

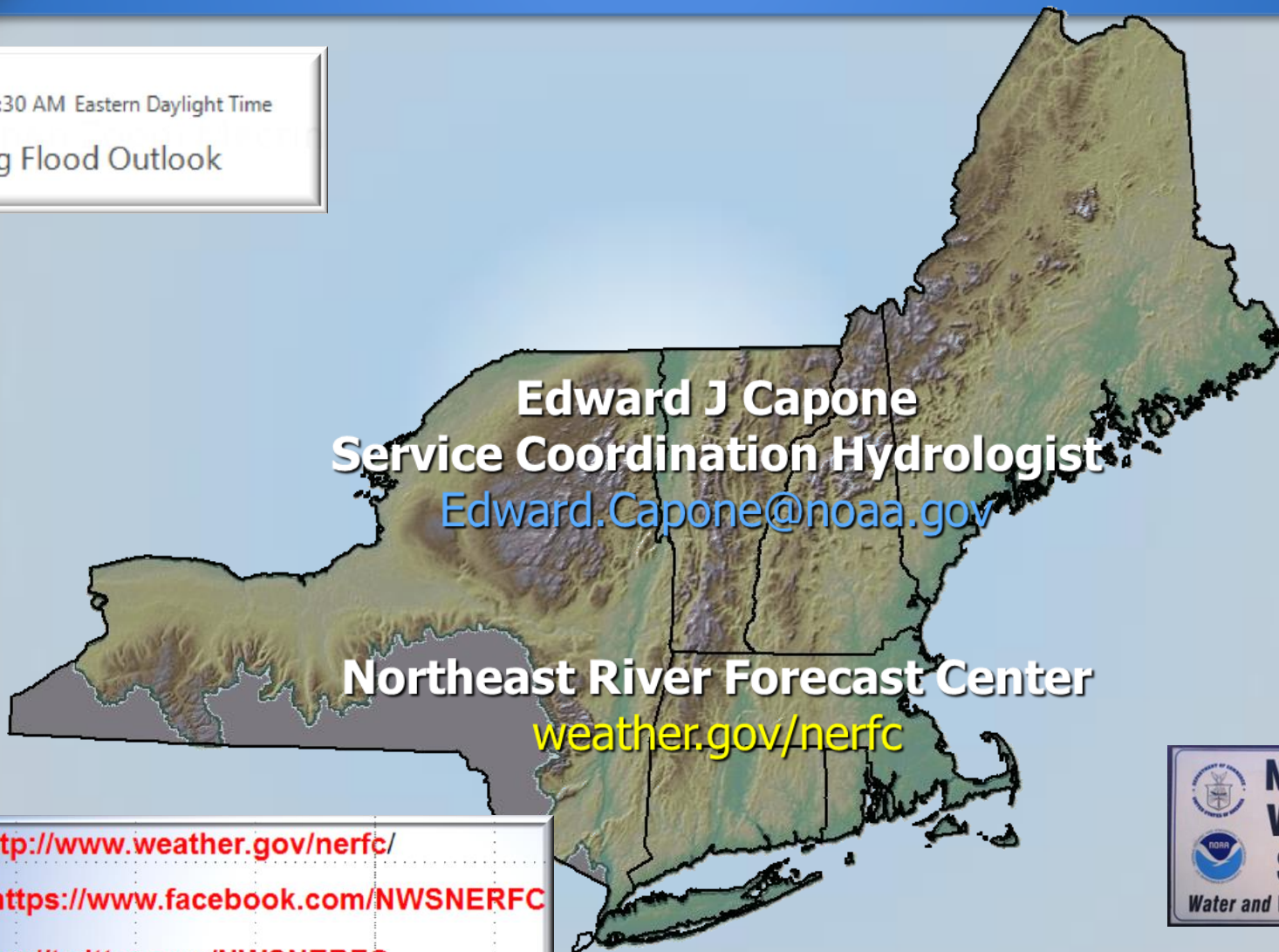


Northeast River Forecast Center (NERFC) DOC-NOAA-NWS



9:30 AM - 10:30 AM Eastern Daylight Time

Spring Flood Outlook



Edward J Capone
Service Coordination Hydrologist
Edward.Capone@noaa.gov

Northeast River Forecast Center
weather.gov/nerfc

Website: <http://www.weather.gov/nerfc/>

Facebook: <https://www.facebook.com/NWSNERFC>

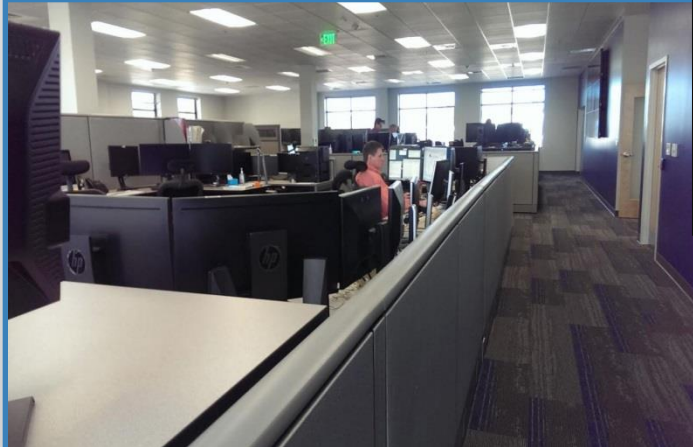
Twitter: <https://twitter.com/NWSNERFC>



Building a Weather-Ready Nation



NWS Boston/Norton New Facility – March 20th 2018



**NWS Boston/Norton
46 Commerce Way
Norton, MA.
508-622-3300**



Building a Weather-Ready Nation



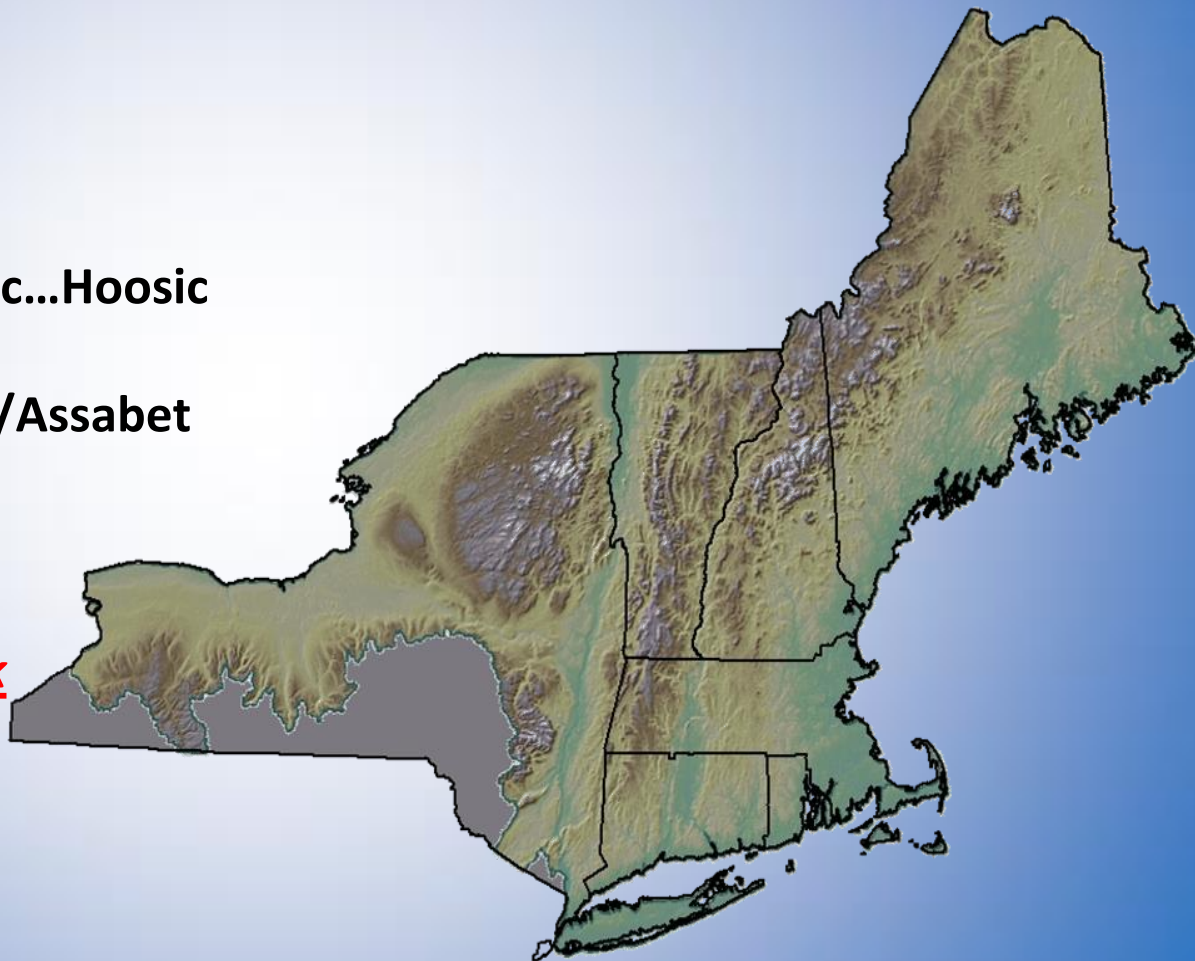
NERFC Service Area



Includes Major Storm Tracks—Ocean and Orographic Influences

- **Major Watersheds**

- -Saint John
- -Penobscot
- -Androscoggin
- -Merrimack
- -Connecticut ...Housatonic...Hoosic
- -Willimantic...Yantic
- -Merrimack and Concord/Assabet
- -Charles and Neponset
- **-Blackstone**
- -Taunton
- **-Pawtuxet and Paucatuck**
- -Hudson
- -Mohawk and Schoharie
- -Lake Champlain
- -Genesee
- -Buffalo Creeks



Building a Weather-Ready Nation



Northeast River Forecast Center's

Mar 30th Spring Outlook



➤ Brought to you by:

➤ *Edward Capone – Service Coordination Hydrologist*

➤ Overview to Include:

- ● Potential flood outlook – convective/synoptic conditions
- ● Stream flow-Groundwater-Soil moisture
- ☐ ● *Snowpack Conditions --- Ice Jams*
- ● Antecedent –Current—Future precipitation forecasts
- ● Short and Medium Range Met Forecasts (significant events)
- ● Flood or Drought Outlook (Near term & Longer term)
- ● *State of ENSO – Seasonal Teleconnections*

NERFC Spring Outlook Briefing

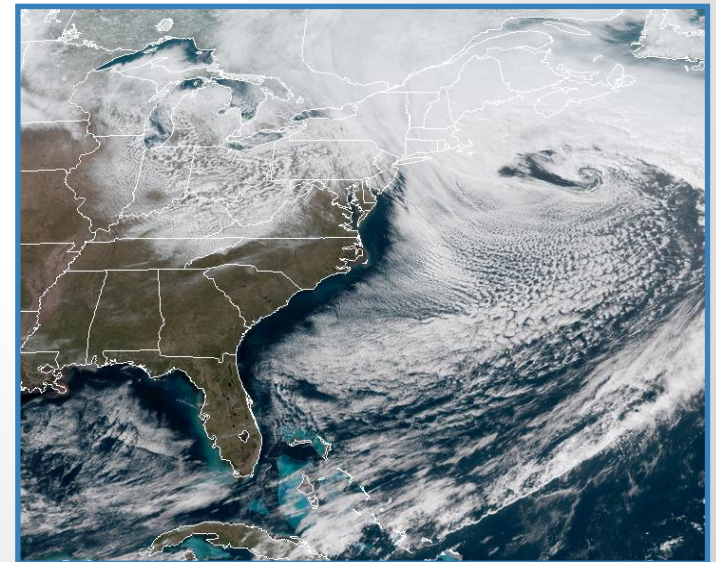
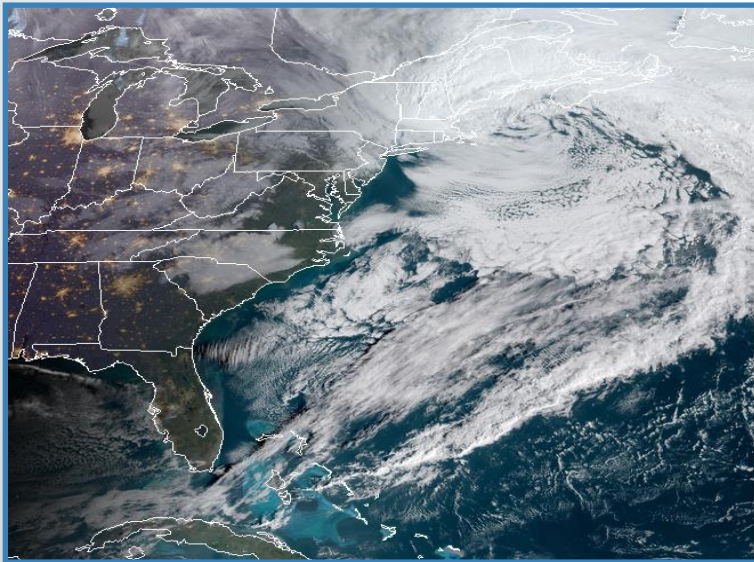
Fri, Mar 16, 2018 1:00 PM - 1:30 PM EDT

Please join my meeting from your computer, tablet or smartphone.
<https://global.gotomeeting.com/join/688718589>

You can also dial in using your phone.
United States: +1 (571) 317-3117

Access Code: 688-718-589

More phone numbers
Canada: +1 (647) 497-9373



Building a Weather-Ready Nation

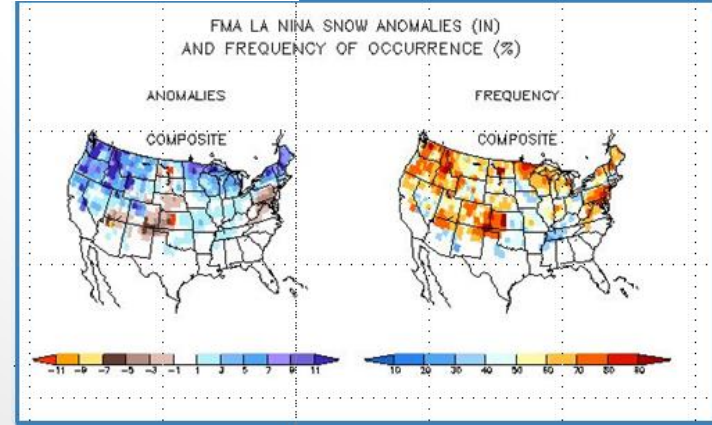
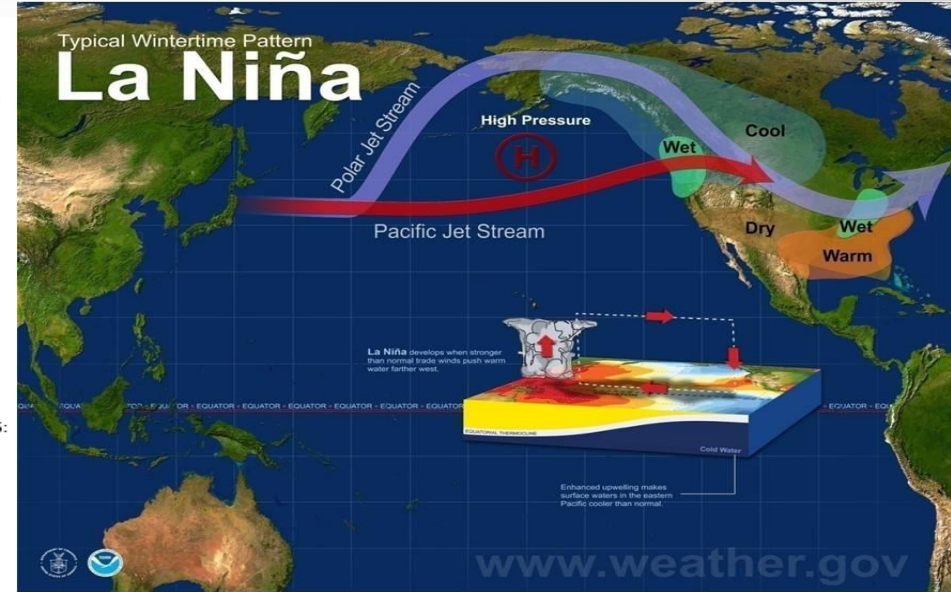
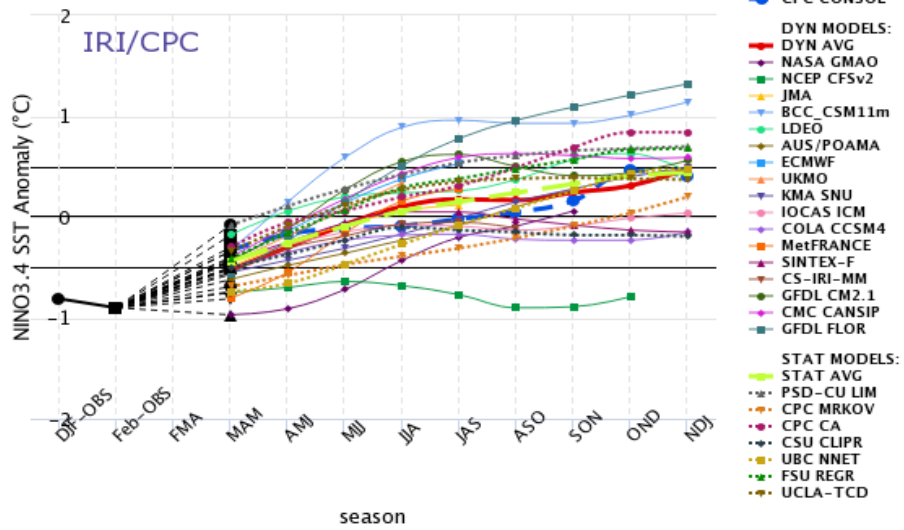


ENSO Conditions

Weak La Niña to Neutral (La Nada)



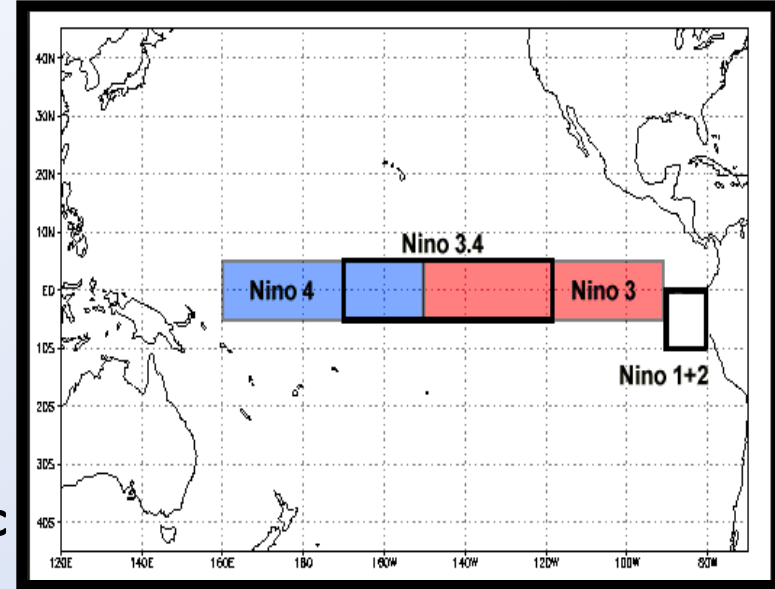
Mid-Mar 2018 Plume of Model ENSO Predictions



Building a Weather-Ready Nation

Teleconnections – Affect Precip/Temp Can Have Implications on River Flow

- El Nino Southern Oscillation (ENSO)
- Modoki El Nino (EMI) – Nino 3.4
- North Atlantic Oscillation (NAO)
- Arctic Oscillation (AO)
- East Pacific Oscillation (EPO)
- Pacific North American Index (PNA)
- SST Anomalies (SSTA) Pacific/Atlantic
- Pacific Decadal Oscillation (PDO)
- Atlantic Multi-Decadal Oscillation (AMO)
- Quasi-Biennial Oscillation (QBO)
- Southern Oscillation Index (SOI)
- Madden-Julian Oscillation (MJO)
- Stratospheric Trends and Temp Anomalies
- Solar Trends – geomagnetic activity, solar flux, sunspots
- Pattern Persistence – Analog Years





NESIS

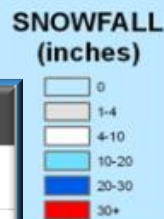
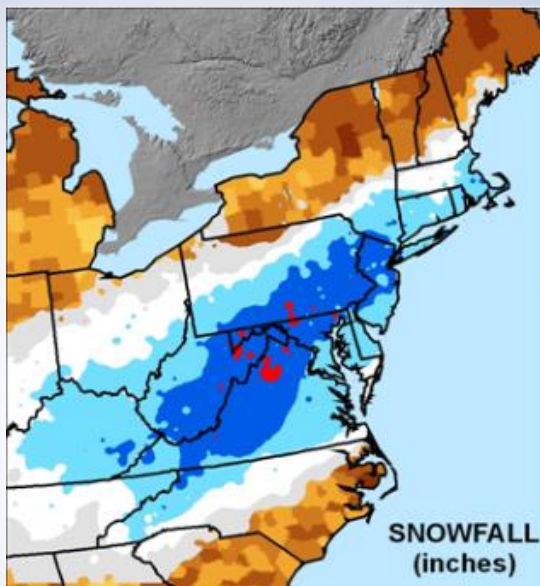


Northeast Snowfall Impact Scale

- **Depth—Area---Population Impacted NOAA...Kocin/Uccellini**

Near 100 storms classified

- Near 5% Extreme
- Near 10% Crippling
- Blizzard '78 ...Major



<i>n</i>	Area (SqMi)	Population
0	118,837	15,182,500
1	107,526	16,432,000
4	103,951	19,913,500
10	107,786	29,907,800
20	63,532	30,216,900
30	2,364	340,889

$$NESIS = \sum_{n=4}^{n=30} \left[\frac{n}{10} \left(\frac{A_n}{A_{mean}} + \frac{P_n}{P_{mean}} \right) \right]$$

NESIS = 11.78
 NESIS Category 5
 Extreme

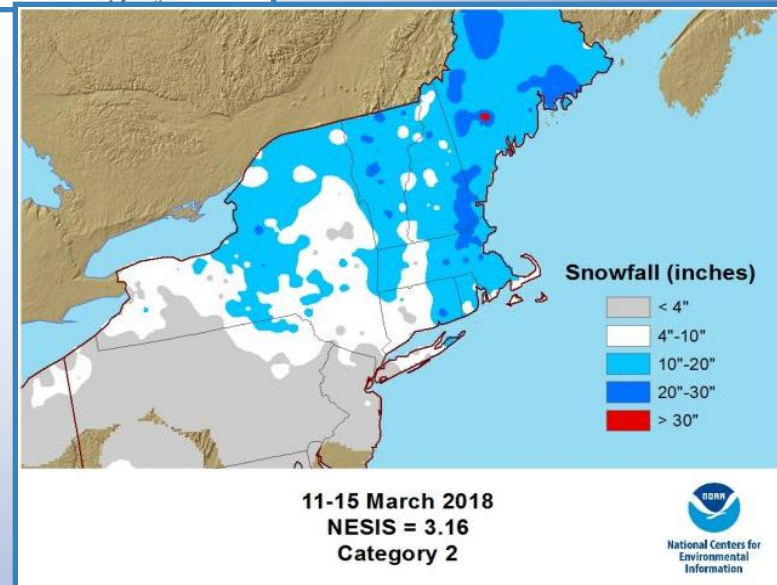
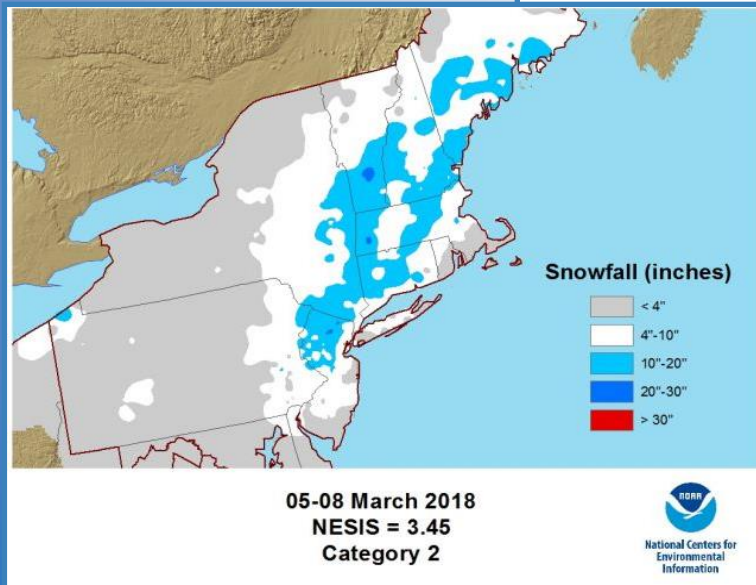
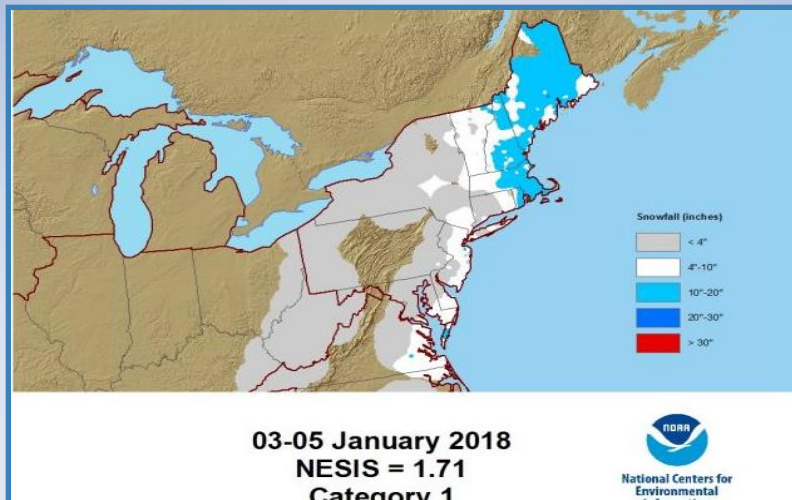
CATEGORY	NESIS VALUE	DESCRIPTION
1	1—2.499	Notable
2	2.5—3.99	Significant
3	4—5.99	Major
4	6—9.99	Crippling
5	10.0+	Extreme





Winter of 2018

3 NESIS Storms



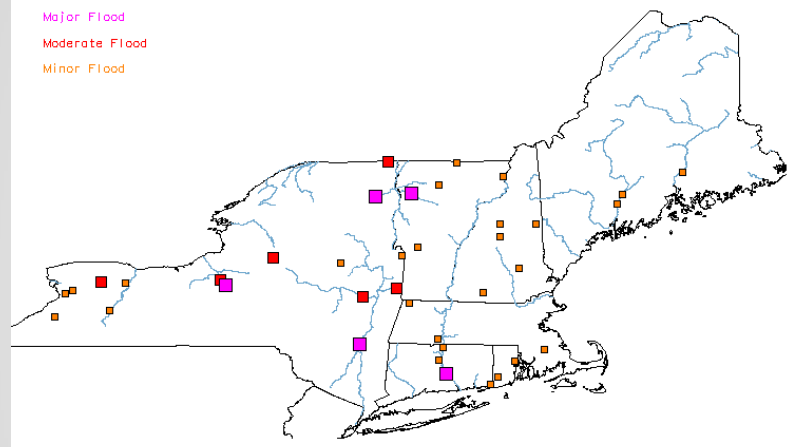


Warmer Phase of La Nina Winter January and February Thaws –over 30 locations in FLOOD -- Ice Jams



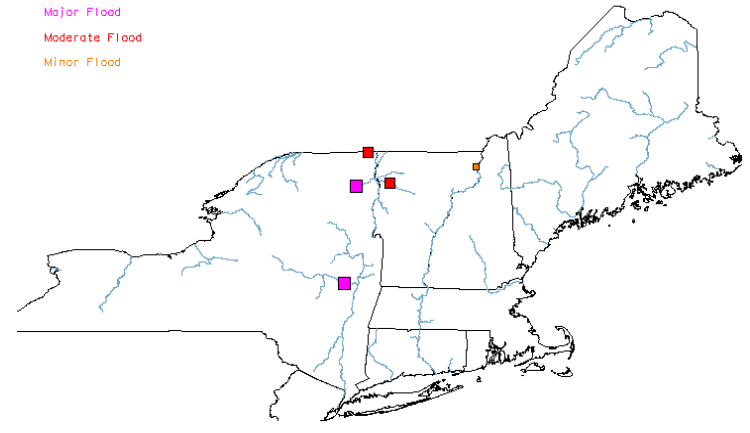
Northeast Flooding 2018-01-10 to 2018-01-17

Major Flood
Moderate Flood
Minor Flood



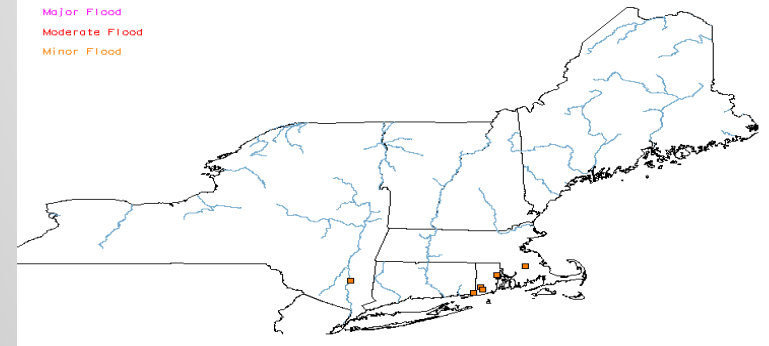
Northeast Flooding 2018-02-18 to 2018-02-23

Major Flood
Moderate Flood
Minor Flood



Northeast Flooding 2018-02-27 to 2018-03-04

Major Flood
Moderate Flood
Minor Flood



Sentinel-3 Image cc by SA 3.0 IGO





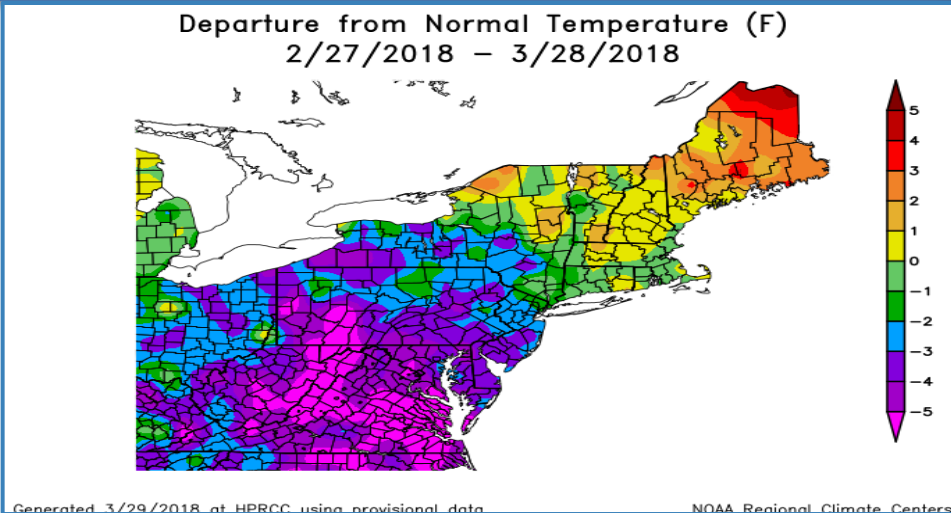
30-Day (NERCC)



Temperature Departures – Precipitation %

Temperature Departures

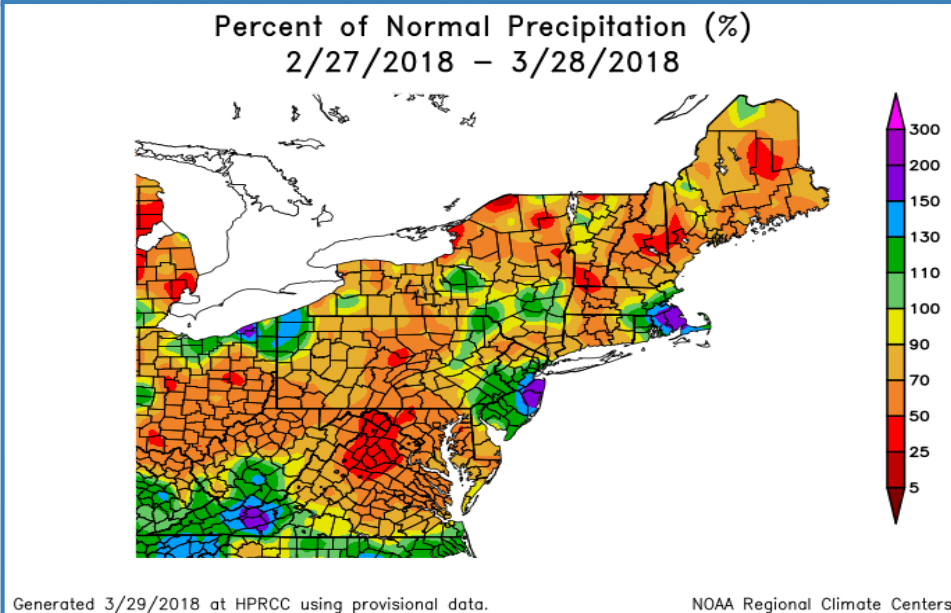
Last 30 Days – Many above normal locations



Precipitation -- % of Normal

Last 30 Days – I-90 and South -- ABOVE

Northern Basins – Some Below

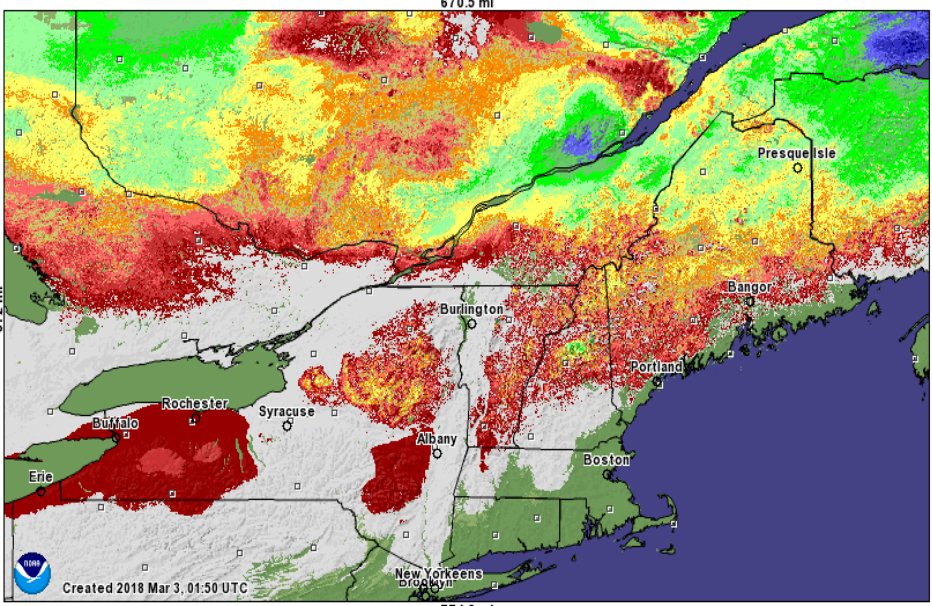




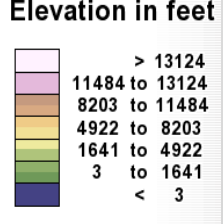
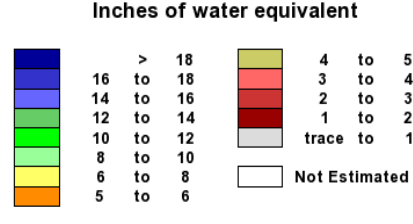
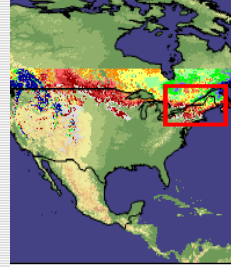
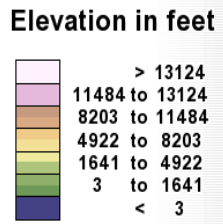
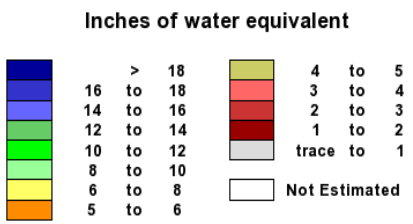
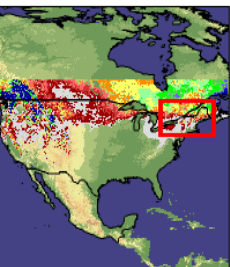
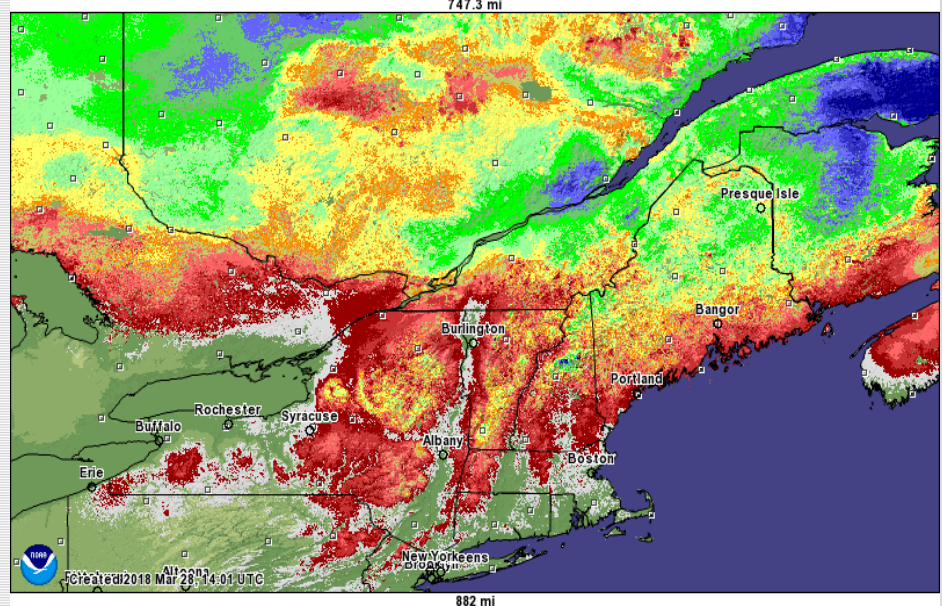
Snow Water Equivalent (SWE) March 2nd (left) vs March 28 (right)



Modeled Snow Water Equivalent (Shallow-snow Legend) for 2018 March 2, 13:00 UTC

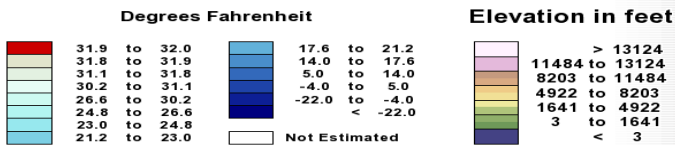
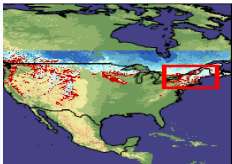
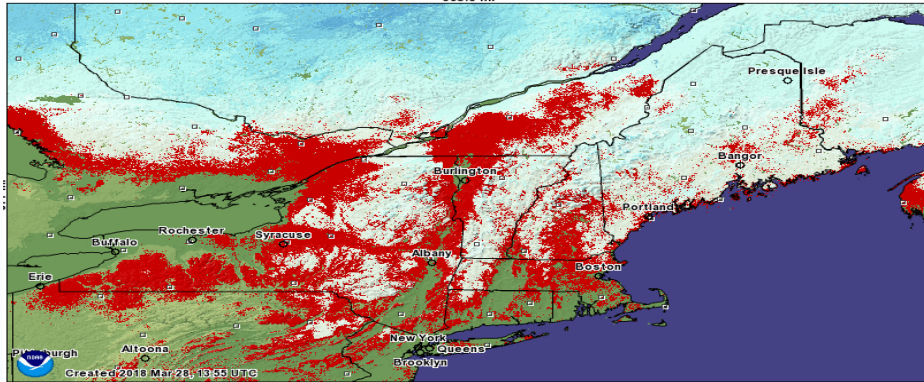


Modeled Snow Water Equivalent (Shallow-snow Legend) forecasted for 2018 March 28, 20:00 UTC

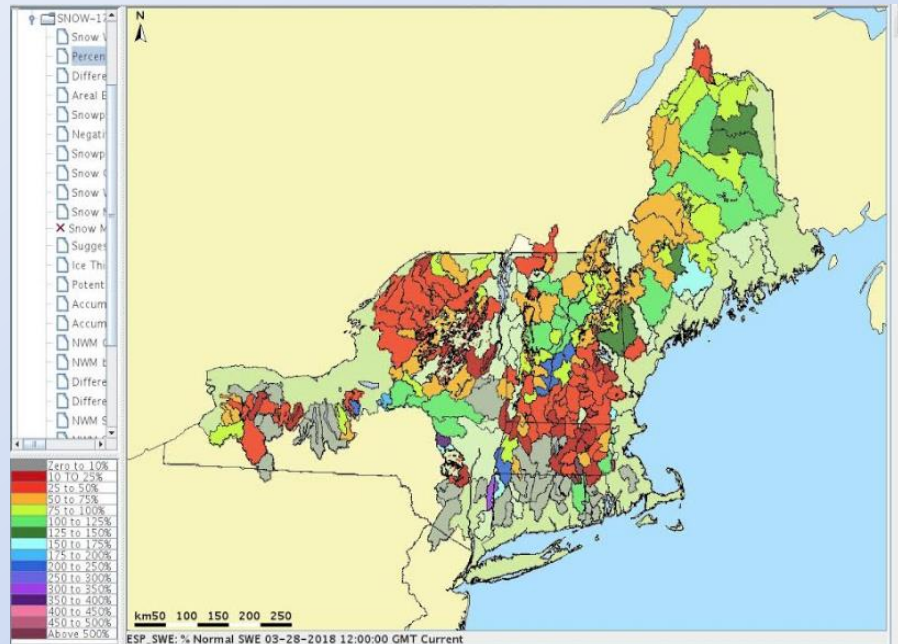
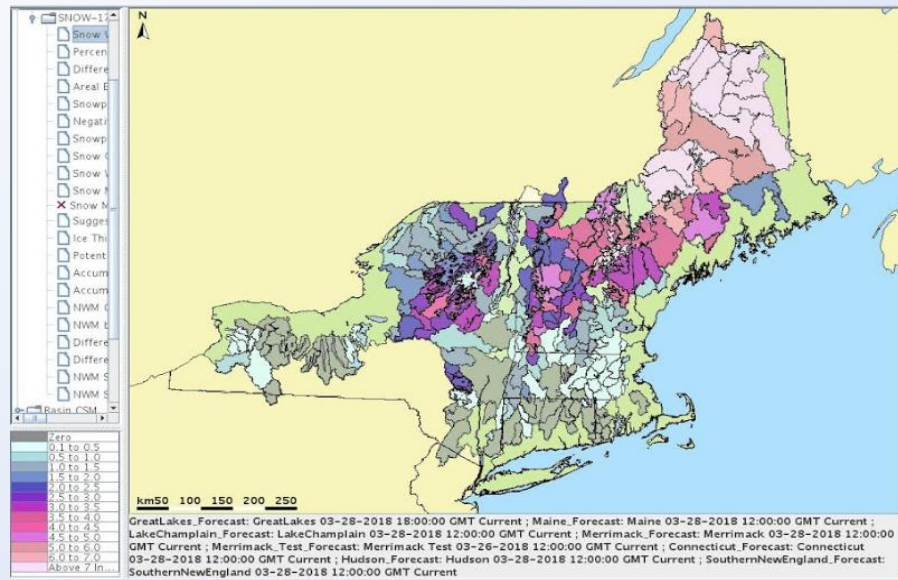
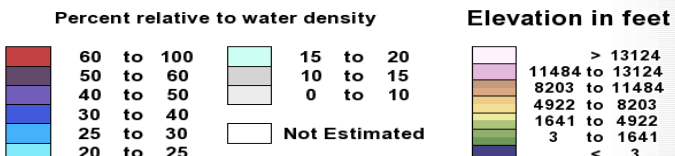
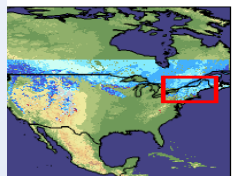
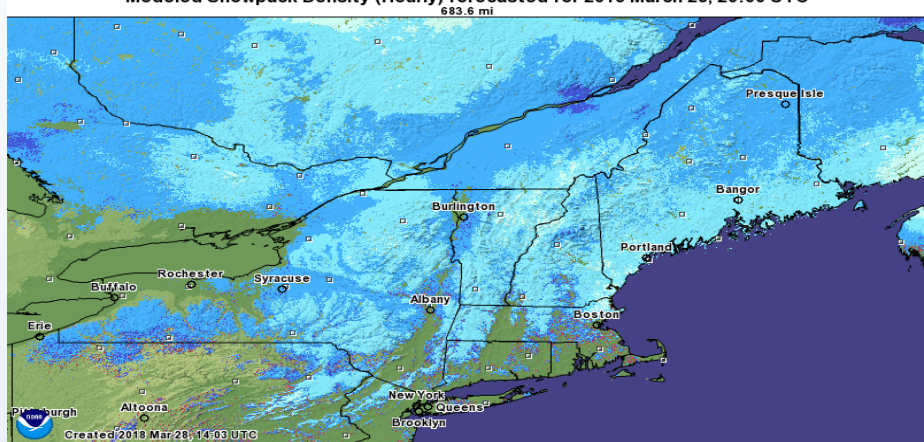


Snow States March 29th

Modeled Snowpack Temperature (Hourly) forecasted for 2018 March 28, 20:00 UTC



Modeled Snowpack Density (Hourly) forecasted for 2018 March 28, 20:00 UTC



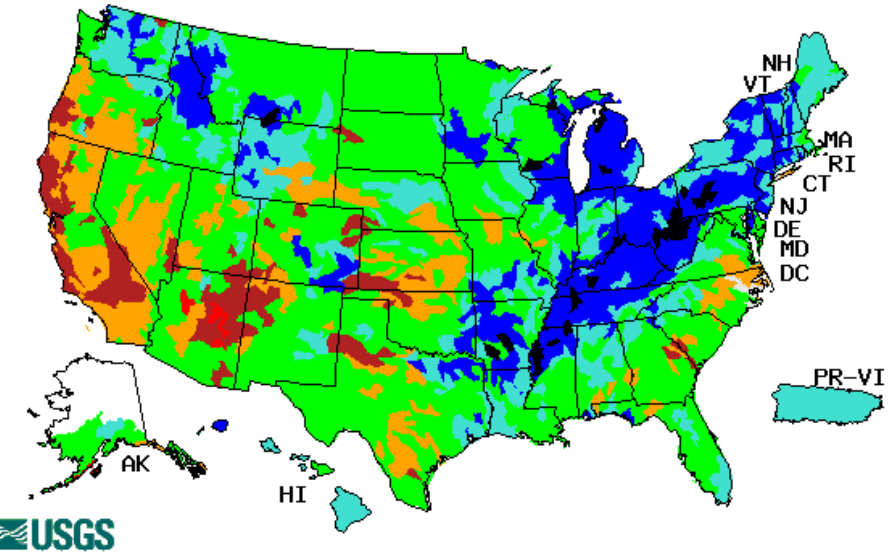


USGS Streamflow Conditions

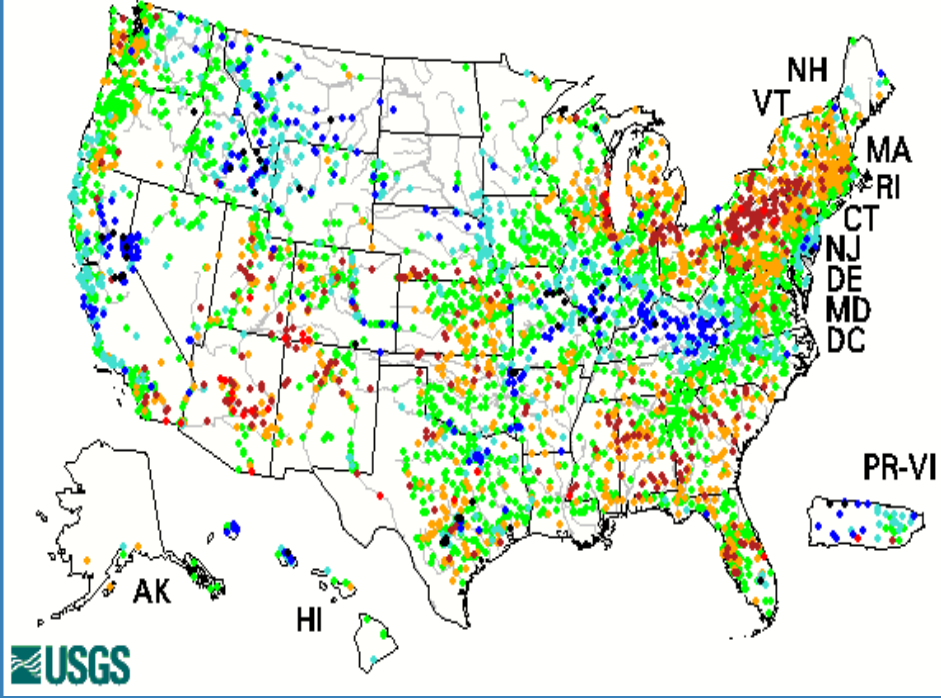
7-Day Average Streamflow



February 2018



Wednesday, March 28, 2018



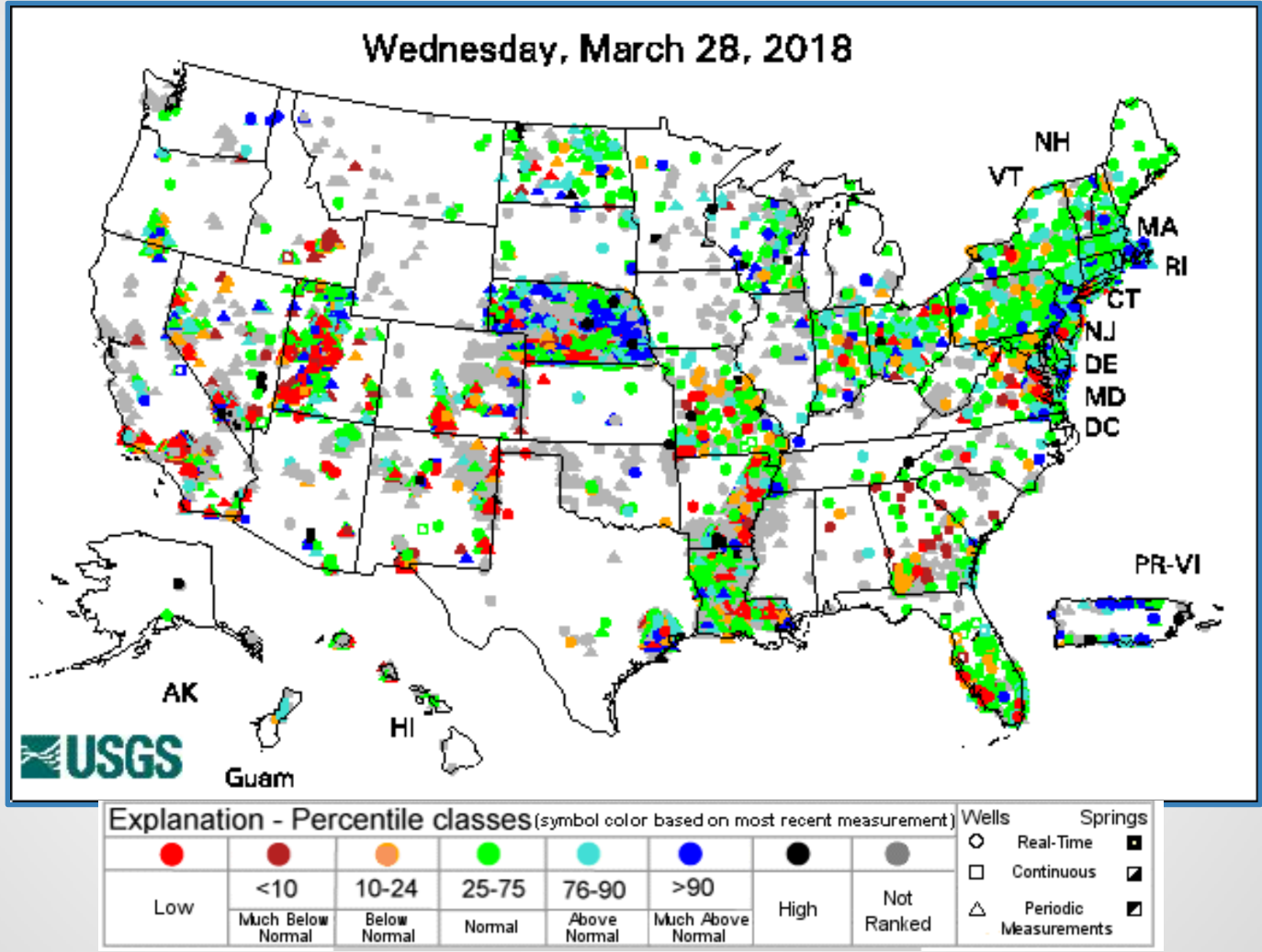
Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	



Building a Weather-Ready Nation



USGS Groundwater Conditions



Building a Weather-Ready Nation

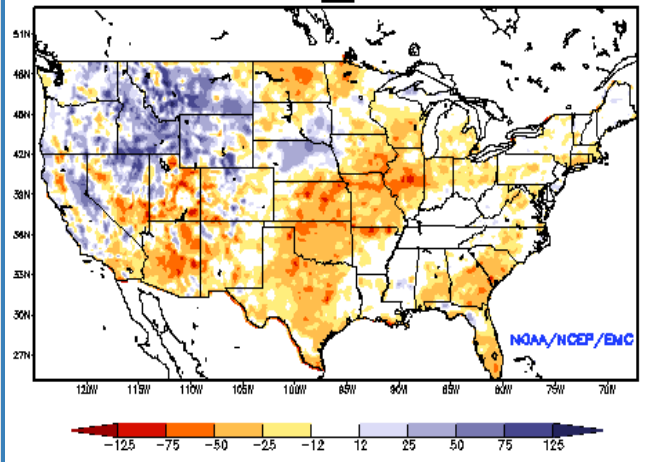


Soil Moisture Current Conditions

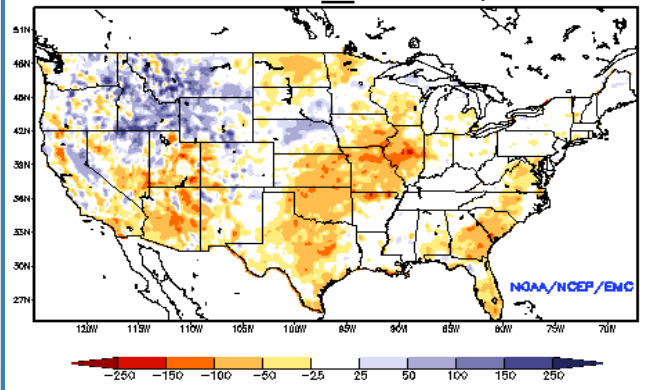
Departures and Percentiles



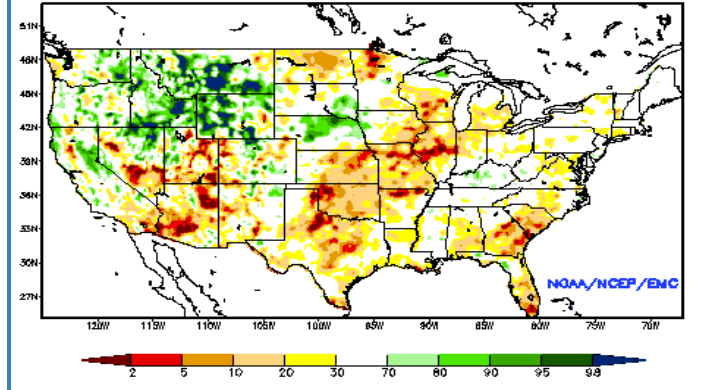
Ensemble-Mean - Current Top 1M Soil Moisture Anomaly (mm)
NCEP NLDAS Products Valid: MAR 24, 2018



Ensemble-Mean - Current Total Column Soil Moisture Anomaly (mm)
NCEP NLDAS Products Valid: MAR 24, 2018



Ensemble-Mean - Current Total Column Soil Moisture Percentile
NCEP NLDAS Products Valid: MAR 24, 2018





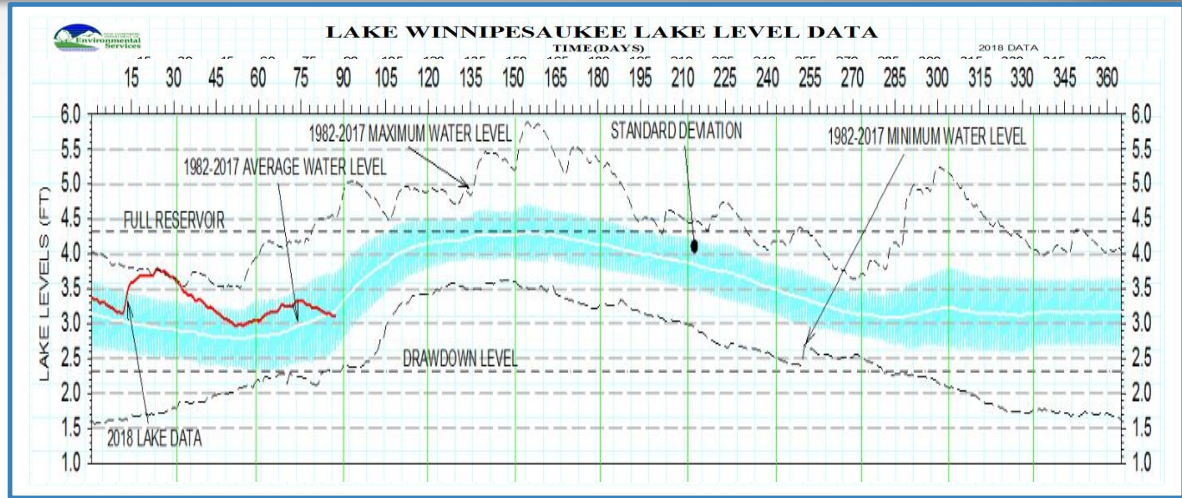
Water Supply/Lake Levels

Near and Above Normal

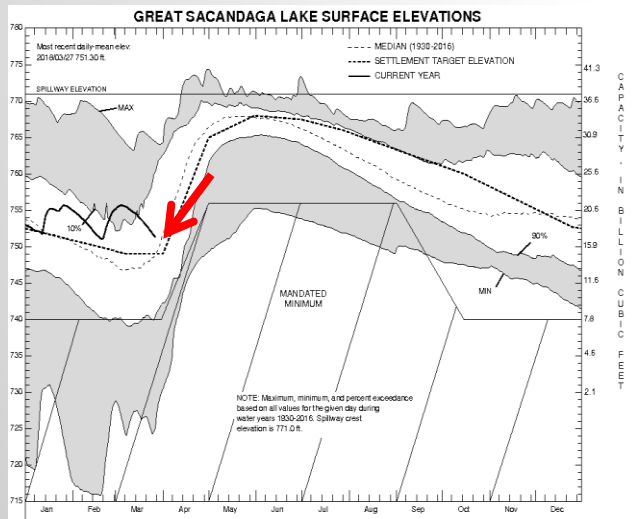


New York City's Water Supply System
March 27, 2018

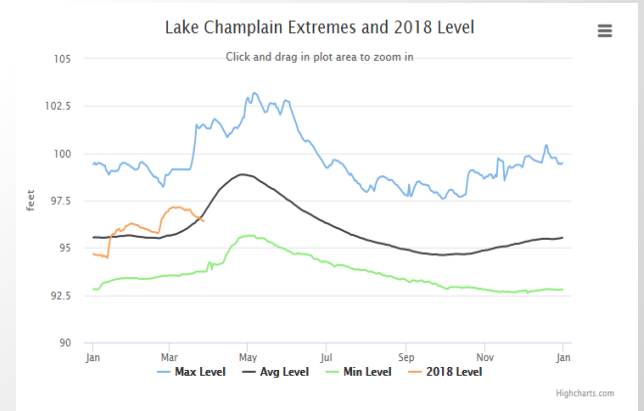
Total Storage	(% of Capacity)
Current:	92.6
Normal:	92.9
Consumption	(billion gallons)
03/26/18	0.97
Average Precipitation	(inches)
	Actual Historical
January:	3.14 3.20
February:	4.38 2.46
March:	2.49 2.83



RESERVOIR LEVELS: The Quabbin Reservoir, the largest water supply source for 47 communities in the Metro Boston area, is currently at **87.8%** of its 412 billion-gallon maximum capacity. The 65 billion-gallon Wachusett Reservoir is **92.3%** full.



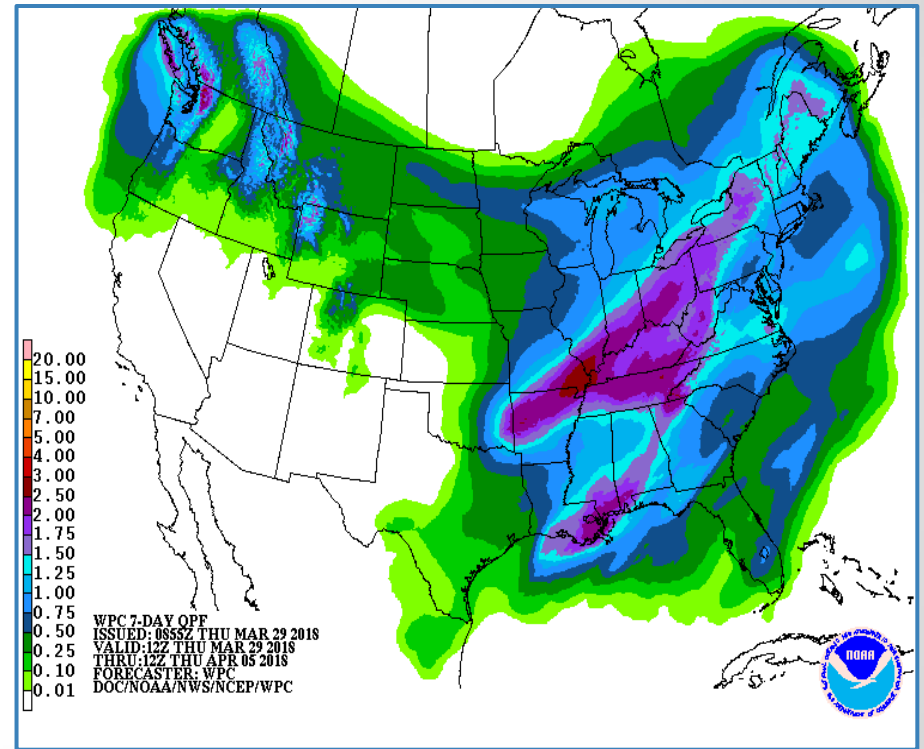
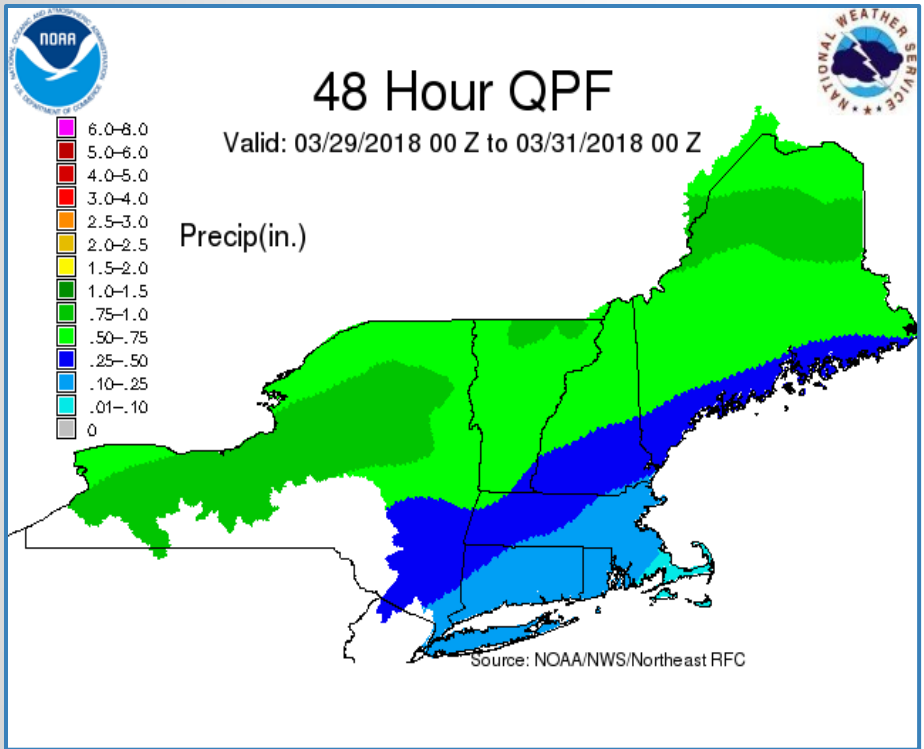
- MAINE Reservoirs
- Rangley -- >Normal
 - Mooselookmeguntic -- >Normal
 - Richardson -- >Normal
 - Aziscochos
 - Errol
 - Flagstaff - > Normal
 - Moosehead - NORMAL
 - Brassau - > Normal





Precipitation Forecast

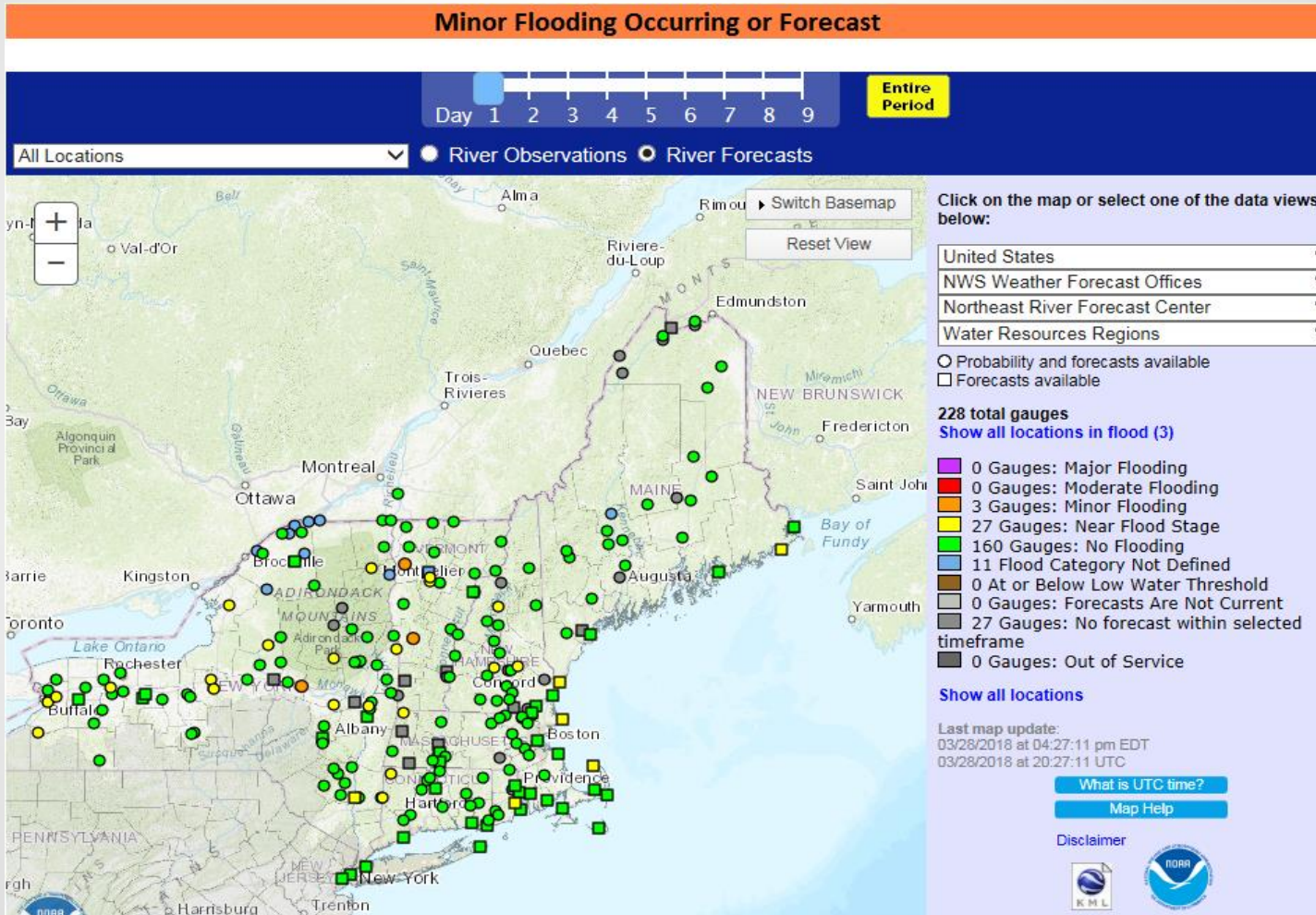
2-Day and 7-Day





NERFC 72-Hr River Forecast

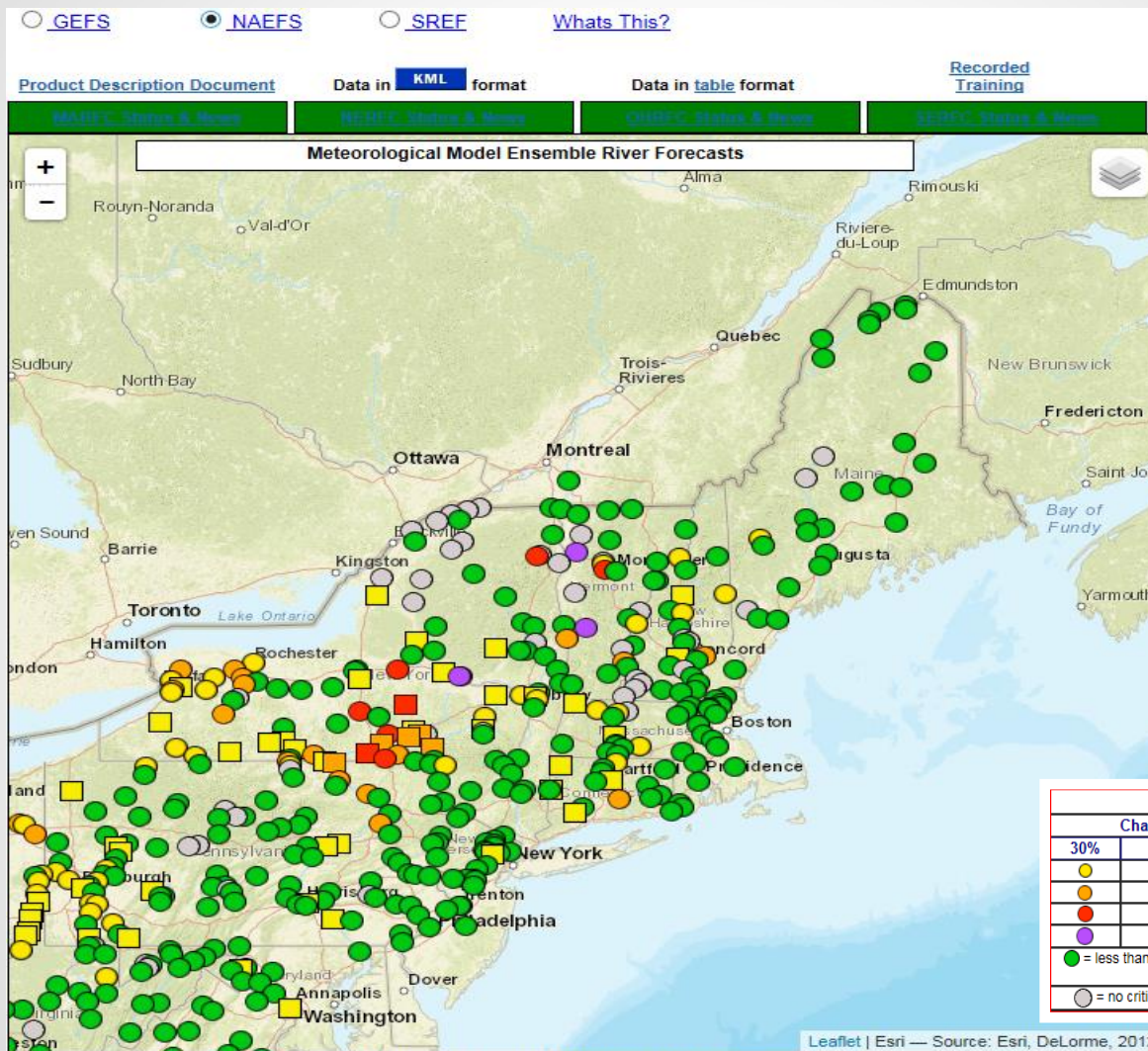
Minor Riverine Flooding Forecast





Short-range Ensemble River Forecasts

<http://www.weather.gov/erh/MMEFS>



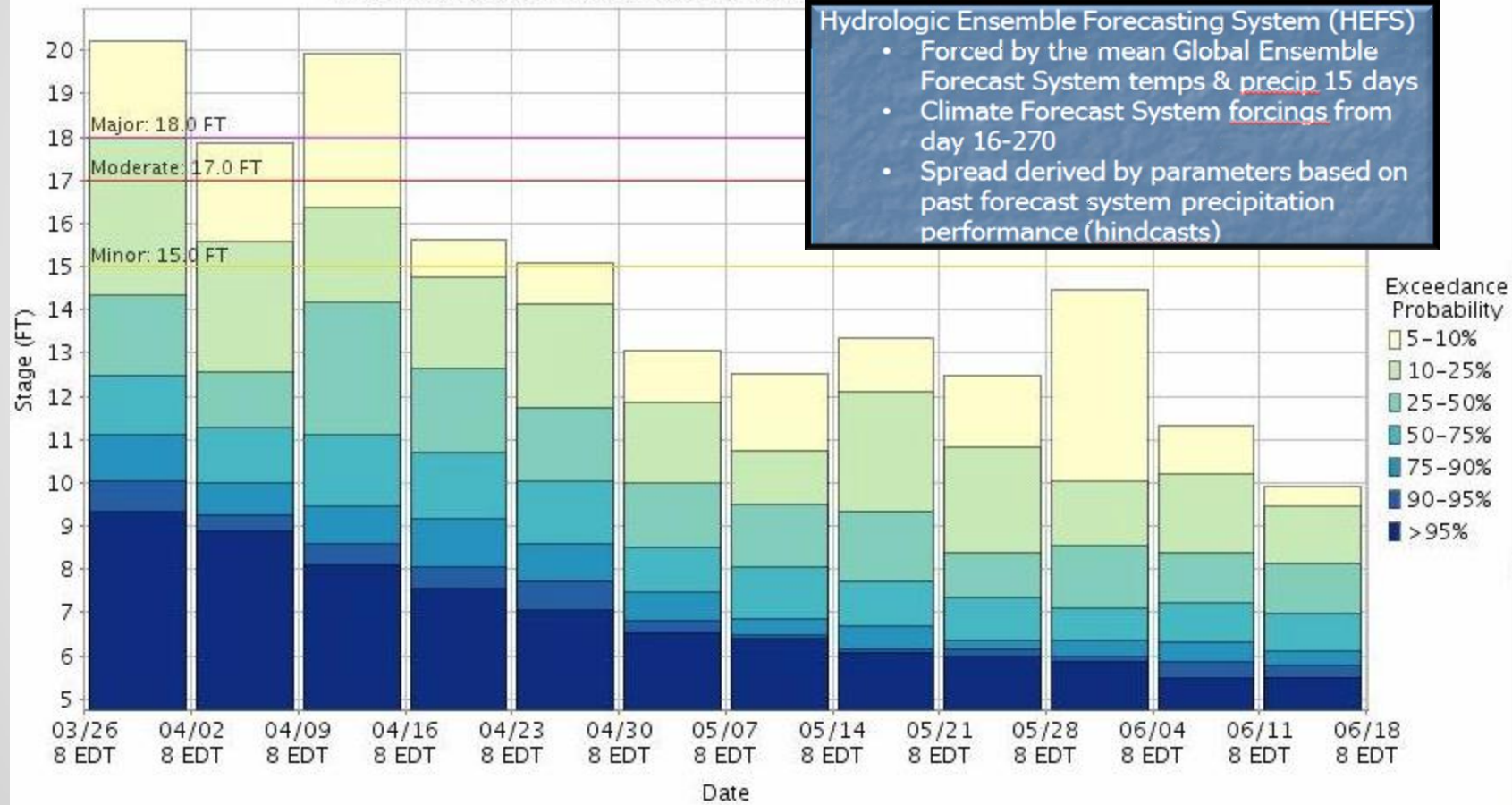
Building a Weather-Ready Nation



Hydrologic Ensemble Forecast System (HEFS) – Little Falls on the Mohawk



Weekly Chance of Exceeding River Stage at Mohawk River at Little Falls, NY (L1LN6)
Forecast for the period 03/26/2018 – 06/24/2018
This is a conditional simulation based on the current conditions as of 03/26/2018



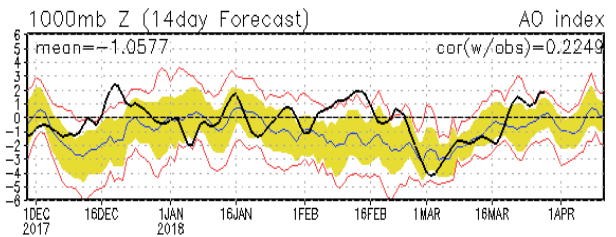
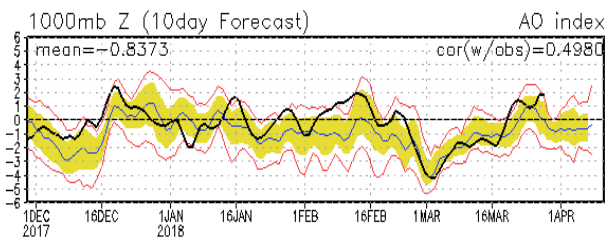
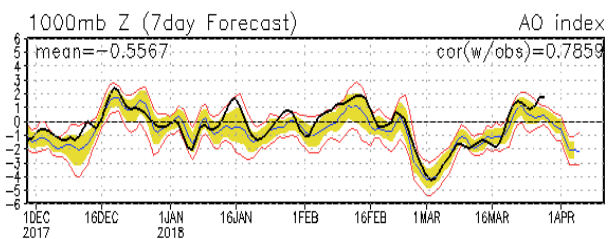
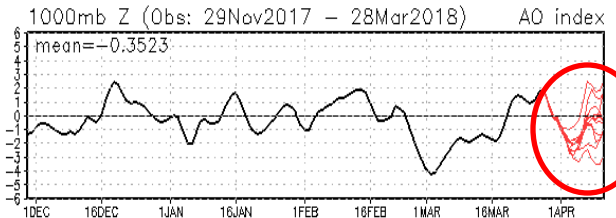


Teleconnection Patterns

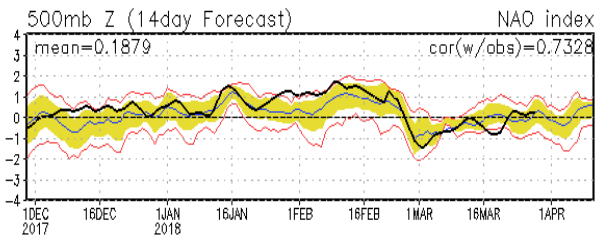
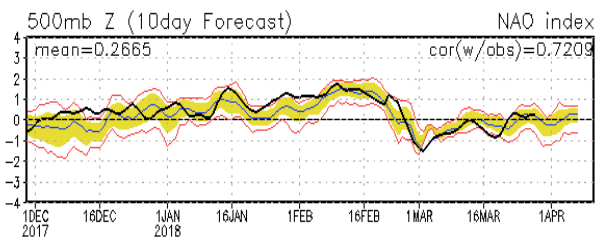
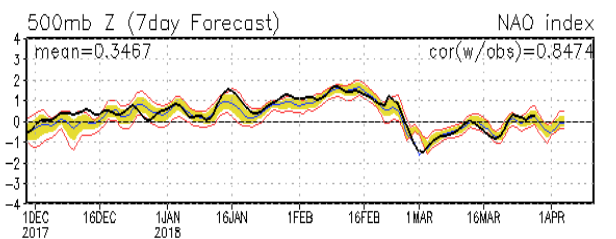
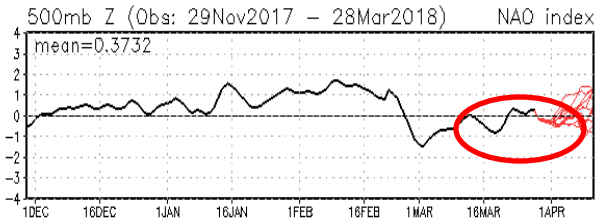
AO--NAO--PNA



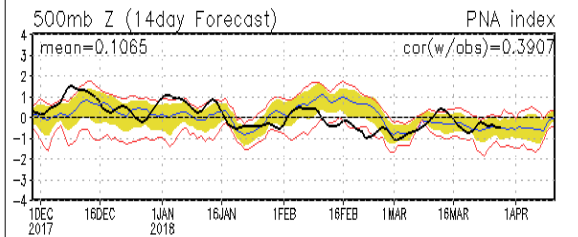
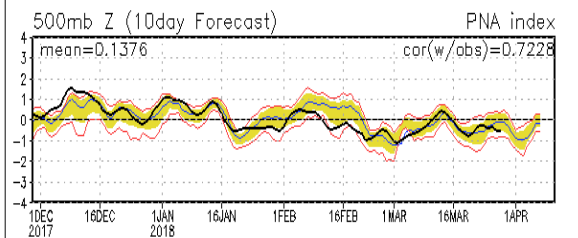
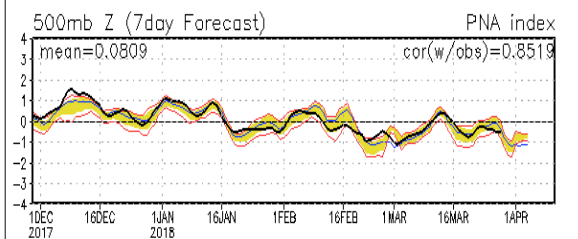
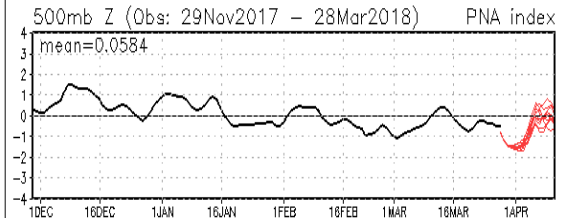
AO: Observed & ENSM forecasts



NAO: Observed & ENSM forecasts



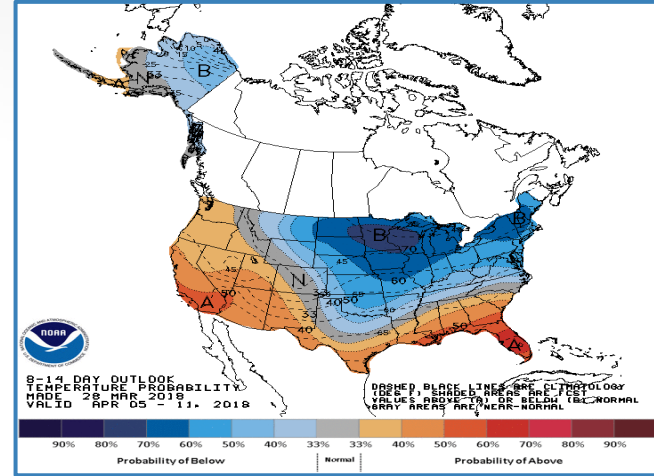
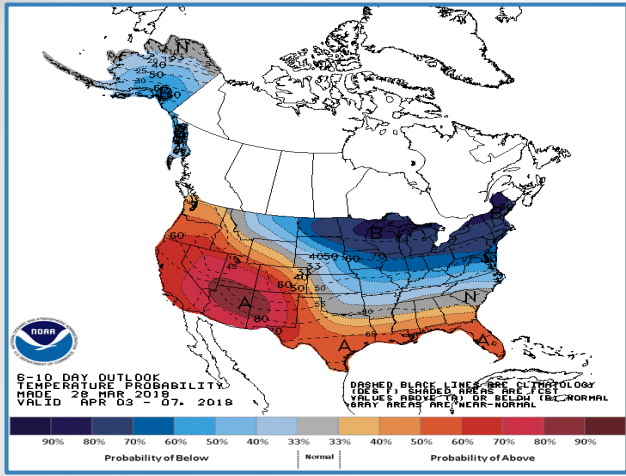
PNA: Observed & ENSM forecasts





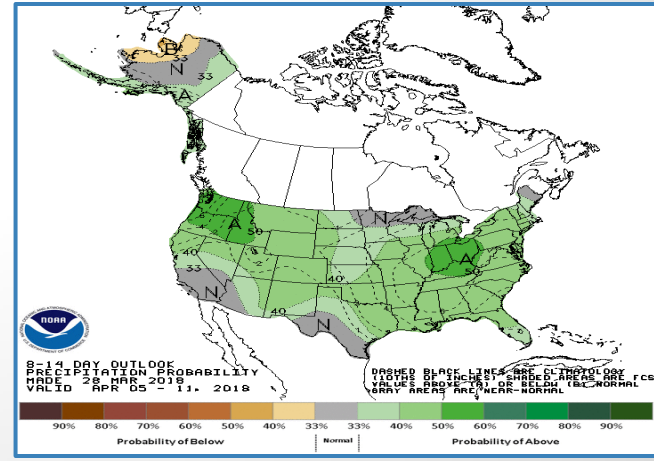
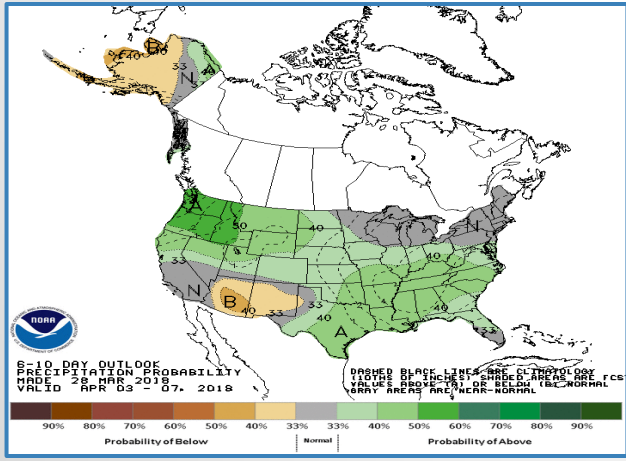
CPC Outlooks

6 to 10 and 8 to 14 day outlooks



6 to 10 day outlooks

8 to 14 day outlooks

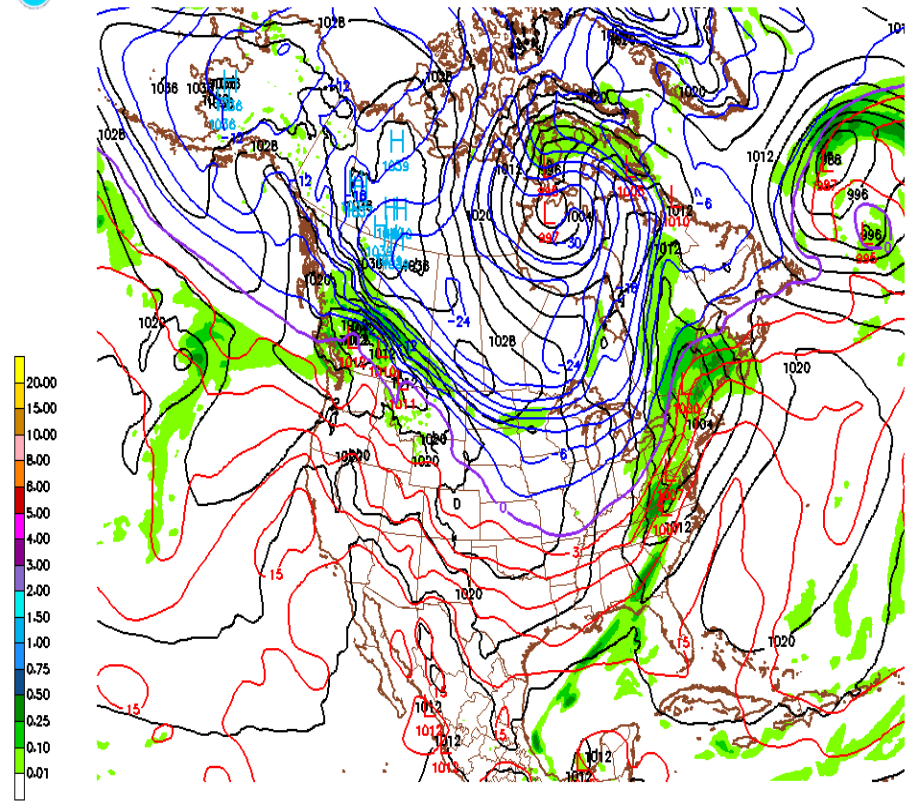




HIGH and Dry

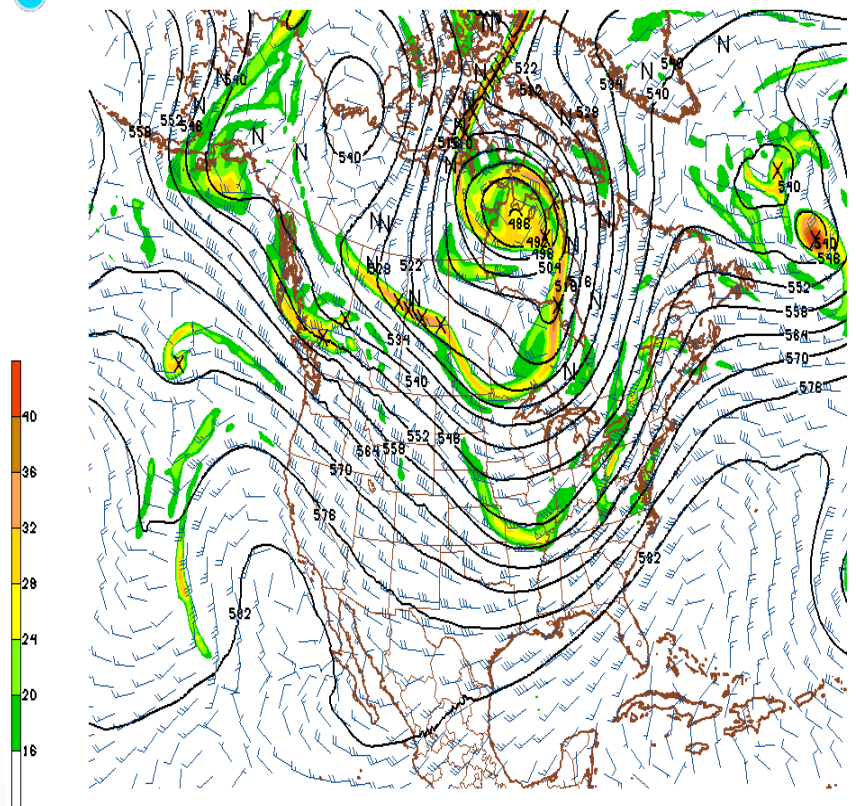
March 18th – Surface and 500mb

03/29/18 06UTC 28HR FCST VALID Fri 03/30/18 10UTC NOAA/NWS/NCEP



180330/1000V028 GFS EMSL (4mb) 03-HR PRCP(IN) B500MB TEMP(C)

03/29/18 06UTC 28HR FCST VALID FRI 03/30/18 10UTC NOAA/NWS/NCEP



180330/1000V028 GFS 500MB HGT, ABS VALUE OF ABS VOR, AND WIND



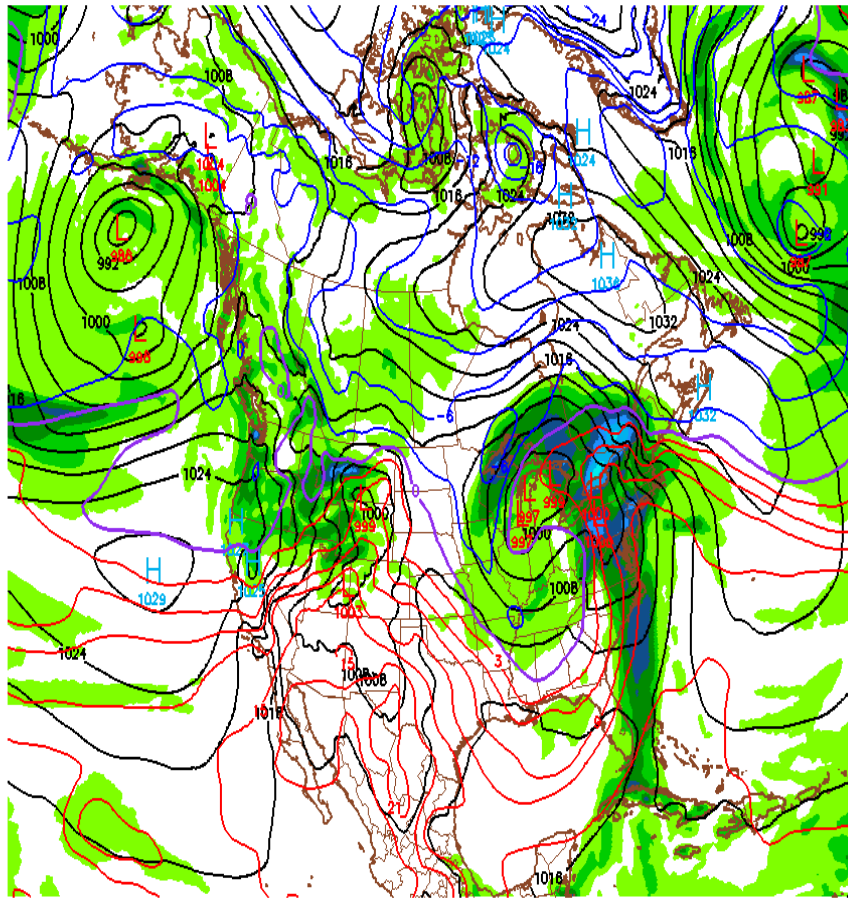


Surface Prognosis – 4/12

Gulf Moisture – Warm Storm ??



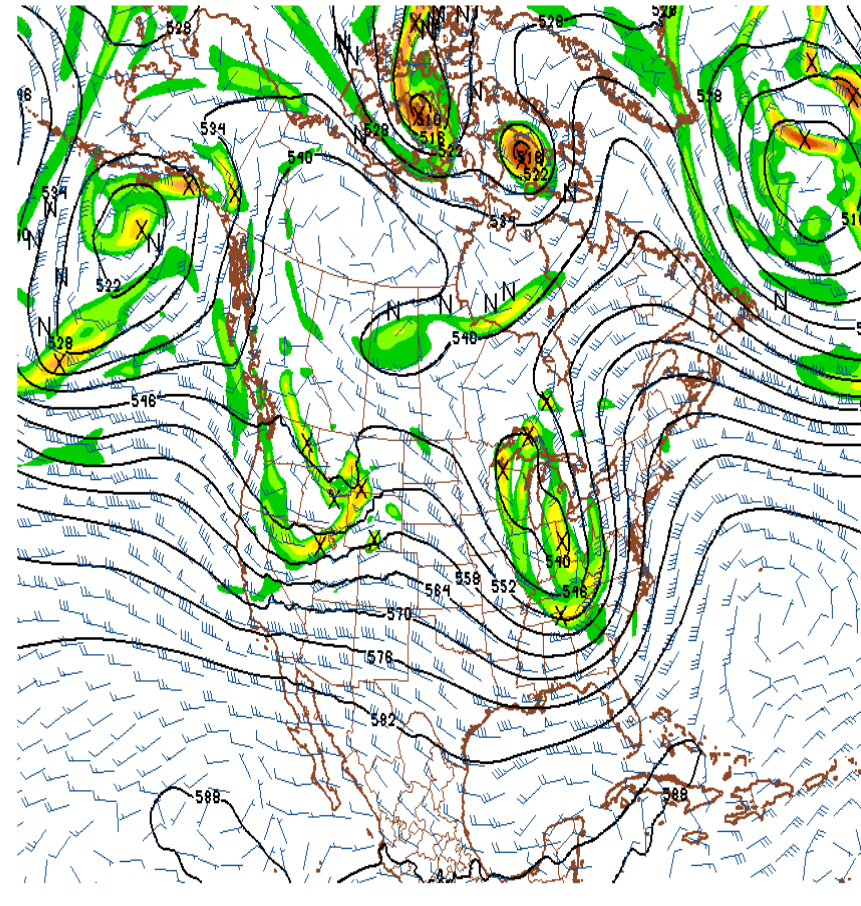
03/29/18 06UTC 336HR FCST VALID THU 04/12/18 06UTC NOAA/NWS/NCEP



180412/0600V336 GFS EMSL (4mb) 12-HR PRCP(IN) 500MB TEMP(C)



03/29/18 06UTC 336HR FCST VALID THU 04/12/18 06UTC NOAA/NWS/NCEP



180412/0600V336 GFS 500MB HGT, ABS VALUE OF ABS VOR, AND WIND



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NERFC Winter Outlook March 29

Flood Potential -- Valid until April 13th








Spring Flood Potential Outlook

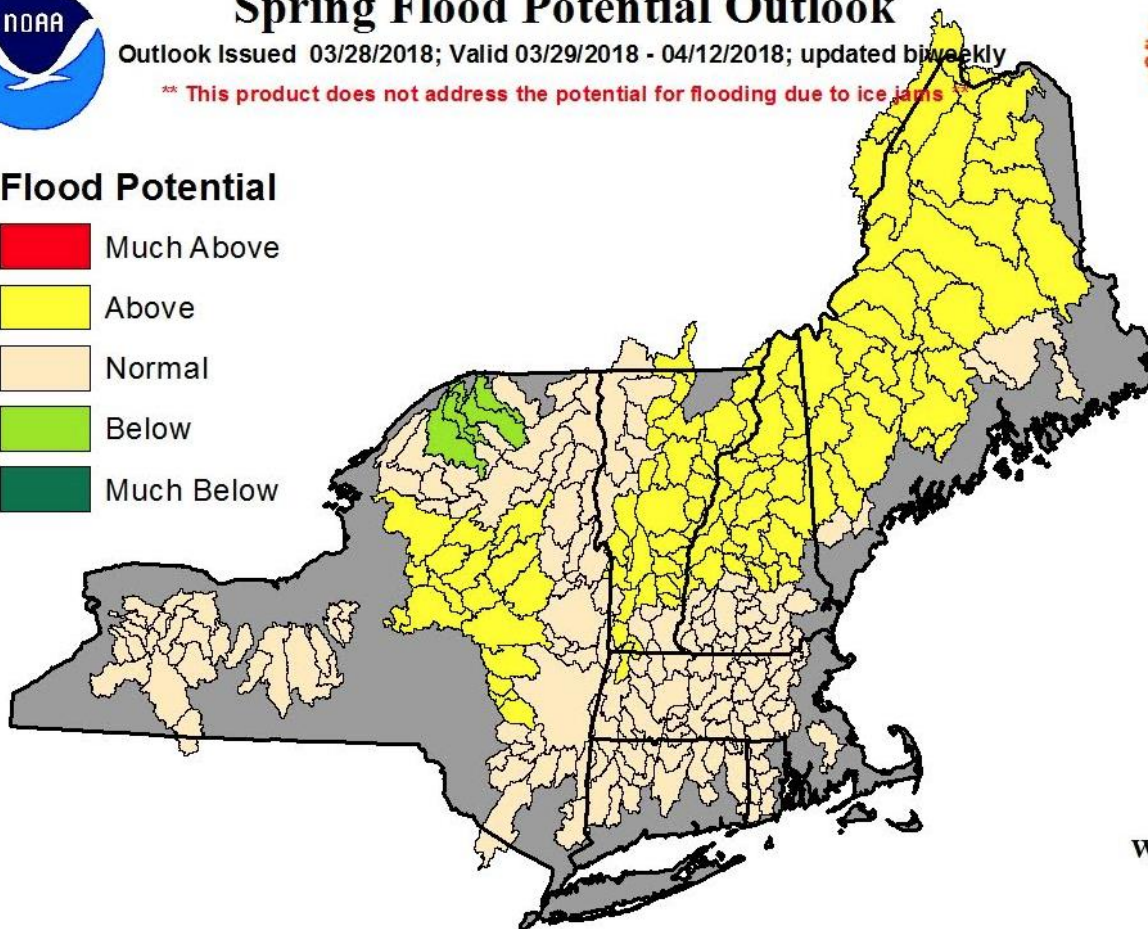
Outlook Issued 03/28/2018; Valid 03/29/2018 - 04/12/2018; updated biweekly

** This product does not address the potential for flooding due to ice jams



Flood Potential

-  Much Above
-  Above
-  Normal
-  Below
-  Much Below



Map produced by the Northeast River Forecast Center

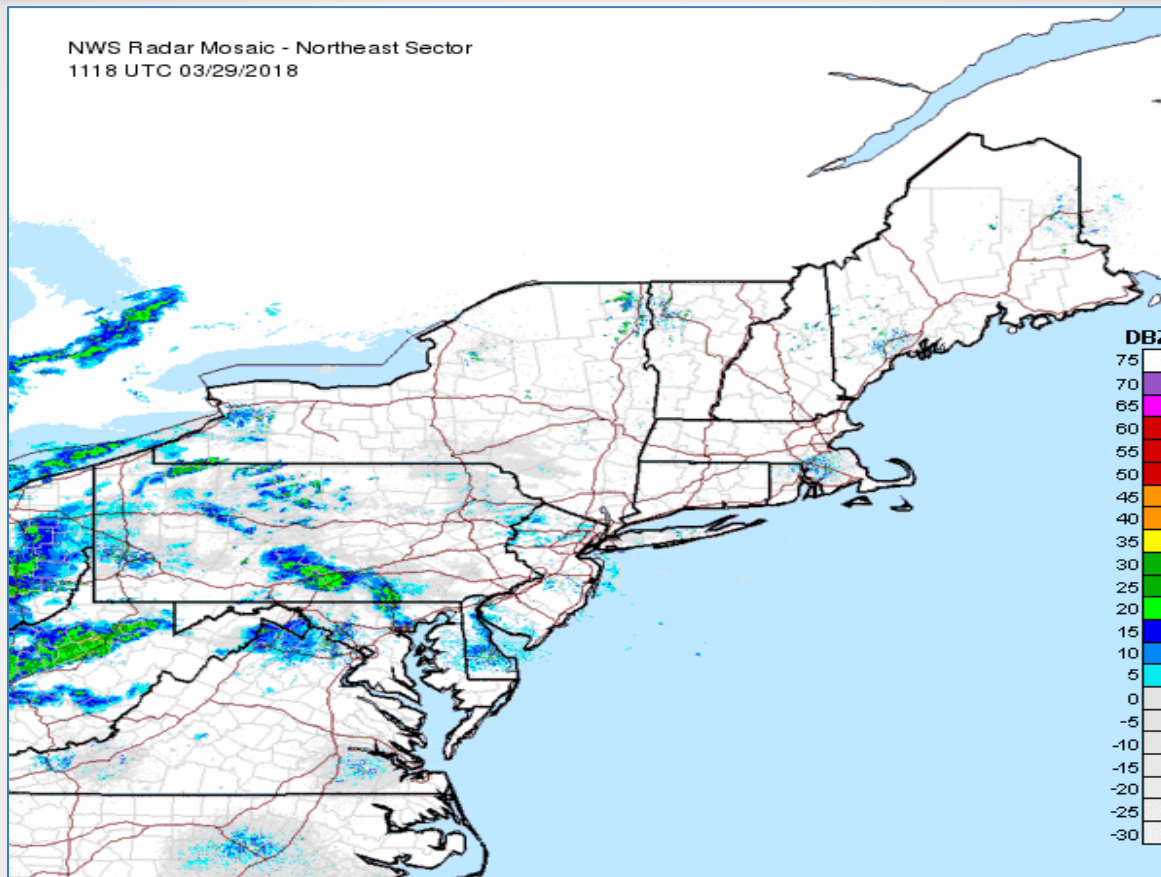


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Northeast River Forecast Center's

Next Outlook: Friday April 12th 2018



Ed Capone

**Service Coordination Hydrologist
NOAA/NWS/Northeast River Forecast Center**



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