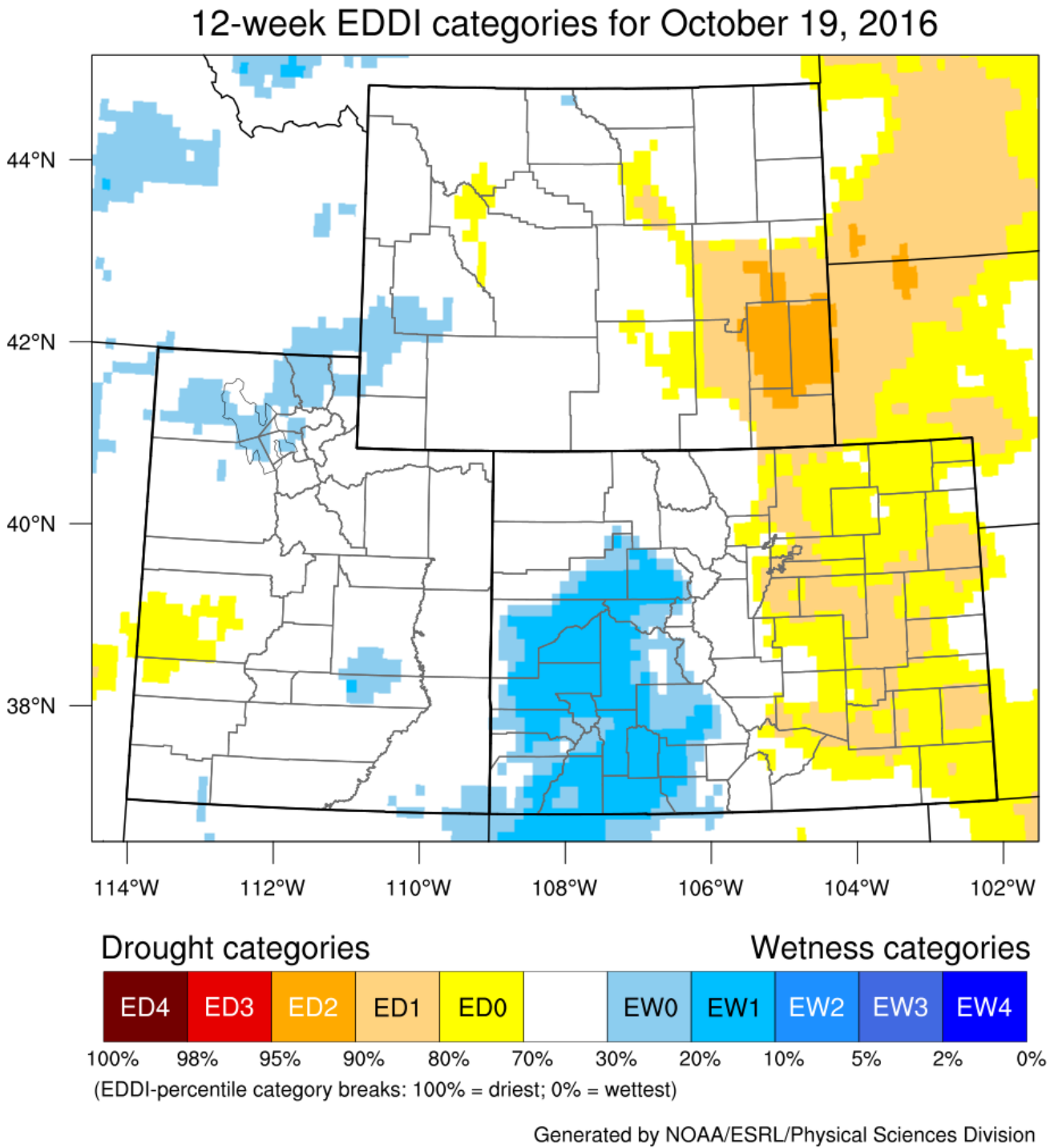
Generated 10/11/2016 at HPRCC using provisional data.

Regional Climate Centers

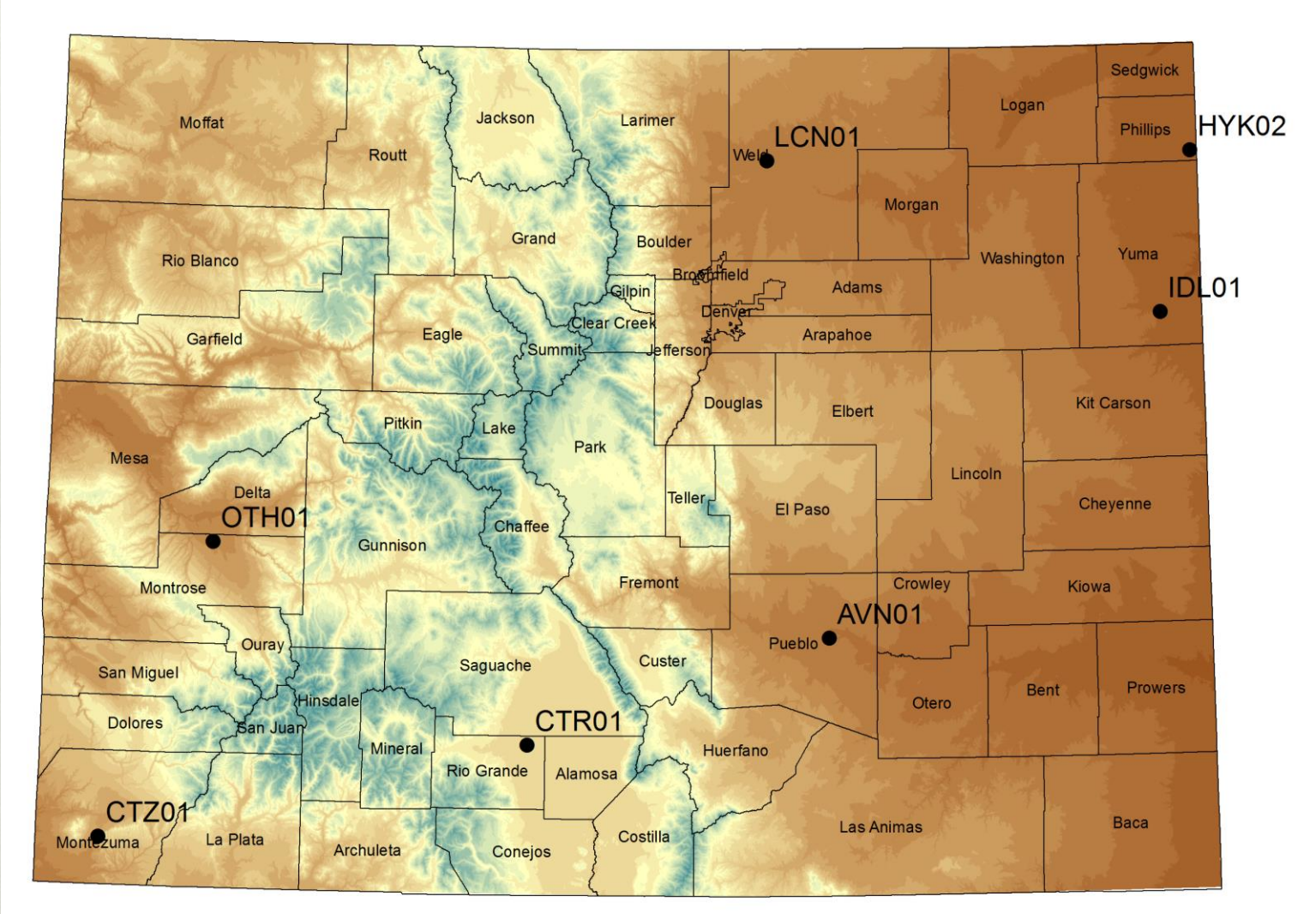
4 Week Evaporative Demand Drought Index (EDDI)



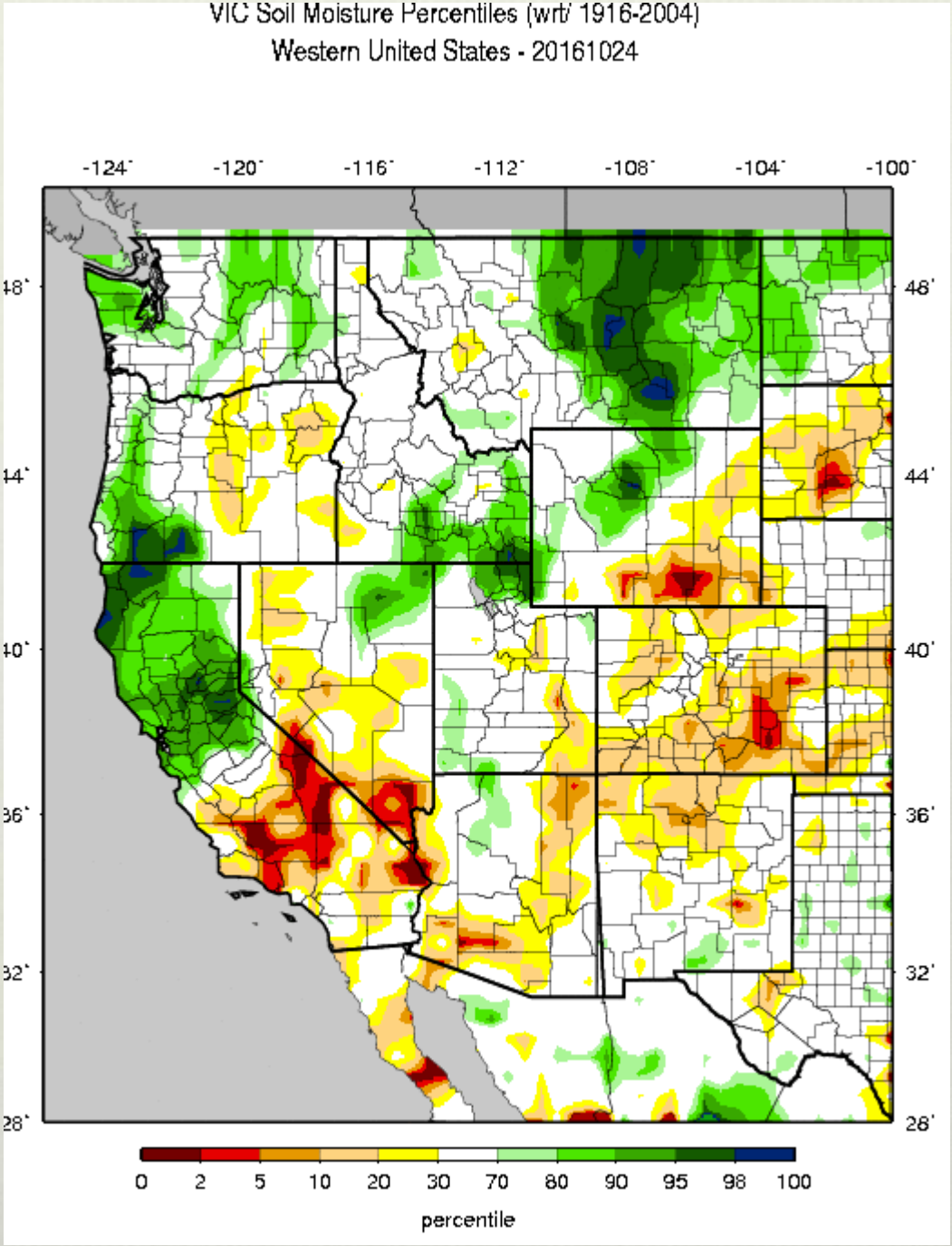
12 Week Evaporative Demand Drought Index (EDDI)

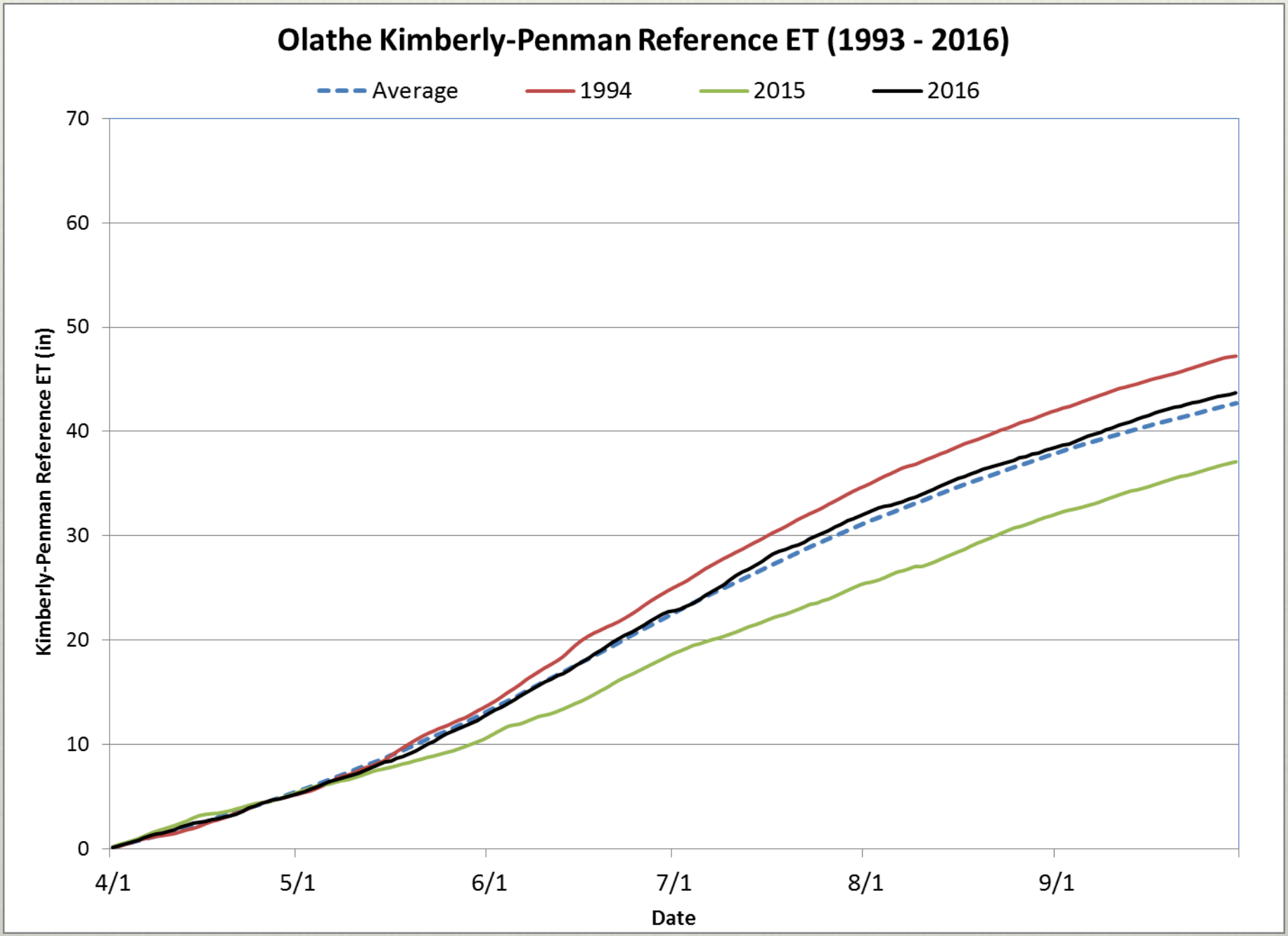


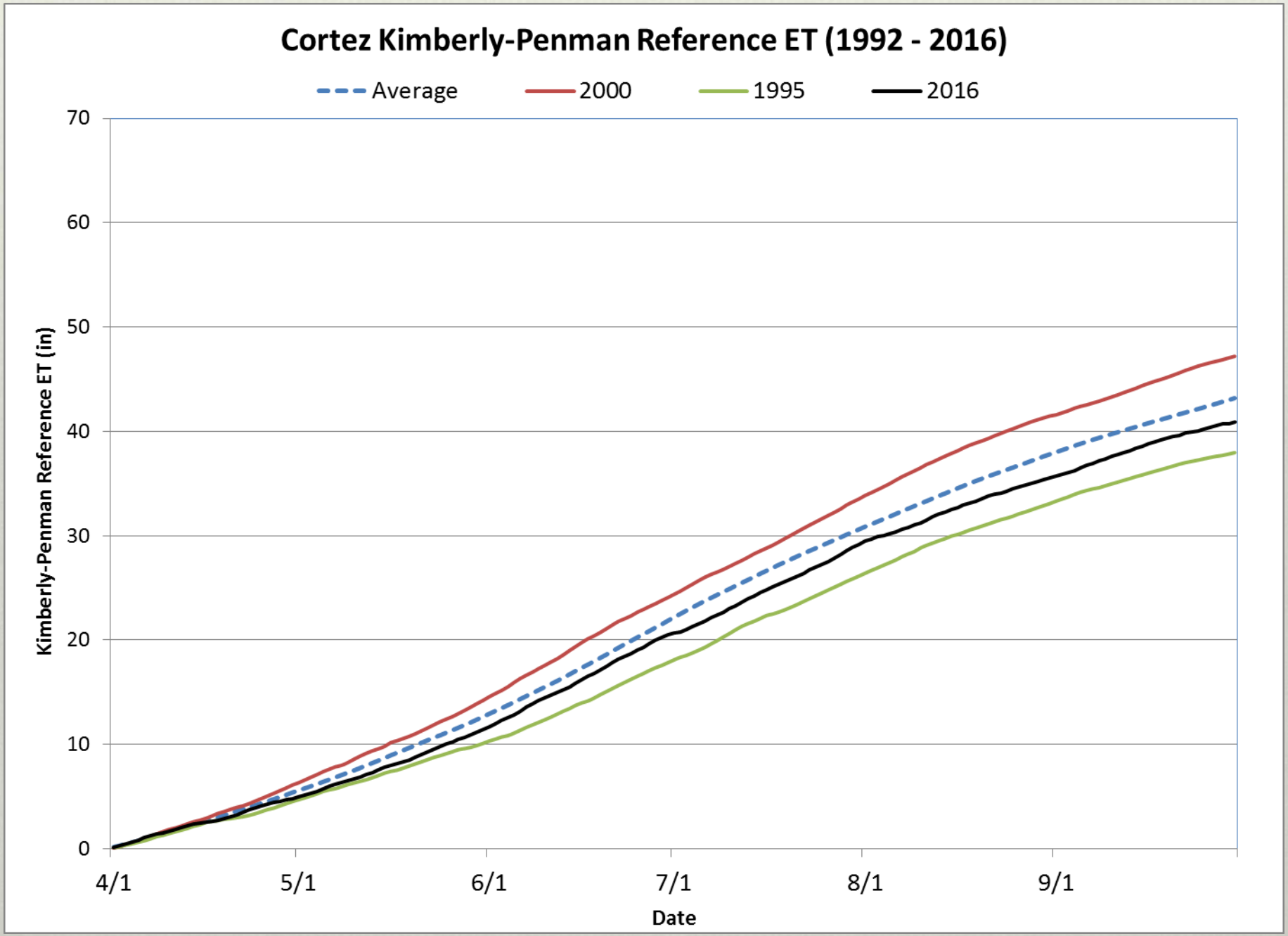
CoAgMet Reference Evapotranspiration Stations

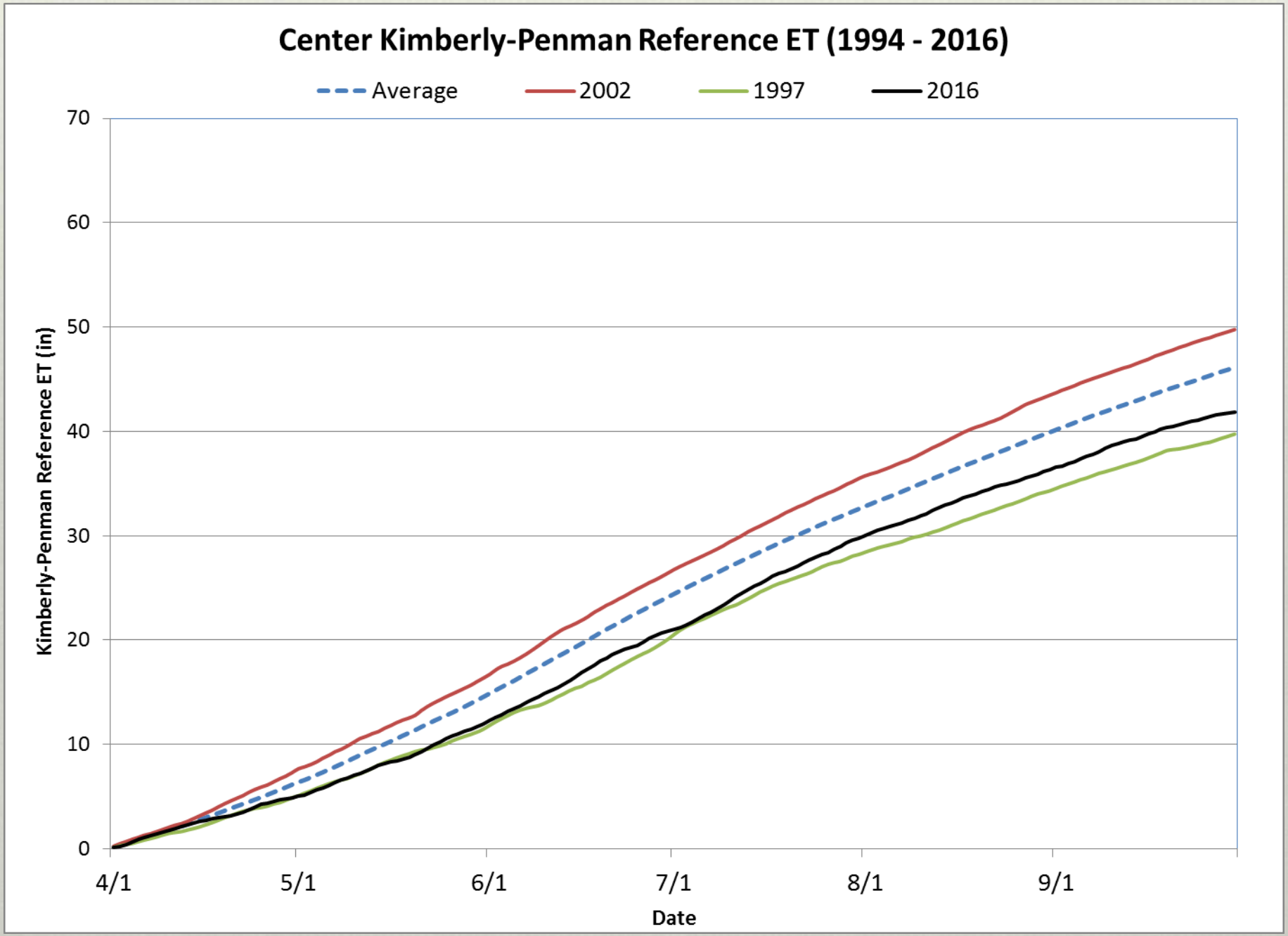


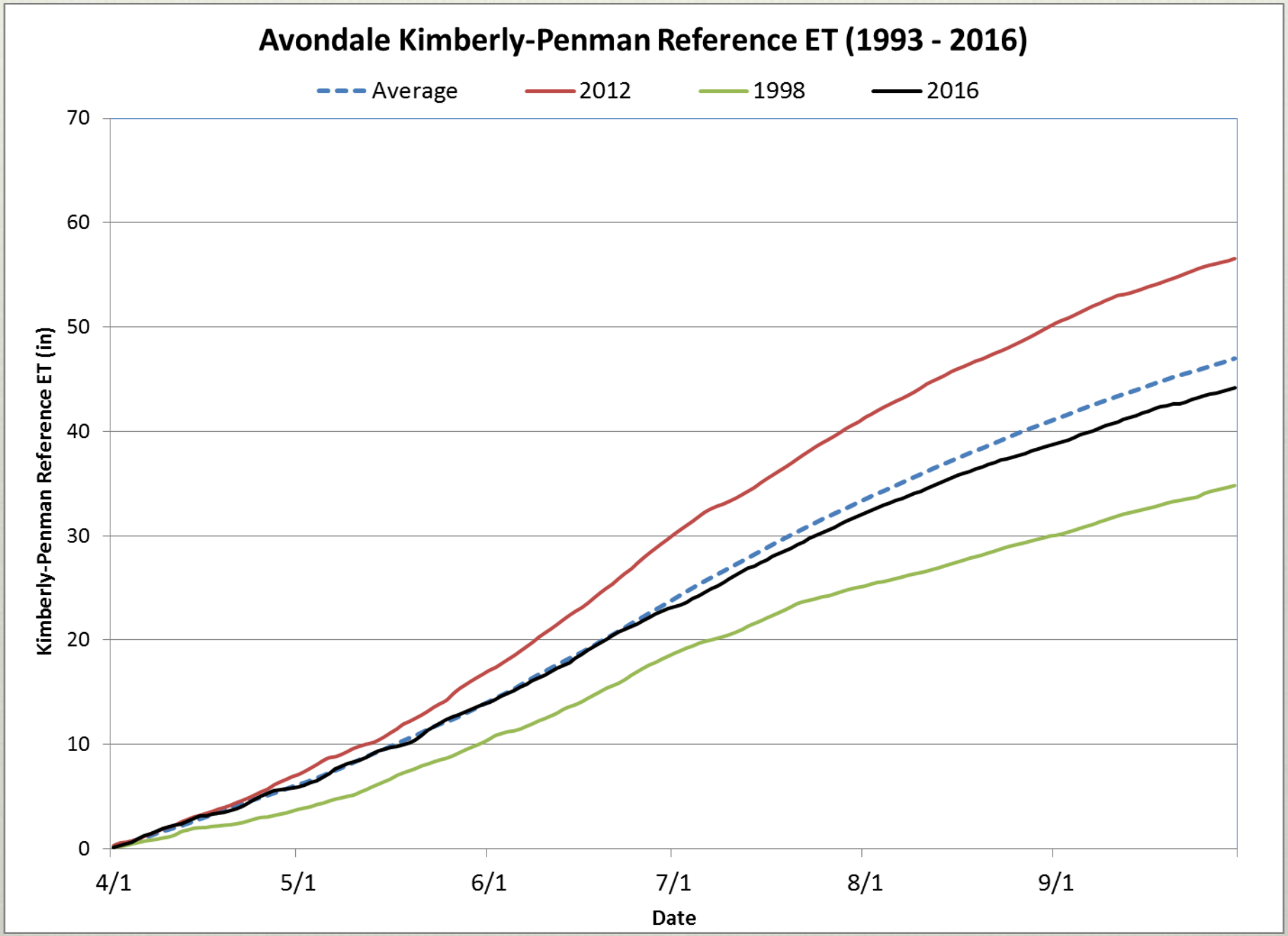
VIC soil moisture

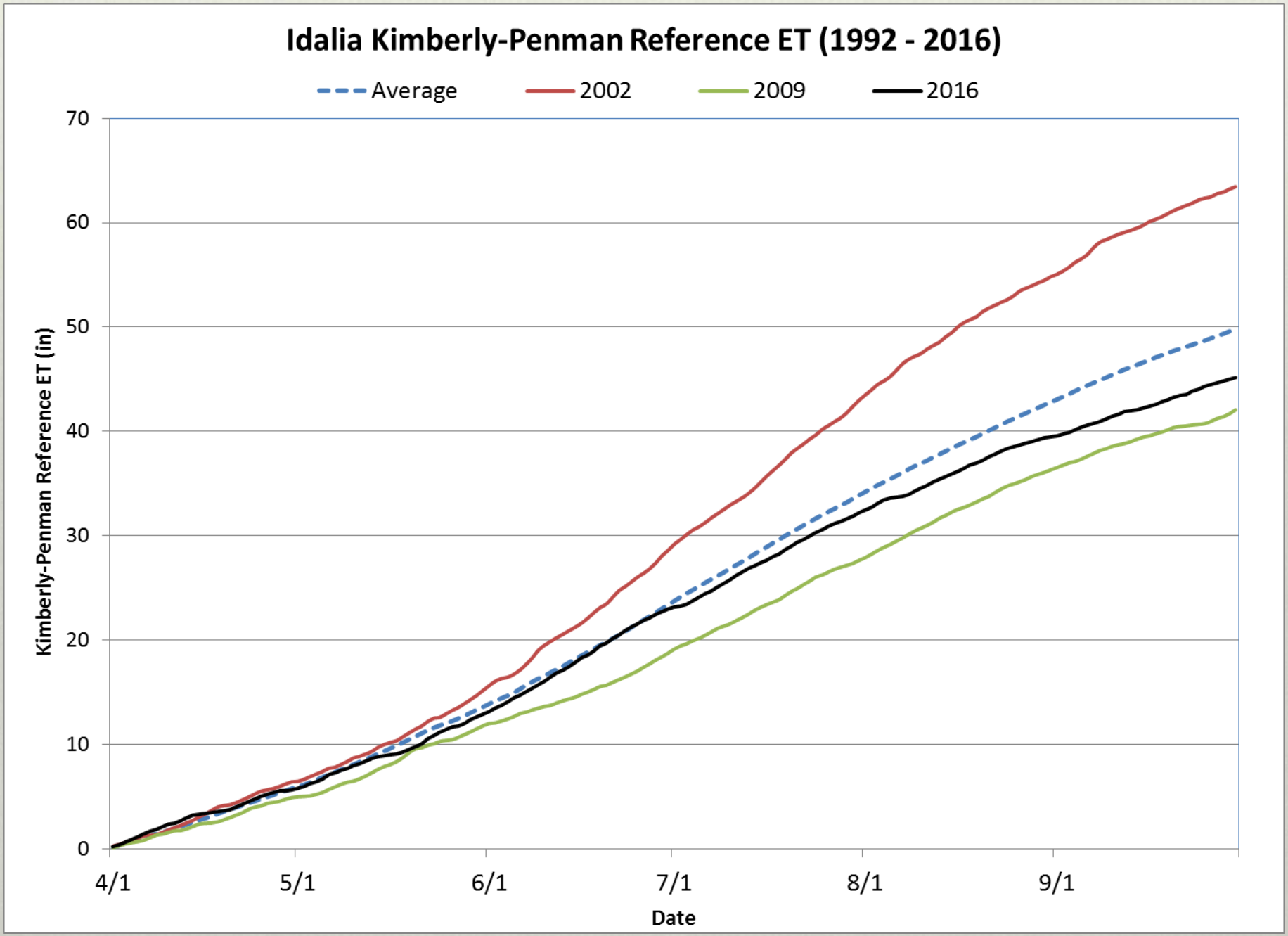


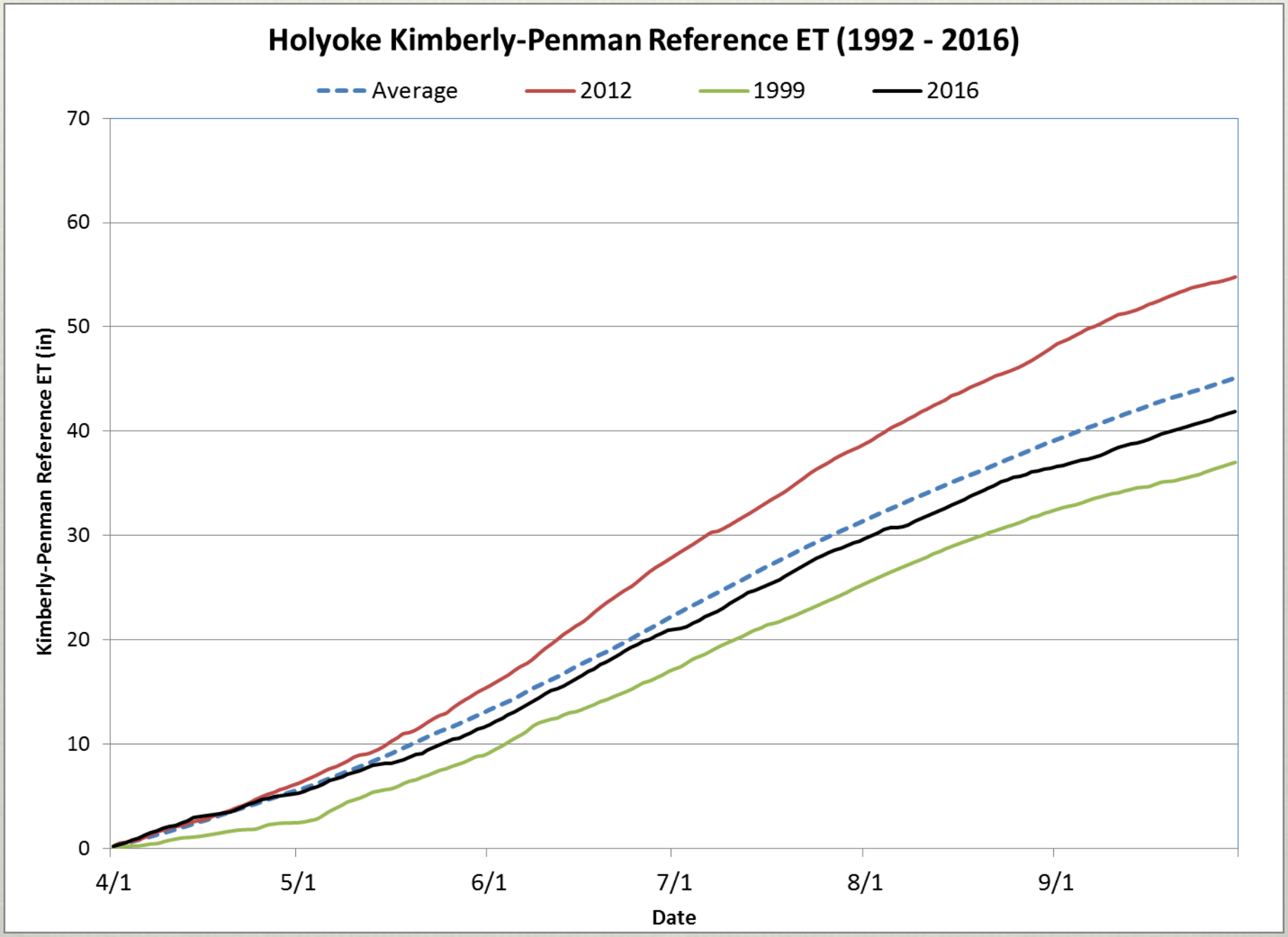

Olathe Kimberly-Penman Reference ET (1993 - 2016)
Average
1994
2015
2016
70
60
50
40
30
20
10
0
Kimberly-Penman Reference ET (in)
4/1
5/1
6/1
7/1
8/1
9/1
Date

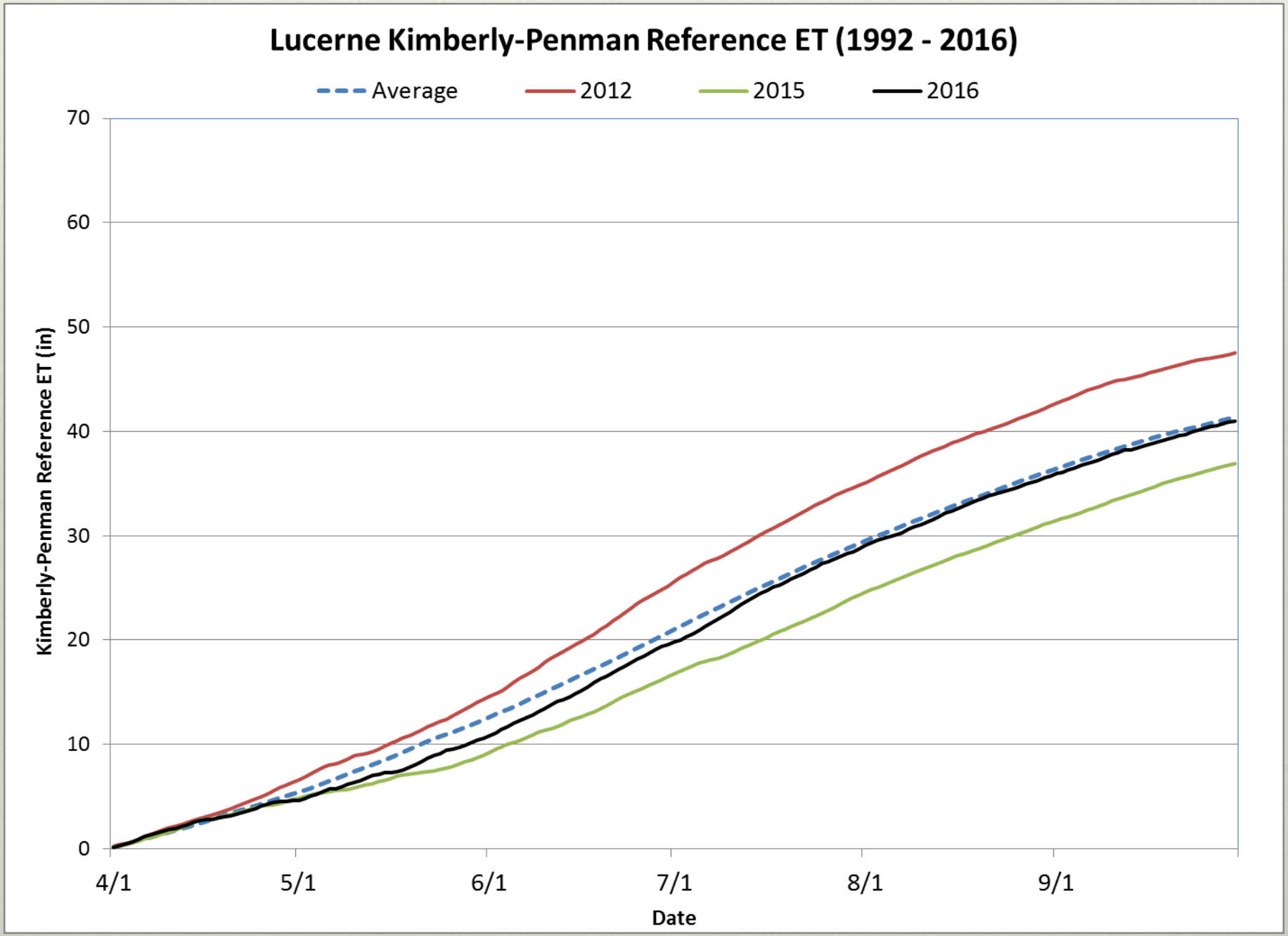

Cortez Kimberly-Penman Reference ET (1992 - 2016)
Average
2000
1995
2016
70
60
50
40
30
20
10
0
Kimberly-Penman Reference ET (in)
4/1
5/1
6/1
7/1
8/1
9/1
Date

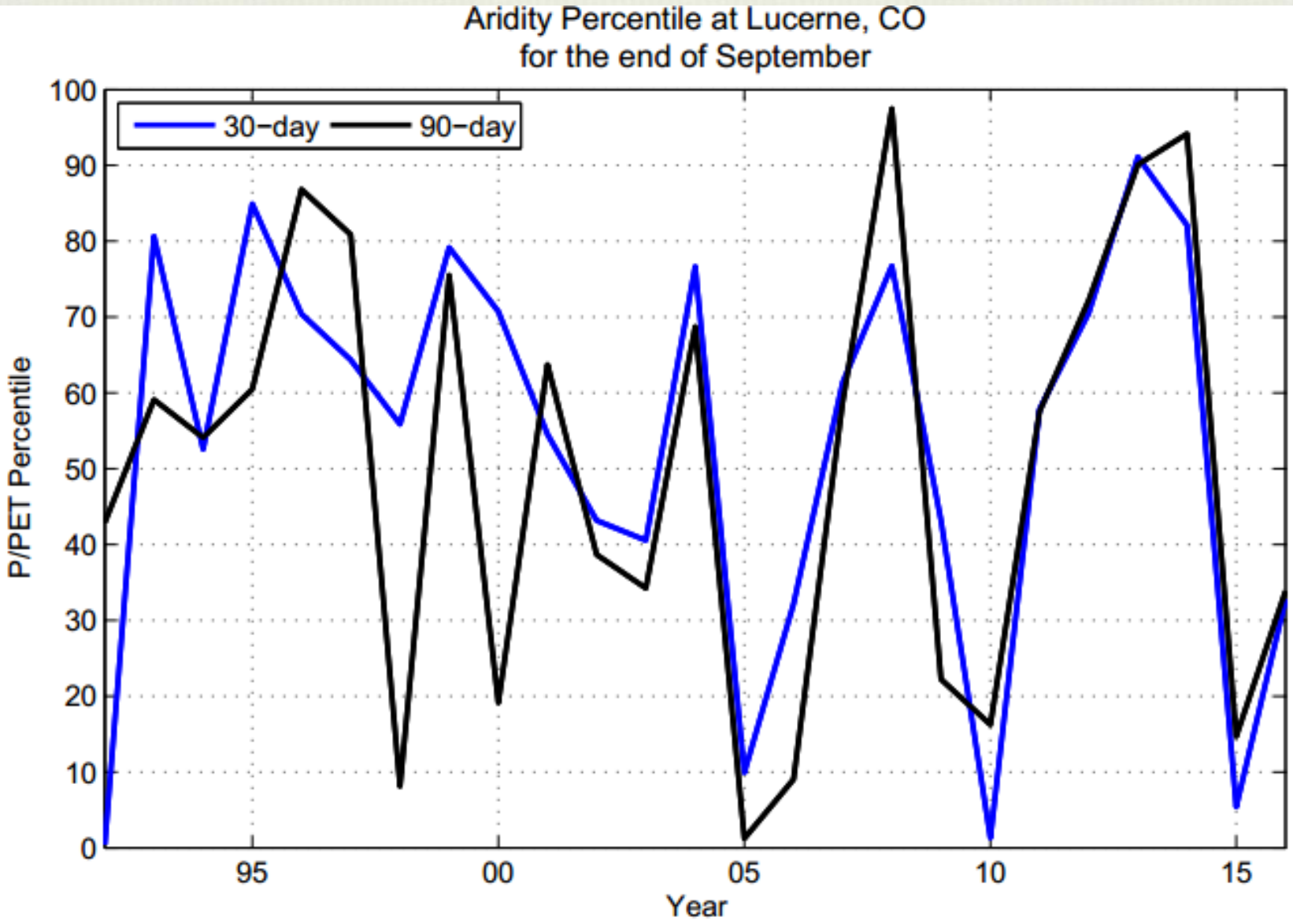

Center Kimberly-Penman Reference ET (1994 - 2016)
Average
2002
1997
2016
70
60
50
40
30
20
10
0
Kimberly-Penman Reference ET (in)
4/1
5/1
6/1
7/1
8/1
9/1
Date

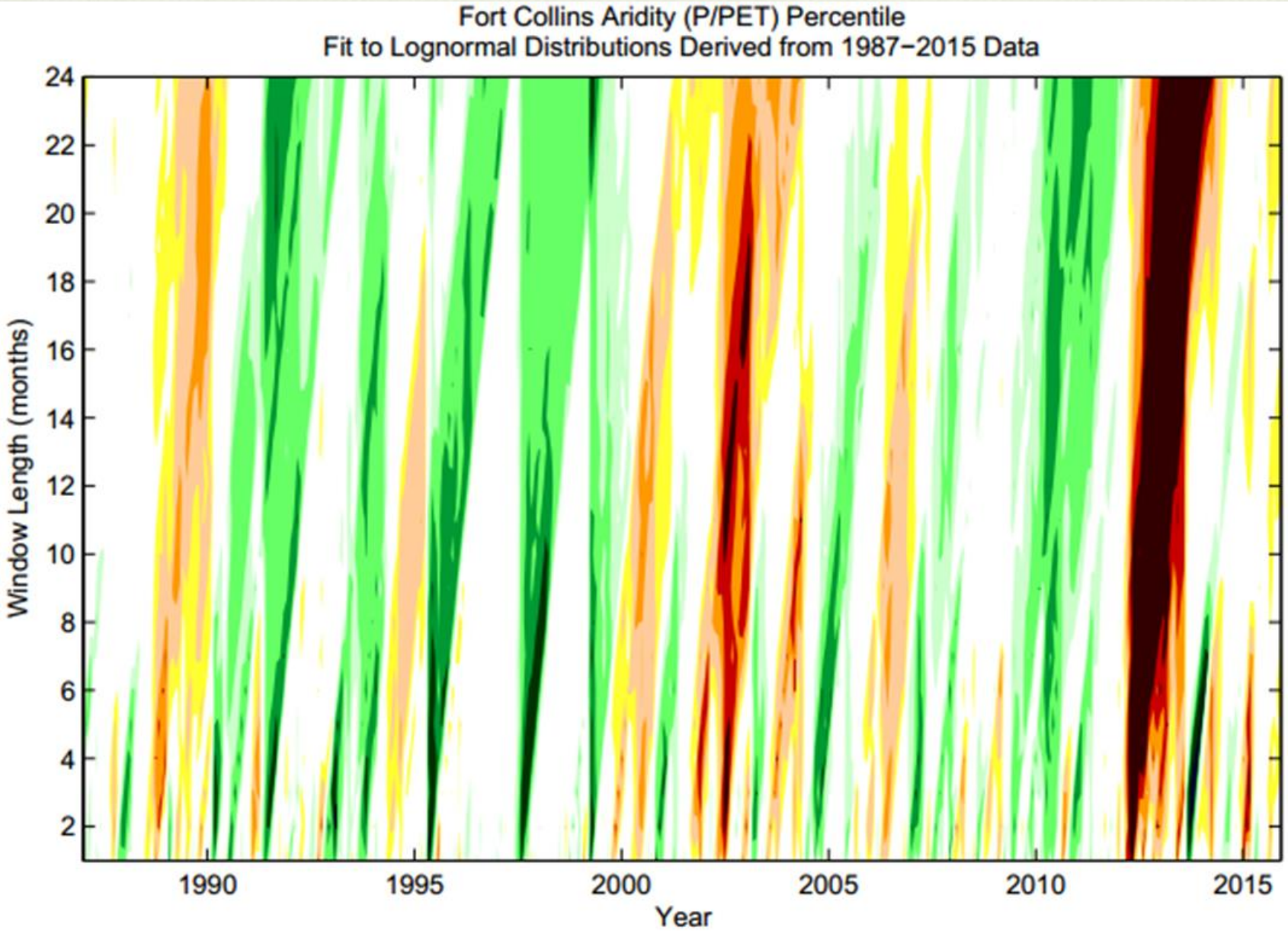

Avondale Kimberly-Penman Reference ET (1993 - 2016)
Average
2012
1998
2016
70
60
50
40
30
20
10
0
Kimberly-Penman Reference ET (in)
4/1
5/1
6/1
7/1
8/1
9/1
Date


Idalia Kimberly-Penman Reference ET (1992 - 2016)
Average
2002
2009
2016
70
60
50
40
30
20
10
0
Kimberly-Penman Reference ET (in)
4/1
5/1
6/1
7/1
8/1
9/1
Date

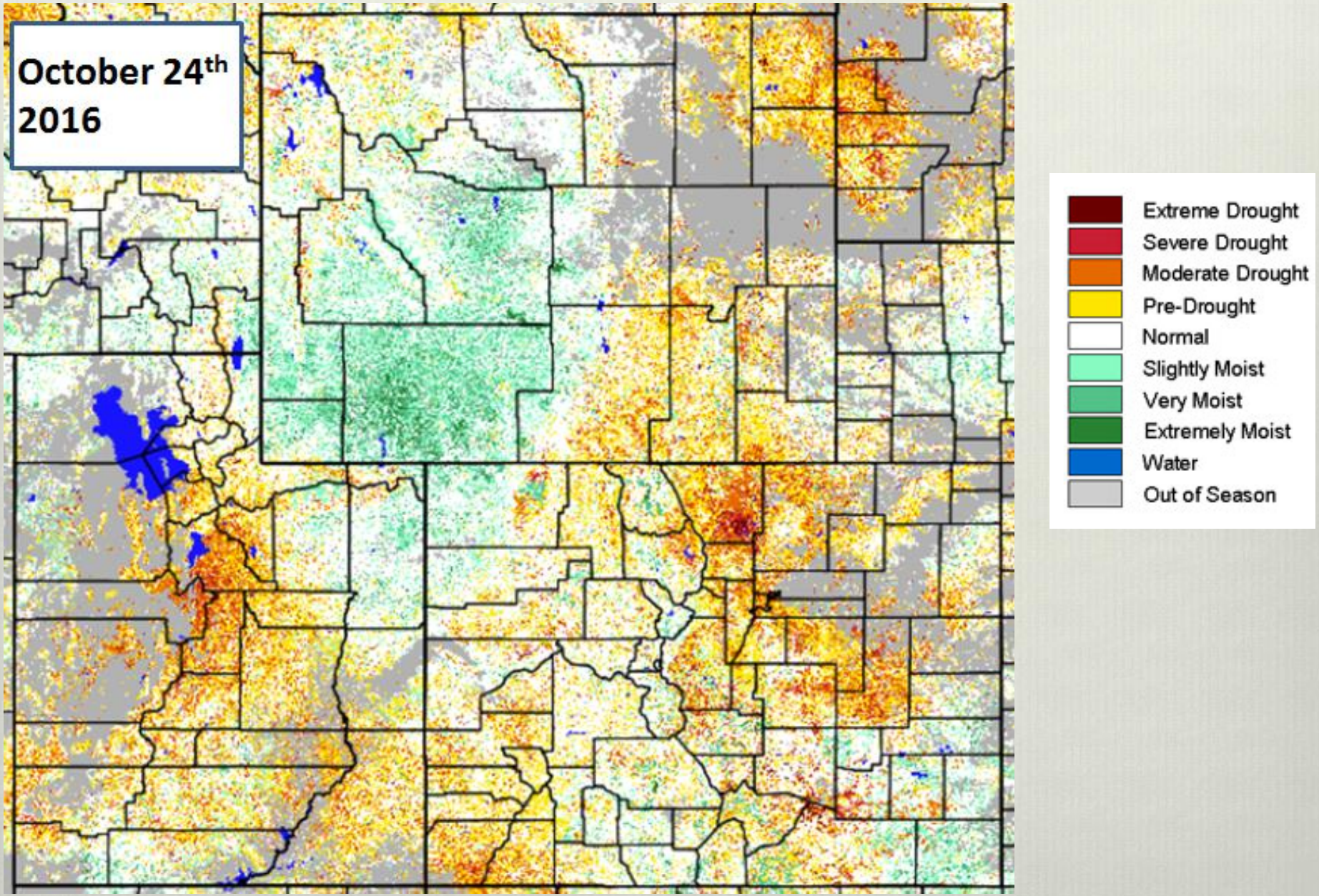

Holyoke Kimberly-Penman Reference ET (1992 - 2016)
Average
2012
1999
2016
70
60
50
40
30
20
10
0
Kimberly-Penman Reference ET (in)
4/1
5/1
6/1
7/1
8/1
9/1
Date


Lucerne Kimberly-Penman Reference ET (1992 - 2016)
Average
2012
2015
2016
70
60
50
40
30
20
10
0
Kimberly-Penman Reference ET (in)
4/1
5/1
6/1
7/1
8/1
9/1
Date


Aridity Percentile at Lucerne, CO
for the end of September
30−day
90−day
P/PET Percentile
100
90
80
70
60
50
40
30
20
10
0
95
00
05
10
15
Year

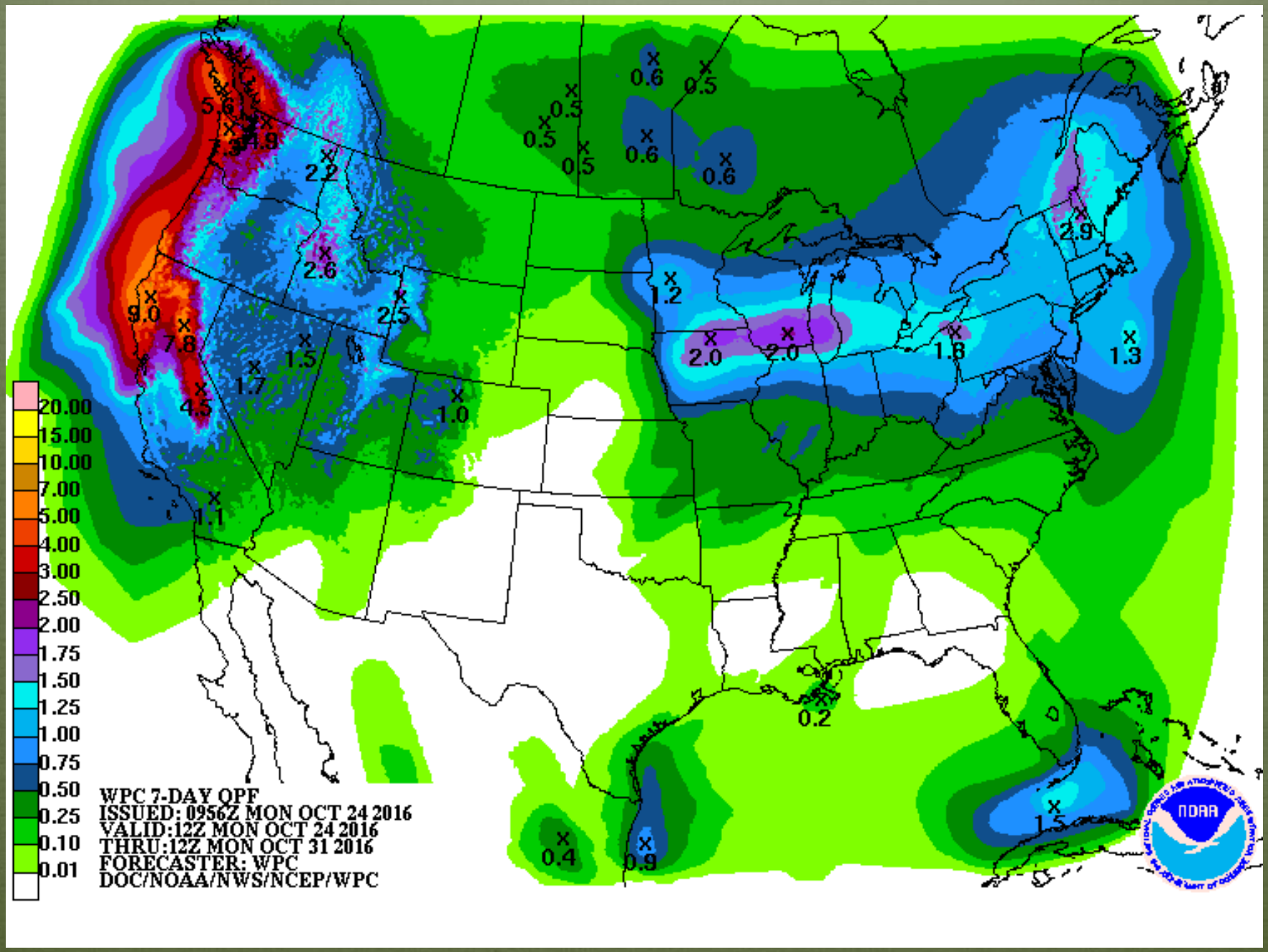

Fort Collins Aridity (P/PET) Percentile
Fit to Lognormal Distributions Derived from 1987–2015 Data
Window Length (months)
24
22
20
18
16
14
12
10
8
6
4
2
1990
1995
2000
2005
2010
2015
Year

VegDRI

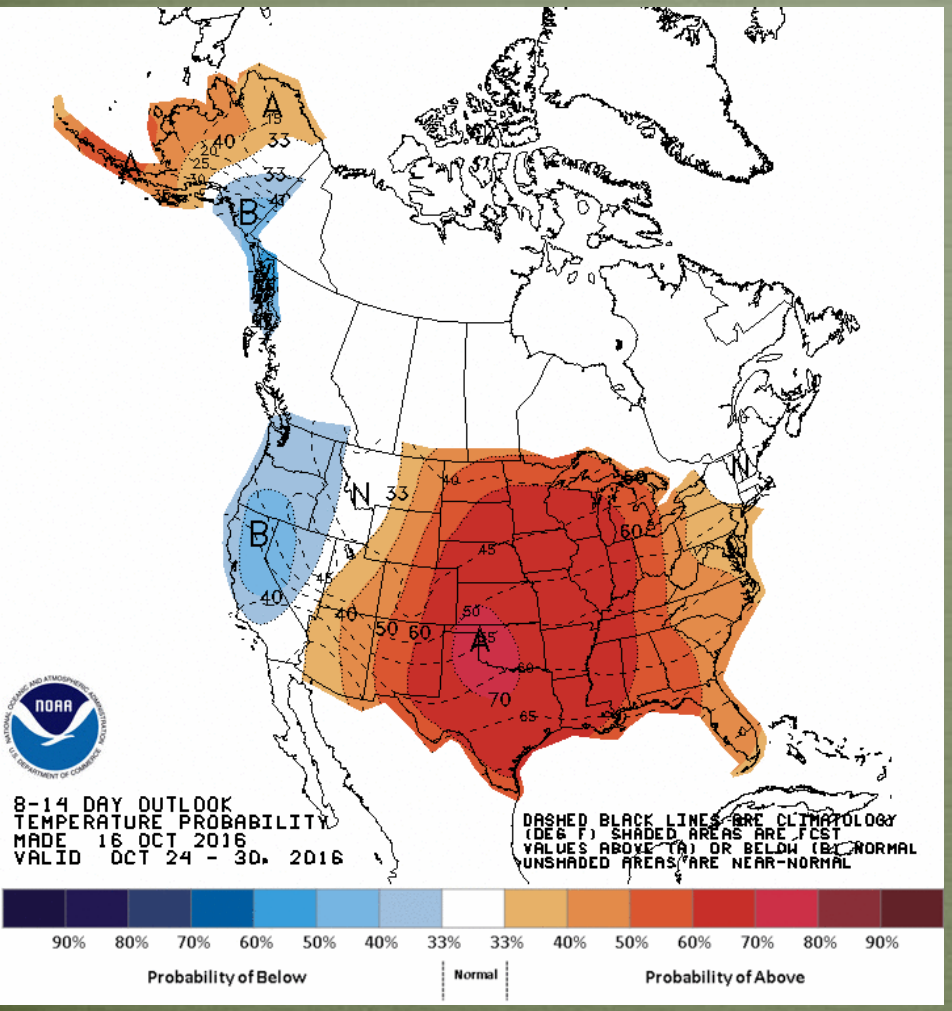

October 24th
2016
Extreme Drought
Severe Drought
Moderate Drought
Pre-Drought
Normal
Slightly Moist
Very Moist
Extremely Moist
Water
Out of Season

Precipitation Forecast

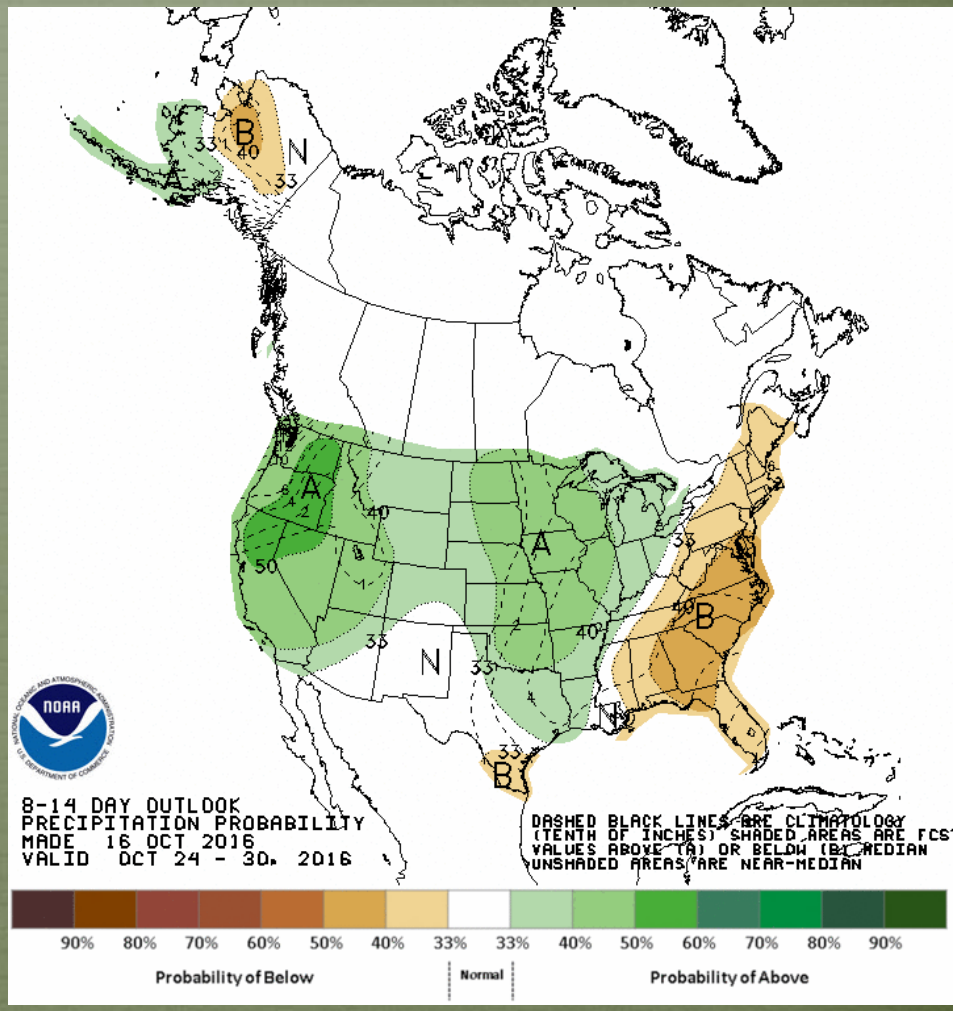
7 Day Quantitative Precipitation Forecast



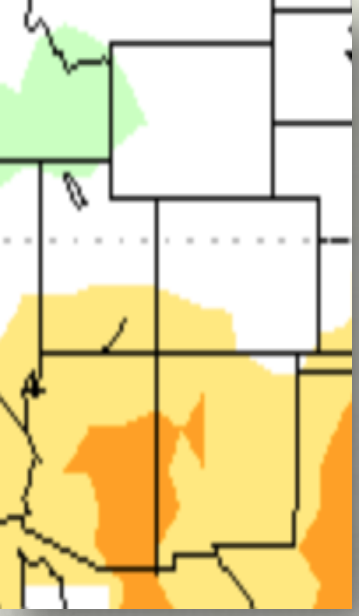
8-14 Day Outlook



Temperature



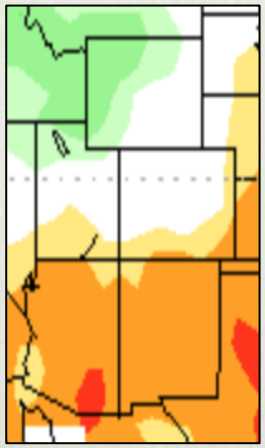
Precipitation



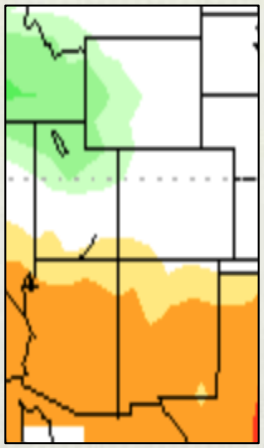
NMME

The North American Multi-Model Ensemble

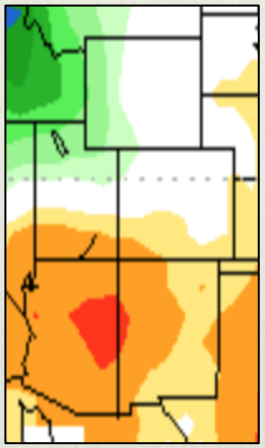
November - January



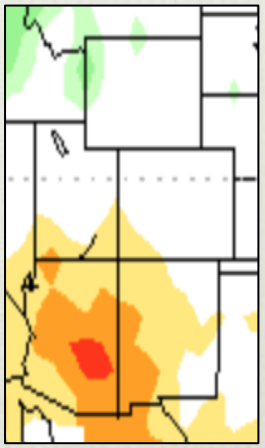
CFSv2



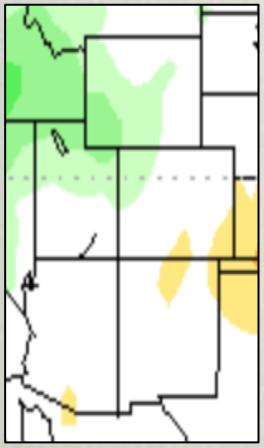
CMC1



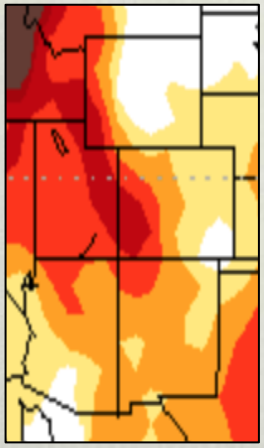
CMC2



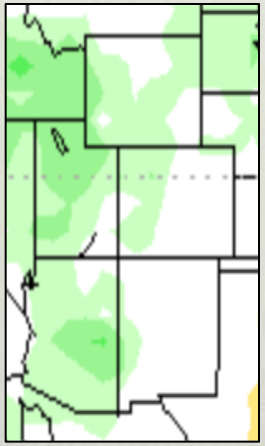
GFDL_FLOR



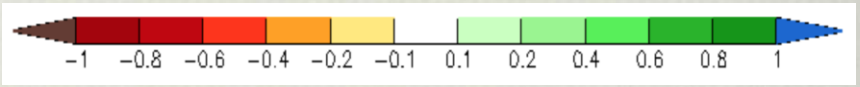
GFDL



NCAR_CCSM4

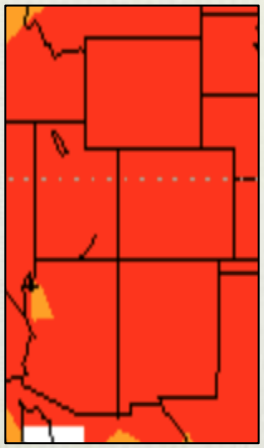


NASA

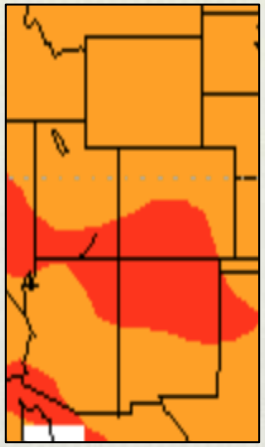


Precipitation Anomaly (mm/day)

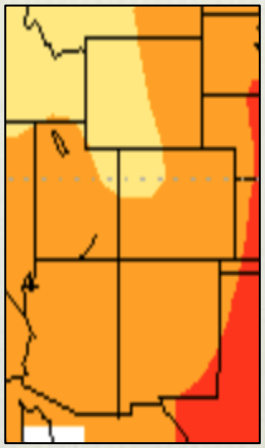
November - January



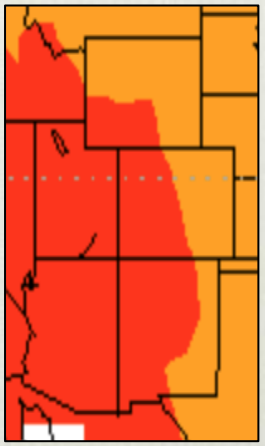
CFSv2



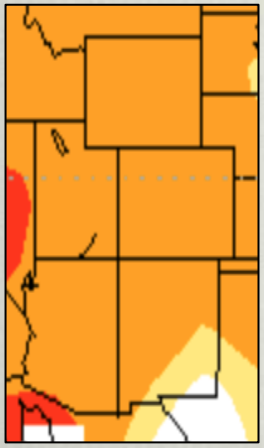
CMC1



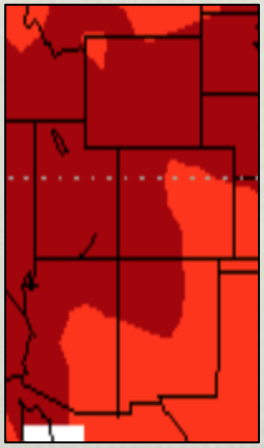
CMC2



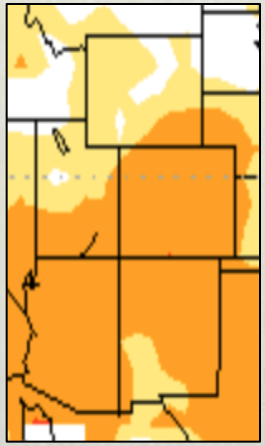
GFDL_FLOR



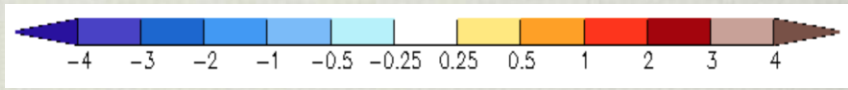
GFDL



NCAR_CCSM4

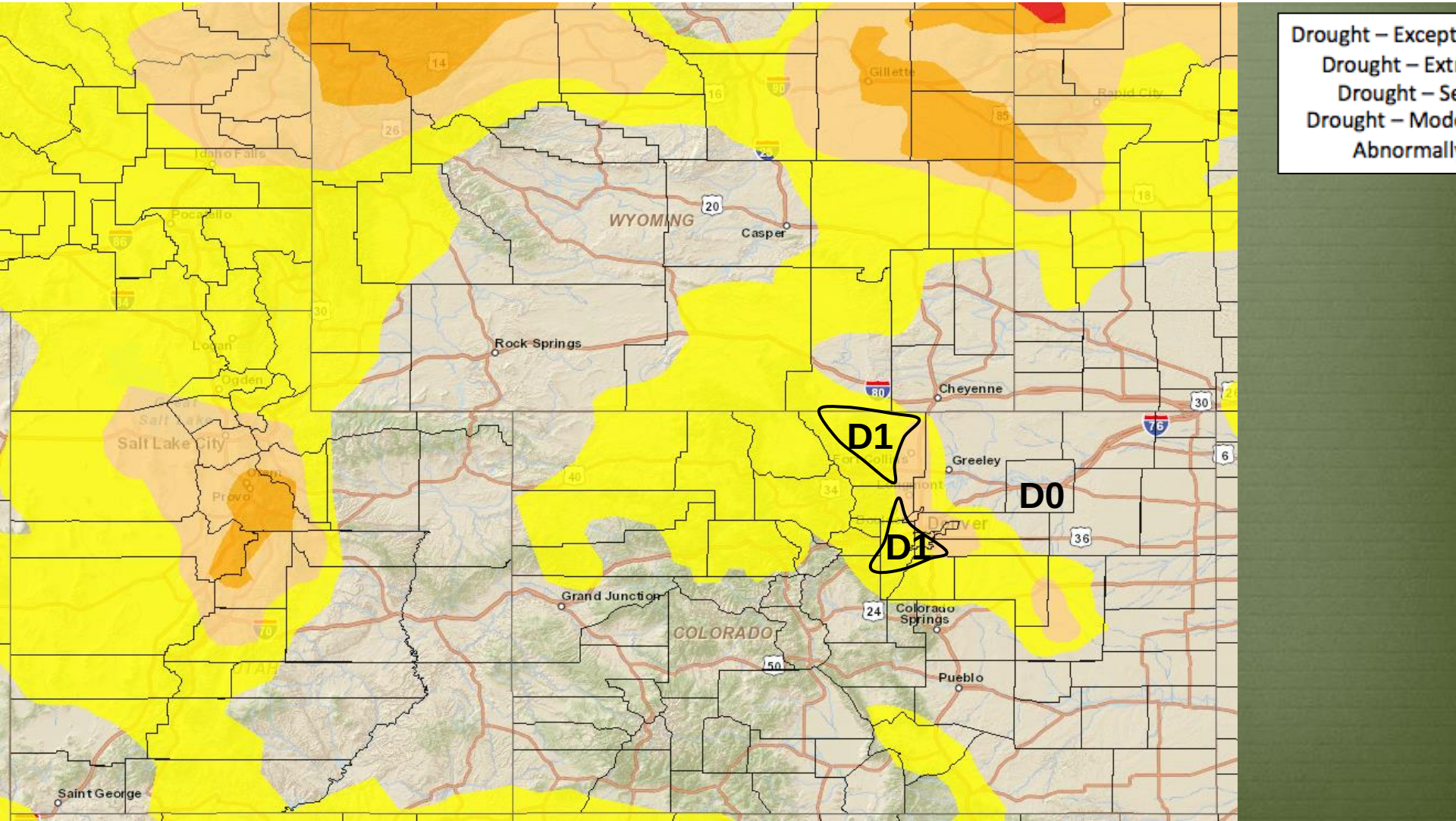


NASA



Temperature Anomaly (℃)

Recommendations



INFO

For more information