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US HRWW GRAIN WEATHER ISSUES

as of FRIDAY 28 DECEMBER 2017

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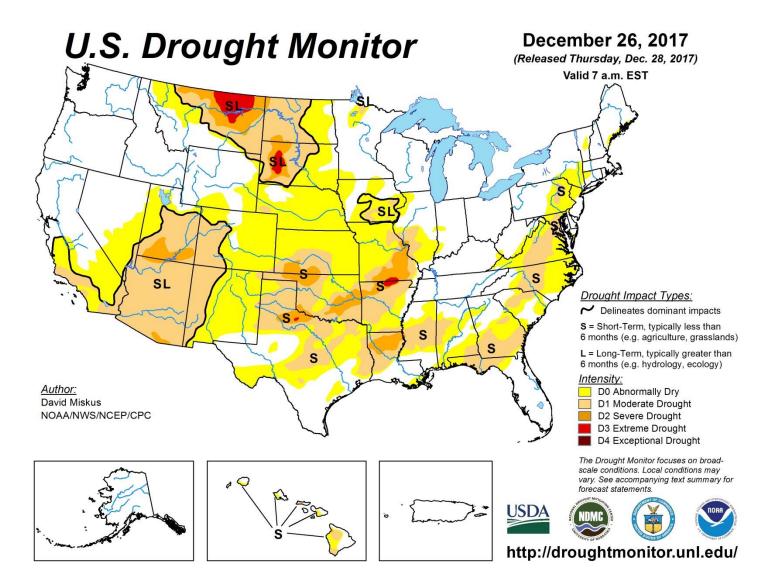
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wxrisk@gmail. com

DROUGHT CONDITIONS OVER MOST OF PLAINS / DELTA WORSENING WEEKLY



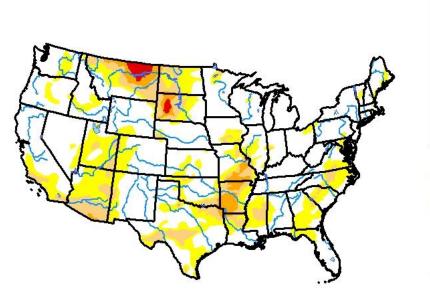
US DROUGHT CONDITIONS SINCE NOVEMBER 14

U.S. Drought Monitor Continental U.S. (CONUS)

November 14, 2017

(Released Thursday, Nov. 16, 2017) Valid 7 a.m. EST

Drought Conditions (Percent Area)



None D0-D4 D1-D4 D2-D4 D3-D4 D4 3.52 Current 64.97 35.03 13.06 0.75 0.00 Last Week 67.19 32.81 11.96 2.90 0.75 0.00 11-07-2017 3 Months Ago 71.95 28.05 11.31 5.33 2.45 0.70 08-15-2017 Start of 53.89 Calendar Year 46.11 22.53 8.63 3.15 0.96 01-03-2017 Start of 63.07 36.93 13.81 4.99 0.87 Water Year 2.36 09-26-2017 One Year Ago 48.01 51.99 30.13 14.44 6.40 2.36 11-15-2016

Intensity:

D0 Abnormally Dry D1 Moderate Drought



D3 Extreme Drought D4 Exceptional Drought

D2 Severe Drought

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

Author:

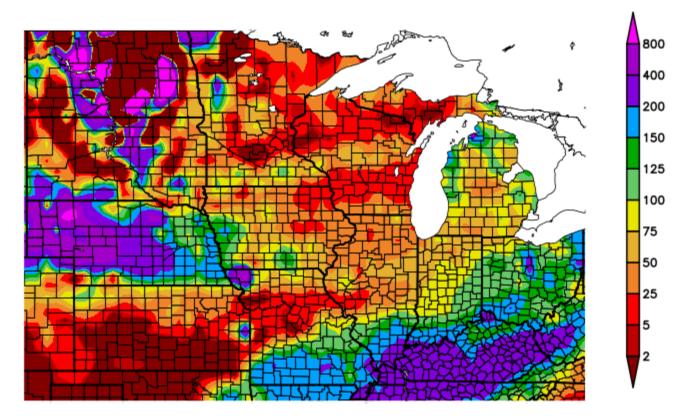
Richard Tinker CPC/NOAA/NWS/NCEP



http://droughtmonitor.unl.edu/

US PRECIP & ANOMALIES LAST 7 DAYS

Percent of Normal Precipitation (%) 12/22/2017 - 12/28/2017

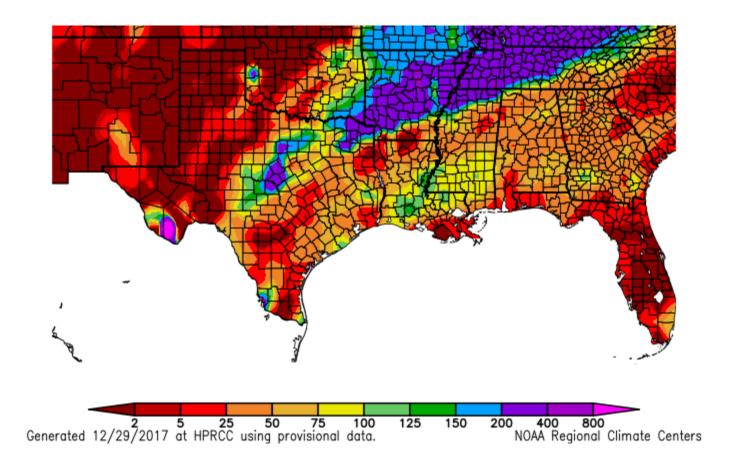


Generated 12/29/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers

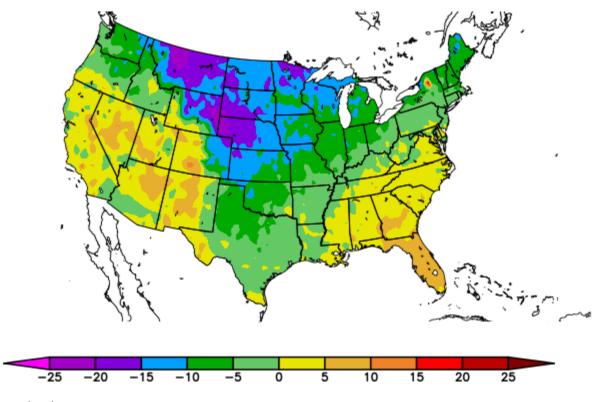
US PRECIP & ANOMALIES LAST 7 DAYS

Percent of Normal Precipitation (%) 12/22/2017 - 12/28/2017



TEMPS FALL PAST 7 DAYS—

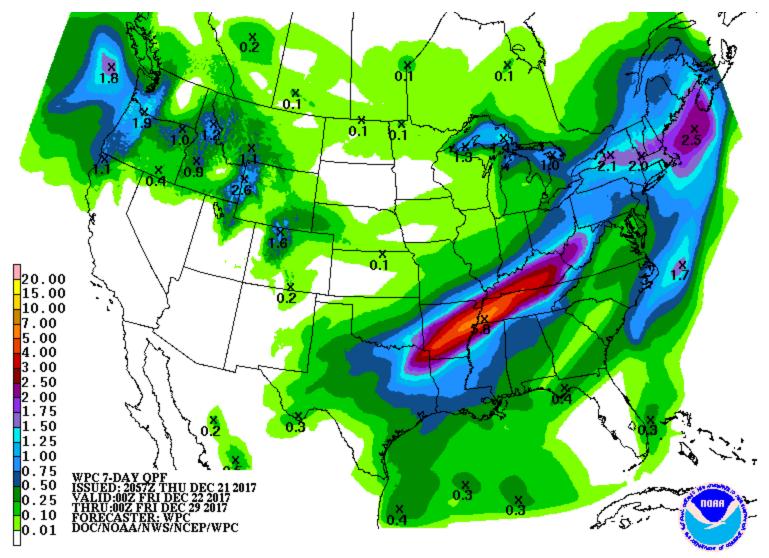
Departure from Normal Temperature (F) 12/22/2017 - 12/28/2017

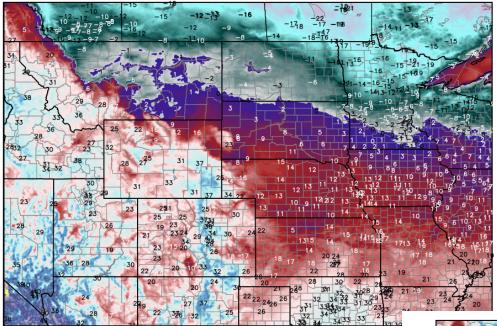


Generated 12/29/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers

NWS OFFICIAL RAINFALL NEXT 7 DAYS Not much help





128 122

8

2

-2

-5

-8

-11 -14 -17 -20

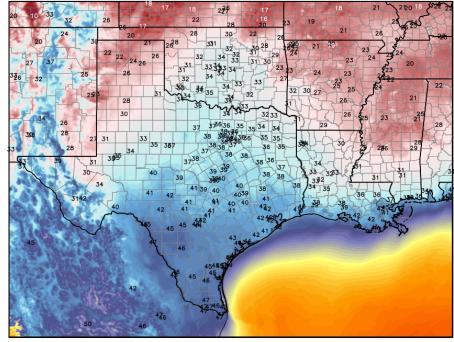
-23

-26

-29

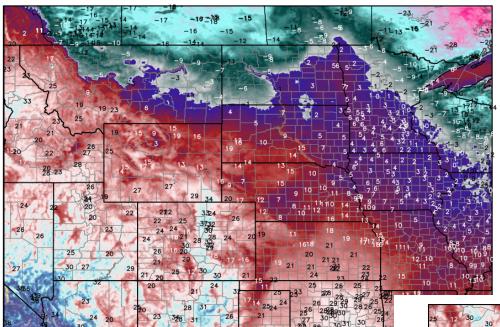
Colorado lowa: Minnesota: Nebraska: Montana: Kansas: North Dakota:	Max: Max: Max: Max: Max: Max: Max:	46.2°F 15.3°F 6.5°F 36.6°F 38.7°F 30.2°F 4.1°F	Avg: Avg: Avg: Avg: Avg: Avg: Avg:	-9.4°F 13.7°F 7.3°F 16.9°F	Min: Min: Min: Min: Min:	7.5°F -0.6°F -22.1°F 5.2°F -15.6°F 2.1°F -18.3°F
--	--	--	--	-------------------------------------	--------------------------------------	--

South Dakota: Max: 30.3°F / Wyoming: Max: 43.6°F / Missouri: Max: 28.9°F / NCEP RTMA (2.5km) 2-meter Temp [°F] 12 WeatherBELL Models



Arkansas: Min: 15.8°F Max: 33.9°F Avg: ouisiana: Min: 24.8°F Max: 53.6°F Avg: Oklahoma: Min: 14.2°F Max: 37.2°F Avg: Fexas: Min: 15.7°F Max: 56.0°F Avg:	35.5°F 30.2°F	
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NCEP RTMA (2.5km) 2-meter Temp [°F] 12Z29DEC2017 WeatherBELL Models



20

14 8 2

-2

-5

-8 -11

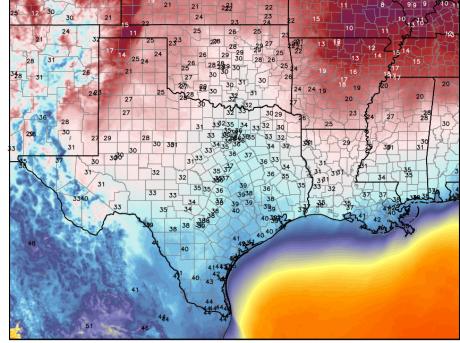
-14

-17 -20

-23

Colorado	Max:	41.6°F	Avg:	24.0°F	Min:	8.6°F
lowa:	Max:	11.4°F	Avg:			-1.1°F
Minnesota:	Max:		Avg:			-24.7°
Nebraska:	Max:	24.9°F	Avg:			2.1°F
Montana:	Max:	30.5°F	Avg:			-16.5°F
Kansas:	Max:	25.7°F	Avg:			6.8°F
North Dakota:	Max:	8.9°F	Avg:	-2.9°F	Min:	-17.8¶

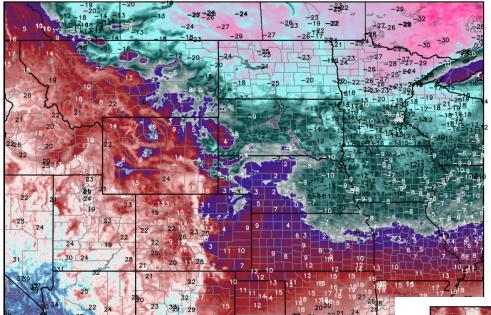
South Dakota: Max: 21.2°F Wyoming: Max: 34.4°F Missouri: Max: 22.8°F NCEP RTMA (2.5km) 2-meter Temp [°F] 1 WeatherBELL Models



Arkansas: Louisiana: Oklahoma: Texas:	25.2°F 6.1°F	Max: Max:	28.1°F 53.3°F 35.9°F 51.8°F	Avg: Avg:	19.2°F 33.9°F 26.8°F 33.2°F

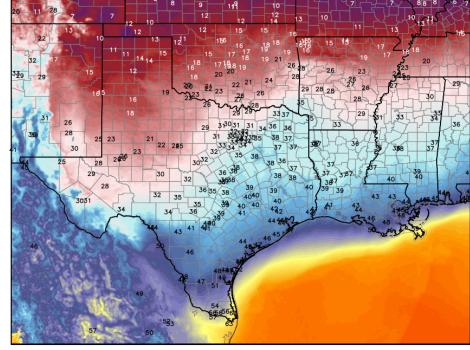
NCEP RTMA (2.5km) 2-meter Temp [°F] 12Z28DEC2017 WeatherBELL Models

-50



Colorado Iowa:	Max: Max:	36.8°F −2.9°F	Avg: 14.5°F Min: -5.8°F Avg: -10.3°F Min: -19.1°F
Minnesota:	Max:	-3.8°F	Avg: -19.2°F Min: -31.9°F
Nebraska:	Max:	17.5°F	Ava: -3.4°F Min: -15.1°F
Montana:	Max:	26.1°F	Avg: 3.2°F Min: -30.1°F
Kansas:	Max:	15.4°F	Avg: 4.9°F Min: -9.6°F
North Dakota:	Max:	-4.2°F	Avg: -19.9°F Min: -30.1°F

South Dakota: Max: 13.6°F / Wyoming: Max: 31.6°F / Missouri: Max: 19.4°F / NCEP RTMA (2.5km) 2-meter Temp [°F] 12 WeatherBELL Models



Arkansas: Louisiana: Oklahoma: Texas:	32.7°F 2.7°F	Max: Max:	Avg: Avg:	40.5°F 18.7°F	

128 122

14 8 2 -2 -5 -8 -11 -14

> -17 -20

-23 -26

> NCEP RTMA (2.5km) 2-meter Temp [°F] 12Z27DEC2017 WeatherBELL Models

CURRENT UPPER AIR PATTERN.. Here coems next blast of arctic air

ECMWF EPS Ensemble Mean 500 hPa Geopotential Height [dm] INIT: 00Z29DEC2017 fx: [000] hr --> Fri 00Z29DEC2017

EVERE COLD

Min|Max: 4844.8 | 5896.1 m

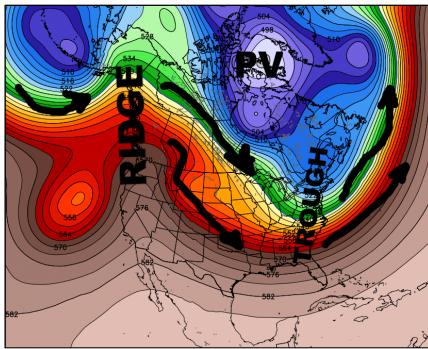
JAN 2 ARCTIC AIR OVER EAST OF MISS RIVER

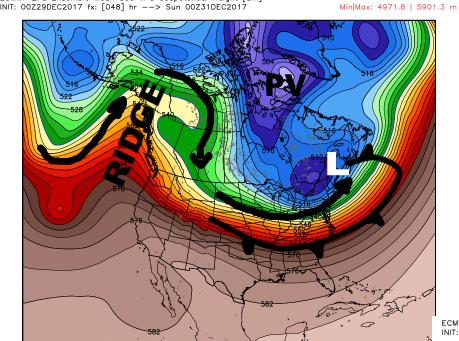
ECMWF EPS Ensemble Mean 500 hPa Geopotential Height [dm] INIT: 00Z29DEC2017 fx: [096] hr --> Tue 00Z02JAN2018

Min|Max: 4914.2 | 5897.8 m

DEC 31 NEXT **BLAST SWEEPS** IN







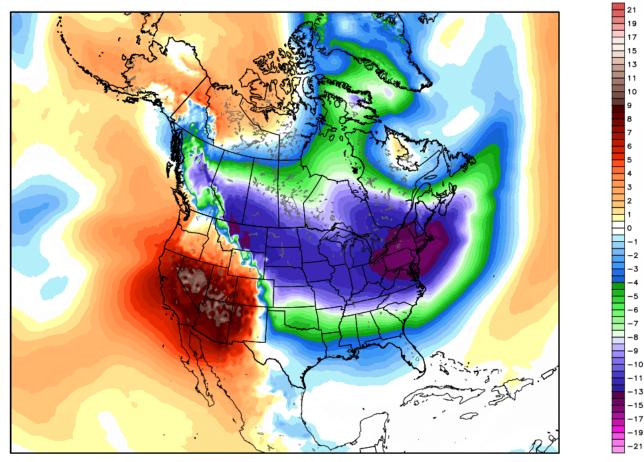


ECMWF EPS Ensemble Mean 500 hPa Geopotential Height [dm]

850mb TEMP ANOMALIES NEXT 5 DAYS ...WOW... -9 to -15c

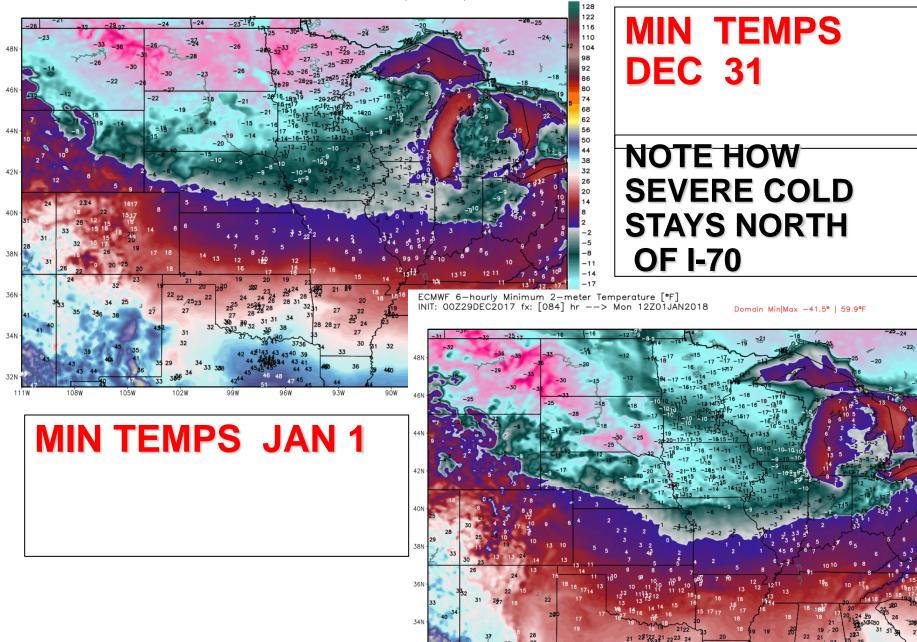
 ECMWF EPS Ensemble Mean 850 hPa Temperature Anomaly [°C] fx: [120] hr --> Wed 00Z03JAN2018

 INIT: 00Z29DEC2017 5-day Mean between 00Z29DEC2017 & 00Z03JAN2018
 Day 0 - Day 5
 Min|Max -15.4° | 11.5°C



INIT: 00Z29DEC2017 fx: [060] hr --> Sun 12Z31DEC2017

Domain Min|Max -40.9° | 60.3°F



111W

1080

105W

102W

93W

9ÓW

87W

128 122

68 62

26

-2

-14 -17 -20

-23 -26 -29 -32

-35 -38 -41 ECMWF 6-hourly Minimum 2-meter Temperature [°F] INIT: 00Z29DEC2017 fx: [108] hr --> Tue 12Z02JAN2018

44

42N

40N

38N

36N

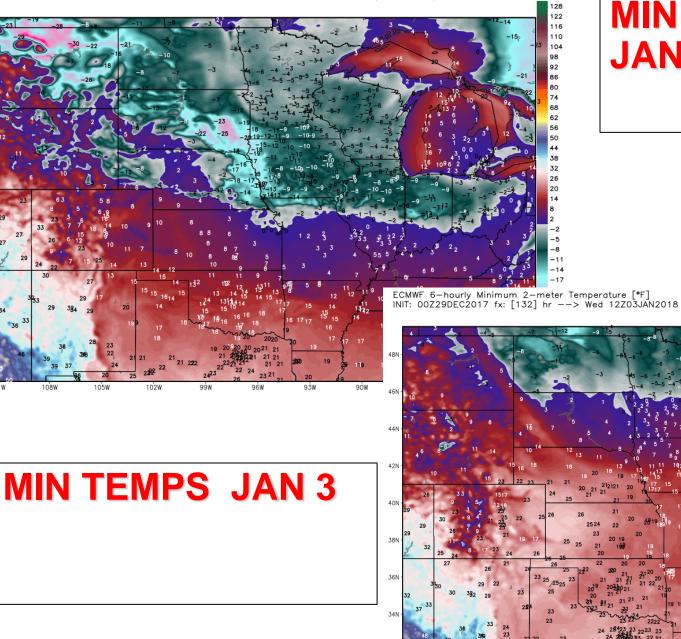
34N

32N

11'1W

Domain Min|Max -40.3° | 58.5°F

11'1W



MIN TEMPS JAN 2

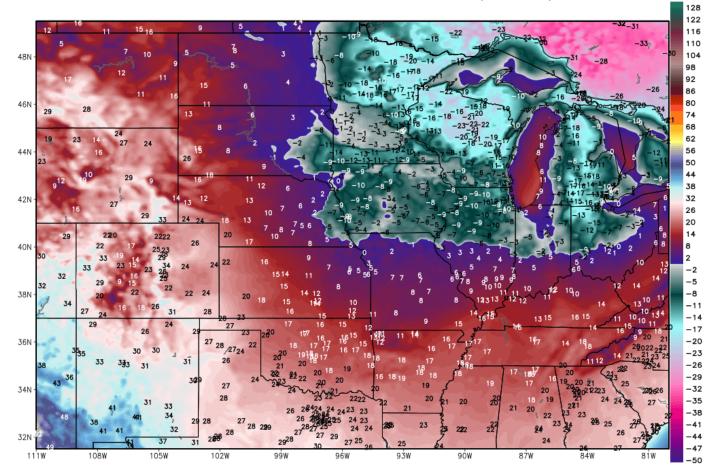
. ' J 3JAN2018 Domain Min|Max - 26.0° | 57.0°F

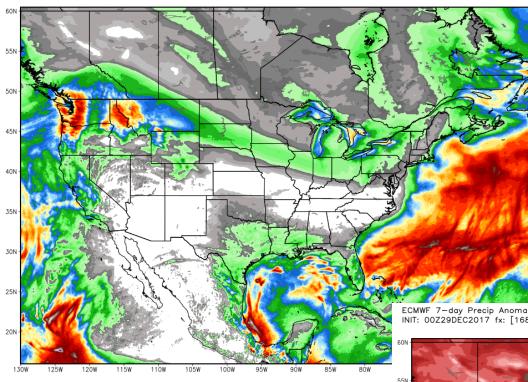
128 122 116 110 104 98 92 86 80 74 68 62 56 50 44 38 32 26 20 -2 -11 -14 -17 -20 -23 -26 -29 -32 -35 -38 -41 -44 22 -47 105W 93W 9ÓW 87W 1021 -50

JAN 4 ARCTIC AIR SLIDES ... Into Midwest .. Temps begin to recover over HRWW areas

ECMWF 6-hourly Minimum 2-meter Temperature [°F] INIT: 00Z29DEC2017 fx: [156] hr --> Thu 12Z04JAN2018

Domain Min|Max -37.0° | 58.3°F





EURO RAINFALL NEXT 7 DAYS-

ECMWF 7-day Precip Anomaly [% of normal] between 00Z29DEC2017 -- 00Z05JAN2018 INIT: 00Z29DEC2017 fx: [168] hr --> Fri 00Z05JAN2018

19 18

17 16

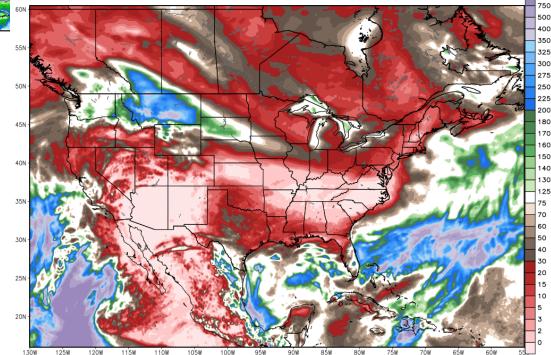
13 12

2.5 2 1.8 1.6

0.9 0.8

0.7 0.6 0.5 0.4 0.3

0.25

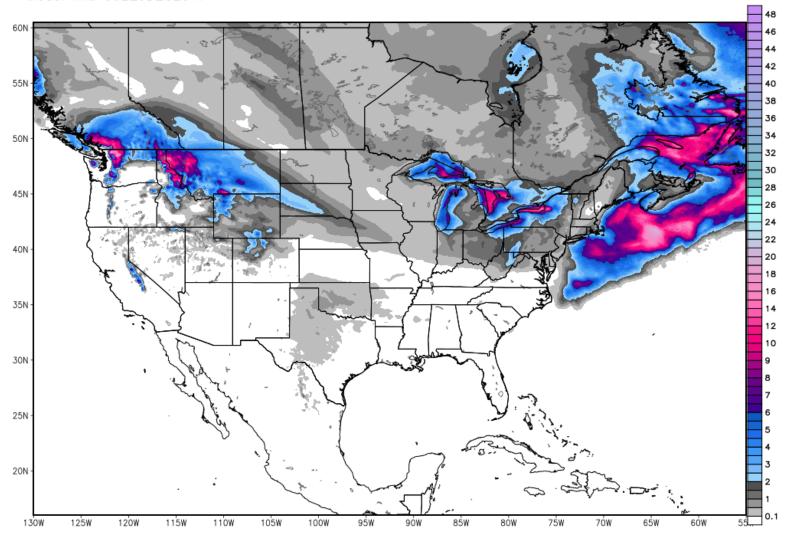


RAINFALL ANOMALIES NEXT 7 DAYS

SNOWFALL NEXT 7 DAYS --VERY LITTLE

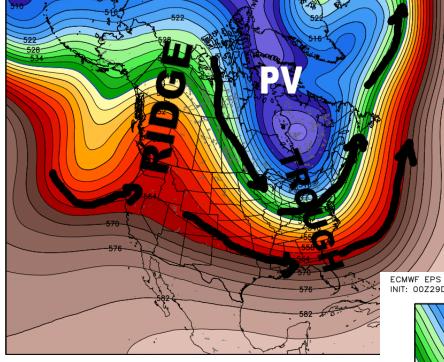
ECMWF 144hr Snowfall [inch] from 00Z30DEC2017 to Fri 00Z05JAN2018 Model Init: 00Z29DEC2017

Max 20.79 inch



ECMWF EPS Ensemble Mean 500 hPa Geopotential Height [dm] INIT: 00Z29DEC2017 fx: [156] hr --> Thu 12Z04JAN2018

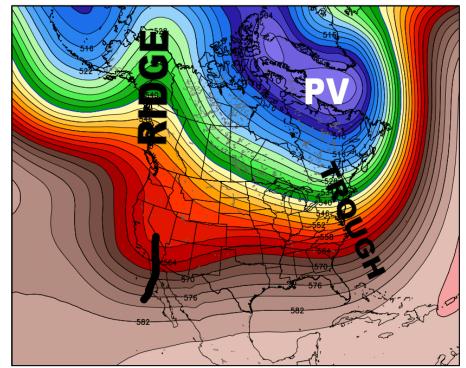
Min|Max: 5002.7 | 5915.6 m



UPPER AIR PATTERN JAN 4 -- deep trough slides to East coast then off the coast by JAN 6... Taking severe cold withit

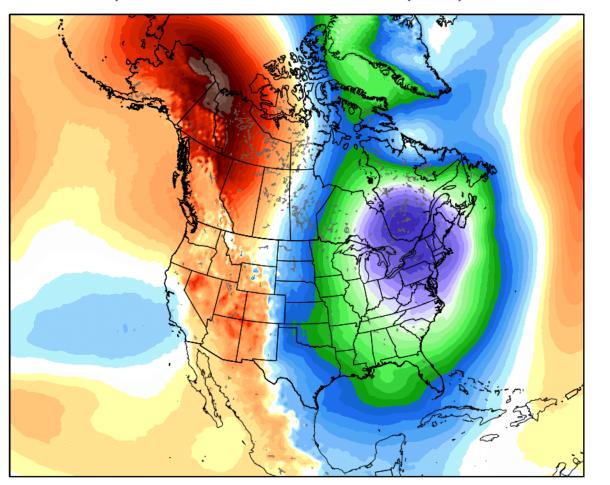
ECMWF EPS Ensemble Mean 500 hPa Geopotential Height [dm] INIT: 00Z29DEC2017 fx: [216] hr --> Sun 00Z07JAN2018

Min|Max: 4981.7 | 5910.9 m



6-10 DAYS SHOWS HEART OF COLD AIR EASTERN US

ECMWF EPS Ensemble Mean 850 hPa Temperature Anomaly [°C] fx: [240] hr --> Mon 00Z08JAN2018 INIT: 00Z29DEC2017 5-day Mean between 00Z03JAN2018 & 00Z08JAN2018 Day 5 - Day 10 Min|Max -11.4° | 11.0°C



21 19 17 15 13 11 10 9 8 7 6 5 0 -2 -3 -4 -5 -6 -7 -8 -9 -10 -11 -13 -15 -17 -19 -21

ECMWF EPS Ensemble Mean 500 hPa Geopotential Height [dm] INIT: 00Z29DEC2017 fx: [264] hr --> Tue 00Z09JAN2018

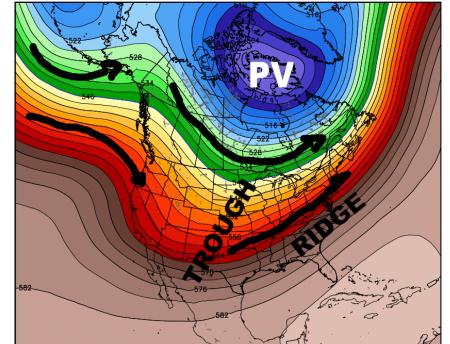
Min|Max: 4962.4 | 5905.4 m

11-15DAY JET STREAM PATTERN

ECMWF EPS Ensemble Mean 500 hPa Geopotential Height [dm] INIT: 00Z29DEC2017 fx: [360] hr --> Sat 00Z13JAN2018

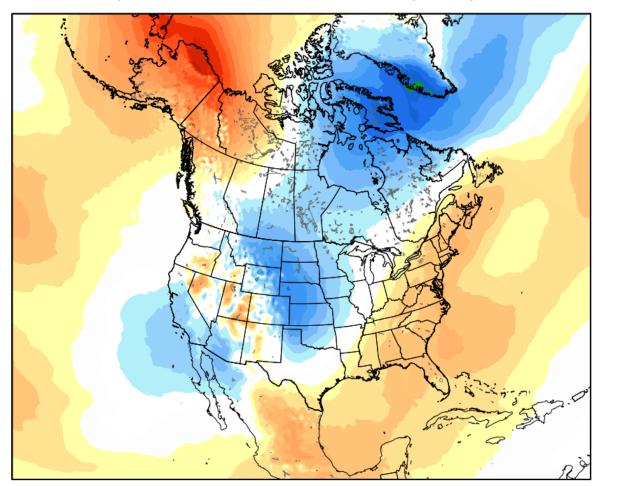
Min|Max: 5008.4 | 5902.3 m

SOME warming but it may not last long and new ridge rebuilds over western Canada



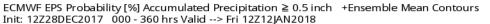
11-15 DAY 850mb TEMPS SHOWS NEAR NORMAL OVER MIDWEST ... SEASONAL COLD OVER PLAINS ...which may be the beginning of new Cold Blast

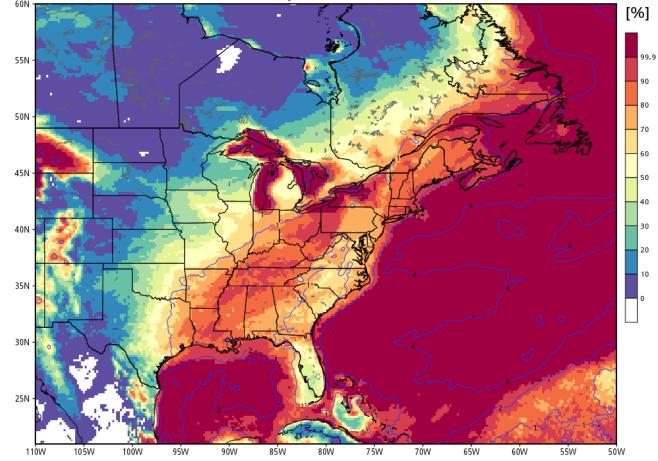
ECMWF EPS Ensemble Mean 850 hPa Temperature Anomaly [°C] fx: [360] hr --> Sat 00Z13JAN2018 INIT: 00Z29DEC2017 5-day Mean between 00Z08JAN2018 & 00Z13JAN2018 Day 10 - Day 15 Min|Max -6.2° | 6.7°C





PROBABILITY OF SEEING ANY RAIN OVER 0.50"/ 12mm next 14 days / THRU Jan 12 !! WCB = Bone Dry Plains at best 20% chance..Only Delta into TN KY IND OH have a good chance of seeing rains over 0.50"/ 12mm





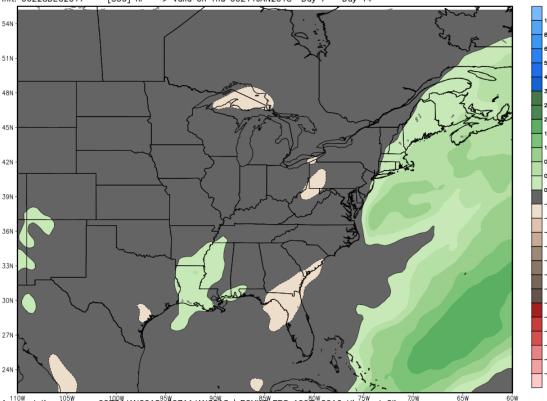
ECMWF EPS Ensemble Mean 7-day Avg 2m Temperature Anomaly [°C] Min|Max: -8.7° | 5.3°C nit: 00Z28DEC2017 -- [336] hr --> Valid on Thu 00Z11JAN2018 Day 7 - Day 14

54N 51N Average between 00Z04JAN2018-00Z11JAN2018 | ECMWF EPS 1997-2016 Hindcast Climatology

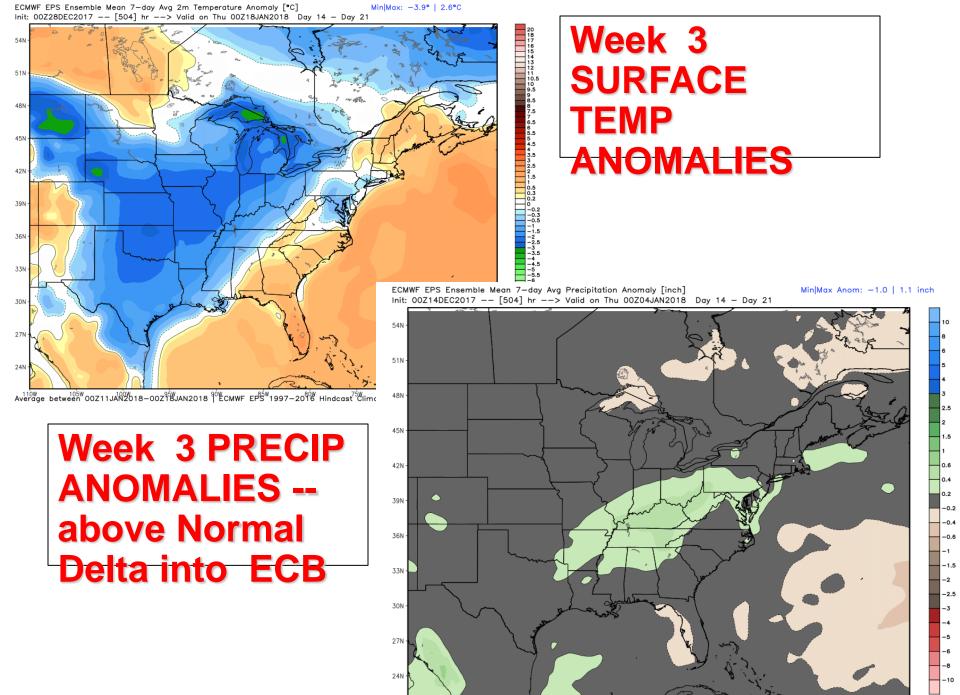
Week 2 PRECIP **ANOMALIES**

Week 2 **SURFACE** TEMP ANOMALIES

ECMWF EPS Ensemble Mean 7-day Avg Precipitation Anomaly [inch] Init: 00Z28DEC2017 -- [336] hr --> Valid on Thu 00Z11JAN2018 Day 7 - Day 14 Min|Max Anom: -0.4 | 2.0 inch

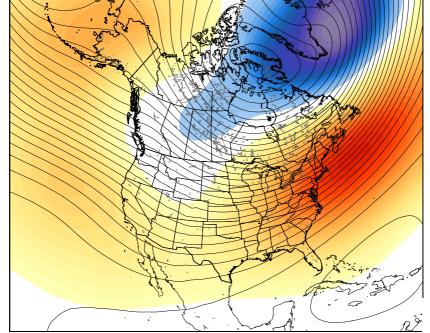


Accumulation between 00204JAN2018-00211JAN2018 | ECMWF EPS 1997-2016 Hindcast Climatology 65W



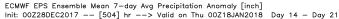
Accumulation 105W Accumulation between 00228DEC2017-00Z04JAN2018 | ECMWF EPS 19987-2016 Hindcast Climatology 65W 60W

ECMWF EPS Ensemble Mean 7-day Avg 500 hPa Geopotential Height Anomaly [m] Min|Max: -99.3 | 123.0 m Init: 00Z28DEC2017 -- [672] hr --> Valid on Thu 00Z25JAN2018 Day 21 - Day 28



Average between 00Z18JAN2018-00Z25JAN2018 | ECMWF EPS 1996-2015 Hindcast Climatology

Week 3 Mid JAN ... RIDGE over eastern INCREASES RIAN CHANCE over Midwest NOT Plains



125 115

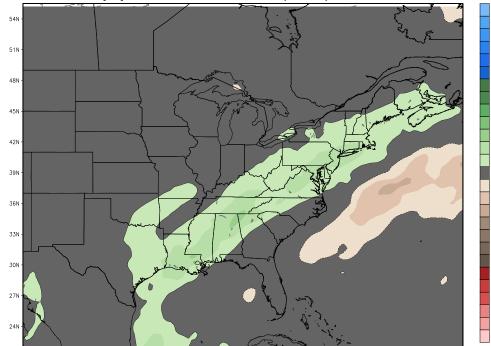
-10

-20 -30 -40 -50 -60 -70 -80 -90 -100 -110

-120 -130 -140 -150 -160 -170 -180 -190 -200 -210

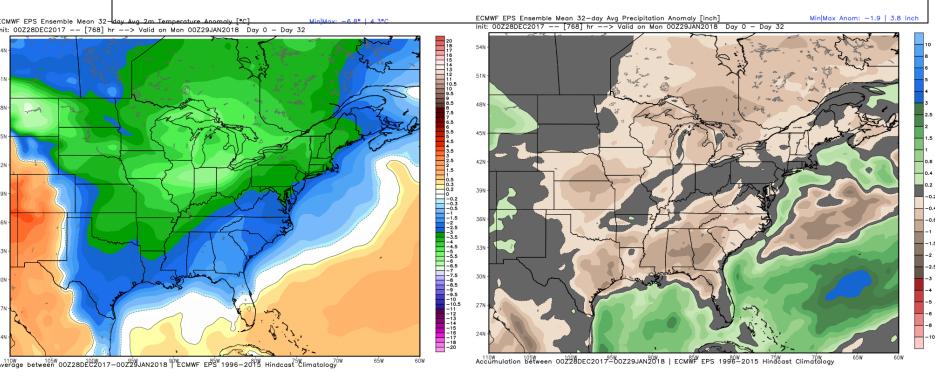
Min|Max Anom: -0.8 | 0.8 inch

- 6ÓW



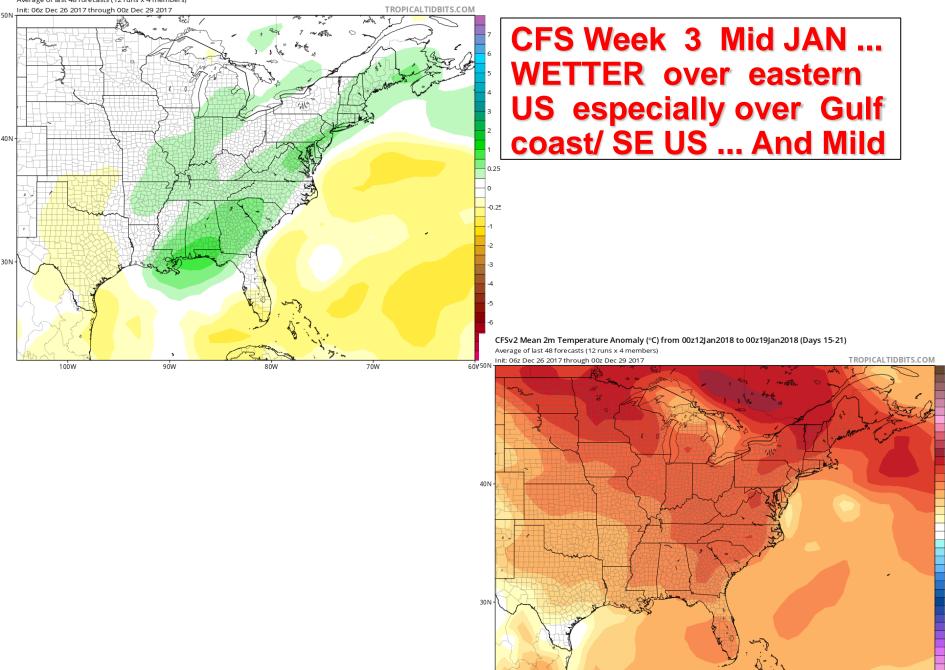
Accumulation between 00Z11JAN2018-00Z18JAN2018 | ECMWF EPS 1997-2016 Hindcast Climatology 65W

NEXT 32 DAYS - SFC TEMP ANOMALIES LEFT side... PRECIP ANOMALIES RIGHT SIDE



CFSv2 Accumulated Precip. Anomaly (in) from 00z12Jan2018 to 00z19Jan2018 (Days 15-21)

Average of last 48 forecasts (12 runs x 4 members)



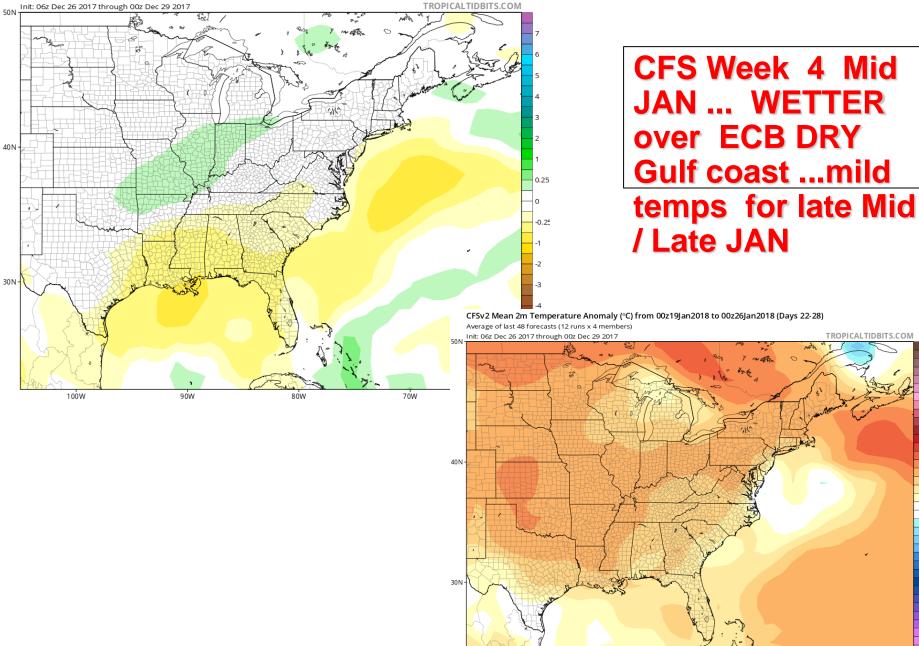
100W

90W

70W

CFSv2 Accumulated Precip. Anomaly (in) from 00z19Jan2018 to 00z26Jan2018 (Days 22-28)

Average of last 48 forecasts (12 runs x 4 members)



90w

100W

TROPICALTIDBITS.COM

1.5 0.75 0.25 -0.25 -0.75 -1.5 -2.5

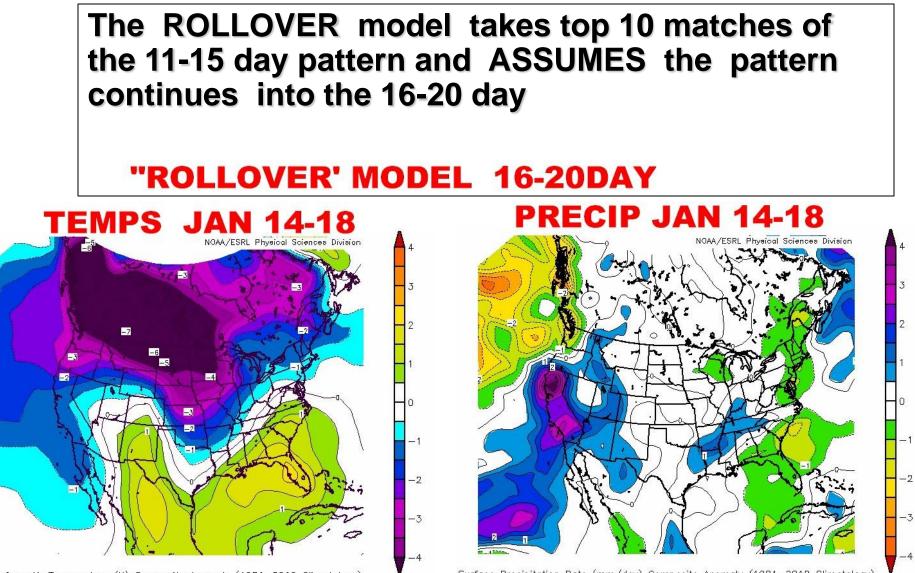
-3.5

-13

60W

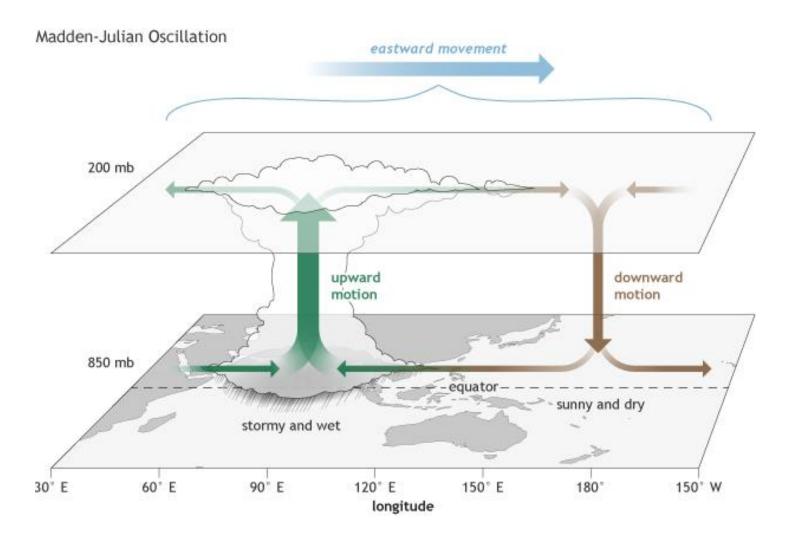
with

70W

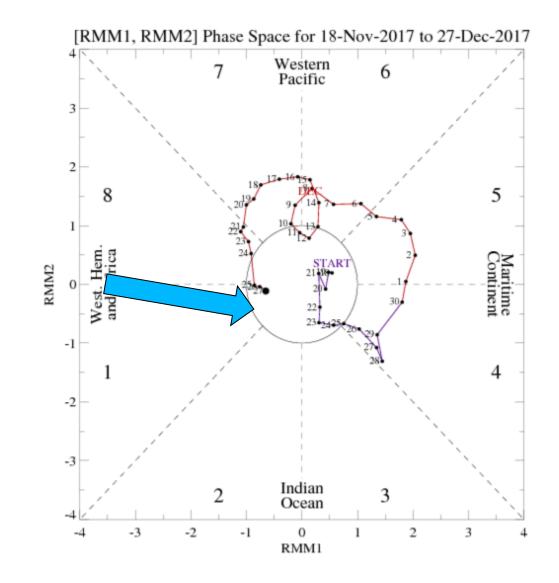


Surface Air Temperature (K) Composite Anomaly (1981-2010 Climatology) CPC Analog 16-20 Day Composite Surface Precipitation Rate (mm/day) Composite Anomaly (1981—2010 Climatology) CPC Analog 16—20 Day Composite

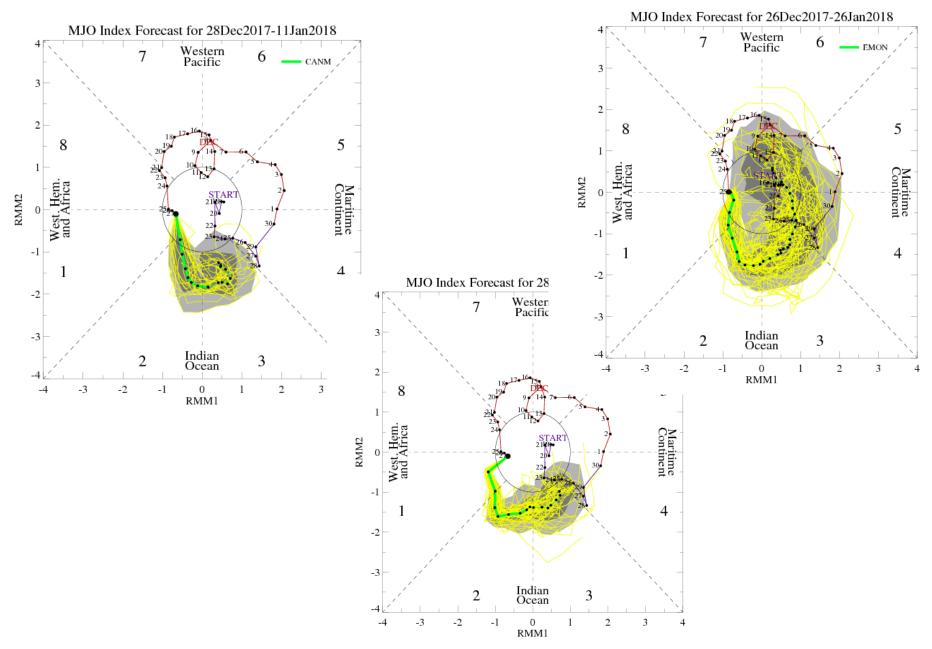
LETS TALK MJO/ENSO



MJO IS IN NEUTRAL

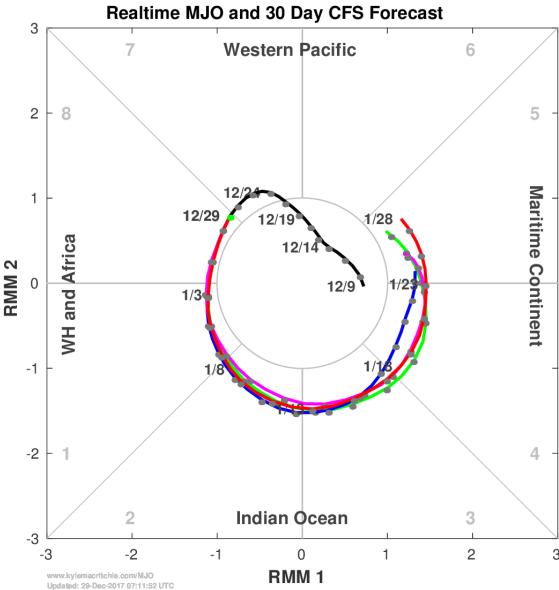


MJO PHASE MOVES BACK OUT .. INTO PHASE 2 AND 3 BY MID / LATE JAN

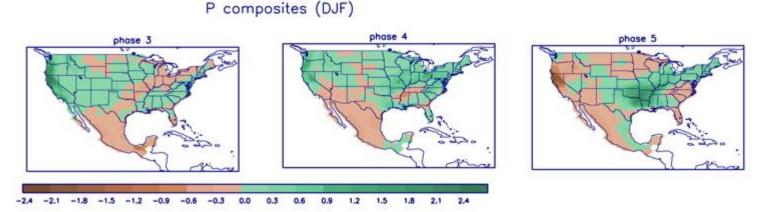


EXPERIMENTAL MJO CONTINUES INTO PHASE 4 5 BY END OF JAN

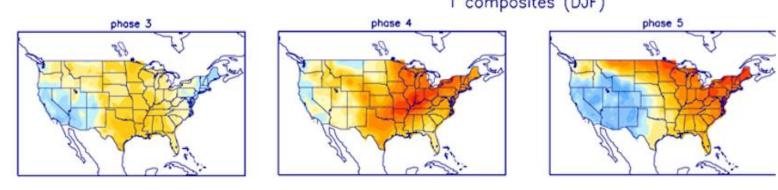
WHICH MEANS WHAT?



IN JAN... PHASE 345 ARE ALL WETTER THAN NORMAL OVER PLAINS / MIDWEST ... HRWW ESPECIALLY IN PHASE 5



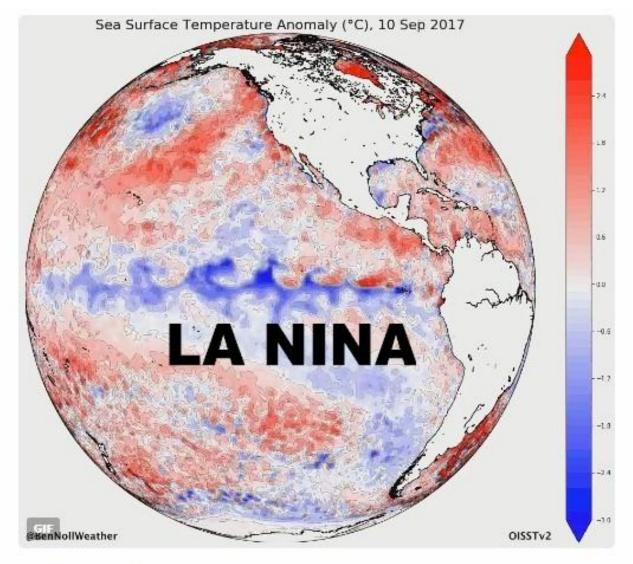
IN JAN... PHASE 3 4 5 ARE ALL WARMER THAN NORMAL OVER PLAINS / MIDWEST ... WHICH SHIFTS INTO EASTERN US IN PHASE 4-5 T composites (DJF)



-3.0 -2.7 -2.4 -2.1 -1.8 -1.5 -1.2 -0.9 -0.6 -0.3 0.0 0.3 0.6 0.9 1.2 1.5 1.8 2.1 2.4 2.7 3.0

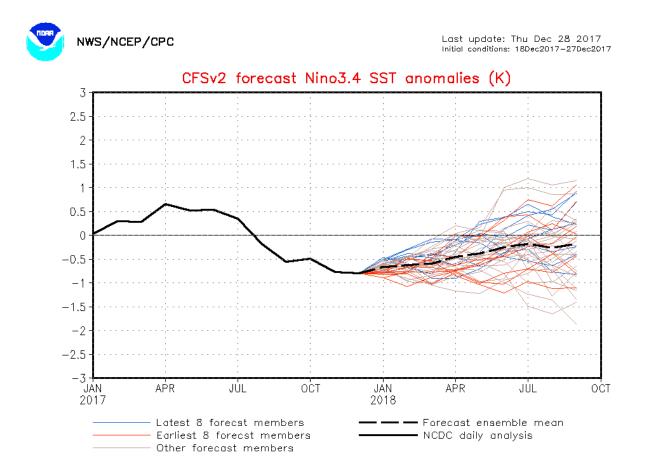
SUMMARY US / HRWW

- 1. NEW ARCTIC BLAST COMING... Dec 31- Jan 3. Sub zero N of I-80 single Digits I-70 to I-80 Teens into OK TX
- 2. Cold pattern ends of Plains JAN 4 ends over East Coast Jan 7. Milder (return to normal) pattern develops but may not last long
- **3.** very dry most areas(esp HRWW) next 3 weeks maybe next 30 days
- 4. CFS week 3 and 4 somewhat warmer than Euro weeklies... But also favor somewhat bewtter than normal rains over Gulf coast ECB
- 5. MJO Phase 3...4..5. favors warmer temps than Euro weeklies and MUCH wetter over HRWW later Jan.. Assuming MJO makes it to Phase 5

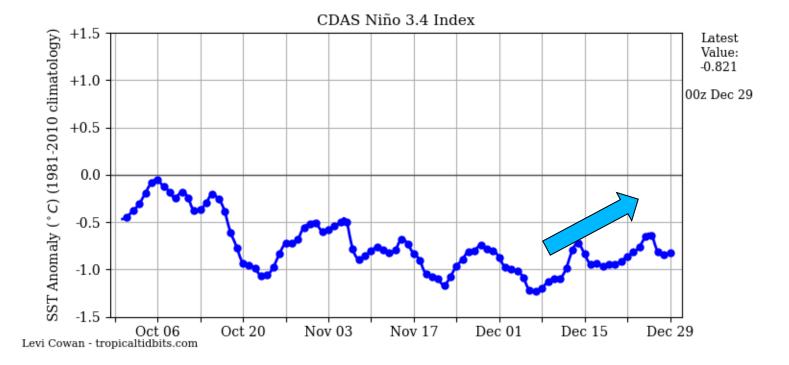


6:29 AM - 13 Sep 2017

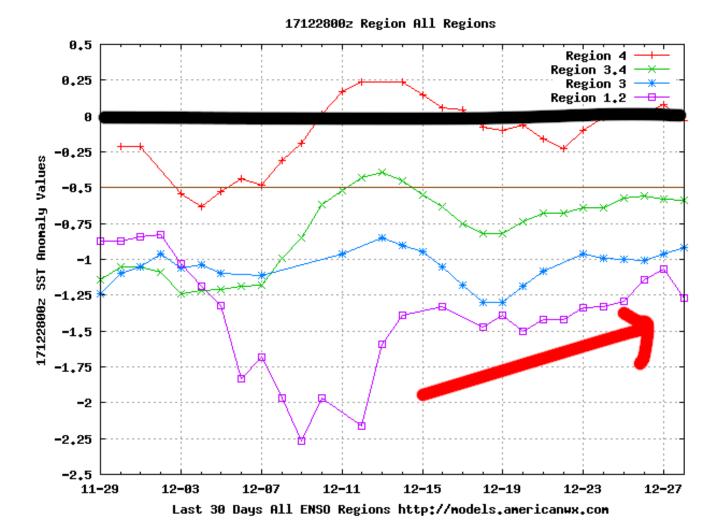
LATEST CFS MODEL PROJECTION = ** La Nina NEVER reaches threshold for MODERATE but stays weak into APRIL... Prolonging dry pattern into at least part of SPRING 2018



ACTUAL ENSO REGION 3.4 LA NINA clearly weakening since DEC 7-10



ACTUAL SEA SURFACE TEMP ANOMALIES – of all 4 regions.. This is NOT a Model "projection" Moderately cold SSTA ... Also shows weakening of the cold SSTA/ LA Nina

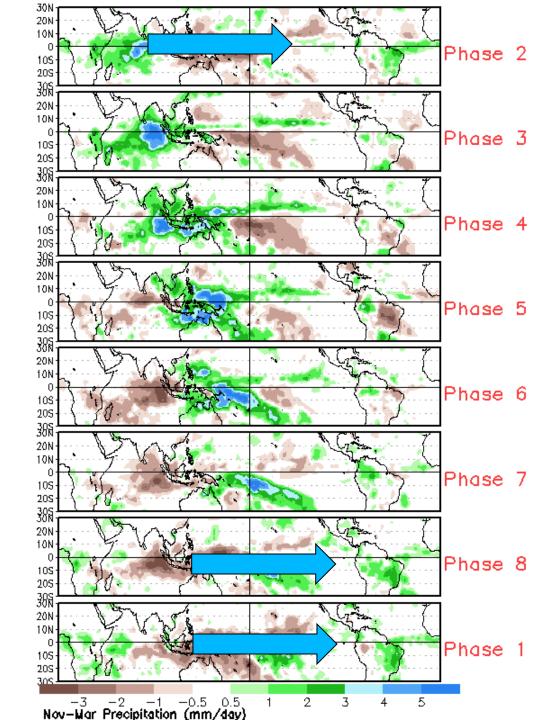


PHASE 7 NEAR NORMAL RAINS BRAZIL STILL WET OVER ARG

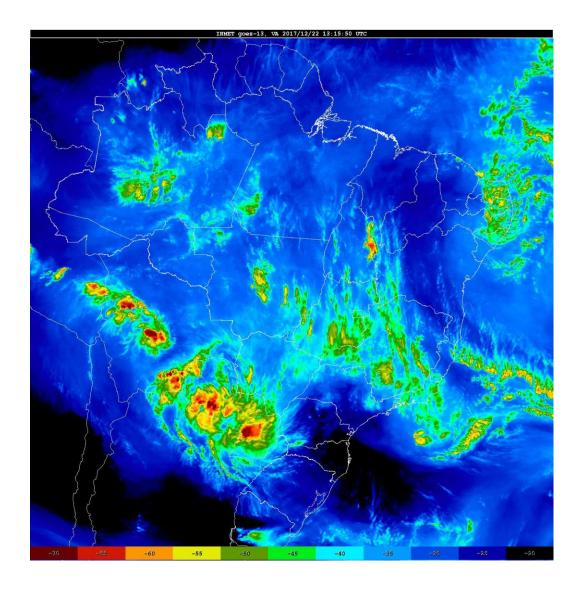
PHASE 8

PHASE 1

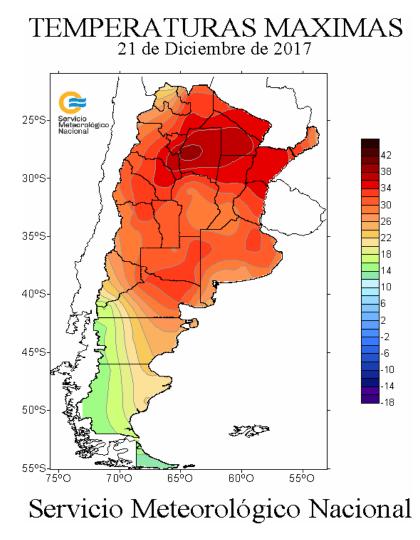
PHASE 2



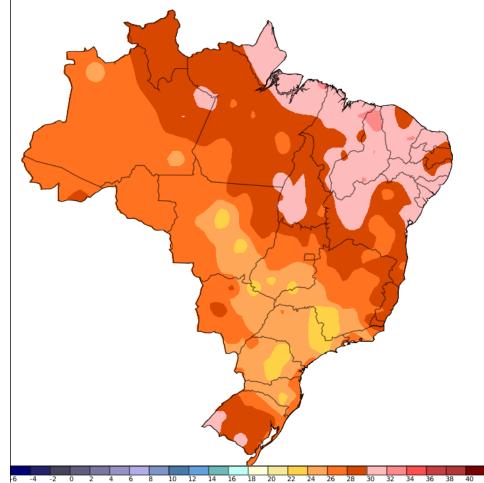
BIG storms over Parg clear over all of ARG.. storms over Minas Goias Tocatins into eastern Mato Grosso



MAX TEMPS DEC 21



Instituto Nacional de Meteorologia - INMET Temperatura Máxima (°C) Informações Sinóticas do dia 22/12/2017 às 13:00 UTC

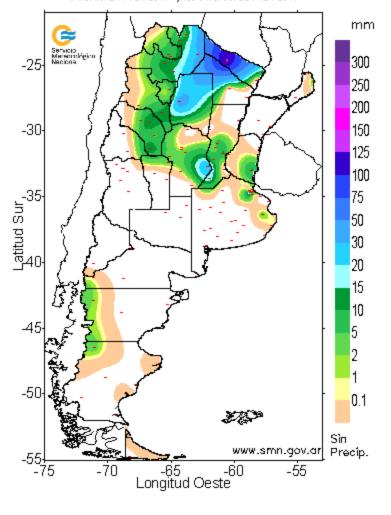


RAINFALL DEC 21

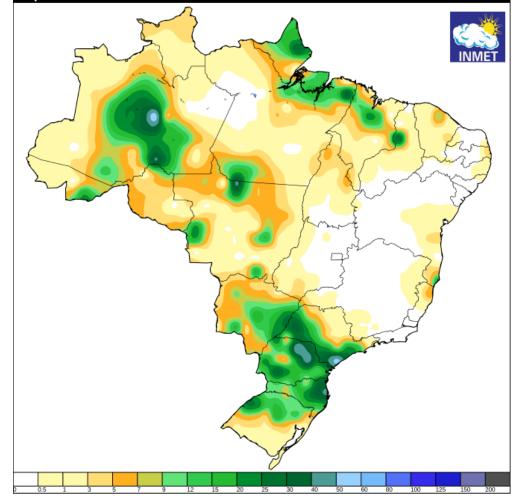
RAINFALL DEC 21=

Servicio Meteorológico Nacional

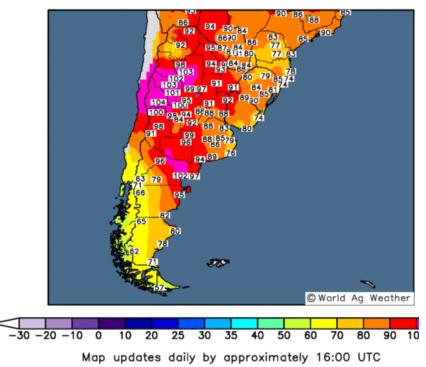
PRECIPITACION (EN MILIMETROS) ACUMULADA EN 24 HORAS Los valores corresponden al periodo comprendido entre las 9 hs. del 21 / 12 / 2017 y las 9 hs. del 22 / 12 / 2017



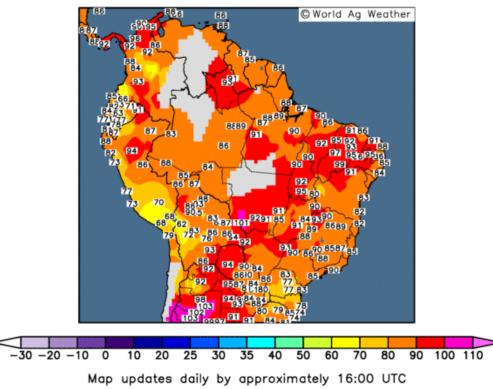
Instituto Nacional de Meteorologia - INMET Precipitação Acumulada em 24 horas Mapa do dia 21/12/2017



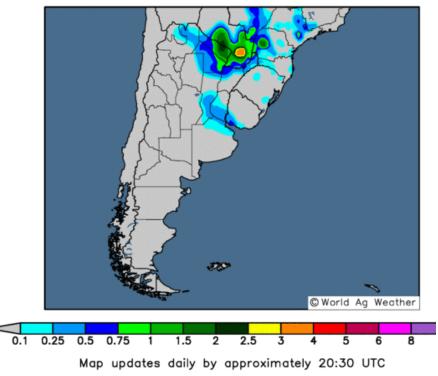
Observed Maximum Temperature (°F) 20 Dec 2017



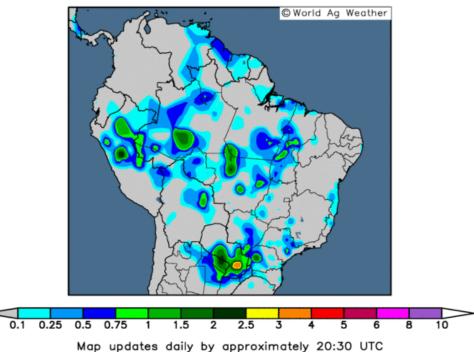
Observed Maximum Temperature (°F) 20 Dec 2017



24-hour Precipitation Analysis Observed precipitation (inches) through 12 UTC 20 Dec 2017

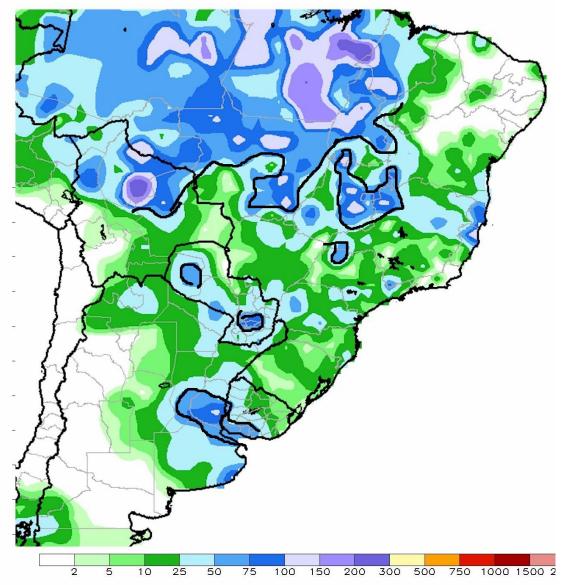


24-hour Precipitation Analysis Observed precipitation (inches) through 12 UTC 20 Dec 2017



TOTAL RAINFALL LAST 7 DAYS

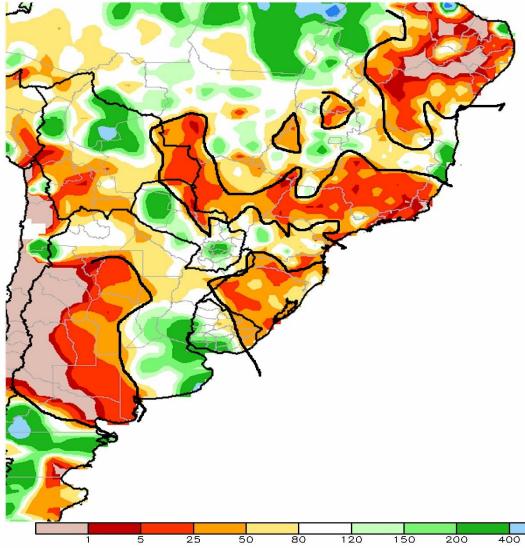
CPC Unified Gauge 7-Day Total Rainfall (mm) Period: 14Dec2017 - 20Dec2017



DRY MOST AREAS OVER PAST 7 DAYS– black lines = 2"/50mm line ...only Mato Grosso & Tocatins saw 2"/50mm+

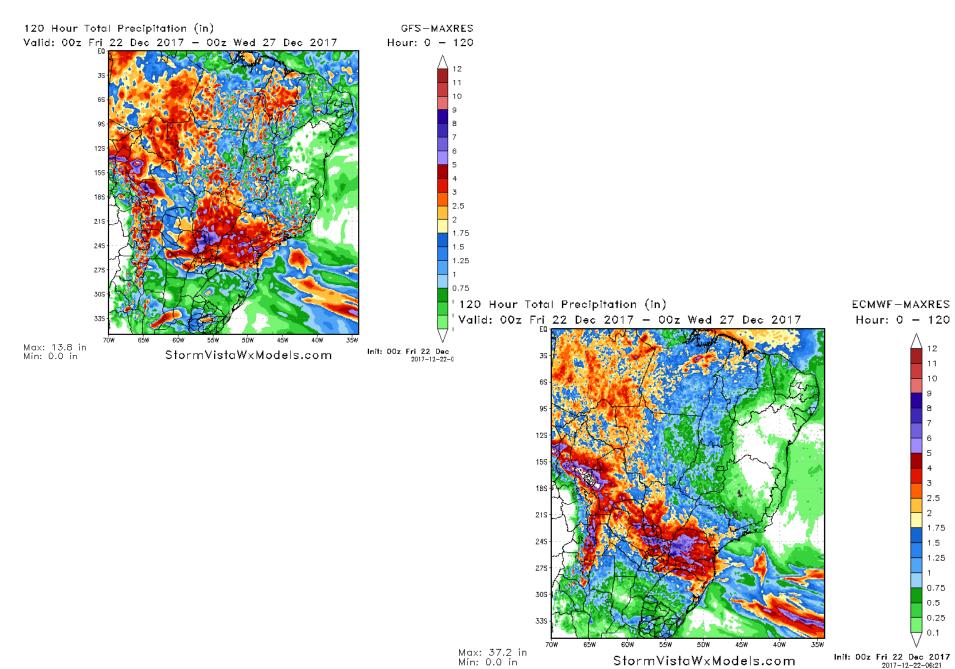
RAINFALL DEPARTURE FROM NORMAL PAST 7 DAYS

CPC Unified Gauge 7-Day Percent of Normal Rainfall (%) Period: 14Dec2017 - 20Dec2017

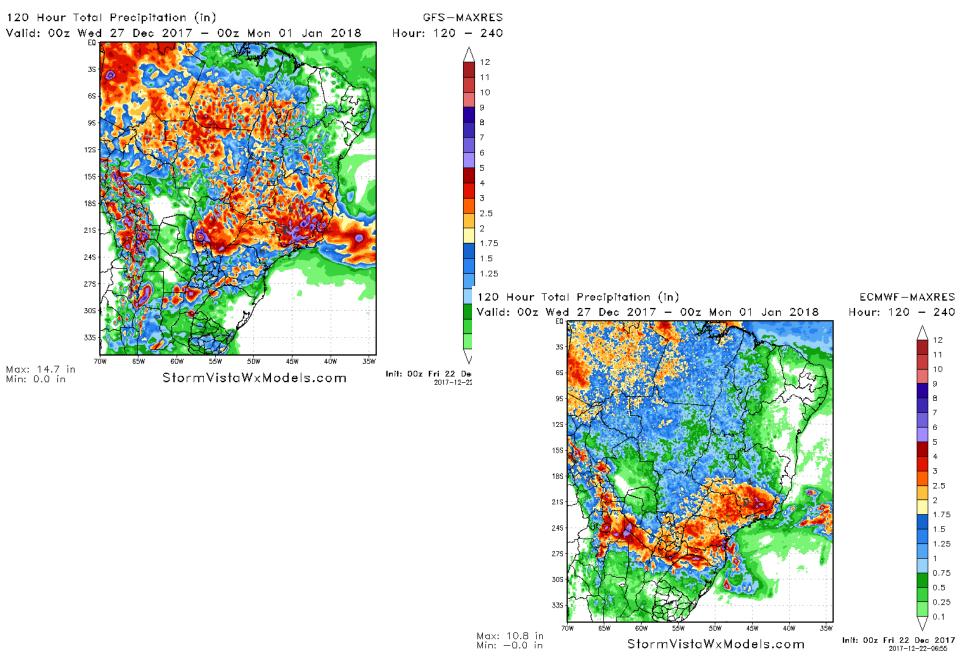


DRY MOST AREAS OVER OF BRAZIL IN PAST 7 DAYS– black lines = shows 5-25% of Normal rainfall

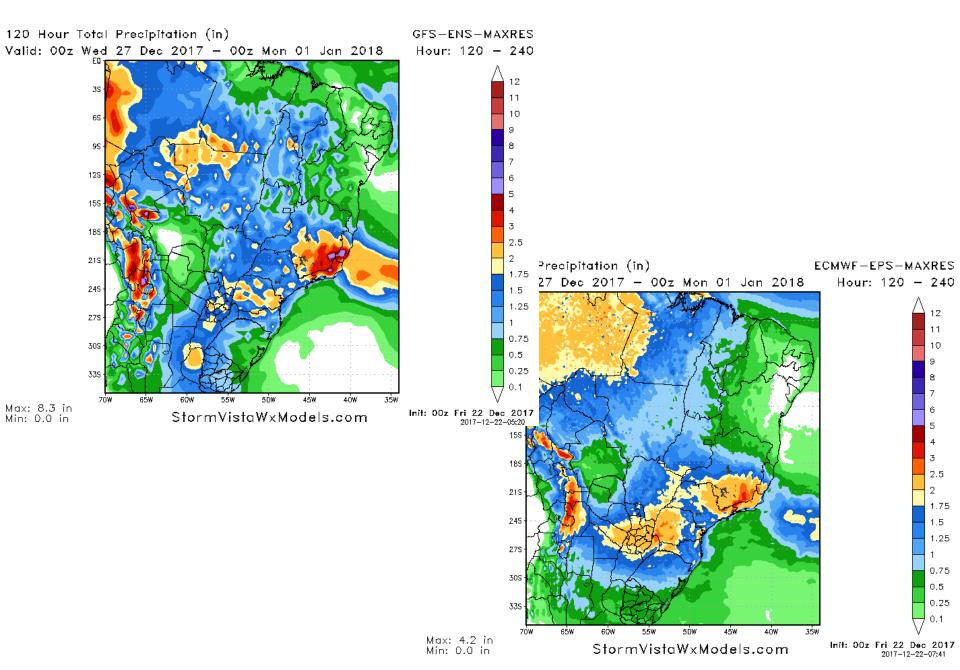
GFS / EURO MODELS NEXT 5 DAYS

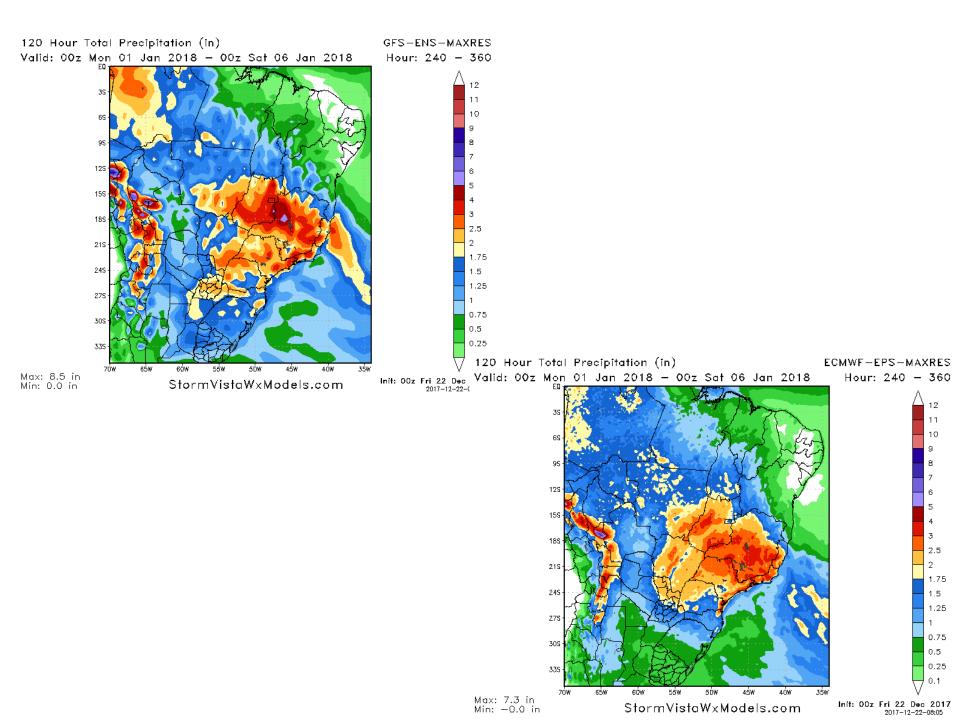


GFS / EUROPEAN MODELS 6-10 DAY



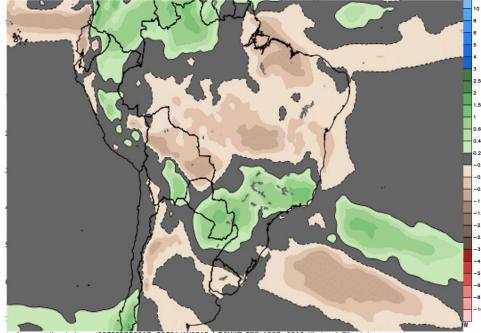
GFS / EUROPEAN MODELS 6-10 ENSEMBLES





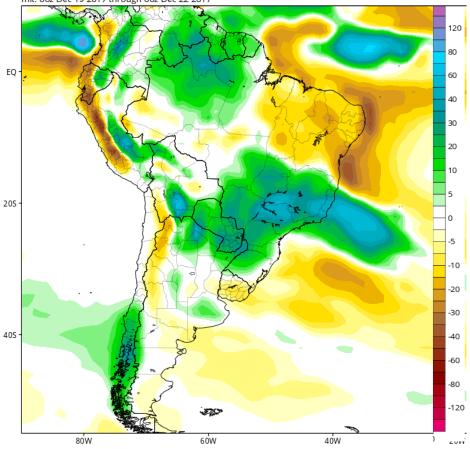
WEEK 2... DEC 29-JAN 4 EURO LEFT CFS/ RIGHT EURO has central ARG slightly dry CFS show "normal" rains for central ARG .. EURO ET east Parg SE Brazil CFS agrees with that

ECMWF EPS Ensemble Mean 7-day Avg Precipitation Anomaly [inch] Init: 00Z21DEC2017 -- [168] hr --> Valid on Thu 00Z04JAN2018 Day 0 - Day 7 Min|Max Anom: -2.7 | 5.2 inch



Accumulation between 00Z28DEC2017-00Z04JAN2018 | ECMWF EPS 1997-2016 Hindcast Climatology

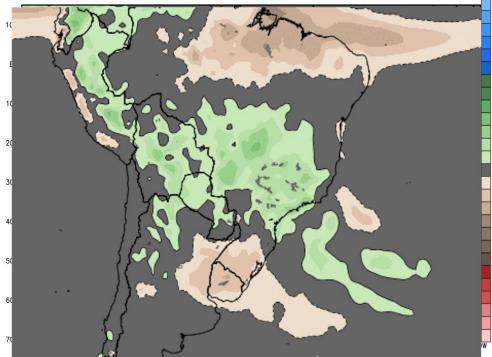
CFSv2 Accumulated Precip. Anomaly (mm) from 00z29Dec2017 to 00z05Jan2018 (Days 8-14) Average of last 48 forecasts (12 runs x 4 members) Init: 06z Dec 19 2017 through 00z Dec 22 2017



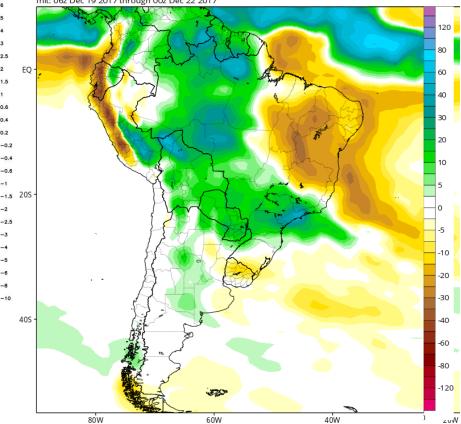
WEEK 3 ... JAN 5=11 EURO LEFT CFS/ RIGHT EURO still has central ARG into se Brazil dry - CFS central ARG near Normal --SE & sw Brazil WET. EURO is wetter over western central & east central Brazil

Min|Max Anom: -2.9 | 3.1 inch

ECMWF EPS Ensemble Mean 7-day Avg Precipitation Anomaly [inch] Init: 00Z21DEC2017 -- [252] hr --> Valid on Thu 00Z11JAN2018 Day 3.5 - Day 10.5



CFSv2 Accumulated Precip. Anomaly (mm) from 00z05Jan2018 to 00z12Jan2018 (Days 15-21) Average of last 48 forecasts (12 runs x 4 members) Init: 06z Dec 19 2017 through 00z Dec 22 2017



WEEK 4 ... JAN 12-18 EURO LEFT CFS/ RIGHT central & northern ARG = WET as is SE Brazil WET DRY over central/ east central Brazil

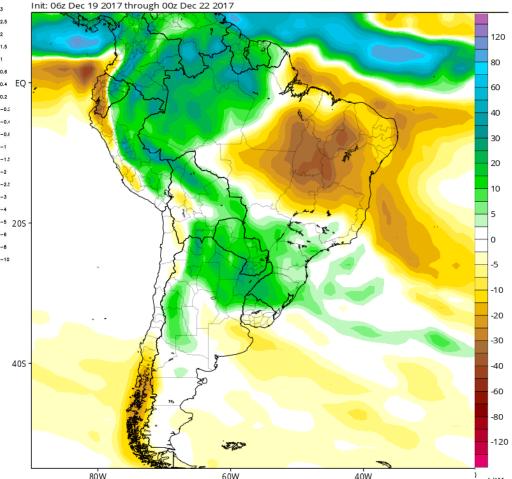
.2 1

ECMWF EPS Ensemble Mean 7-day Avg Precipitation Anomaly [inch] Init: 00Z21DEC2017 -- [336] hr --> Valid on Thu 00Z18JAN2018 Day 7 - Day 14

140W 1.30W 80W 110W 100W 90W

Accumulation between 00Z11JAN2018-00Z18JAN2018 | ECMWF EPS 1997-2016 Hindcast Climatology

CFSv2 Accumulated Precip. Anomaly (mm) from 00z12Jan2018 to 00z19Jan2018 (Days 22-28) Average of last 48 forecasts (12 runs x 4 members)



40W

2011

80'W

Sometimes I wonder whether the world is being run by smart people who are putting us on, or by imbeciles who really mean it.

MARK TWAIN

