

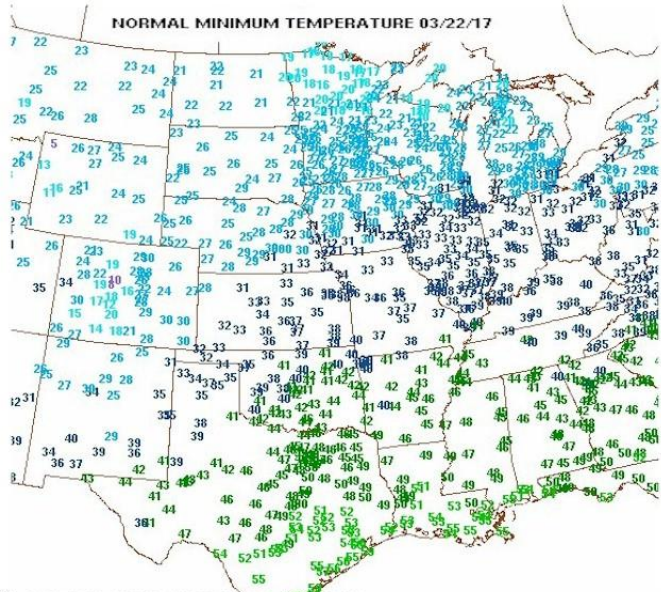
## **USA GRAIN WEATHER 3/22/15**

**MODERATE RAINS for CENTRAL PLAINS MIDWEST 1-5 DAY... SIGNIFICANT PERHAPS HEAVY RAINS FOR HRWW AREAS IN 6-10day ... VERY WET DELTA & ECB IN THE 11-15 D.**

the latest midday weather models have now completed. There are no changes in the 1-5D the European GFS and Canadian models are in strong agreement that 0.75-2.0" 20-50mm rains are going to fall over eastern COL western central NEB into far se SD southern MN ... with a 2ndary area of rain covering much of IA MO ILL IND MI with simialr amounts and coverage. Lesse amounts & coverage will fall across far eastern portions of KS/OK/ARK/ TX LA . In the 6-10 day the 2z operational or regular GFS shifts the significant rains south so that it covers 80% of western& northern TX western & central OK with `1-3"25-75mm rains. But the rains are significantly less on the 12z GFS model over eastern COL / western KS & southern NEB. However the regular Canadian & European keep significant rains of 1-4" / 25-100mm over 75% of Western NEB western & central KS eastern COL. However TX is mostly dry as is western OK on these models. In addition there is a second area of HEAVY rain between 2-6"/50-150mm that covers far eastern portions of TX/ eastern OK... and 80% of LA ARK MO southern ILL and western portions of MS / TN Kentucky. The 11 to 15D= forecast at midday is unchanged with widespread significant rains likely over eastern OK eastern TX ...all the Delta and Deep South into the southern half of the ECB. There are some moderate rains over the HRWW but the model data has these rains generally under 1 "/25mm.

These images show than normal Min and Max temperatures for March 21 and the actual readings with respect to anomalies.

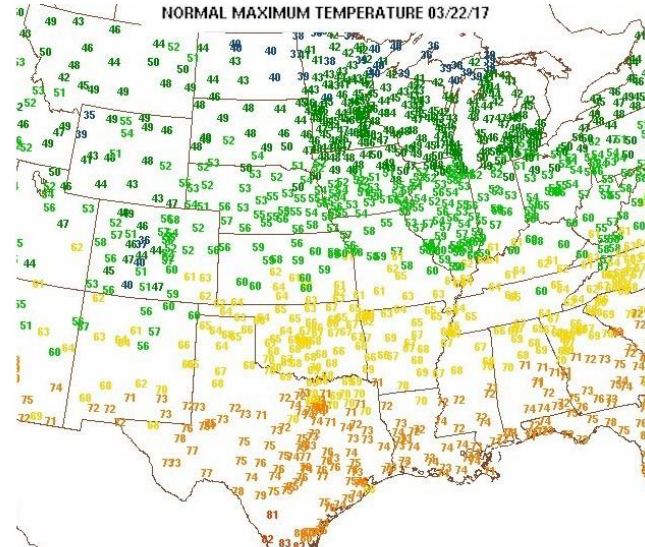
### NORMAL MIN TEMPS 3/21/17



NCEP GFS 850 hPa Temp Anomaly [C] Analysis  
Tue 12Z21MAR2017

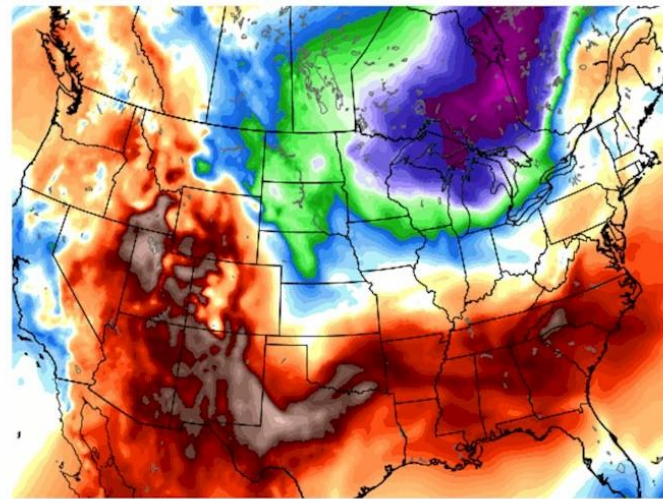
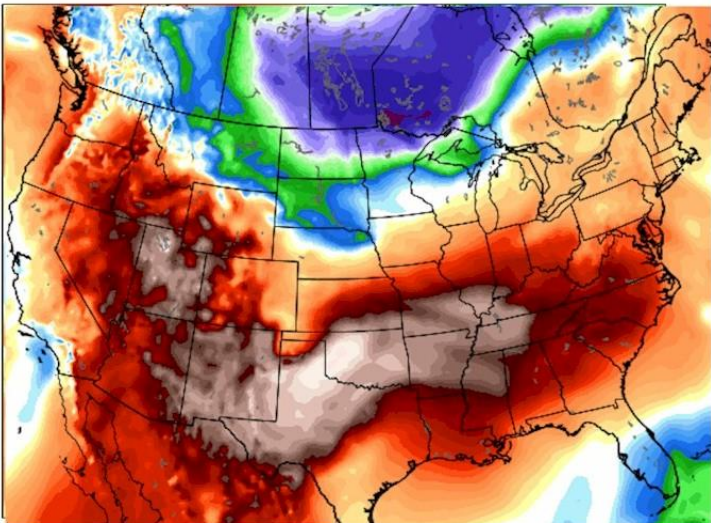
Domain Min/Max -16.6° - 16.5°C

### NORMAL MAX TEMPS 3/21/17



NCEP GFS 850 hPa Temp Anomaly [C] Analysis  
Wed 00Z22MAR2017

Domain Min/Max -17.7° - 15.2°C



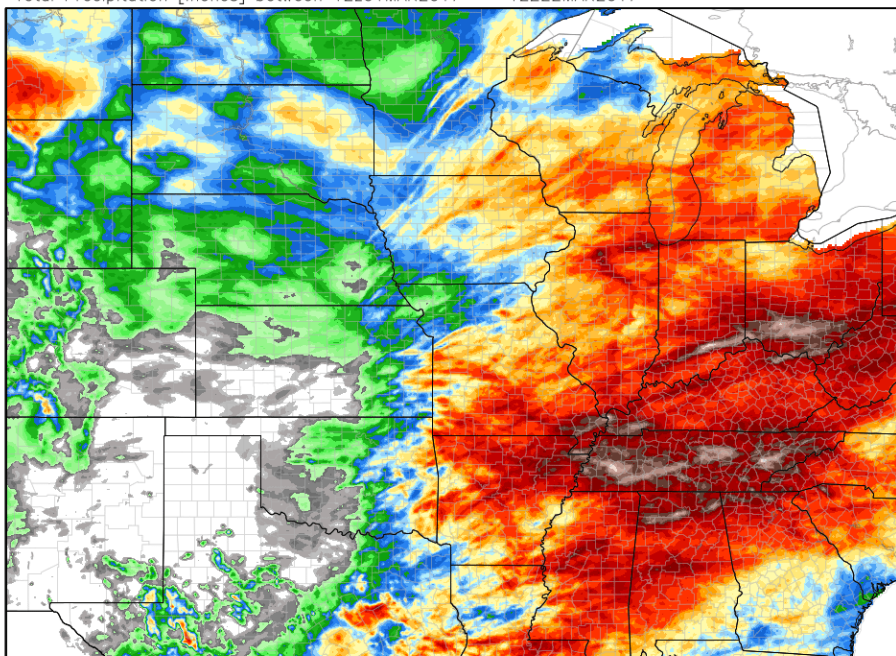
WxBell®

## RADAR <http://radar.weather.gov/Conus/full.php>

There is a band of light to moderate snow over eastern portions of South Dakota far Northwest Iowa eastern portions of North Dakota and far southwest Minnesota. This snows being caused by a warm front which is passing through the Plains and head into the WCB ... and eventually into the Midwest .

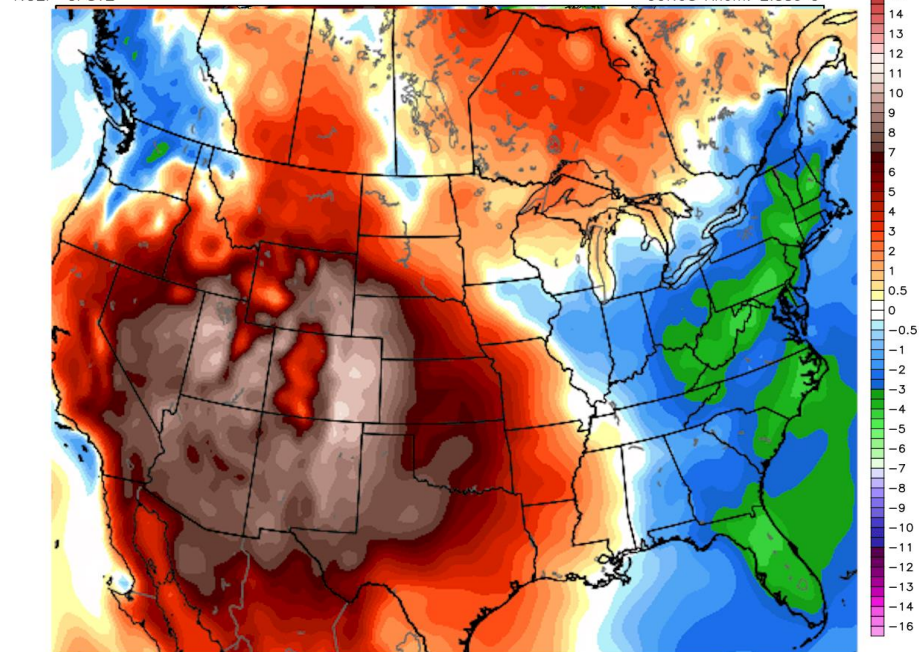
The image on the LEFT refers to rainfall amounts since March 1 and as you can see the heart of the HRWW have seen no significant rain of any kind since March 1. From approximately the line of interstate 35 which runs from Dallas to KC to Minneapolis ... rainfall amounts have been significantly higher with some areas in Indiana ..Ohio ...and Tennessee receiving as much as 5 -6 inches 125-150mm of rain since March 1. The image on the RIGHT shows temperatures over the last seven days.

NWS Precipitation Analysis 4-km HRAP Grid -- MAR MTD Total Accumulation  
Total Precipitation [inches] between 12z01MAR2017 -- 12Z22MAR2017 Domain Max: 7.9 in.



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

Temperature (2-meter) Anomaly [°C] 06Z15MAR2017 --> 00Z22MAR2017 | Average  
NCEP\_CFSv2 CONUS Anom: 2.889°C



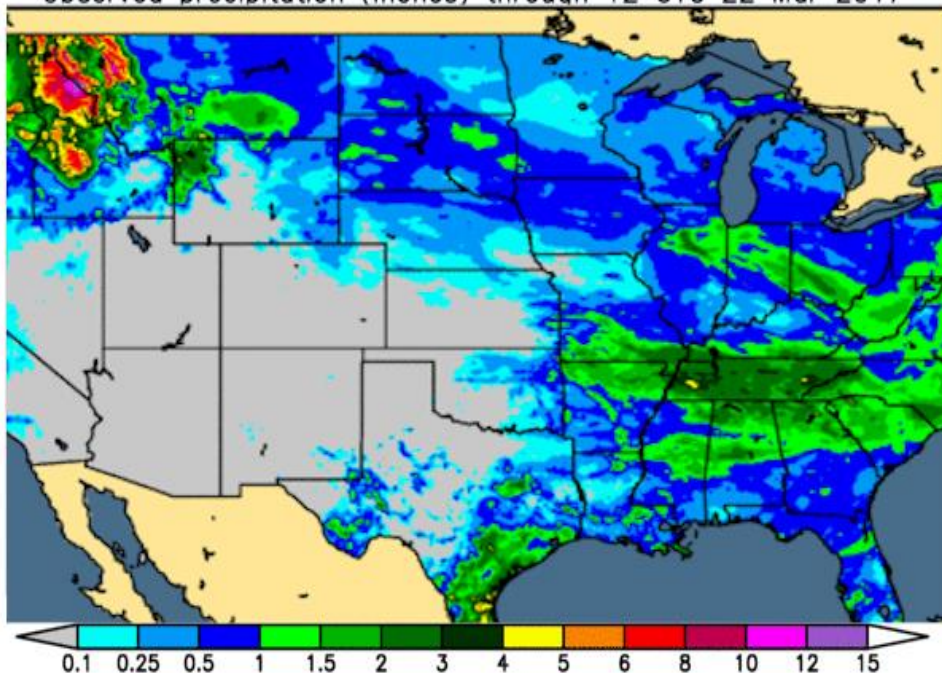
NCEP\_CFSR 1981-2010 Climatology | T574 CFSv2 Analysis Grid | Ryan N. Maue | WeatherBELL

## RAINFALL LAST 14 DAYS

If we look back over last 14 days we see more the same sort of rainfall patterns... all the significant rain has been across the Dakotas and small areas of the Midwest while most of the central and Plains and the Delta regions have been quite dry.

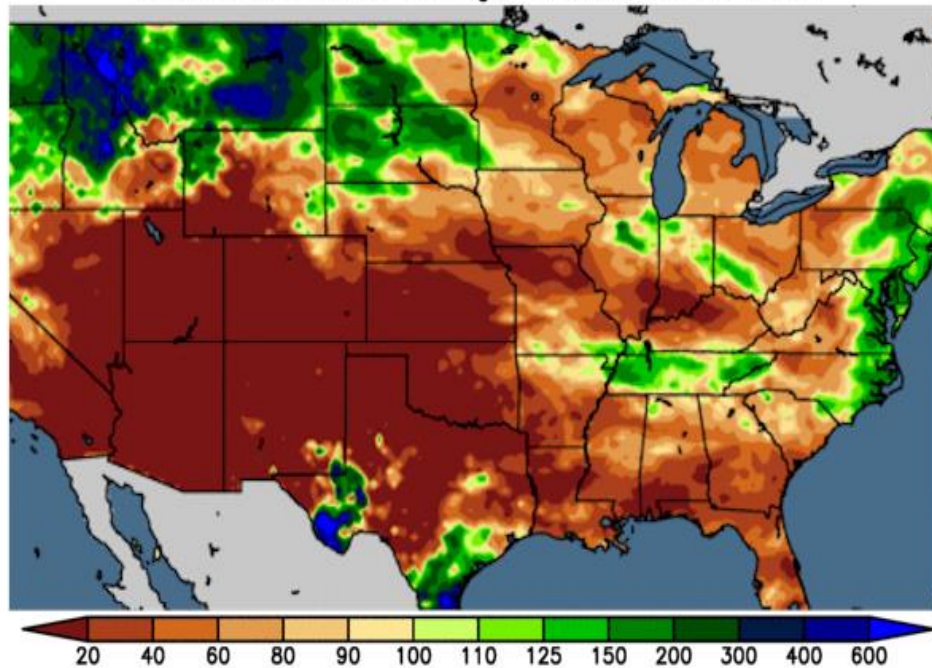
### 14-day Precipitation Analysis

Observed precipitation (inches) through 12 UTC 22 Mar 2017



### 14-day Precipitation Analysis

Percent of normal through 12 UTC 22 Mar 2017



## NEXT 5 DAYS

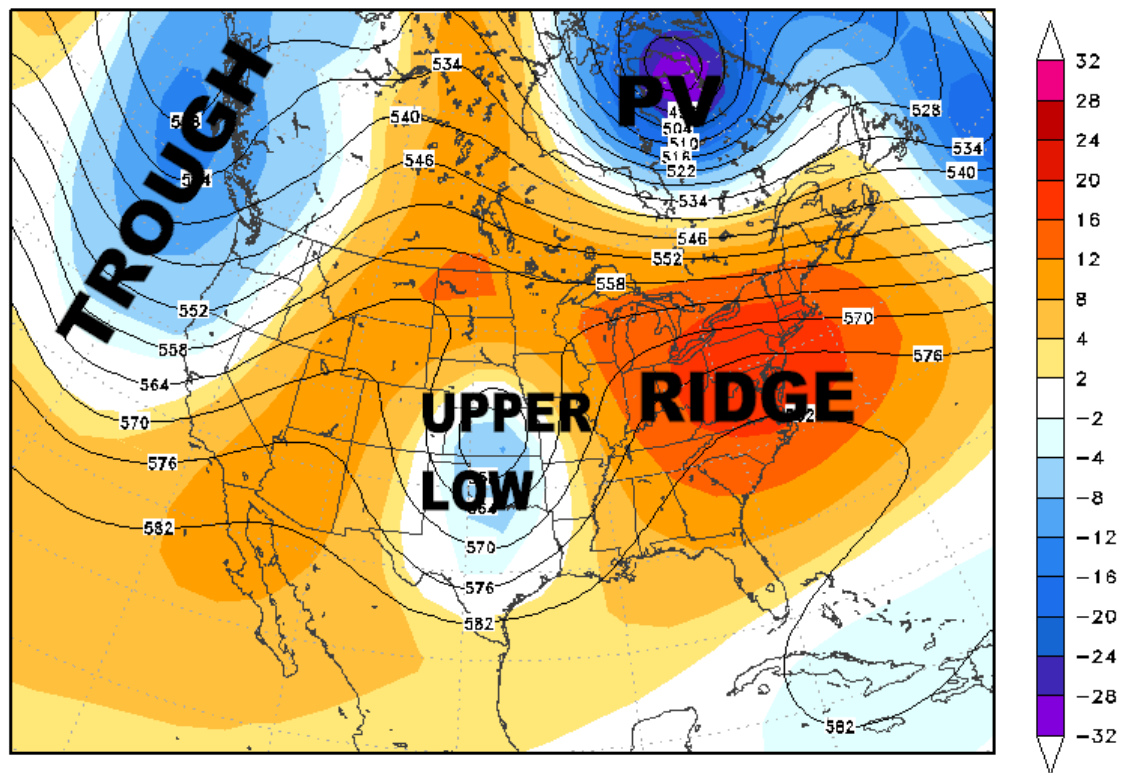
There is not a lot to change in the weather maps for the weather models over the next five days. A strong system coming out of California fed by a very powerful jet stream will develop into a major low pressure area over the central / lower Plains. This system be fairly slow moving and as likely bring about significant severe weather to much of the Plains as well perhaps the WCB and the Delta region.

The weather models are in pretty good agreement as to the amount of rain although the GFS has a bit more rainfall coverage than the European does over portions of Missouri ... eastern Oklahoma ... eastern Texas ... Arkansas ... and Louisiana. Temperatures look to run above normal.. Note that the heart of the HRWW areas are dry over the next five days.

### UPPER AIR MAP MARCH 7

500 mb Height Anomaly (dm)  
Valid: 00z Sat 25 Mar 2017

ECMWF-EPS  
Hour: 72



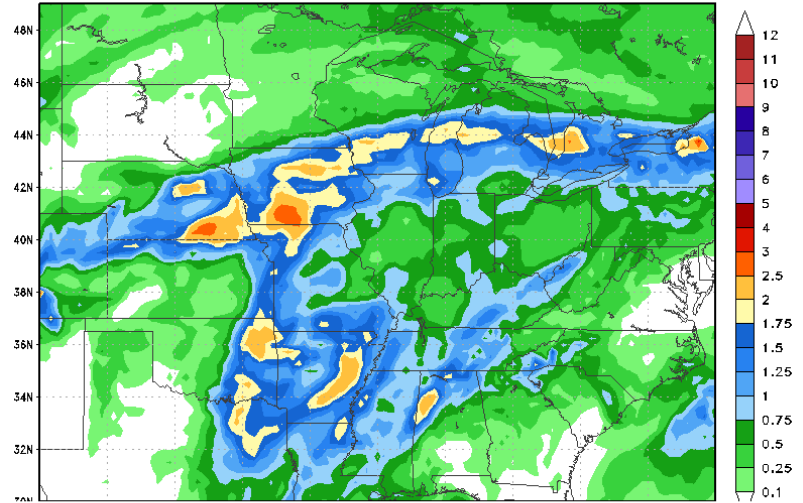
GRADS: COLA/IGES

StormVistaWxModels.com

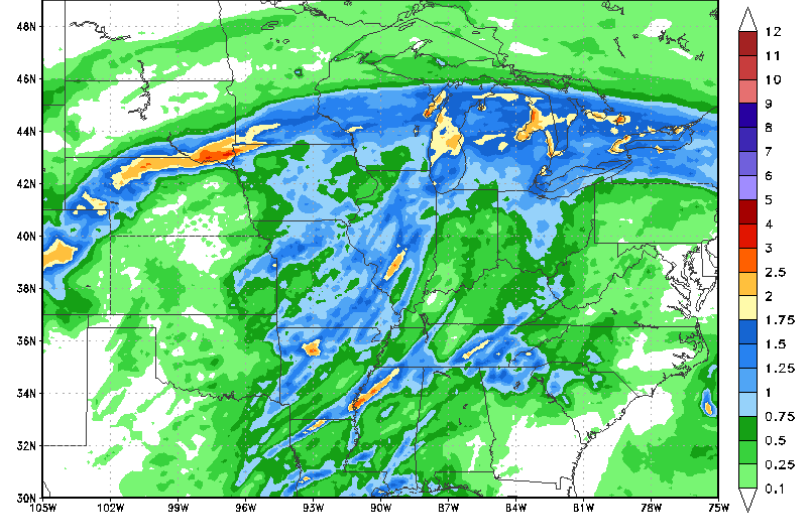
Init: 00z Wed 22 Mar 2017  
2017-03-22-03:12

# 1 - 5 DAY TEMP ANOMALIES PRECIP ANOMALIES

120 Hour Total Precipitation (in)  
Valid: 00z Wed 22 Mar 2017 - 00z Mon 27 Mar 2017  
GFS-MAXRES  
Hour: 0 - 120

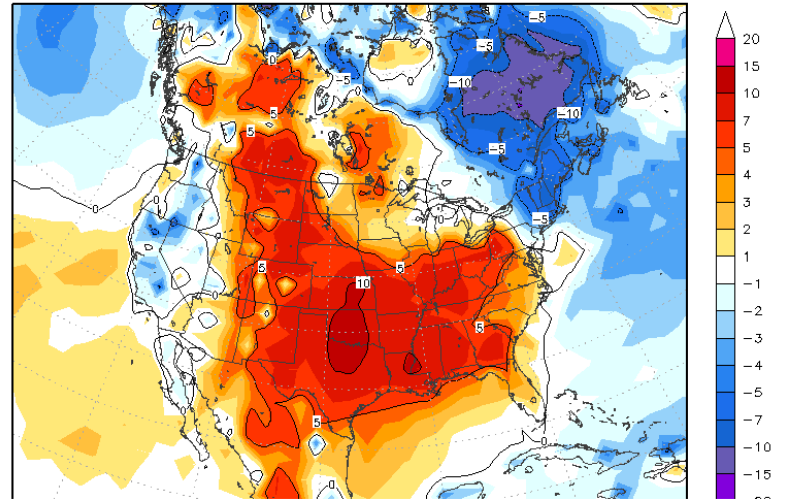


120 Hour Total Precipitation (in)  
Valid: 00z Wed 22 Mar 2017 - 00z Mon 27 Mar 2017  
ECMWF-MAXRES  
Hour: 0 - 120

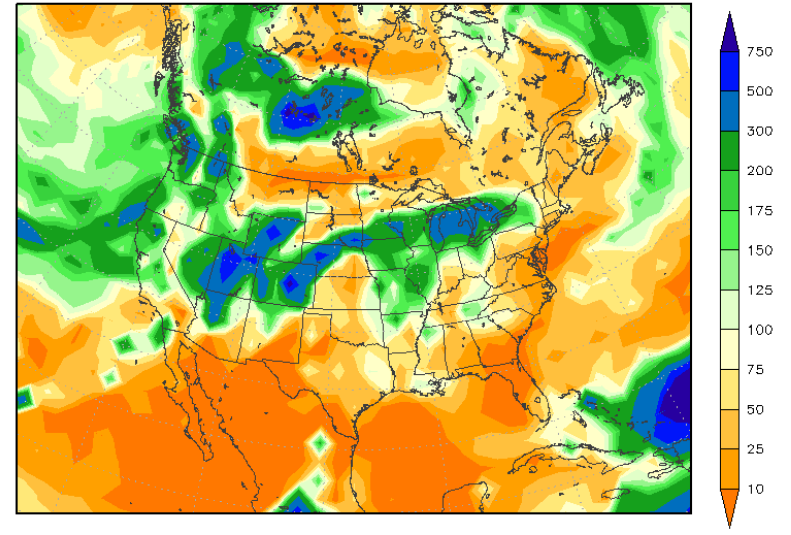


Max: 3.3 in  
Min: 0.0 in  
StormVistaWxModels.com  
Init: 00z Wed 22 Mar 2017  
2017-03-22-06:20

1-5 Day Mean 2 m Temperature Anomaly (F)  
Valid: 00z Wed 22 Mar 2017 - 00z Mon 27 Mar 2017  
ECMWF-EPS  
Hour: 0 - 120



1-5 Day Precipitation Anomaly (% of Normal)  
Valid: 00z Wed 22 Mar 2017 - 00z Mon 27 Mar 2017  
ECMWF  
Hour: 0 - 120



StormVistaWxModels.com  
Init: 00z Wed 22 Mar 2017  
2017-03-22-02:20

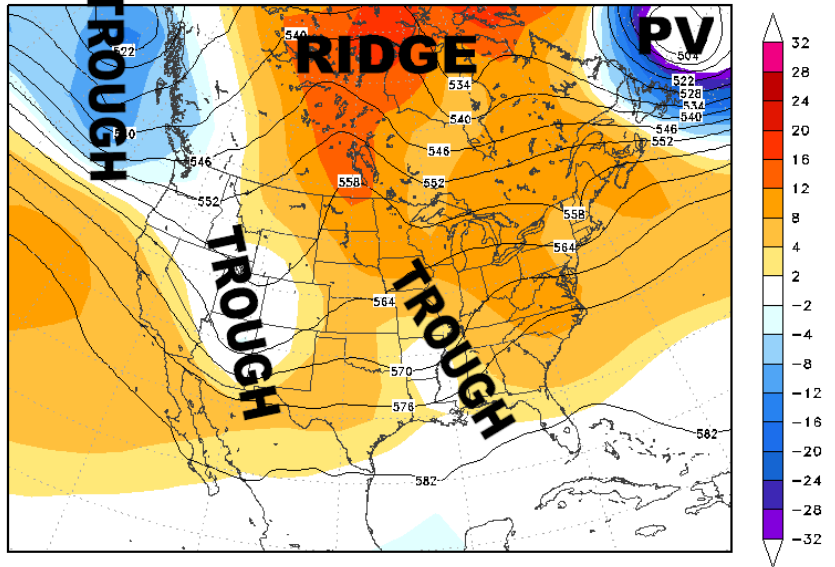
GRADS: OOLA/IBES

# 6-10 DAY

-- the system over the Midwest moves slowly eastward and will bring moderate rain to the ECB on the 27 and 28. But there is already a new trough and low pressure area in California by the 27. Because of the strong blocking pattern over the Great Lakes and south central Canada ...both of these systems will be slow moving and as a result will enhance rainfall amounts and coverage.

The operational GFS and European models as well as the GFS and European ensembles shows significant rains over the heart of the HRWW areas ...into the Delta and moderate to significant rains over a good portion of the Midwest. Temperatures continue to run above normal from the central and eastern portions of Texas ...into the ECB and into the Middle Atlantic region and over much of south central Canada. Notice that the rainfall anomalies are quite impressive with large areas ranging from 150 to 350% above normal over the Plains and most of the Midwest and Delta regions

500 mb Height Anomaly (dm)  
Valid: 00z Tue 28 Mar 2017  
ECMWF  
Hour: 144

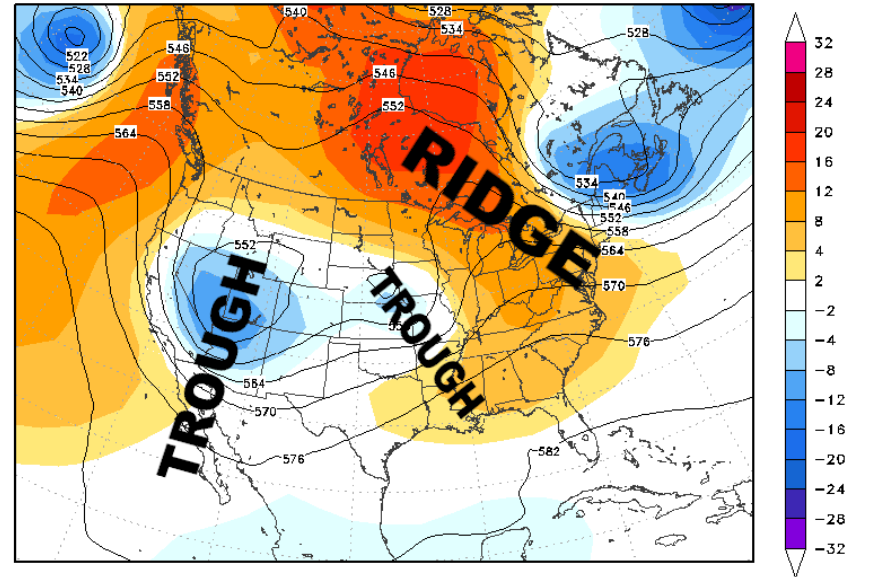


GRADS: COLA/IGES

StormVistaWxModels.com

Init: 00z Wed 22 Mar 2017  
2017-03-22-02:27

500 mb Height Anomaly (dm)  
Valid: 12z Wed 29 Mar 2017  
ECMWF  
Hour: 180



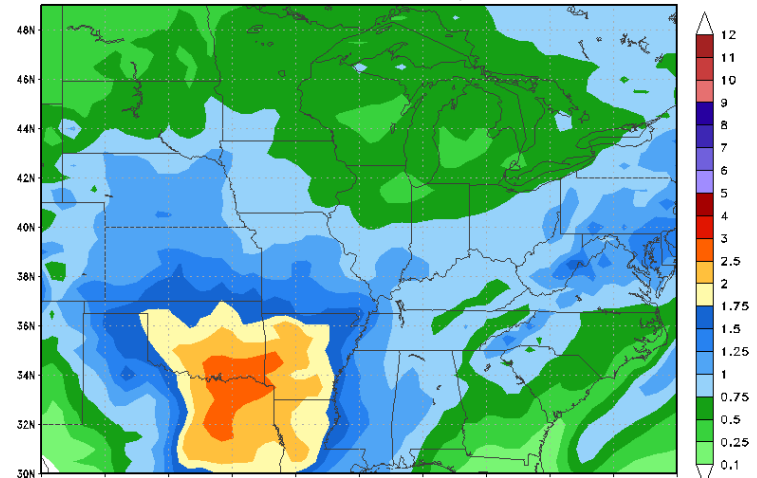
GRADS: COLA/IGES

StormVistaWxModels.com

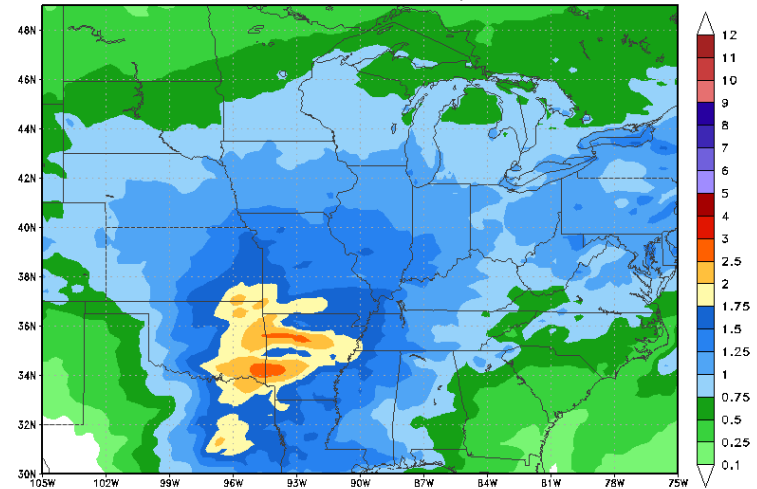
Init: 00z Wed 22 Mar 2017  
2017-03-22-02:39

# 6-10 DAY TEMP ANOMALIES    PRECIP ANOMALIES

120 Hour Total Precipitation (in)      GFS-ENS-MAXRES  
Valid: 00z Mon 27 Mar 2017 - 00z Sat 01 Apr 2017      Hour: 120 - 240

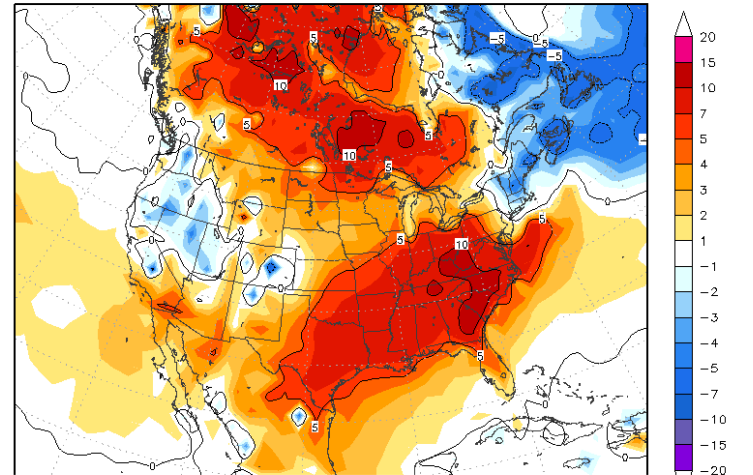


120 Hour Total Precipitation (in)      ECMWF-EPS-MAXRES  
Valid: 00z Mon 27 Mar 2017 - 00z Sat 01 Apr 2017      Hour: 120 - 240

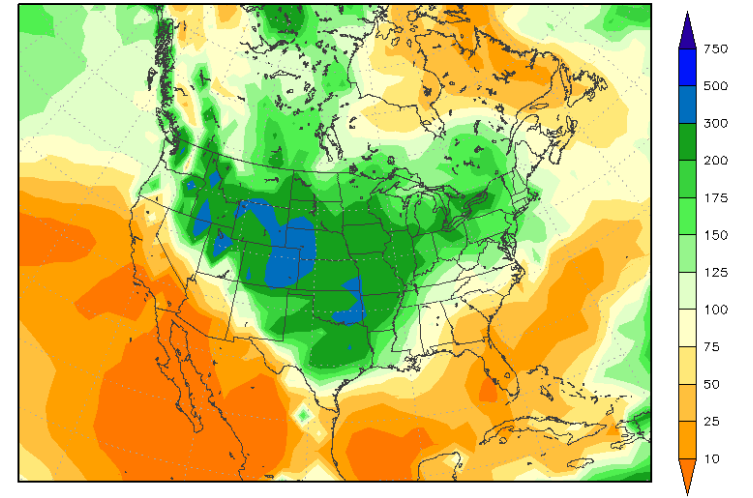


Max: 3.0 in      StormVistaWxModels.com      Init: 00z Wed 22 Mar 2017  
Min: 0.0 in      2017-03-22-07:41

6-10 Day Mean 2 m Temperature Anomaly (F)      ECMWF-EPS  
Valid: 00z Mon 27 Mar 2017 - 00z Sat 01 Apr 2017      Hour: 120 - 240



6-10 Day Precipitation Anomaly (% of Normal)      ECMWF-EPS  
Valid: 00z Mon 27 Mar 2017 - 00z Sat 01 Apr 2017      Hour: 120 - 240



StormVistaWxModels.com      Init: 00z Wed 22 Mar 2017  
©ADS: OOLA/IDES      2017-03-22-03:40



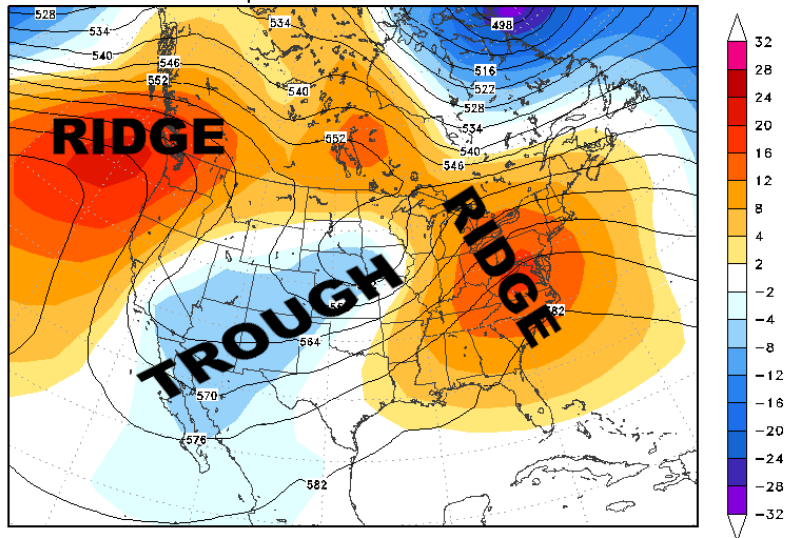
# 11-15 DAY

The pattern remains largely unchanged in the 11 to 15 day. The models continue show a deep and persistent trough extending from the Midwest into the central Rockies ...then back into the Southwestern states. There is a strong ridge in the jet stream over the Eastern Pacific Ocean and another one off the Southeastern coast. This sort of r pattern means that waves of LOW pressure will be coming out of the trough in the Southwestern states and track in a ENE direction across the heart of the Plains ...the Midwest ...and into the Middle Atlantic region. In addition because of the stronger than normal Jetstream more severe weather potential exists in the pattern in the 11 to 15 day

As you can see the rainfall anomalies are slanted more and WSW- ENE alignment running from eastern portions of Oklahoma /Texas/ southeastern Kansas /all of the Delta and the Deep south ..and most of the ECB. The WCB some sees some moderate rain but not nearly as heavy.

Temperatures are somewhat cooler with the trough covering much of the country ...while Rainfall anomalies are Above and or much Above Normal... the Deep south and Delta regions as well as the East Coast and the ECB..

500 mb Height Anomaly (dm)  
Valid: 00z Sat 01 Apr 2017  
ECMWF  
Hour: 240

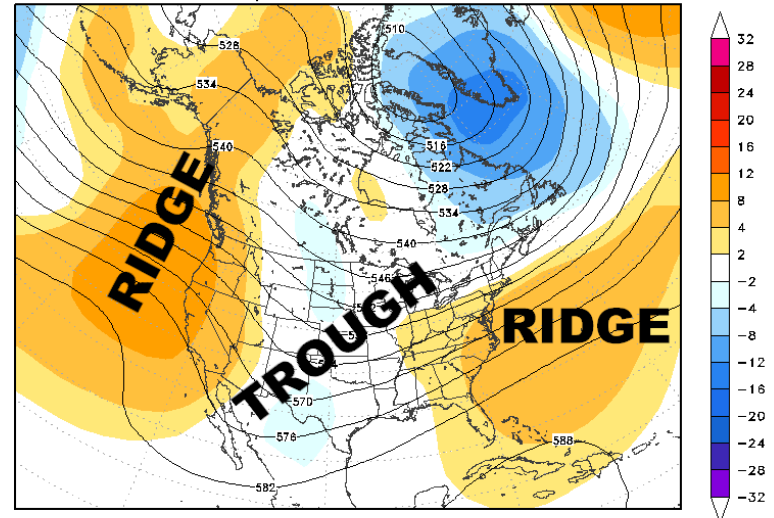


GrADS: COLA/IGES

StormVistaWxModels.com

Init: 00z Wed 22 Mar 2017  
2017-03-22-02:55

500 mb Height Anomaly (dm)  
Valid: 12z Mon 03 Apr 2017  
ECMWF-EPS  
Hour: 300



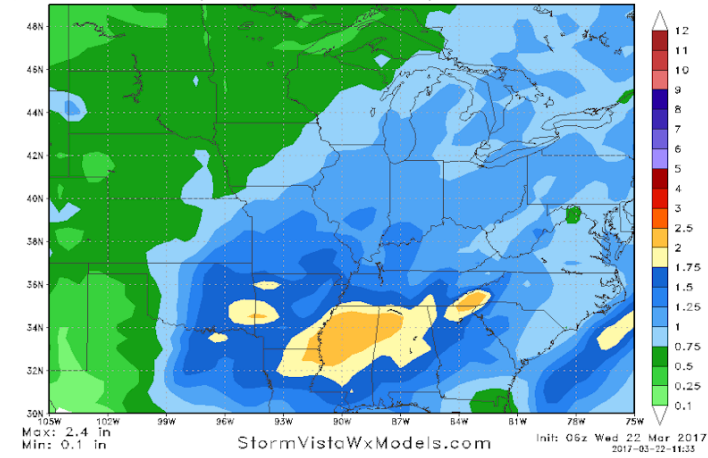
GrADS: COLA/IGES

StormVistaWxModels.com

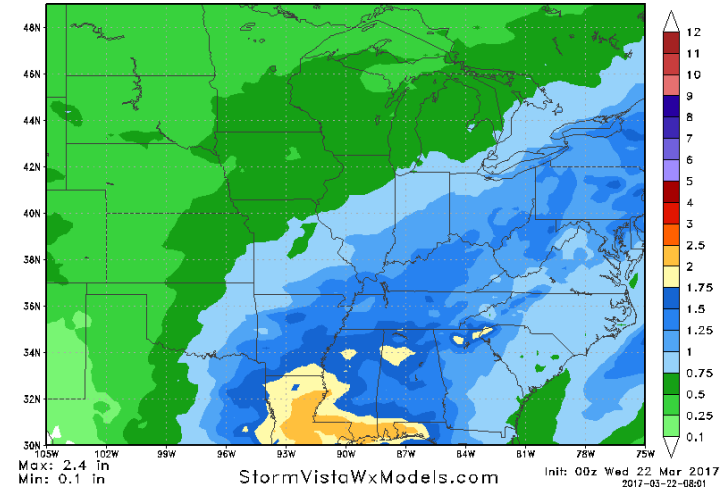
Init: 00z Wed 22 Mar 2017  
2017-03-22-03:50

# 11-15 DAY TEMP ANOMALIES    PRECIP ANOMALIES

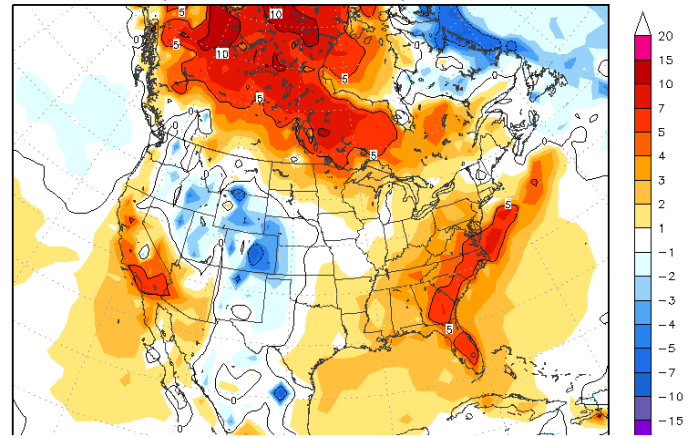
120 Hour Total Precipitation (in)  
Valid: 06z Sat 01 Apr 2017 - 06z Thu 06 Apr 2017



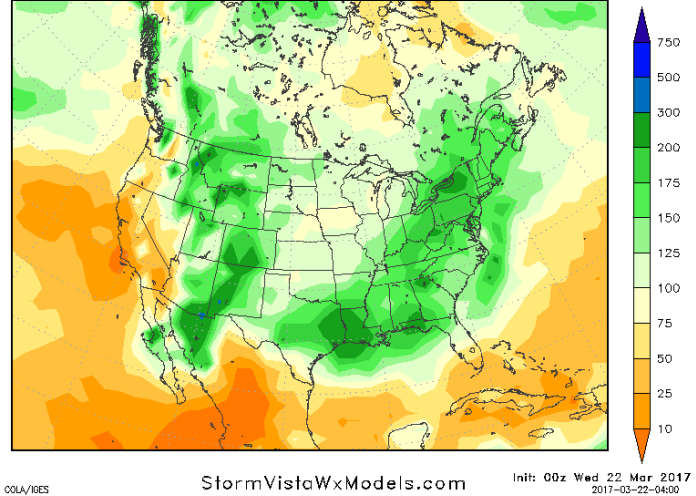
120 Hour Total Precipitation (in)  
Valid: 00z Sat 01 Apr 2017 - 00z Thu 06 Apr 2017



11-15 Day Mean 2 m Temperature Anomaly (F)  
Valid: 00z Sat 01 Apr 2017 - 00z Thu 06 Apr 2017



11-15 Day Precipitation Anomaly (% of Normal)  
Valid: 00z Sat 01 Apr 2017 - 00z Thu 06 Apr 2017



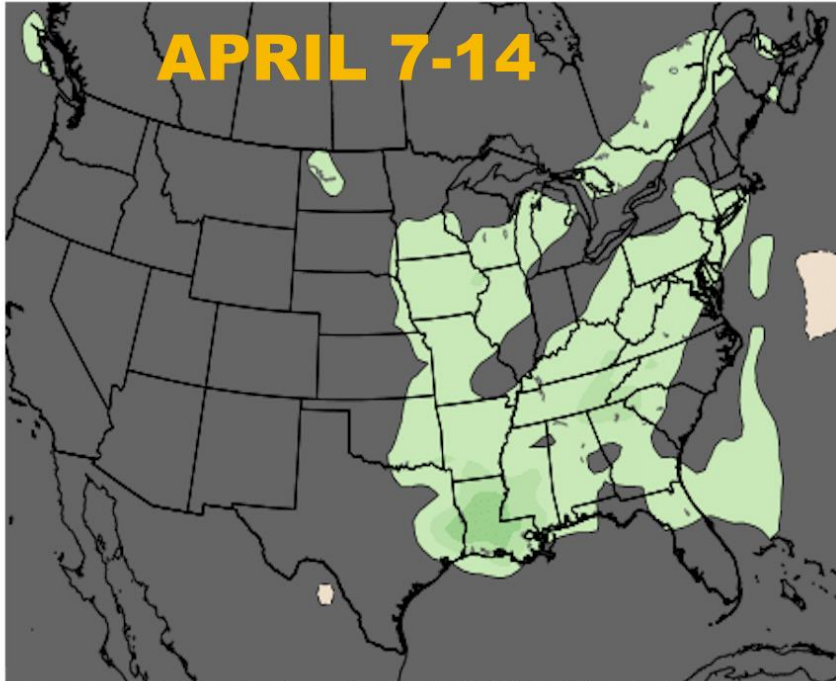
QVDS: COLA/RES

# 16-20 DAY

In the extended forecast the weekly European models continue show a above normal rainfall pattern for most of the Delta ...the Deep South and a good portion of the Midwest. Rainfall anomalies appear to be near normal over the winter wheat areas.

ECMWF EPS Ensemble Mean 7-day Avg Precipitation Anomaly [inch]  
Init: 00Z20MAR2017 -- [300] hr --> Valid on Fri 00Z14APR2017 Day 5.5 - Day 12.5

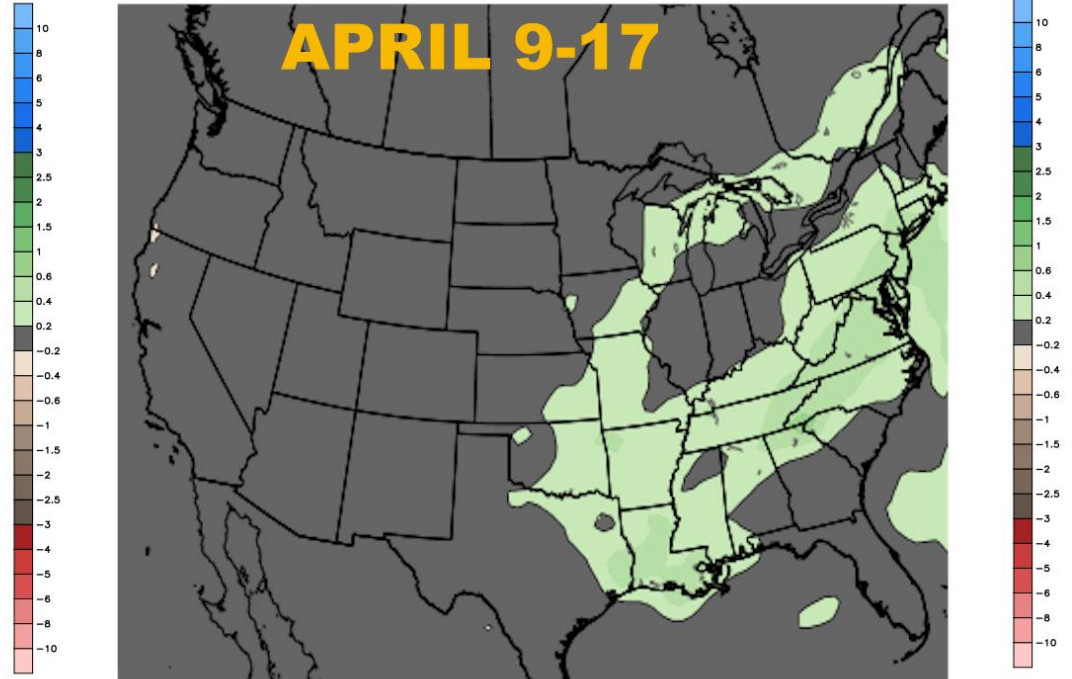
Min|Max Anom: -0.9 | 0.8 inch



Accumulation between 00Z07APR2017-00Z14APR2017 | ECMWF EPS 1997-2016 Hindcast Climatology

ECMWF EPS Ensemble Mean 7-day Avg Precipitation Anomaly [inch]  
Init: 00Z20MAR2017 -- [336] hr --> Valid on Mon 00Z17APR2017 Day 7 - Day 14

Min|Max Anom: -0.9 | 0.9 inch



Accumulation between 00Z10APR2017-00Z17APR2017 | ECMWF EPS 1997-2016 Hindcast Climatology

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