Island Lake Technical Committee
Refill 2018

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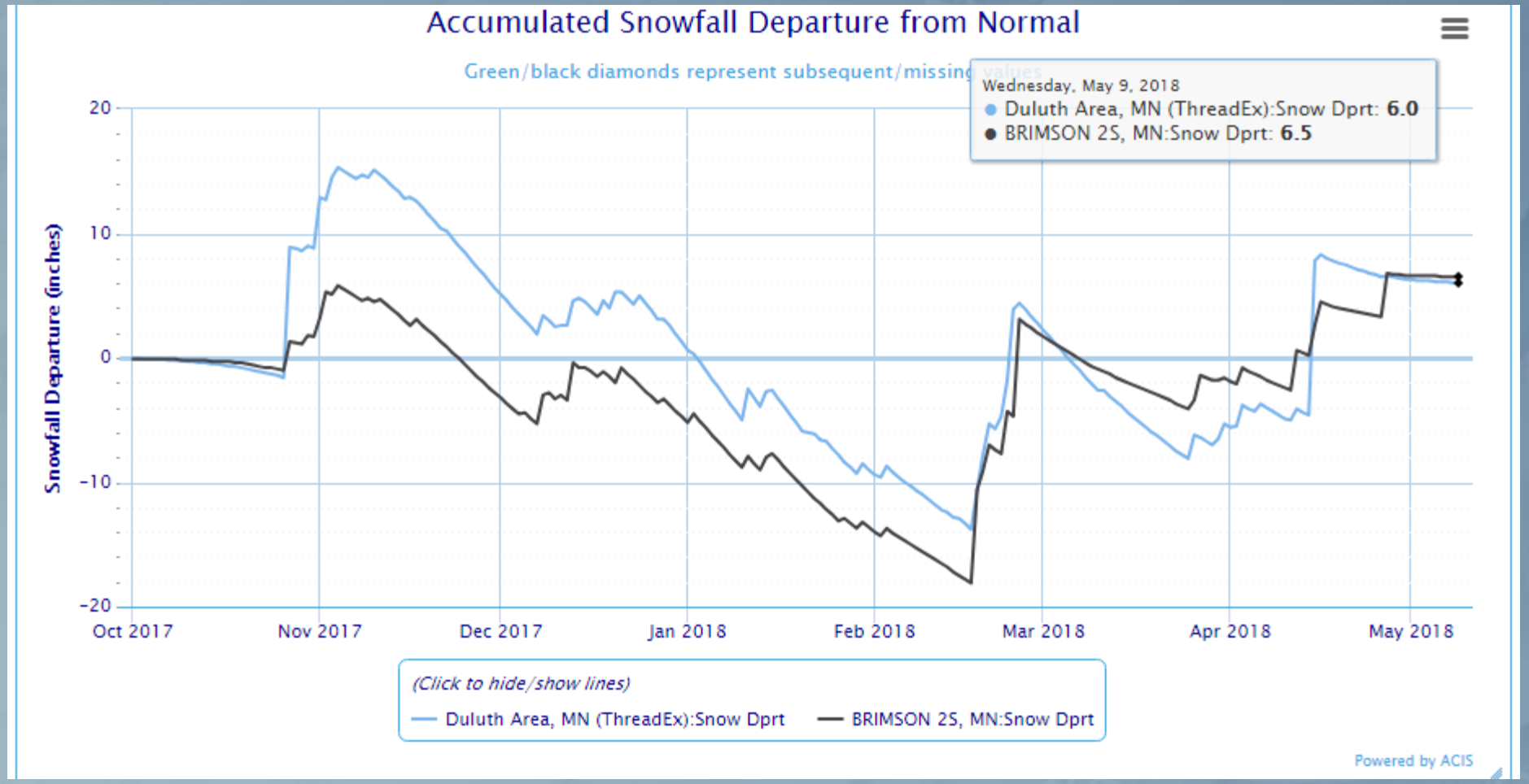
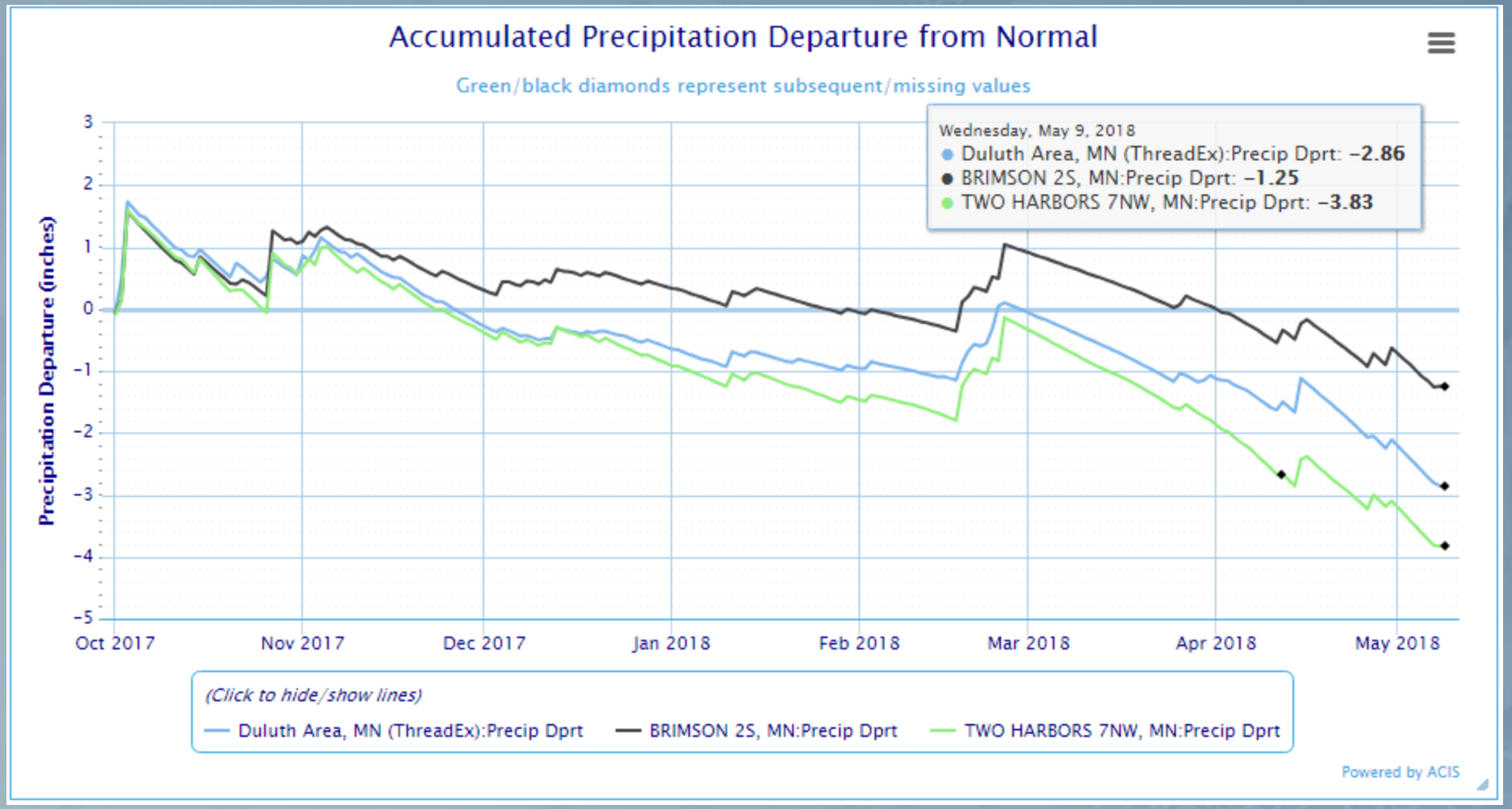
Snowpack and Spring runoff

- Since February 22nd meeting:
  - ANOTHER BIG CHANGE! LACK OF SPRING RAIN.
  - Normal snow pack but very little rain.
  - Late spring runoff began around April 20th
  - As of May 8th Runoff through the basin has been snow melt. Did not benefit from Rain on Snow or from frozen ground.
  - Light precipitation May 9th.

Snow Accumulation vs Normal



Precipitation Accumulation vs Normal



Near Record Dry Spring 2018

- The overwhelming reason for lack of refill is lack of precipitation since February 28th.
  - In Duluth 9th Driest March 1st – May 9th (147 years of record)
  - In Brimson 4th Driest March 1st – May 9th (70 years of record)

Minimum 70-Day Total Precipitation for Duluth Area, MN (ThreadEx)

Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	0.84	1987-05-09	0
2	1.33	1900-05-09	0
3	1.43	1980-05-09	0
4	1.44	1898-05-09	0
5	1.69	1925-05-09	0
6	1.79	1883-05-09	0
7	1.85	1910-05-09	0
8	2.06	1959-05-09	0
9	2.20	2018-05-09	0
-	2.20	1958-05-09	0
Last value also occurred in one or more previous years.			
Period of record: 1871-08-01 to 2018-05-09			

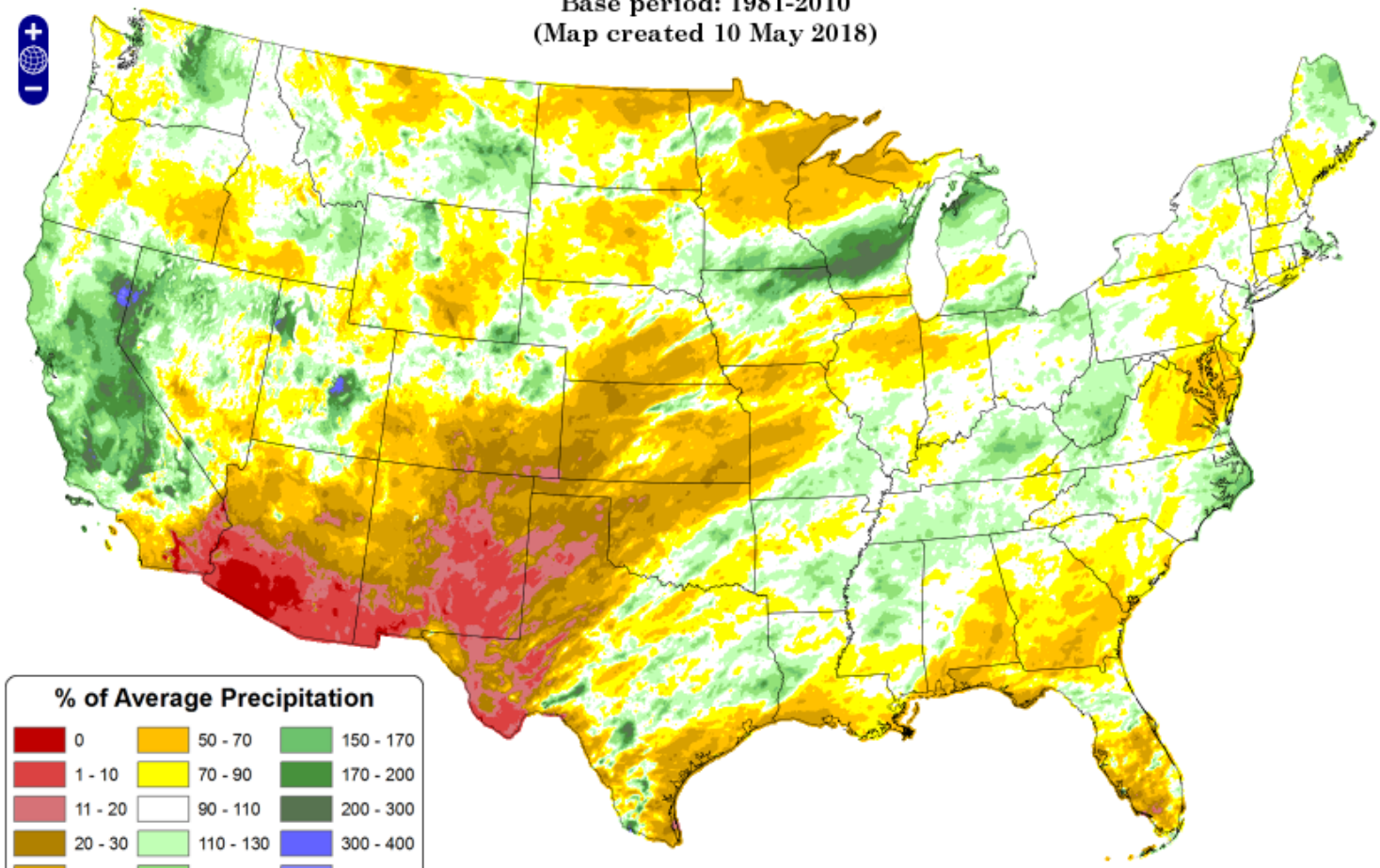
Minimum 70-Day Total Precipitation for BRIMSON 2S, MN

Click column heading to sort ascending, click again to sort descending.

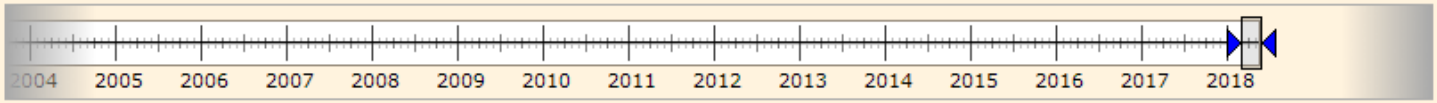
Rank	Value	Ending Date	Missing Days
1	1.00	1987-05-09	0
2	1.31	1959-05-09	0
3	1.57	1958-05-09	0
4	2.03	2018-05-09	0
5	2.08	1962-05-09	0
6	2.18	2015-05-09	0
7	2.25	2003-05-09	0
8	2.33	1996-05-09	0
9	2.38	1951-05-09	0
10	2.39	1983-05-09	0
Period of record: 1948-08-01 to 2018-05-09			

Total Precipitation Anomaly: March 2018 - 09 May 2018

Period ending 7 AM EST 09 May 2018
Base period: 1981-2010
(Map created 10 May 2018)



To change the window on the slider, use the dropdown lists or drag the scale handles.



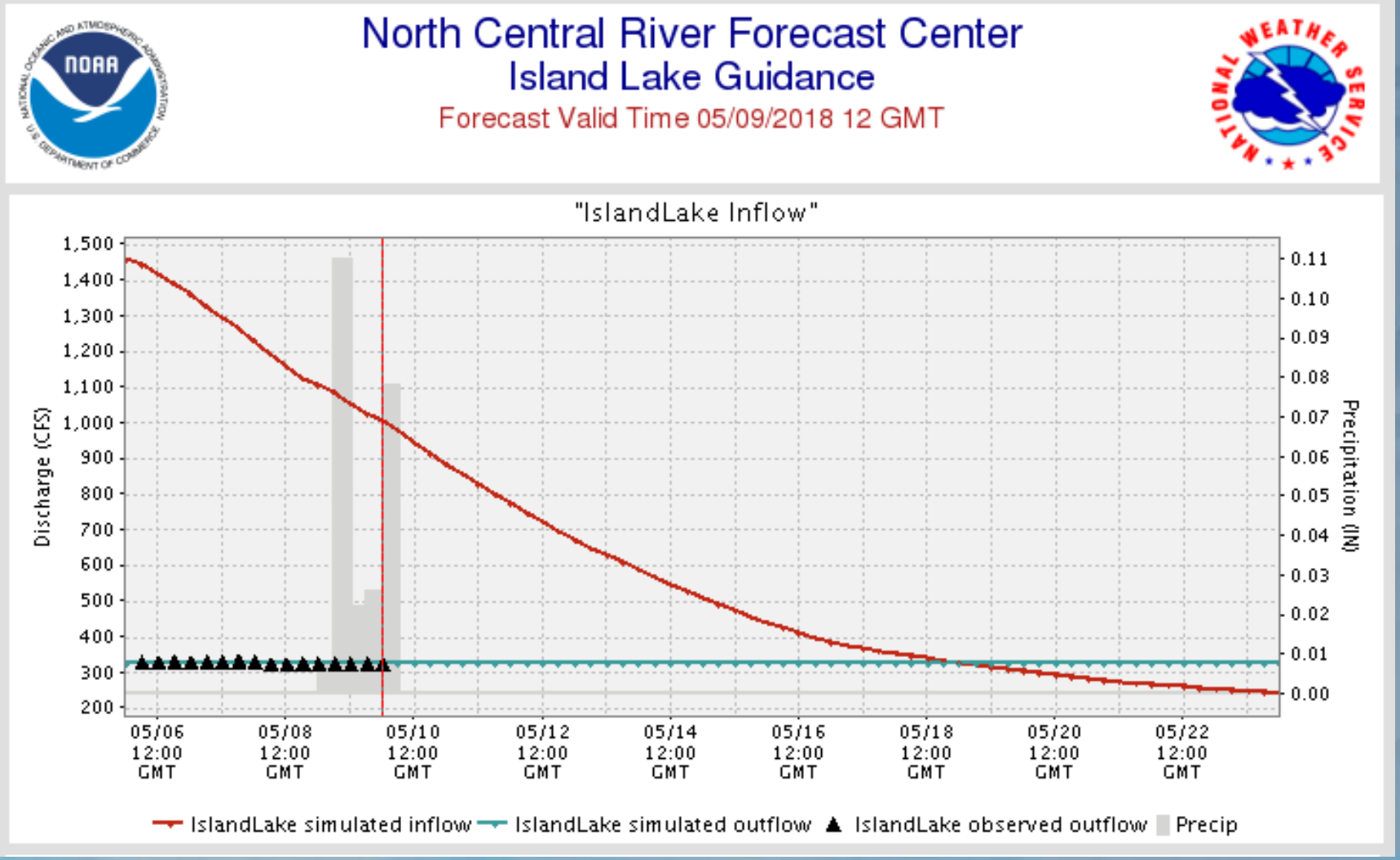
Duration (months): 2 ▾ Start month: 2018 Mar ▾ End month: 2018 May (partial) ▾

Choosing the current month as end date extends the time window to include whatever days have elapsed so far this month (e.g., a duration of "2" months is actually "2 plus the fractional month").

Hydrologic Outlook

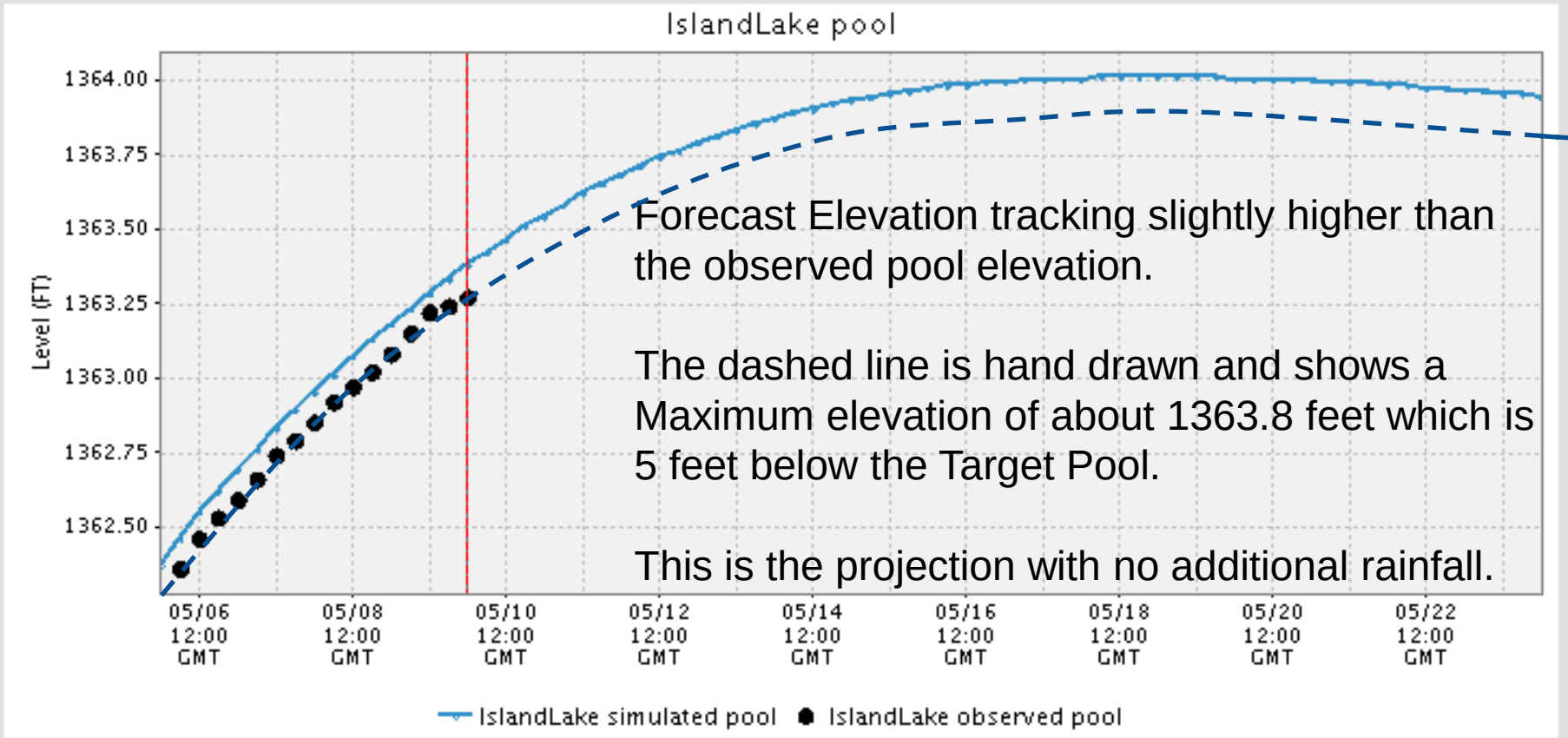
- Refill probability was 45% as of Feburary 5th
- Refill probability was 85% as of February 28th
- Refill will not happen June 1st without near record rainfall which is very unlikely.
- Inflow from snow melt runoff has ended.

Model Forecast Inflow uses only 24 Hours Forecast Precipitation



https://www.weather.gov/mpx/islandlake

Model Forecast Elevation – 24 Hours of Forecast Precipitation



Forecast Elevation tracking slightly higher than the observed pool elevation.

The dashed line is hand drawn and shows a Maximum elevation of about 1363.8 feet which is 5 feet below the Target Pool.

This is the projection with no additional rainfall.

Disclaimers: Not an offical forecast - Model Guidance Only
These forecasts include 24 hours of forecast precipitation.

Created on 05/09/2018 at 10:16:17 AM CDT

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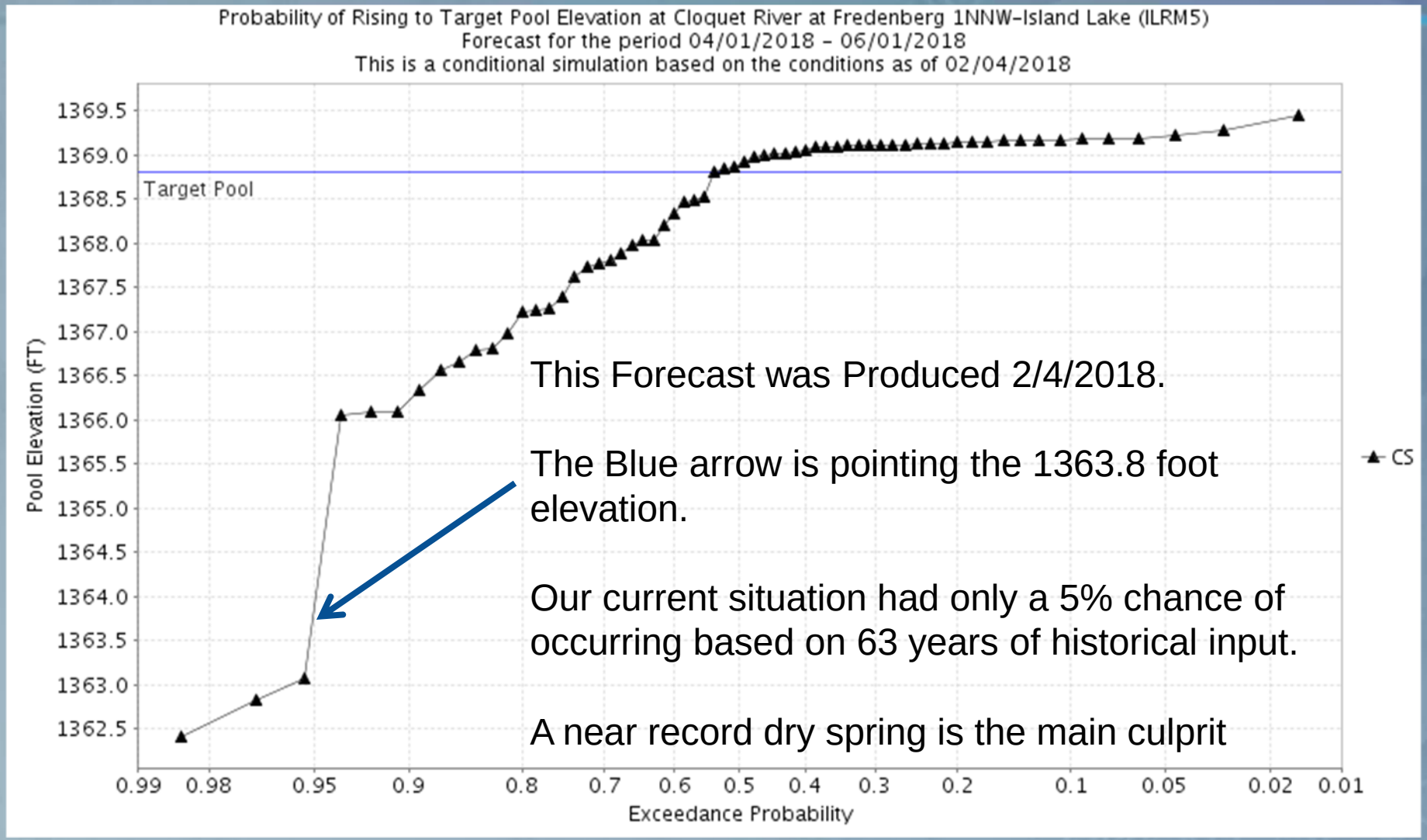
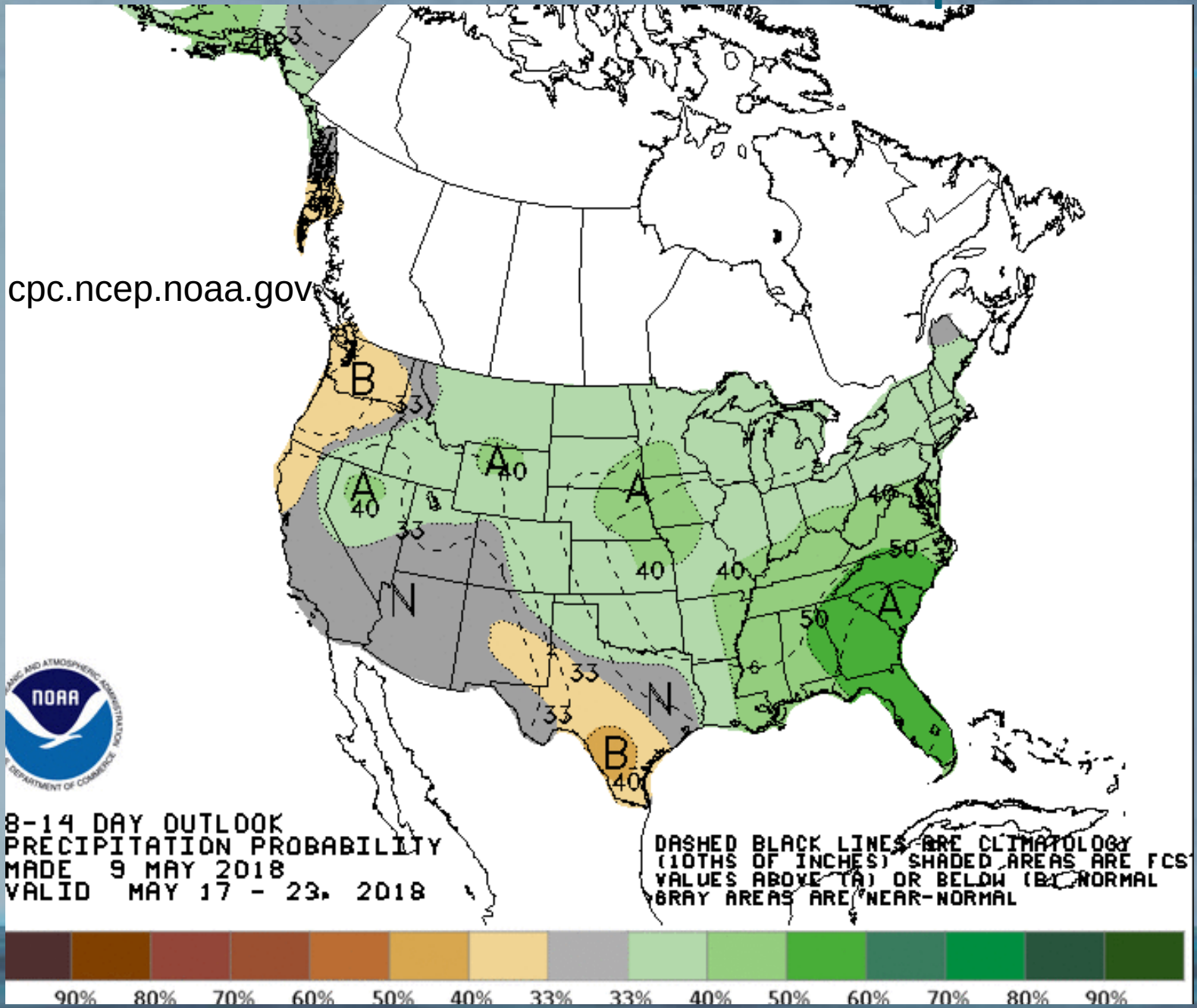
Review of Forecast from our February Meeting



Short Term Outlook – Precipitation



May-July Outlook – Precipitation

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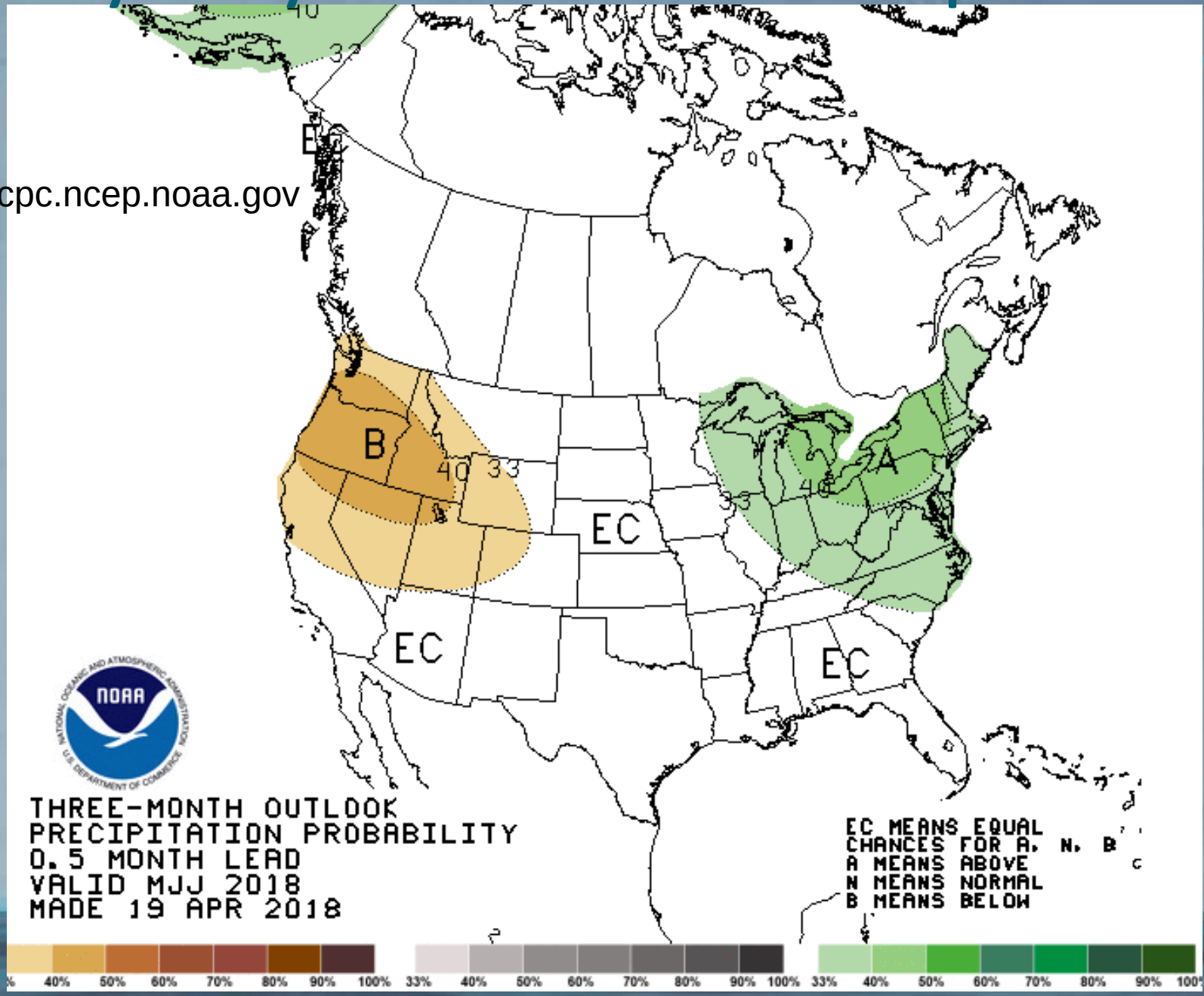

Summary

- Late spring snowmelt resulted in late start to refill.
- Spring runoff was not enhanced by rain on snow on frozen ground.
- Near record dry spring.
- Refill will not happen by June 1st without near record rains.
- The River Model shows a forecast pool elevation of 1363.8' which is 5 feet below the Target Pool elevation. This model only uses 24-hours of forecast precipitation so expect it to change if rain is in the near term forecast. (In other words this shows the minimum elevation we may expect by June 1st.)