Summary of Key Briefing Points
1030-1130am MST THU Feb 25, 2016

Current Conditions as of THU 12Z-15Z February 25

Tropics and Mid-latitudes

Over the Tropical Pacific:

- Quite convection in FD
- Main activity in SH SPCZ
- CXI Indicates warm air aloft, low level capping inversion

Tropical Outlook

- Main convection in SPCZ----to remain very active, and eastward displaced

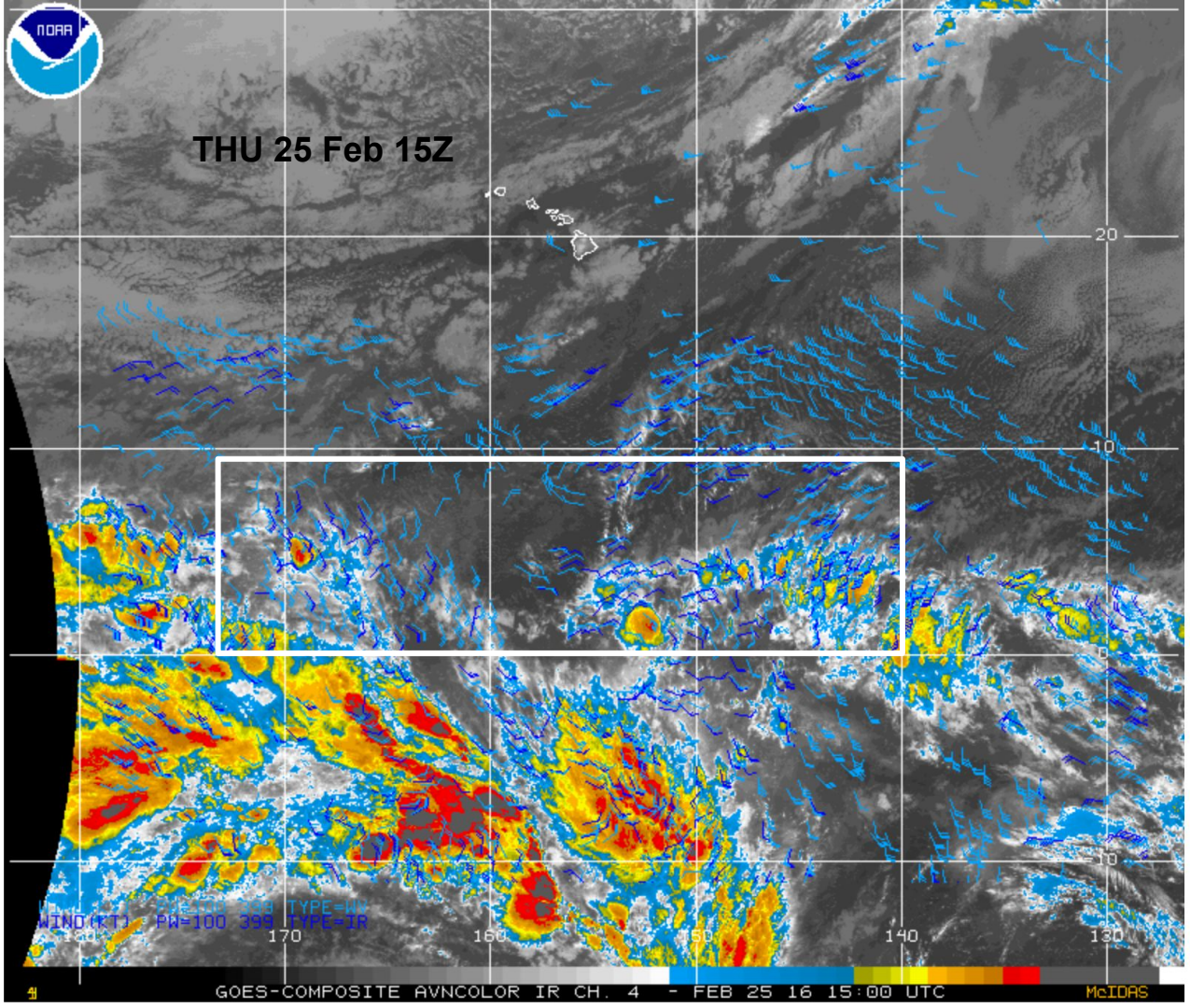
Midlatitude Conditions/Outlook

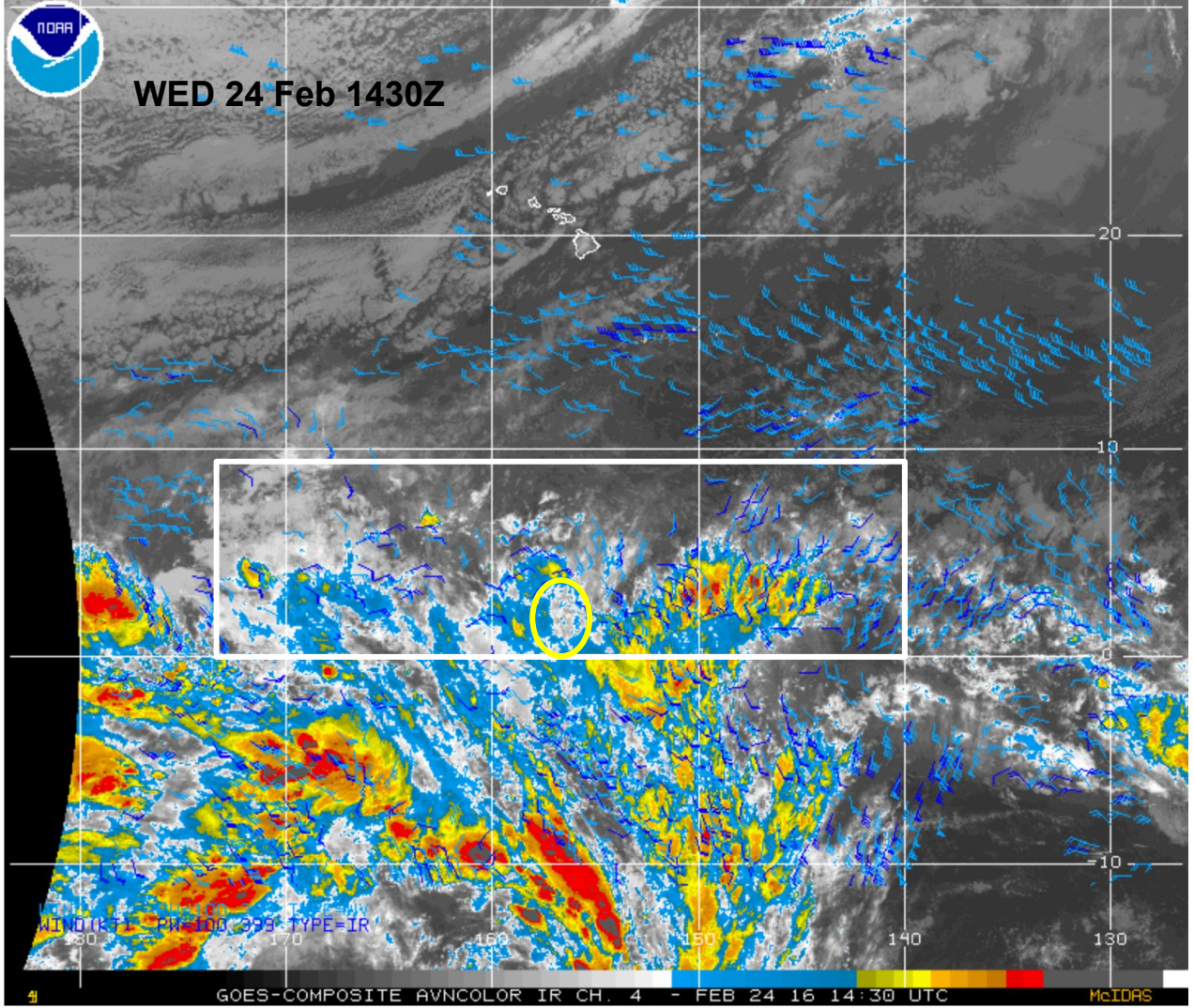
Short Term:

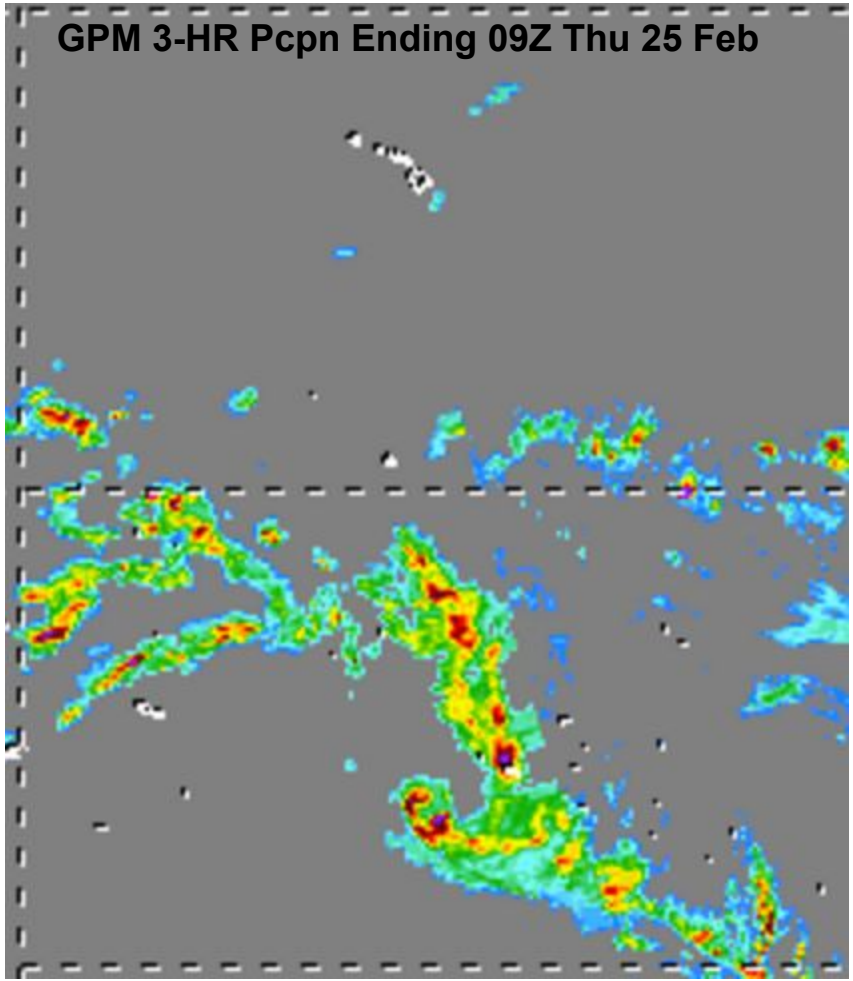
- CA quiet, rains expected by weekend in N

- **Medium - Long Term:**

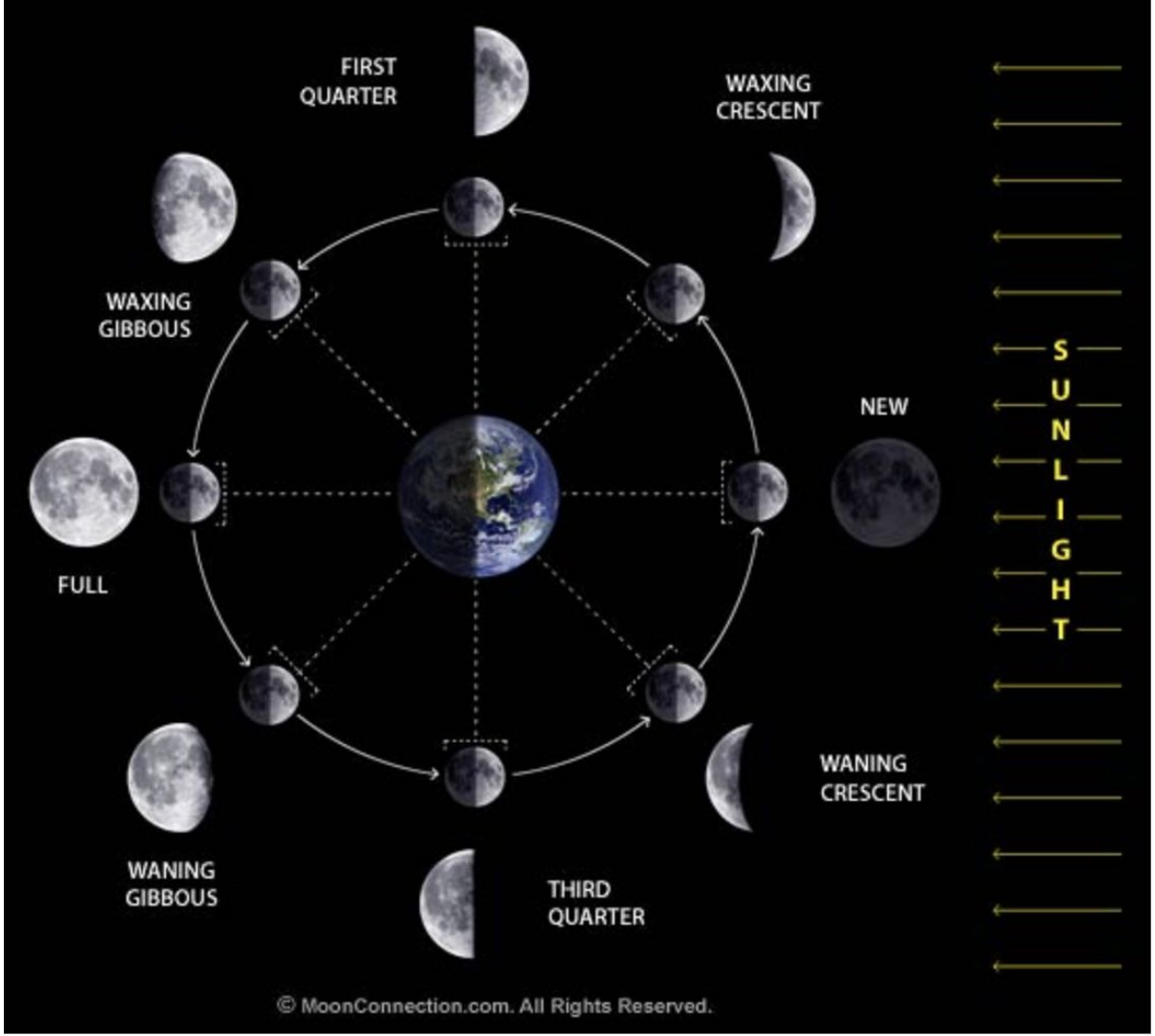
- possible Central CA rain early next week
- No appreciable CA pcpn expected over the next 7-10 days
- Day 10-15 in EC and GFS indicate major change in the EPacific circulation


THU 25 Feb 15Z
20
10
0
-10
170
160
150
140
130
WIND(KT) PW=100 399 TYPE=IR
GOES-COMPOSITE AVNCOLOR IR CH. 4 - FEB 25 16 15:00 UTC
McIDAS


WED 24 Feb 1430Z
20
10
0
-10
180
170
160
150
140
130
GOES-COMPOSITE AVNCOLOR IR CH. 4 - FEB 24 16 14:30 UTC
McIDAS


GPM 3-HR Pcpn Ending 09Z Thu 25 Feb

As Observed on CXI
by Paul Johnston
Leslie Harten
Thu 25 Feb


FIRST QUARTER
WAXING CRESCENT
WAXING GIBBOUS
NEW
FULL
SUNLIGHT
WANING CRESCENT
WANING GIBBOUS
THIRD QUARTER
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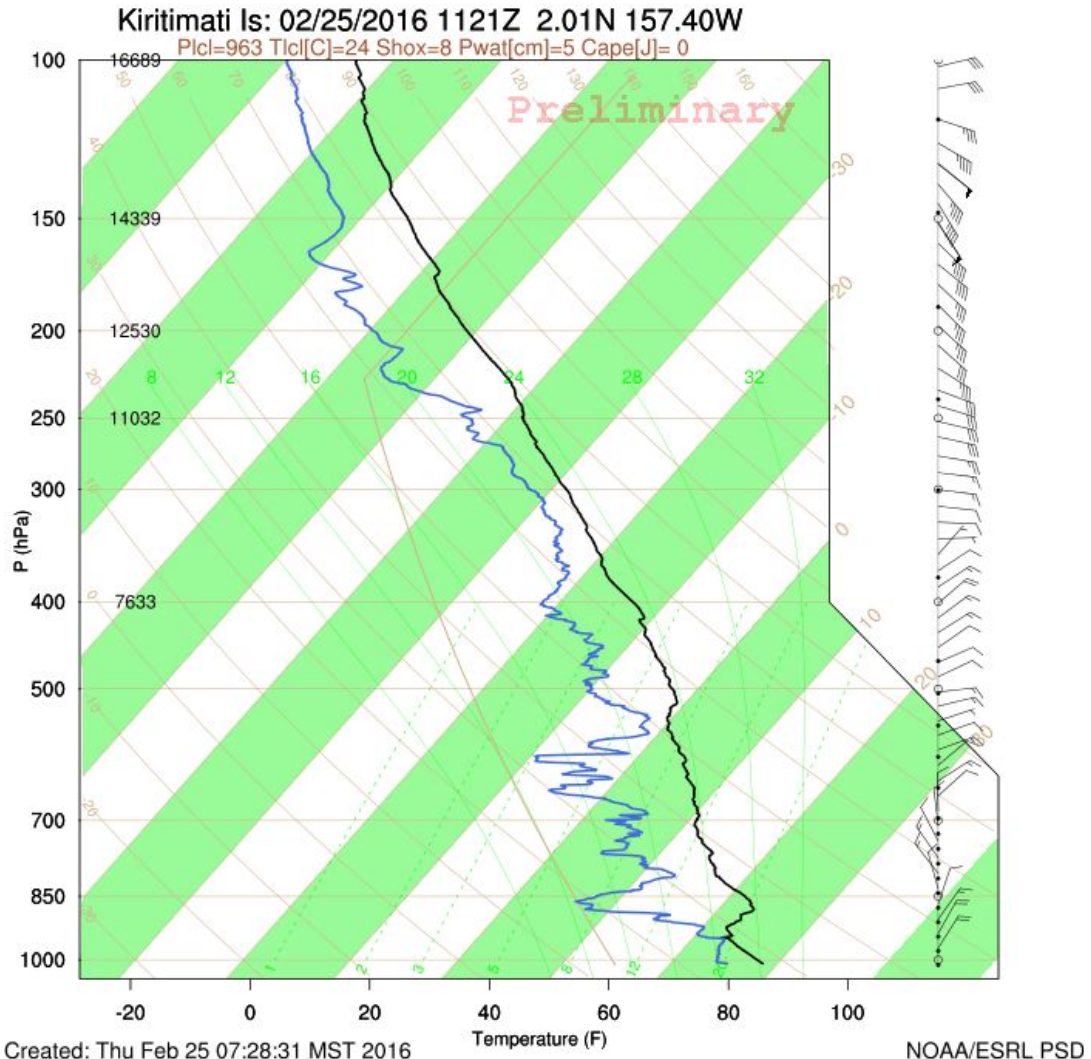
Launch 121LT, 1121UT: 7.5m/s steady NNE wind, 9 m/s gusts, needed
four hands to fill and launch.

130LT: Bright gibbous moon and Venus nearly overhead, can see shadows
from moonlight. Where there are no clouds, sky is clear and stars
abundant. Partly cloudy; Cu moving quickly from NE; a patch of Ci
above. Ocean swell and waves still larger than normal.

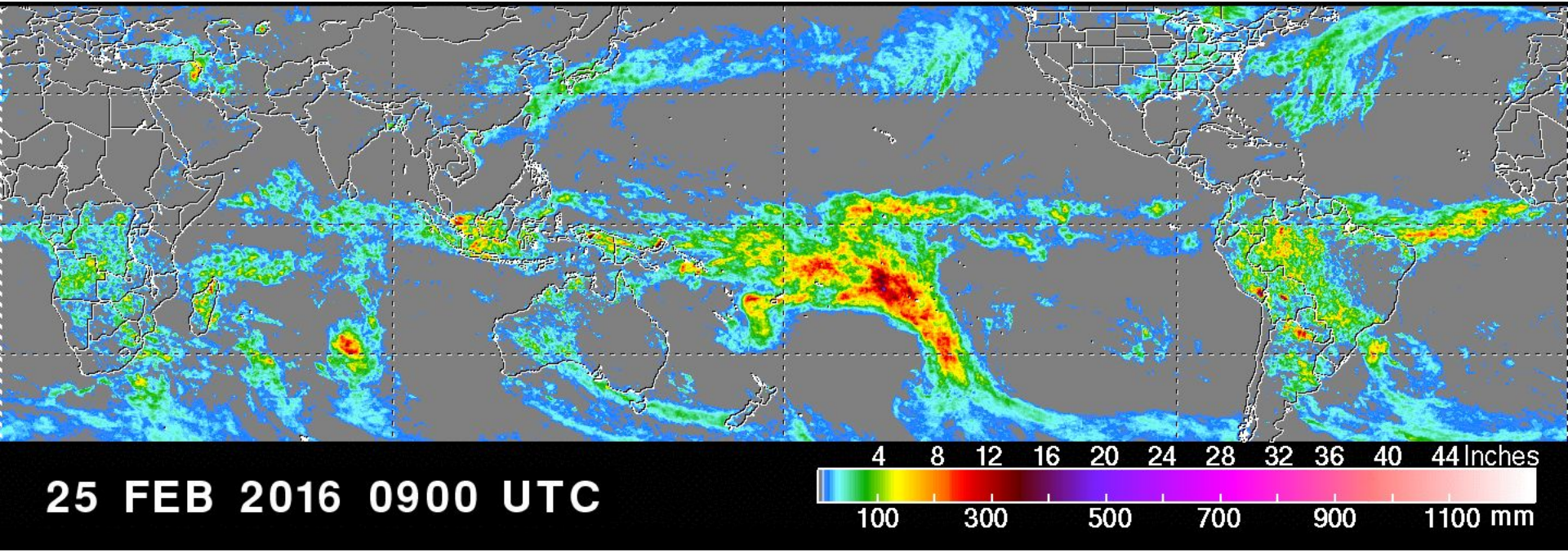
200LT: Bright moon overhead, standing on our own shadows. Cu still
moving briskly from NE. Appears to be a large cloud to NE near
horizon. It is large in area, not enough light to see details such as
type or height. Surface winds still ~7m/s, with gusts to 9.
Direction has changed from 30 to 20 degrees.

250LT: Balloon on way down. Bright moon, more clouds. Clouds not
moving as fast. More clouds to north, extending to horizon.

Paul and Leslie



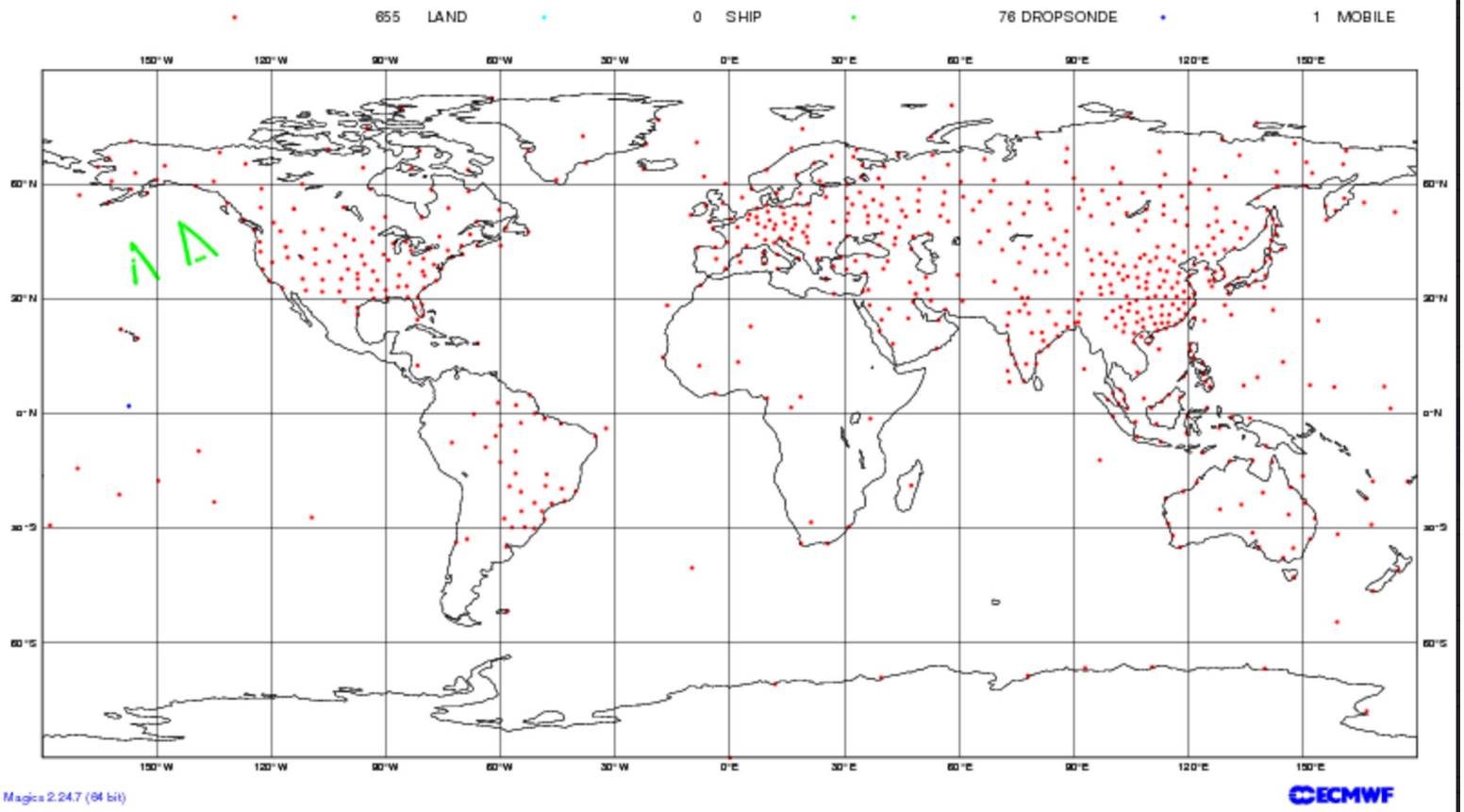
GPM 7 Day Accumulation Ending 09Z 25 Feb



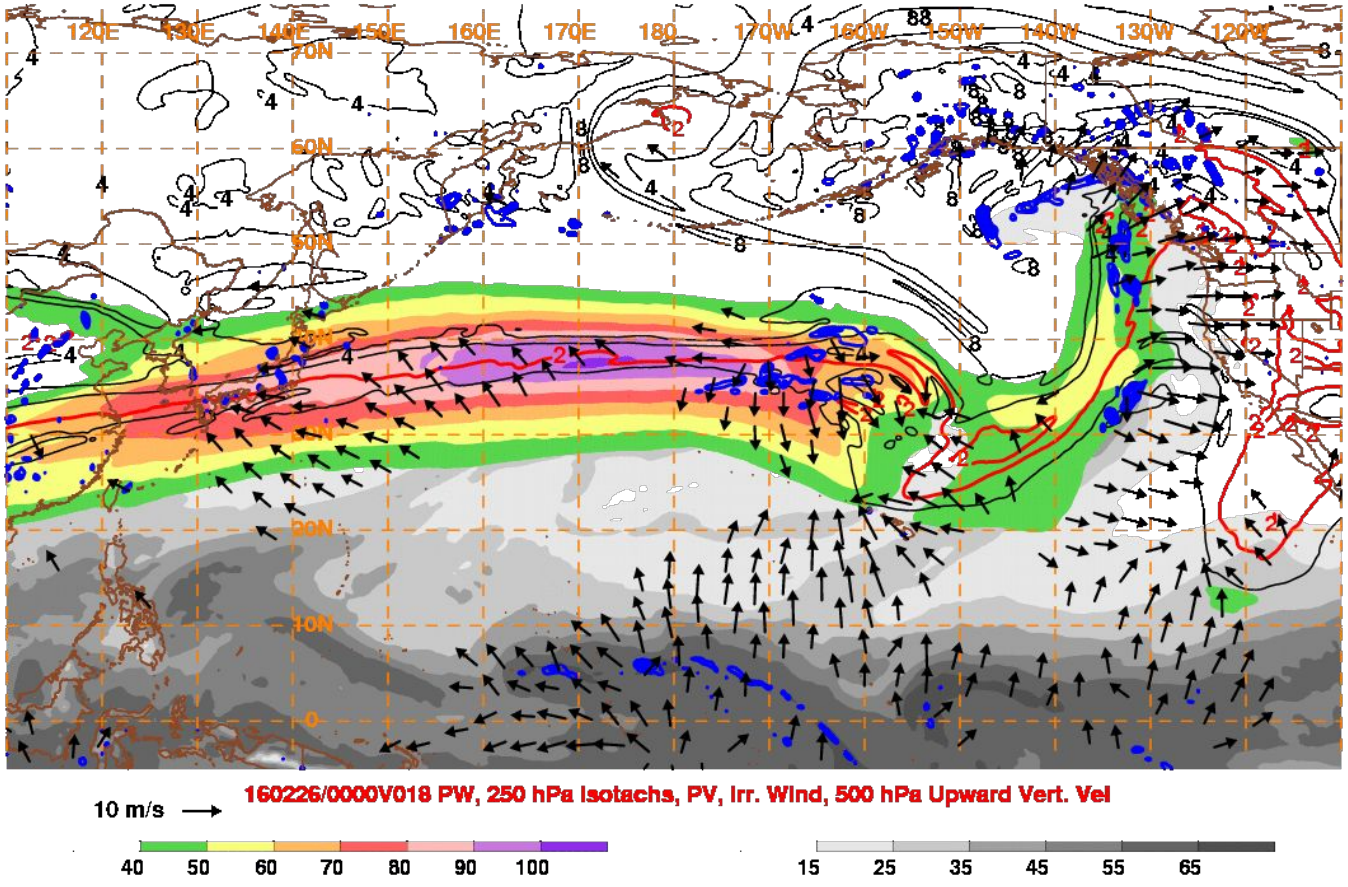
ECMWF Data Coverage (All obs DA) - Temp

14/Feb/2016; 00 UTC

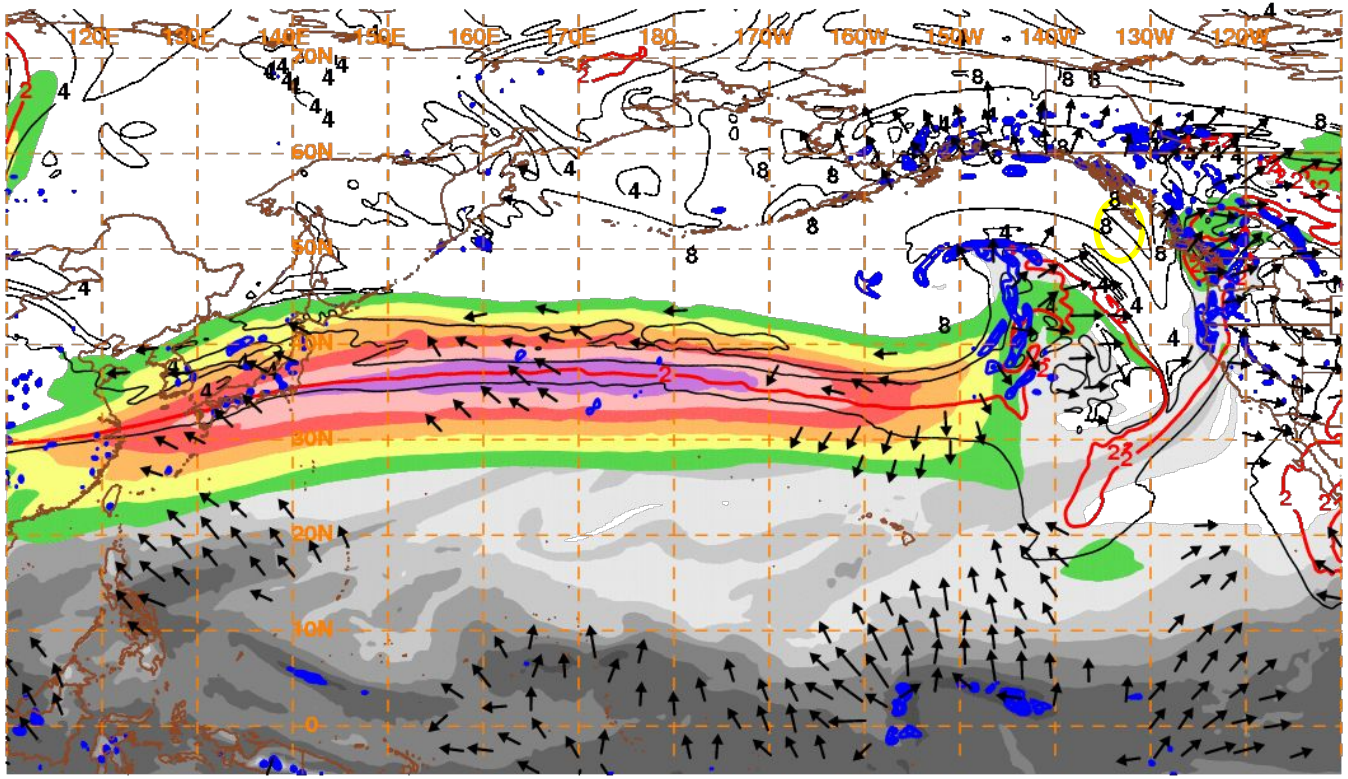
Total number of obs = 732



00Z FRI


120E
130E
140E
150E
160E
170E
180
170W
160W
150W
140W
130W
120W
70N
60N
50N
40N
30N
20N
10N
0
160226/0000V018 PW, 250 hPa Isotachs, PV, Irr. Wind, 500 hPa Upward Vert. Vel
10 m/s
40 50 60 70 80 90 100
15 25 35 45 55 65

00Z Sat


120E
130E
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150E
160E
170E
180
170W
160W
150W
140W
130W
120W
60N
50N
40N
30N
20N
10N
0
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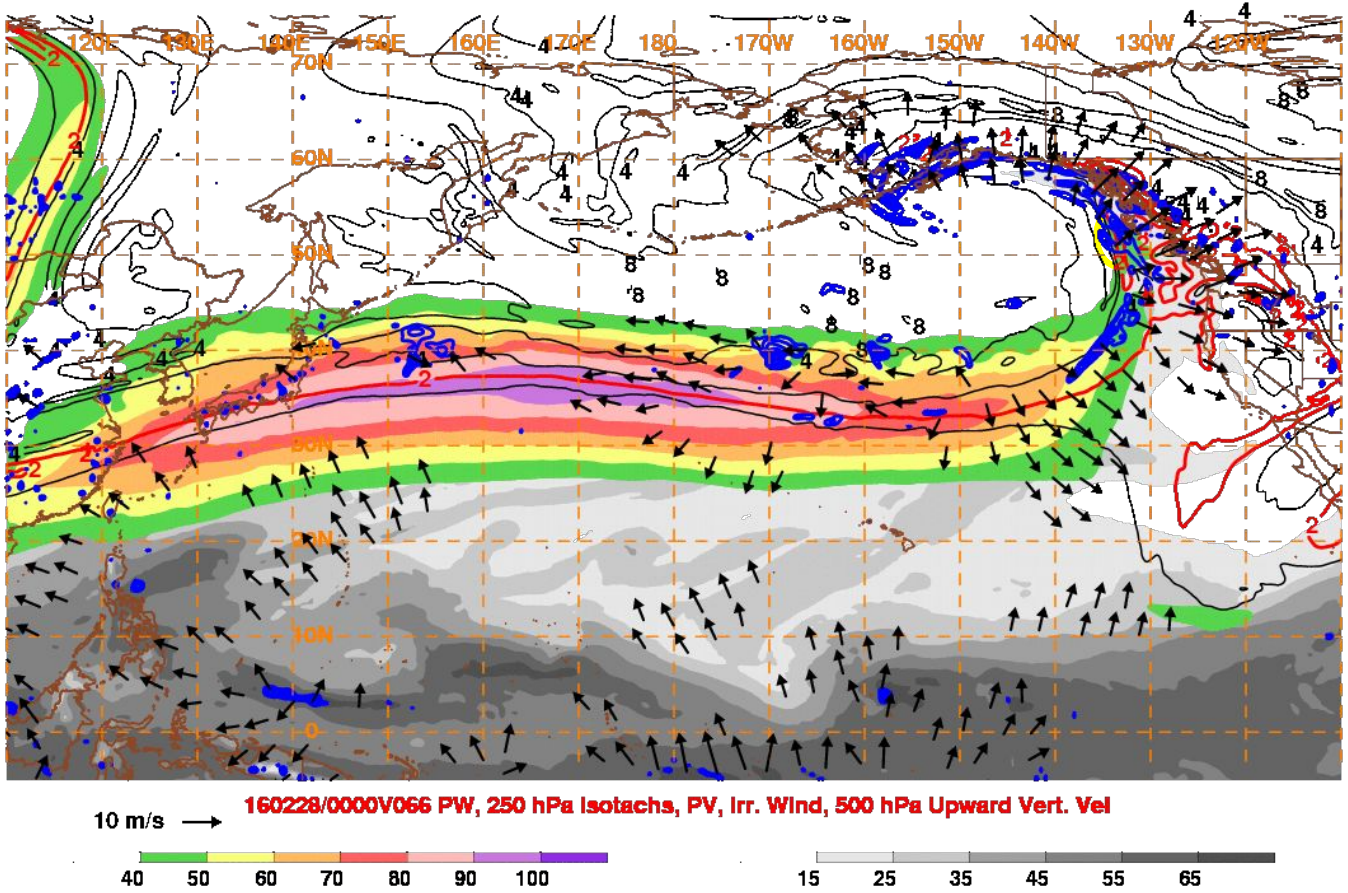
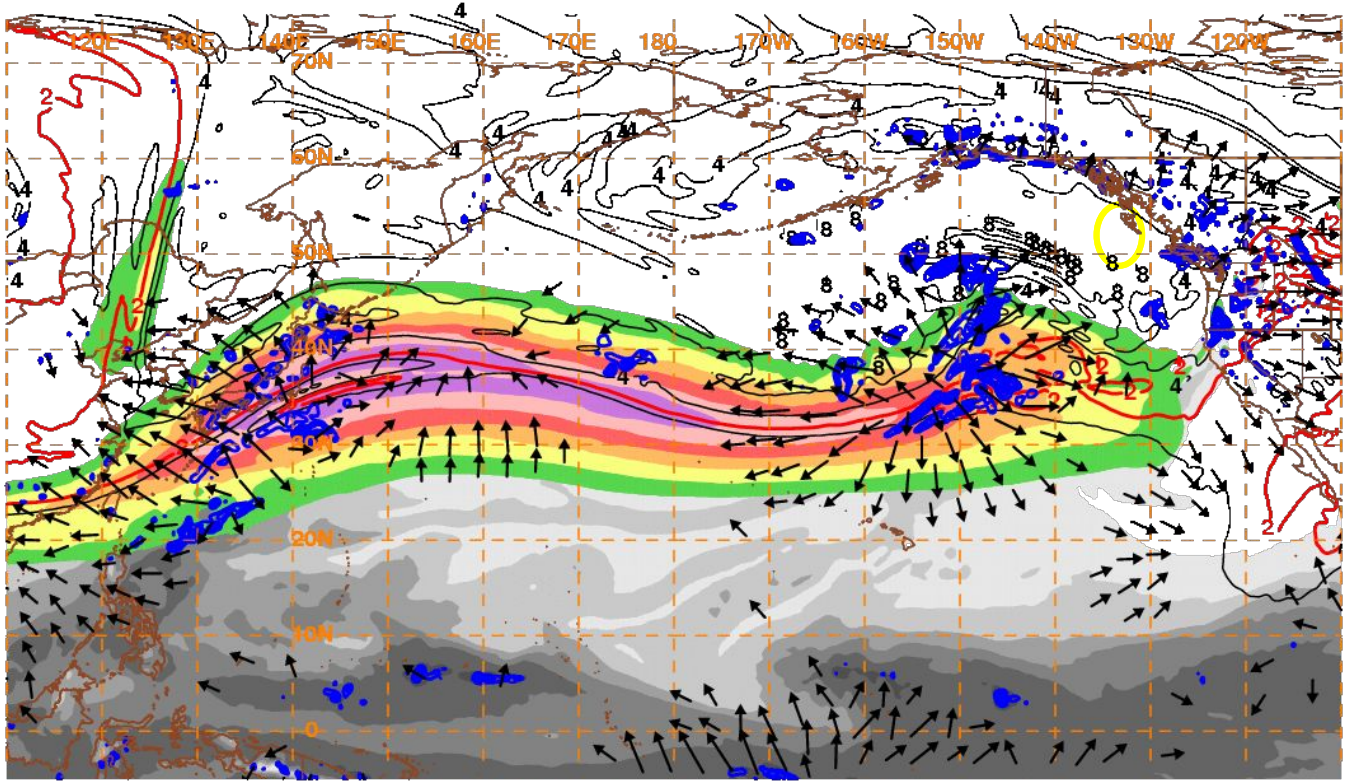
10 m/s
40 50 60 70 80 90 100
15 25 35 45 55 65

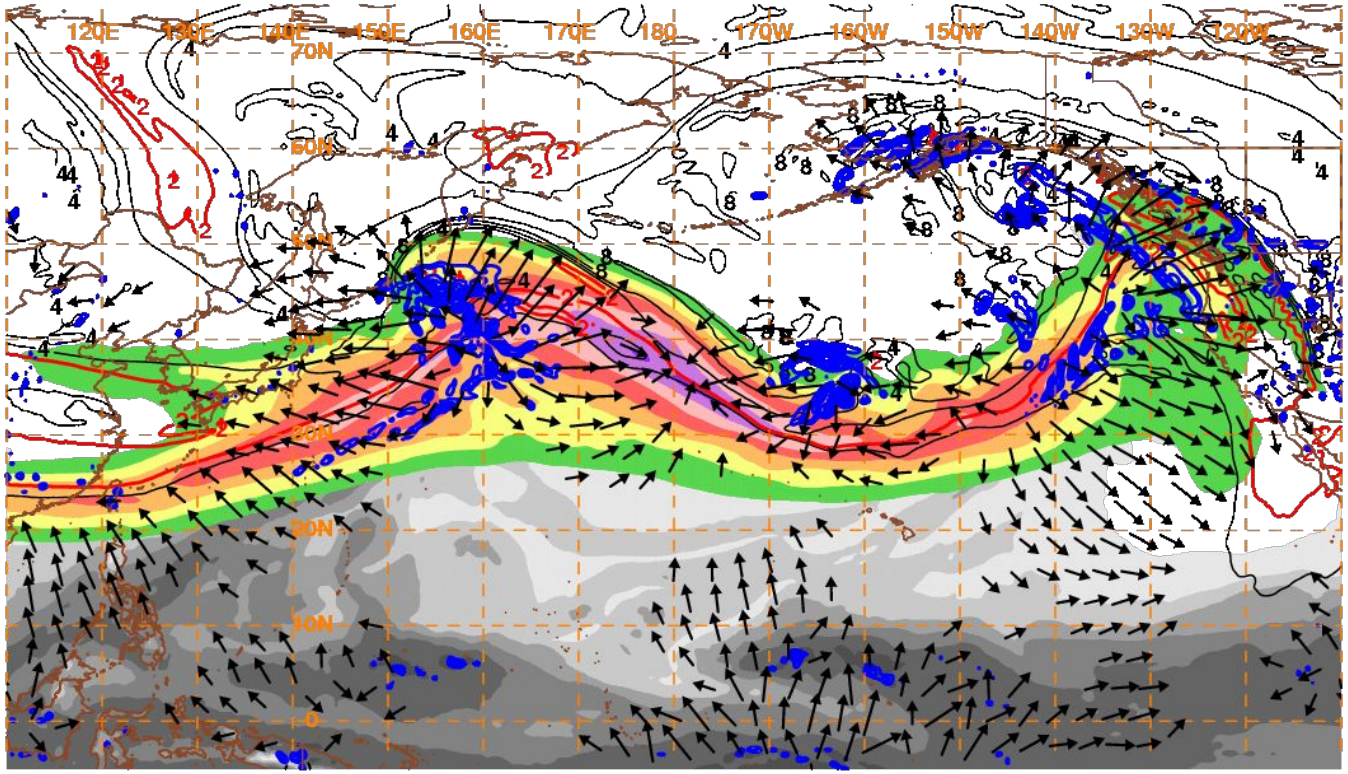
00Z Sun


120E
130E
140E
150E
160E
170E
180
170W
160W
150W
140W
130W
120W
70N
60N
50N
40N
30N
20N
10N
0
160228/0000V066 PW, 250 hPa Isotachs, PV, Irr. Wind, 500 hPa Upward Vert. Vel
10 m/s
40 50 60 70 80 90 100
15 25 35 45 55 65

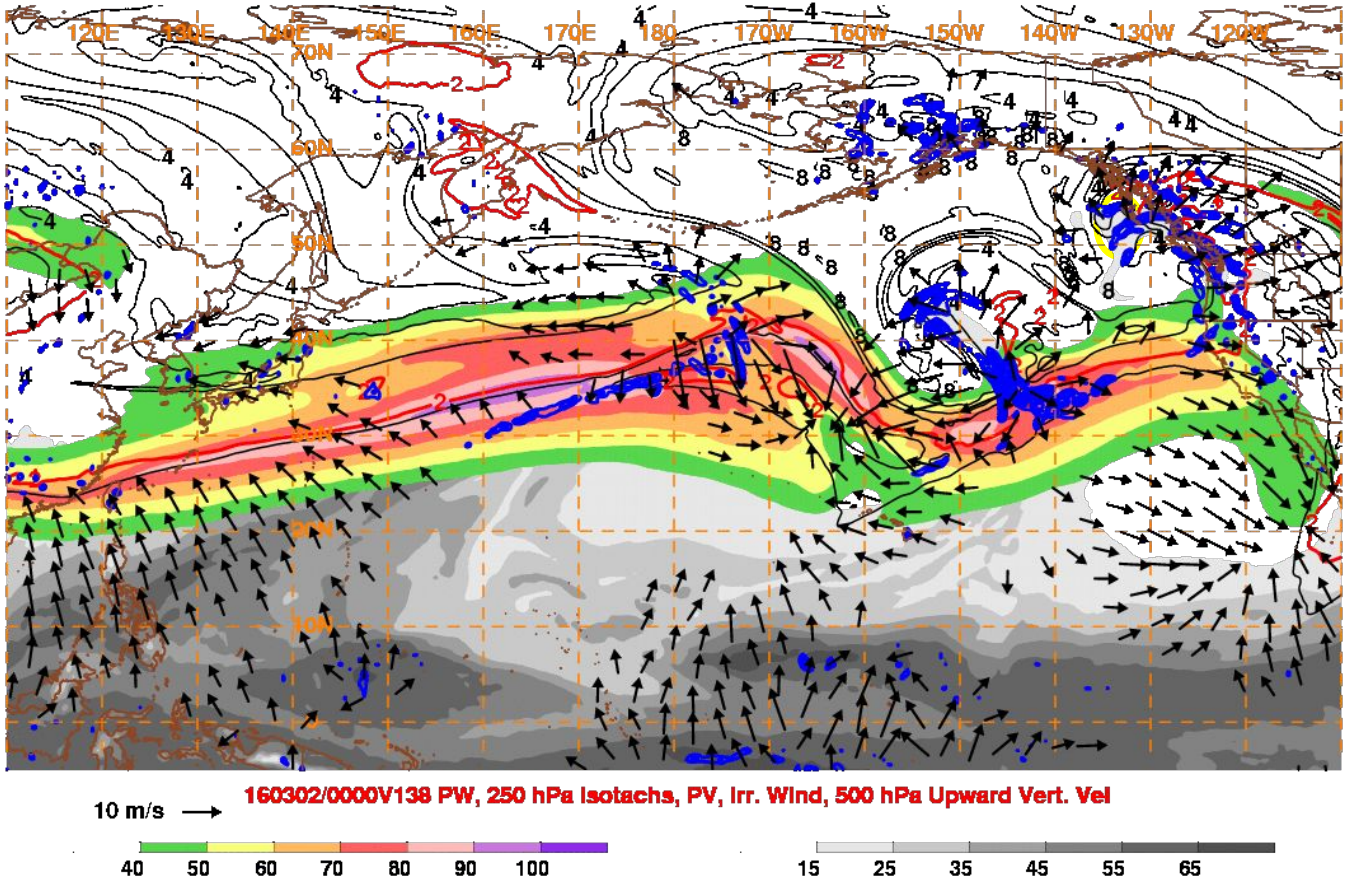
00Z Mon


120E
130E
140E
150E
160E
170E
180
170W
160W
150W
140W
130W
120W
70N
60N
50N
40N
30N
20N
10N
0
160229/0000V090 PW, 250 hPa Isotachs, PV, Irr. Wind, 500 hPa Upward Vert. Vel
10 m/s
40 50 60 70 80 90 100
15 25 35 45 55 65

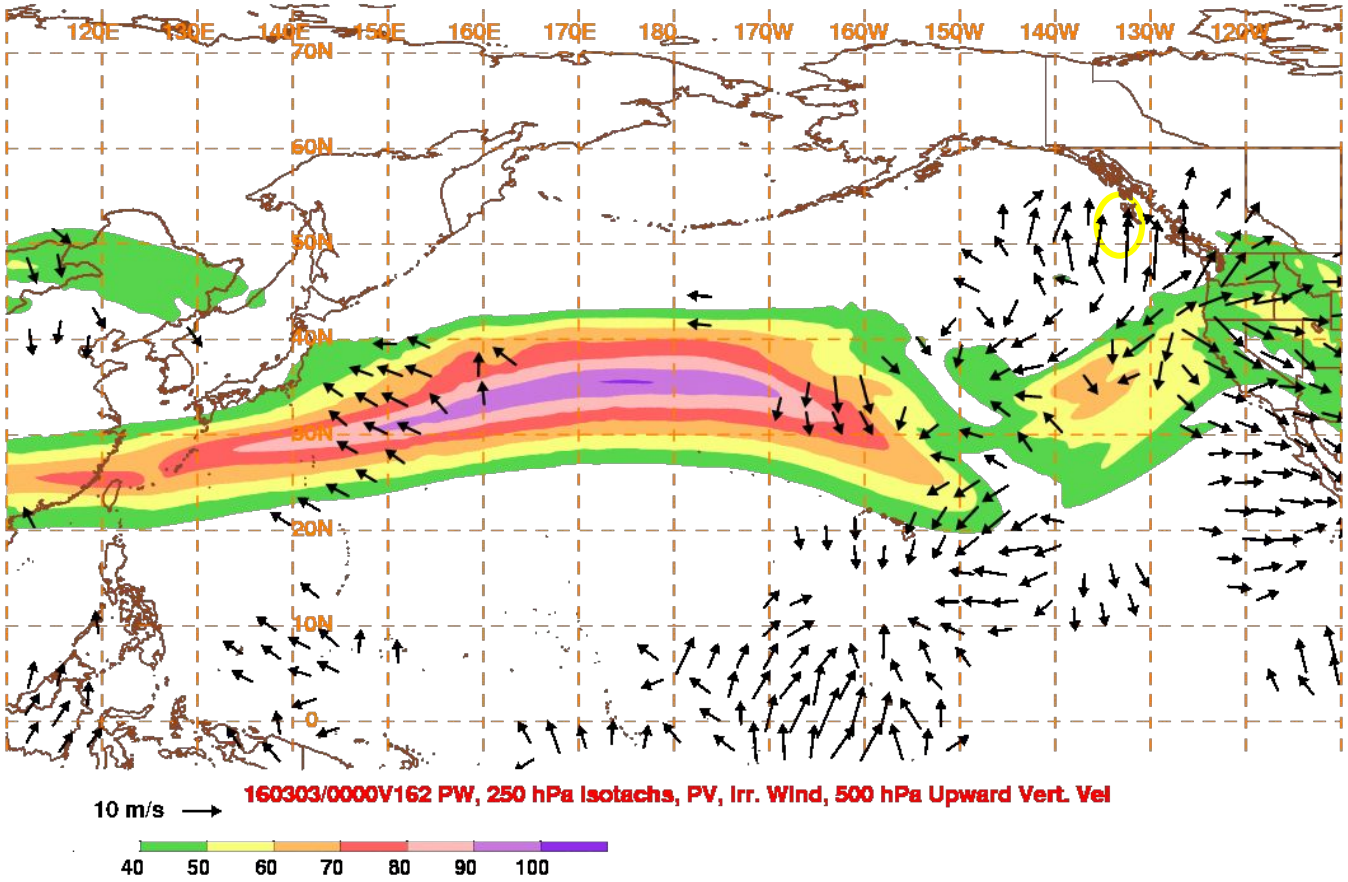
00Z TUE

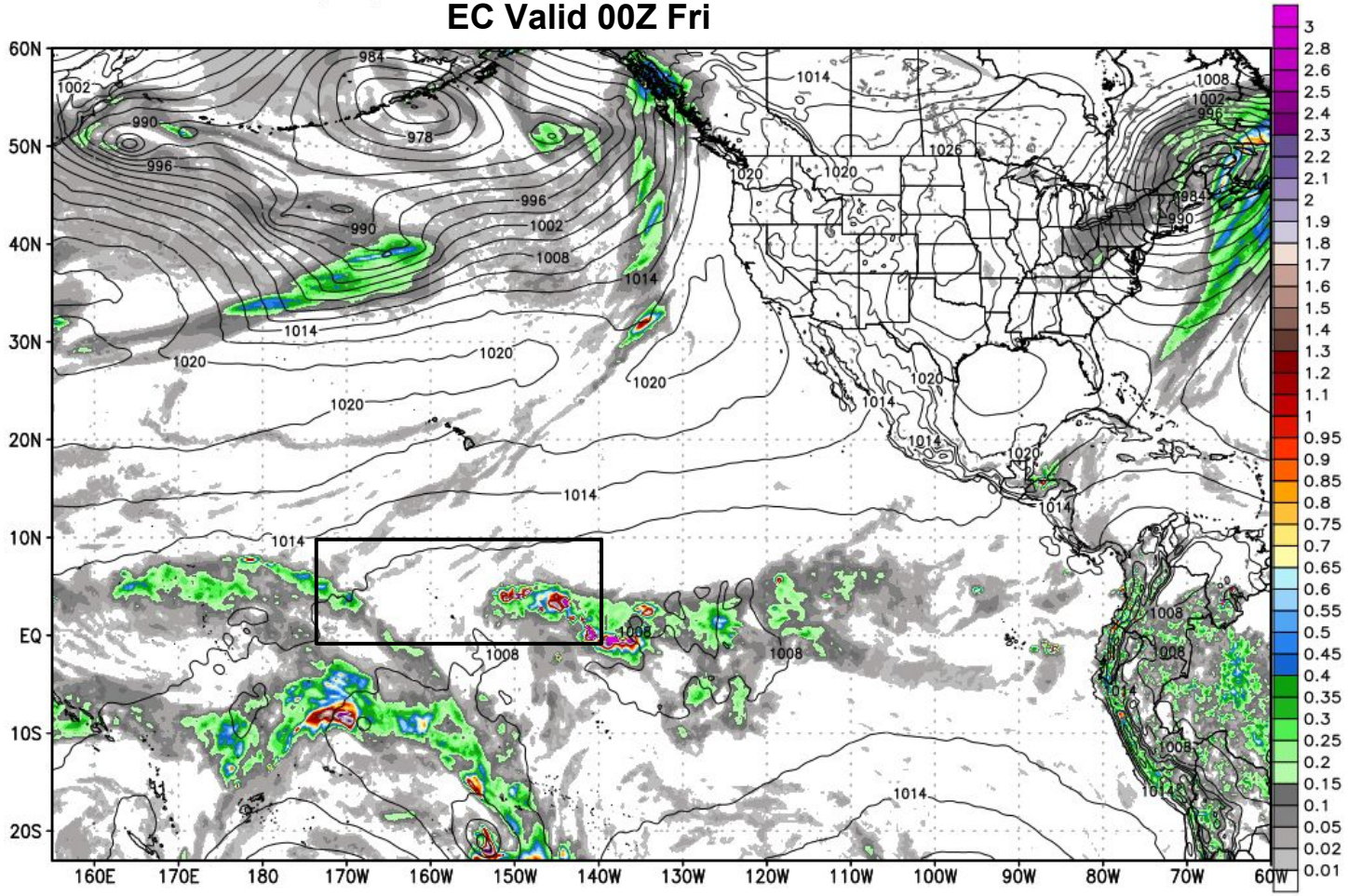

120E
130E
140E
150E
160E
170E
180
170W
160W
150W
140W
130W
120W
70N
60N
50N
40N
30N
20N
10N
0
160301/0000V114 PW, 250 hPa Isotachs, PV, Irr. Wind, 500 hPa Upward Vert. Vel
10 m/s
40
50
60
70
80
90
100
15
25
35
45
55
65

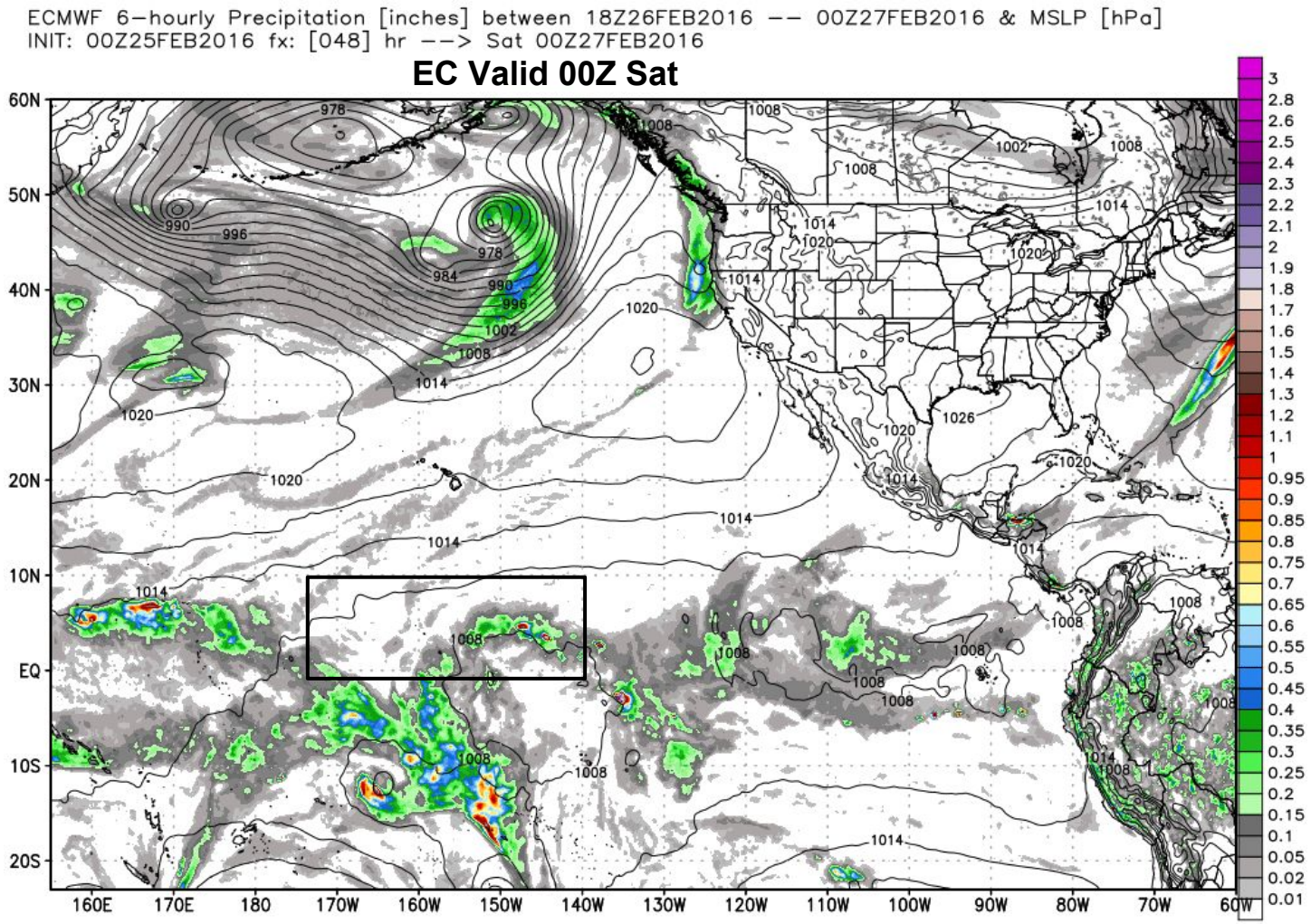
00Z WED

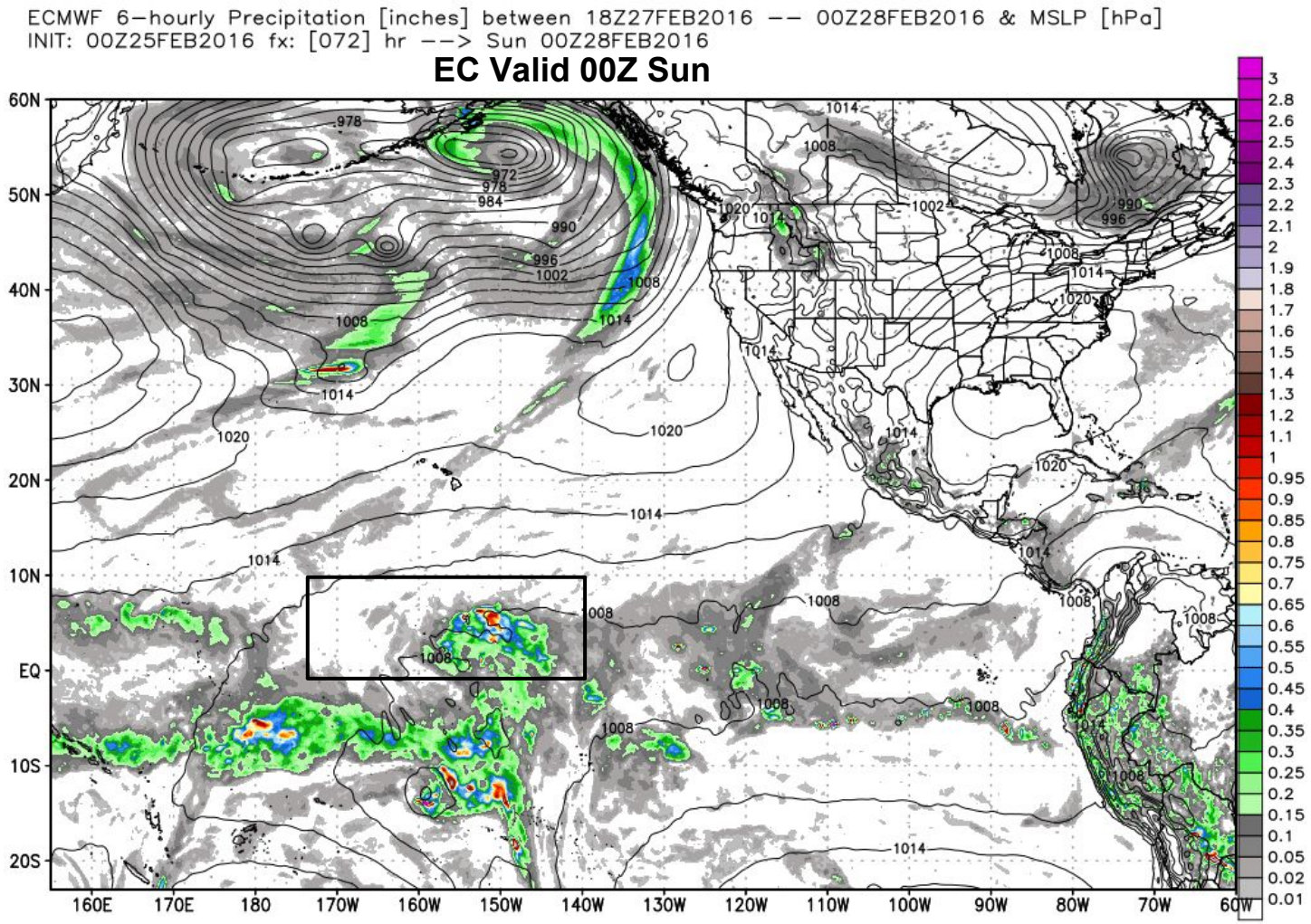

120E
130E
140E
150E
160E
170E
180
170W
160W
150W
140W
130W
120W
70N
60N
50N
40N
30N
20N
10N
160302/0000V138 PW, 250 hPa Isotachs, PV, Irr. Wind, 500 hPa Upward Vert. Vel
10 m/s
40
50
60
70
80
90
100
15
25
35
45
55
65

00Z Thu


120E
130E
140E
150E
160E
170E
180
170W
160W
150W
140W
130W
120W
70N
60N
50N
40N
30N
20N
10N
0
160303/0000V162 PW, 250 hPa Isotachs, PV, Irr. Wind, 500 hPa Upward Vert. Vel
10 m/s
40
50
60
70
80
90
100


ECMWF 6-hourly Precipitation [inches] between 18Z25FEB2016 -- 00Z26FEB2016 & MSLP [hPa]
INIT: 00Z25FEB2016 fx: [024] hr --> Fri 00Z26FEB2016
EC Valid 00Z Fri
60N
50N
40N
30N
20N
10N
EQ
10S
20S
160E
170E
180
170W
160W
150W
140W
130W
120W
110W
100W
90W
80W
70W
60W
3
2.8
2.6
2.5
2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0.02
0.01


ECMWF 6-hourly Precipitation [inches] between 18Z26FEB2016 -- 00Z27FEB2016 & MSLP [hPa]
INIT: 00Z25FEB2016 fx: [048] hr --> Sat 00Z27FEB2016
EC Valid 00Z Sat
60N
50N
40N
30N
20N
10N
EQ
10S
20S
160E
170E
180
170W
160W
150W
140W
130W
120W
110W
100W
90W
80W
70W
60W
3
2.8
2.6
2.5
2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0.02
0.01


ECMWF 6-hourly Precipitation [inches] between 18Z27FEB2016 -- 00Z28FEB2016 & MSLP [hPa]
INIT: 00Z25FEB2016 fx: [072] hr --> Sun 00Z28FEB2016
EC Valid 00Z Sun
60N
50N
40N
30N
20N
10N
EQ
10S
20S
160E
170E
180
170W
160W
150W
140W
130W
120W
110W
100W
90W
80W
70W
60W
3
2.8
2.6
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2.2
2.1
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1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
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0.8
0.75
0.7
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0.6
0.55
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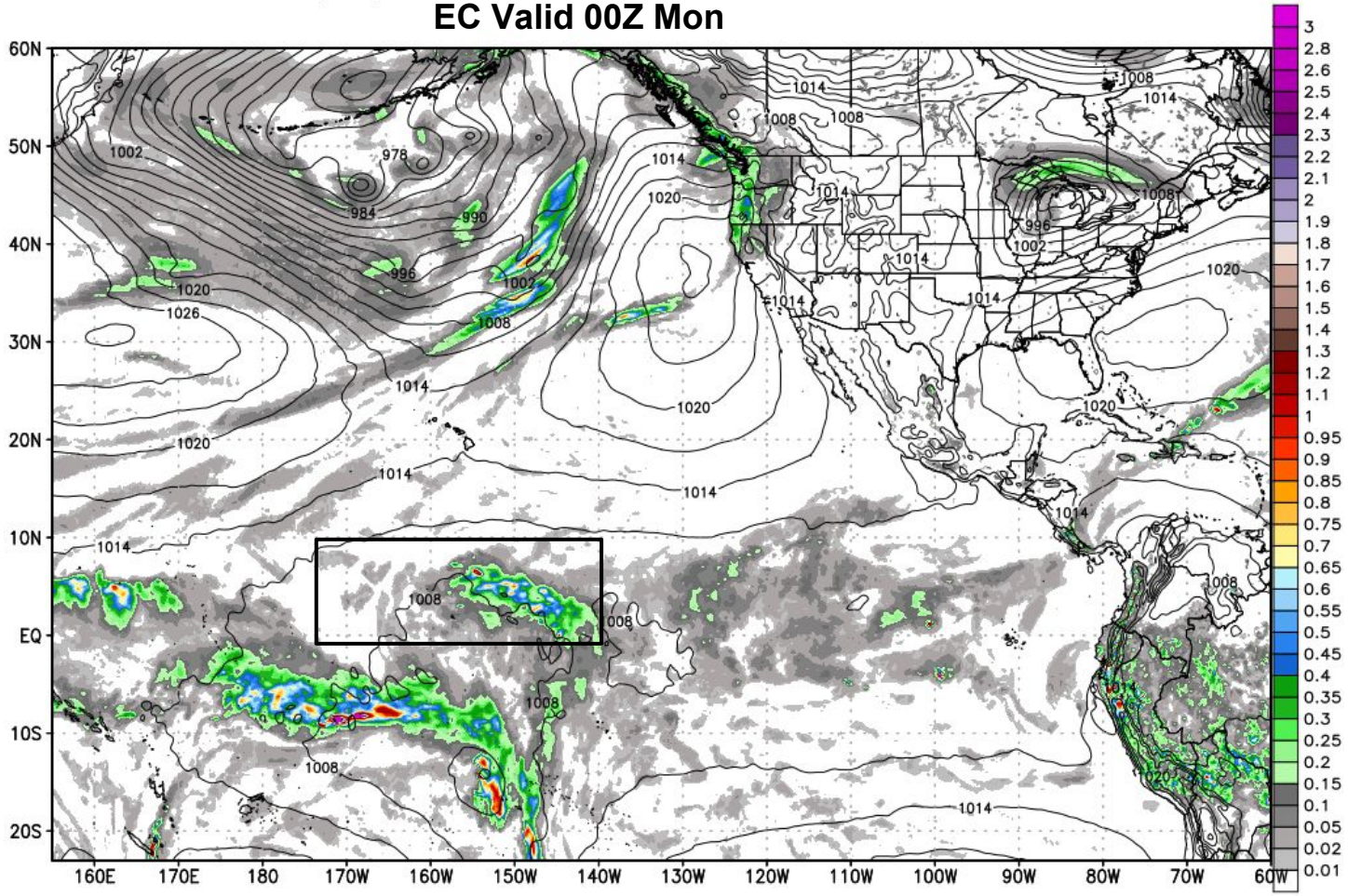
0.3
0.25
0.2
0.15
0.1
0.05
0.02
0.01


ECMWF 6-hourly Precipitation [inches] between 18Z28FEB2016 -- 00Z29FEB2016 & MSLP [hPa]
INIT: 00Z25FEB2016 fx: [096] hr --> Mon 00Z29FEB2016
EC Valid 00Z Mon
60N
50N
40N
30N
20N
10N
EQ
10S
20S
160E
170E
180
170W
160W
150W
140W
130W
120W
110W
100W
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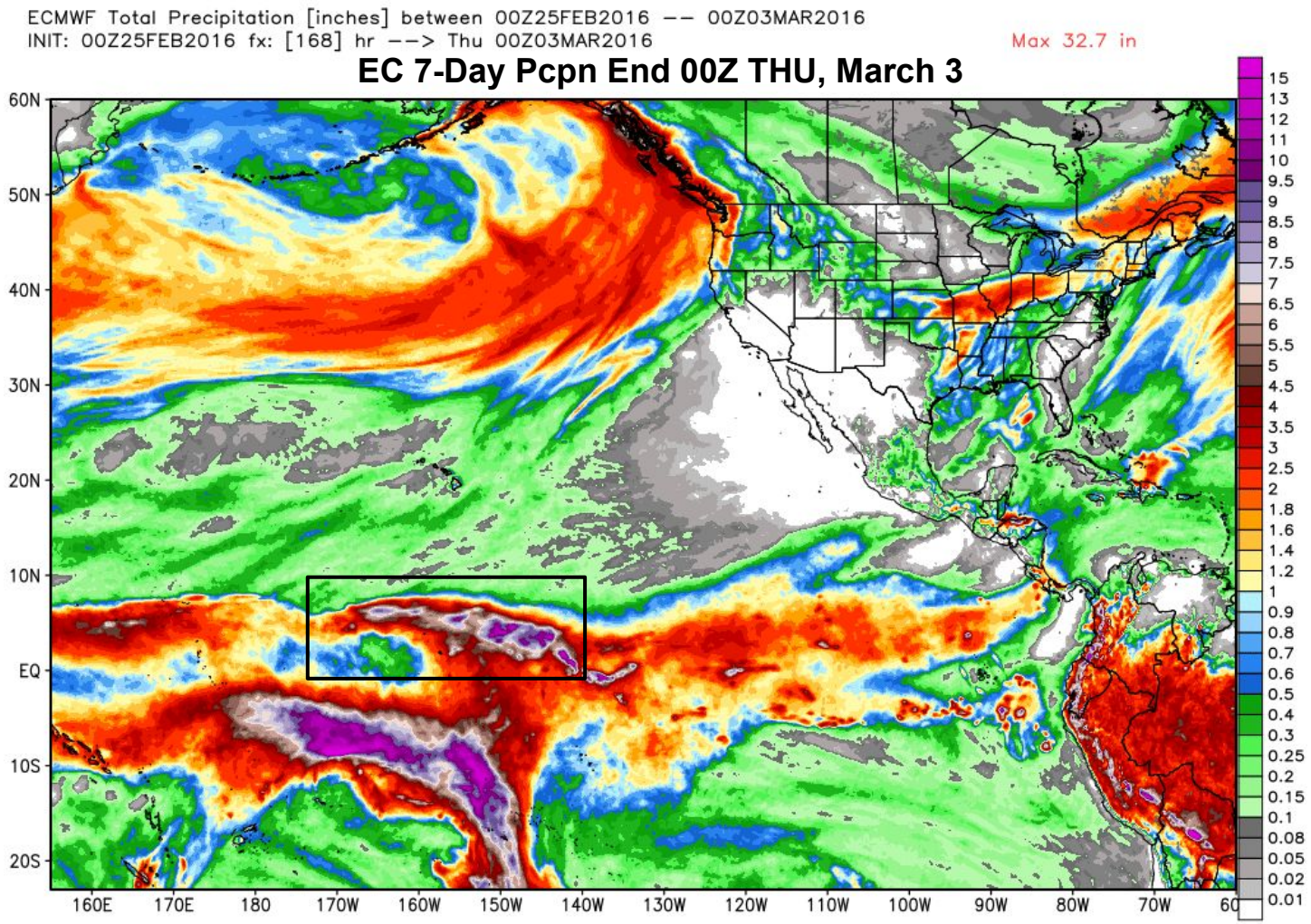
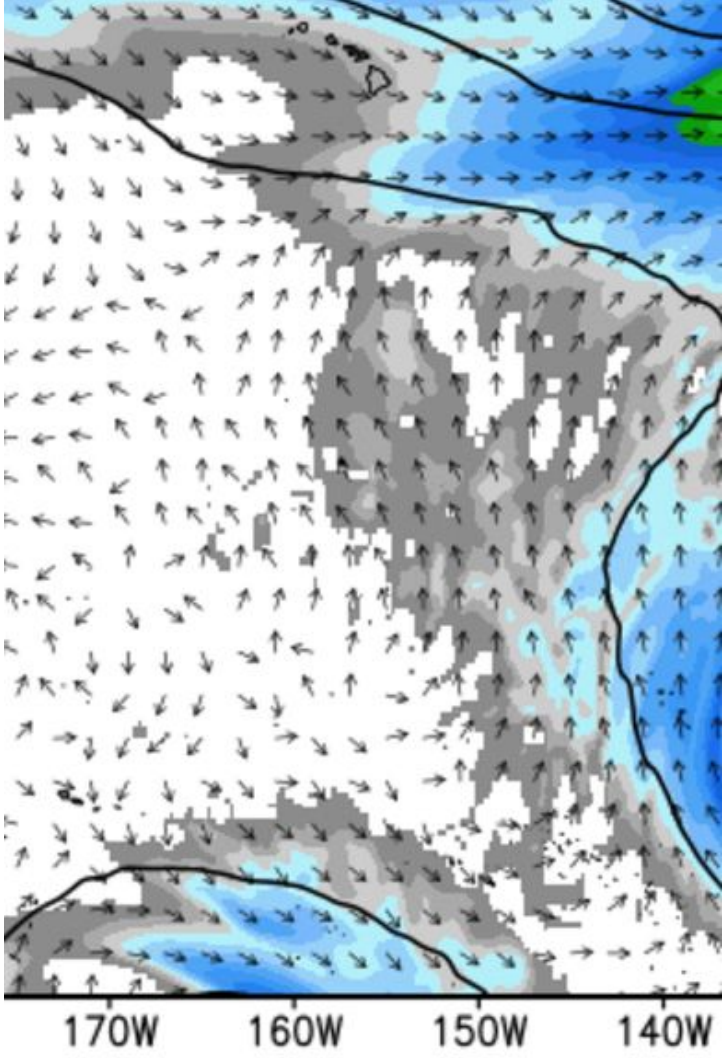
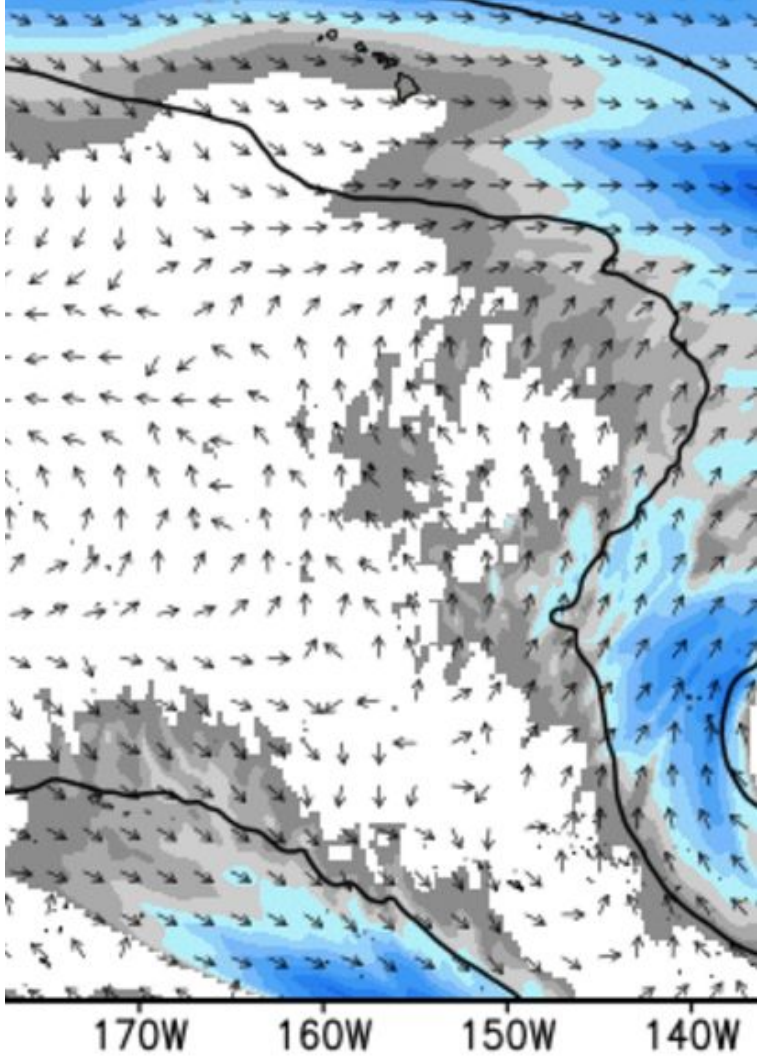
0.05
0.02
0.01


ECMWF Total Precipitation [inches] between 00Z25FEB2016 -- 00Z03MAR2016
INIT: 00Z25FEB2016 fx: [168] hr --> Thu 00Z03MAR2016
Max 32.7 in
EC 7-Day Pcpn End 00Z THU, March 3
60N
50N
40N
30N
20N
10N
EQ
10S
20S
160E
170E
180
170W
160W
150W
140W
130W
120W
110W
100W
90W
80W
70W
60
15
13
12
11
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.8
1.6
1.4
1.2
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.25
0.2
0.15
0.1
0.08
0.05
0.02
0.01

EC 00Z Sat 200 Wind



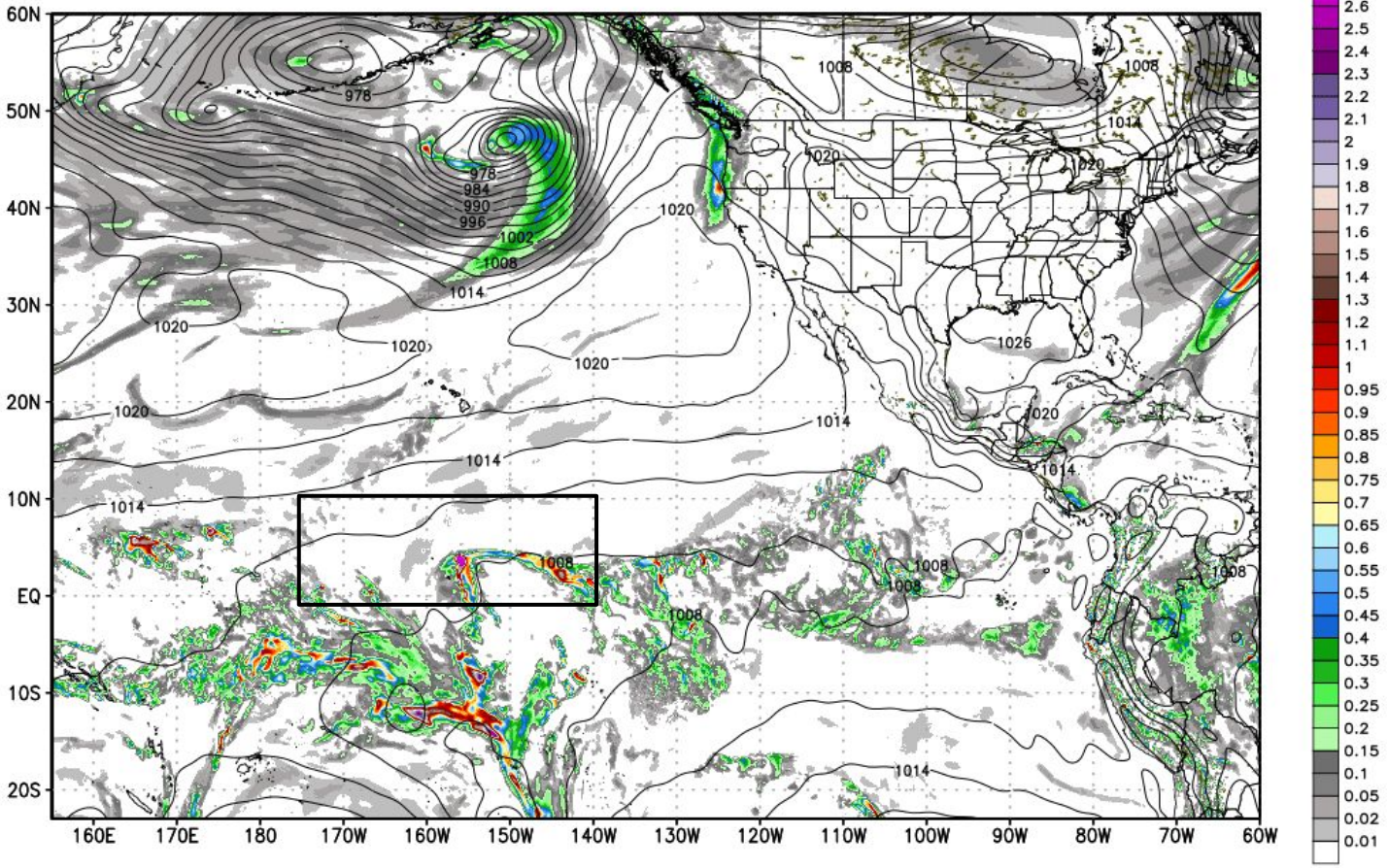
EC 00Z Sun 200 Wind



NCEP GFS 6-hourly Precipitation [inch] & MSLP [hPa]
INIT: 12Z25FEB2016 fx: [036] hr --> Sat 00Z27FEB2016

Max: 5.8 in.

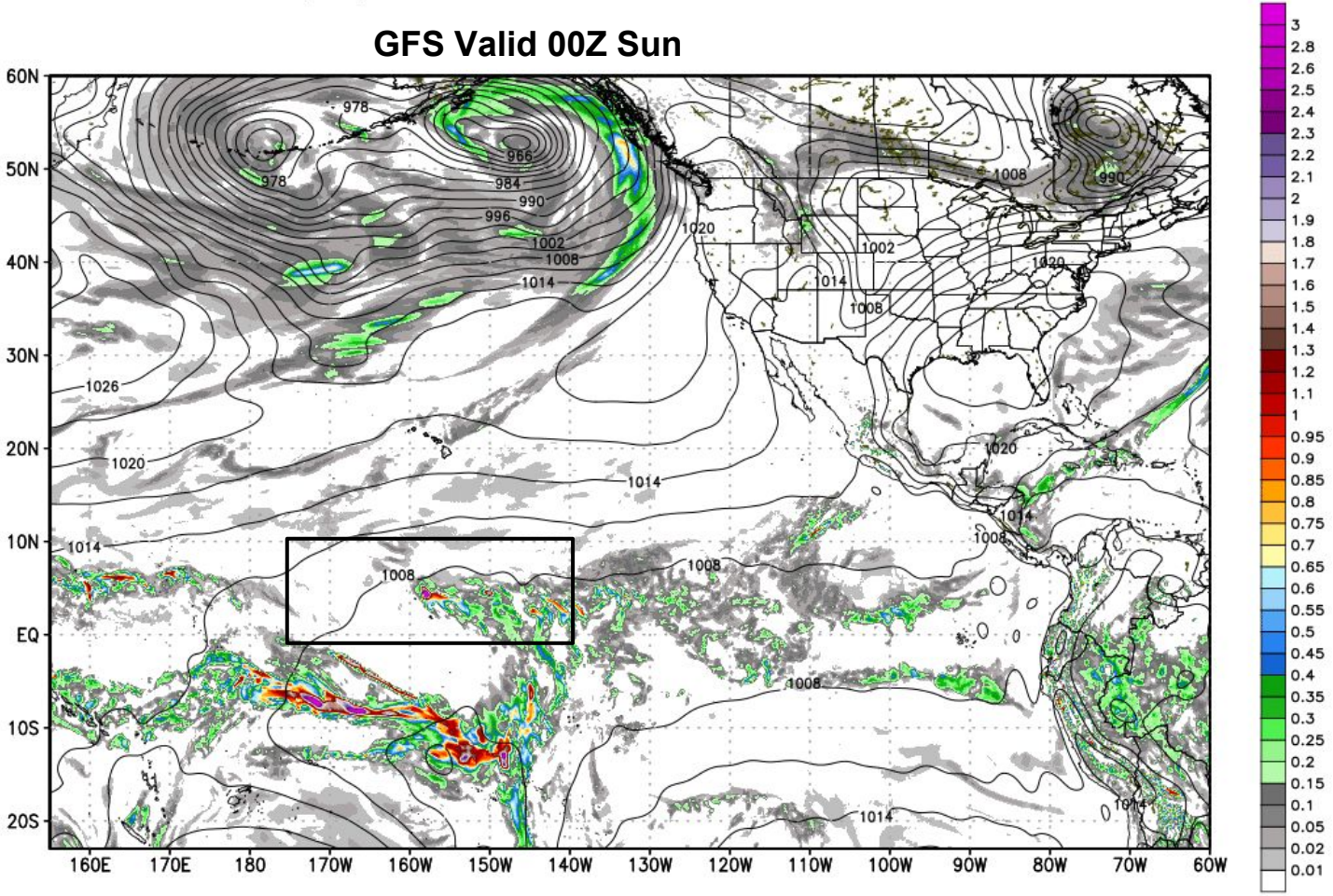
GFS Valid 00Z Sat



NCEP GFS 6-hourly Precipitation [inch] & MSLP [hPa]
INIT: 12Z25FEB2016 fx: [060] hr --> Sun 00Z28FEB2016

Max: 3.6 in.

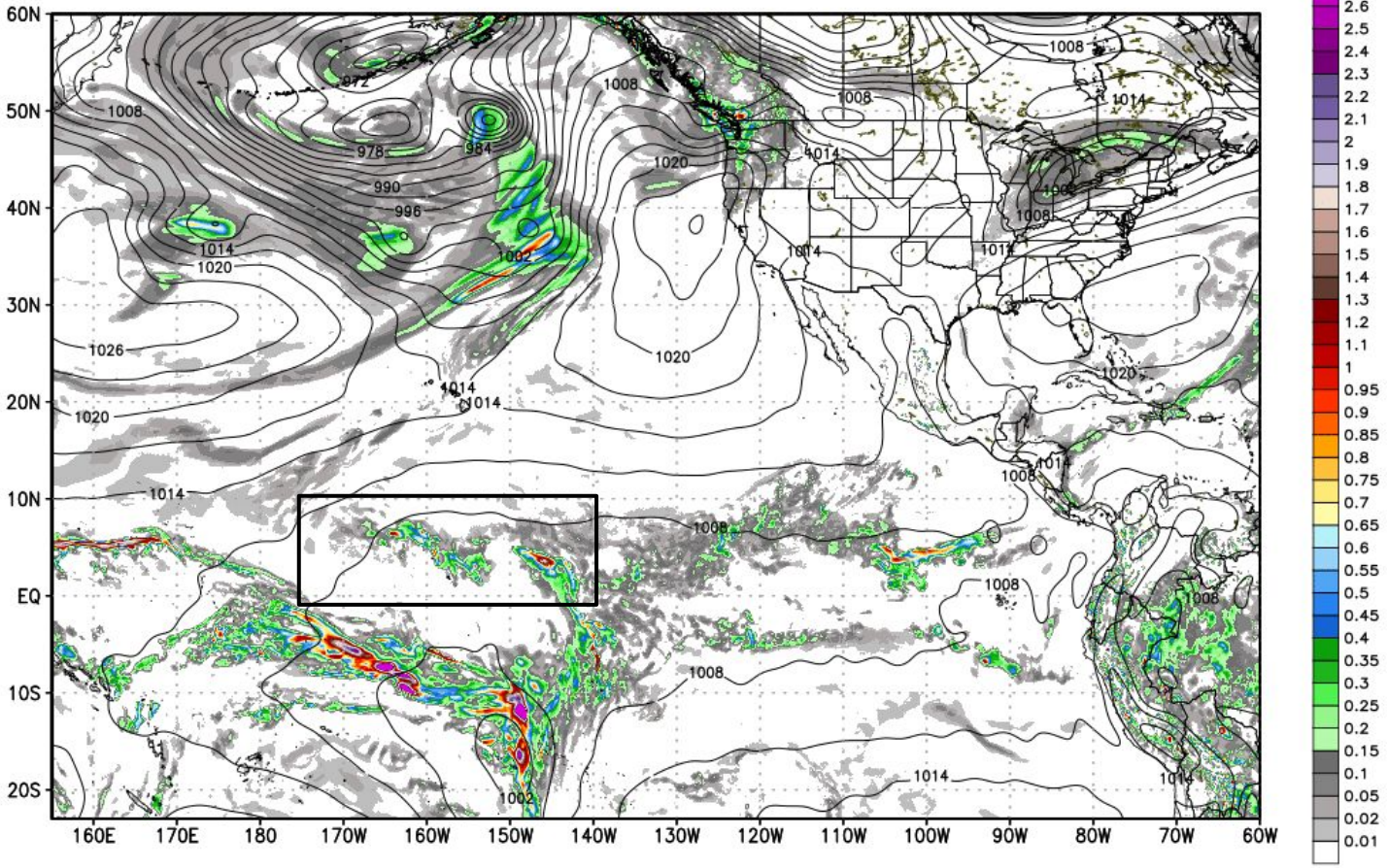
GFS Valid 00Z Sun



NCEP GFS 6-hourly Precipitation [inch] & MSLP [hPa]
INIT: 12Z25FEB2016 fx: [084] hr --> Mon 00Z29FEB2016

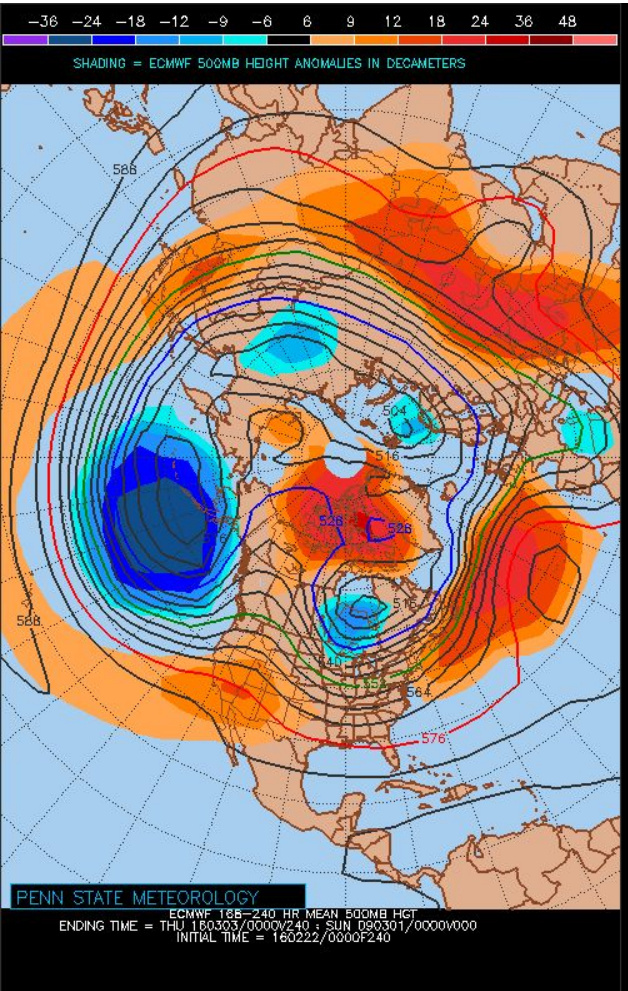
Max: 6.5 in.

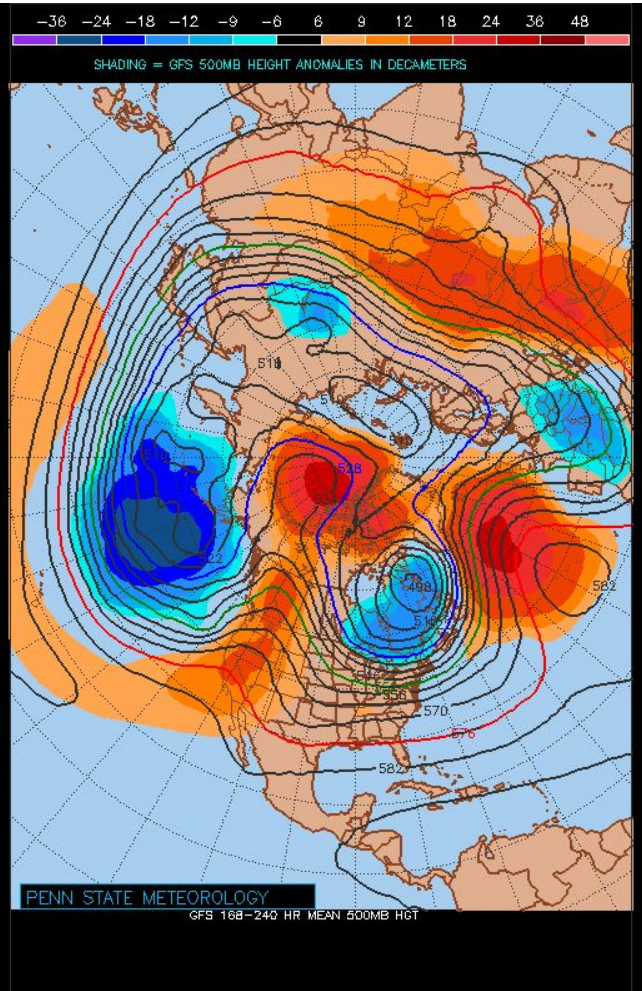
GFS Valid 00Z Mon

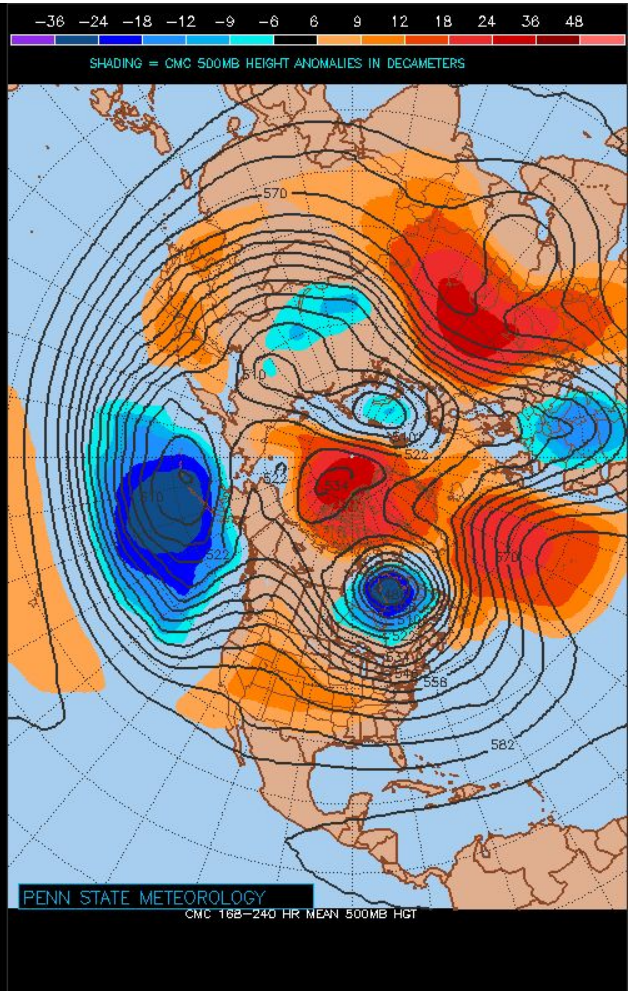


Medium - Long Range Forecast

Day 7-10 Initialized 00Z SAT 20 Feb

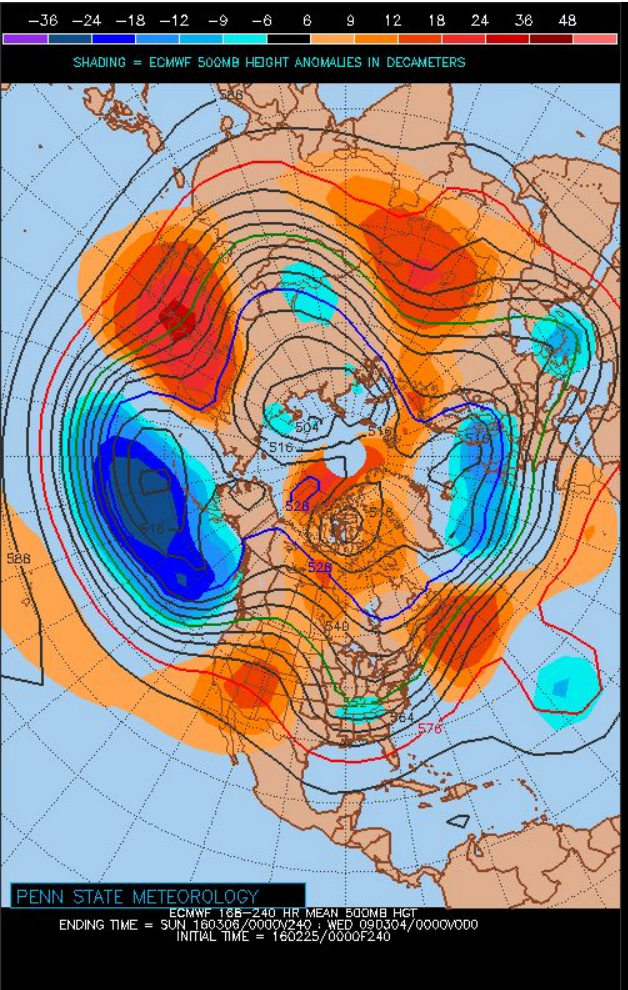


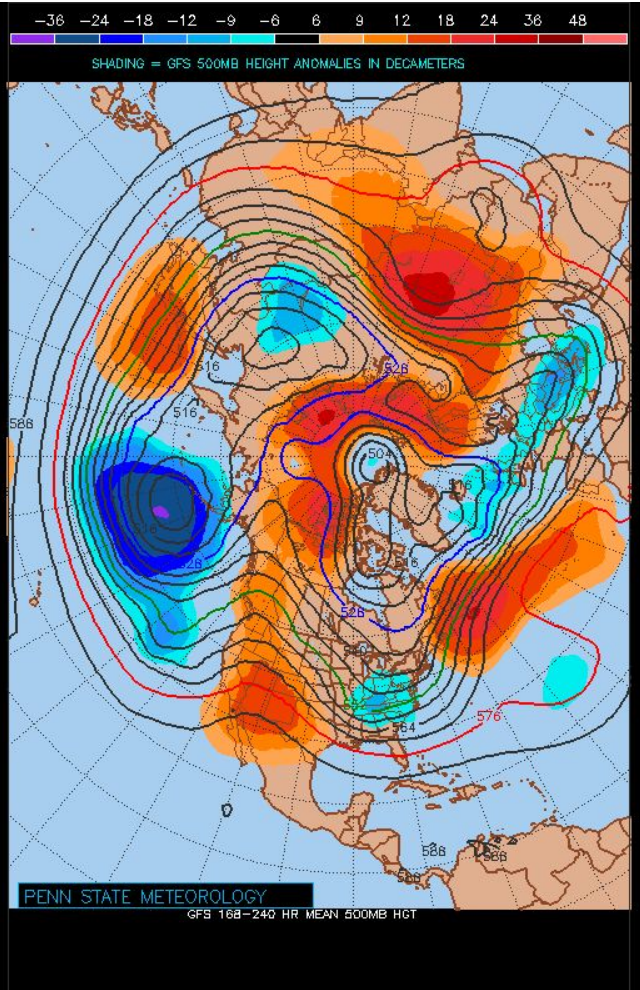


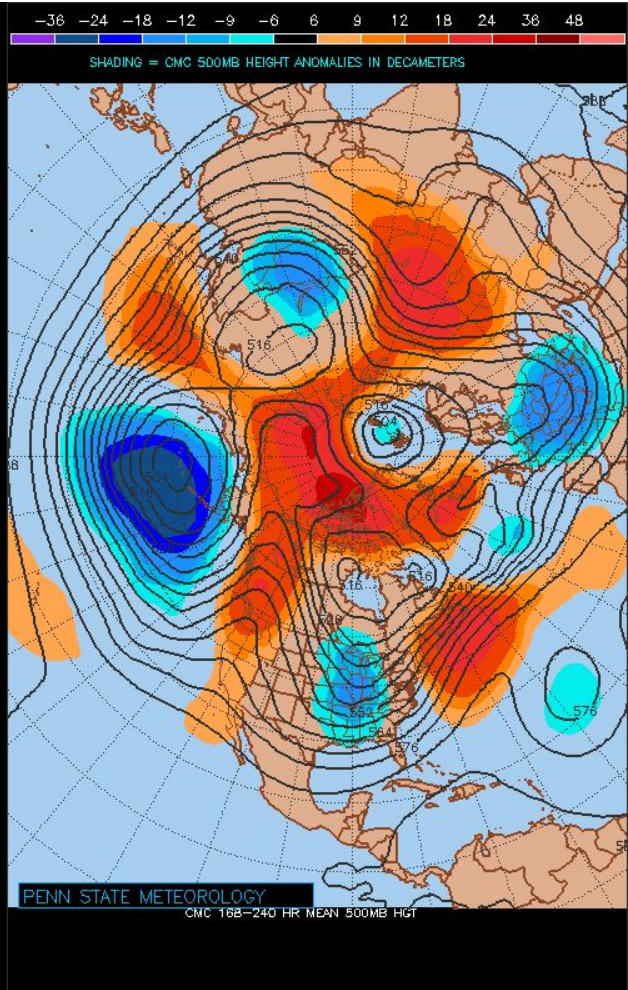


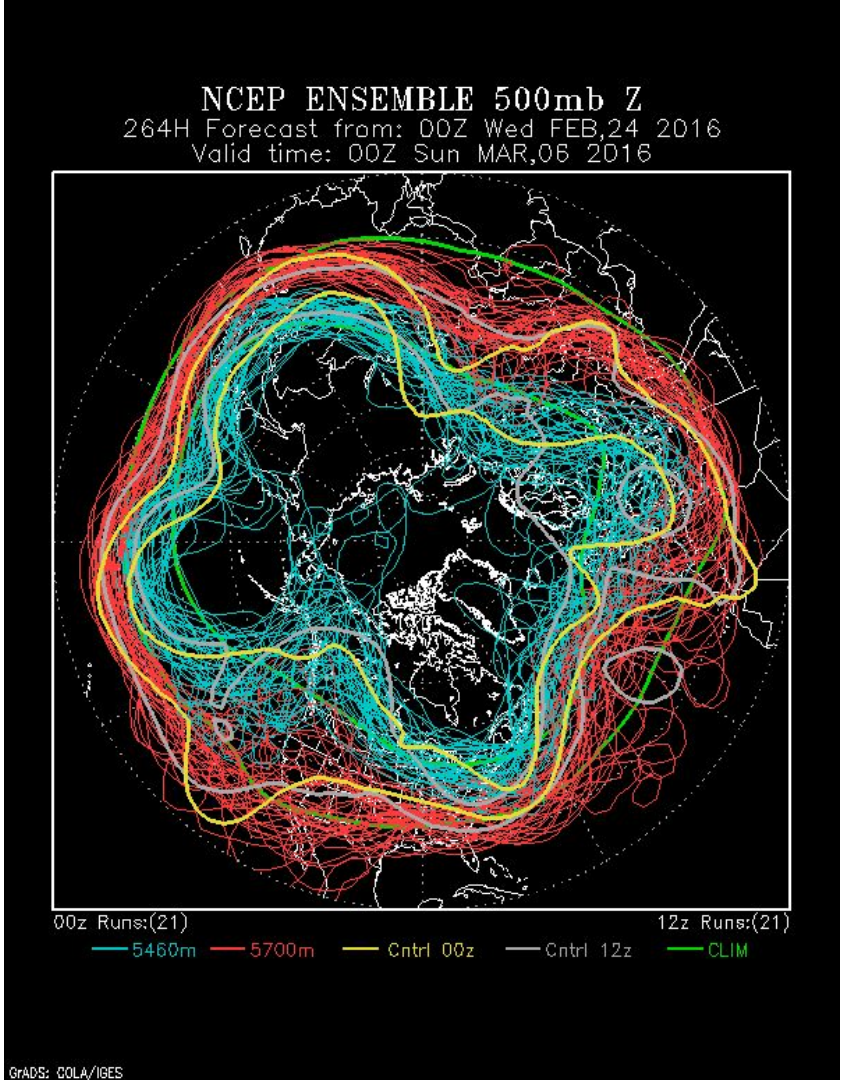
Medium - Long Range Forecast

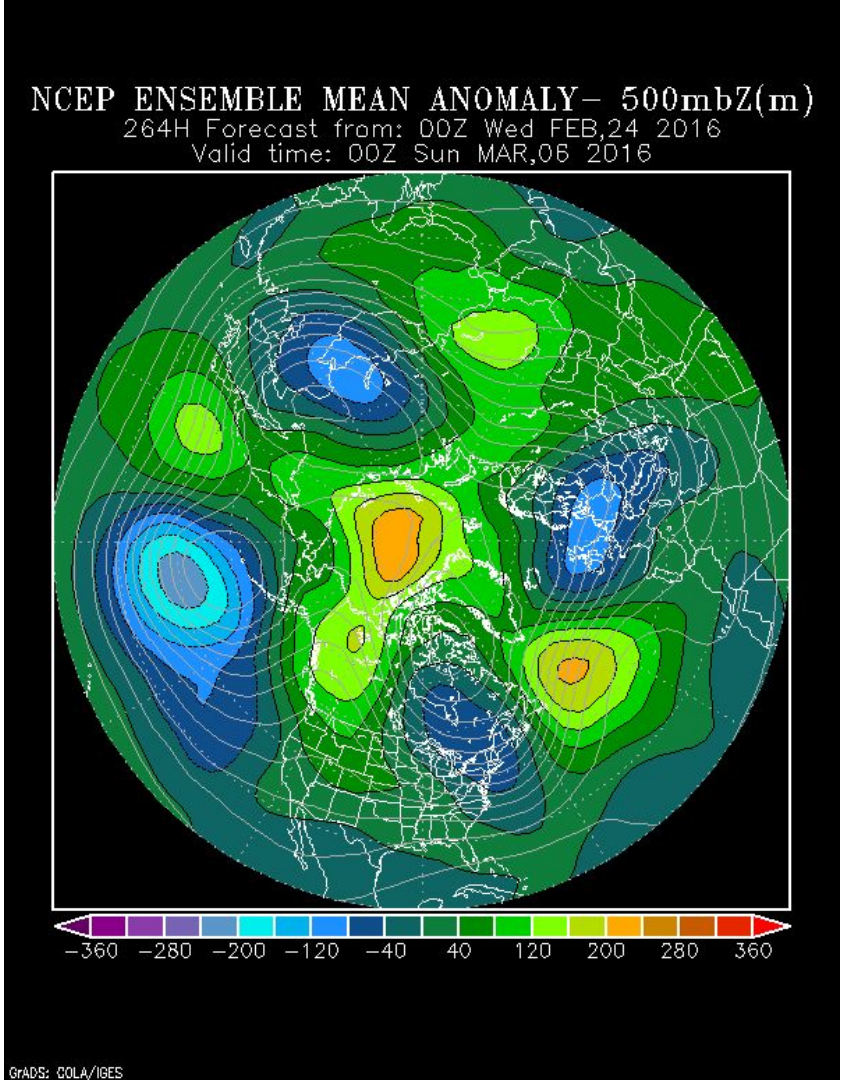
Day 7-10 Initialized 00Z Thu 25 Feb

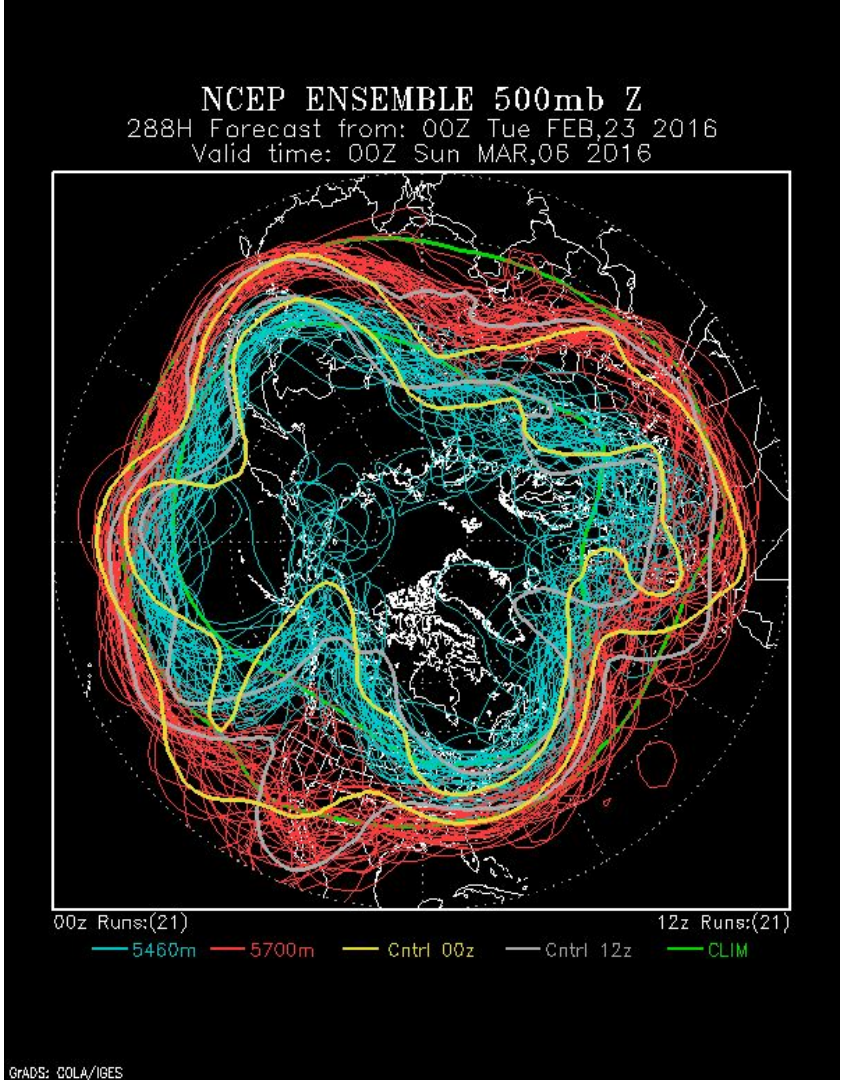







NCEP ENSEMBLE 500mb Z
264H Forecast from: 00Z Wed FEB,24 2016
Valid time: 00Z Sun MAR,06 2016
00z Runs:(21)
12z Runs:(21)
5460m
5700m
Cntrl 00z
Cntrl 12z
CLIM
GrADS: COLA/IGES


NCEP ENSEMBLE MEAN ANOMALY- 500mbZ(m)
264H Forecast from: 00Z Wed FEB,24 2016
Valid time: 00Z Sun MAR,06 2016
-360
-280
-200
-120
-40
40
120
200
280
360
GrADS: COLA/IGES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00z Runs:(21)
12z Runs:(21)
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5700m
Cntrl 00z
Cntrl 12z
CLIM
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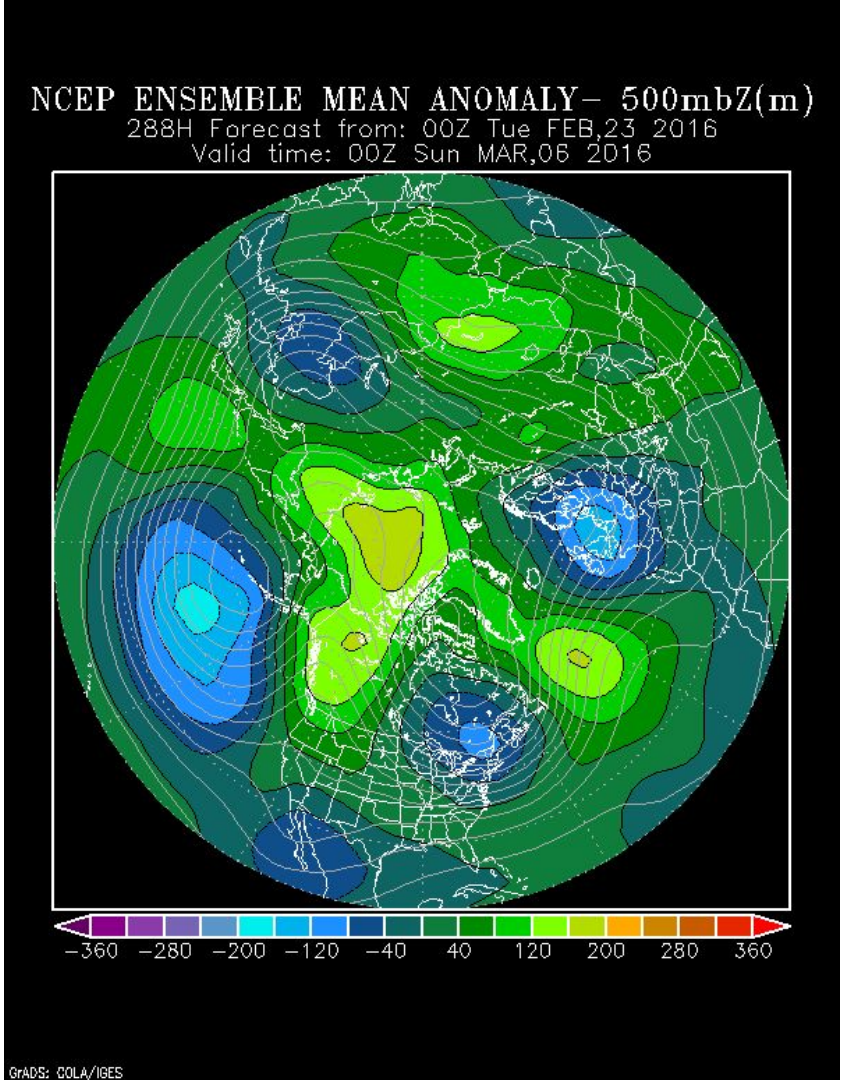
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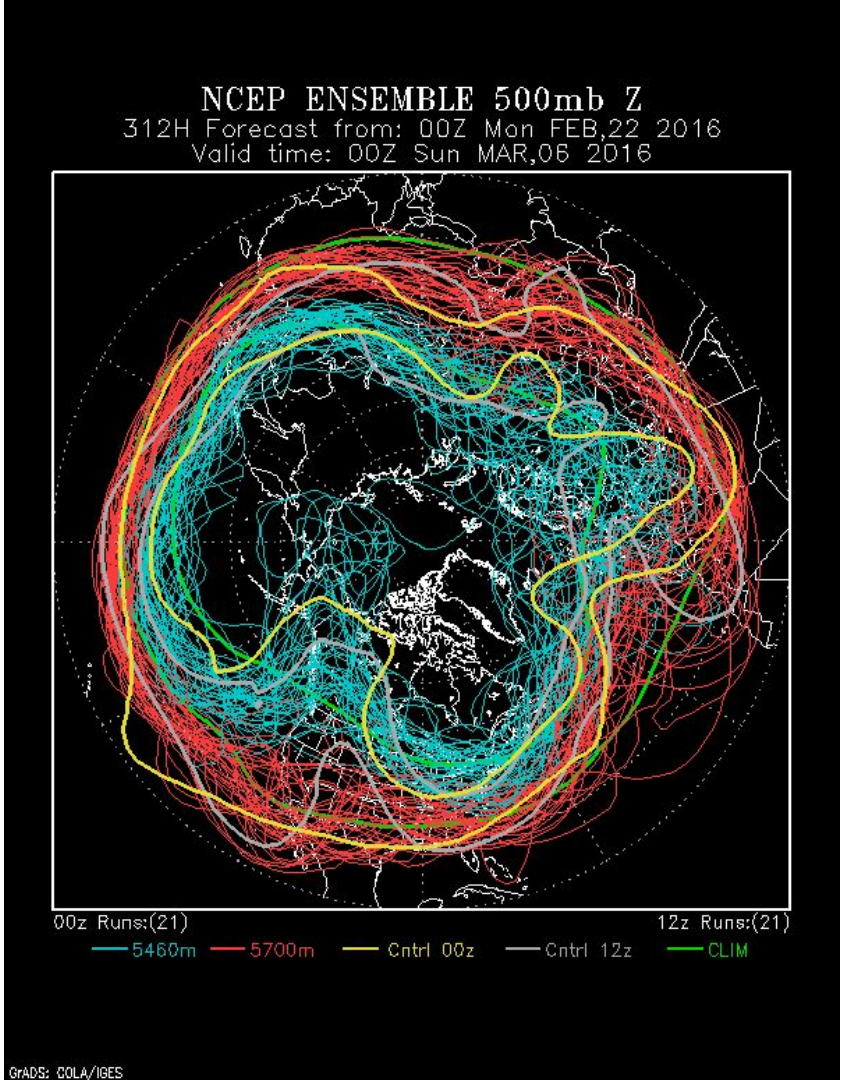
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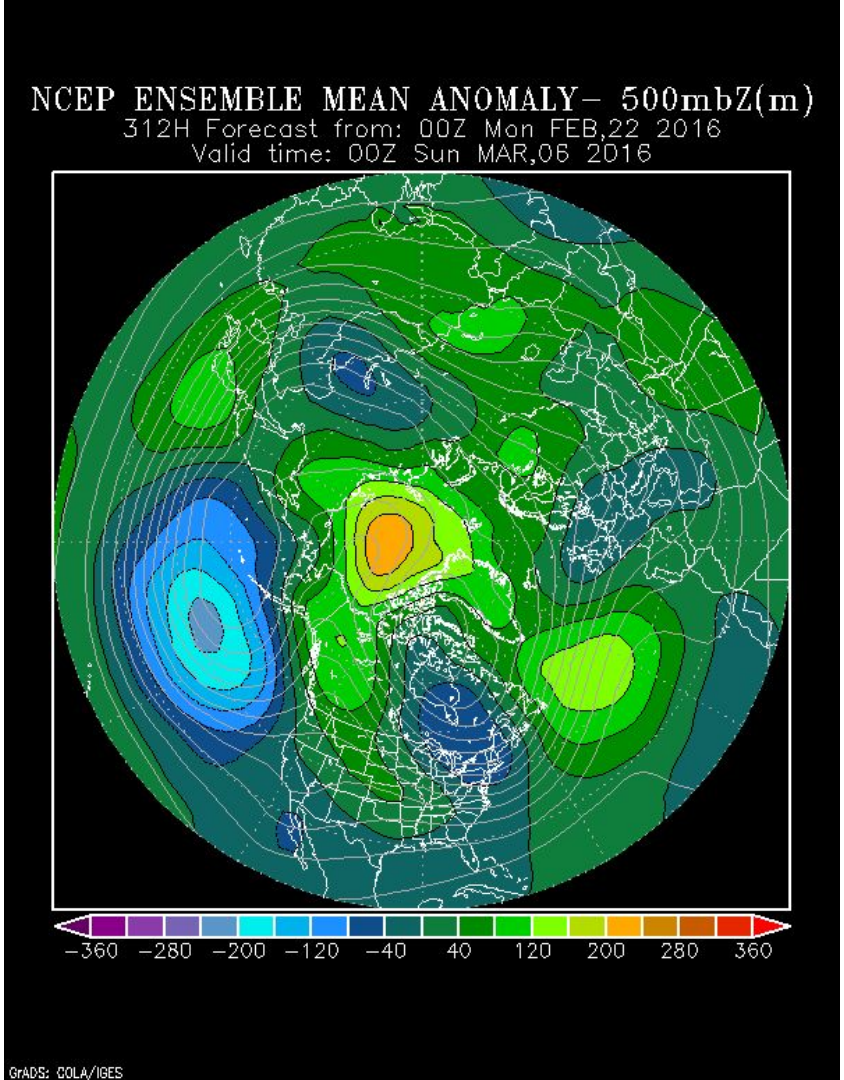
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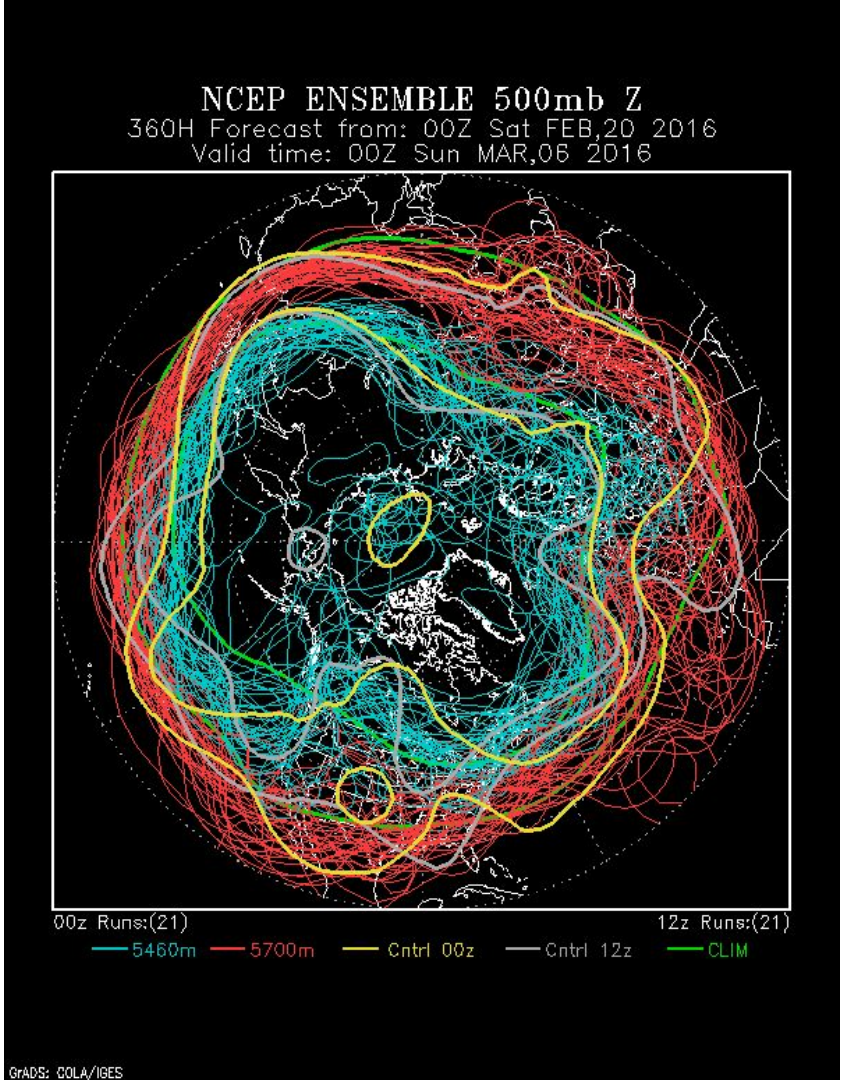
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5700m
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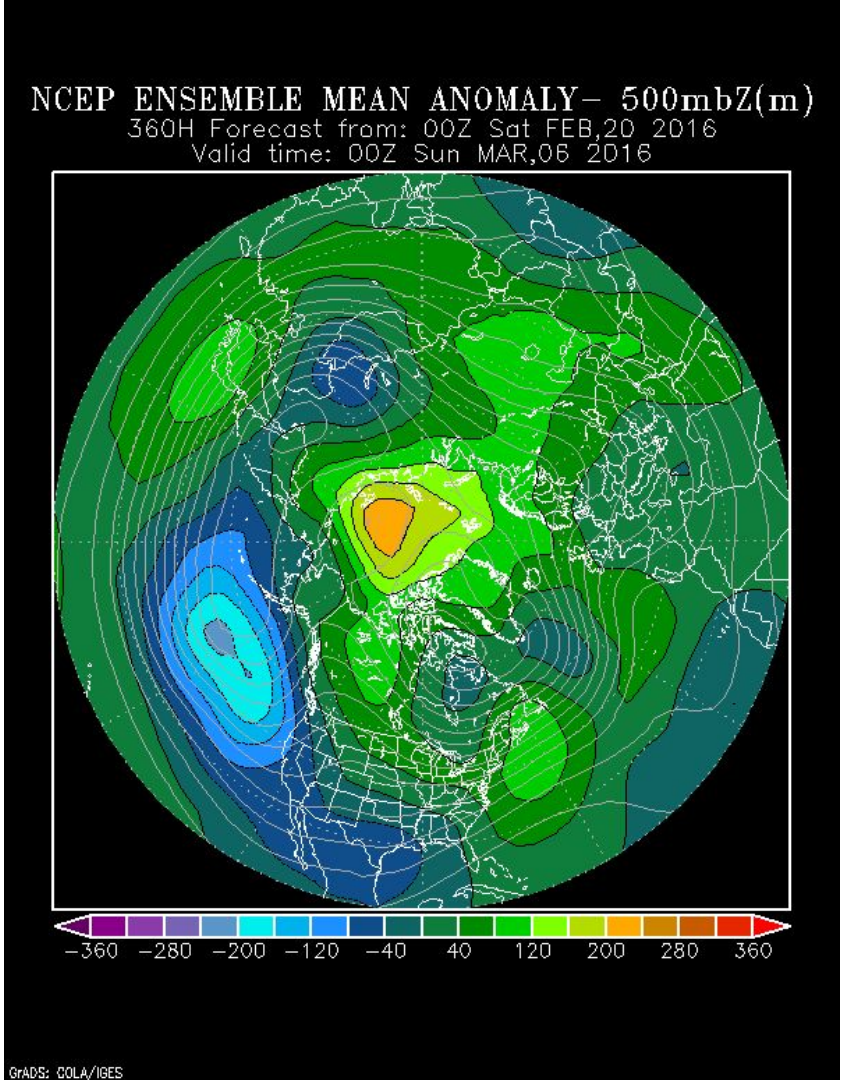
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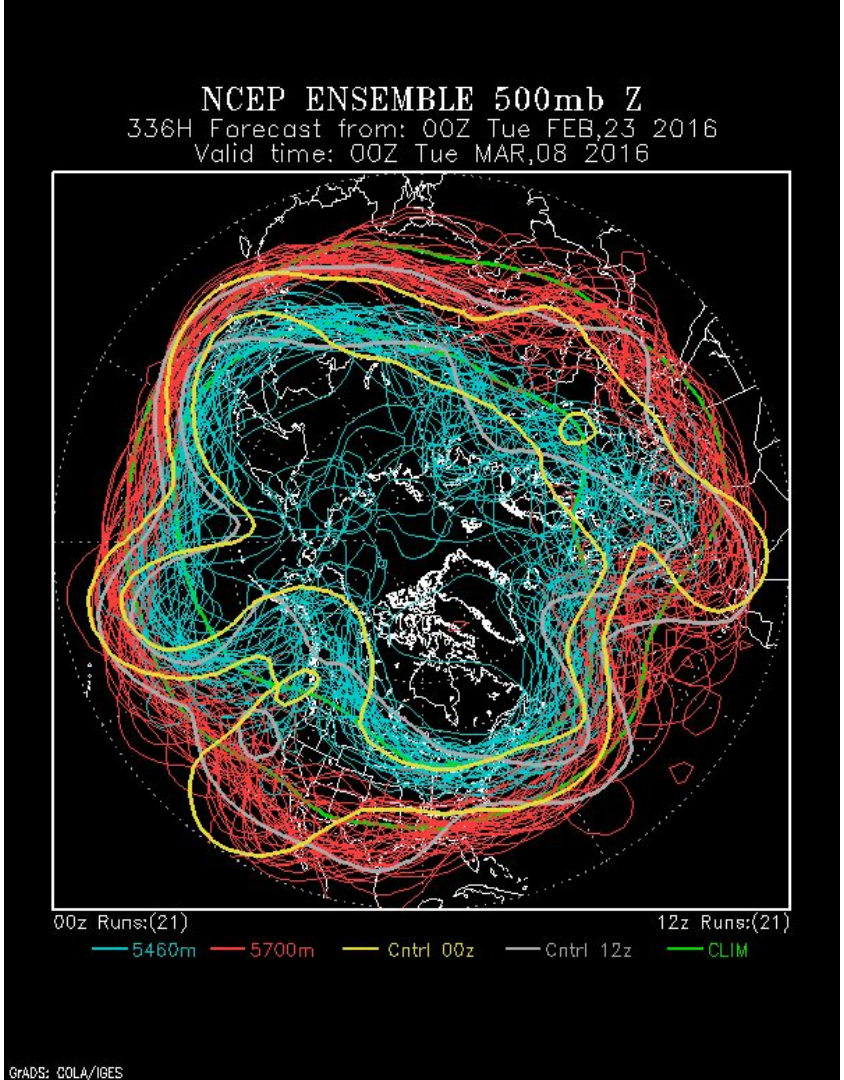
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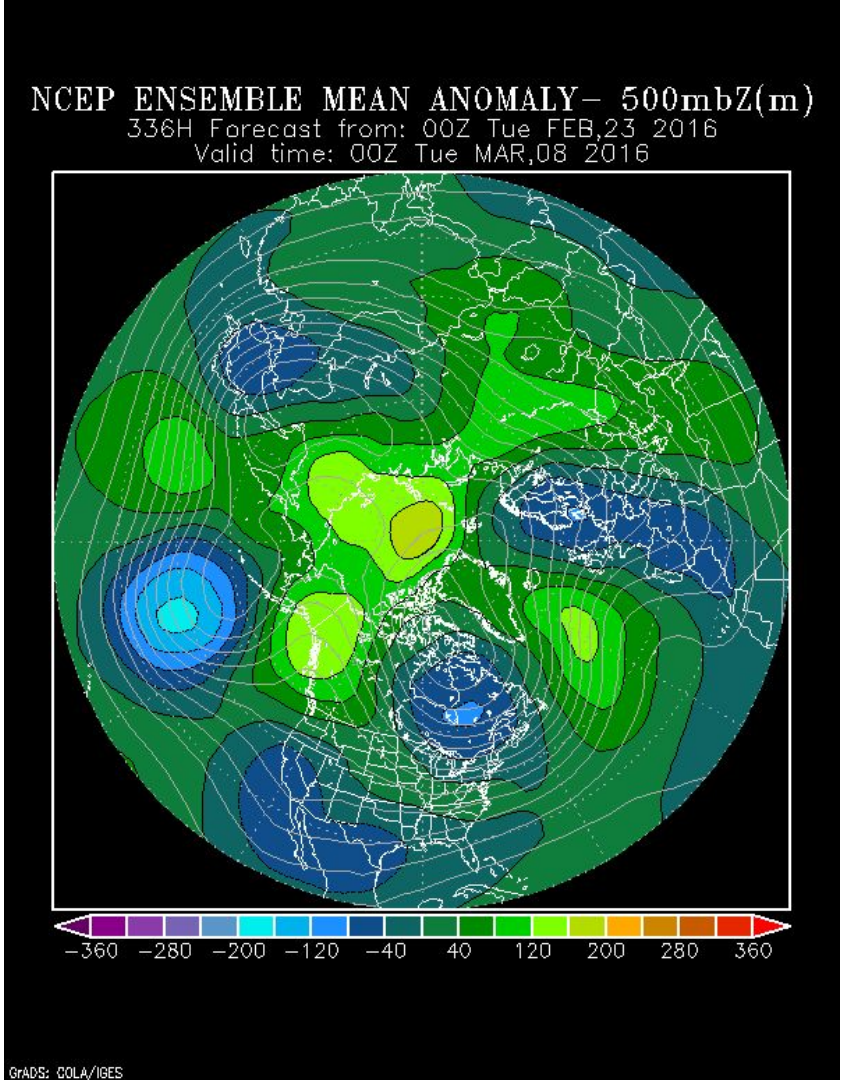
CLIM
GrADS: COLA/IGES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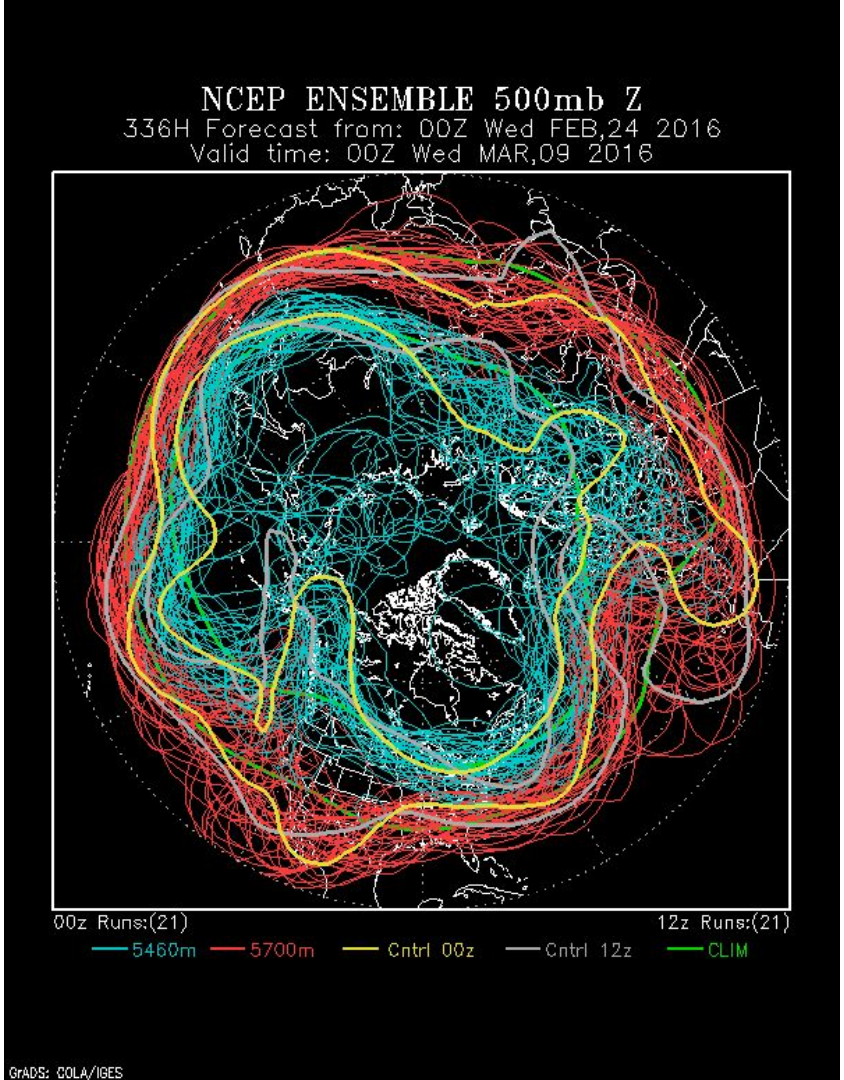
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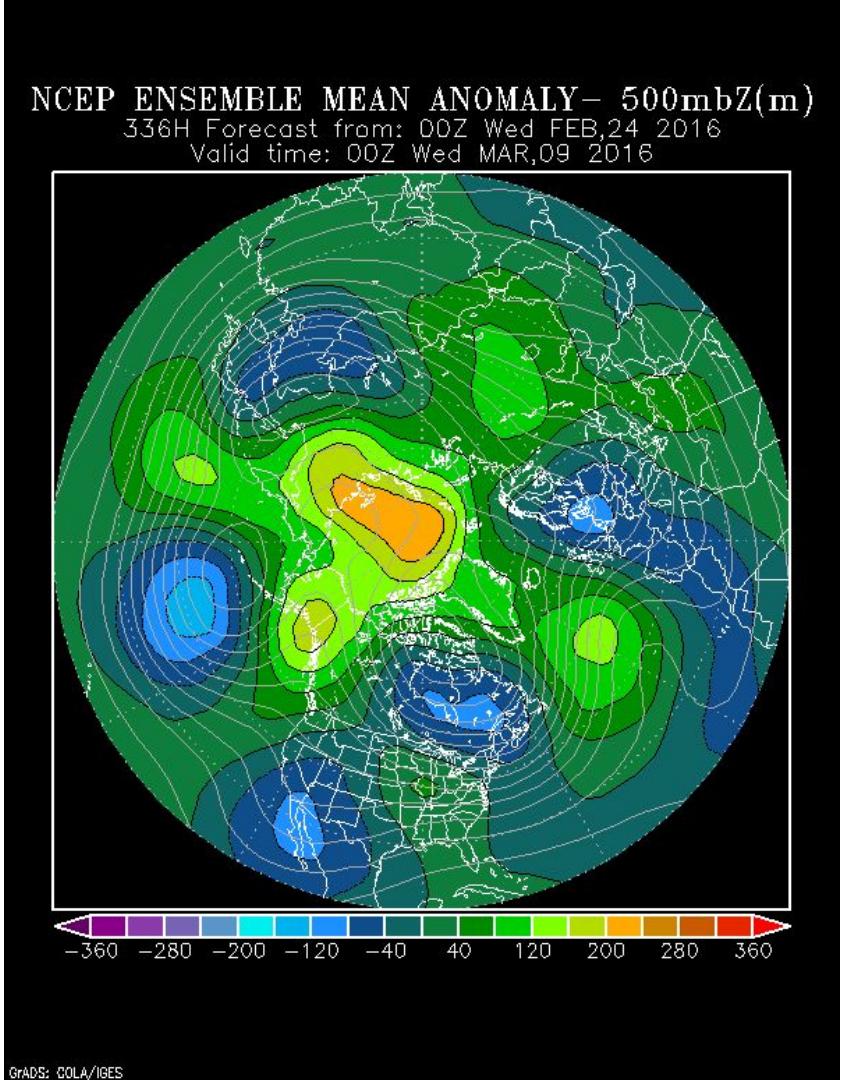
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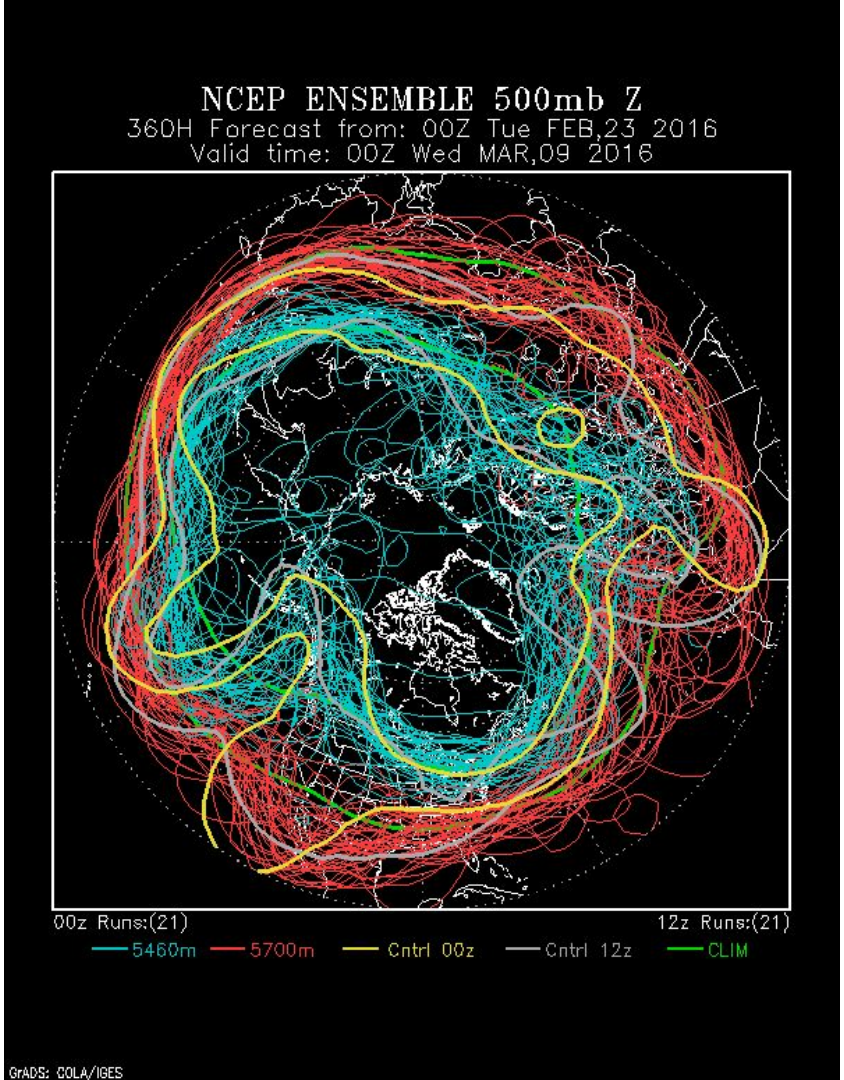
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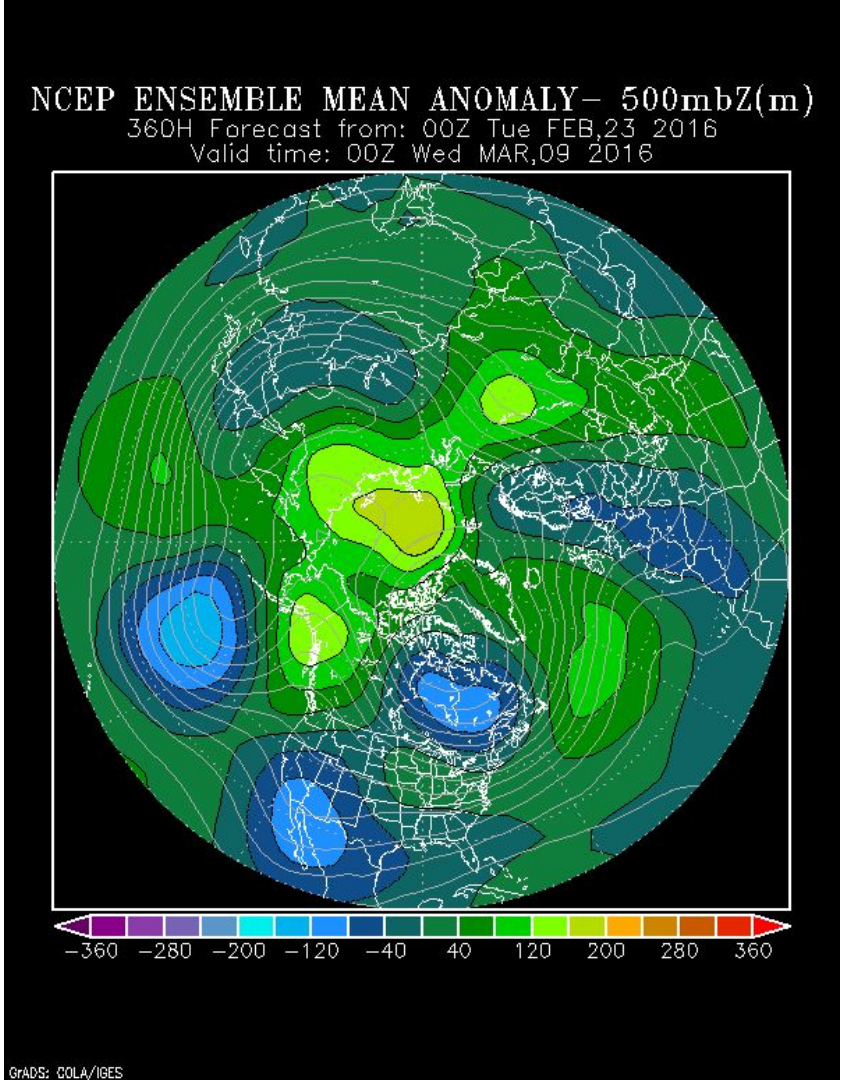
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-200
-120
-40
40
120
200
280
360
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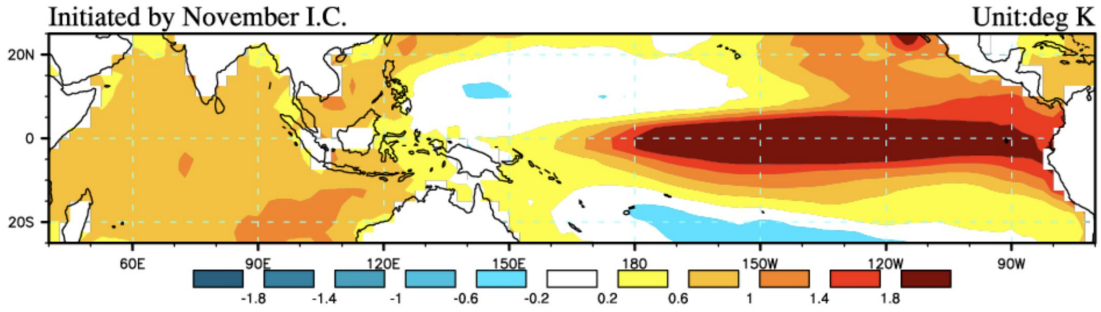
So What Did You Expect?

SST Anomaly for DJF 2015



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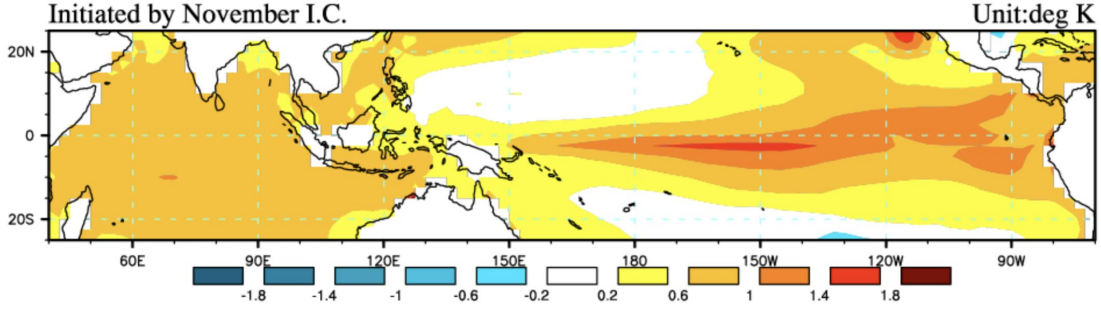
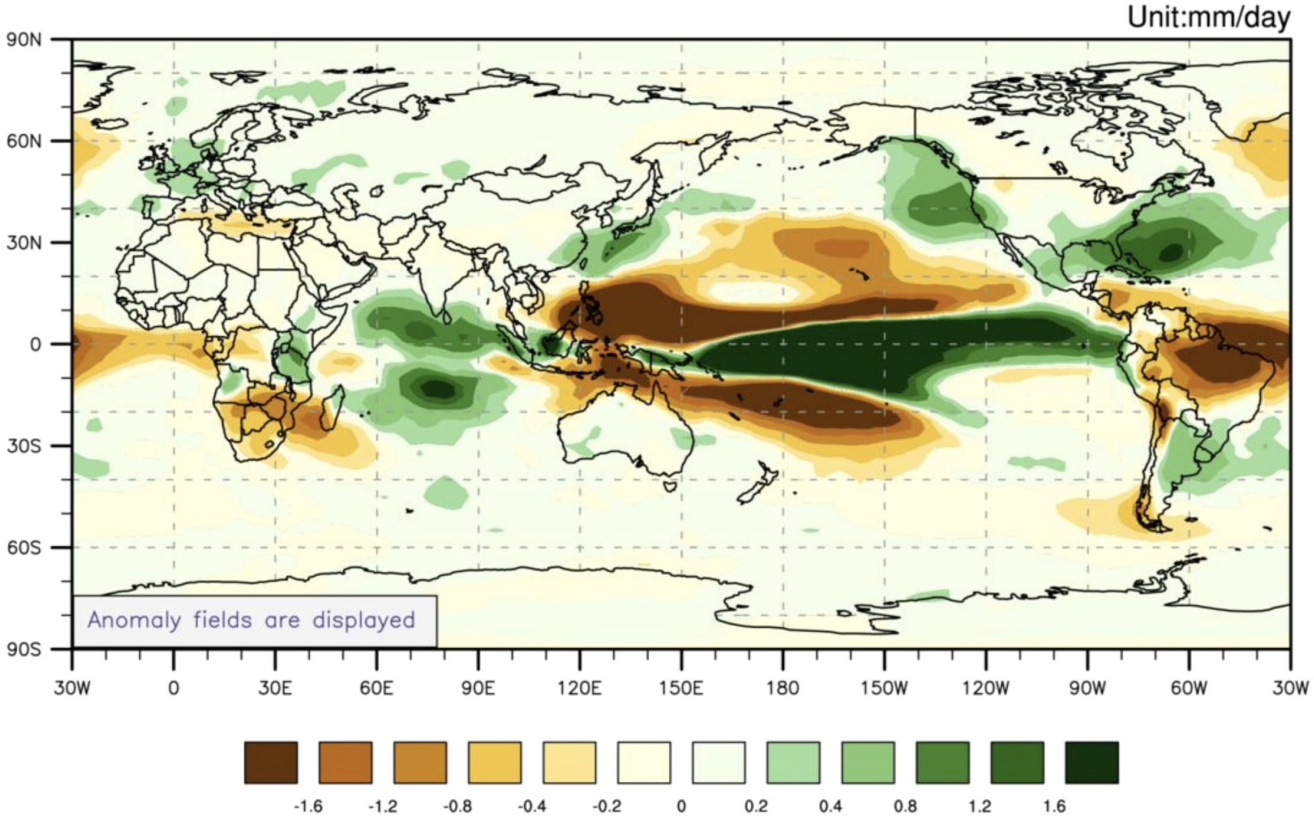
SST Anomaly for MAM 2016



© APEC Climate Center

Precipitation for December 2015-February 2016

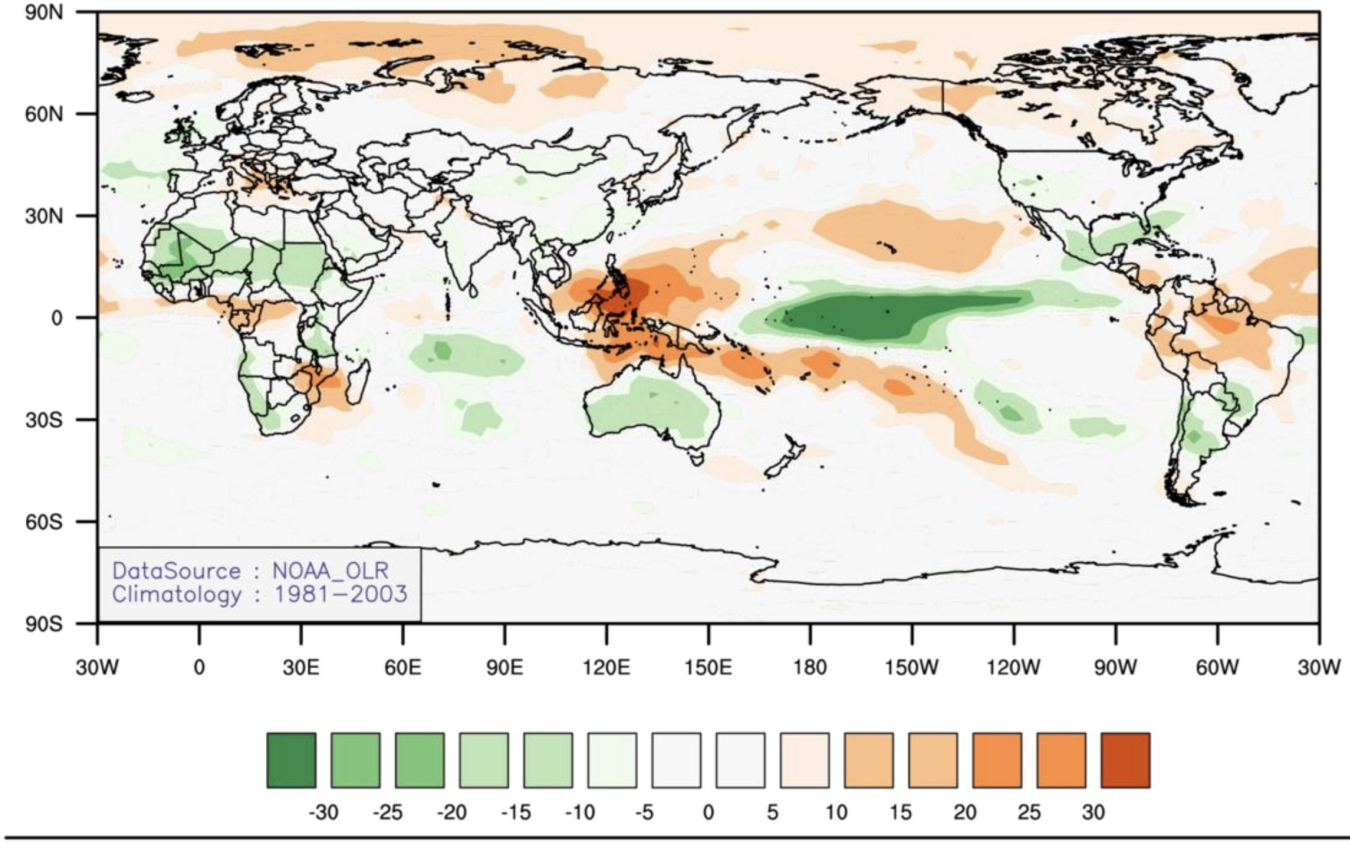


© APEC Climate Center

OLR Anomaly

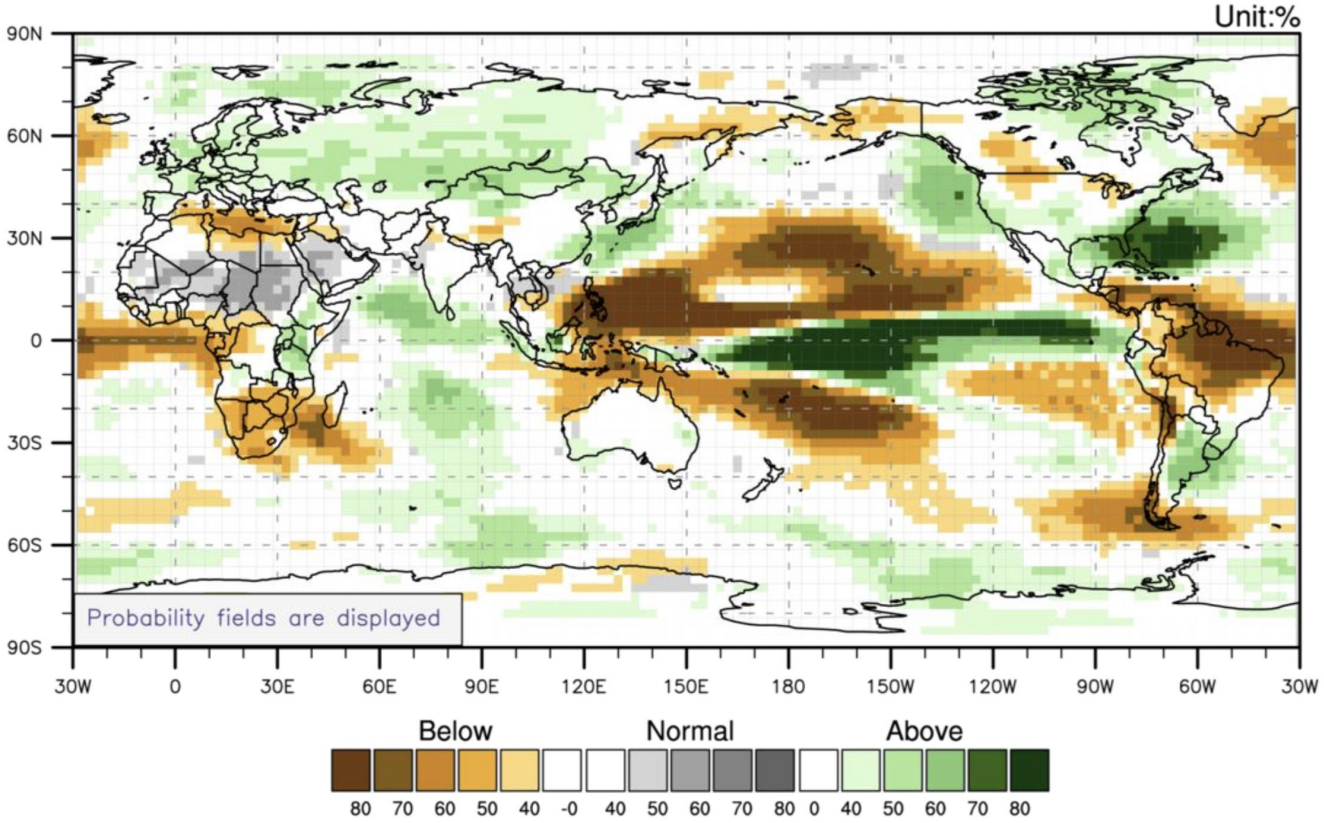
Dec 1 2015 - Feb 12 2016

Unit : W/m^2



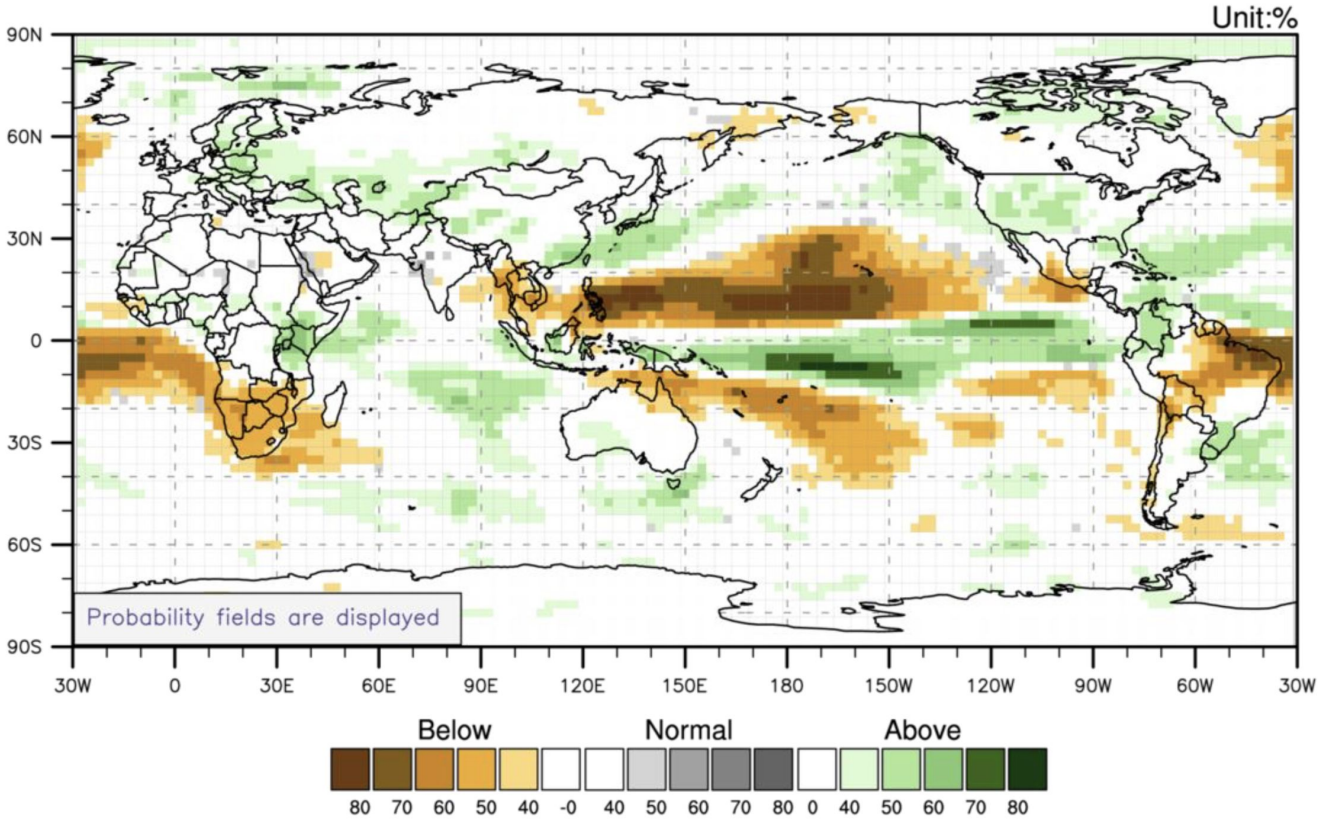
© APEC Climate Center created:02/15/16

Precipitation for December 2015-February 2016



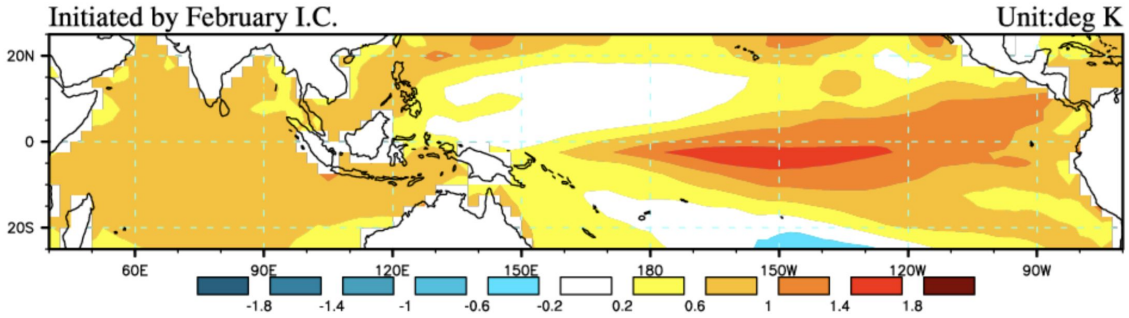
© APEC Climate Center

Precipitation for March-May 2016



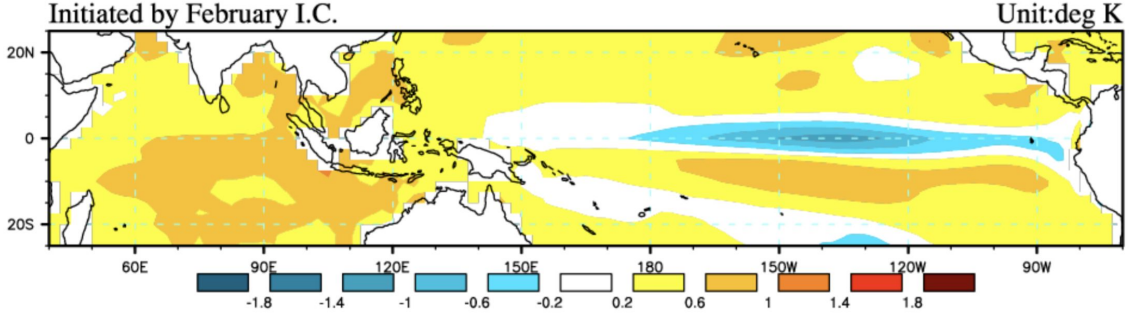
© APEC Climate Center

SST Anomaly for MAM 2016



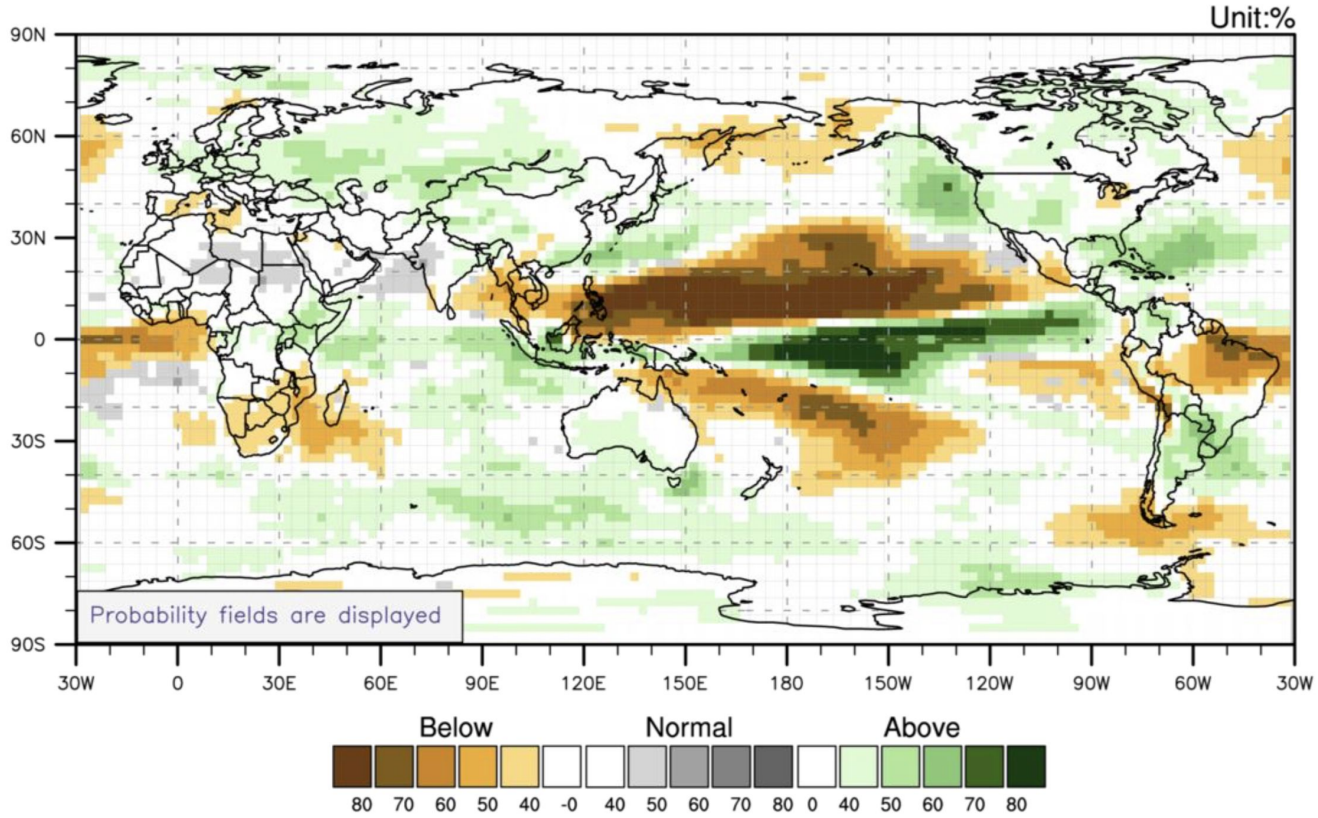
© APEC Climate Center

SST Anomaly for JJA 2016



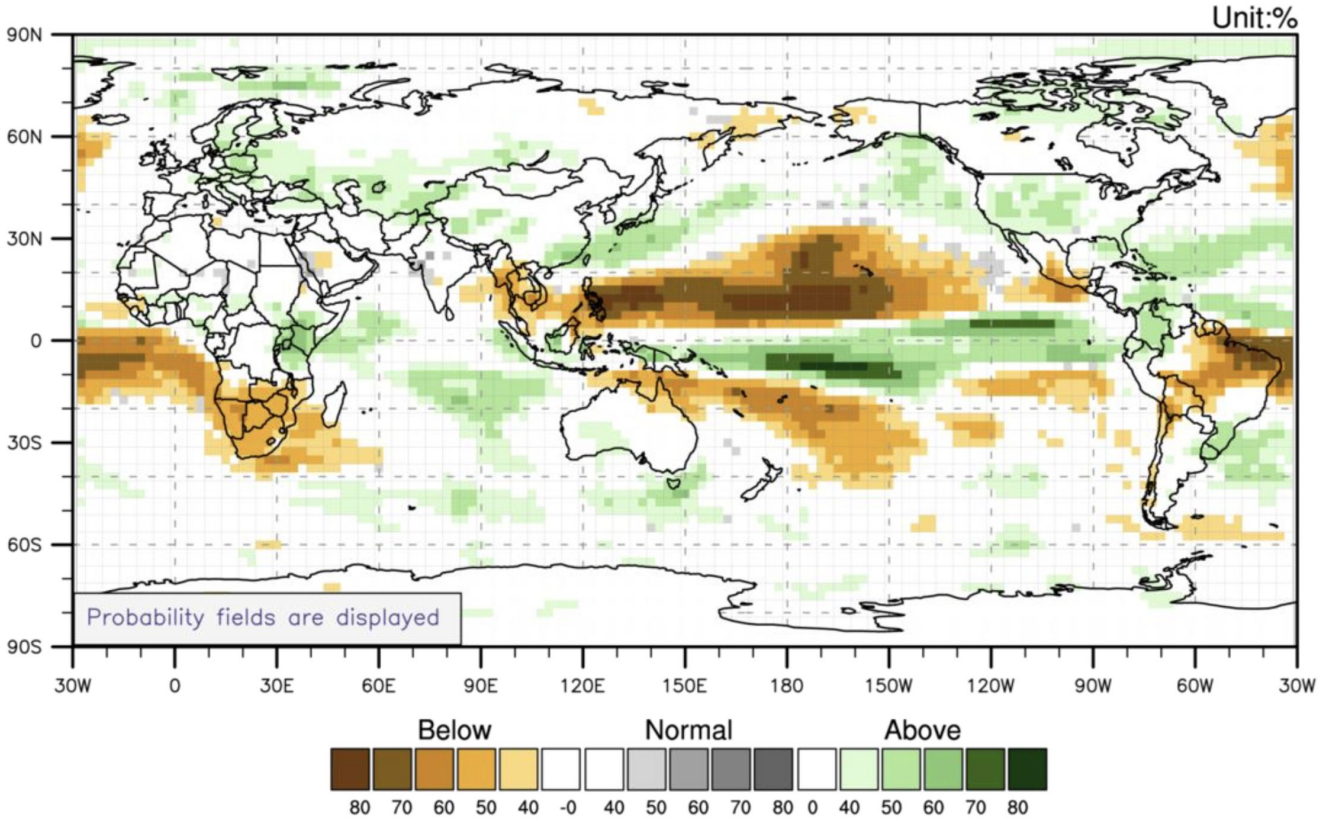
© APEC Climate Center

Precipitation for March-May 2016



© APEC Climate Center

Precipitation for March-May 2016



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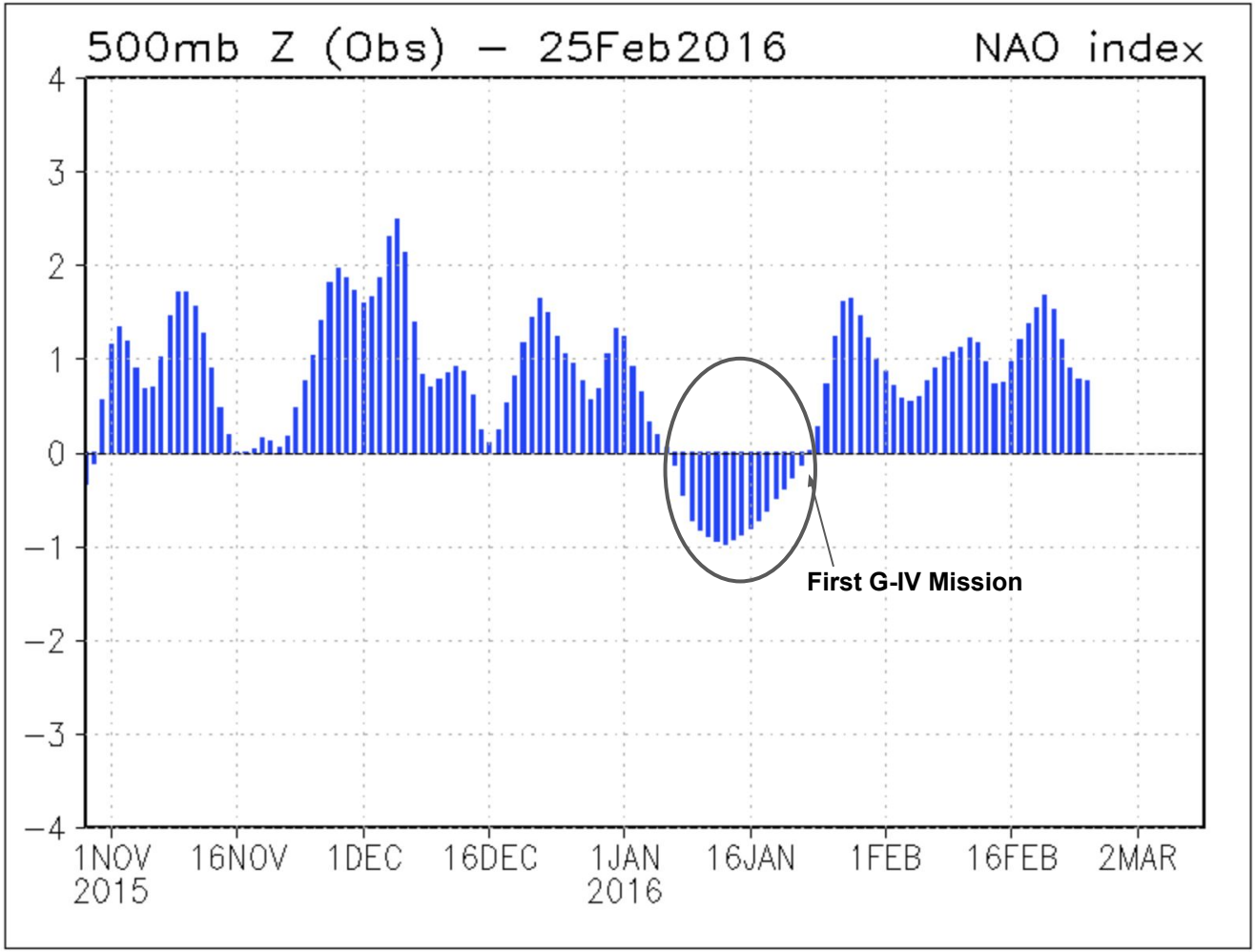
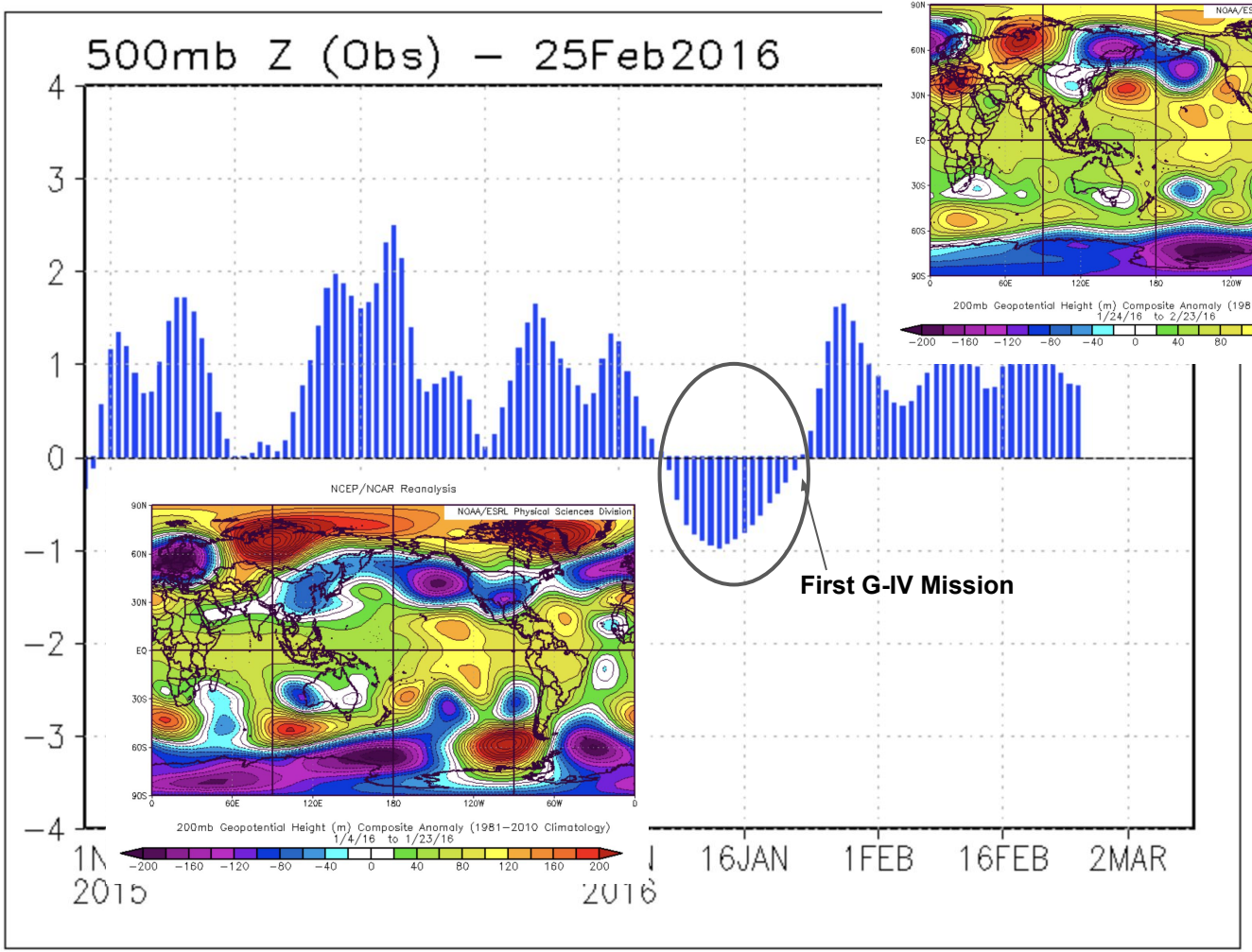
So What Did You Get?

A Whole Lot of ENSO *and NAO*

Observations



Observations

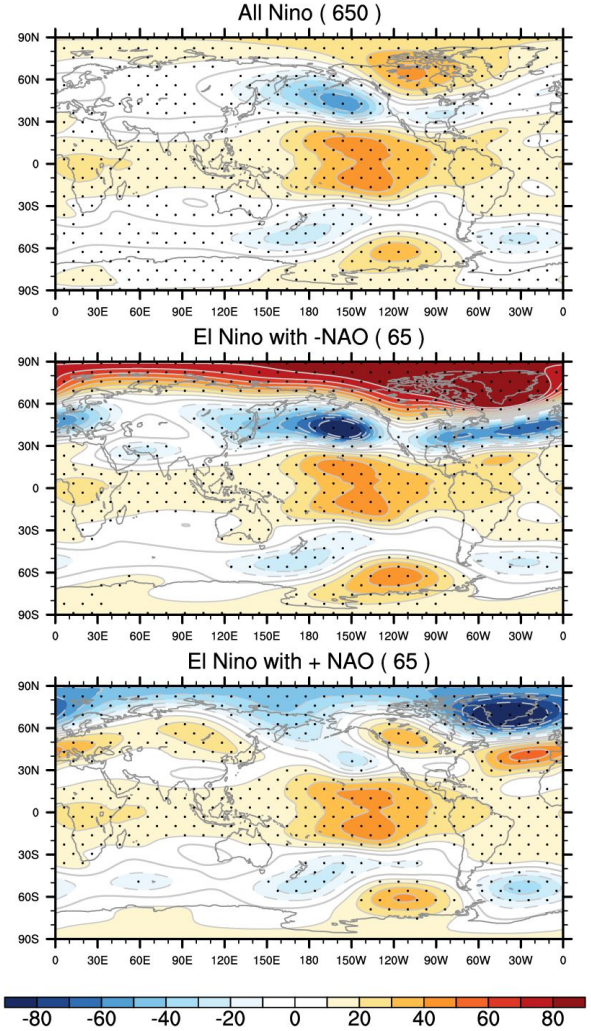


Diagnose the Seasonal Climate During El Niño, commingled with strong +NAO or - NAO Occurrences

Lantao Sun

- CAM5 Historical 50-member (PSD partnership LBNL)
- 1959-2014
- Define 13 El Niño Years
- Composite El Niño Signal (NDJF; 650-members)
- For Each El Niño year, rank the 50 CAM5 samples by NAO index
- Select upper and lower decile NAO occurrences
- Sub-composite Climate States for El Niño w/NAO (65-members)

El Nino Z200 NDJF anomaly

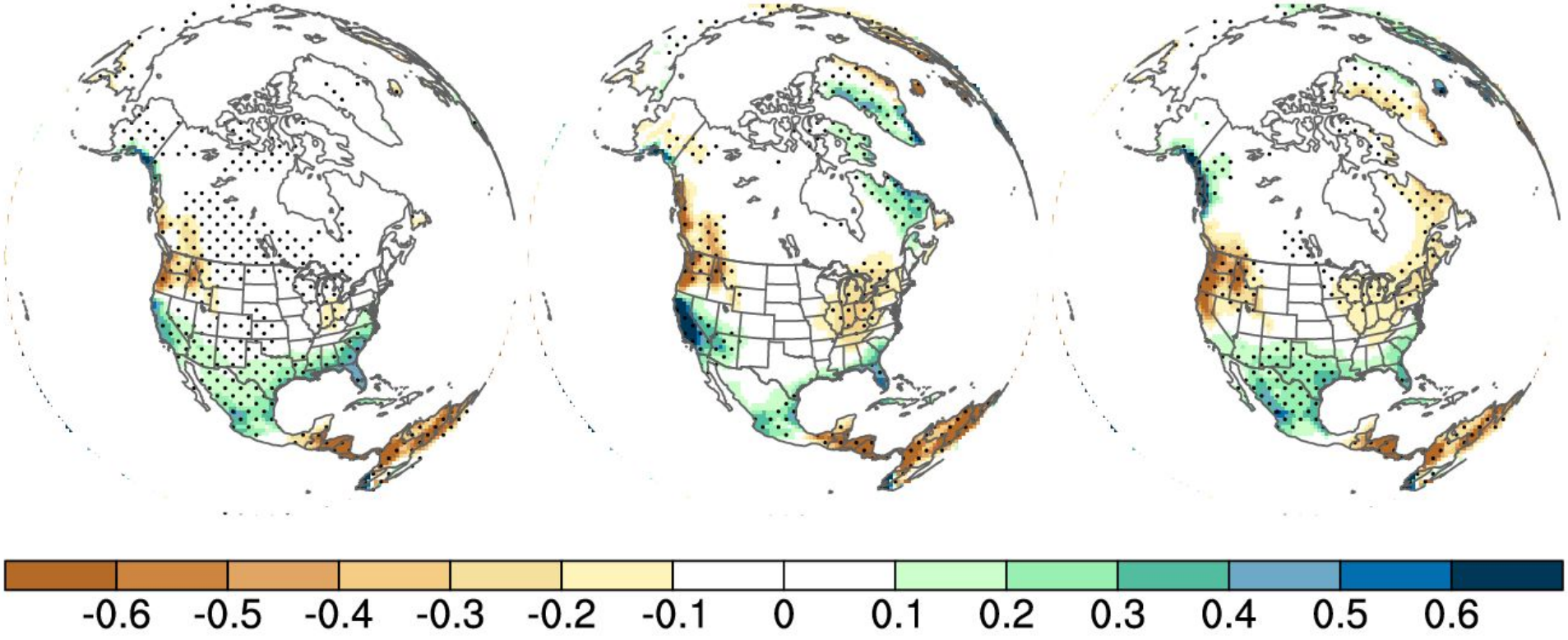


El Nino Precip NDJF anomaly

All Nino (650)

El Nino with -NAO (65)

El Nino with + NAO (65)



Sensitivity of Extratropics to Tropical Forcing

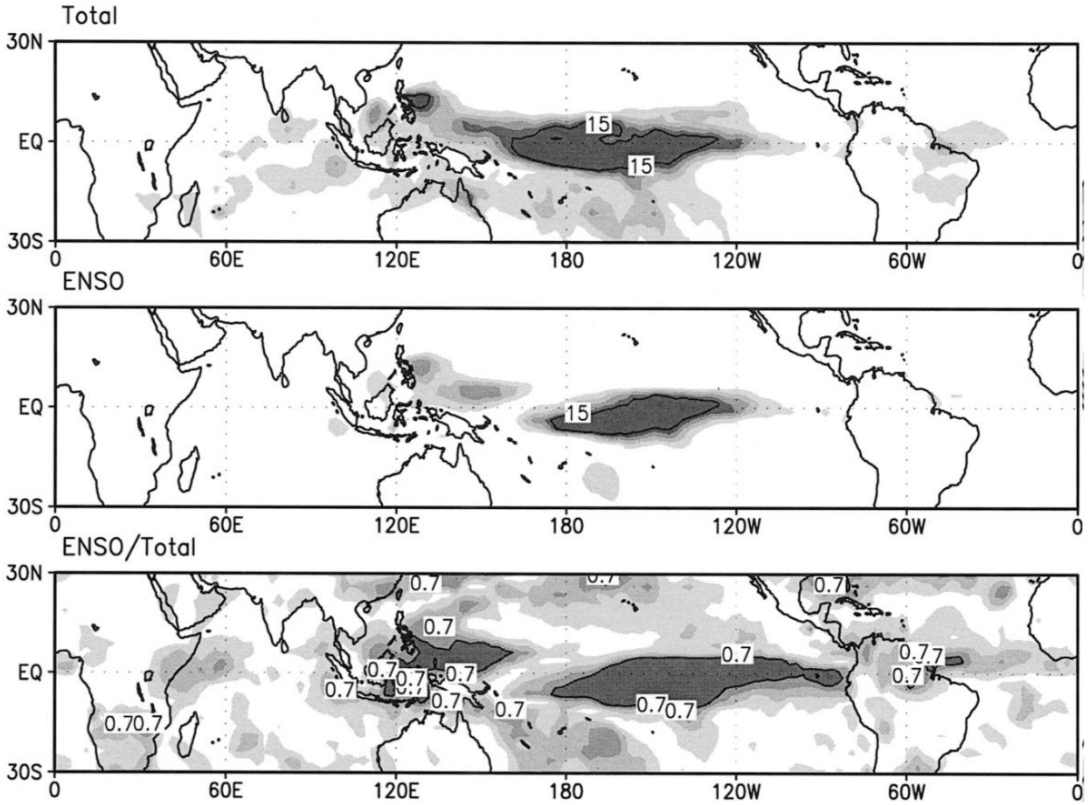


FIG. 4. Observed winter (DJF) seasonally averaged (top) total variance of precipitation, (middle) ENSO component of the precipitation variance, and (bottom) the ratio of the ENSO component to the total variance. The period of analysis is 1980–99, and precipitation is based on the GPCP data. Results are shown for the Tropics within 30°N–30°S. Contour interval is 3 (mm day^{-1})^2 in (top) and (middle), and 0.2 in (bottom).

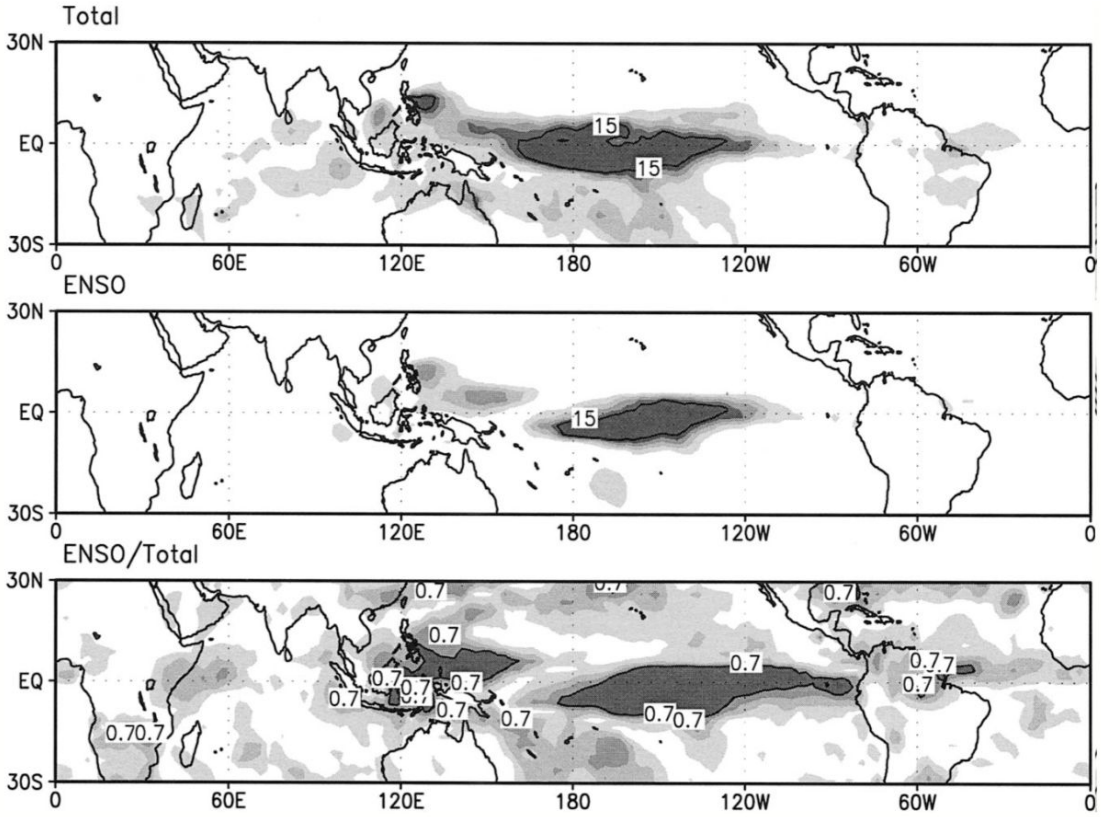


FIG. 4. Observed winter (DJF) seasonally averaged (top) total variance of precipitation, (middle) ENSO component of the precipitation variance, and (bottom) the ratio of the ENSO component to the total variance. The period of analysis is 1980–99, and precipitation is based on the GPCP data. Results are shown for the Tropics within 30°N–30°S. Contour interval is 3 (mm day^{-1})^2 in (top) and (middle), and 0.2 in (bottom).

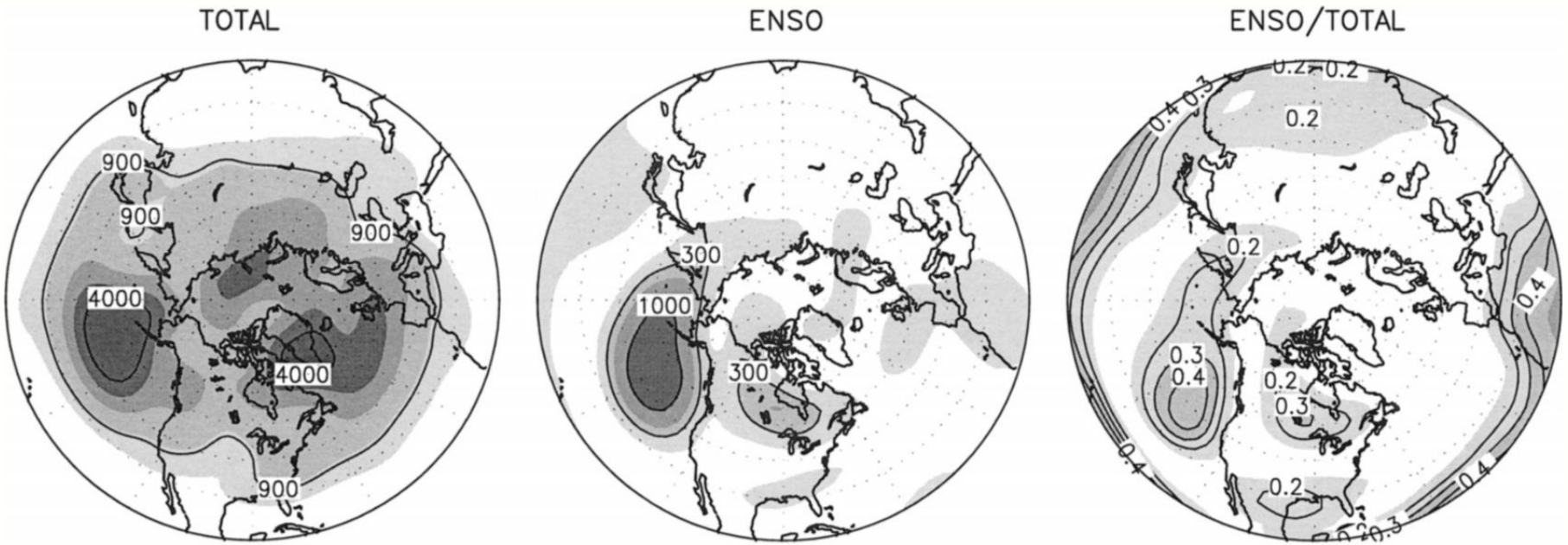


FIG. 5. Observed winter (DJF) seasonally averaged total (left) variance of 500-hPa heights, (middle) ENSO component of the 500-hPa height variance, and (right) the ratio of the ENSO component to the total variance. The period of analysis is 1950–99, and results are shown for the NH polar cap to 20°N. Contour interval is 1000 $(m)^2$ in (left) and (middle), and 0.1 in (right).

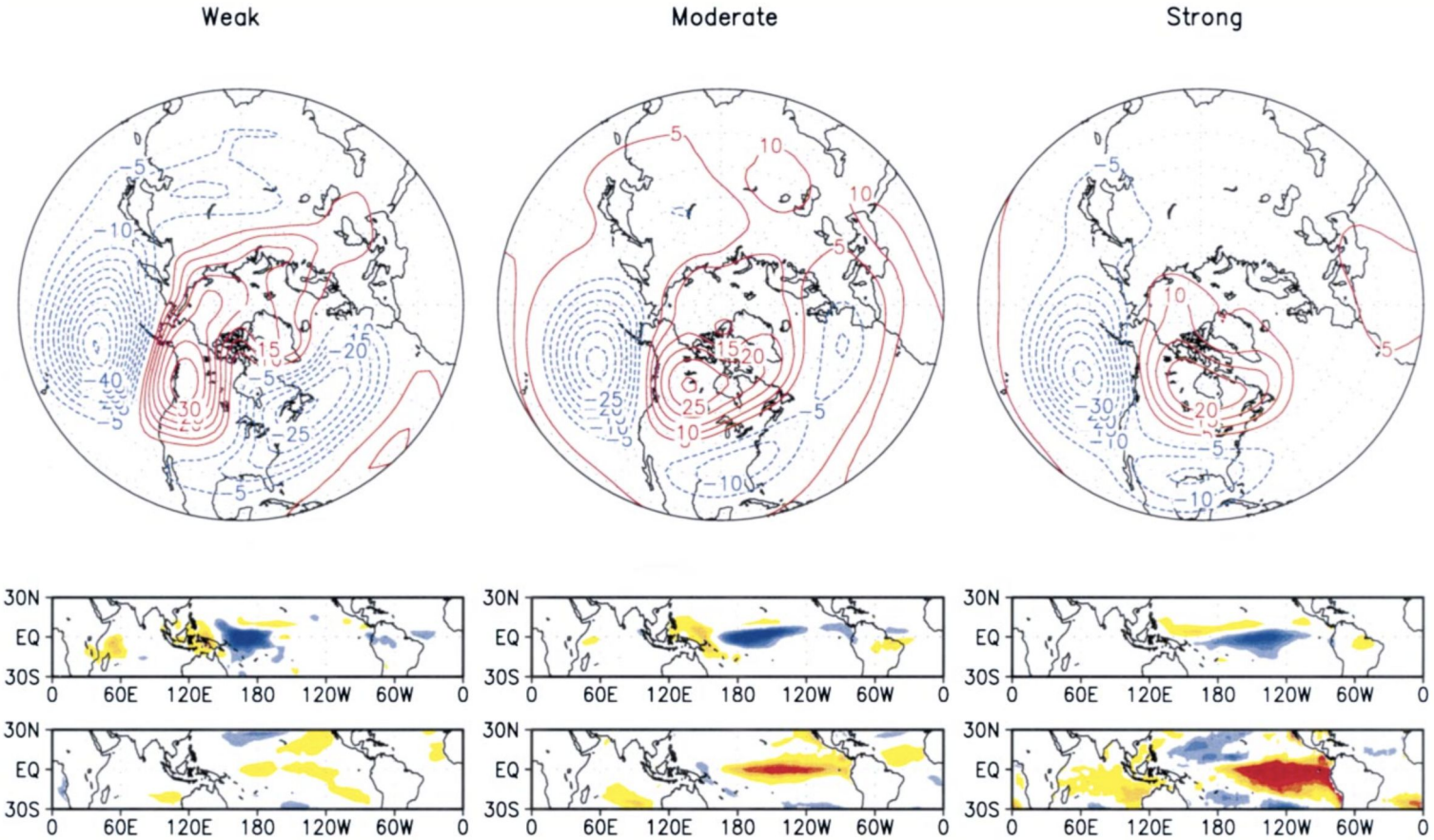


FIG. 13. GCM ensemble winter (DJF) anomalies of (top) 500-hPa height, (middle) tropical rainfall, and (bottom) tropical SST for varying strengths of equatorial Pacific warm events during (left) 1980, (middle) 1958, and (right) 1983. The year refers to the Jan of the season. The height and rainfall anomalies have been scaled by the amplitude of the EOF1 index of ENSO for each case. Contours for height are drawn every 5 m, with positive (negative) values solid (dashed). Shading interval for rainfall is every 1 mm day^{-1}, with positive (negative) anomalies in blue (red). Shading interval for SST is every 0.5°C, with positive (negative) anomalies in red (blue).

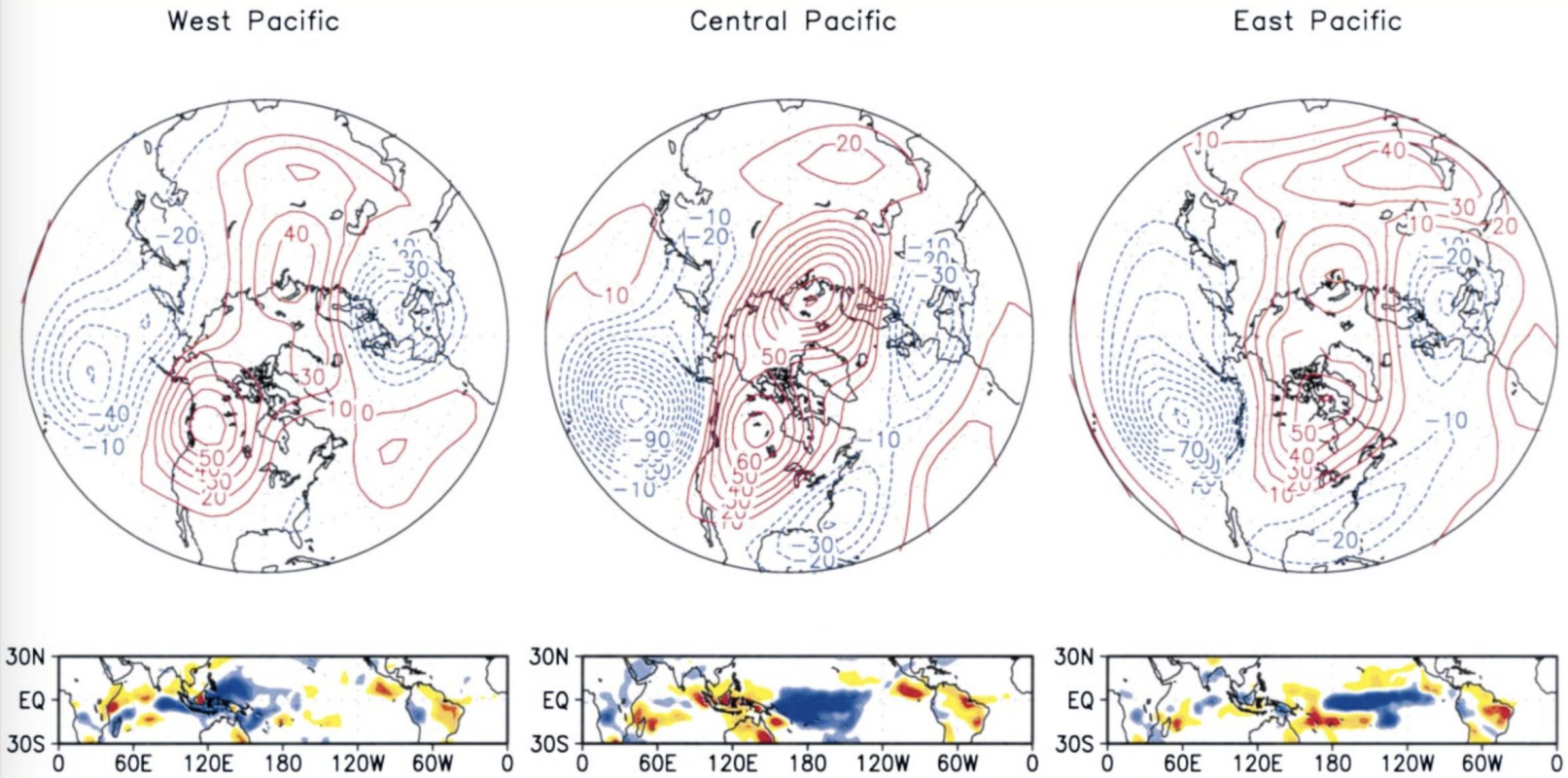


FIG. 15. Perpetual Jan MRF9 simulations of (top) 500-hPa height and (bottom) tropical rainfall anomalies for varying positions of equatorial positive SST anomalies located in the (left) West, (middle) Central, and (right) East Pacific. Results are based on a 24-month ensemble average. Contours for height are drawn every 10 m, with positive (negative) values solid (dashed). Shading interval for rainfall is every 1 mm day^{-1}, with positive (negative) anomalies in blue (red).

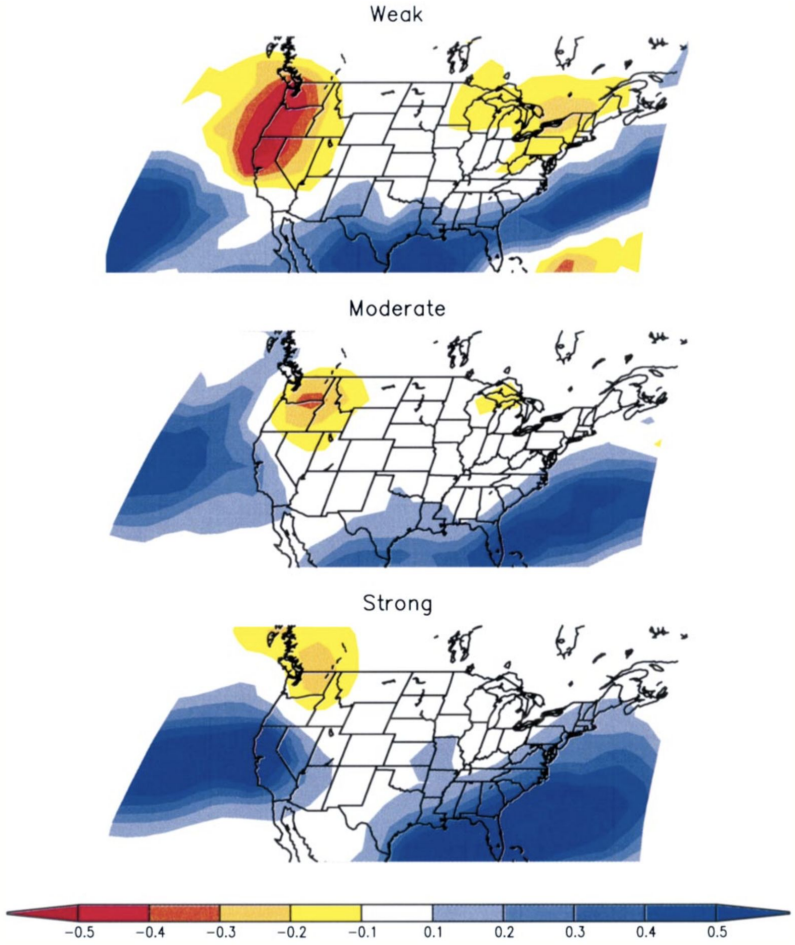
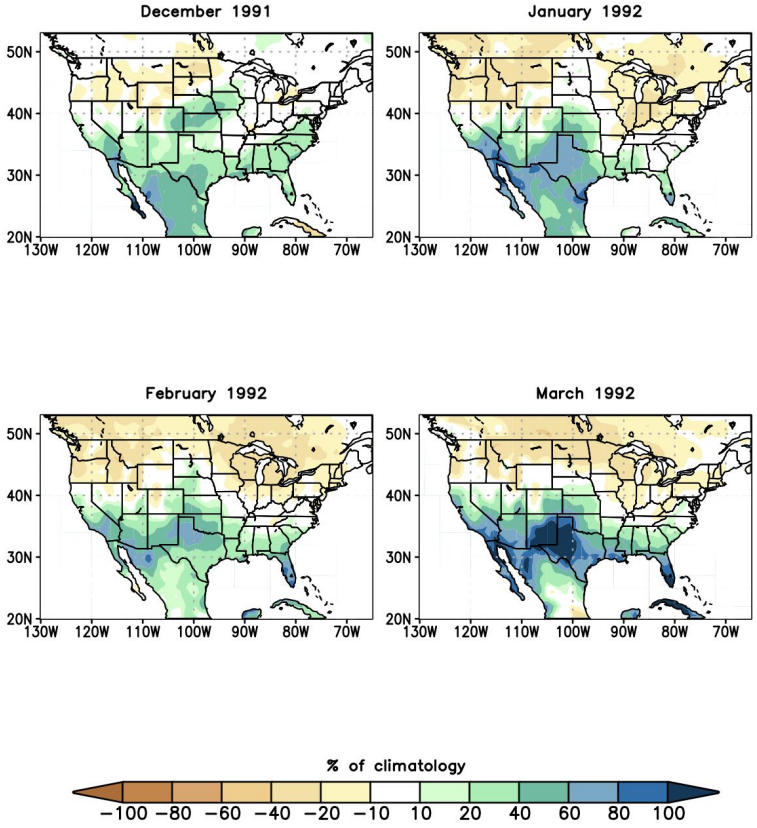


FIG. 14. GCM ensemble winter (DJF) anomalies of North American precipitation for varying strengths of equatorial Pacific warm events during (top) 1980, (middle) 1958, and (bottom) 1983. The year refers to the Jan of the season. The precipitation anomalies have been scaled by the amplitude of the EOF1 index for each case. Shading interval is 0.1 mm day^{-1} with positive (negative) anomalies in blue (red).

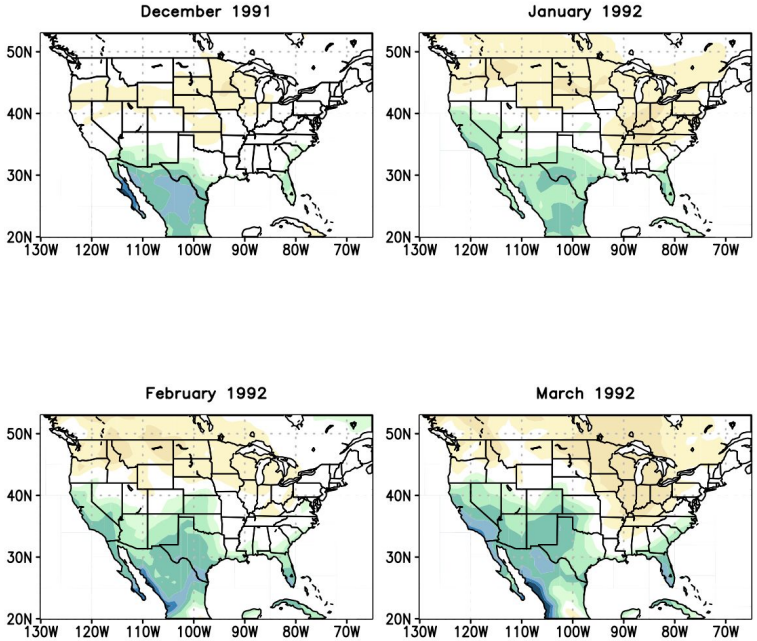
ECHAM5 1991/92 30-run Avg. PCPN Changes

Climo 1981-2010



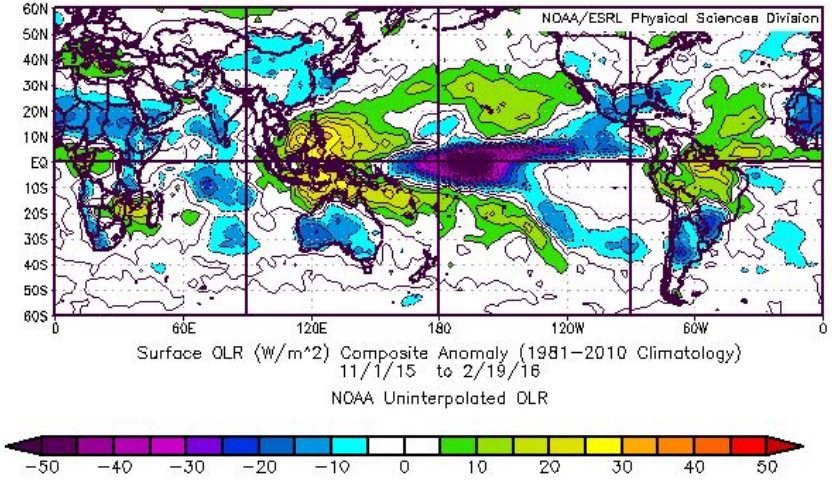
CAM5 1991/92 50-run Avg. PCPN Changes

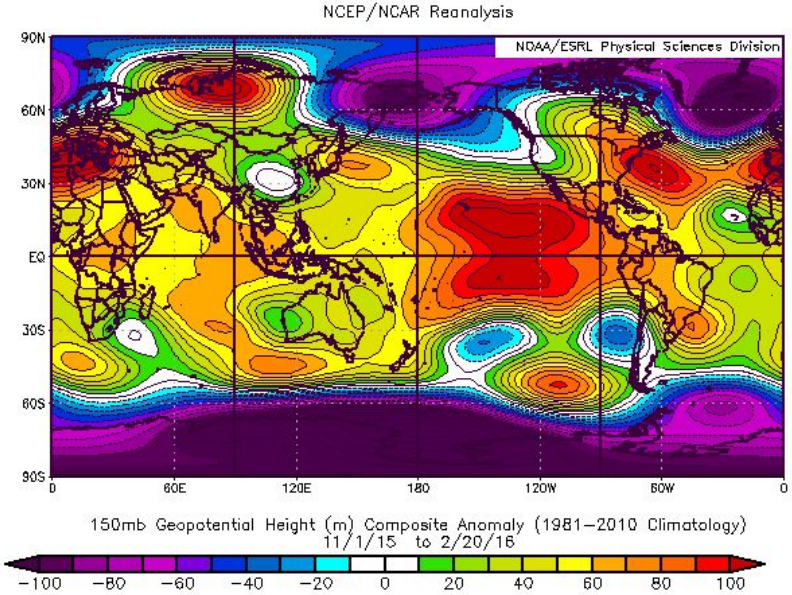
Climo 1981–2010



Beginnings of a Narrative for Nov-Apr 2016

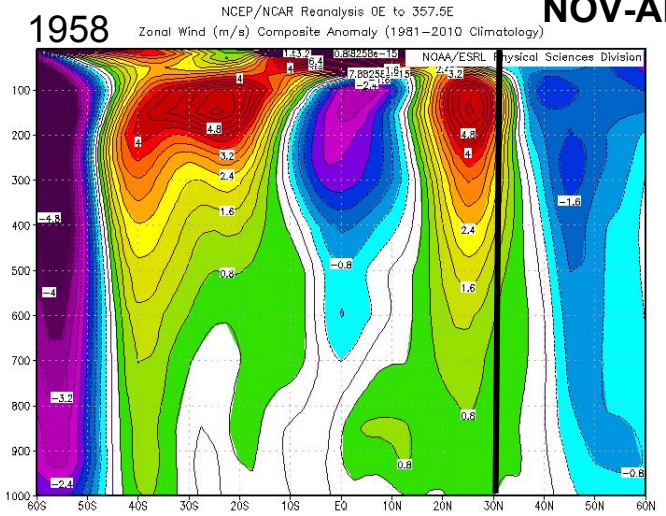
1 November - 20 February 2016



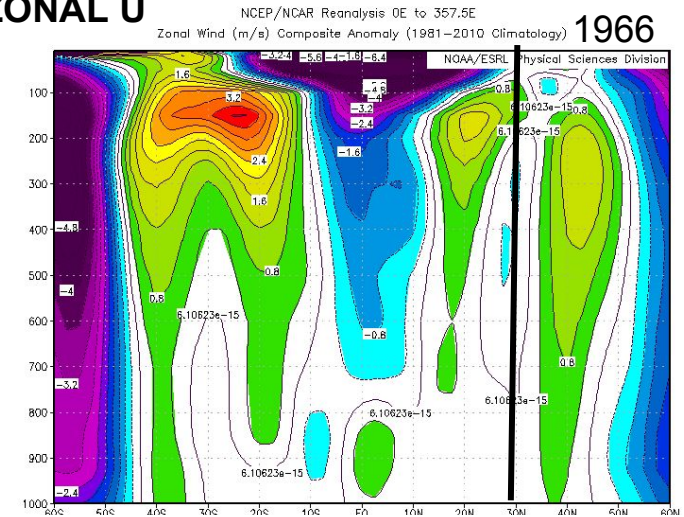


NOV-APR ZONAL U

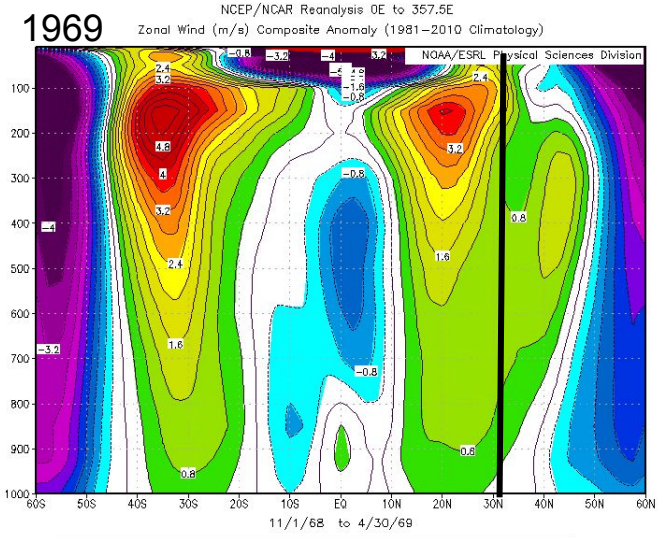
1958



1966



1969



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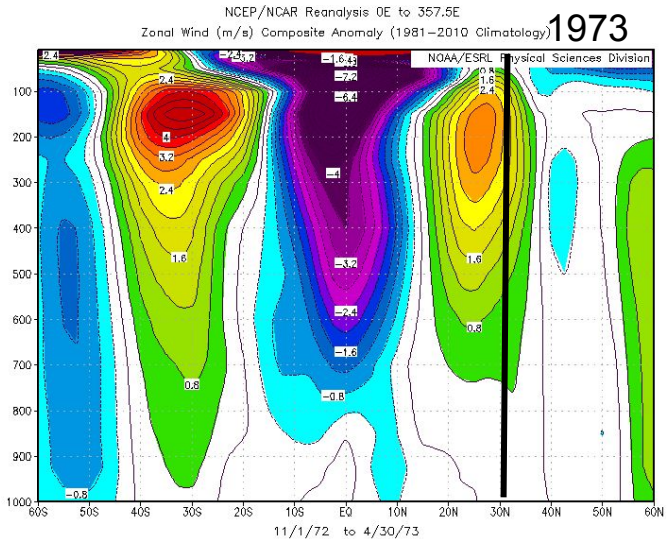
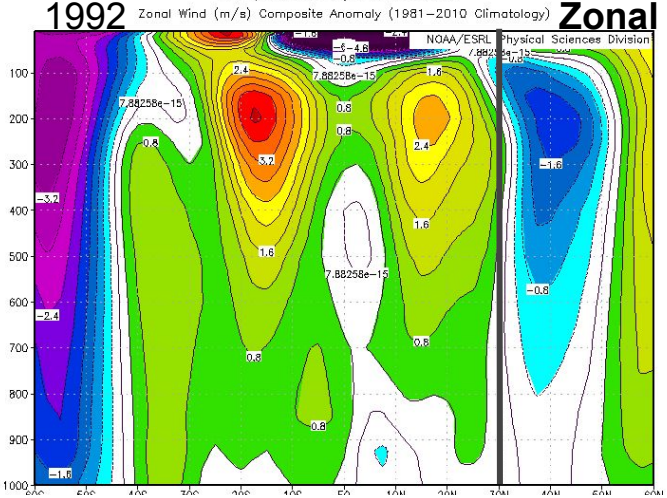


Zonal U Nov-April

1992



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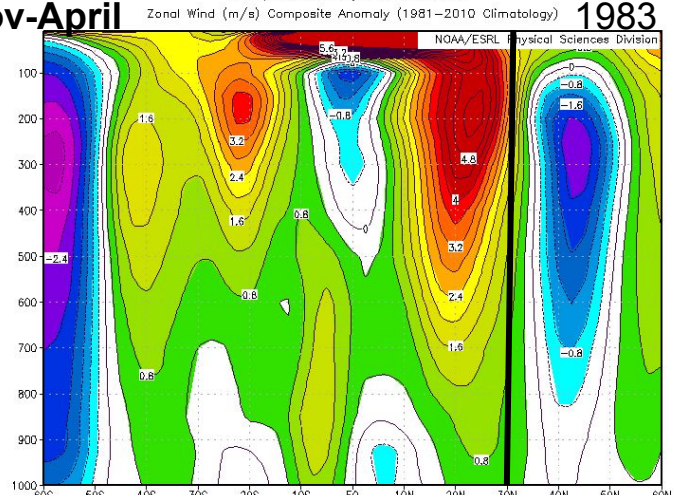

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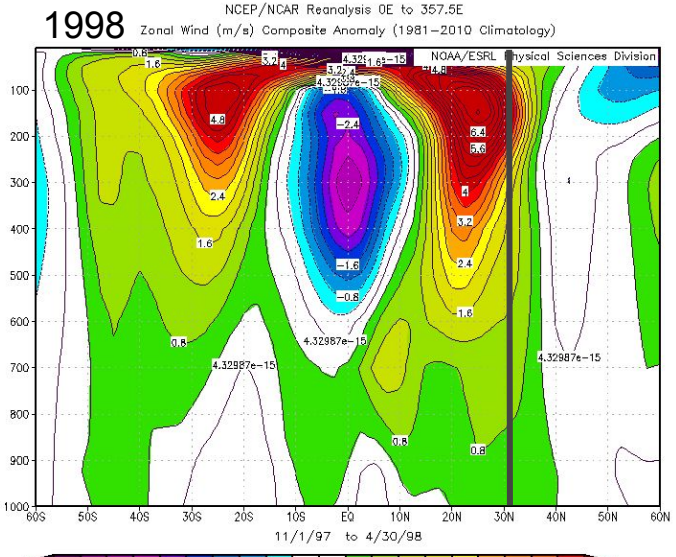

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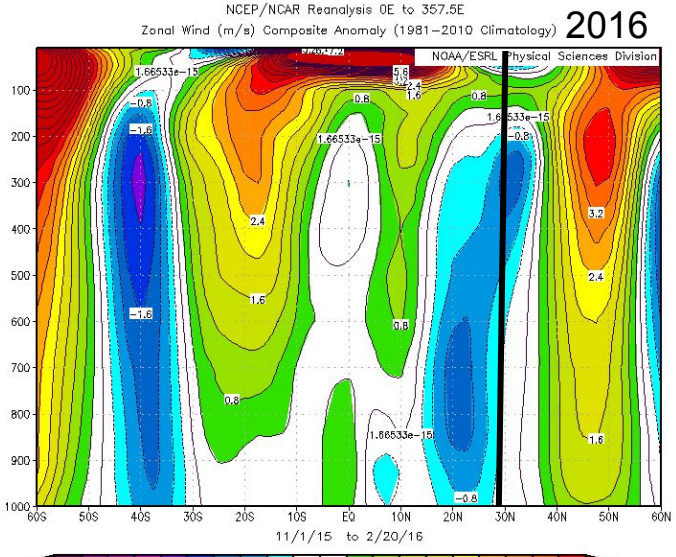
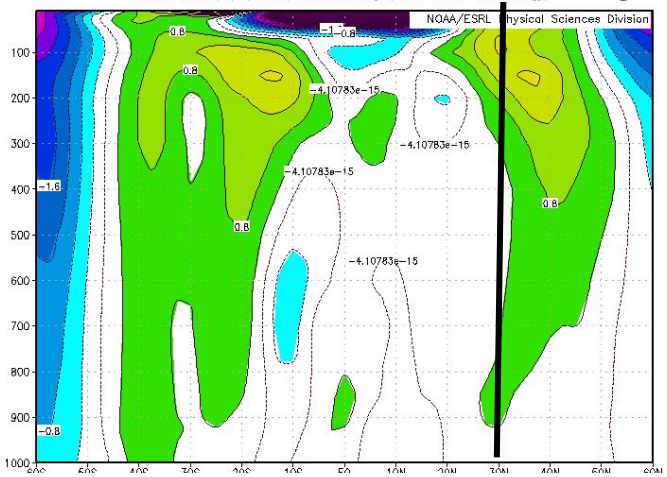
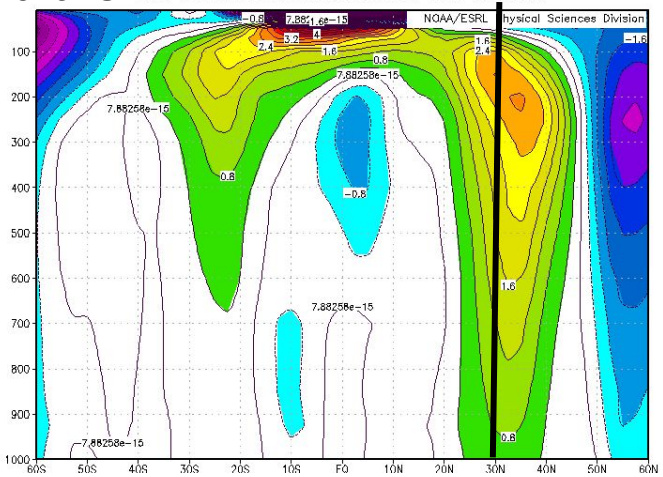
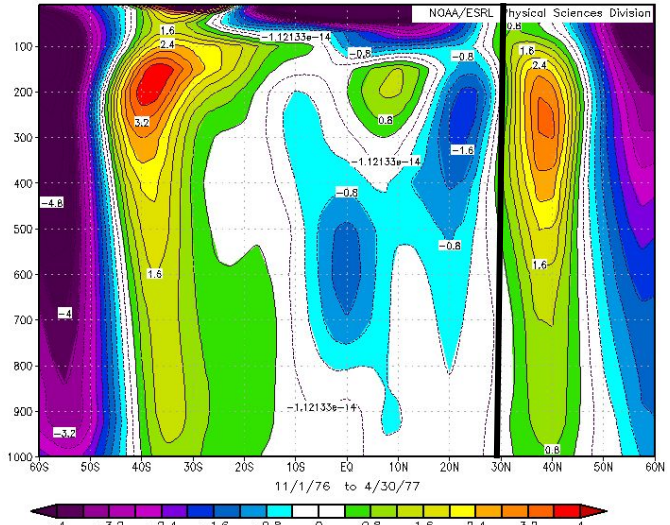


1987 Zonal Wind (m/s) Composite Anomaly (1981–2010 Climatology) NOV-APR Zonal U Zonal Wind (m/s) Composite Anomaly (1981–2010 Climatology) 2003

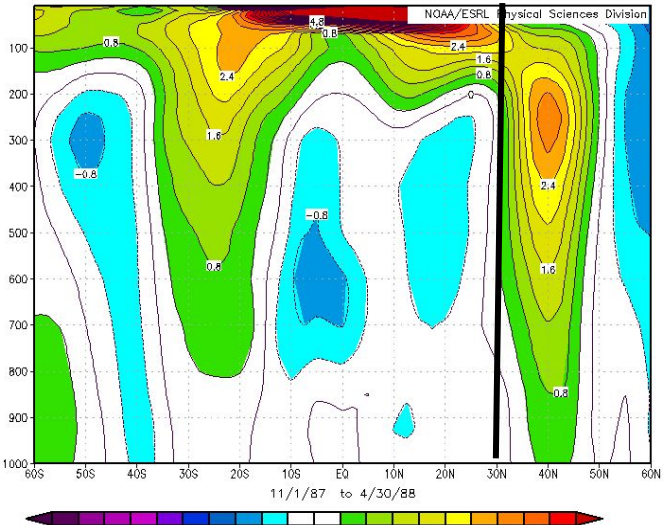




1977 NCEP/NCAR Reanalysis 0E to 357.5E
Zonal Wind (m/s) Composite Anomaly (1981–2010 Climatology)

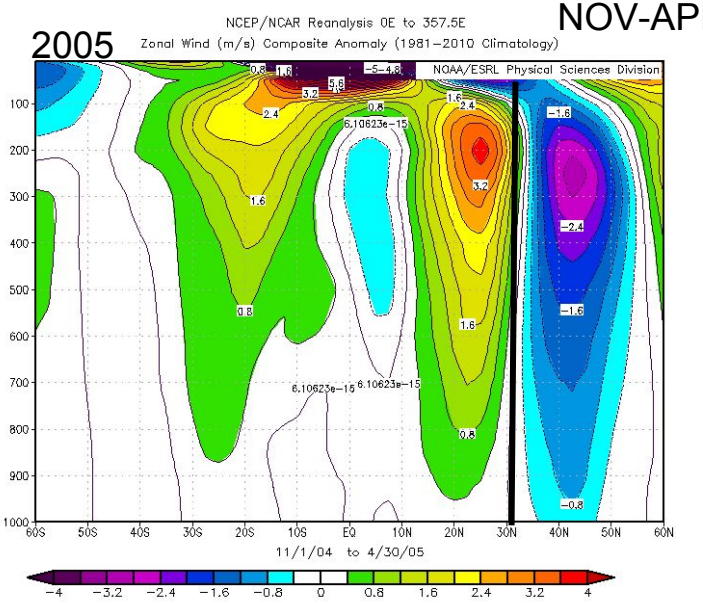


NCEP/NCAR Reanalysis 0E to 357.5E
Zonal Wind (m/s) Composite Anomaly (1981–2010 Climatology) 1988

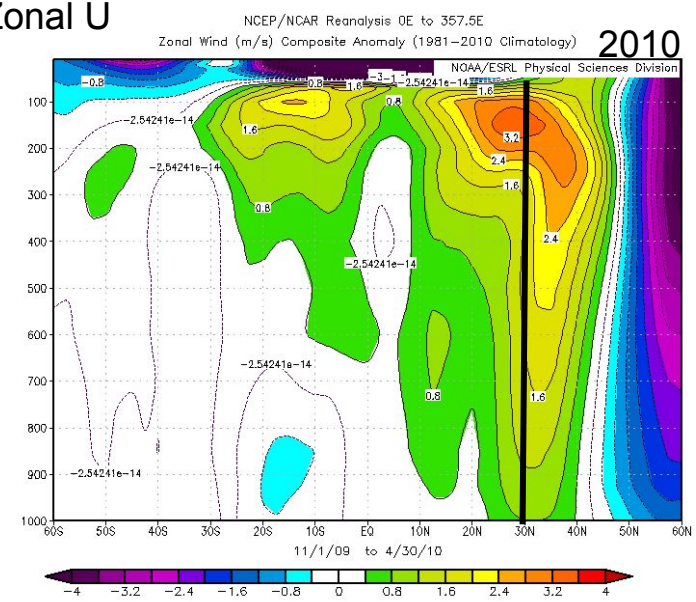


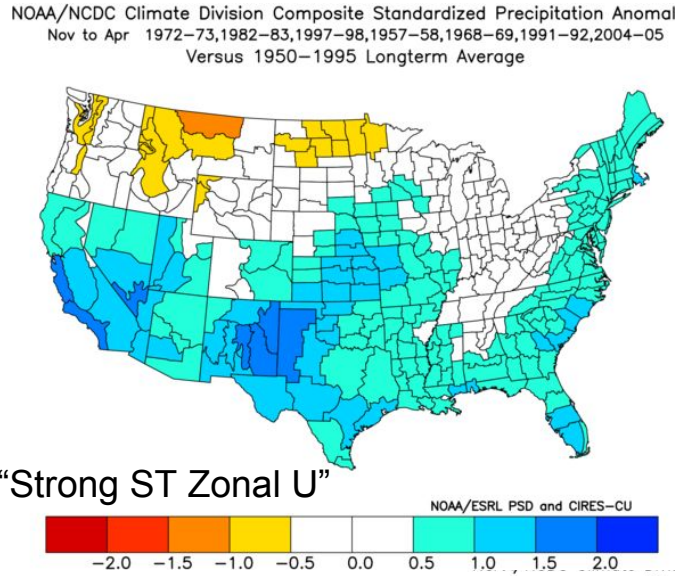
NOV-APR Zonal U

2005

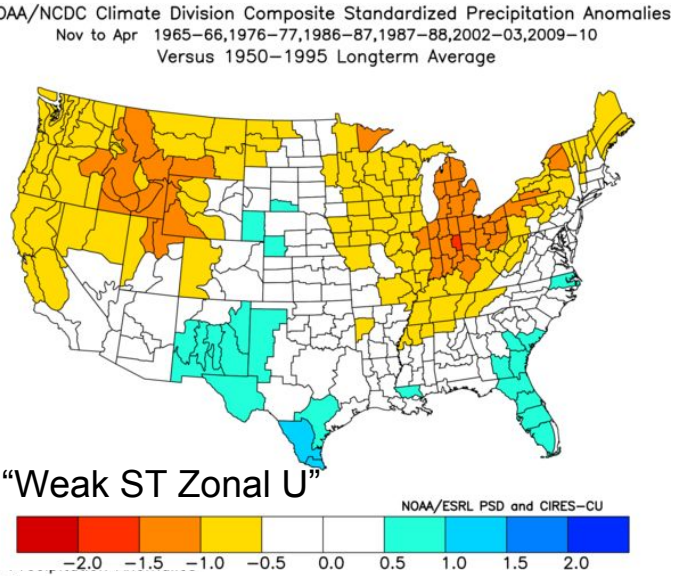


2010

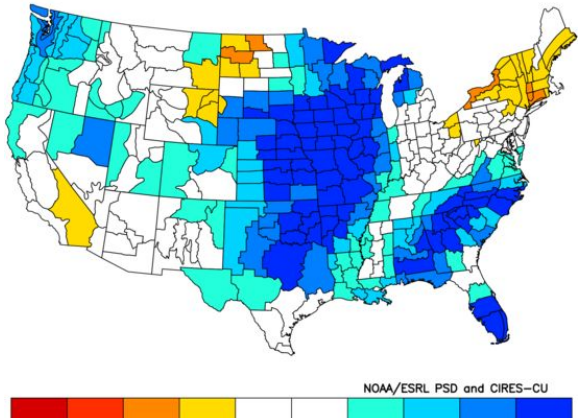




"Strong ST Zonal U"

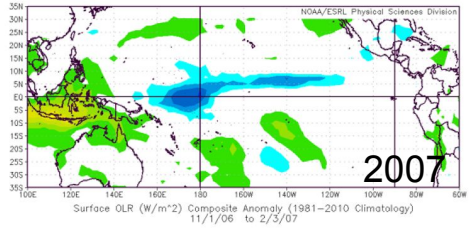


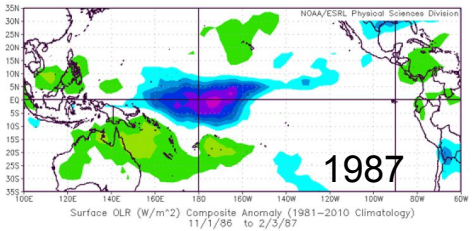
"Weak ST Zonal U"

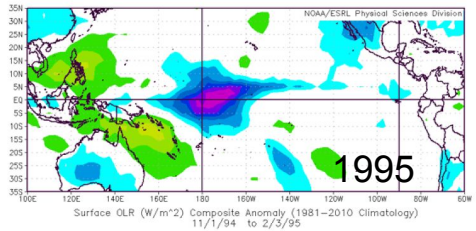


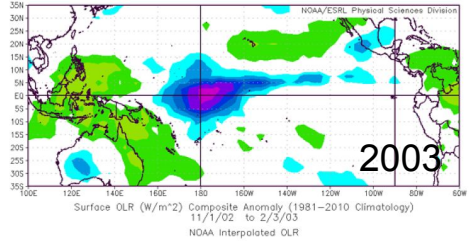
2016

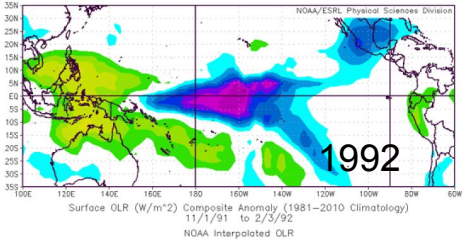
Observed OLR Anomalies : 1 Nov - 3 Feb

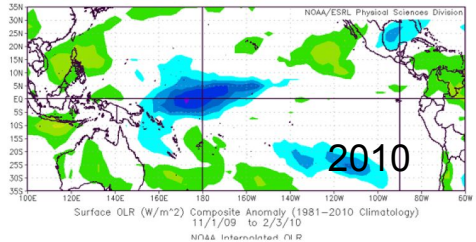


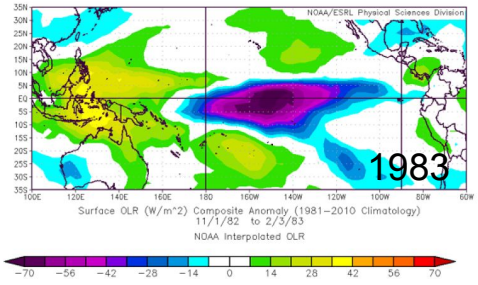


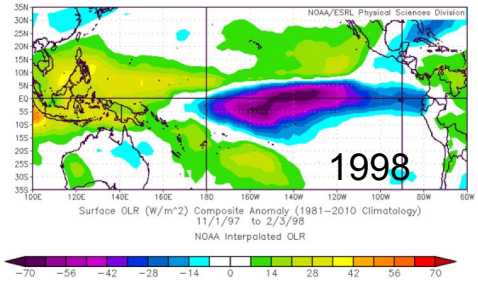


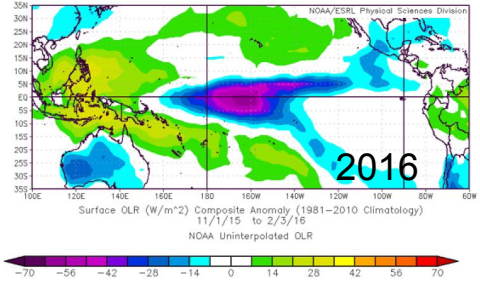




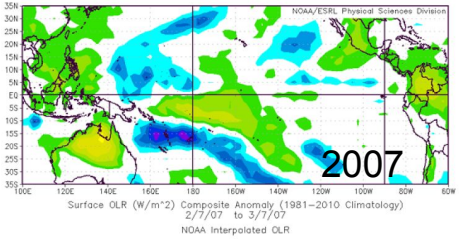


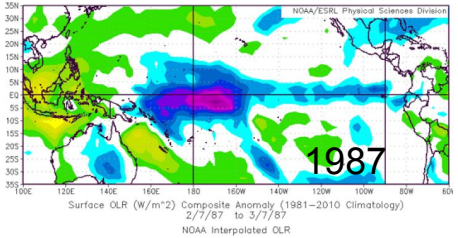


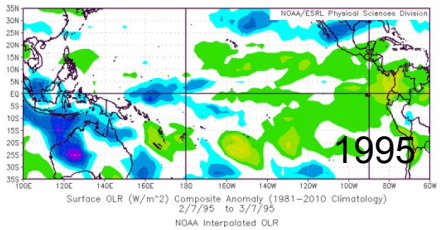


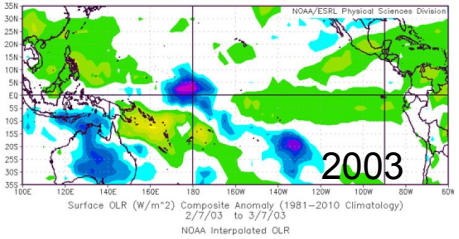


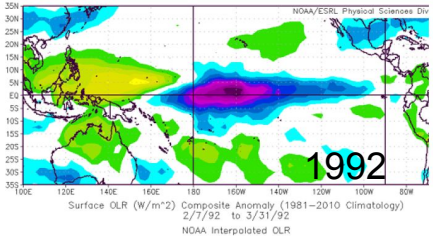
Observed OLR Anomalies : 7 Feb - 7 Mar

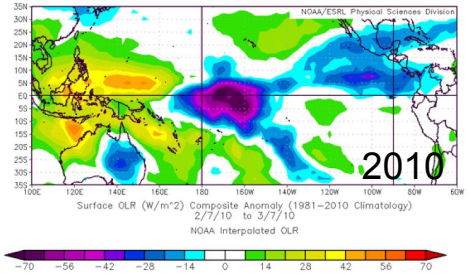


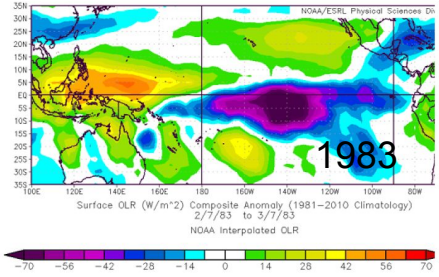


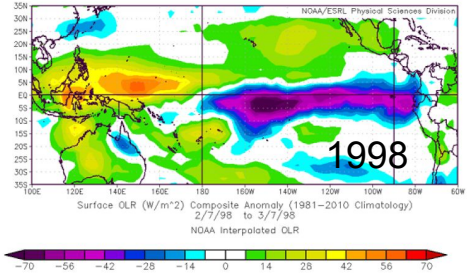




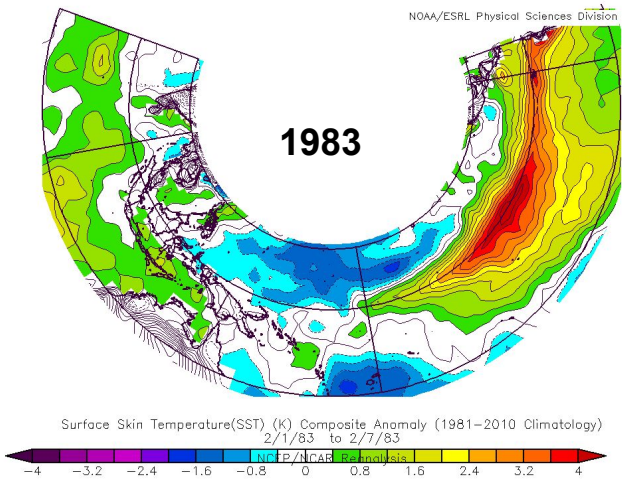


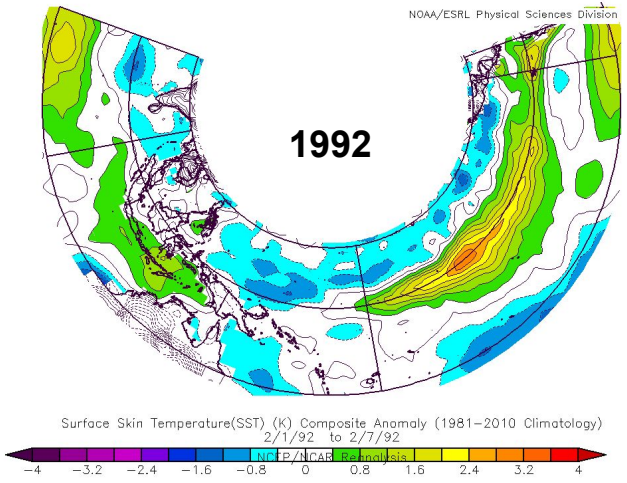


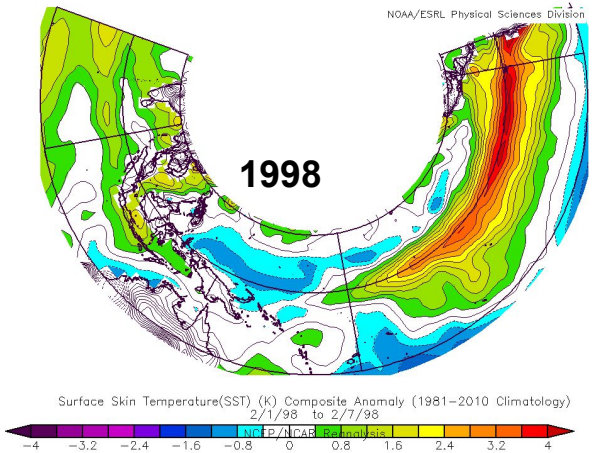


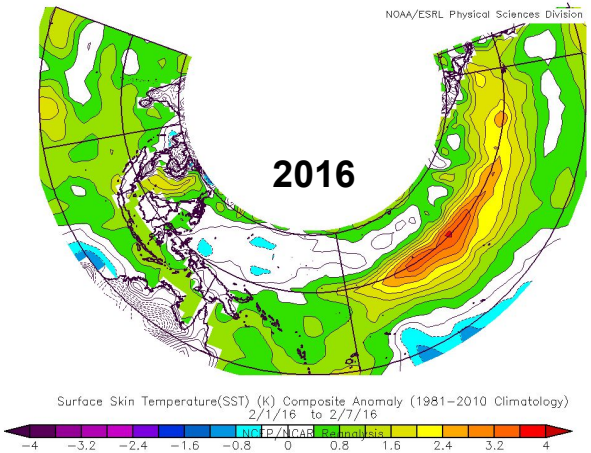


SST ANOM Feb 1-Feb 7

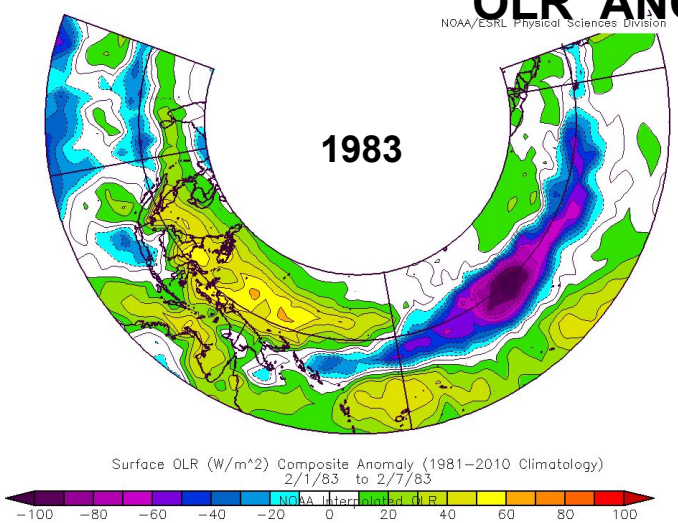


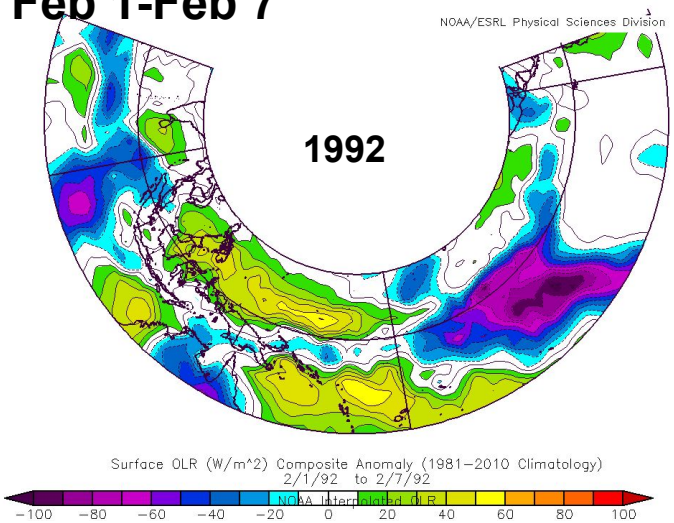


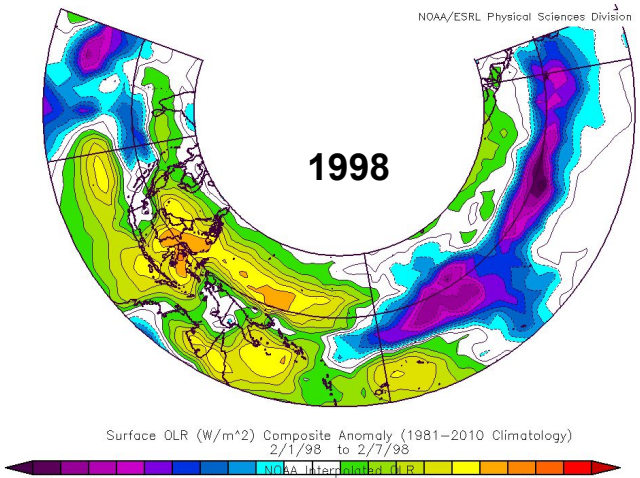


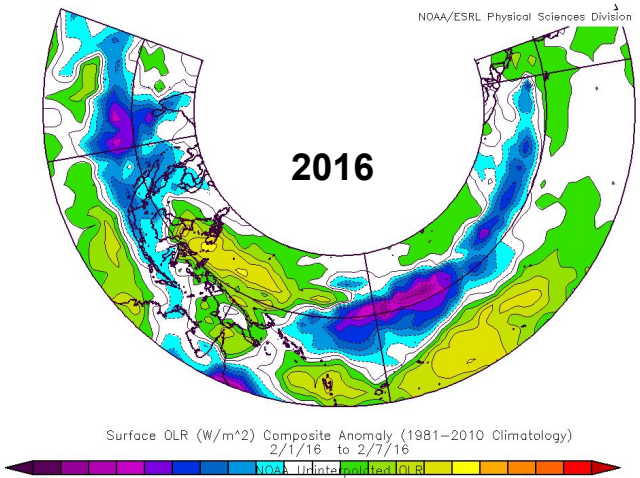


OLR ANOM Feb 1-Feb 7



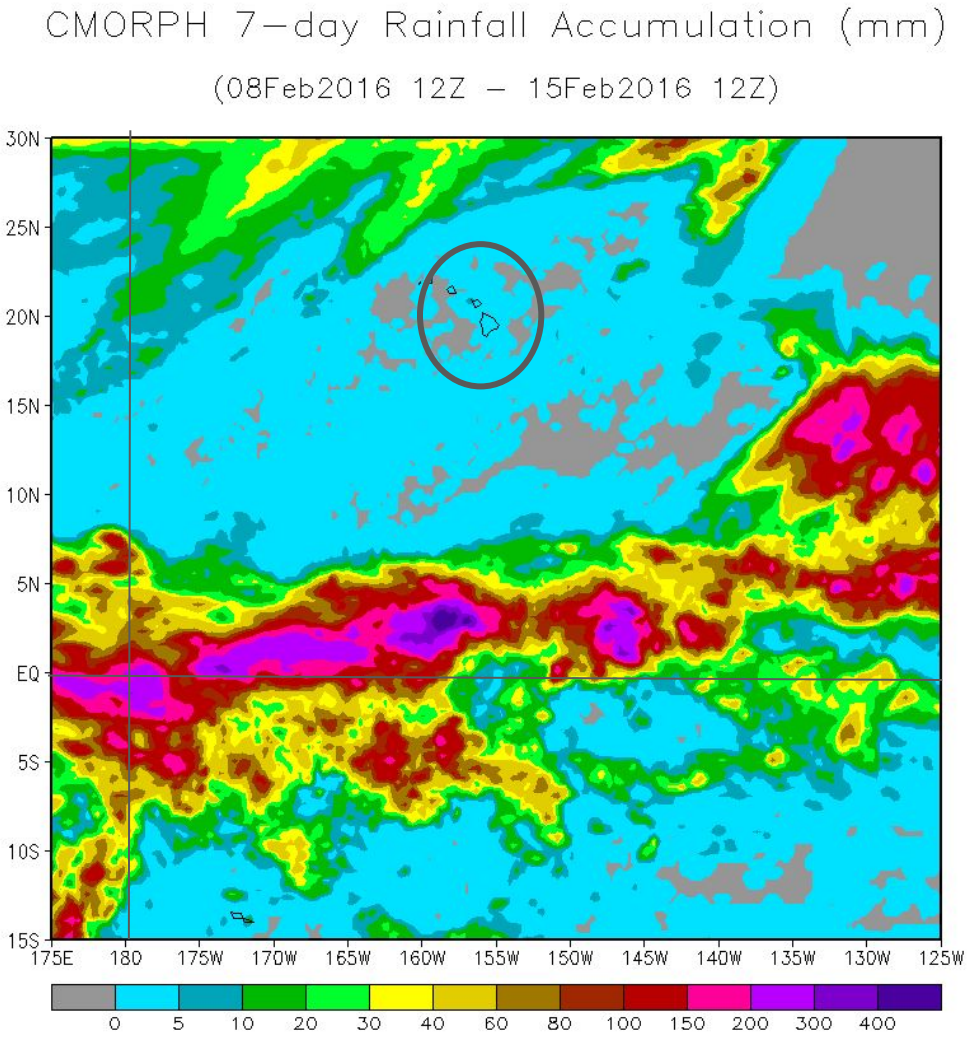


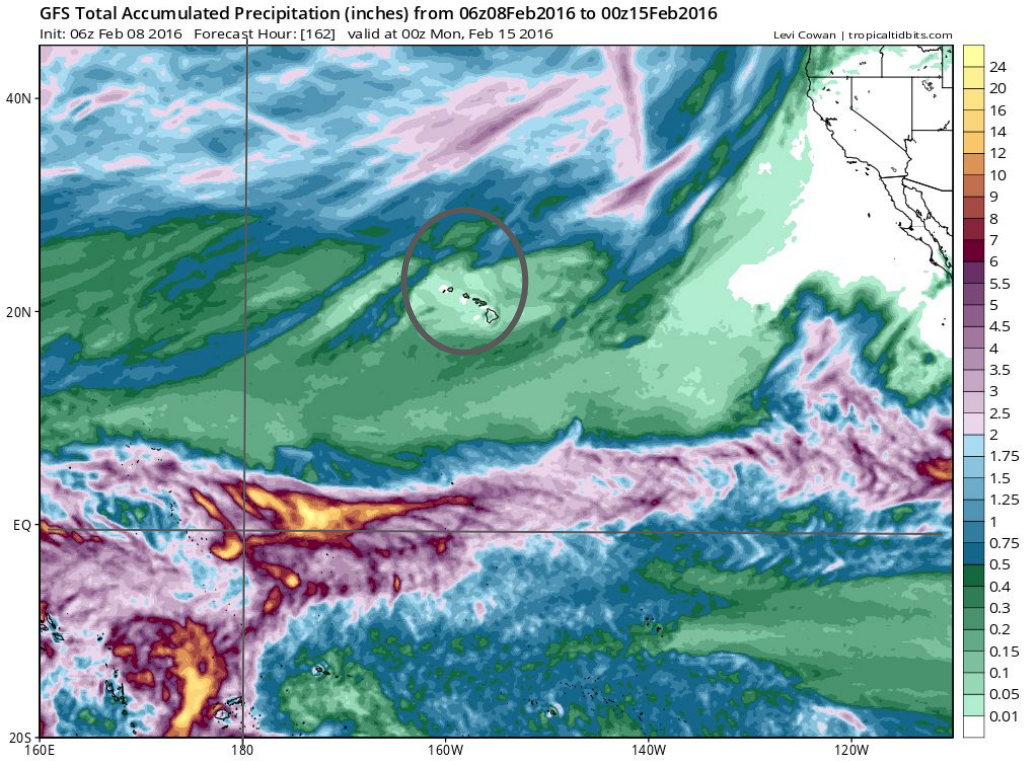




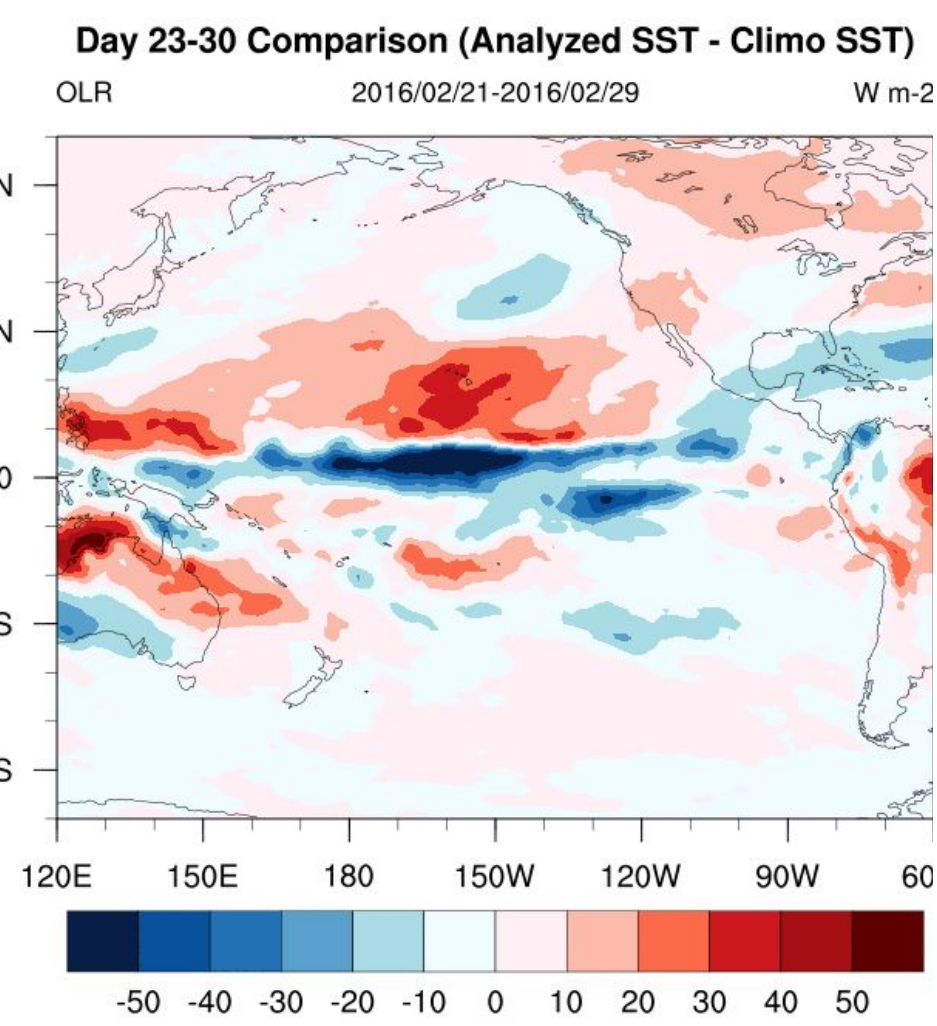
CMORPH: 7-Day

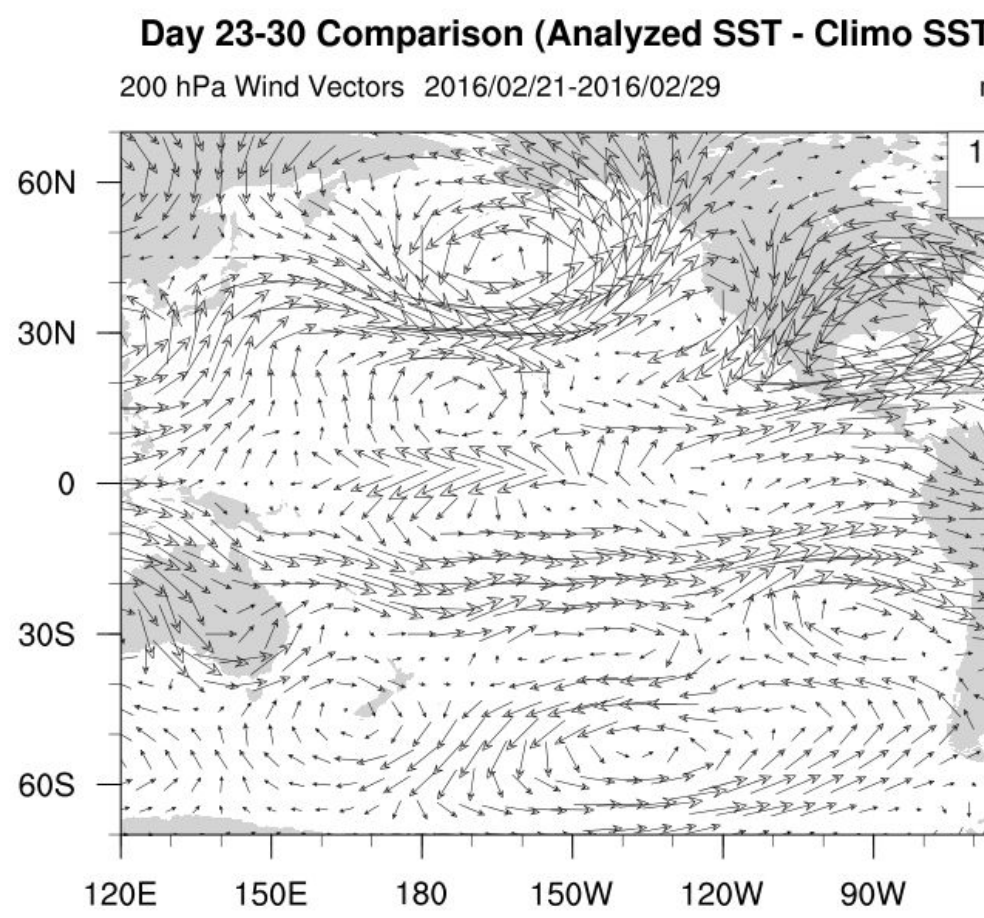
8 - 15 Feb




GFS Total Accumulated Precipitation (inches) from 06z08Feb2016 to 00z15Feb2016
Init: 06z Feb 08 2016 Forecast Hour: [162] valid at 00z Mon, Feb 15 2016
Levi Cowan | tropicaltidbits.com
40N
20N
EQ
20S
160E
180
160W
140W
120W
24
20
16
14
12
10
9
8
7
6
5.5
5
4.5
4
3.5
3
2.5
2
1.75
1.5
1.25
1
0.75
0.5
0.4
0.3
0.2
0.15
0.1
0.05
0.01

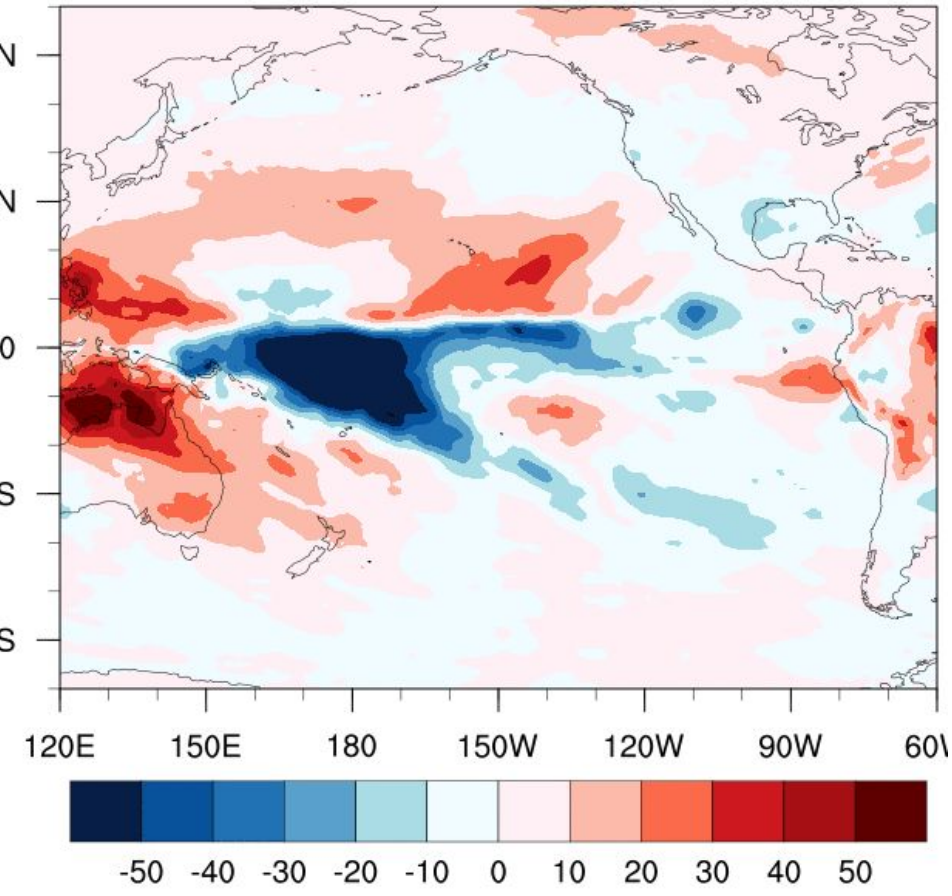
Initial Condition Dependency of the El Niño Signal


Day 23-30 Comparison (Analyzed SST - Climo SST)
OLR
2016/02/21-2016/02/29
W m-2
120E
150E
180
150W
120W
90W
-50
-40
-30
-20
-10
0
10
20
30
40
50


Day 23-30 Comparison (Analyzed SST - Climo SST
200 hPa Wind Vectors
2016/02/21-2016/02/29
60N
30N
0
30S
60S
120E
150E
180
150W
120W
90W

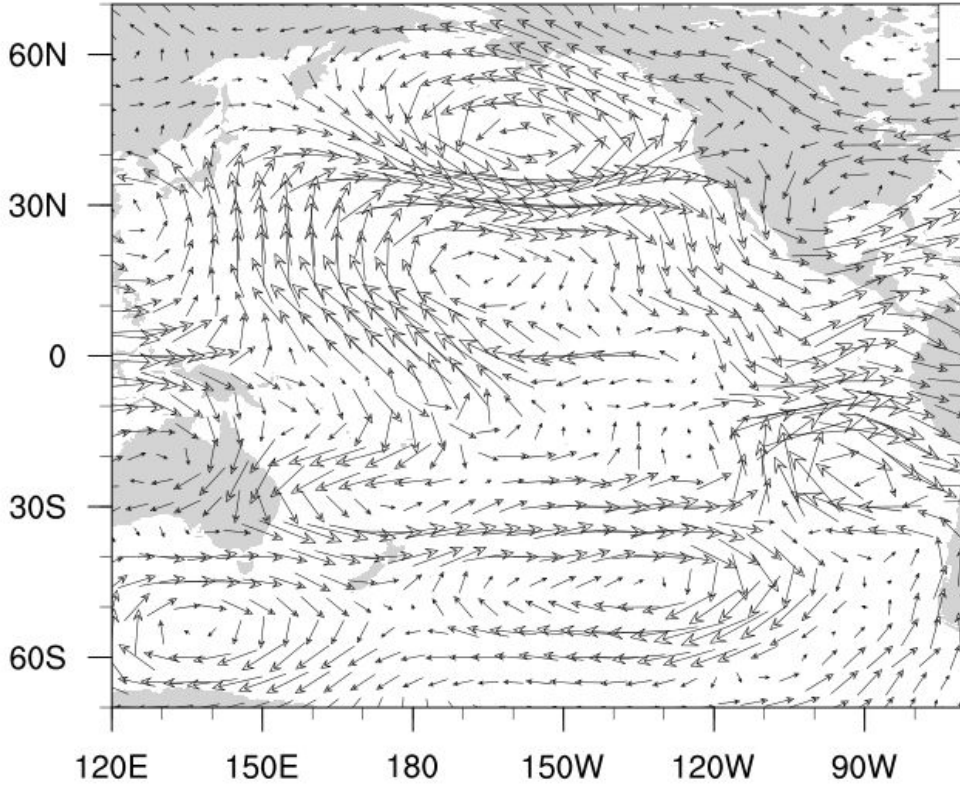
Day 15-22 Comparison (Analyzed SST - Climo SST)

OLR 2016/02/21-2016/02/29 W m-2



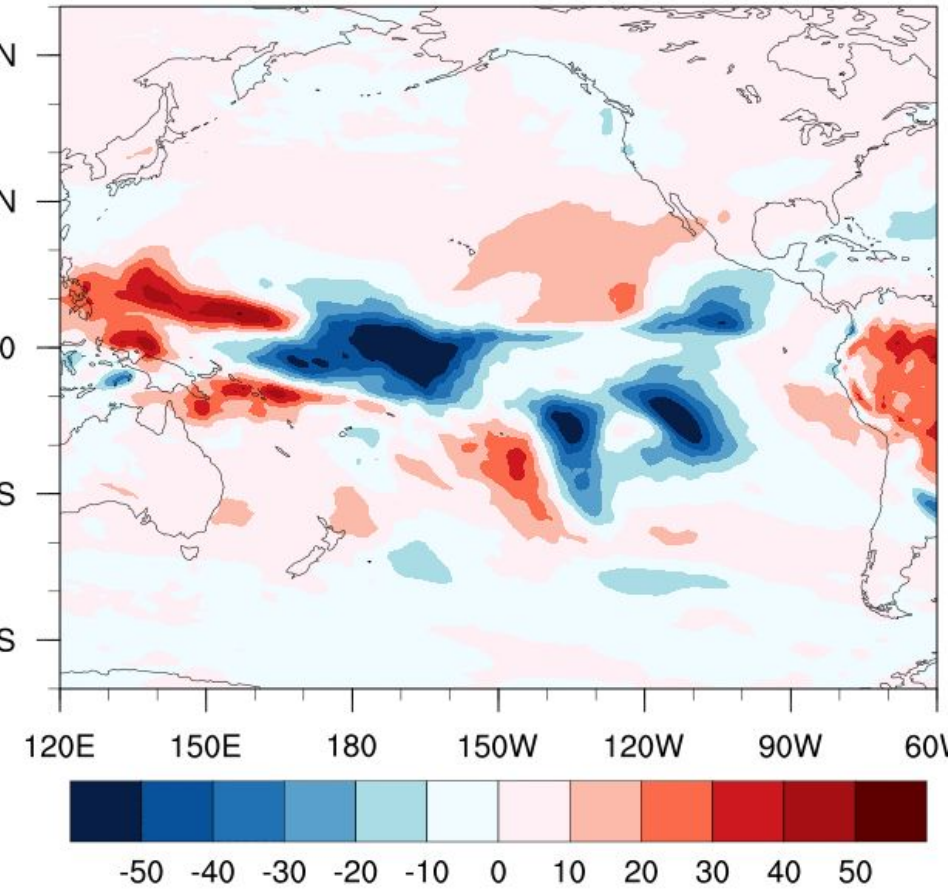
Day 15-22 Comparison (Analyzed SST - Climo SS

200 hPa Wind Vectors 2016/02/21-2016/02/29



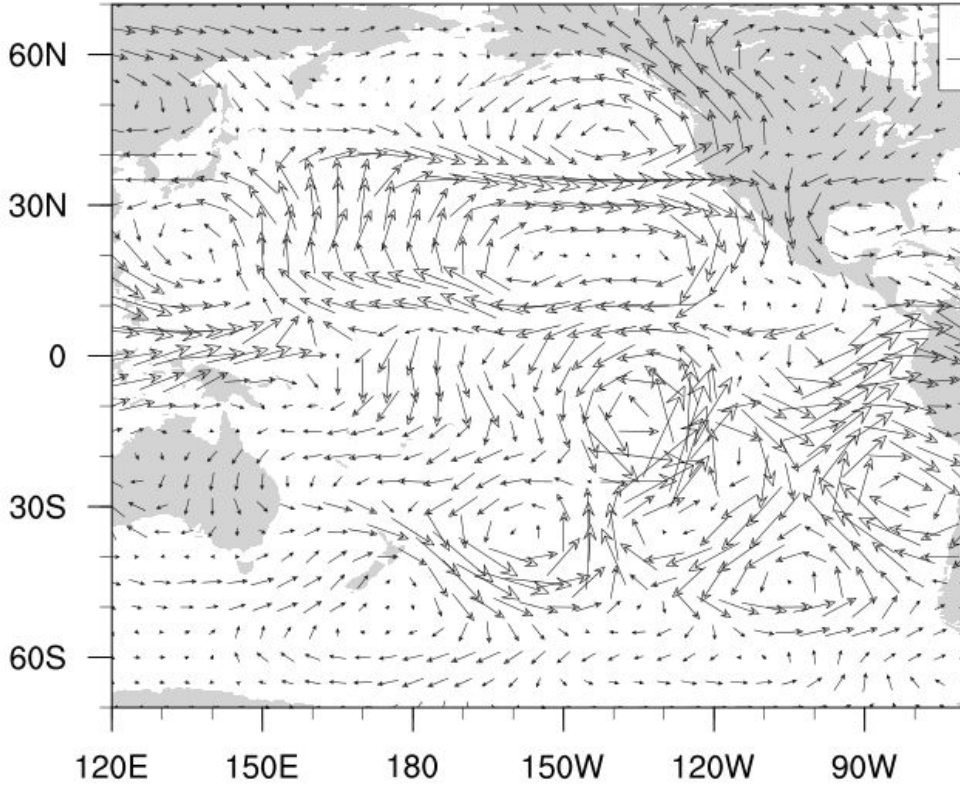
Day 8-14 Comparison (Analyzed SST - Climo SST)

OLR 2016/02/22-2016/02/29 W m-2



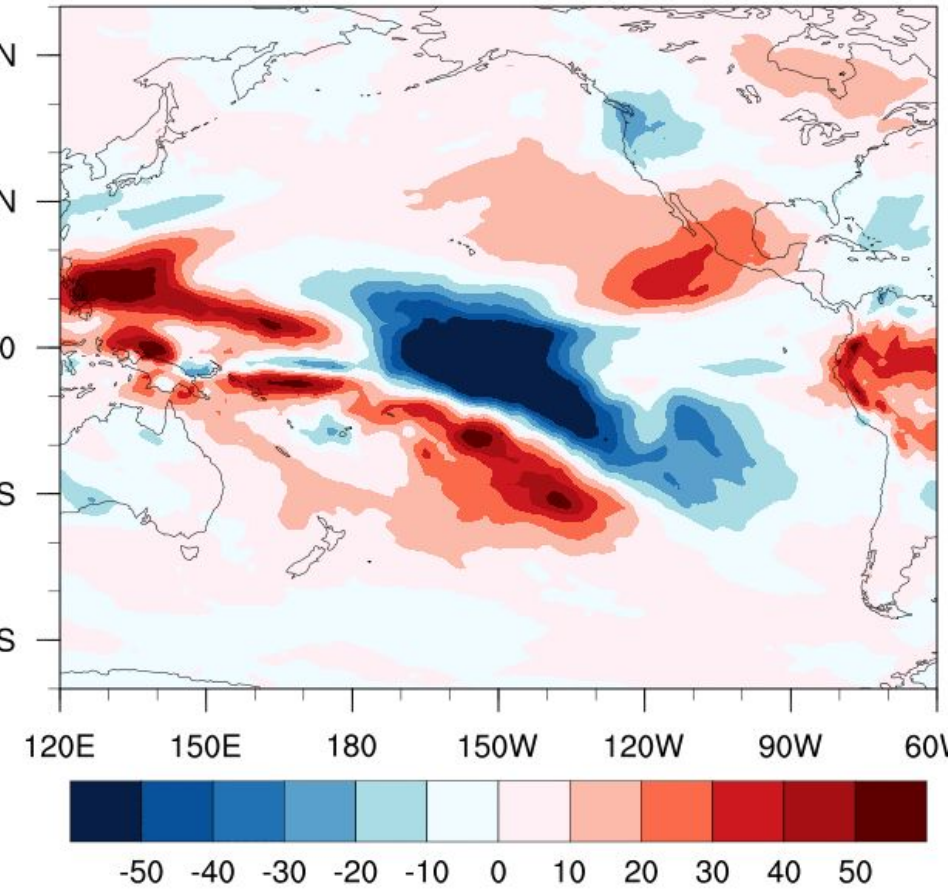
Day 8-14 Comparison (Analyzed SST - Climo SST

200 hPa Wind Vectors 2016/02/22-2016/02/29



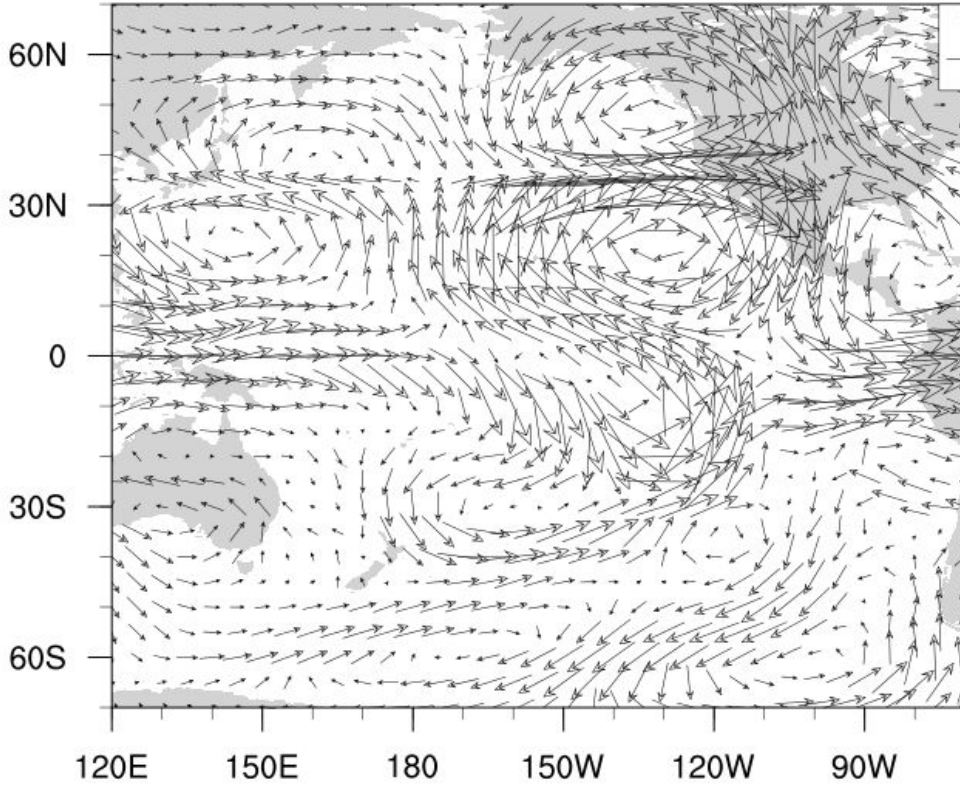
Day 15-22 Comparison (Analyzed SST - Climo SST)

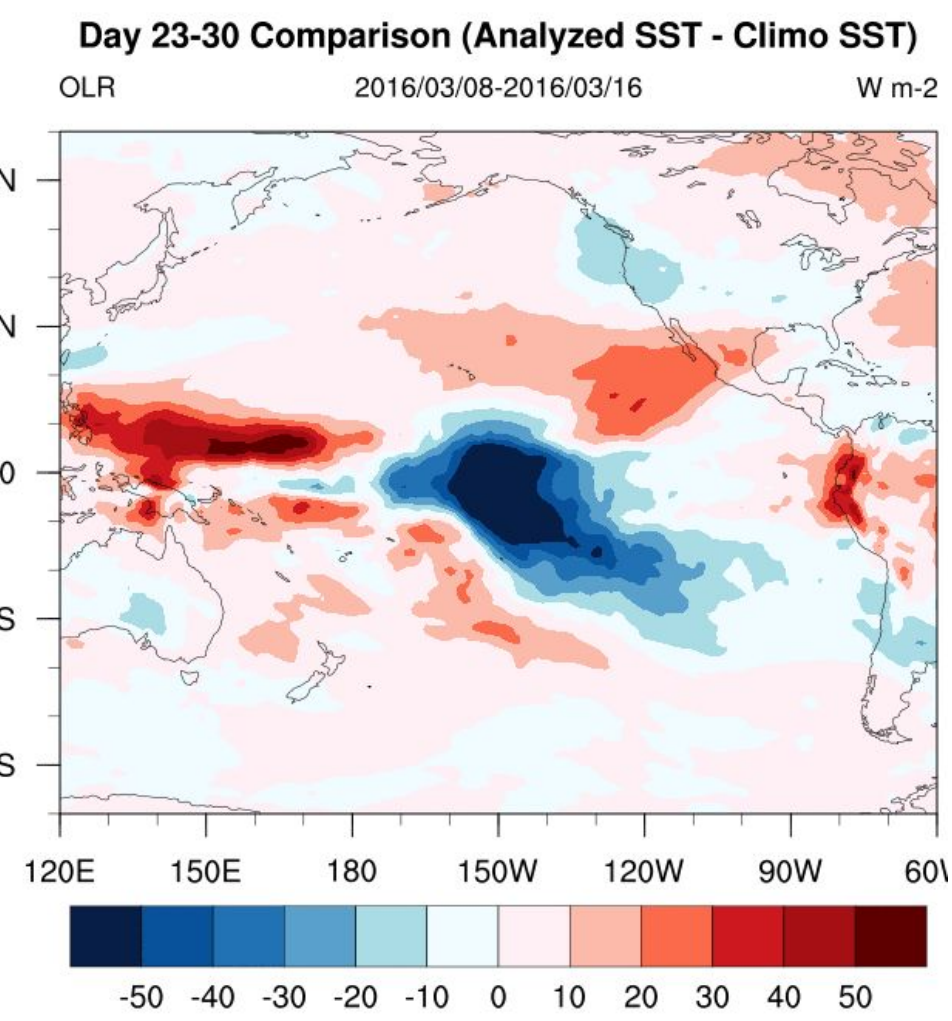
OLR 2016/02/29-2016/03/08 W m-2

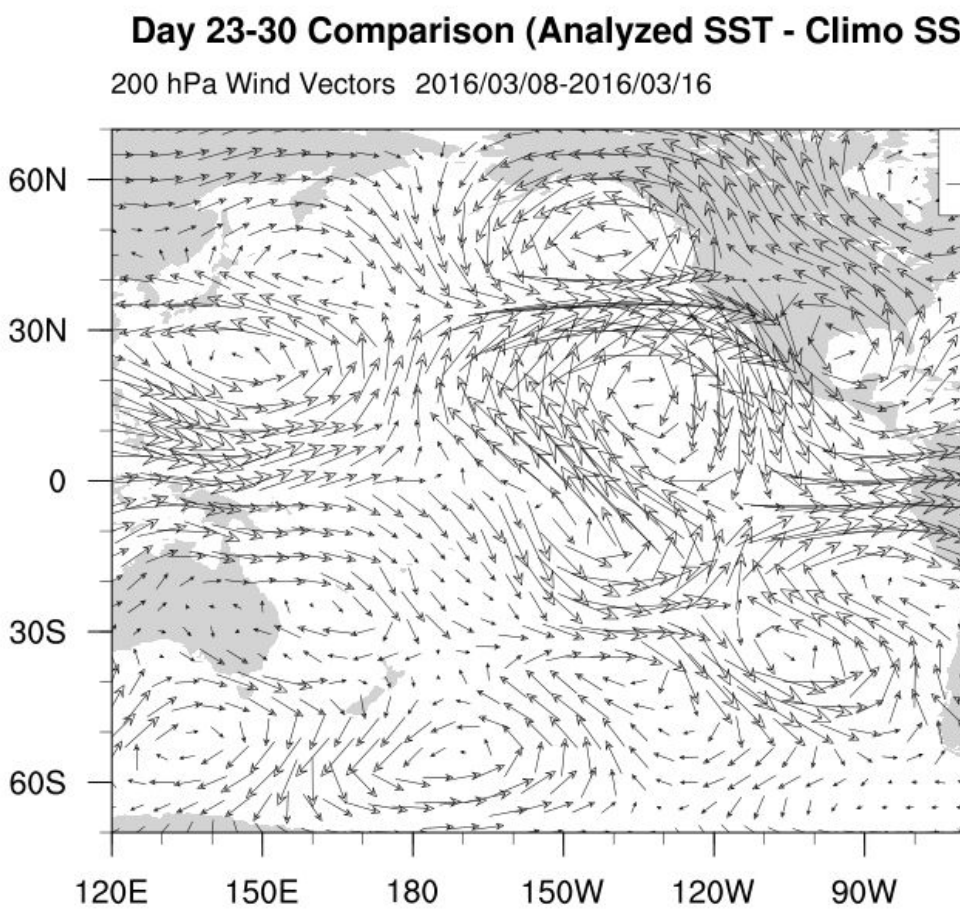


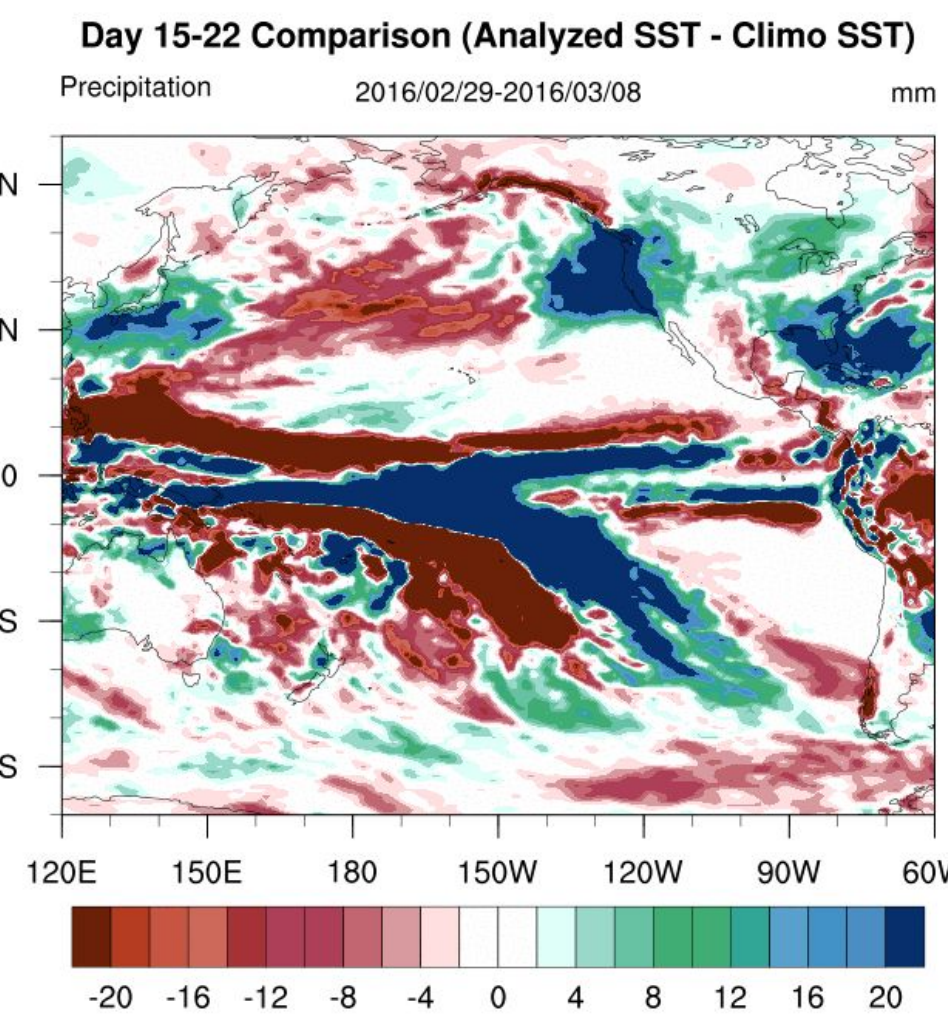
Day 15-22 Comparison (Analyzed SST - Climo SS

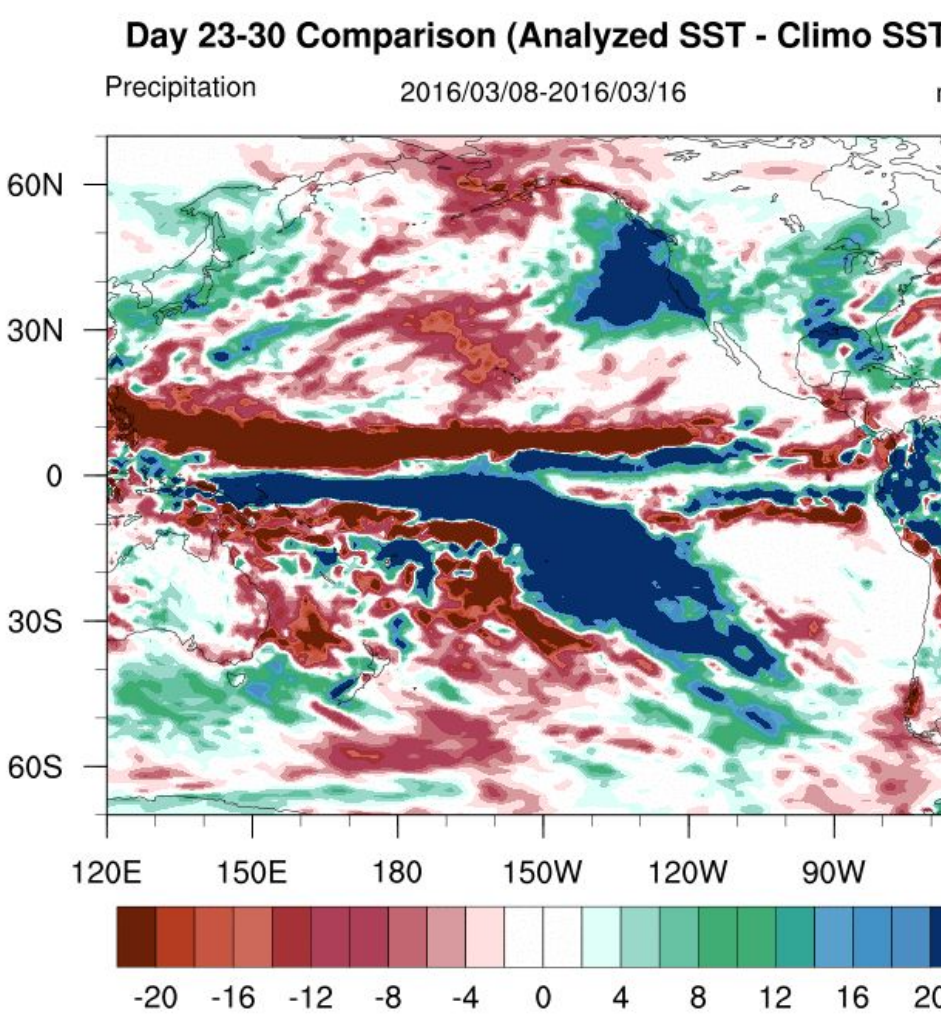
200 hPa Wind Vectors 2016/02/29-2016/03/08




Day 23-30 Comparison (Analyzed SST - Climo SST)
OLR
2016/03/08-2016/03/16
W m-2
N
N
0
S
S
120E
150E
180
150W
120W
90W
60\
-50
-40
-30
-20
-10
0
10
20
30
40
50


Day 23-30 Comparison (Analyzed SST - Climo SS
200 hPa Wind Vectors
2016/03/08-2016/03/16
60N
30N
0
30S
60S
120E
150E
180
150W
120W
90W


Day 15-22 Comparison (Analyzed SST - Climo SST)
Precipitation
2016/02/29-2016/03/08
mm
N
N
0
S
S
120E
150E
180
150W
120W
90W
60W
-20
-16
-12
-8
-4
0
4
8
12
16
20


Day 23-30 Comparison (Analyzed SST - Climo SST
Precipitation
2016/03/08-2016/03/16
60N
30N
0
30S
60S
120E
150E
180
150W
120W
90W
-20
-16
-12
-8
-4
0
4
8
12
16
20