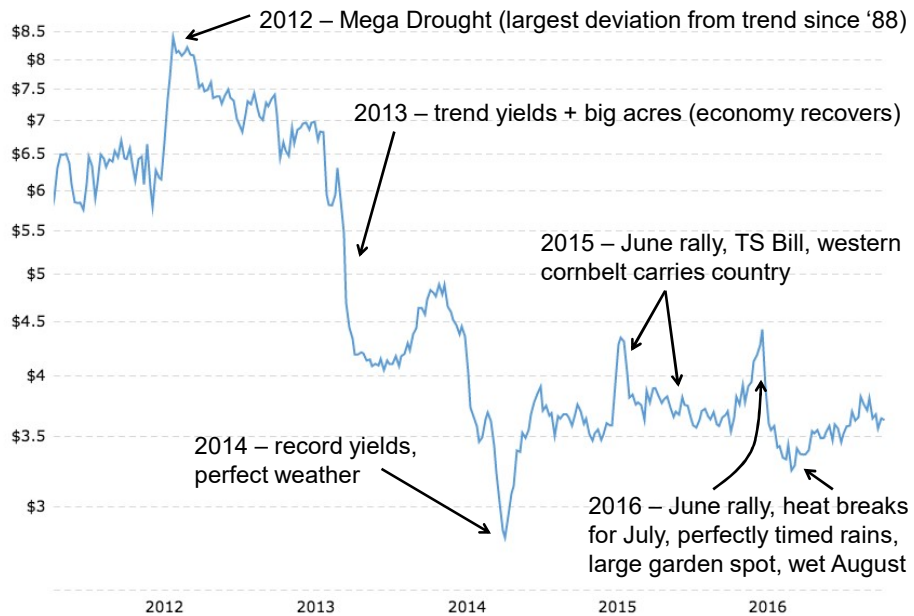




Eric Snodgrass
 Co-Founder and Senior Atmospheric Scientist of Agrible, Inc
 Director of Undergraduate Studies Department of Atmospheric Sciences
 University Of Illinois Urbana-Champaign
snodgrss@illinois.edu eric@agribile.com

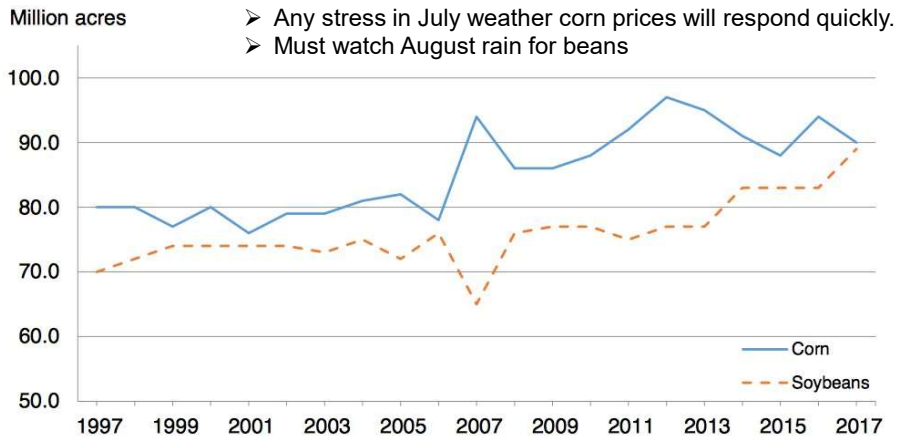


What to Watch in 2017 – Corn Prices and Corn Acres are Down



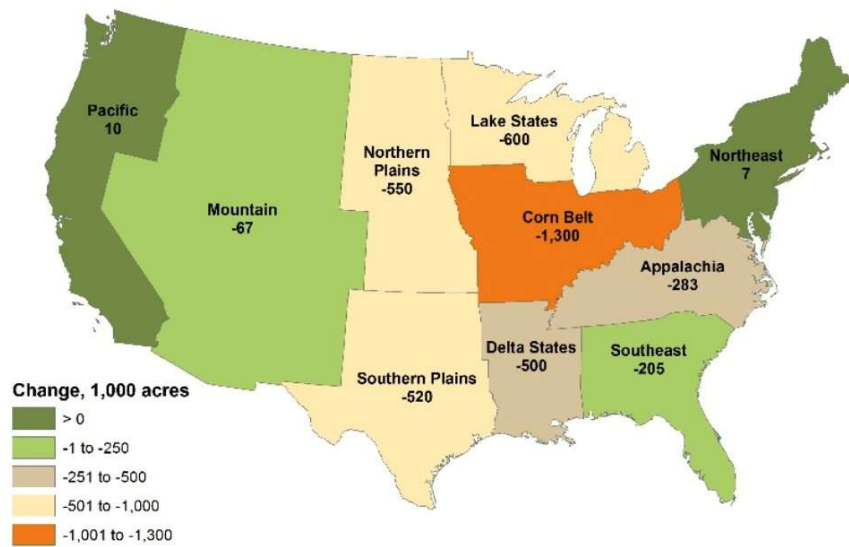
What to Watch in 2017 – Corn Prices and Corn Acres are Down

Corn and Soybean Planted Acreage - United States



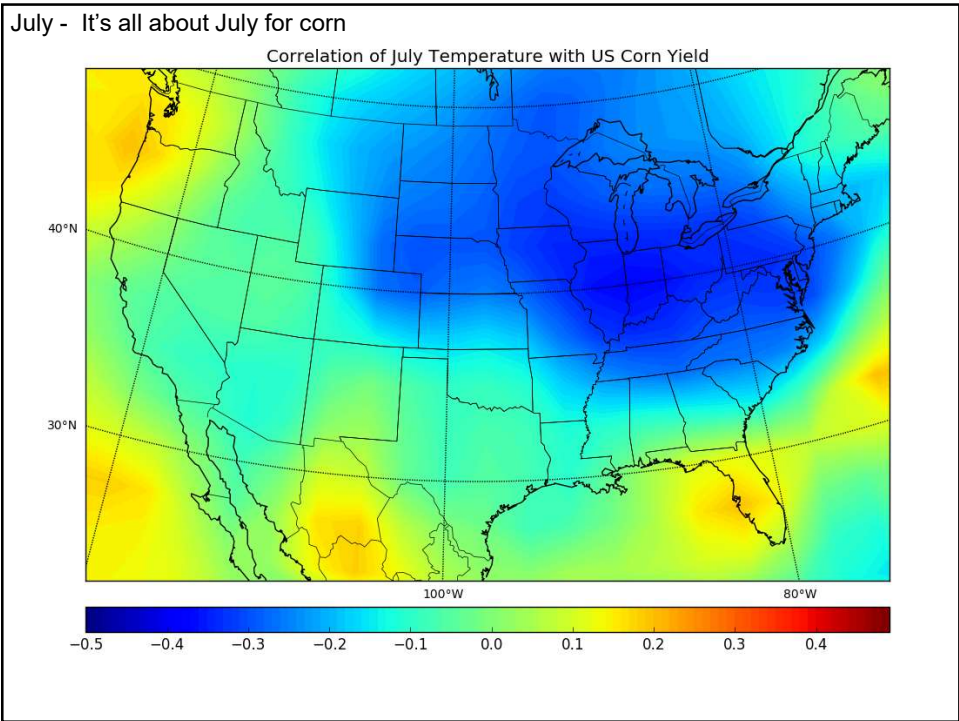
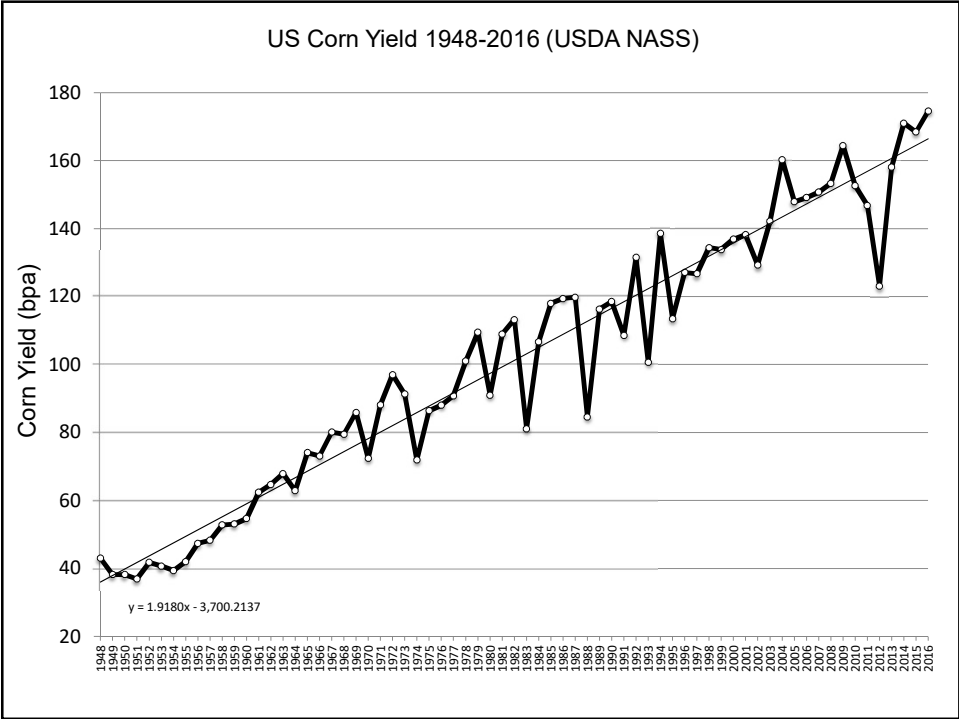
Source: <http://farmdocdaily.illinois.edu/>

Change in corn planted area from 2016 to 2017 (1,000 acres) USDA farm production regions

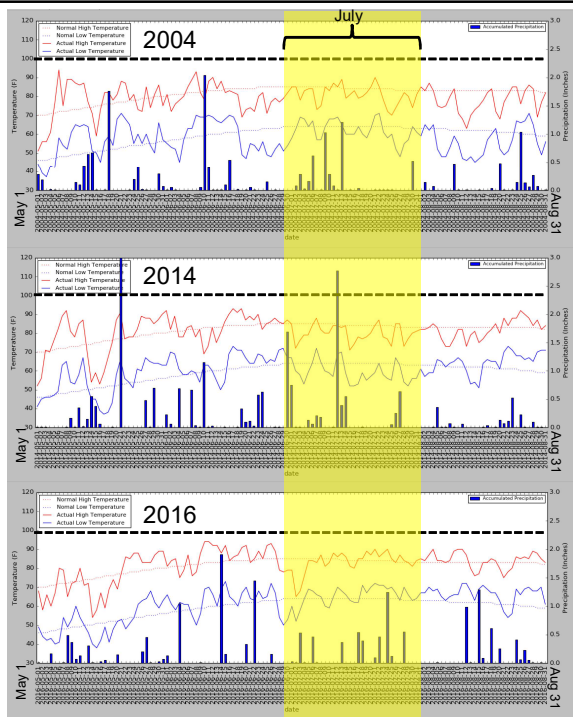


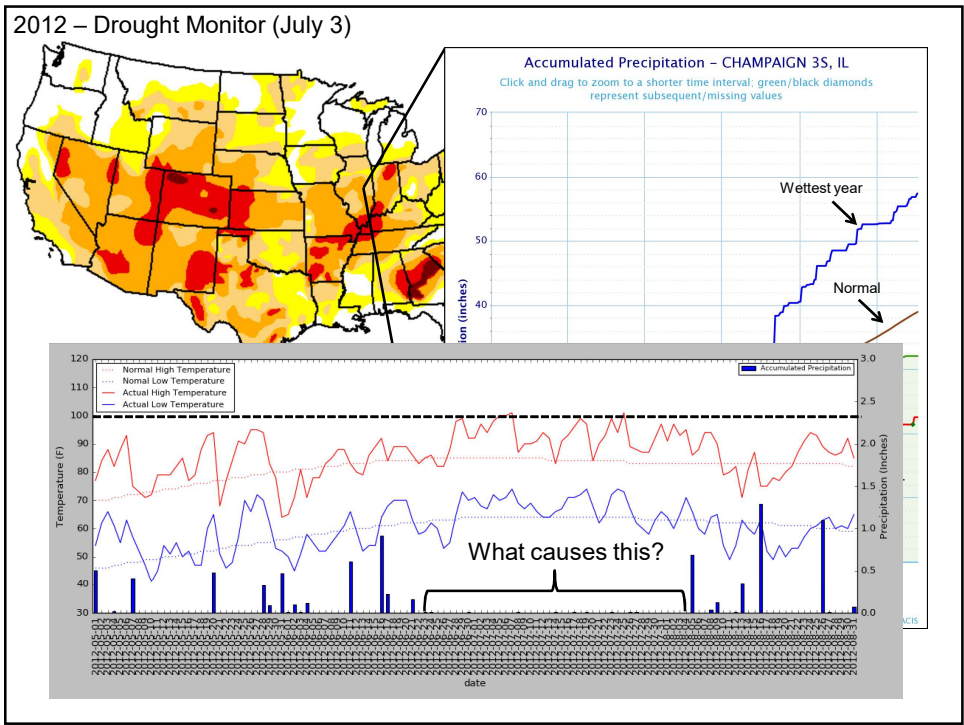
Source: USDA NASS Prospective Plantings report, March 31, 2017.

@FarmPolicy

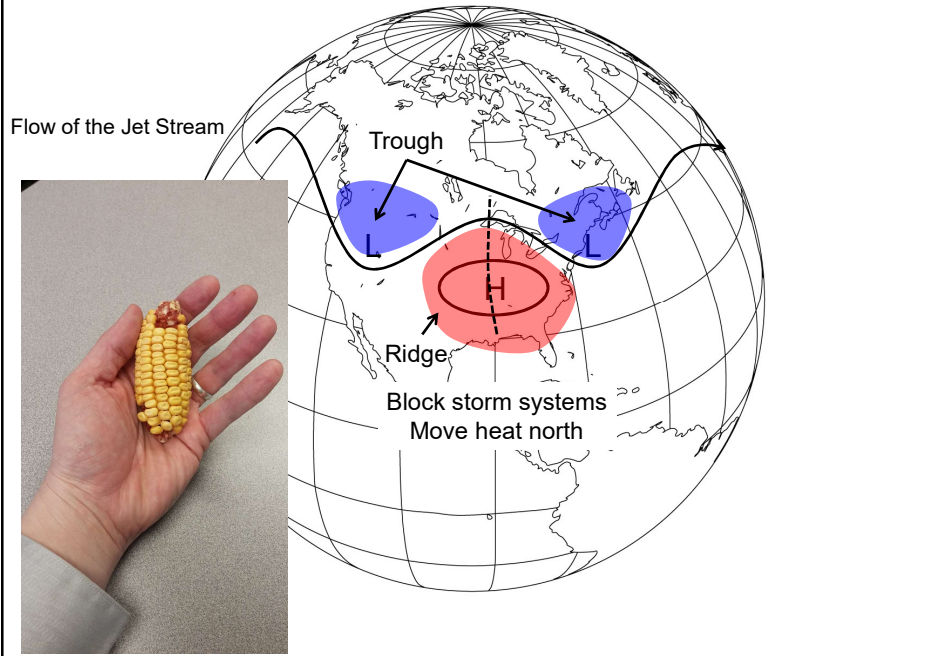


The Good Years...





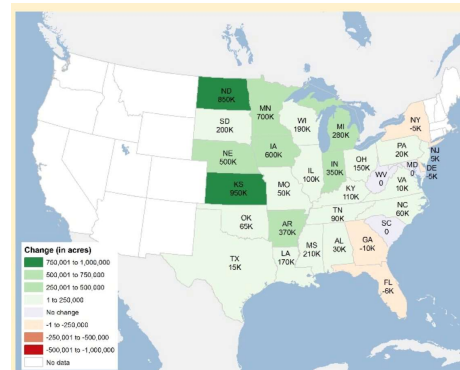
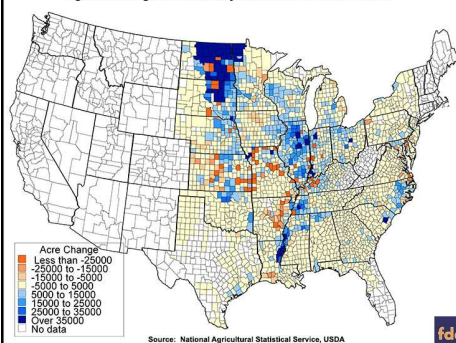
So what types of weather patterns shut off the rain and bring in the heat?

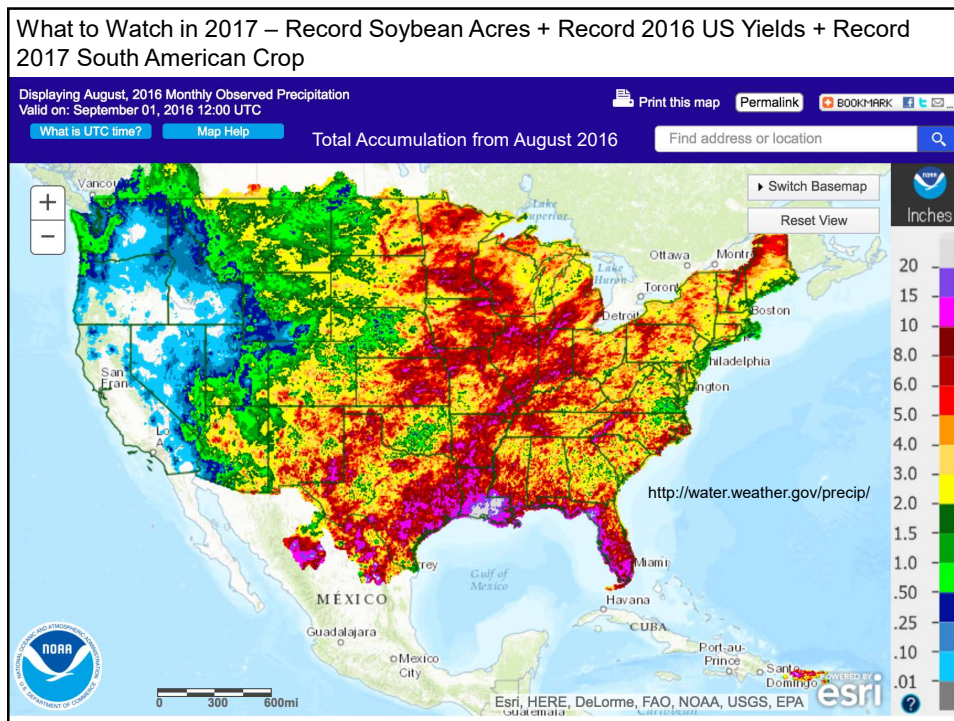
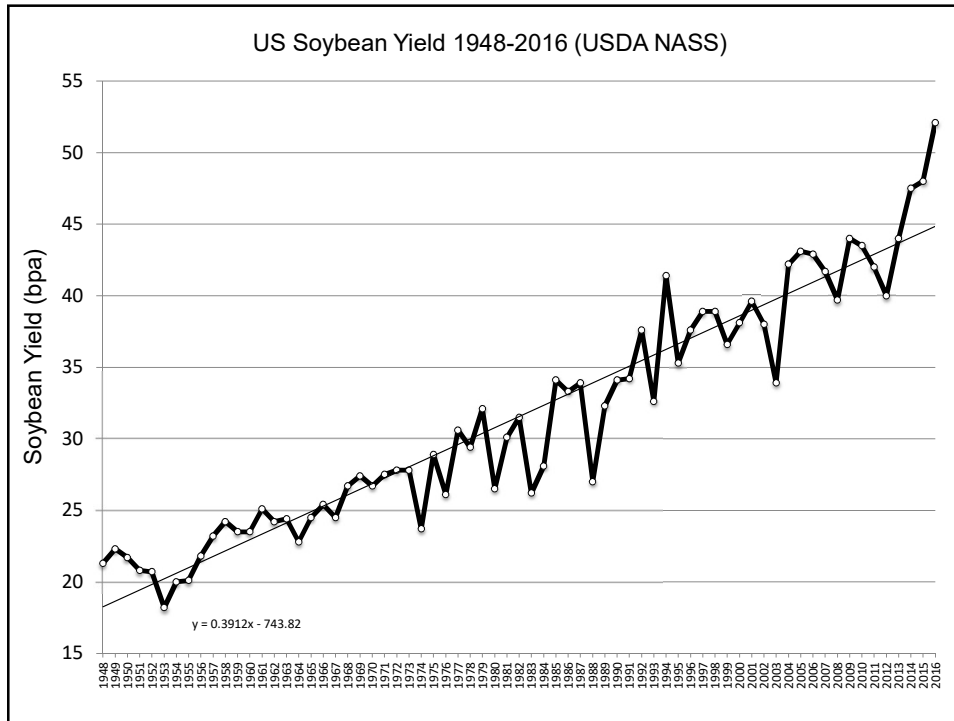


What to Watch in 2017 – Record Soybean Acres + Record 2016 US Yields + Record 2017 South American Crop

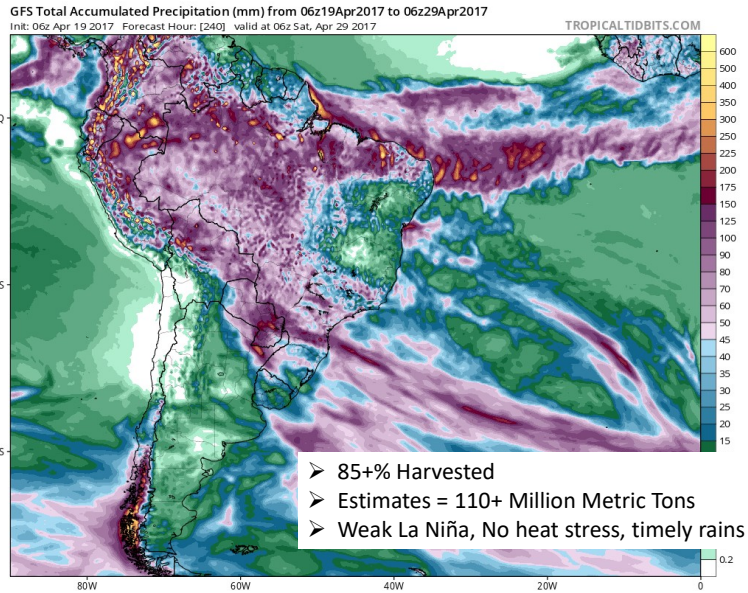
- Soybean Acres = 89.5 Million (up 7% on 2016)
- Kansas +950,000
- North Dakota +850,000
- Minnesota +700,000

Figure 3. Change in Planted Soybean Acres from 2011 to 2016

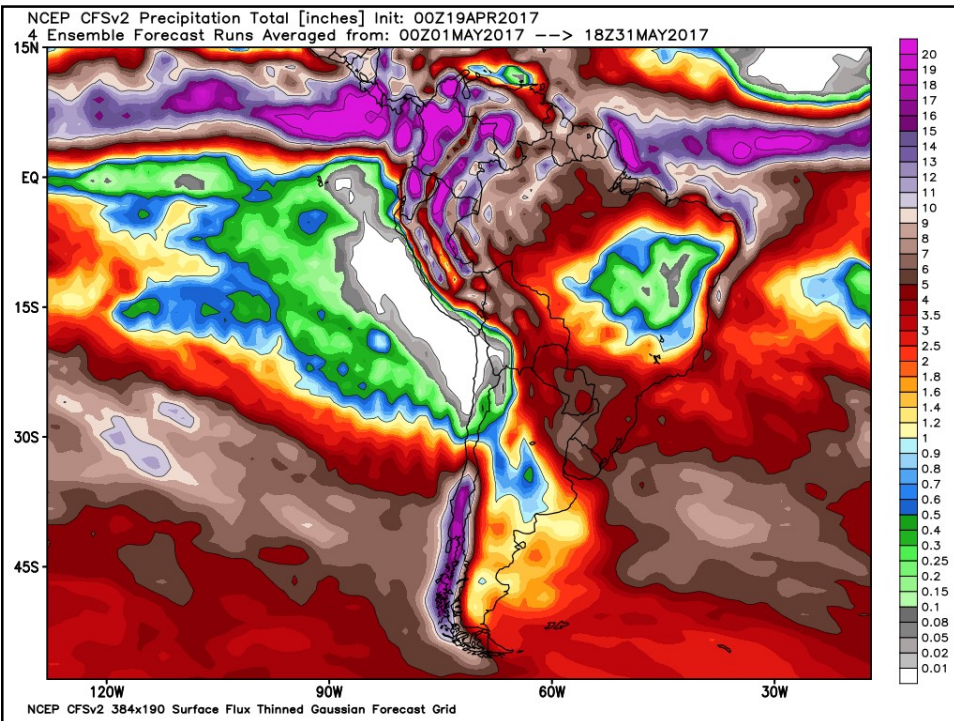


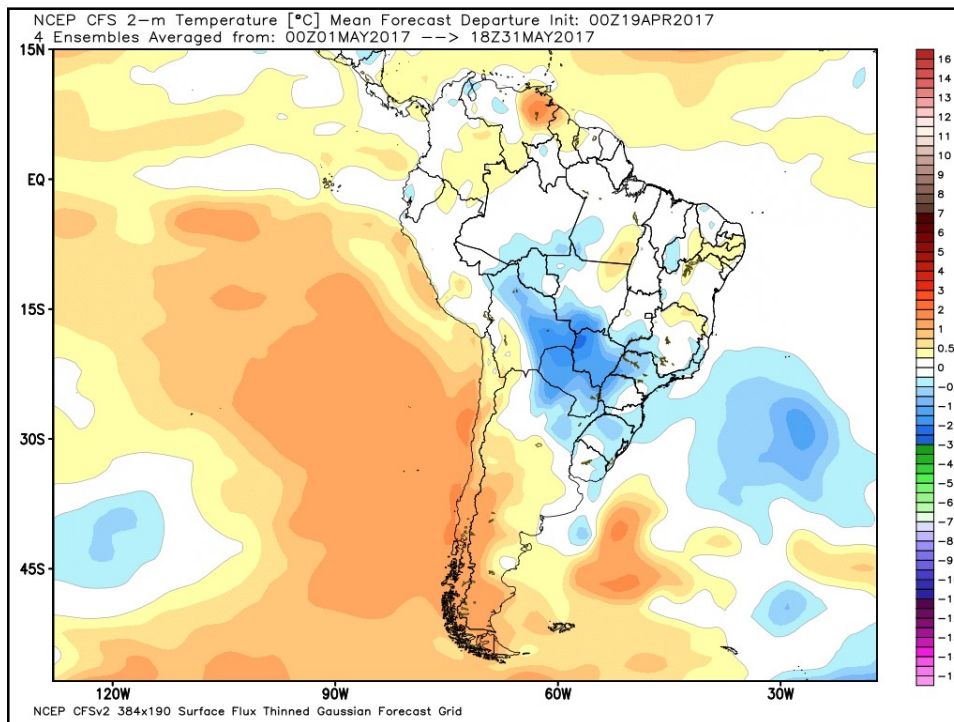


What to Watch in 2017 – Record Soybean Acres + Record 2016 US Yields + Record 2017 South American Crop

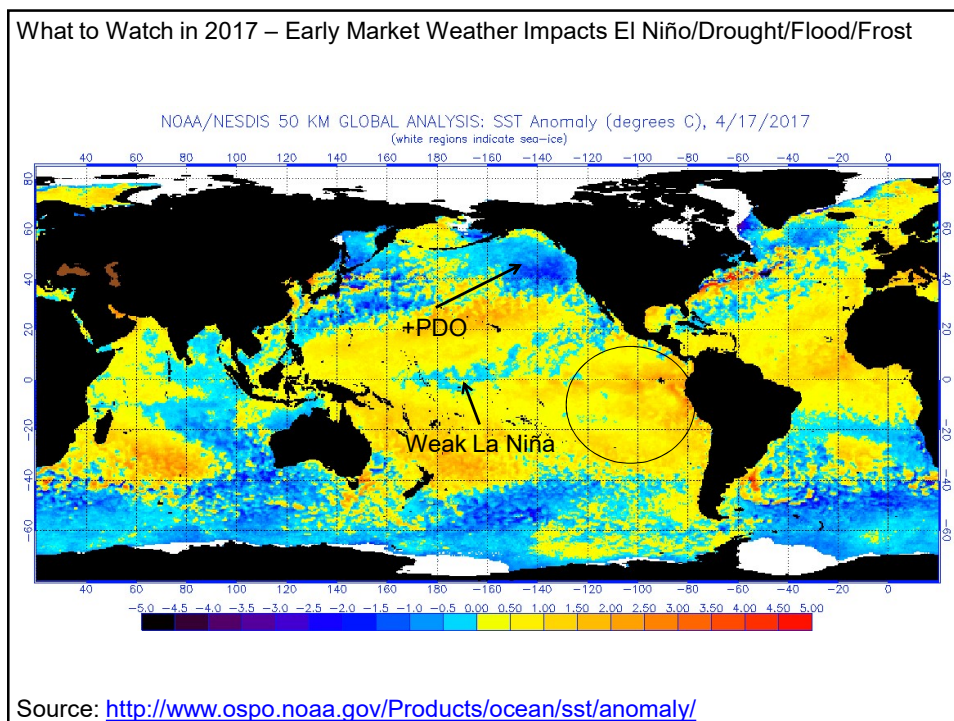


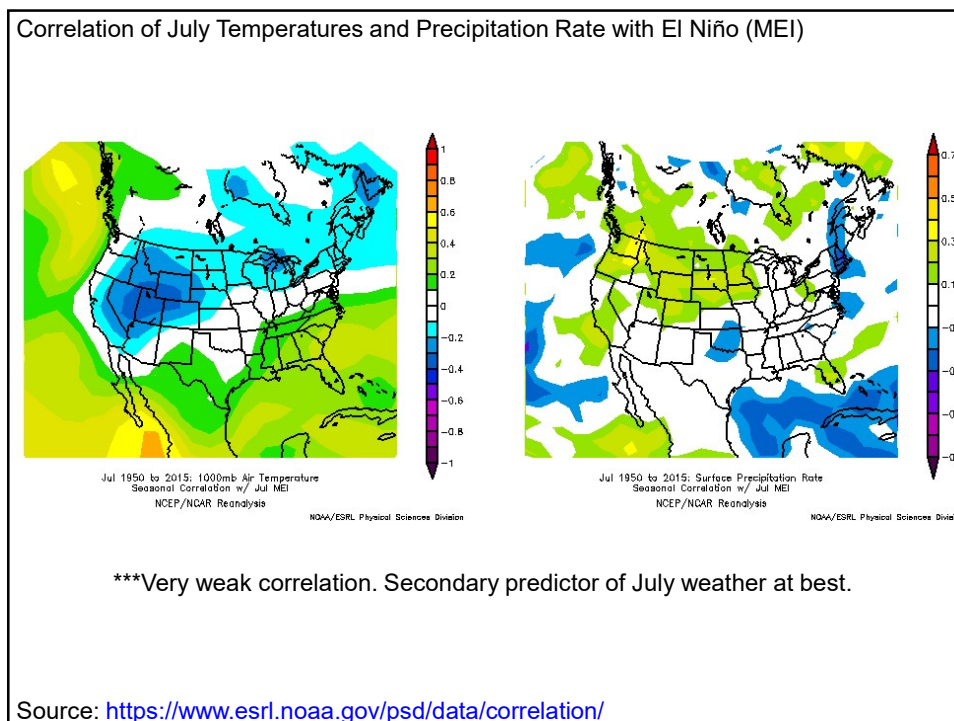
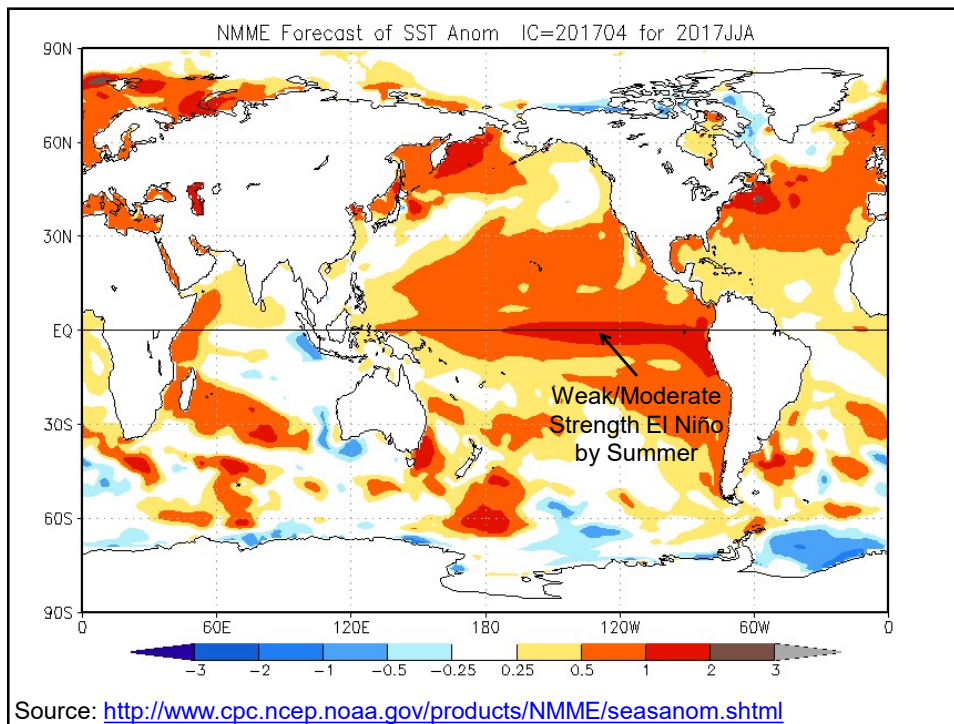
Source: <http://www.tropicaltidbits.com/analysis/models/>
 Source: <http://www.soybeansandcorn.com/>





What to Watch in 2017 – Early Market Weather Impacts El Niño/Drought/Flood/Frost

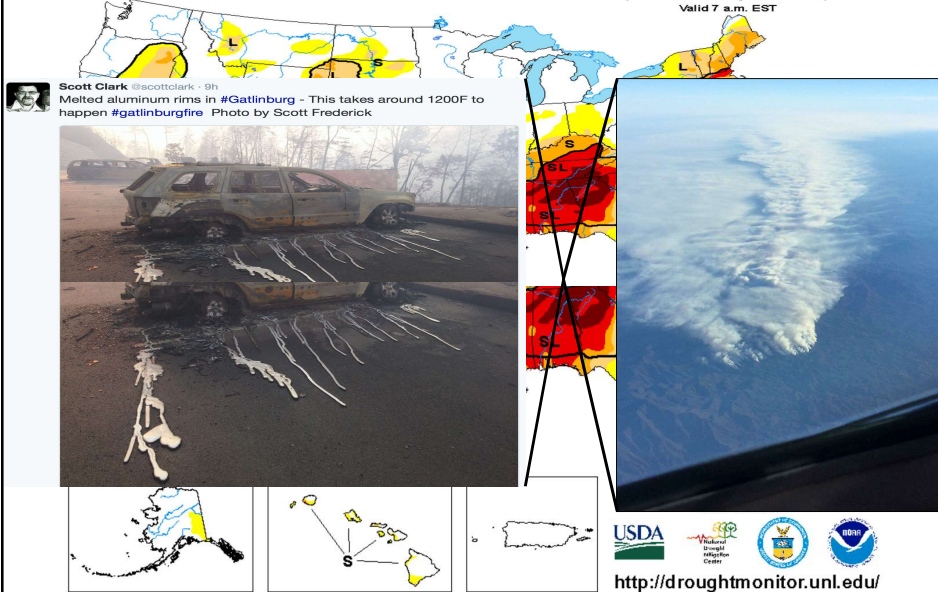




What to Watch in 2017 – Early Market Weather Impacts El Niño/Drought/Flood/Frost

U.S. Drought Monitor

November 29, 2016
 (Released Thursday, Dec. 1, 2016)
 Valid 7 a.m. EST

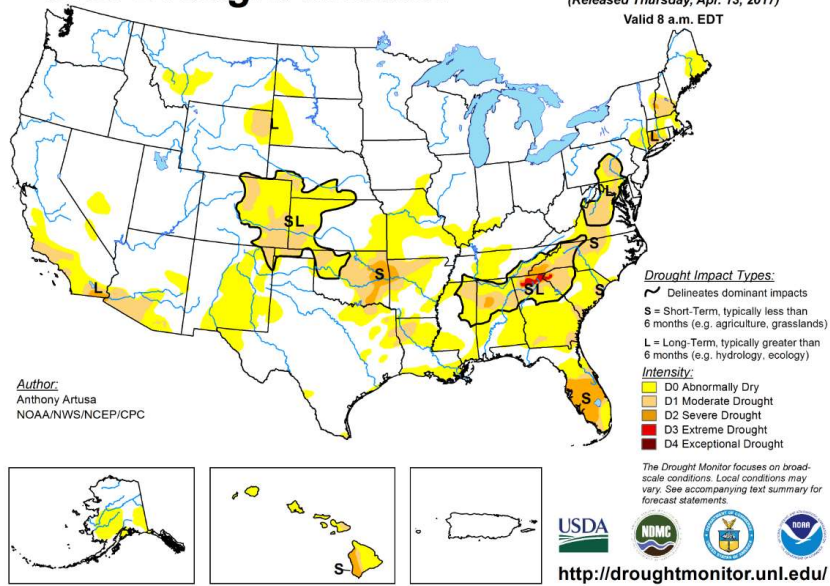


Source: <http://droughtmonitor.unl.edu/>

What to Watch in 2017 – Early Market Weather Impacts El Niño/Drought/Flood/Frost

U.S. Drought Monitor

April 11, 2017
 (Released Thursday, Apr. 13, 2017)
 Valid 8 a.m. EDT



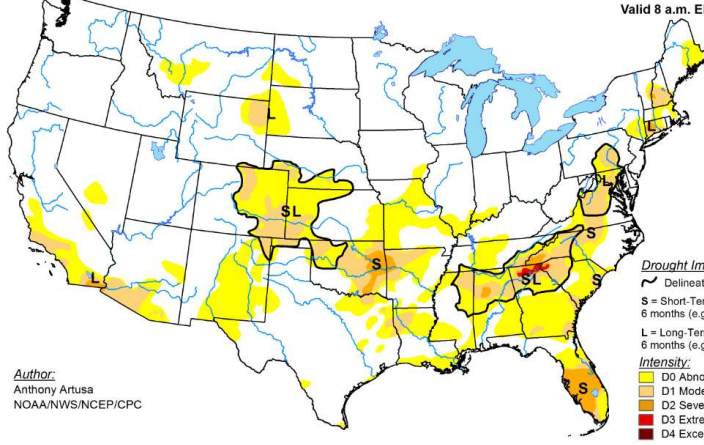
Source: <http://droughtmonitor.unl.edu/>



What to Watch in 2017 – Early Market Weather Impacts El Niño/Drought/Flood/Frost

U.S. Drought Monitor

April 11, 2017
 (Released Thursday, Apr. 13, 2017)
 Valid 8 a.m. EDT

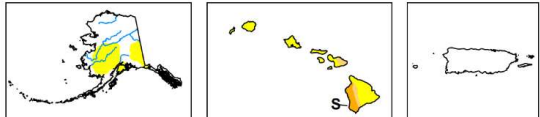


Author:
 Anthony Artusa
 NOAA/NWS/NCEP/CPC

Drought Impact Types:
 ~ Delineates dominant impacts
 S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
 L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:
 D0 Abnormally Dry
 D1 Moderate Drought
 D2 Severe Drought
 D3 Extreme Drought
 D4 Exceptional Drought

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

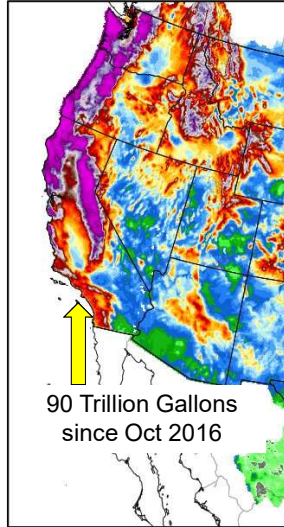


Source: <http://droughtmonitor.unl.edu/>

What to Watch in 2017 – Early Market Weather Impacts El Niño/Drought/Flood/Frost

NWS Precipitation Analysis 4-km HRAP
Total Precipitation [Inches] between 1:

Distribution of Landfalling Atmospheric Rivers on the U.S. West Coast (From 1 Oct 2016 to 31 March 2017)

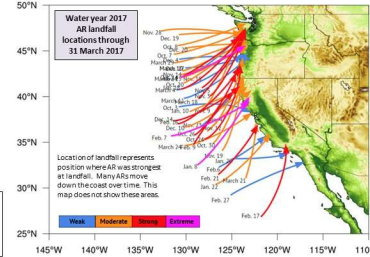


AR Strength	AR Count*
Weak	11
Moderate	20
Strong	12
Extreme	3

Ralph/CW3E AR Strength Scale	
Weak	IVT=250-500 $\text{kg m}^{-2} \text{s}^{-1}$
Moderate	IVT=500-750 $\text{kg m}^{-2} \text{s}^{-1}$
Strong	IVT=750-1000 $\text{kg m}^{-2} \text{s}^{-1}$
Extreme	IVT>1000 $\text{kg m}^{-2} \text{s}^{-1}$

*Radiosondes at Bodega Bay, CA indicated the 10-11 Jan AR was strong (noted as moderate based on GFS analysis data) and 7-8 Feb AR was extreme (noted as strong)

- 45 Atmospheric Rivers have made landfall on the West Coast thus far during the 2017 water year (1 Oct. – 31 March 2017)
- This is much greater than normal
- 1/3 of the landfalling ARs have been “strong” or “extreme”



90 Trillion Gallons
since Oct 2016

Center for Western Weather and Water Extremes
AT UC SAN DIEGO

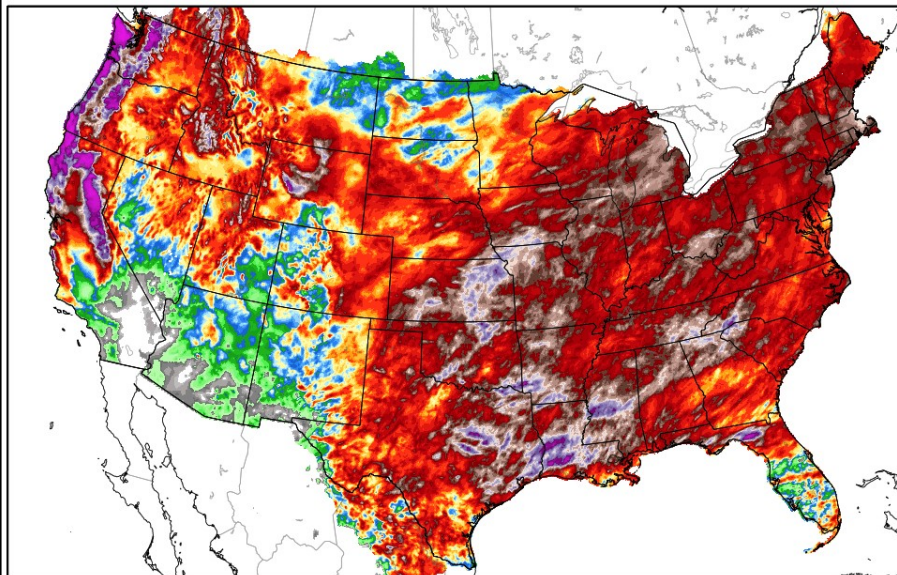
By F.M. Ralph, B. Kawzenuk, C. Hecht, J. Kalansky

Experimental

4 km HRAP grid | End of hydrological day at 1200 UTC | <http://water.weather.gov/precip>

NWS Precipitation Analysis 4-km HRAP Grid -- 30-day Total Accumulation
Total Precipitation [inches] between 12Z20MAR2017 -- 12Z19APR2017

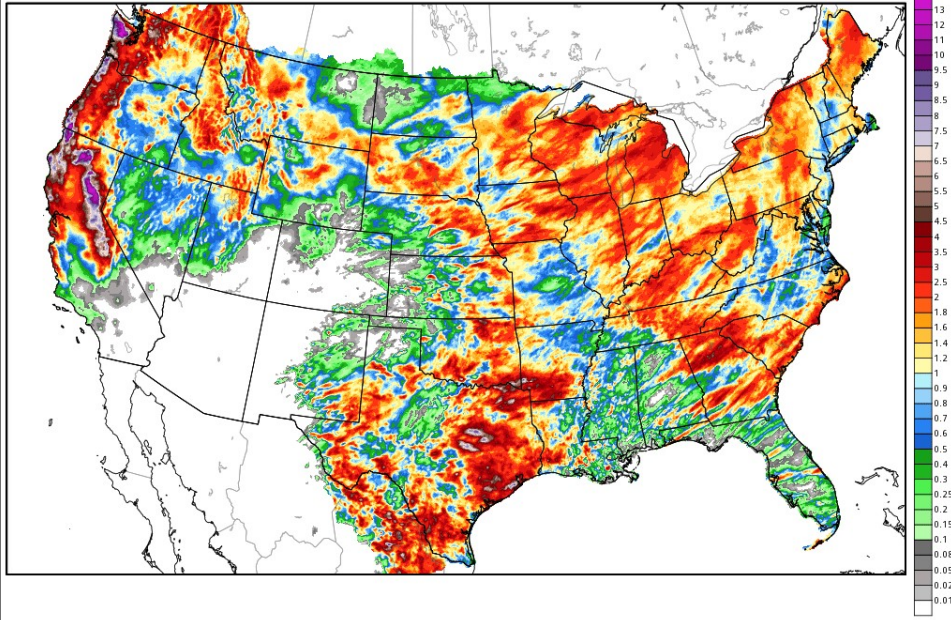
Domain Max: 38.1 in.
Lower 48 Avg: 3.2 in., California: 3.7 in.



4 km HRAP grid | End of hydrological day at 1200 UTC | <http://water.weather.gov/precip>

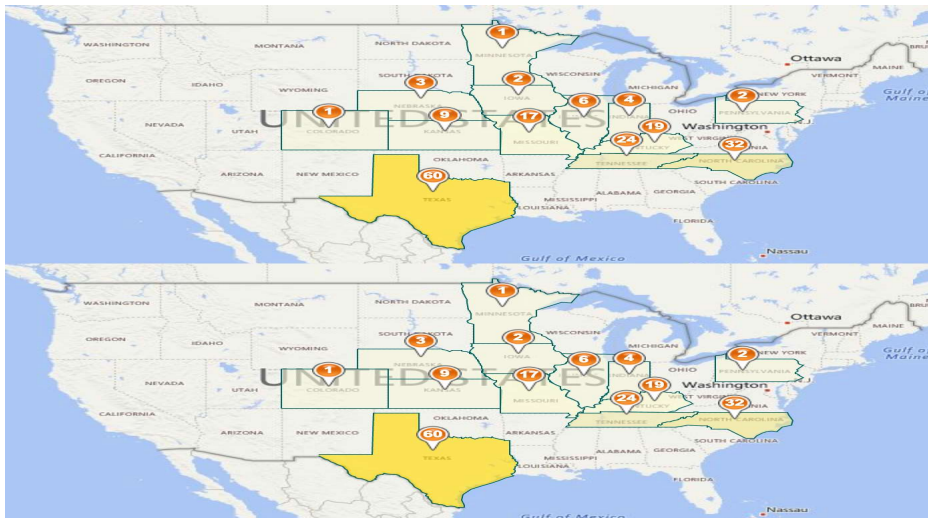
NWS Precipitation Analysis 4-km HRAP Grid -- 14-day Total Accumulation
Total Precipitation [inches] between 12Z05APR2017 -- 12Z19APR2017

Domain Max: 17.4 in.
Lower 48 Avg: 1.2 in. California: 2.1 in.

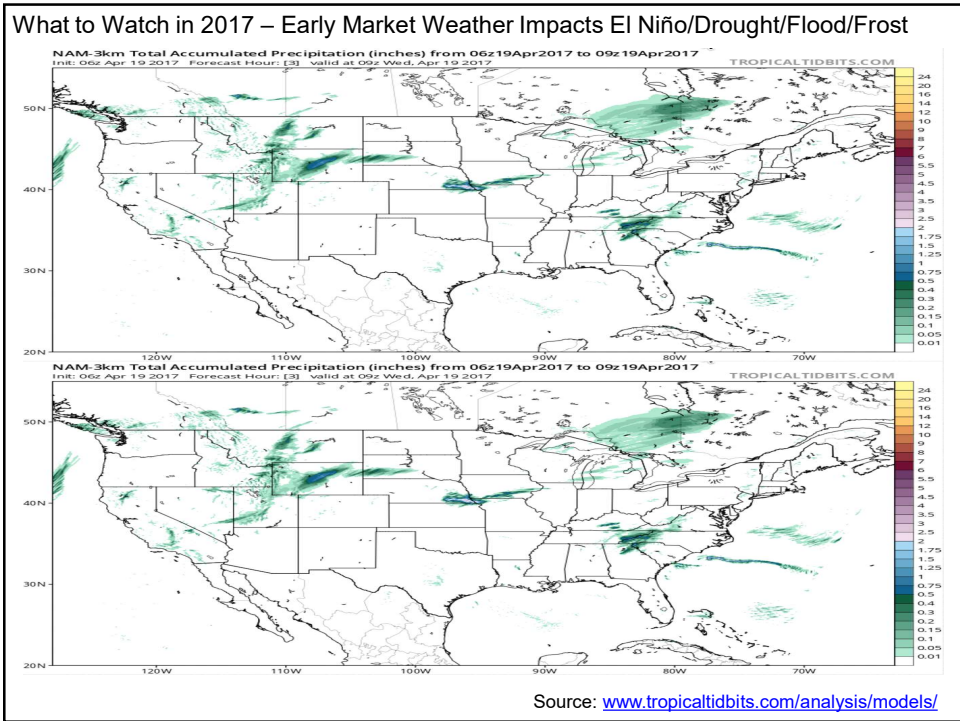
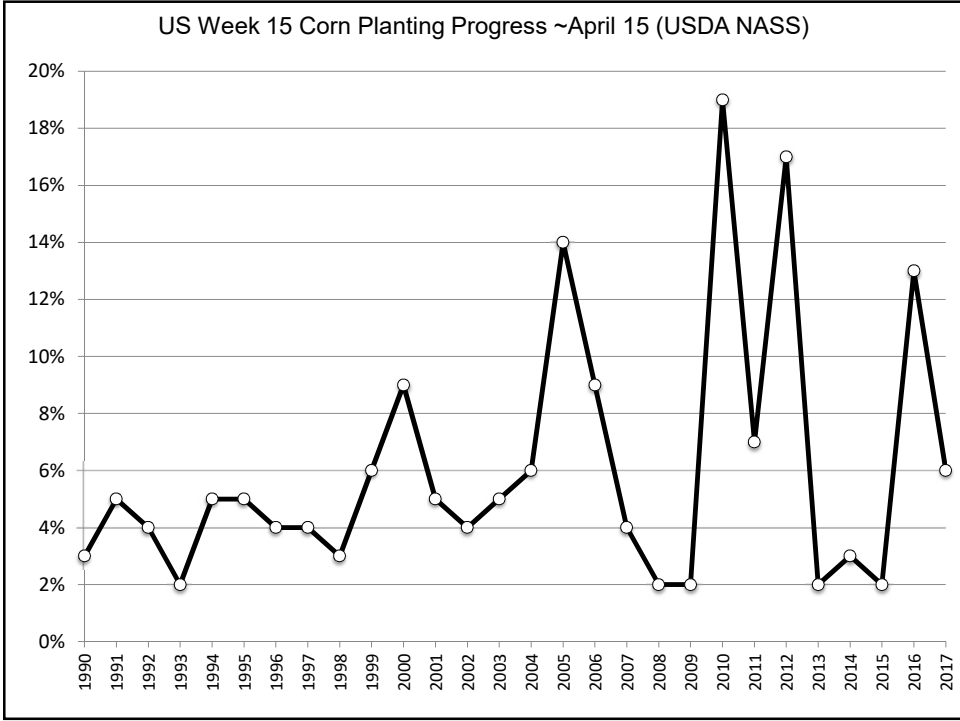


4 km HRAP grid | End of hydrological day at 1200 UTC | <http://water.weather.gov/precip>

Planting Progress Through Week #15



Source: <http://www.agweb.com/corn-planting-map/>

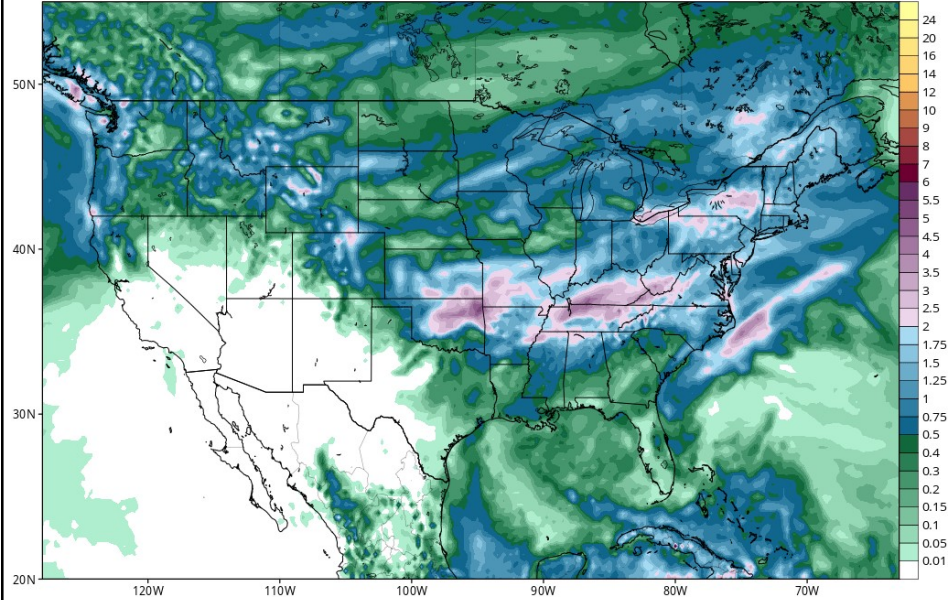


What to Watch in 2017 – Early Market Weather Impacts El Niño/Drought/Flood/Frost

GFS Total Accumulated Precipitation (inches) from 06z19Apr2017 to 12z24Apr2017

Init: 06z Apr 19 2017 Forecast Hour: [126] valid at 12z Mon, Apr 24 2017

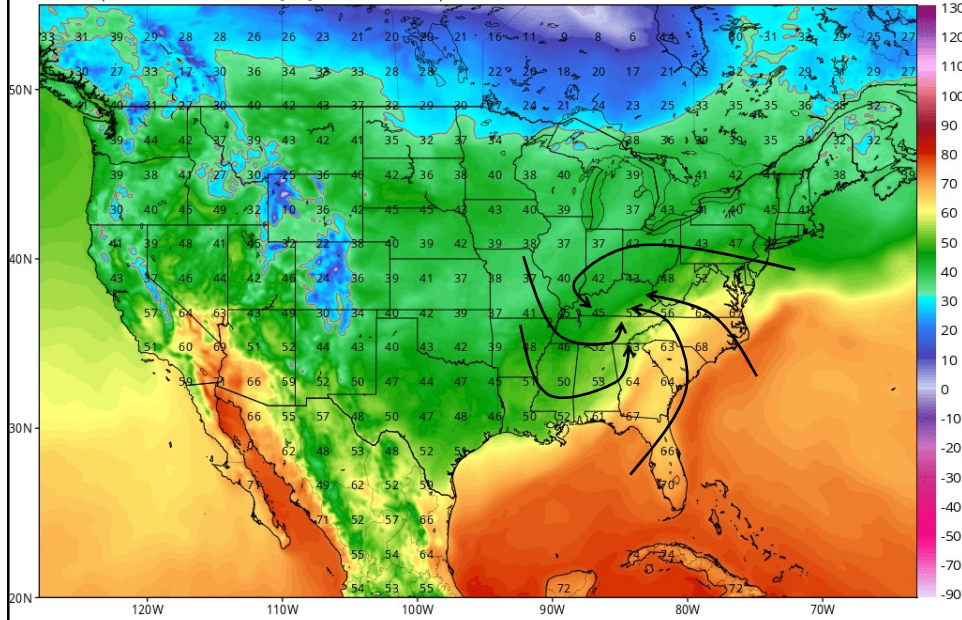
TROPICALTIDBITS.COM



GFS 2-meter Air Temperature (°F)

Init: 06z Apr 19 2017 Forecast Hour: [102] valid at 12z Sun, Apr 23 2017

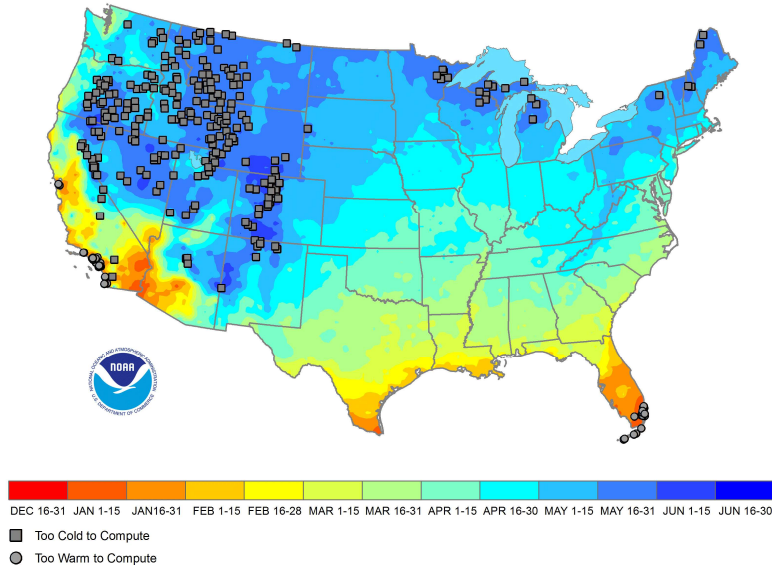
TROPICALTIDBITS.COM



What to Watch in 2017 – Early Market Weather Impacts El Niño/Drought/Flood/Frost

Day of the Last Spring Freeze

from the 1981–2010 U.S. Climate Normals



Source: NOAA

What to Watch in 2017 – Elevated Severe Weather Threat

US Tornado Risk 2017:

Above average
April 2017 = +0.42 sd
March 2017 = +0.04 sd
February 2017 = +0.04 sd
January 2017 = +0.03 sd
Dec 2016 Forecast = +0.325 sd
Nov 2016 Forecast = +0.47 sd

2017 Compared to Average So Far

Tornadoes = 151%
Hail = 156%
Severe Winds = 203%



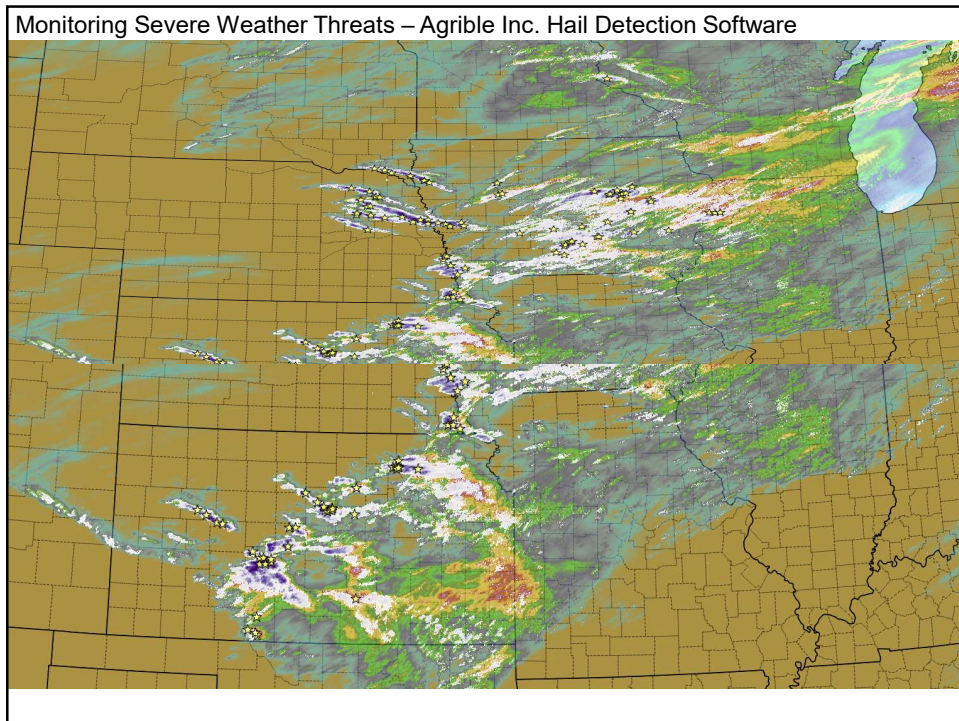
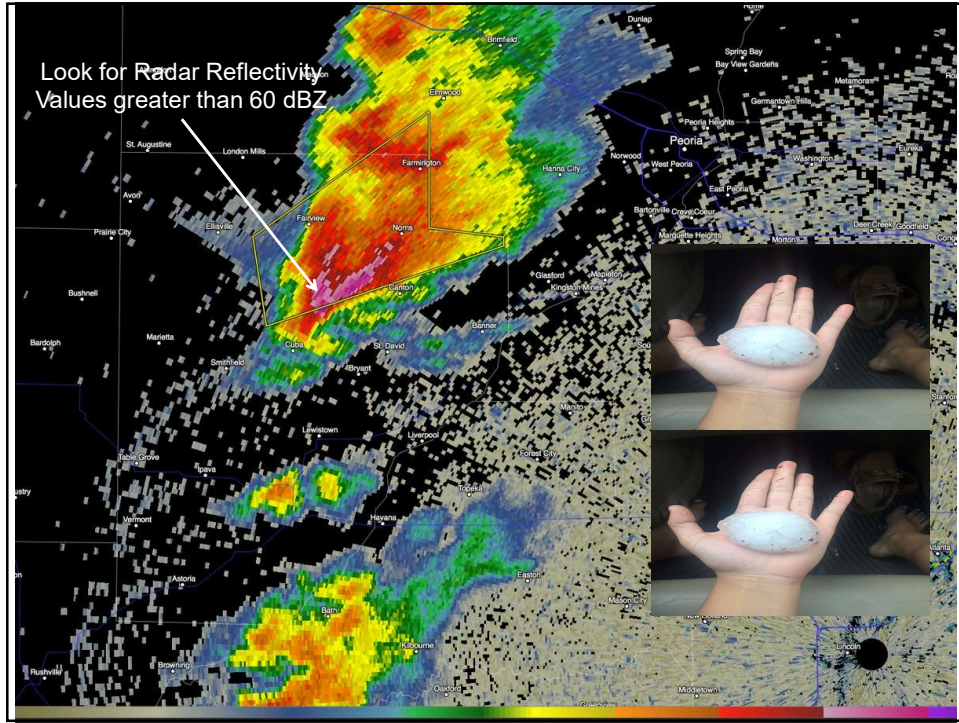
PRELIMINARY SEVERE WEATHER
REPORT DATABASE (ROUGH LOG)

NOAA/Storm Prediction Center Norman, Oklahoma

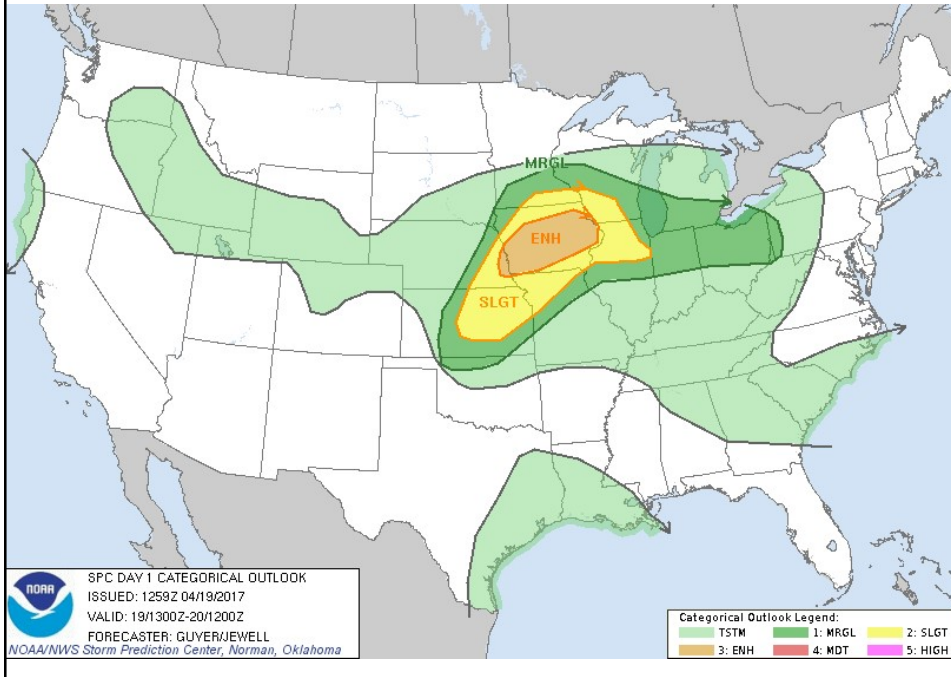
Severe Weather Reports
January 01, 2017 - April 12, 2017

Updated: Wednesday April 12, 2017 11:12 CT

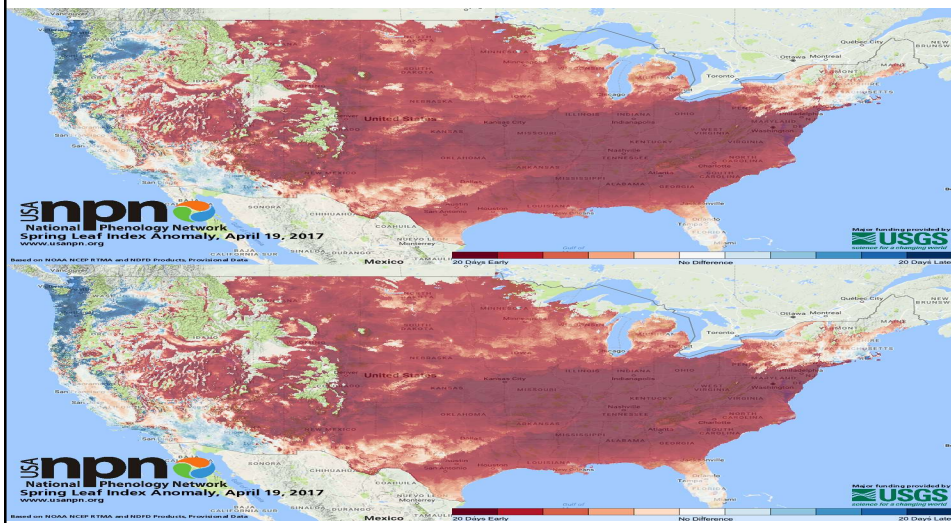
Source: <http://www.spc.noaa.gov/climo/online/monthly/newm.html>



Severe Threat! – <http://www.spc.noaa.gov/>



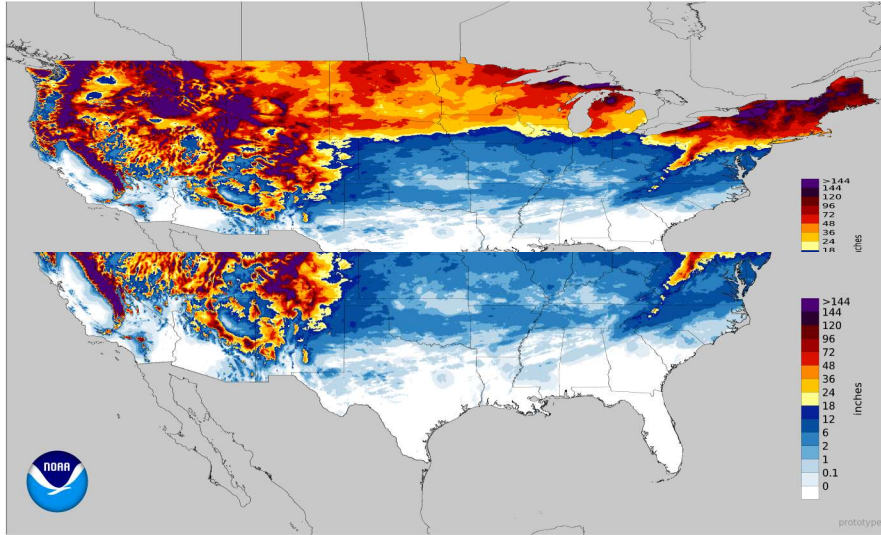
What to Watch in 2017 – Spring Forecast



Source: <https://www.usanpn.org/data/spring>

What to Watch in 2017 – Spring Forecast

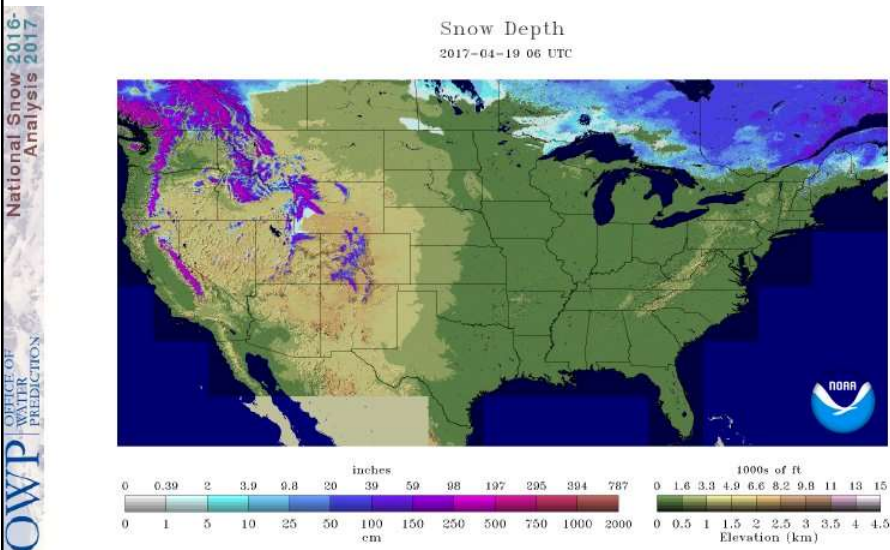
National Snowfall Analysis: accumulation from 2016-09-30 to 2017-04-04
Issued 2017-04-04 15:31:17 UTC



Source: https://www.nohrsc.noaa.gov/snowfall_v2/

What to Watch in 2017 – Spring Forecast

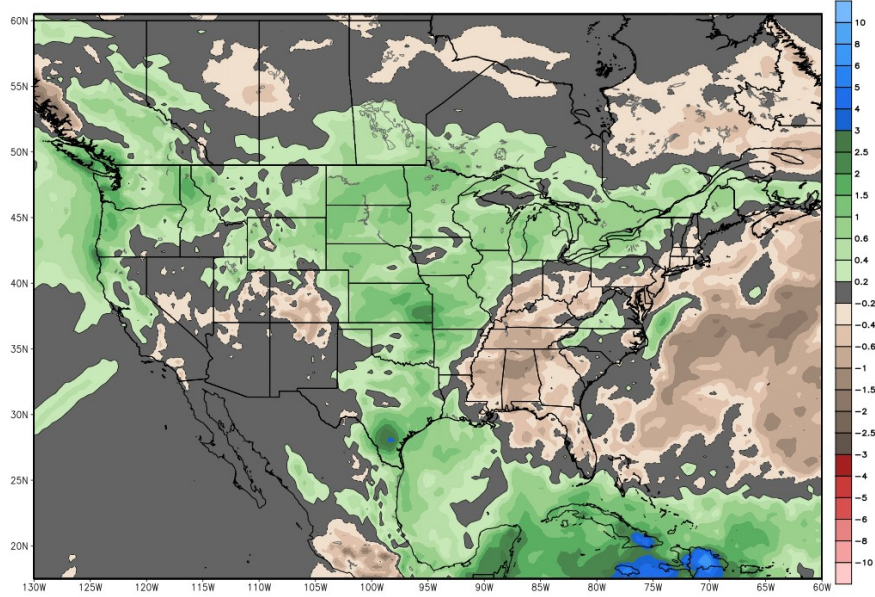
Snow Depth
2017-04-19 06 UTC



Source: <https://www.nohrsc.noaa.gov/nsa/>

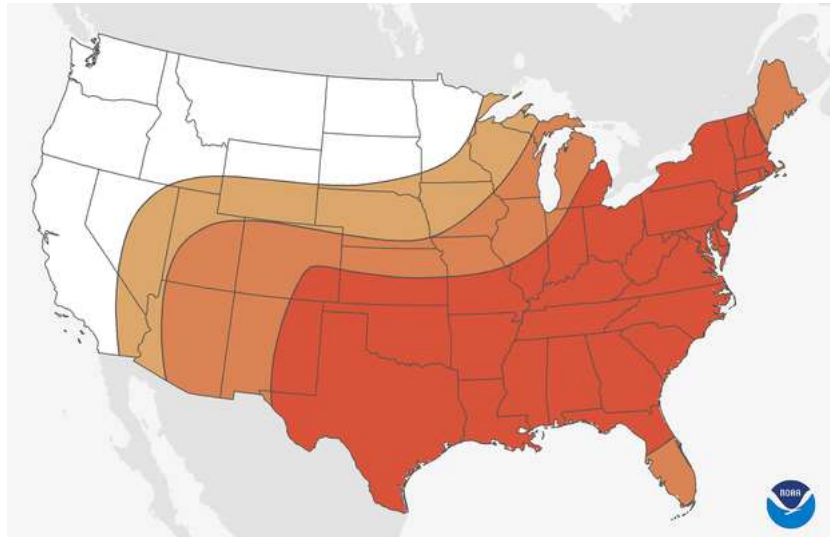
What to Watch in 2017 – Spring Forecast

ECMWF EPS Ensemble Mean 32-day Avg Precipitation Anomaly [inch]
 Init: 00Z17APR2017 -- [768] hr --> Valid on Fri 00Z19MAY2017 Day 0 - Day 32
 Min|Max Anom: -2.3 | 7.5 inch

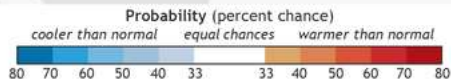


Accumulation between 00Z17APR2017-00Z19MAY2017 | ECMWF EPS 1996-2015 Hindcast Climatology

What to Watch in 2017 – Spring Forecast

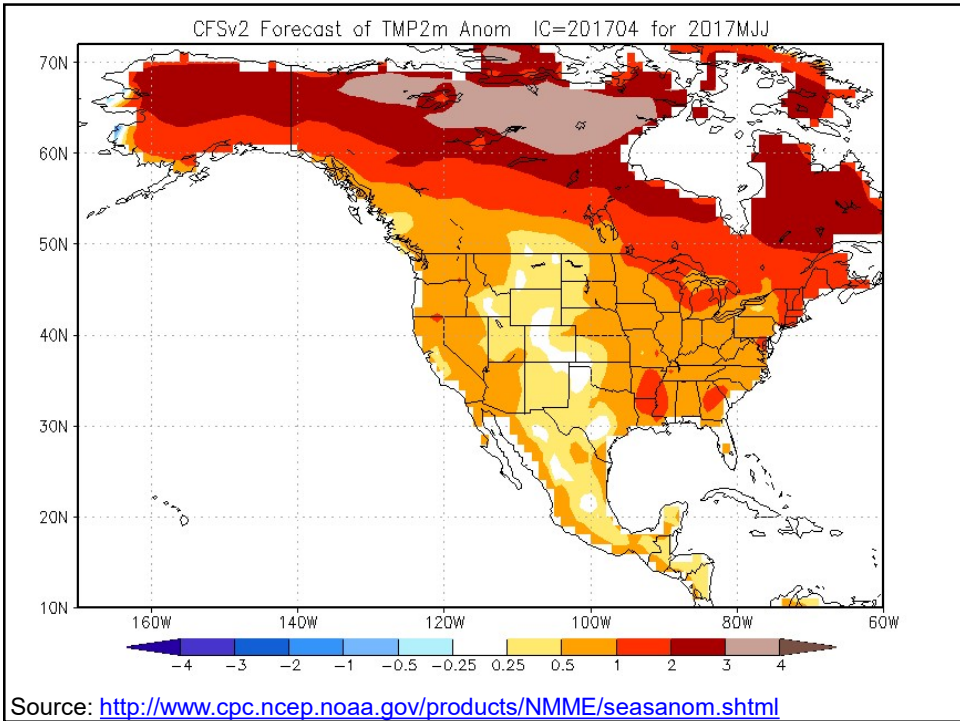
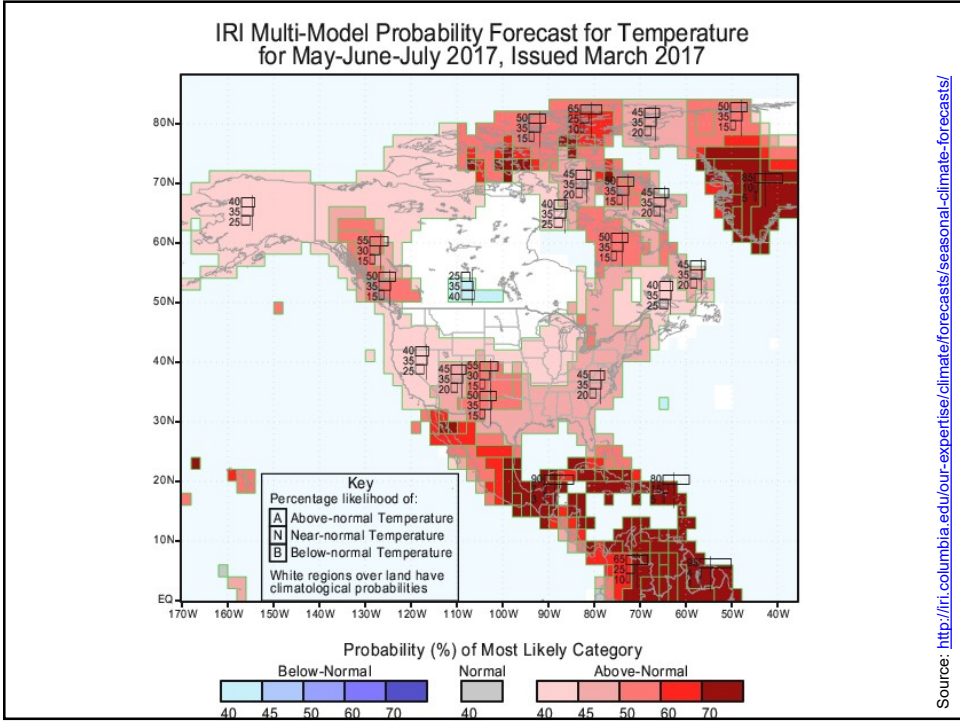


Temperature Outlook
 for April - June
 Issued 16 Mar 2017

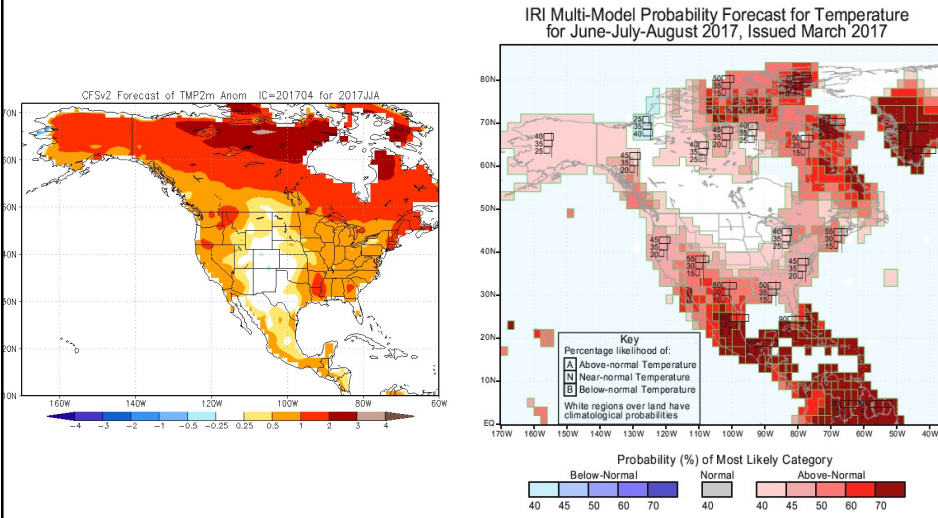


Climate.gov
 Data: CPC

Source: NOAA

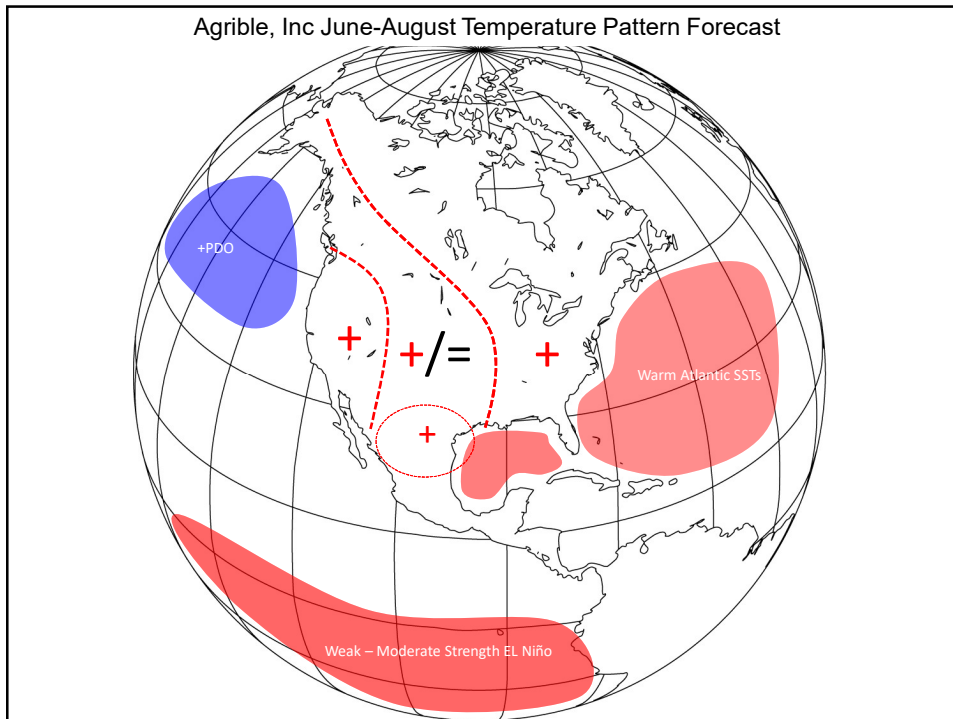


What to Watch in 2017 – Summer Forecast



Source: IRI and NMME

Agrible, Inc June-August Temperature Pattern Forecast

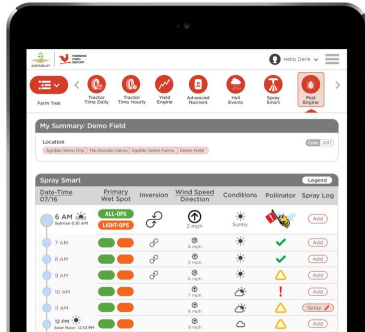


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