

HRWW USA GRAIN WEATHER

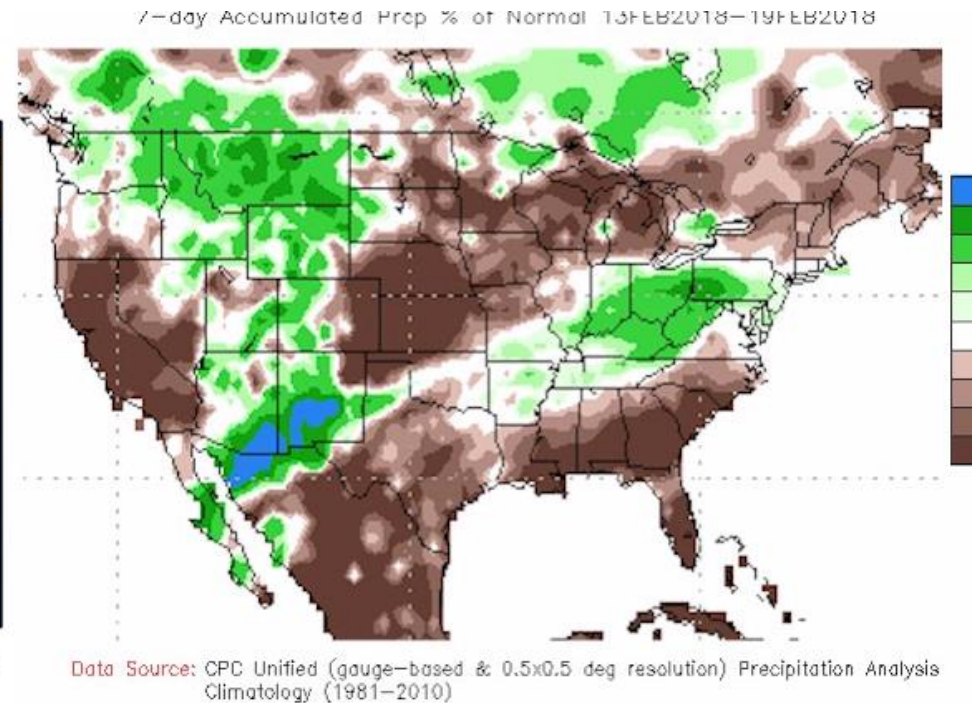
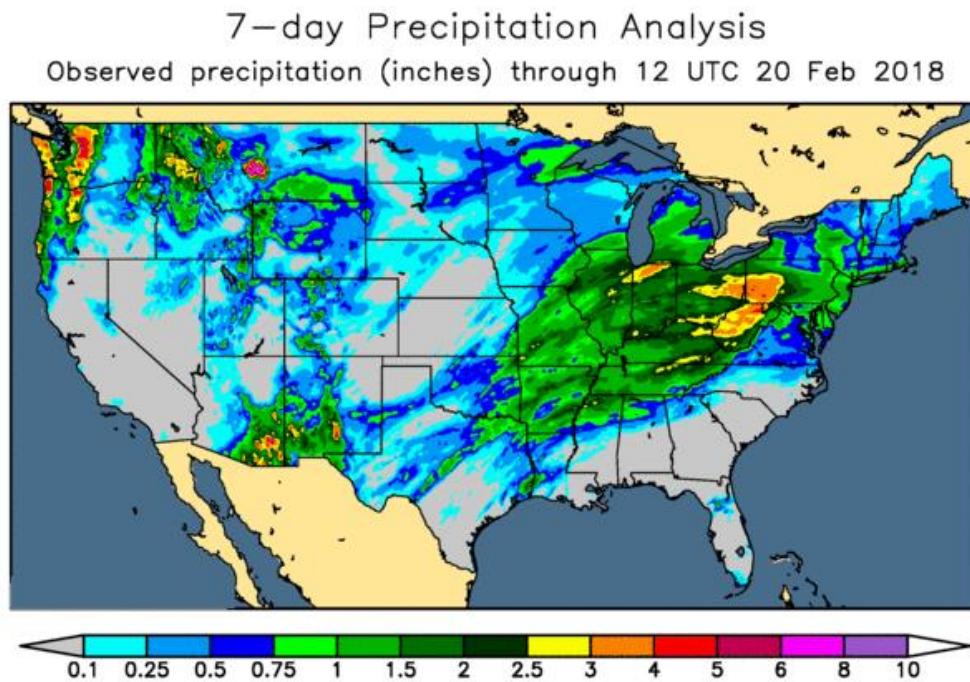
2/20/18 OVERVIEW

SUMMARY

To say that the overall pattern across North America has turned extreme would be on an understatement. The current pattern features a massive trough over the western third of the country and an equally strong a massive ridge over the eastern third of the country. As a result many areas over the Rockies and West Coast as well as the Pacific NW are seeing Much Below normal temperatures while along the eastern third of the country temperatures is seeing Much above normal. Over the next week the battle between these two features will produce significant rains that will run in SW- NE direction (more less from the Delta into the Great Lakes region). Some of this rain will get into the eastern half of Texas and Oklahoma but these rains will not be significant. And the rains will certainly NOT reach western and northern TX western OK and central / western KS. The operational or regular GFS models on early Tuesday morning and the 6z runs did show significant rains over most of the Plains as well as the Delta and significant portions of the Midwest (mostly over the WCB). However the European and GFS ensembles are significantly drier and don't support this sort of really wet extended forecast. In addition the European weeklies and the new CFS model which last week showed areas of moderate or near normal rainfall over the Midwest and the lower Plains are somewhat drier. The MJO moving into phase 8 means DRY for all the Plains and the Midwest but there is some moisture if for western KD OK TX if the MJO can hold together and make it into Phase 1 and Phase 2 in early March.

CONUS RAINFALL PAST 7

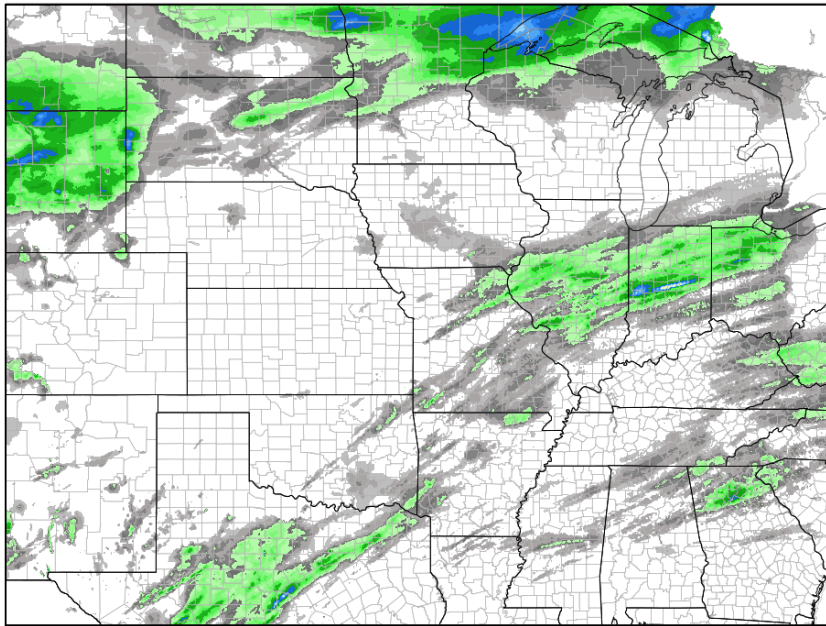
Over the past seven days all the significant rain has been over the Midwest and especially over the ECB. Images show that portions of Indiana Ohio Kentucky the rainfall amounts and in between 2.5-4.0"/ 60-100mm. Much of Missouri Arkansas and Tennessee has also seen significant rain. But there was no significant rain from February 13-20 over any portion of the Plains and WCB. The rainfall anomalies reflect this quite nicely especially over Kansas Nebraska and the WCB.



PLAINS/ DELTA/ MIDWEST RAINFALL PAST 2 DAYS

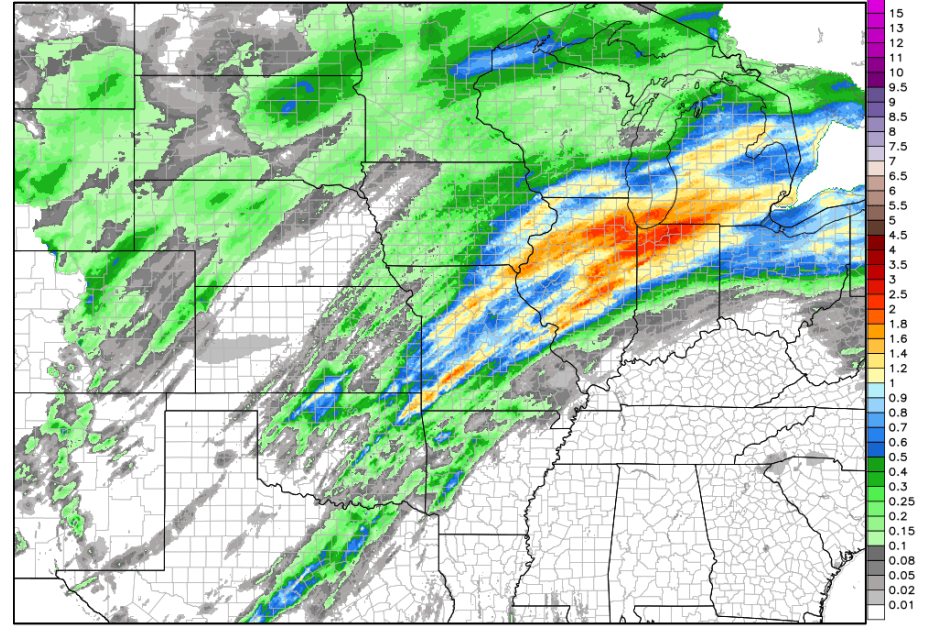
Over the past two days moderate to significant rain has fallen over 70% of Illinois Indiana except for the far southern 25% of those states with rainfall amounts between 0.50-1.5" / 12-38mm. In Central Missouri rainfall amounts of also been moderate to significant with amounts between 0.25-1.0"/6-25mm. There have also been some light rainfall amounts over portions of the Dakotas western Nebraska and Wisconsin but rainfall amounts here were under 0.50"/12mm. Over central and Eastern Iowa the rainfall amounts were a little heavier 0.25-1.0"/6-25mm

NWS Precipitation Analysis 4-km HRAP Grid -- 1-day Total Accumulation Domain Max: 1.4 in.
 Total Precipitation [inches] 1 days 12Z18FEB2018 --> through --> 12Z19FEB2018



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

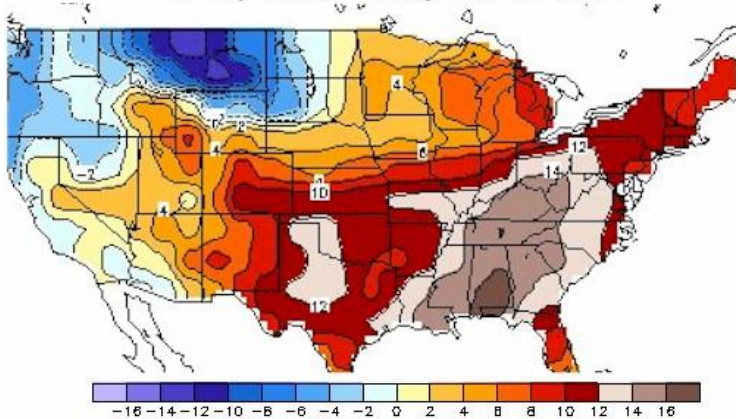
NWS Precipitation Analysis 4-km HRAP Grid -- 1-day Total Accumulation Domain Max: 2.9 in.
 Total Precipitation [inches] 1 days 12Z19FEB2018 --> through --> 12Z20FEB2018



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

CONUS TEMPERATURE ANOMALIES PAST 5 DAYS

Mean Temp (F) Anomaly
 5-day mean ending Feb 18 2018

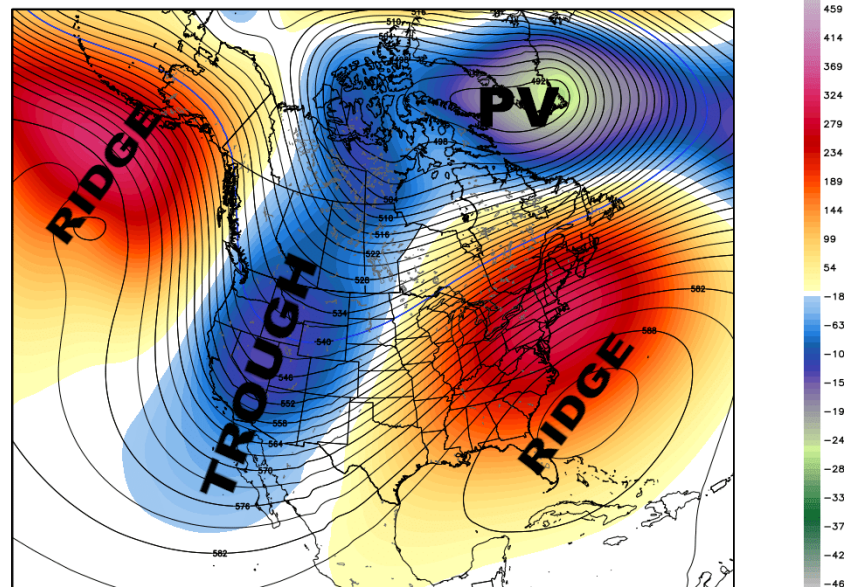


Temperatures over the last 5 days showing extreme warmth from Interstate 70 south with many areas saying temperature anomalies of 10-20° above normal for mid February. North of Interstate 70 into the Great Lakes and Minnesota temperature anomalies have ranged from +2 to +6F above normal.

1-5 DAY

The overall Jetstream pattern remains rather extreme. As a monstrous trough over the western CONUS and a equally powerful and monstrously large ridge over the southeastern CONUS. These two features are obviously connected . Over the western third of the country there are many record low temperatures being said and the Rockies and the Pacific Northwest as Wells California. Over the eastern U.S. there many areas of record warm temperatures period . In between these two powerful features will be a stalled front and waves of LOW pressure will be developing on the front bringing significant rain to portions of the Delta and the Midwest over the next several days.

ECMWF EPS Ensemble Mean 500 hPa Geopotential Height [dm] & Anomaly [m] fx: [120] hr --> Sun 12Z25FEB2018
INIT: 12Z20FEB2018 5-day Mean between 12Z20FEB2018 & 12Z25FEB2018 Day 0 - Day 5 Max: -271.4 | 333.3 m

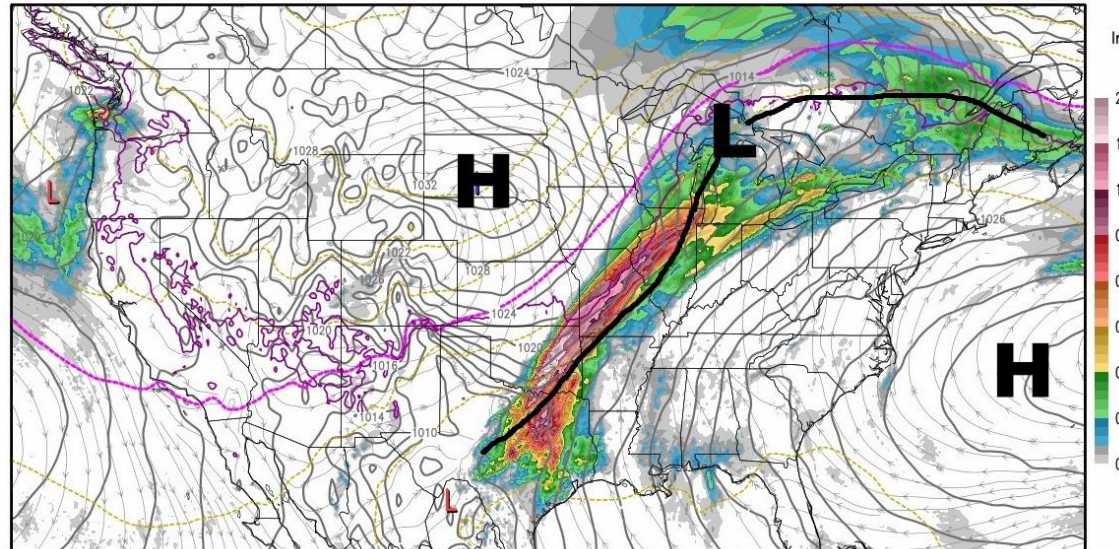


These images show the service weather maps all the next several days for the stalled front. As you can see the front moves for a little over next several days.

MSLP, 6hr Precip, Wind, Thickness, 32f

Valid Wednesday 00Z 02/21

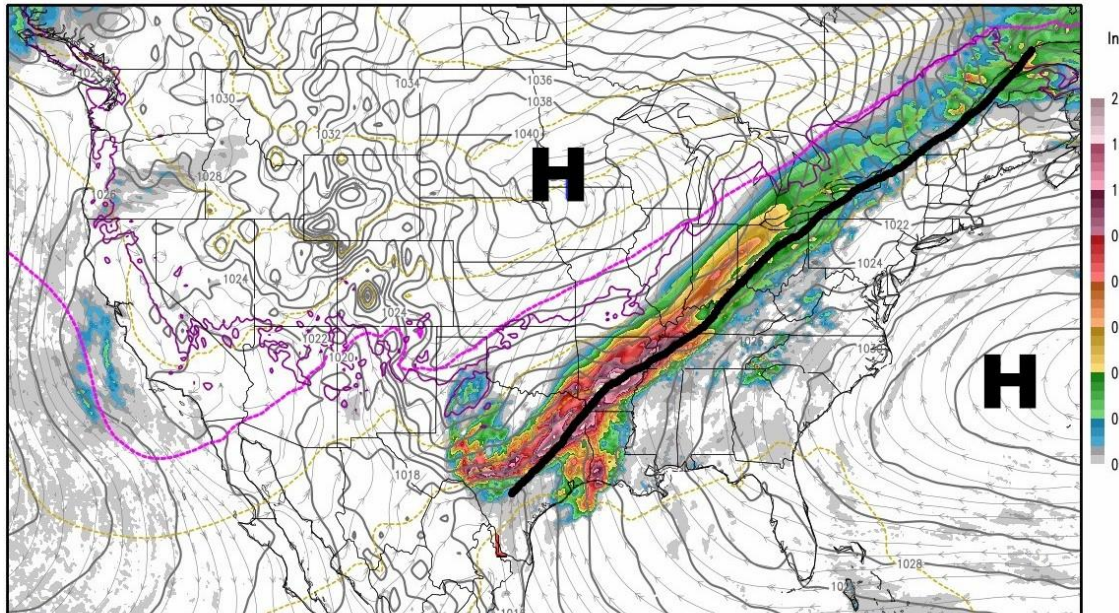
EuroWX.com



MSLP, 6hr Precip, Wind, Thickness, 32f

Valid Wednesday 18Z 02/21

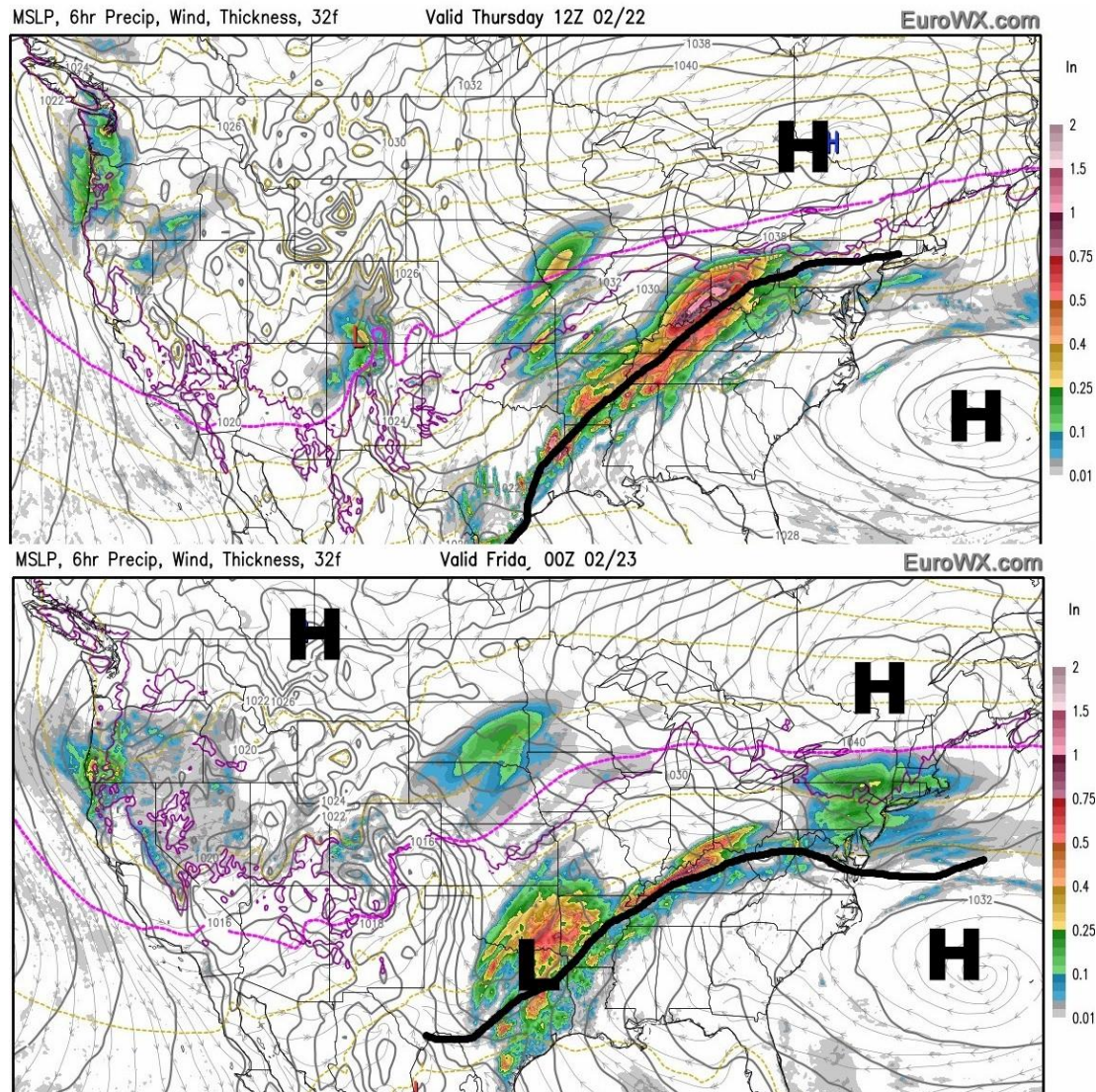
EuroWX.com



ECMWF HRES MODEL RUN 00Z 02/20 42hr FORECAST

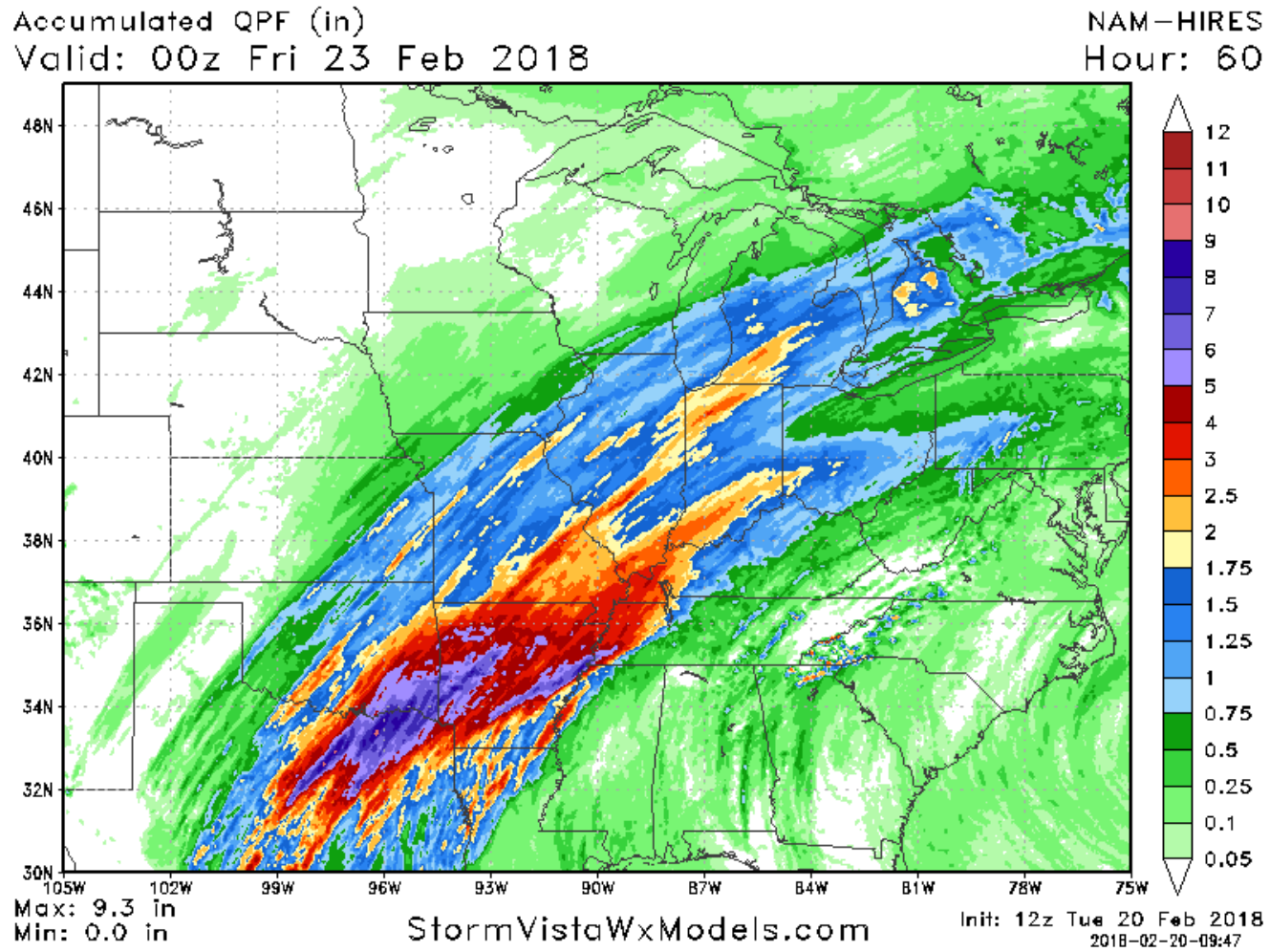
© 2018 ECMWF

This service is based on data and products of the European Center for Medium-range Weather Forecasts.



This image shows the high resolution short range 3km NAM model total rainfall all the next 60 hours which takes is to Thursday evenings 6pm CDT. This is not a surprise when compared to what the data showing last week but the rain is significant over the eastern half of Texas this southeastern half of Oklahoma where rainfall amounts between one and 6 inches are possible. Similar rains cover much of central and Northern Arkansas. The rains are also looking for other significant for much of Missouri with rainfall amounts between 1.5 and 3 inches and these rains extend into the western 25% of Tennessee the eastern half of Kentucky most of Illinois and Indiana. Note again that Southern

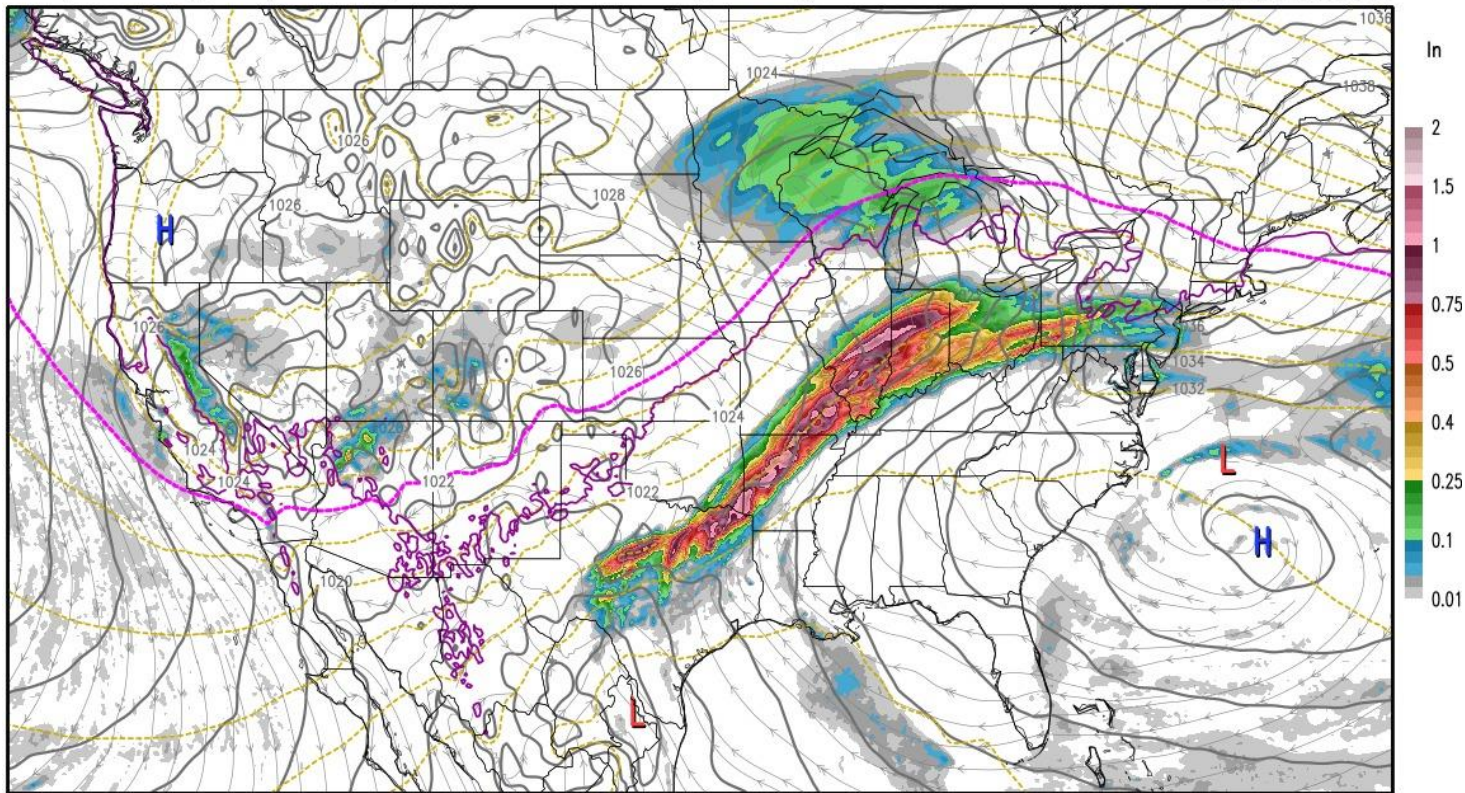
Texas Southern Oklahoma most of Kansas does not see the significant rains.



MSLP, 6hr Precip, Wind, Thickness, 32f

Valid Friday 12Z 02/23

EuroWX.com



ECMWF HRES MODEL RUN 00Z 02/20 84hr FORECAST

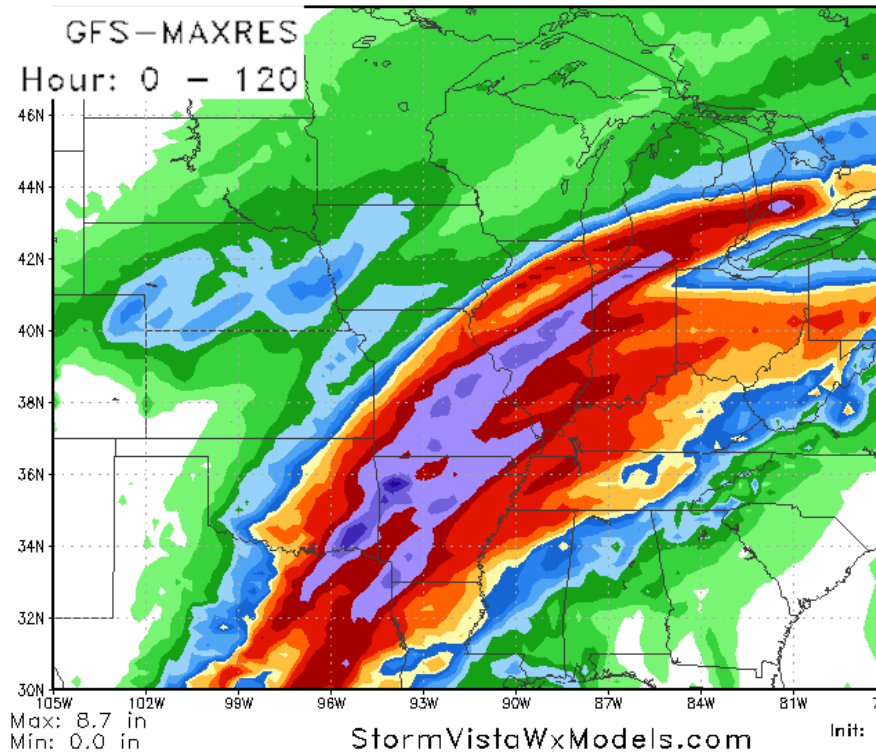
C 2018 ECMWF

This service is based on data and products of the European Center for Medium-range Weather Forecasts.

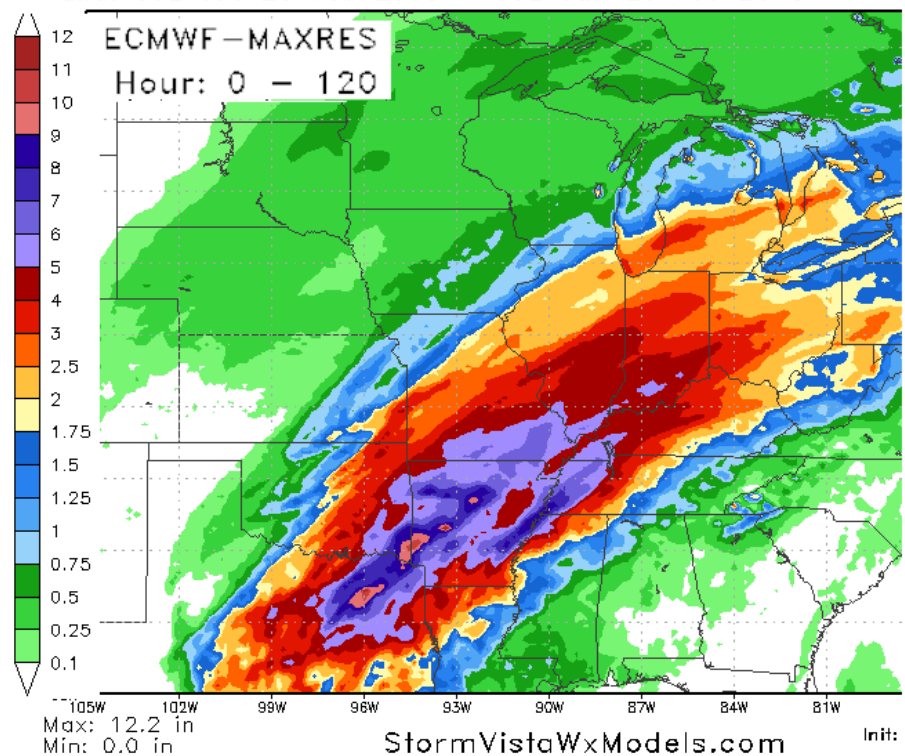
TOTAL 1-5 DAY RAINFALL

Taking a look of the data for the rainfall all the next five days... The model agreement is quite good. The GFS has a bit more rain over Nebraska and Western Iowa and the European model does and it has somewhat heavier rain into Central Illinois in a small band. The European has heavy rains over far northeastern Texas far southeastern Oklahoma and much of Arkansas but the differences here are not significant

120 Hour Total Precipitation (in)
Valid: 00z Tue 20 Feb 2018 - 00z Sun 25 Feb 2018



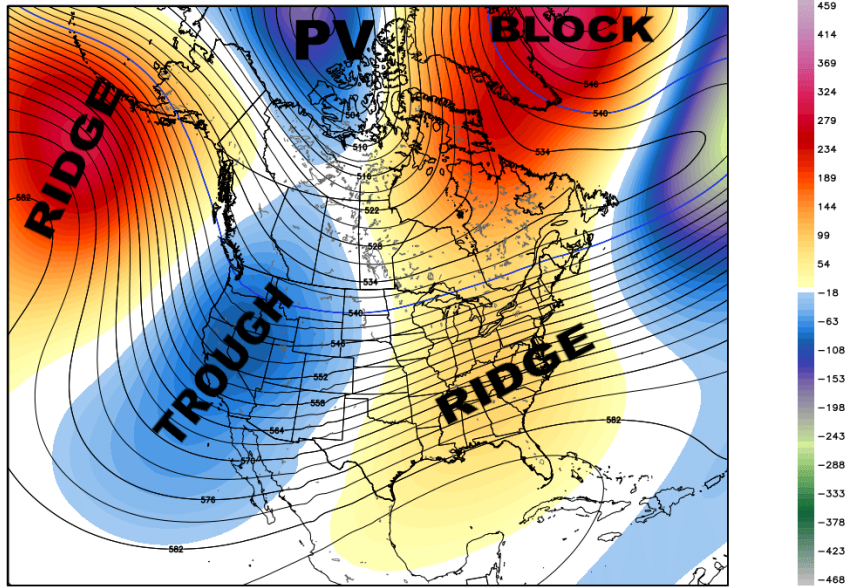
120 Hour Total Precipitation (in)
Valid: 00z Tue 20 Feb 2018 - 00z Sun 25 Feb 2018



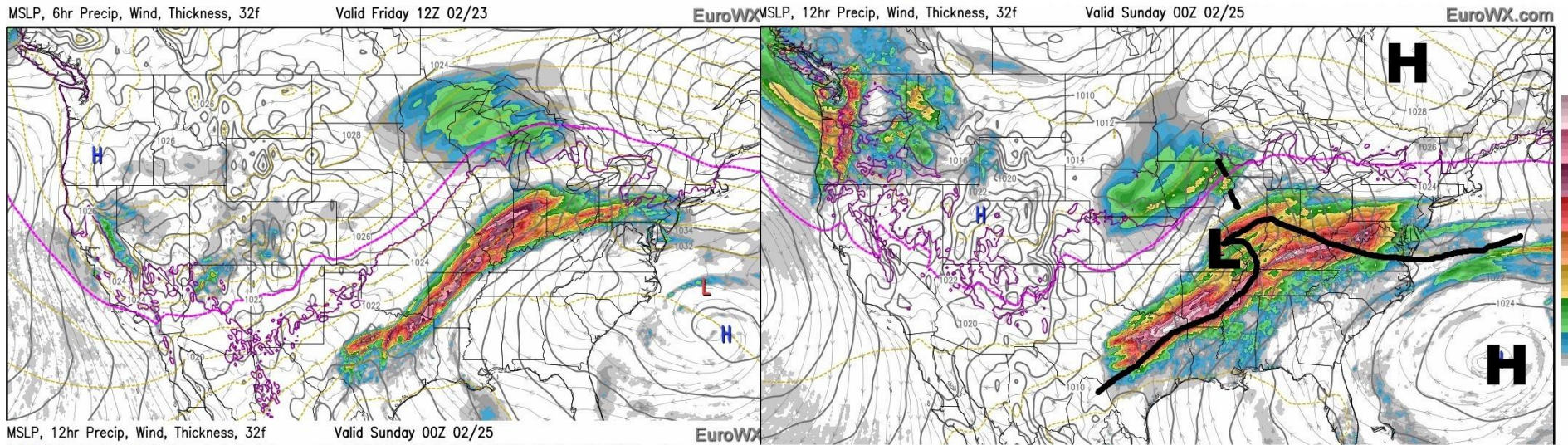
6-10 DAY

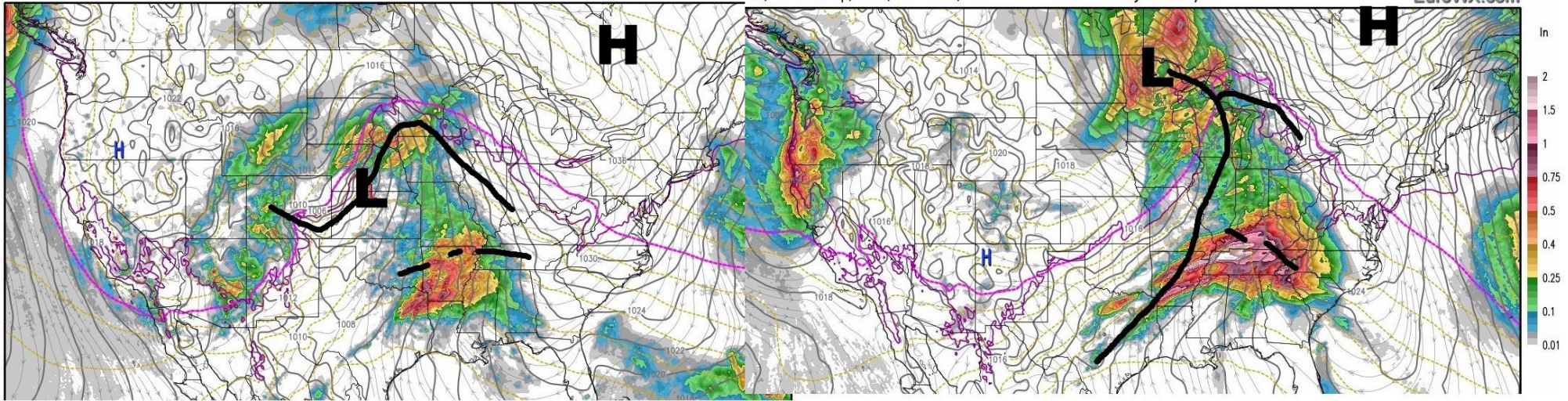
The pattern begins to change somewhat in the 6-10d. It is still mild one but large changes in the jet stream pattern over the Arctic regions are beginning to have an impact on the weather pattern over the U.S. and North America. The development of a block in the jet stream over Greenland - which is refer to as the Greenland block or the negative phase of the NAO is going to intensify and as it does so it will knock down or flatten the ridge over the Southeastern U.S.. This allows the rainfall patterns coming out if the Delta to shift in a more easterly direction bringing good rains into TN valley and Lower ECB regions

ECMWF EPS Ensemble Mean 500 hPa Geopotential Height [dm] & Anomaly [m] fx: [240] hr --> Fri 00Z02MAR2018
 INIT: 00Z20FEB2018 5-day Mean between 00Z25FEB2018 & 00Z02MAR2018 Day 5 - Day10: -289.0 | 332.6 m



At Day 9-10 the European model is developing a significant LOW pressure area over the central Plains which tracks into Minnesota bringing that area some much needed moderate rainfall.

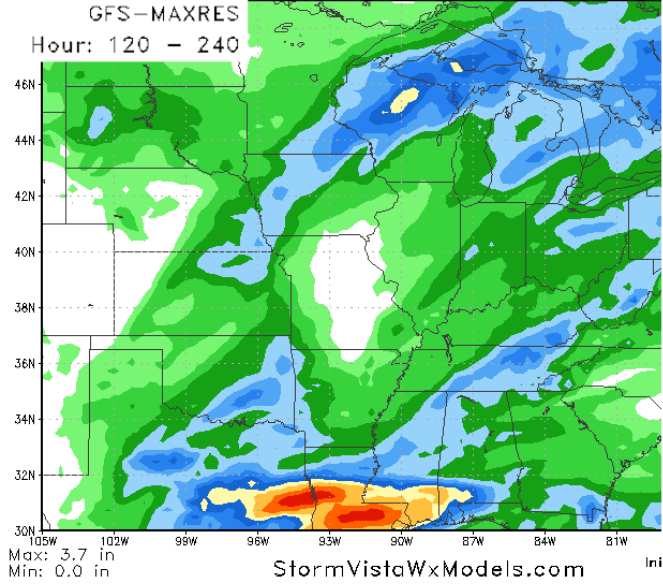




6-10 DAY RAINFALL

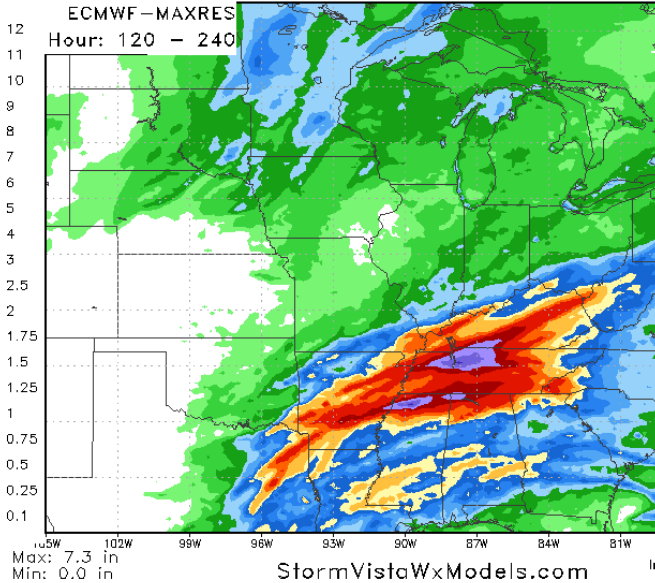
120 Hour Total Precipitation (in)

Valid: 00z Sun 25 Feb 2018 - 00z Fri 02 Mar 2018



120 Hour Total Precipitation (in)

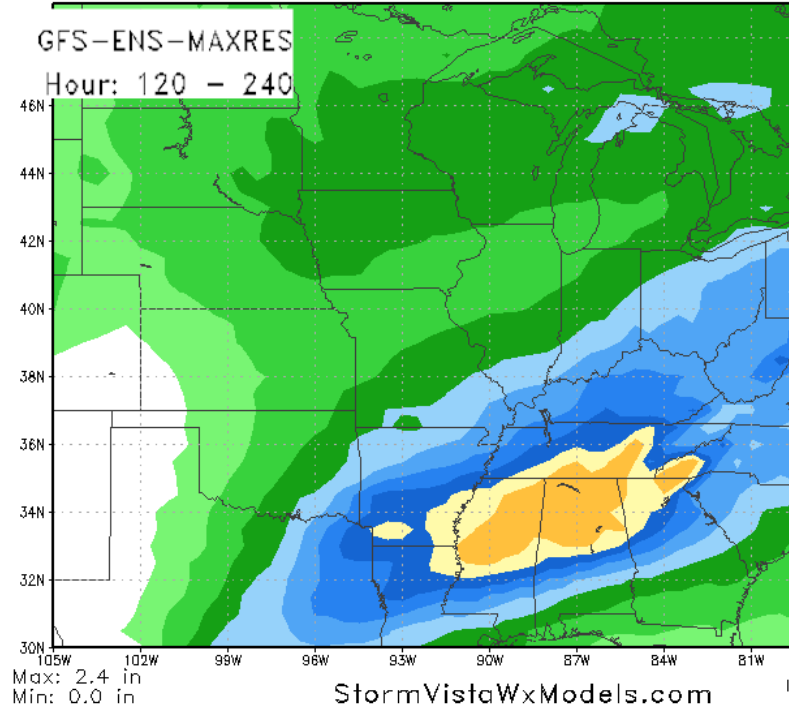
Valid: 00z Sun 25 Feb 2018 - 00z Fri 02 Mar 2018



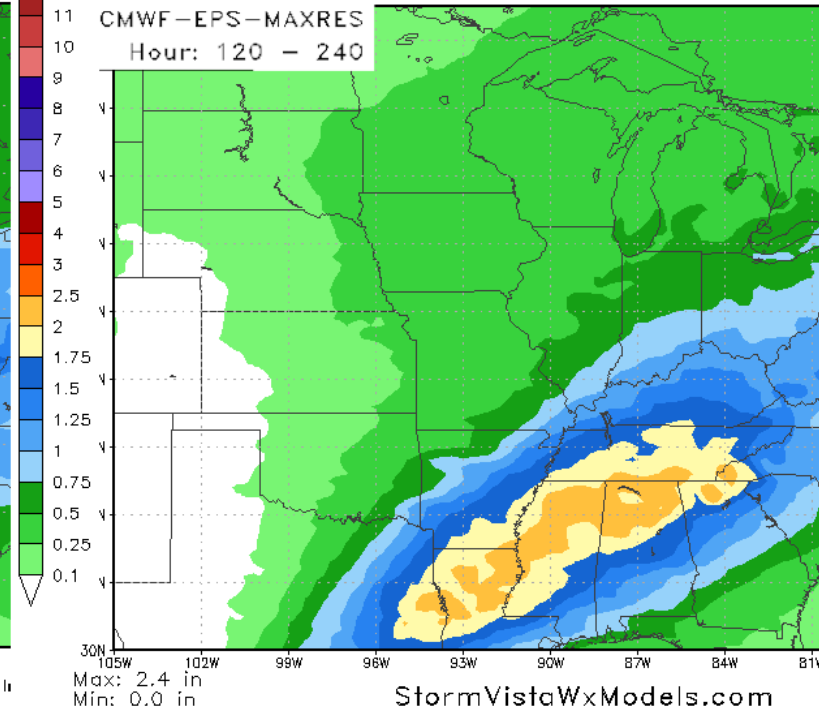
The GFS has much less rain over Arkansas Mississippi Alabama Tennessee Georgia and Kentucky than the ECMWF. Both models show 0.50-1.5"/12-38mm over the Upper WCB. The GFS has these rains more over western Iowa into southeast Minnesota and Wisconsin where the Euro has more rain in western Minnesota.

The 6-10 day ensembles are in good agreement. The GFS is a bit wetter over the WCB but both models show 0.50-2.5"/12-60mm over the Delta most of the Gulf coast states into Tennessee Valley and the lower ECB.

120 Hour Total Precipitation (in)
Valid: 06z Sun 25 Feb 2018 - 06z Fri 02 Mar 2018



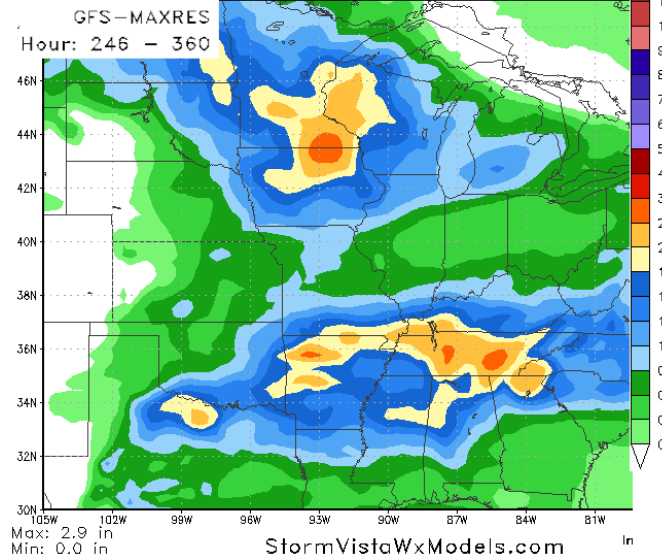
120 Hour Total Precipitation (in)
Valid: 00z Sun 25 Feb 2018 - 00z Fri 02 Mar 2018



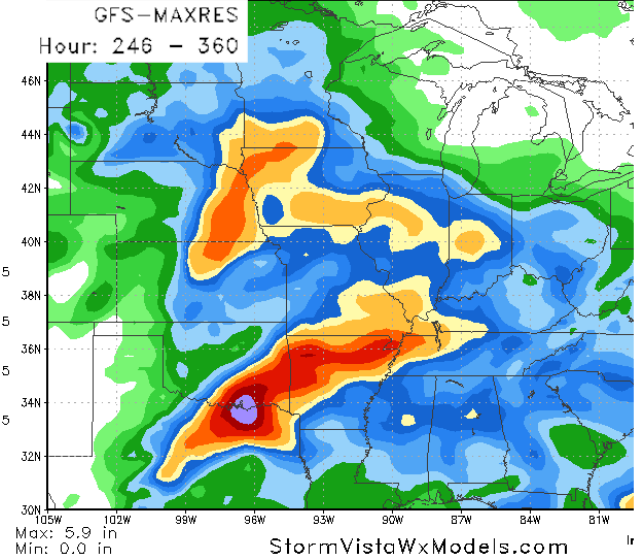
11-15 DAY ENSEMBLES

the operational or regular GFS at 0z and 6z in the 11-15day are quite wet over much of Texas central and eastern Oklahoma as well as eastern half of Kansas Nebraska all of Iowa Minnesota and the ECB. This is Bogus. **The GFS and European ensemble is MUCH drier in all areas.**

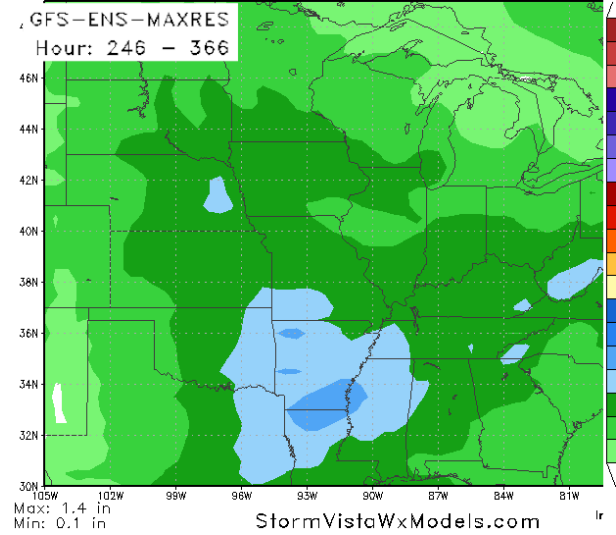
120 Hour Total Precipitation (in)
Valid: 00z Fri 02 Mar 2018 - 00z Wed 07 Mar 2018



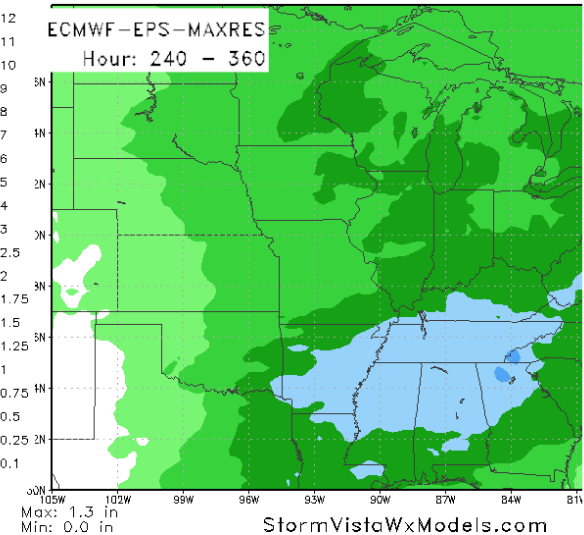
120 Hour Total Precipitation (in)
Valid: 06z Fri 02 Mar 2018 - 06z Wed 07 Mar 2018



120 Hour Total Precipitation (in)
Valid: 12z Fri 02 Mar 2018 - 12z Wed 07 Mar 2018



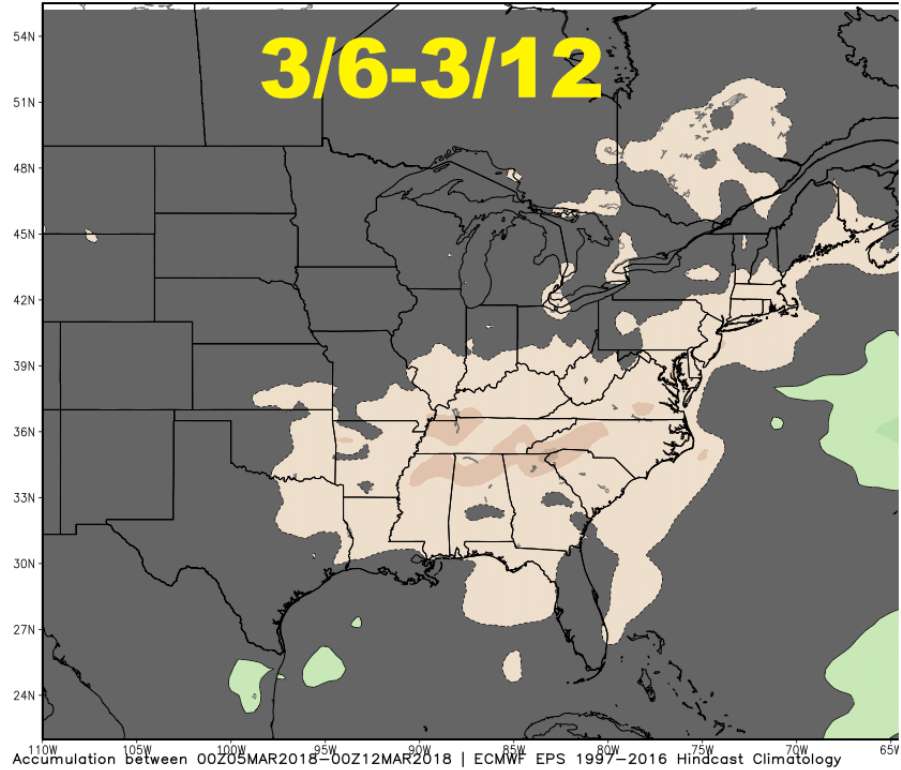
120 Hour Total Precipitation (in)
Valid: 00z Fri 02 Mar 2018 - 00z Wed 07 Mar 2018



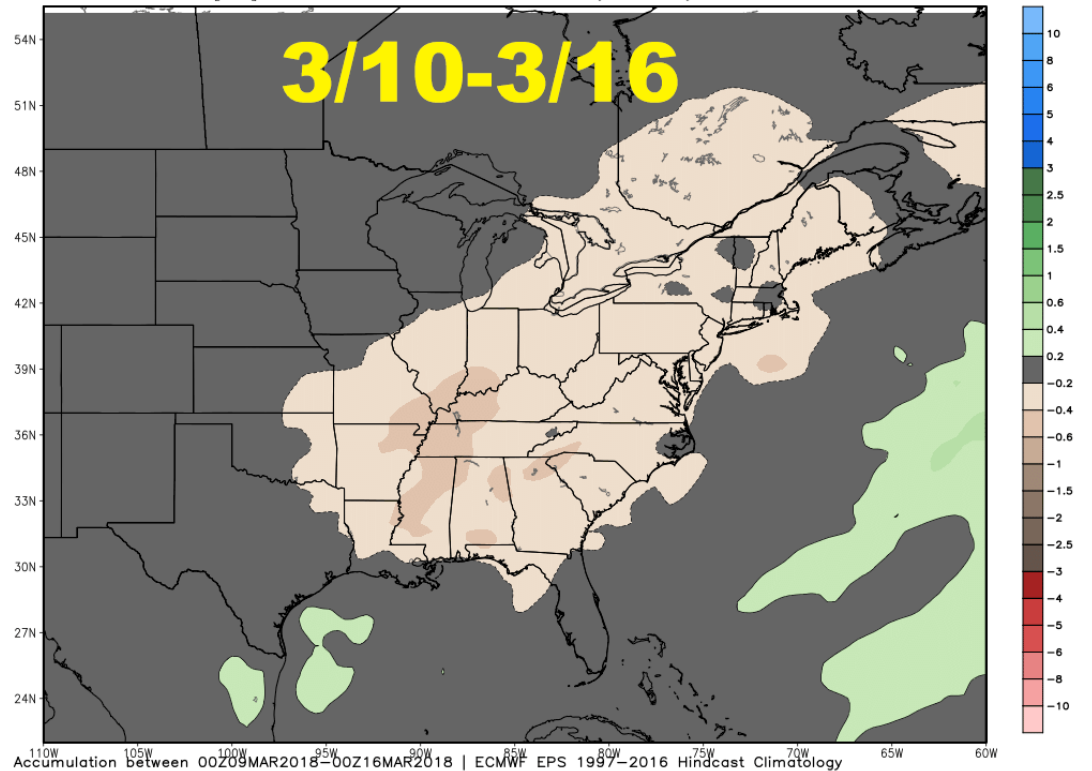
MON NIGHT EURO WEEKLIES

The European weekly models which came out Monday night are actually significantly drier than what they were showing last Friday... especially over the Deep South and the Midwest. This is also because finally turns colder.

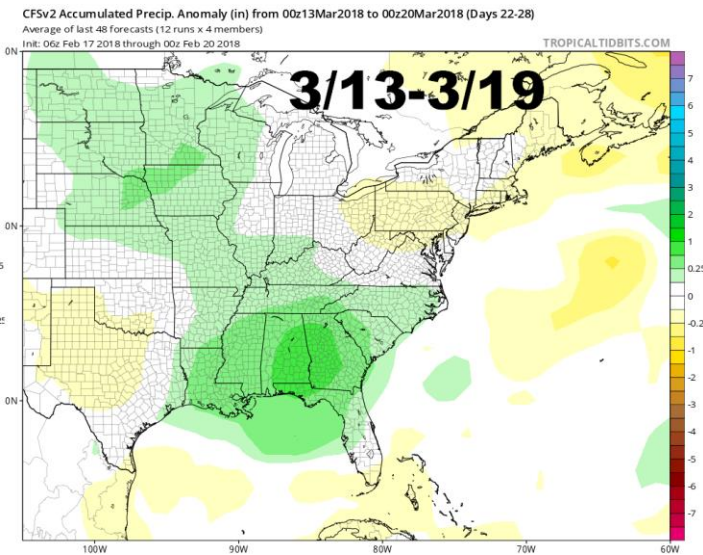
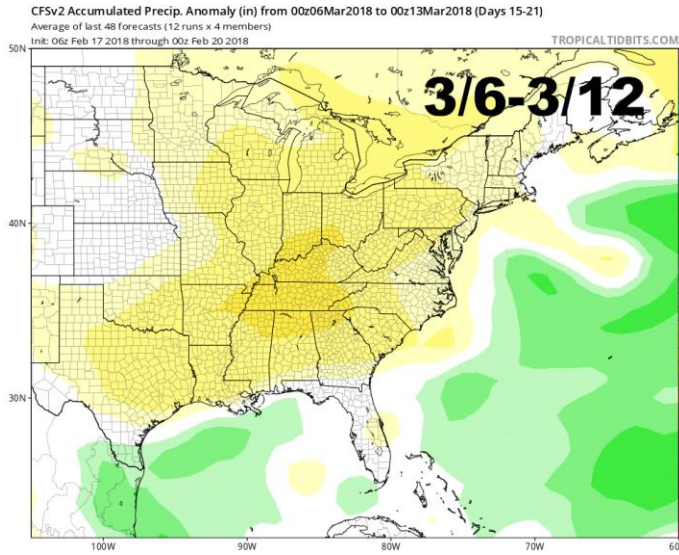
ECMWF EPS Ensemble Mean 7-day Avg Precipitation Anomaly [inch]
Init: 00Z19FEB2018 -- [504] hr --> Valid on Mon 00Z12MAR2018 Day 14 - Day 21



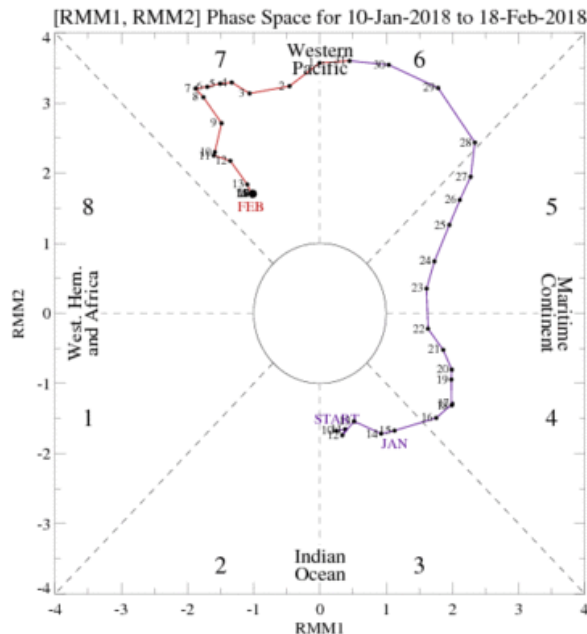
ECMWF EPS Ensemble Mean 7-day Avg Precipitation Anomaly [inch]
Init: 00Z19FEB2018 -- [600] hr --> Valid on Fri 00Z16MAR2018 Day 18 - Day 25



This also the case with the CFS which actually shows large areas of above normal rainfall over the Plains and the WCB in the 2nd week of March. As you can see this run of the CFS is much drier. However the CFS is rather wet for the Upper Plains/ WCB and the Gulf coast.



MJO FORECASTS

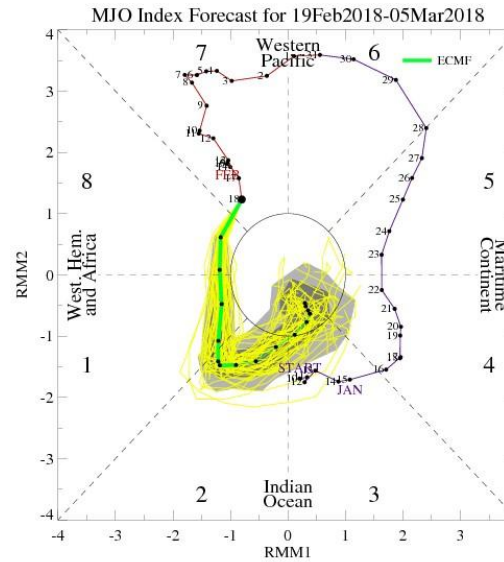
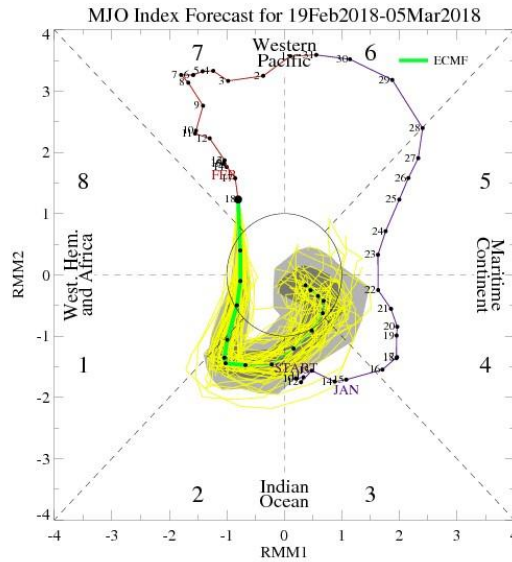
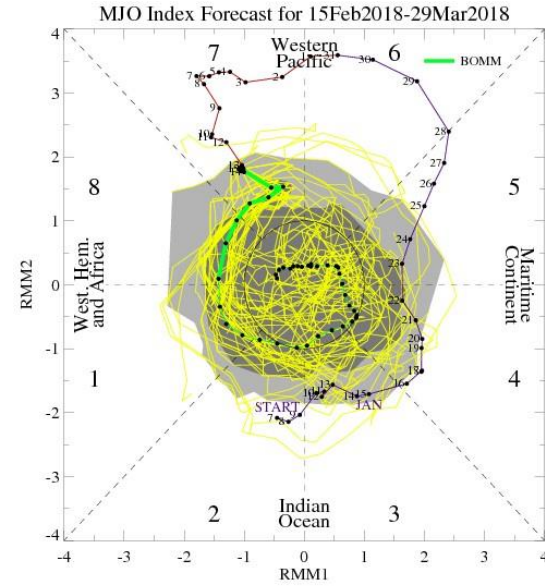
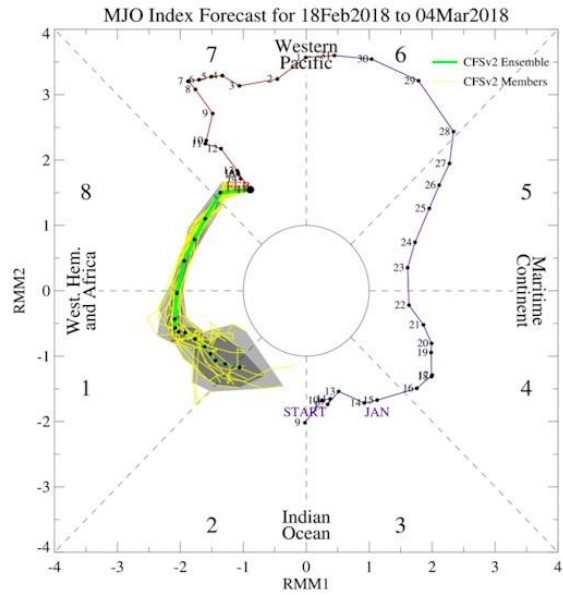


The new weekend projections from the MJO have finally come out. This image on the left shows the actual current position of the MJO impulse. As previously forecast it appears that the current MJO impulse is headed towards a neutral circle at the bottom of phase 7.

The latest model projections are somewhat confusing. The CFS model actually shows the current MJO impulse increasing intensity as it moves into phase 8 and then into phase 1 by the first weekend of March. This is somewhat confirmed by the Australian model which keeps the MJO while barely alive in phase 8 and in phase 1 for the first half of March.

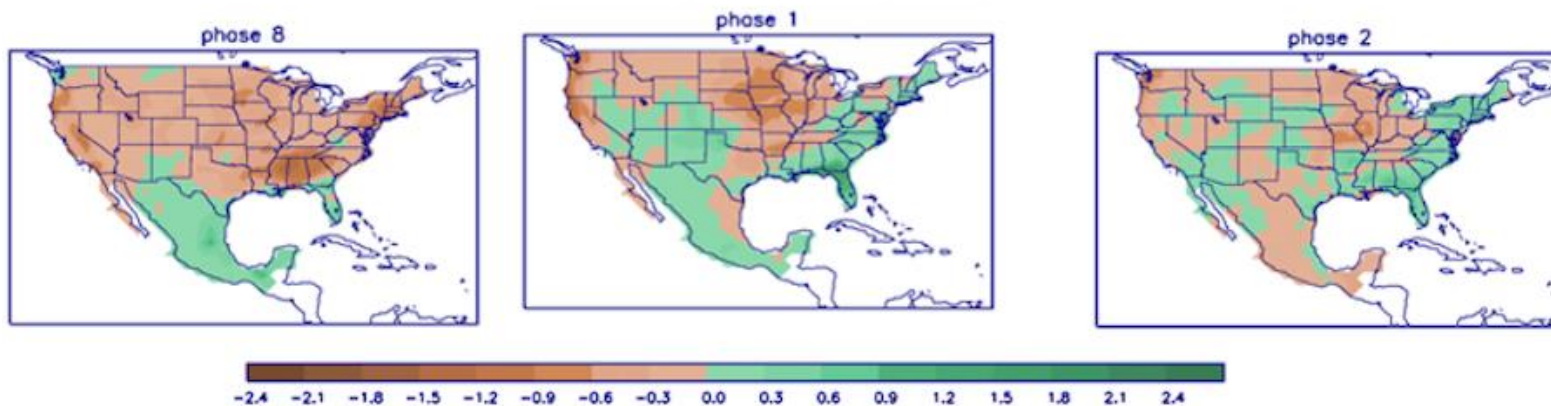
The operational European actually does show the MJO impulse weakening moving into the Neutral circle and then briefly back out into phase 2 by early March. This is supported somewhat by the European ensemble. Clearly then there is a possibility that

the current MJO impulse will not die but stay alive barely and move into phase 8 and phase 1 in the last week of February and into the first week of March. WHAT DOES THIS MEAN FOR THE PLAINS AND MIDWEST



In the month of March when the MJO in Phase 8... the Plains and WCB is very dry. In Phase 1 and 2 SOME rain shows up over western Texas and Oklahoma (Phase1) and into western Nebraska and western Kansas (Phase 2). With respect to temperatures Phase 8 is very warm over Plains and WCB. In Phase 1 and 2 the pattern turns much colder.

P composites (FMA)



T composites (FMA)

