PERSPECTIVA AGROCLIMÁTICA 2017/2018

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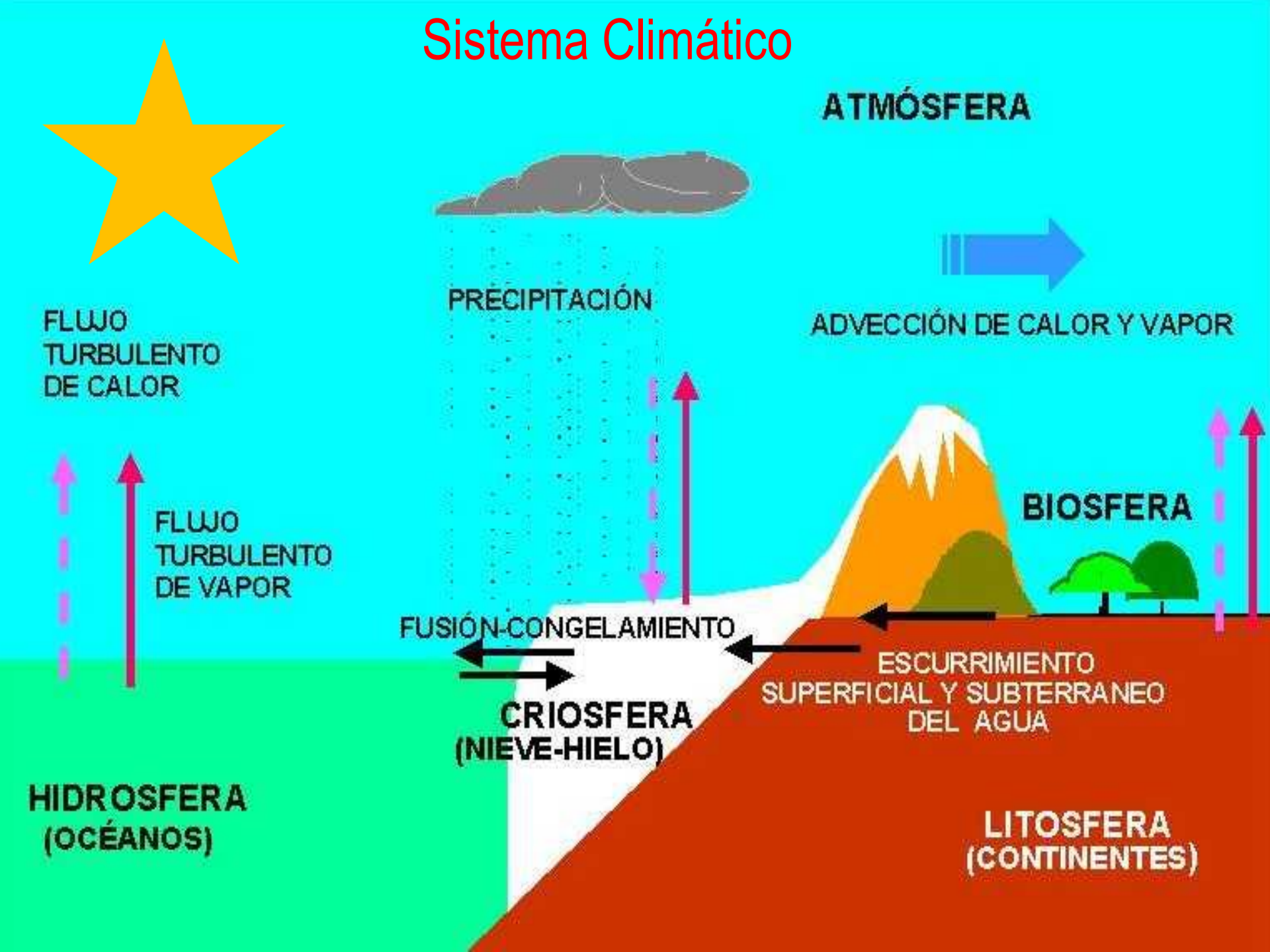
Especialista en Agroclimatología

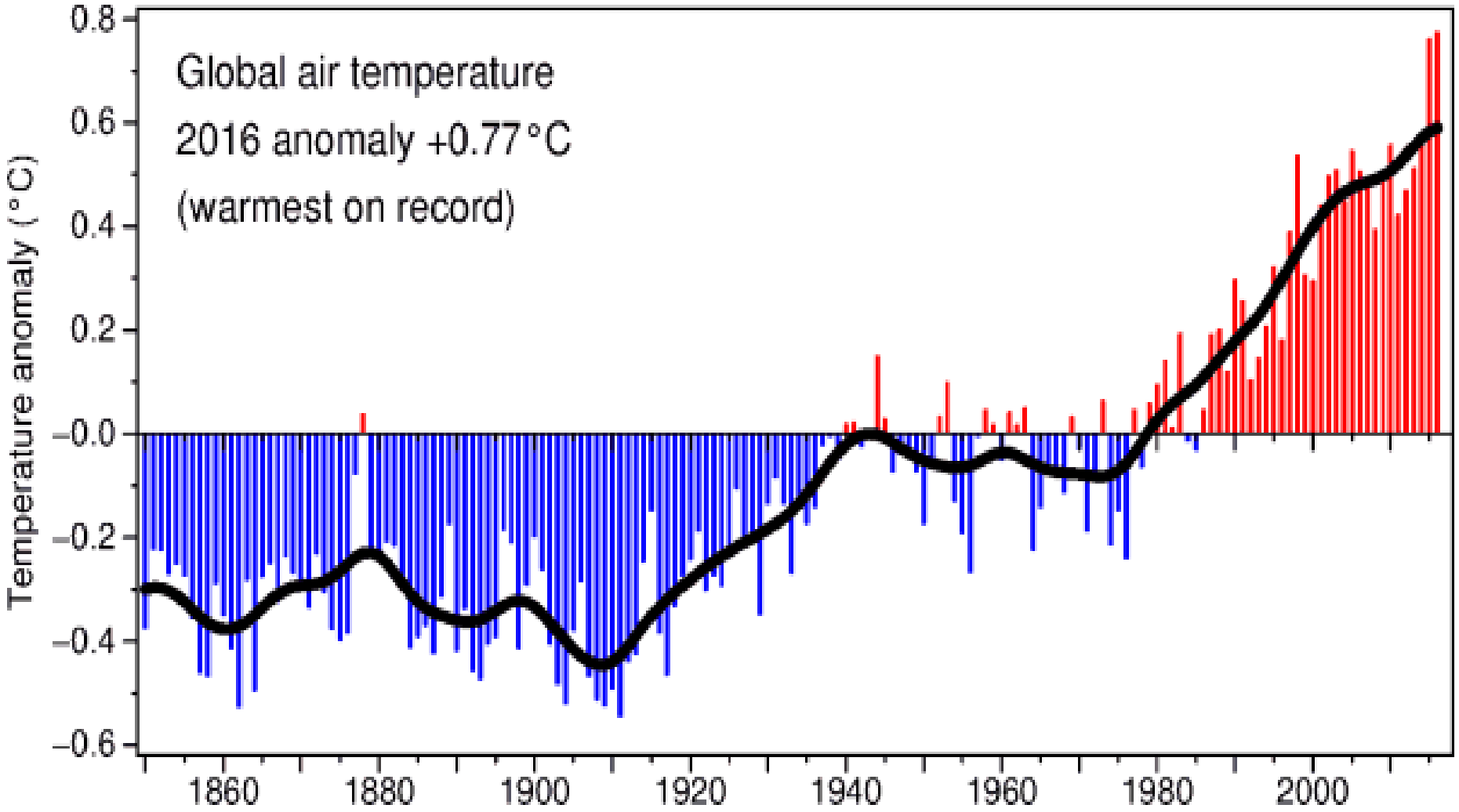
LOMA PLATA

PARAGUAY

27 de Diciembre de 2017

Sistema Climático

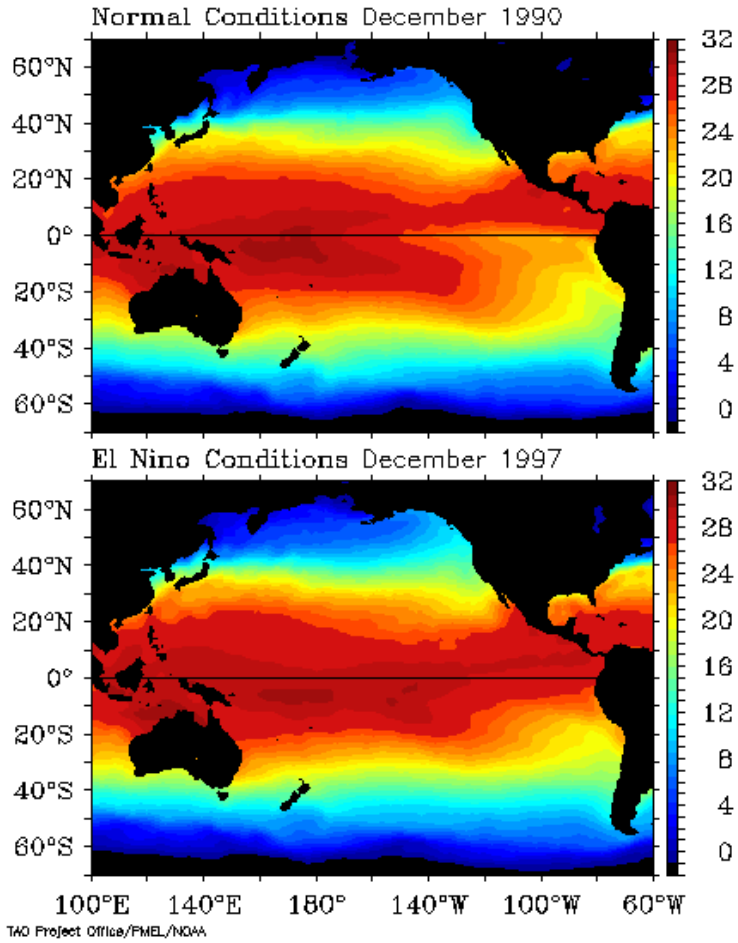



Global air temperature
2016 anomaly +0.77 °C
(warmest on record)
Temperature anomaly (°C)
0.8
0.6
0.4
0.2
−0.0
−0.2
−0.4
−0.6
1860
1880
1900
1920
1940
1960
1980
2000

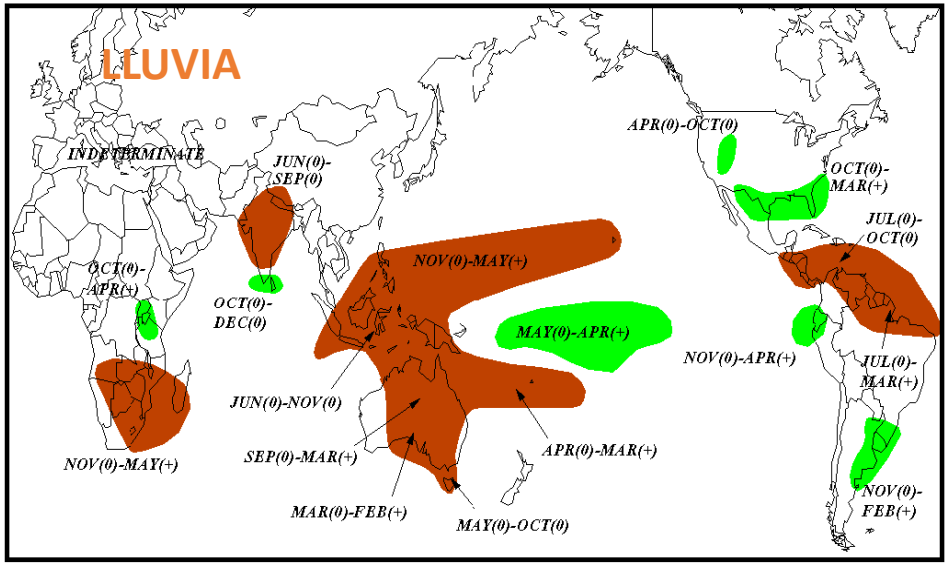
EL ENSO EN EL ESCENARIO DE CAMBIO CLIMÁTICO GLOBAL

EFECTOS DE “EL NIÑO”

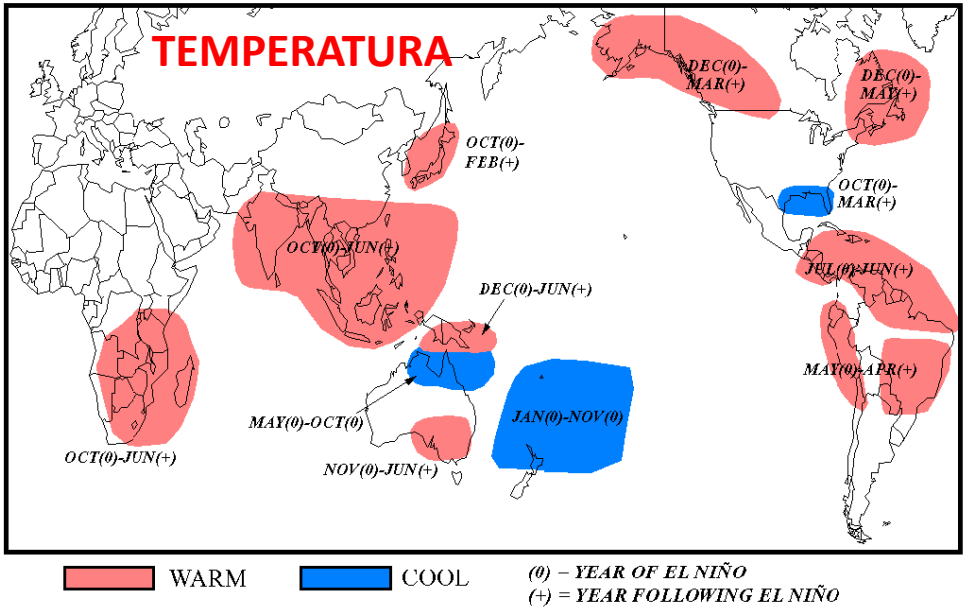
NORMAL



NIÑO



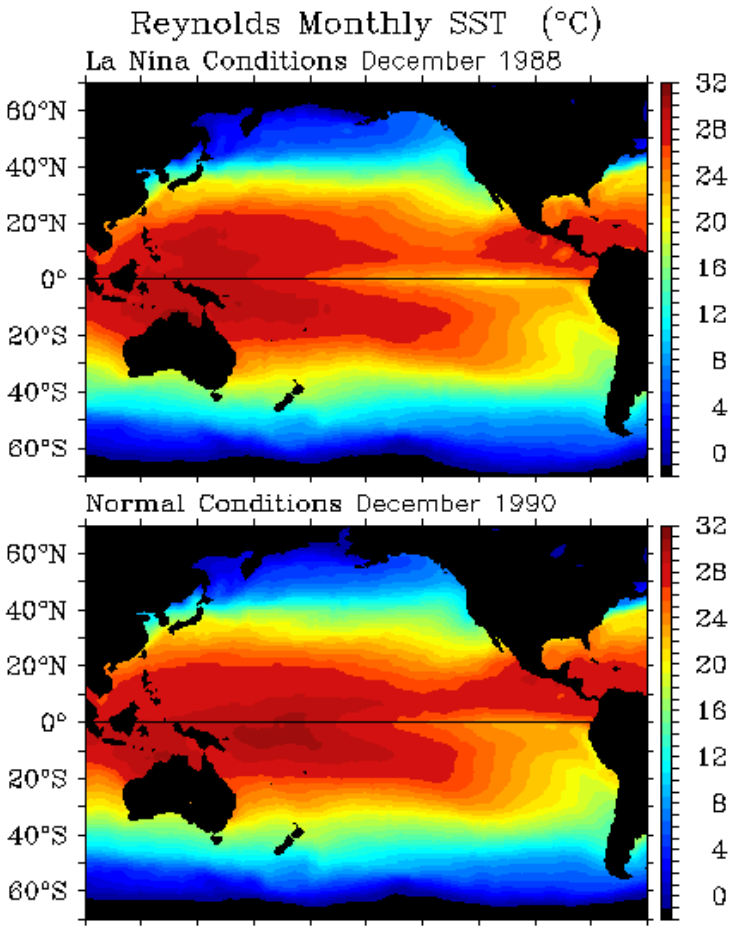
Prepared by the Joint Agricultural Weather Facility
Source: Ropelewski and Halpert, 1987. Monthly Weather Review, (115) p. 1606-1626.



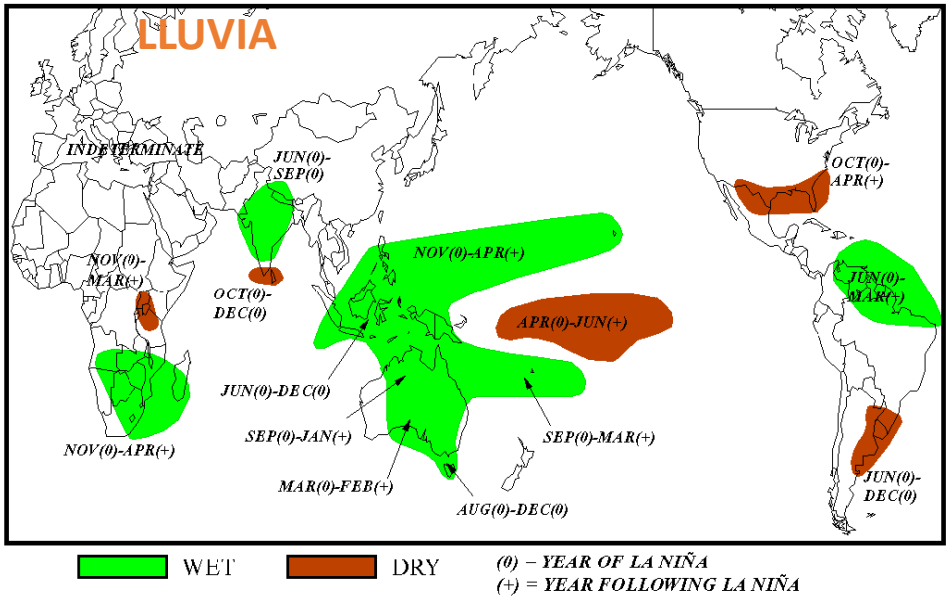
Prepared by the Joint Agricultural Weather Facility
Source: Halpert and Ropelewski, 1992. Journal of Climate, (5) p. 577-593.

EFECTOS DE “LA NIÑA”

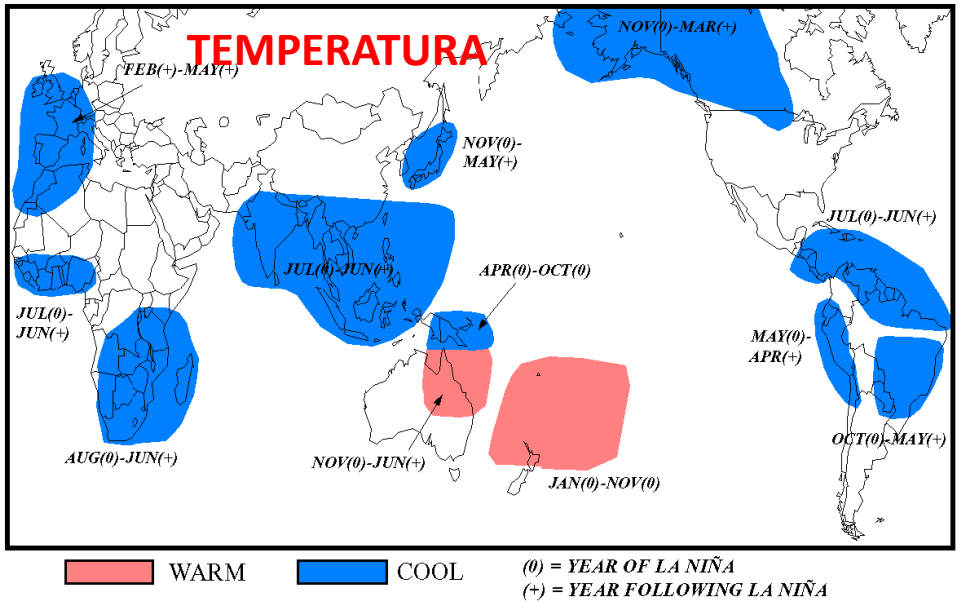
NIÑA



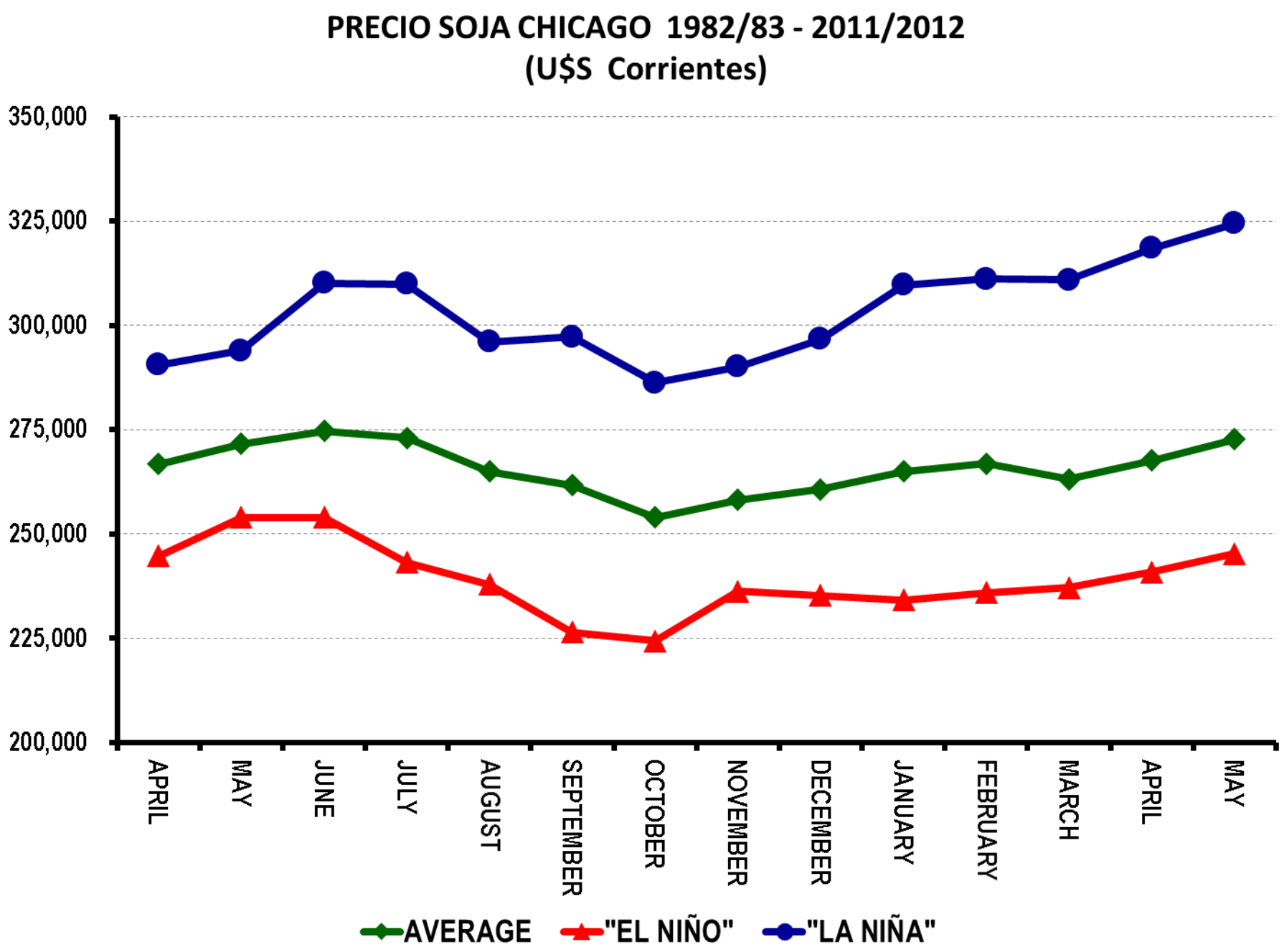
NORMAL

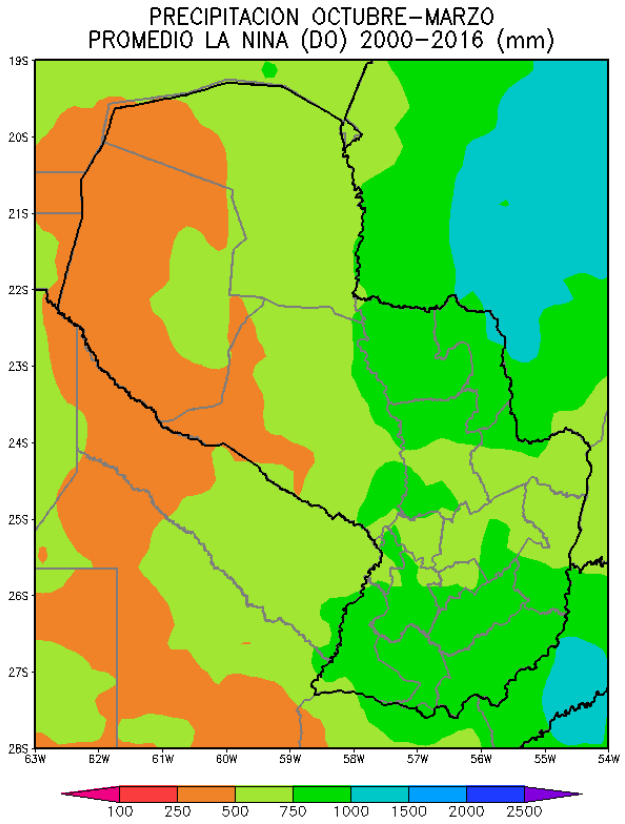


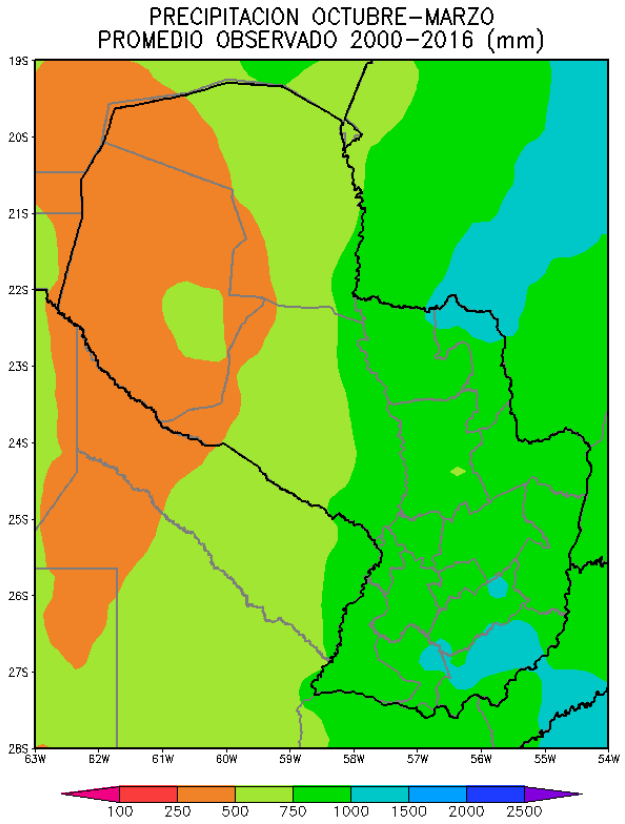
Prepared by the Joint Agricultural Weather Facility
Source: Ropelewski and Halpert, 1989. Journal of Climate, (2) p. 268-284.

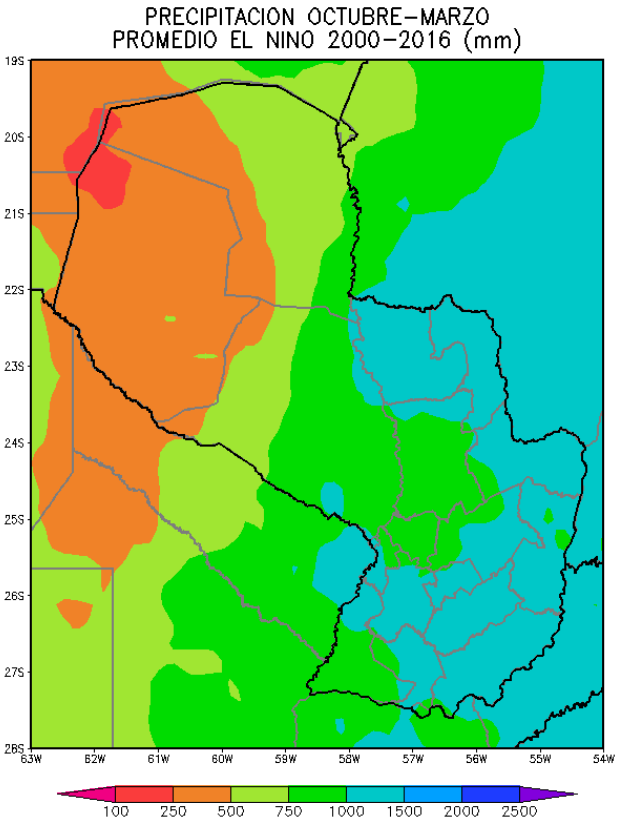


Prepared by the Joint Agricultural Weather Facility
Source: Halpert and Ropelewski, 1992. Journal of Climate, (5) p. 577-593.


PRECIO SOJA CHICAGO 1982/83 - 2011/2012
(U$S Corrientes)
350,000
325,000
300,000
275,000
250,000
225,000
200,000
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBRUARY
MARCH
APRIL
MAY
AVERAGE
"EL NIÑO"
"LA NIÑA"

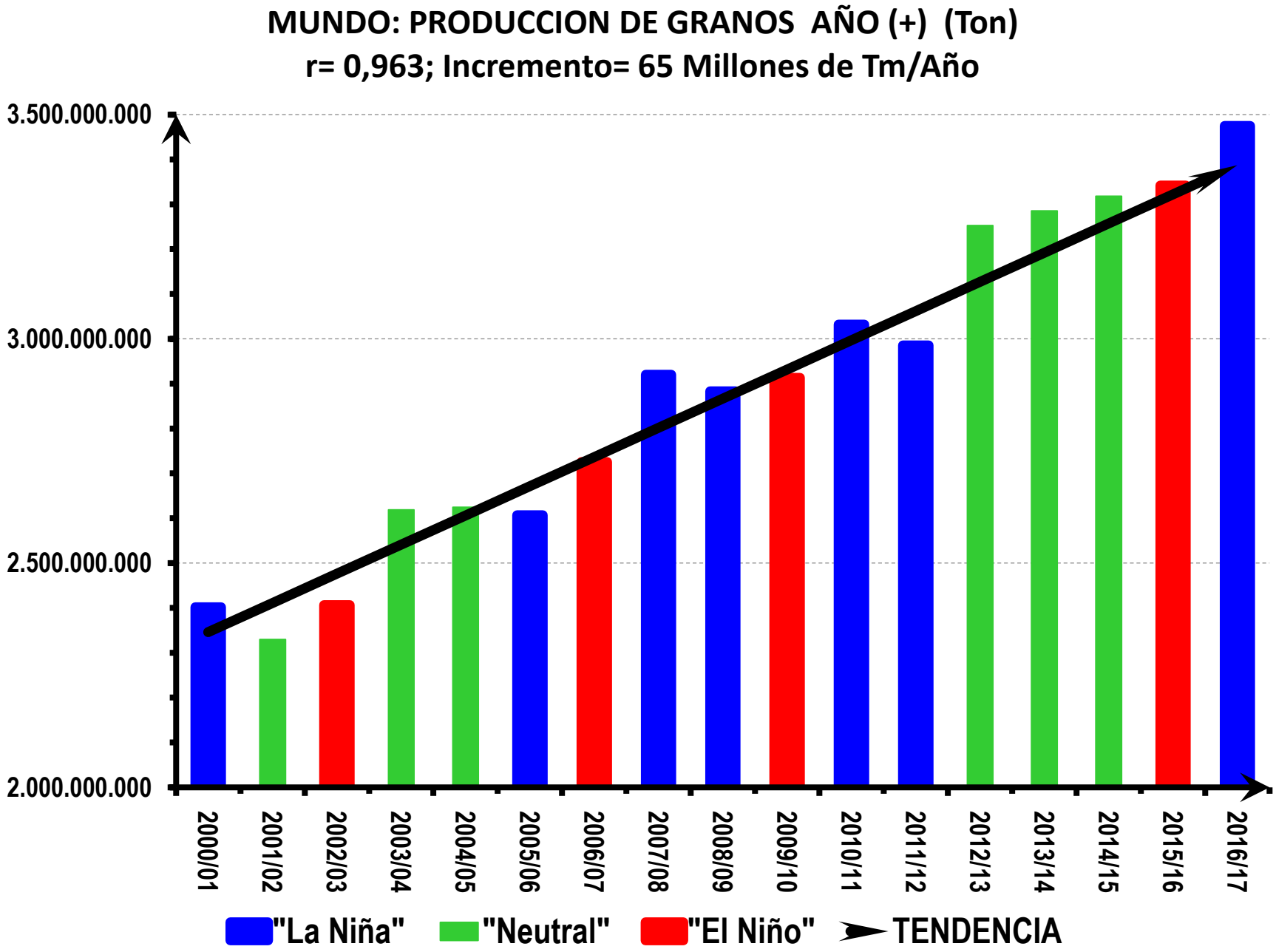

PRECIPITACION OCTUBRE-MARZO
PROMEDIO LA NINA (DO) 2000-2016 (mm)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W
62W
61W
60W
59W
58W
57W
56W
55W
54W
100
250
500
750
1000
1500
2000
2500


PRECIPITACION OCTUBRE-MARZO
PROMEDIO OBSERVADO 2000-2016 (mm)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W
62W
61W
60W
59W
58W
57W
56W
55W
54W
100
250
500
750
1000
1500
2000
2500


PRECIPITACION OCTUBRE-MARZO
PROMEDIO EL NINO 2000-2016 (mm)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W
62W
61W
60W
59W
58W
57W
56W
55W
54W
100
250
500
750
1000
1500
2000
2500

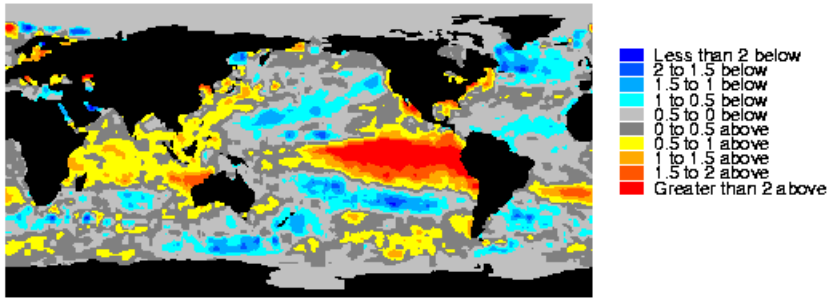
ESCENARIO CLIMÁTICO ACTUAL

1.Fuerte incremento de la variabilidad climática en todas las variables atmosféricas.
2.Precipitaciones de tipo tormenta severa con mucha irregularidad espacial, y riesgo de granizo, vientos y aguaceros torrenciales.
3.Situaciones de bloqueo.
4. El Enso se acentuó.
5.Régimen térmico riguroso.


MUNDO: PRODUCCION DE GRANOS AÑO (+) (Ton)
r= 0,963; Incremento= 65 Millones de Tm/Año
3.500.000.000
3.000.000.000
2.500.000.000
2.000.000.000
2000/01
2001/02
2002/03
2003/04
2004/05
2005/06
2006/07
2007/08
2008/09
2009/10
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
"La Niña"
"Neutral"
"El Niño"
TENDENCIA

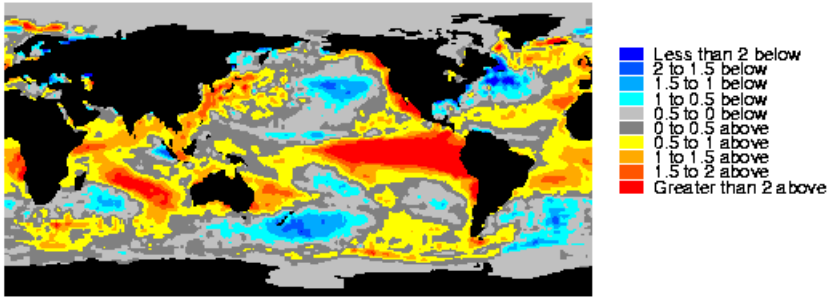
“EL SUPER EL NIÑO 1997/1998”

Variation of Sea-surface Temperature from Average
December 1982



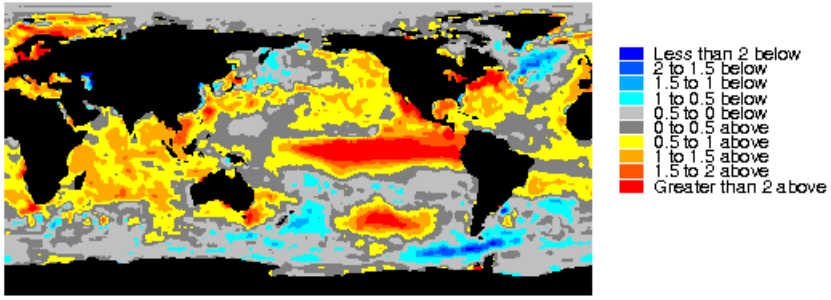
www.LongPaddock.qld.gov.au

Variation of Sea-surface Temperature from Average
December 1997

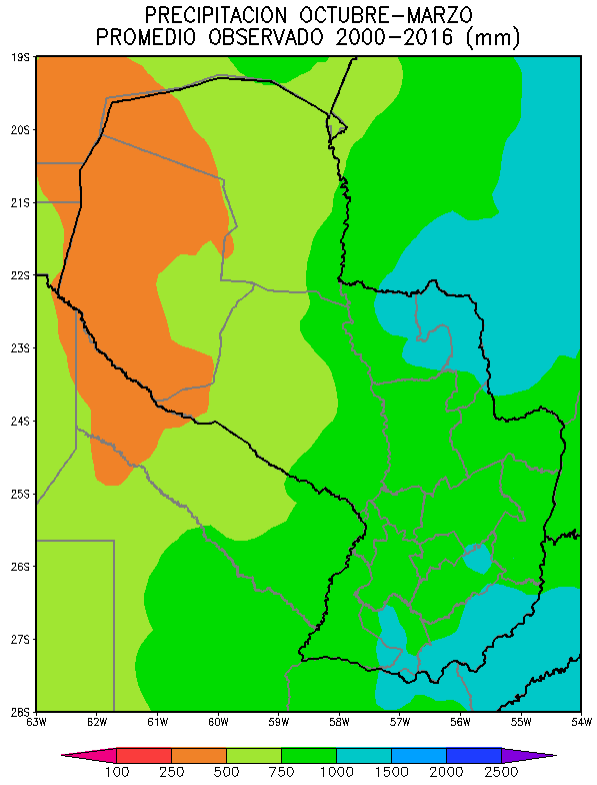


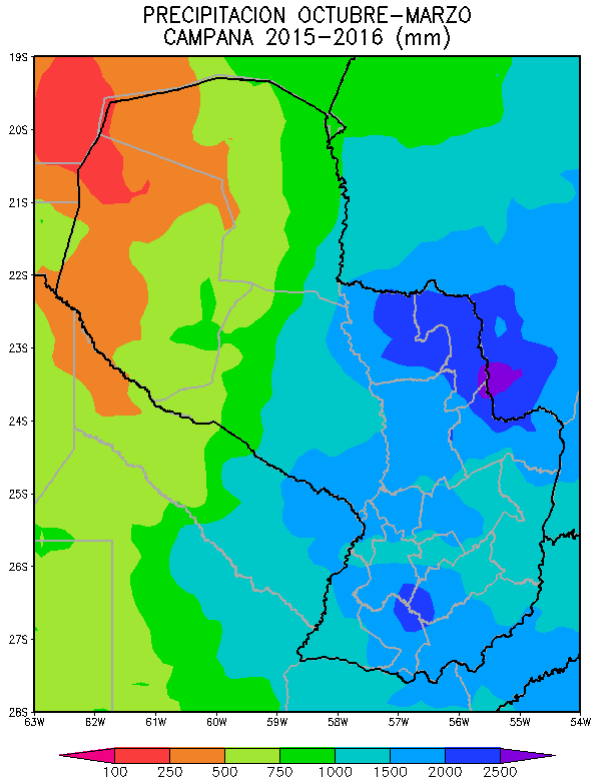
www.LongPaddock.qld.gov.au

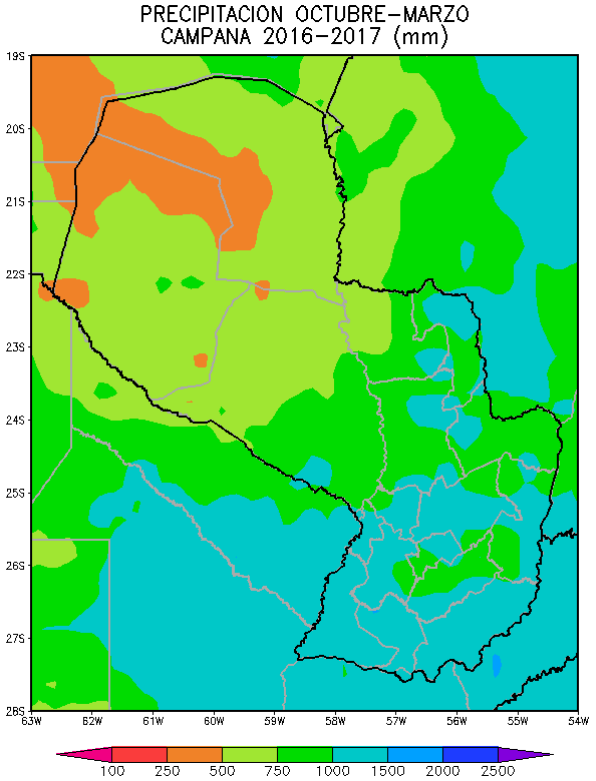
Variation of Sea-surface Temperature from Average
December 2015



www.LongPaddock.qld.gov.au

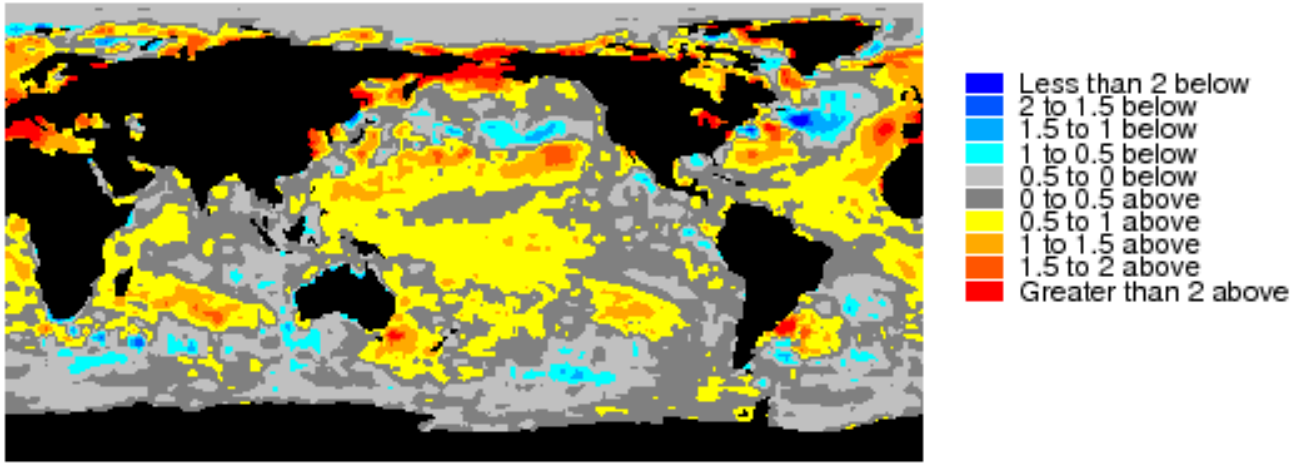

PRECIPITACION OCTUBRE-MARZO
PROMEDIO OBSERVADO 2000-2016 (mm)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W
62W
61W
60W
59W
58W
57W
56W
55W
54W
100
250
500
750
1000
1500
2000
2500


PRECIPITACION OCTUBRE-MARZO
CAMPANA 2015-2016 (mm)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W
62W
61W
60W
59W
58W
57W
56W
55W
54W
100
250
500
750
1000
1500
2000
2500


PRECIPITACION OCTUBRE-MARZO
CAMPANA 2016-2017 (mm)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W
62W
61W
60W
59W
58W
57W
56W
55W
54W
100
250
500
750
1000
1500
2000
2500

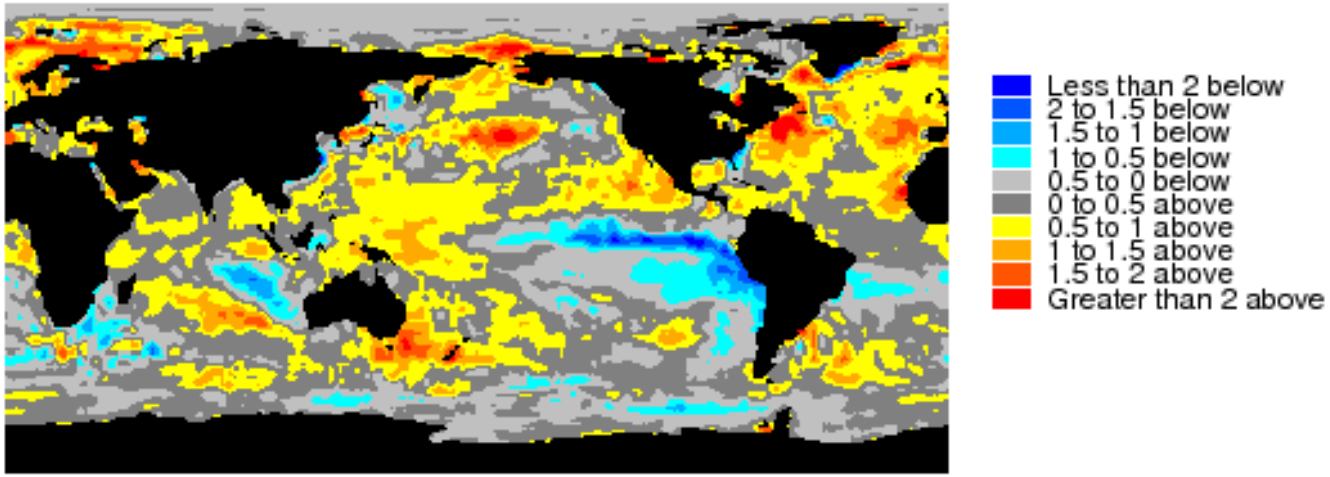
CÓMO EVOLUCIONA EL SISTEMA CLIMÁTICO GLOBAL

Variation of Sea-surface Temperature from Average
June 2017



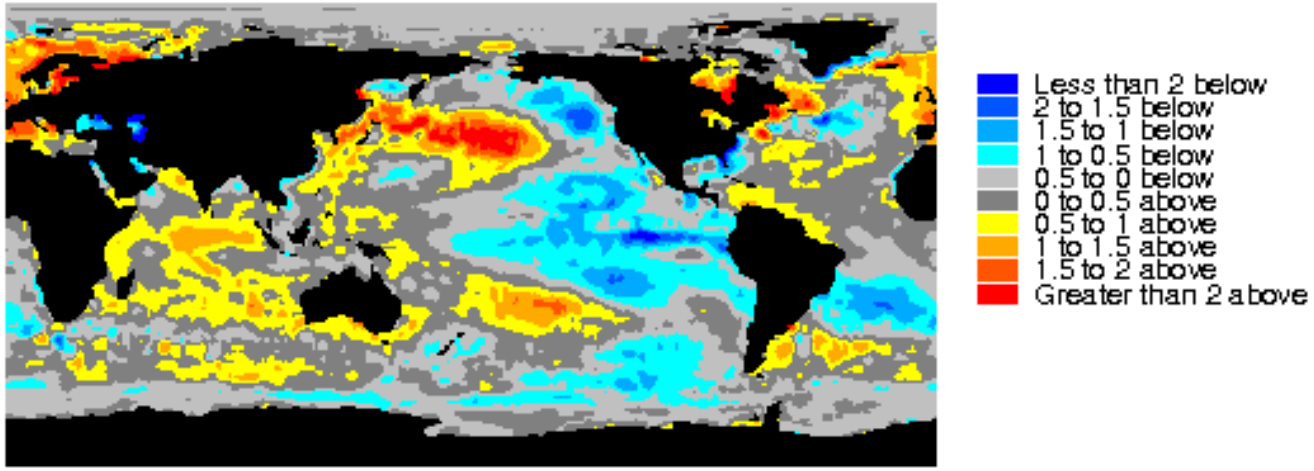
www.LongPaddock.qld.gov.au

Variation of Sea-surface Temperature from Average
November 2017



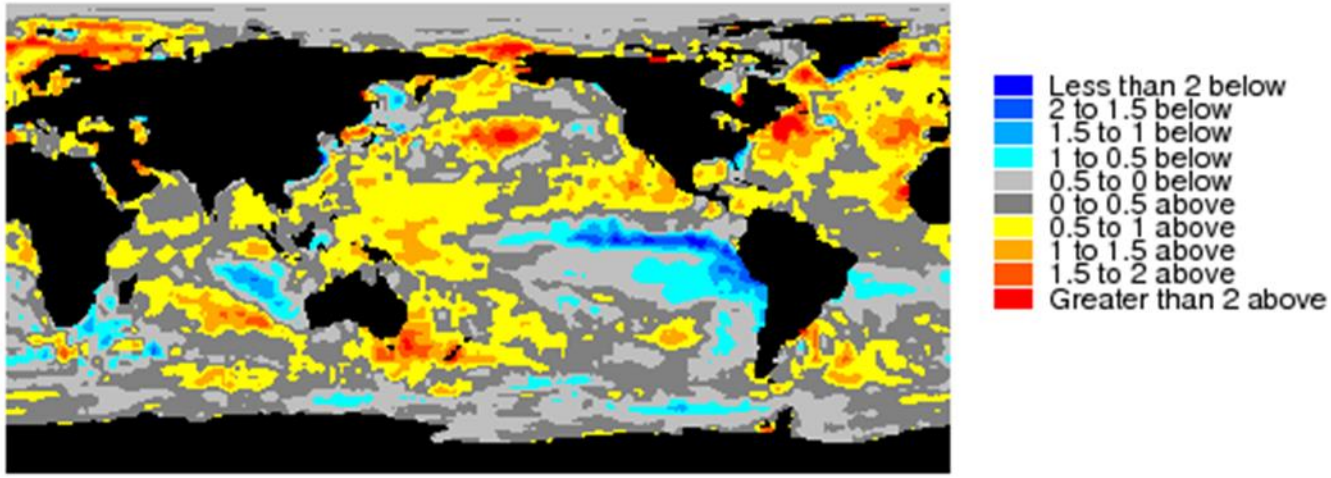
www.LongPaddock.qld.gov.au

Variation of Sea-surface Temperature from Average
November 2011

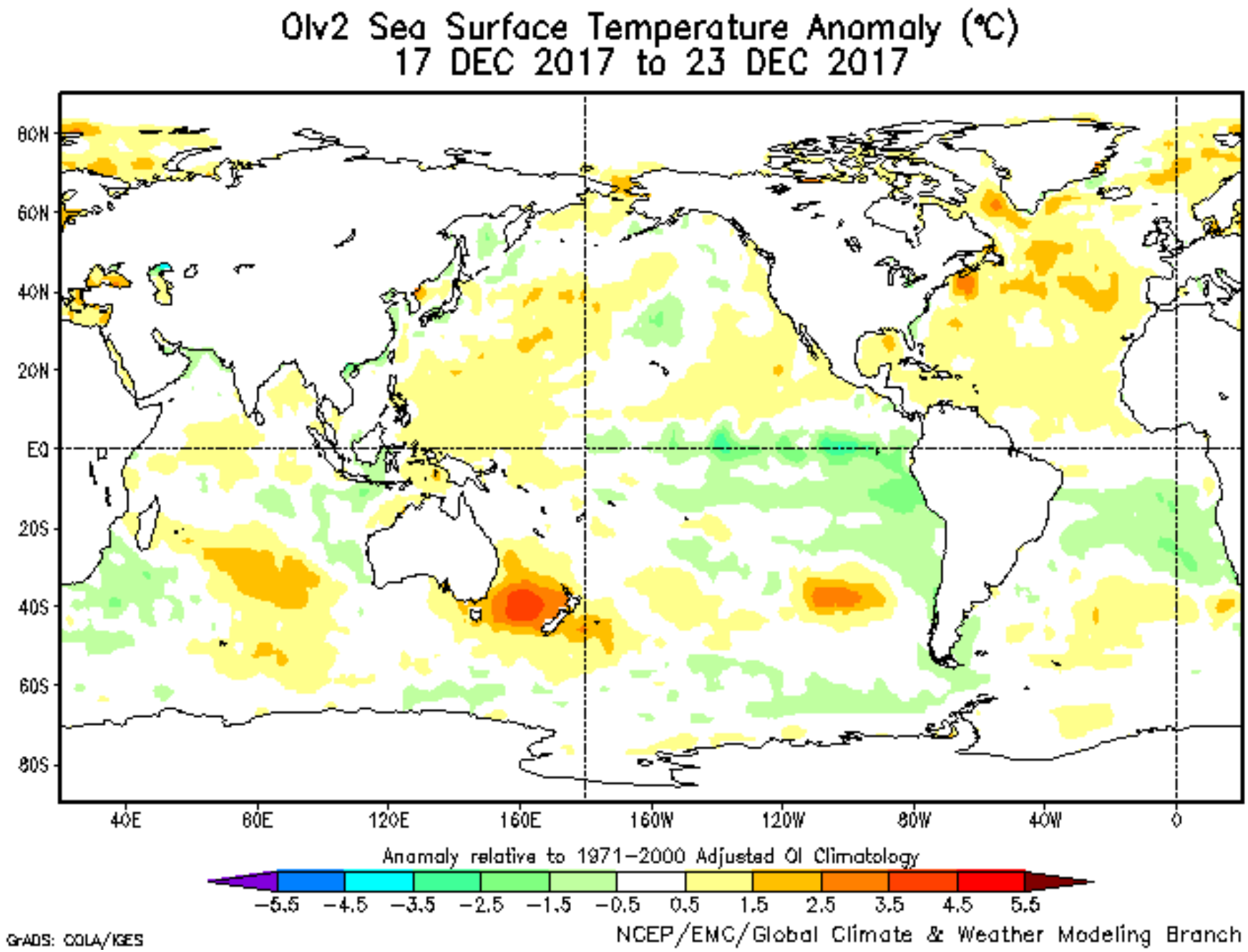


www.LongPaddock.qld.gov.au

Variation of Sea-surface Temperature from Average
November 2017



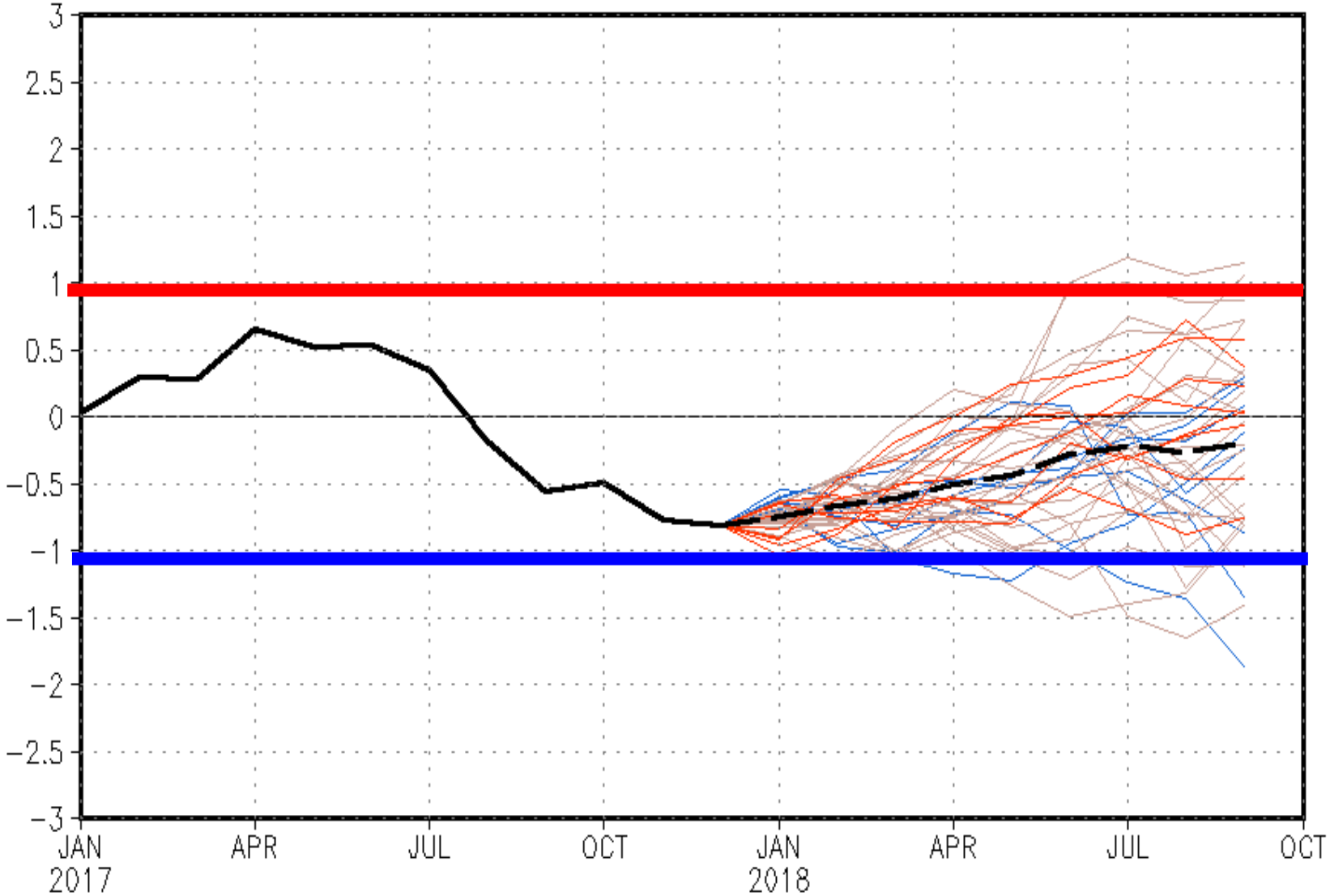
www.LongPaddock.qld.gov.au

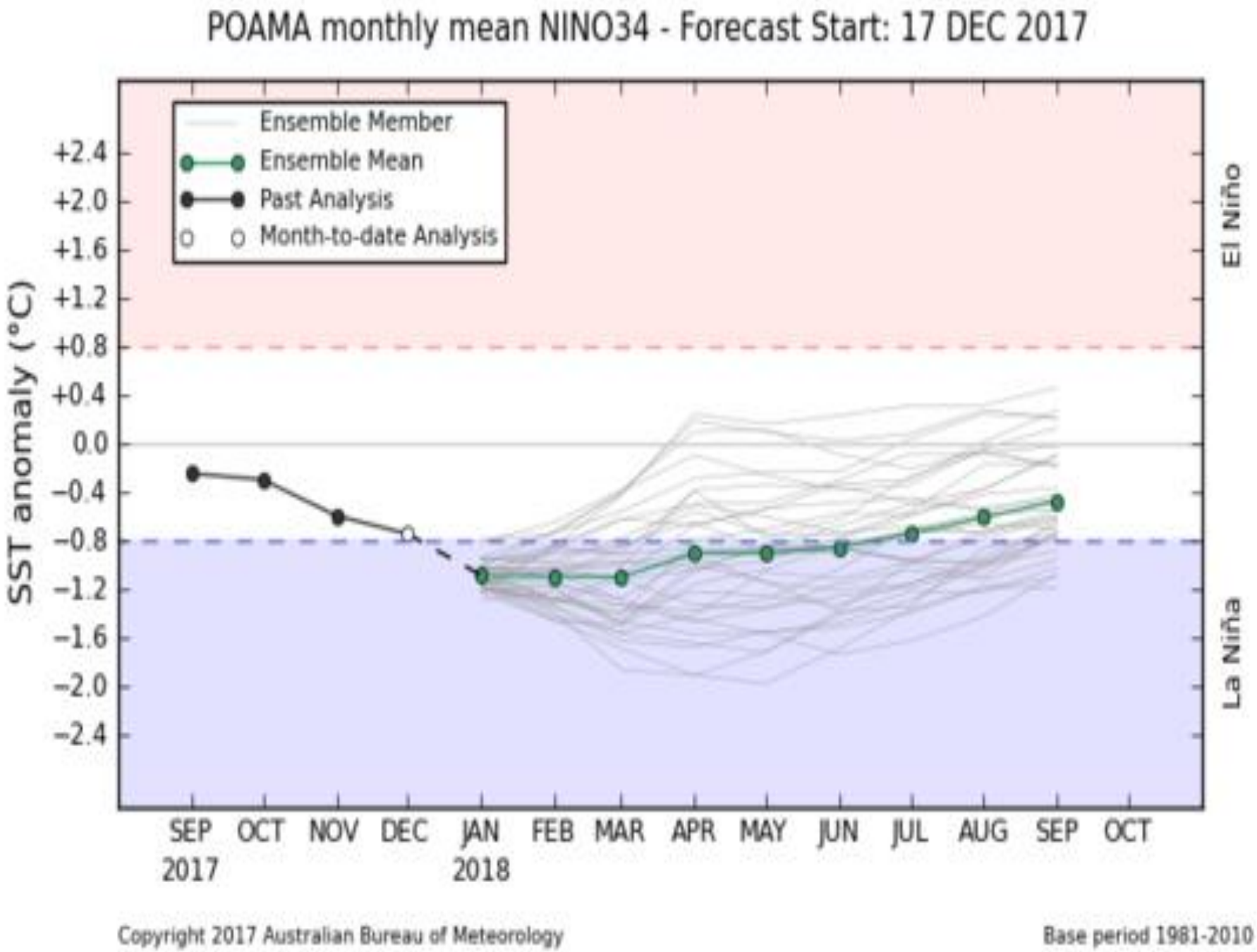

Olv2 Sea Surface Temperature Anomaly (°C)
17 DEC 2017 to 23 DEC 2017
80N
60N
40N
20N
EQ
20S
40S
60S
80S
40E
80E
120E
160E
160W
120W
80W
40W
0
Anomaly relative to 1971-2000 Adjusted OI Climatology
-5.5
-4.5
-3.5
-2.5
-1.5
-0.5
0.5
1.5
2.5
3.5
4.5
5.5
GrADS: COLA/IGES
NCEP/EMC/Global Climate & Weather Modeling Branch

NWS/NCEP/CPC

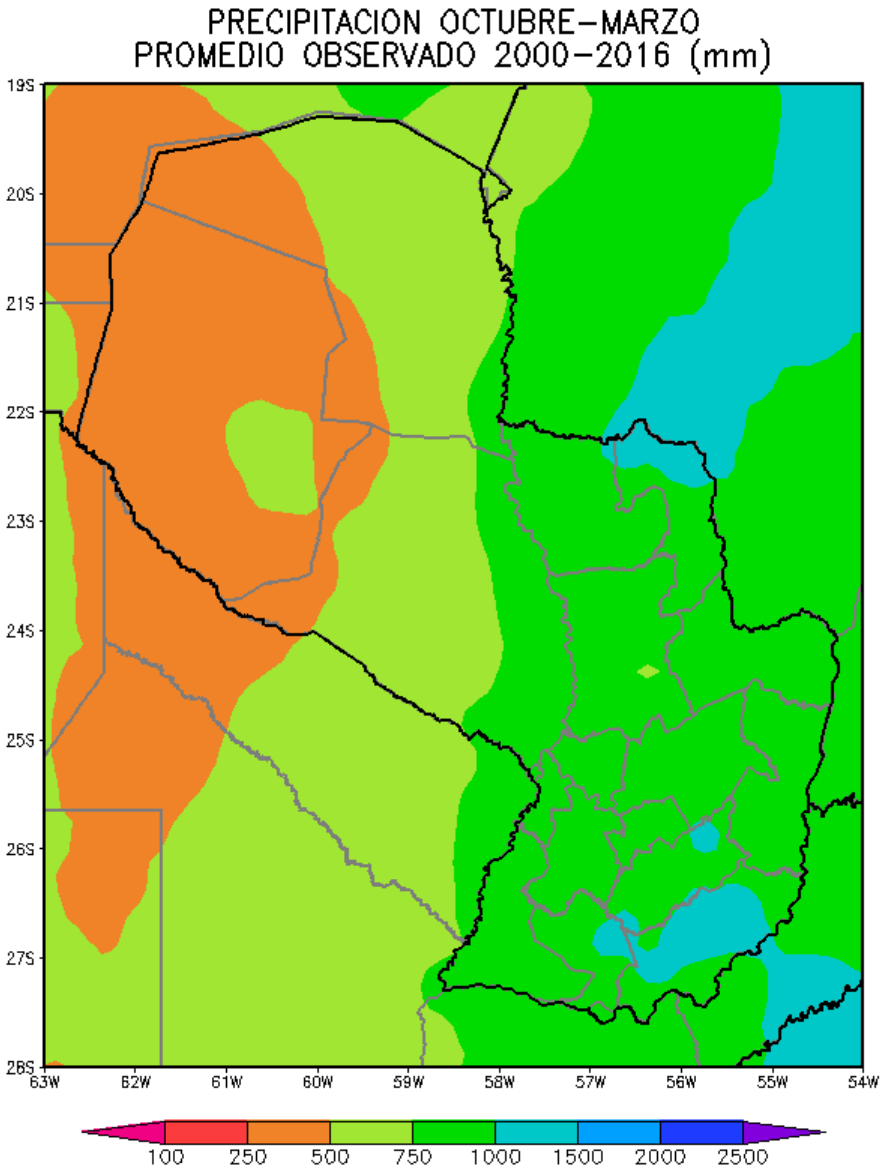
Last update: Mon Dec 25 2017
Initial conditions: 15Dec2017-24Dec2017

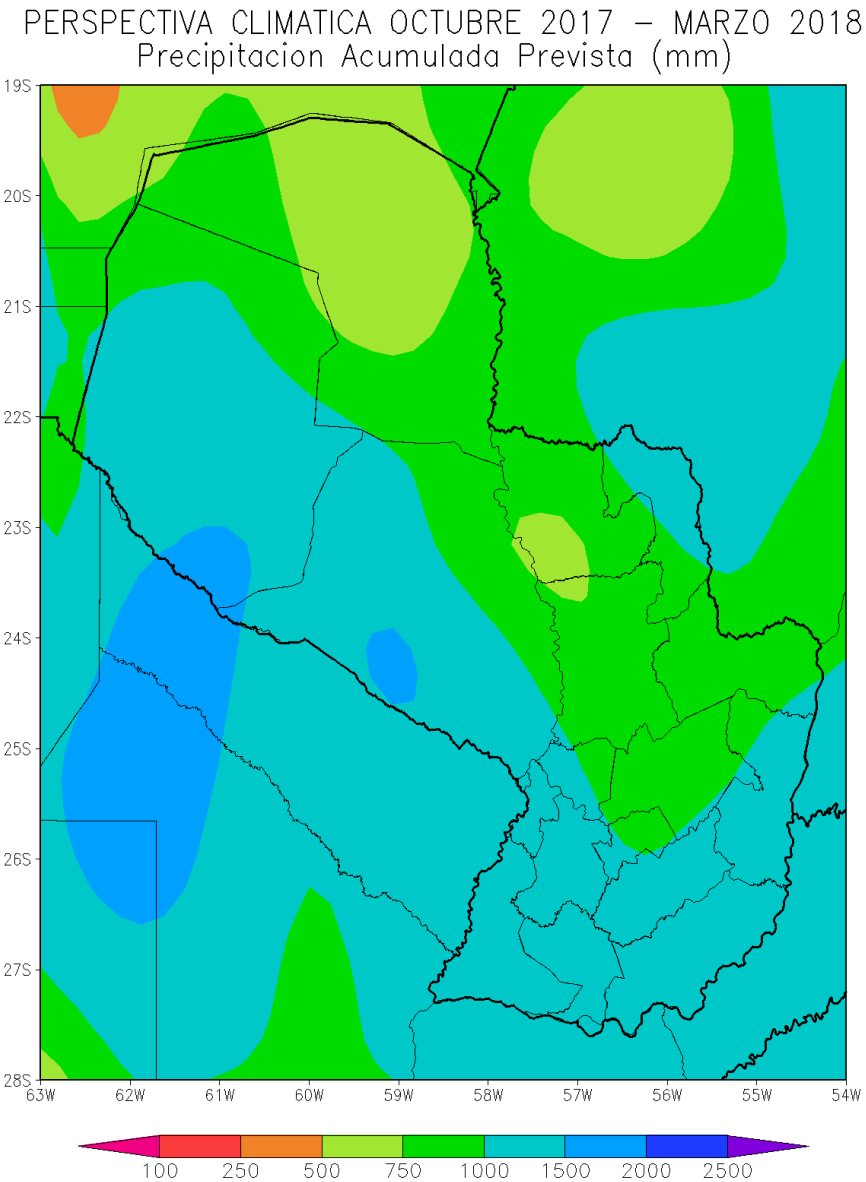
CFSv2 forecast Nino3.4 SST anomalies (K)

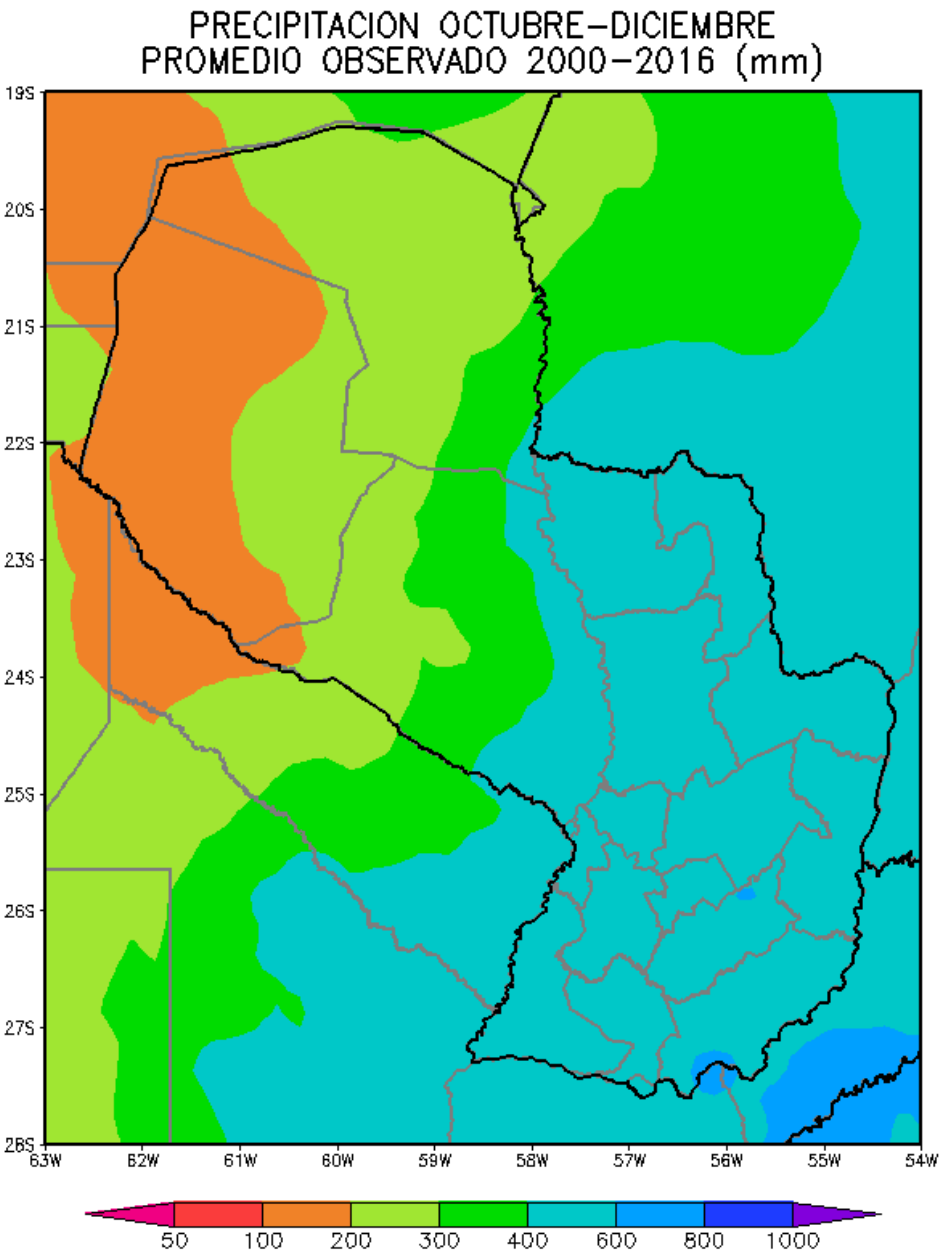


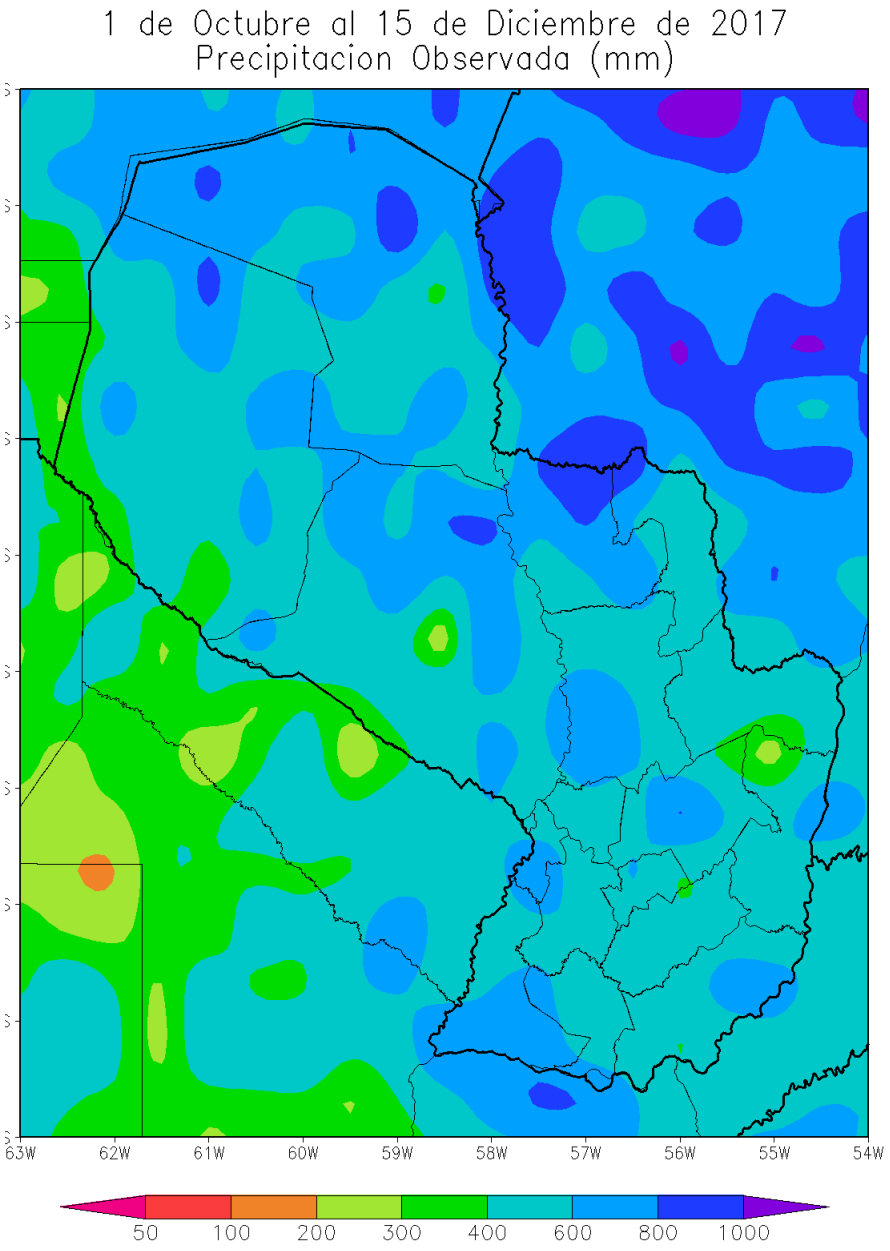

POAMA monthly mean NINO34 - Forecast Start: 17 DEC 2017
Ensemble Member
Ensemble Mean
Past Analysis
Month-to-date Analysis
SST anomaly (°C)
+2.4
+2.0
+1.6
+1.2
+0.8
+0.4
0.0
−0.4
−0.8
−1.2
−1.6
−2.0
−2.4
El Niño
La Niña
SEP 2017
OCT
NOV
DEC
JAN 2018
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
Copyright 2017 Australian Bureau of Meteorology
Base period 1981-2010

CÓMO VIENE RESPONDIENDO EL SISTEMA CLIMÁTICO EN EL PARAGUAY

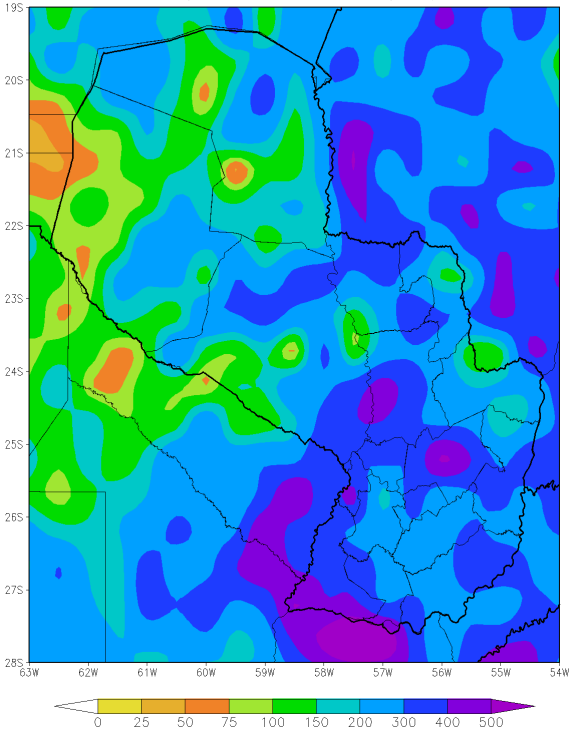

PRECIPITACION OCTUBRE-MARZO
PROMEDIO OBSERVADO 2000-2016 (mm)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W
62W
61W
60W
59W
58W
57W
56W
55W
54W
100
250
500
750
1000
1500
2000
2500


PERSPECTIVA CLIMATICA OCTUBRE 2017 - MARZO 2018
Precipitacion Acumulada Prevista (mm)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W
62W
61W
60W
59W
58W
57W
56W
55W
54W
100
250
500
750
1000
1500
2000
2500

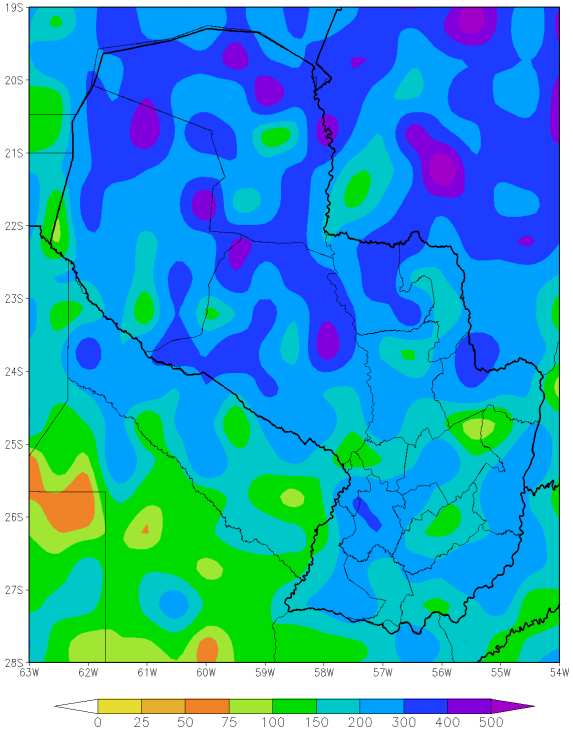

PRECIPITACION OCTUBRE-DICIEMBRE
PROMEDIO OBSERVADO 2000-2016 (mm)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W
62W
61W
60W
59W
58W
57W
56W
55W
54W
50
100
200
300
400
600
800
1000


1 de Octubre al 15 de Diciembre de 2017
Precipitacion Observada (mm)
63W
62W
61W
60W
59W
58W
57W
56W
55W
54W
50
100
200
300
400
600
800
1000

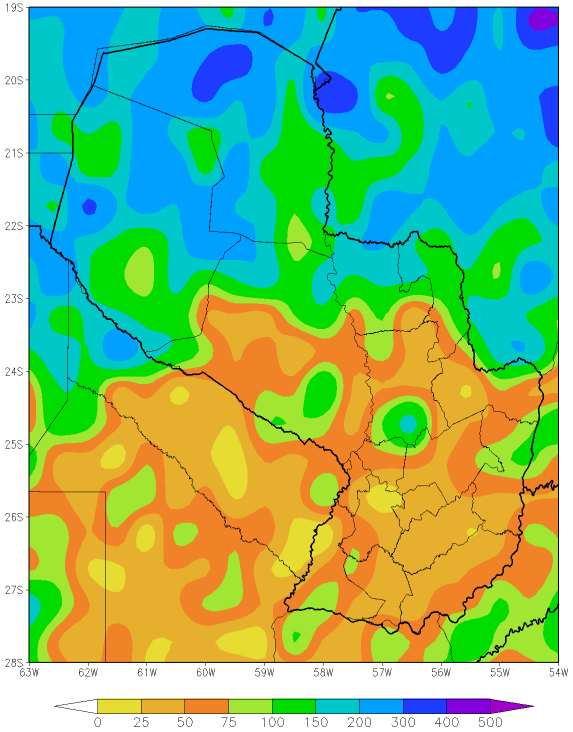
1 al 31 de Octubre de 2017
Precipitacion Observada (mm)



1 al 30 de Noviembre 2017
Precipitacion Observada (mm)

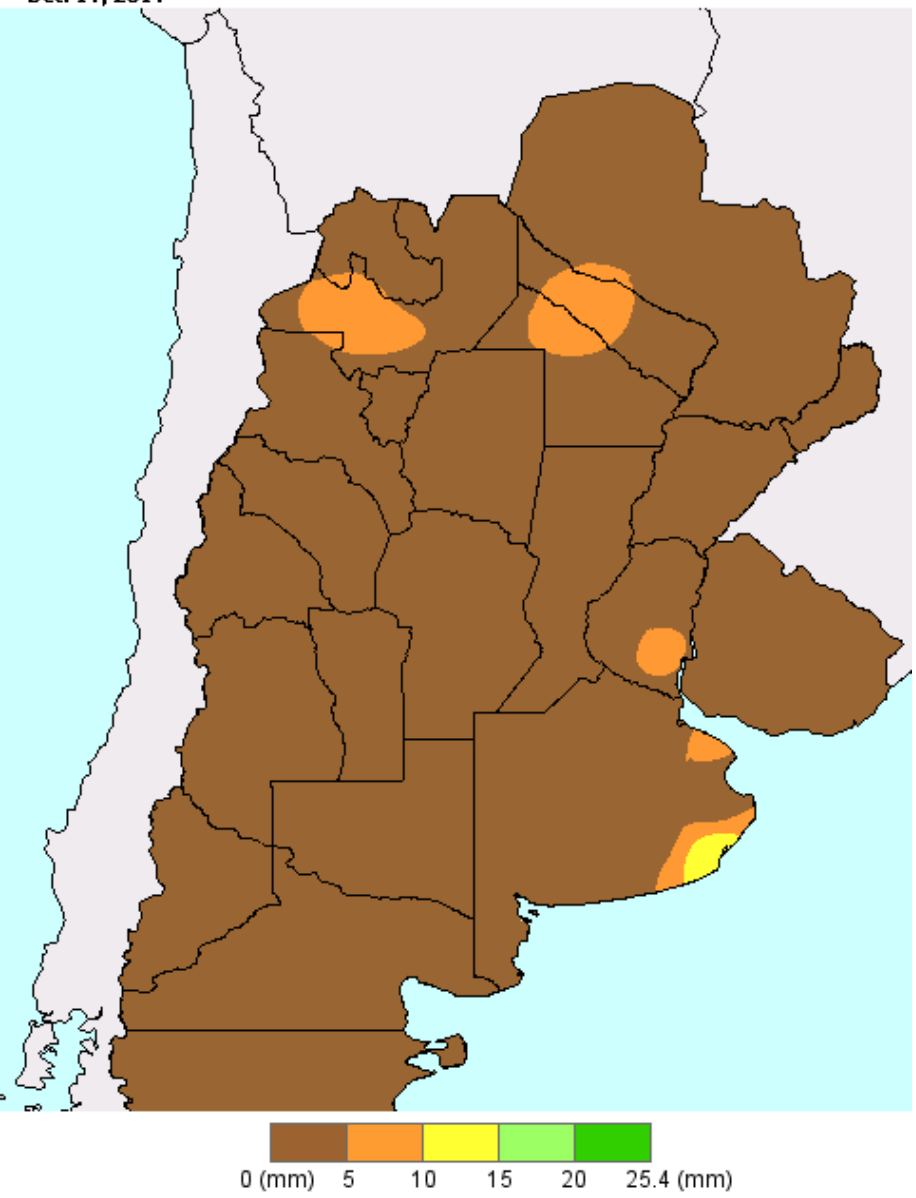


1 al 20 de Diciembre 2017
Precipitacion Observada (mm)



Surface Soil Moisture (WMO)

Dec. 17, 2017

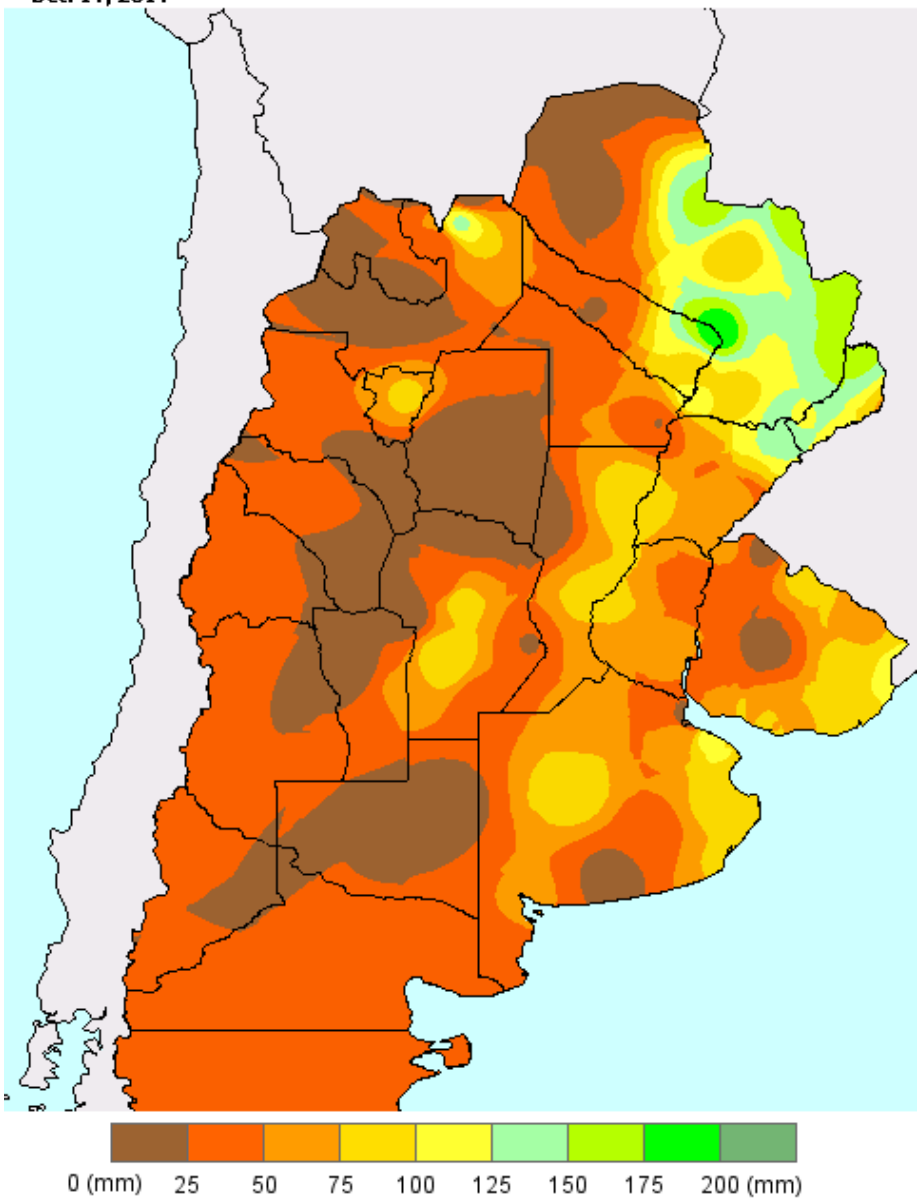


USDA Foreign Agricultural Service
Office of Global Analysis
International Production Assessment Division

Source: World Meteorological Organization
http://www.nws.noaa.gov/iscs/nwsgtsfs.html

Subsurface Soil Moisture (WMO)

Dec. 17, 2017

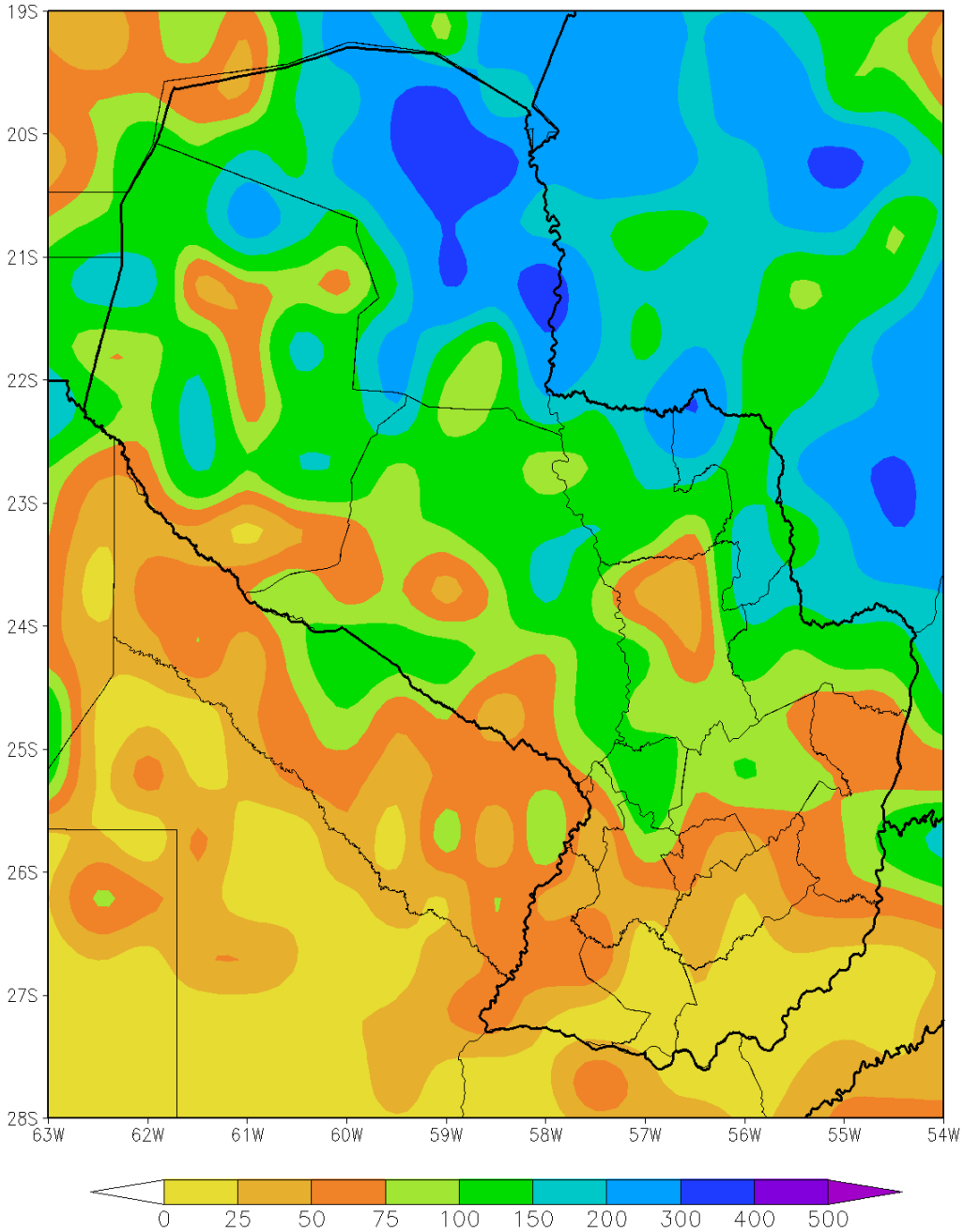


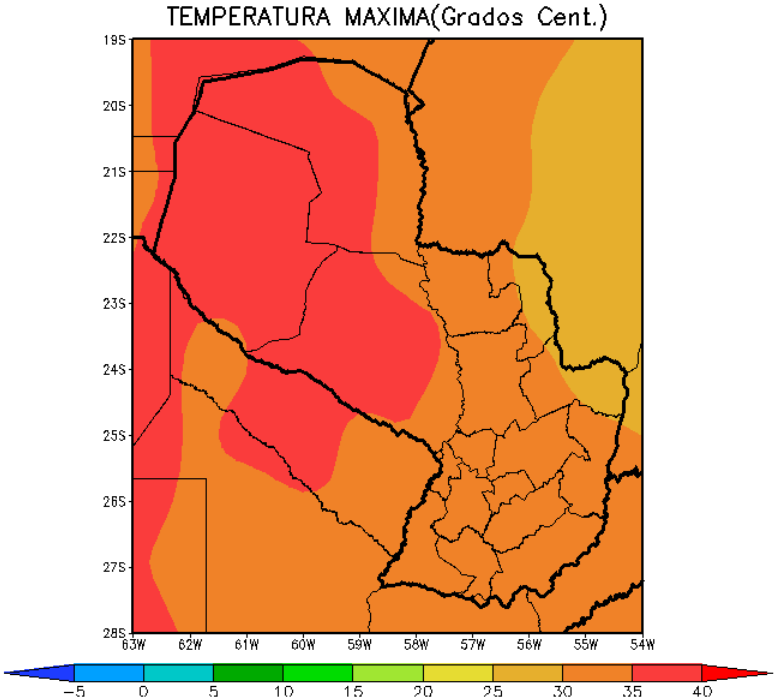
USDA Foreign Agricultural Service
Office of Global Analysis
International Production Assessment Division

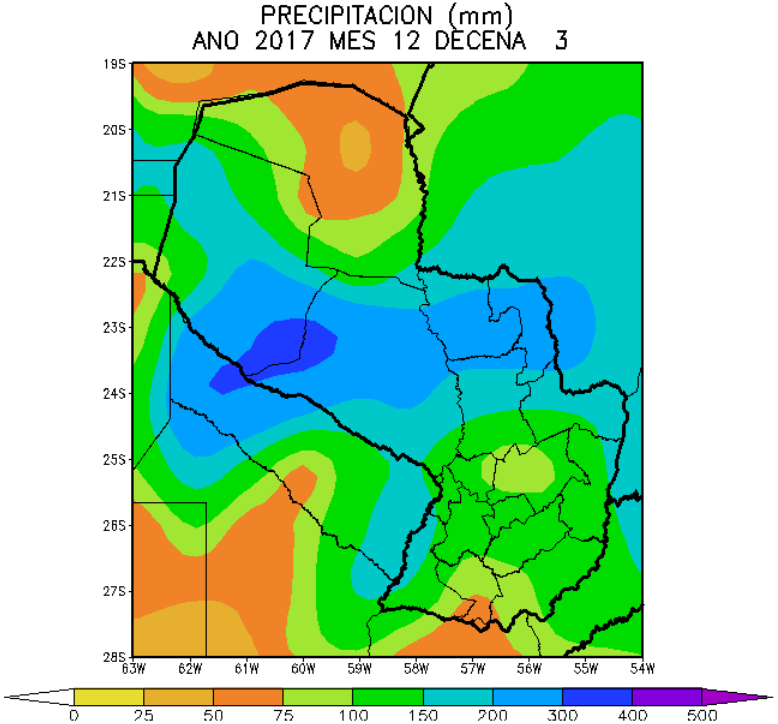
Source: World Meteorological Organization
http://www.nws.noaa.gov/iscs/nwsgtsfs.html

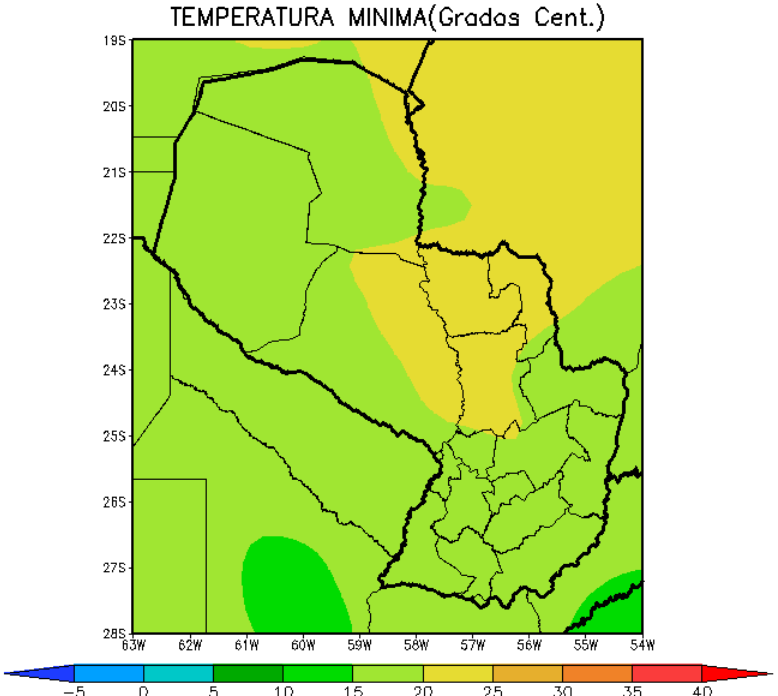
PERSPECTIVA PARA EL VERANO 2018

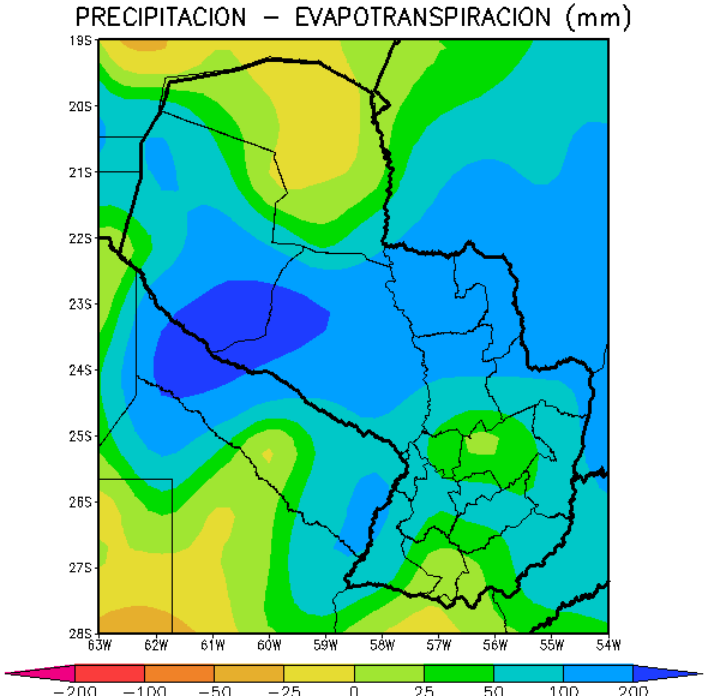
21 al 26 de Diciembre 2017
Precipitacion Observada (mm)

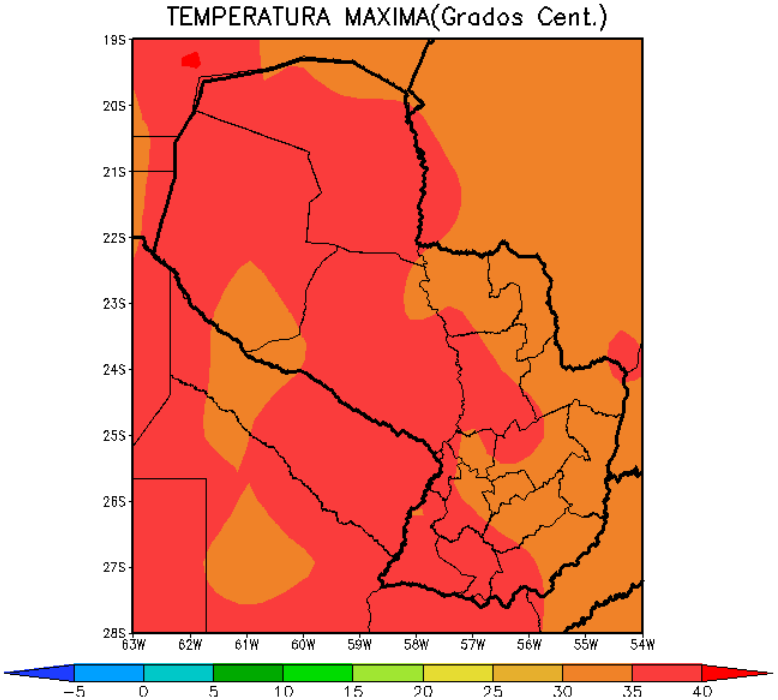



TEMPERATURA MAXIMA(Grados Cent.)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-5 0 5 10 15 20 25 30 35 40


PRECIPITACION (mm)
ANO 2017 MES 12 DECENA 3
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
0 25 50 75 100 150 200 300 400 500


TEMPERATURA MINIMA(Grados Cent.)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-5 0 5 10 15 20 25 30 35 40


PRECIPITACION - EVAPOTRANSPIRACION (mm)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-200 -100 -50 -25 0 25 50 100 200


TEMPERATURA MAXIMA(Grados Cent.)
19S
20S
21S
22S
23S
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25S
26S
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28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
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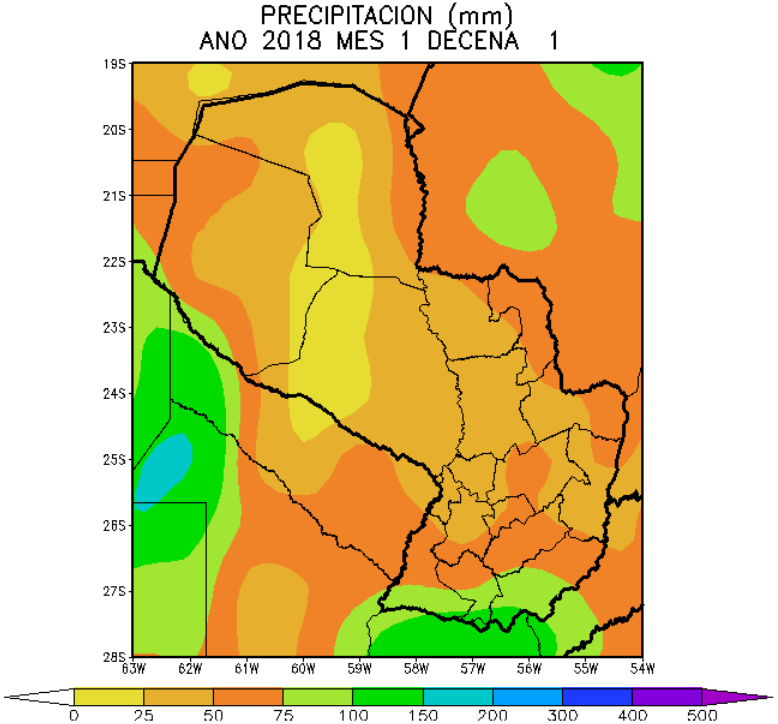
PRECIPITACION (mm)
ANO 2018 MES 1 DECENA 1
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
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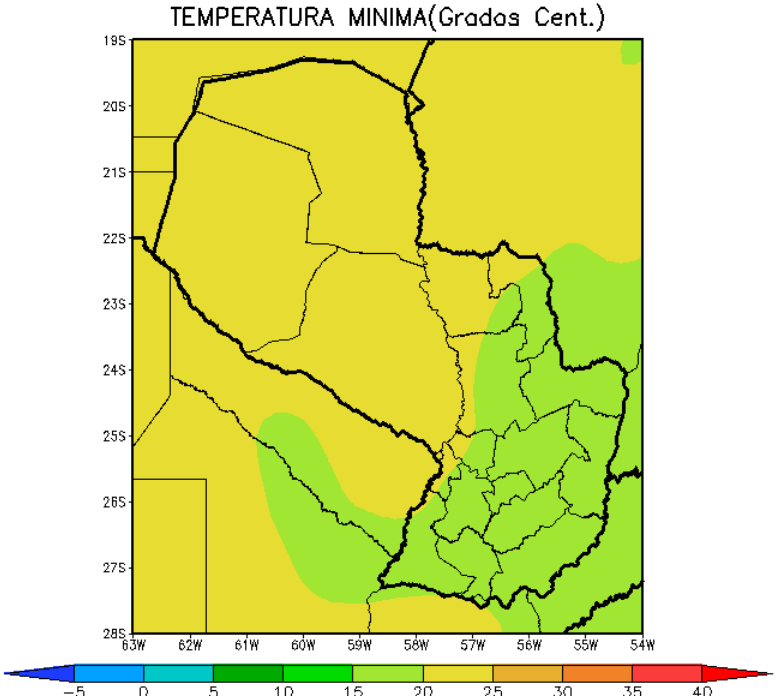
0 25 50 75 100 150 200 300 400 500


TEMPERATURA MINIMA(Grados Cent.)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
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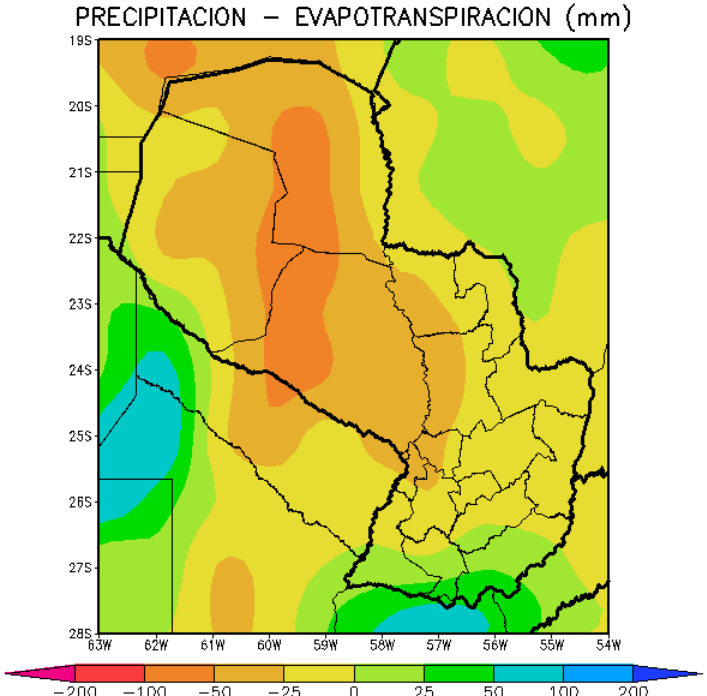
PRECIPITACION - EVAPOTRANSPIRACION (mm)
19S
20S
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28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
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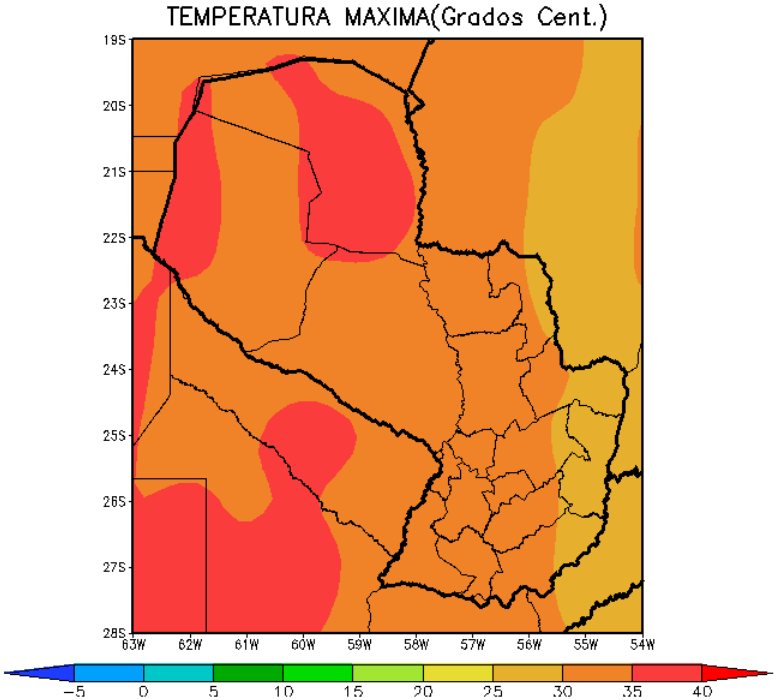
TEMPERATURA MAXIMA(Grados Cent.)
19S
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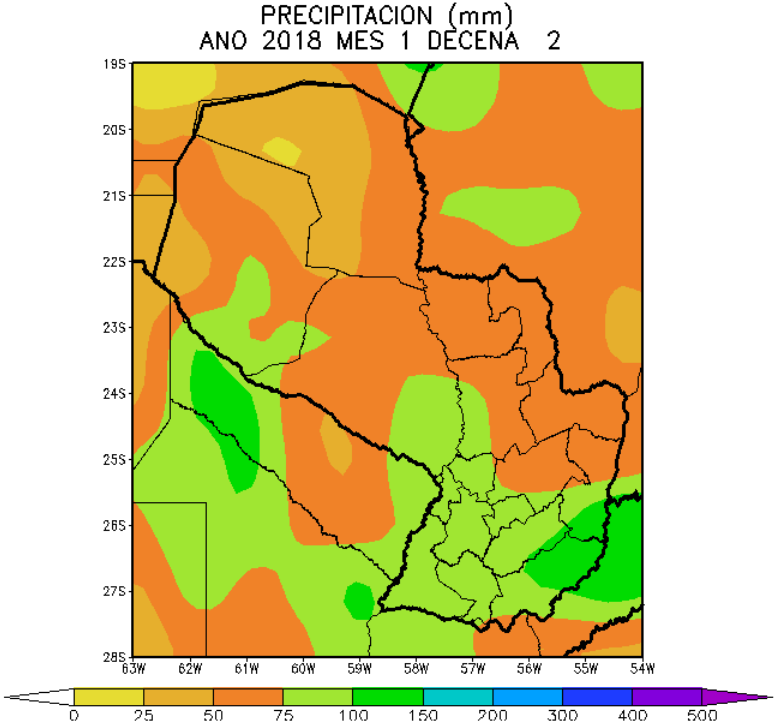
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-5 0 5 10 15 20 25 30 35 40


PRECIPITACION (mm)
ANO 2018 MES 1 DECENA 2
19S
20S
21S
22S
23S
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25S
26S
27S
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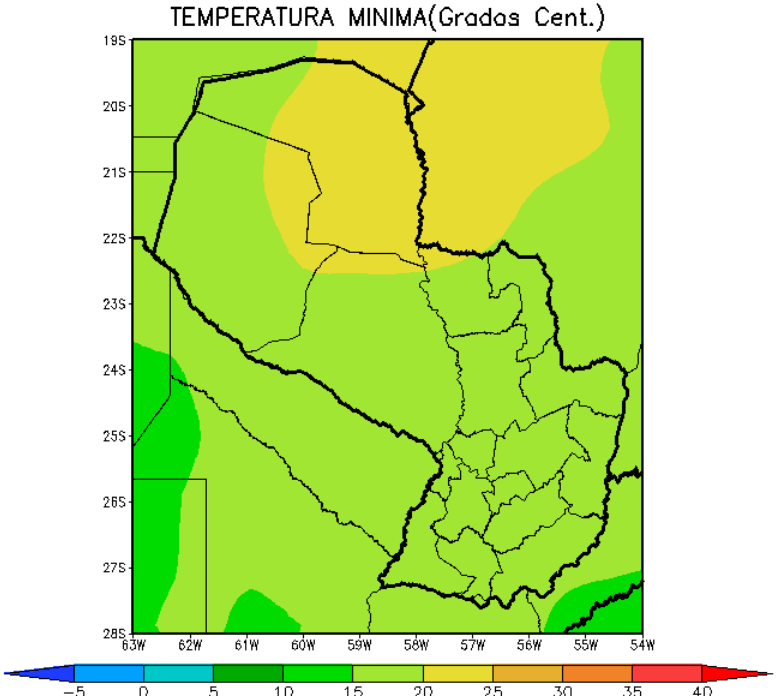
0 25 50 75 100 150 200 300 400 500


TEMPERATURA MINIMA(Grados Cent.)
19S
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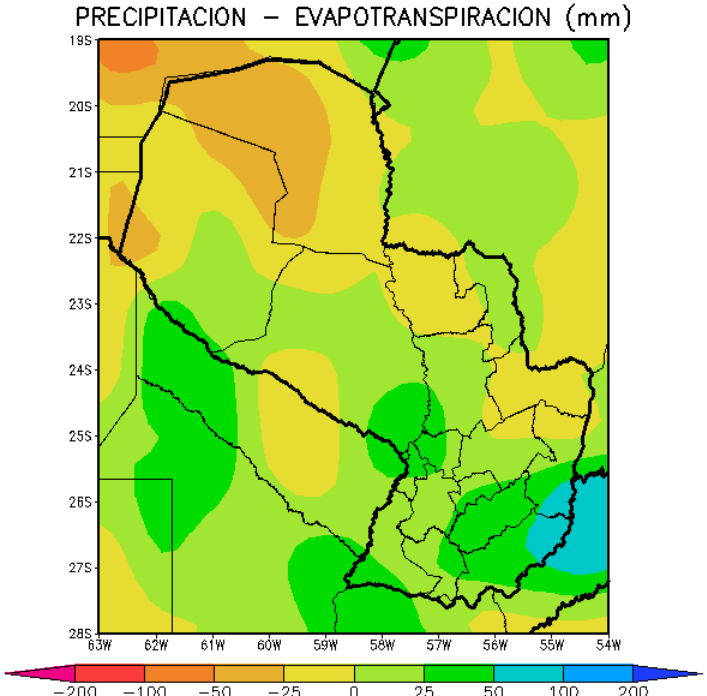
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-5 0 5 10 15 20 25 30 35 40


PRECIPITACION - EVAPOTRANSPIRACION (mm)
19S
20S
21S
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27S
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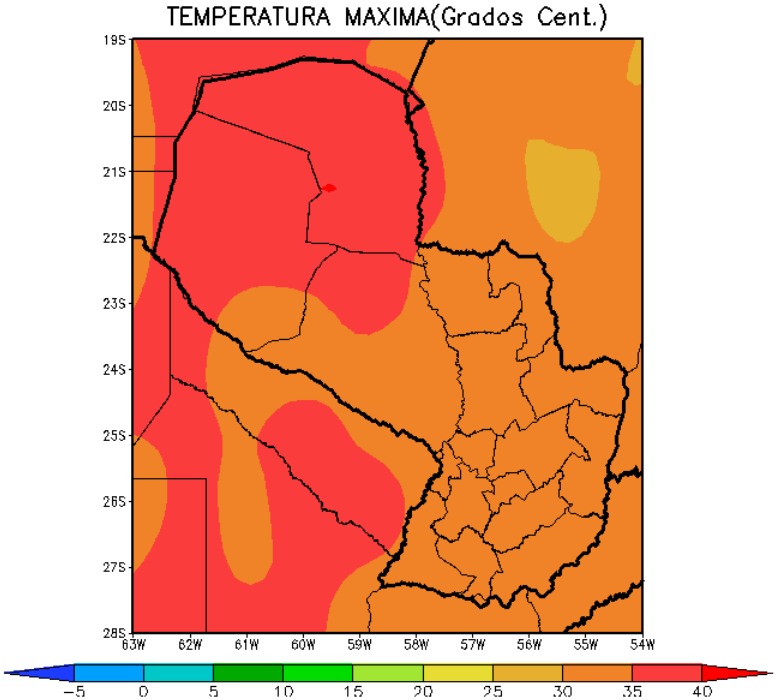
TEMPERATURA MAXIMA(Grados Cent.)
19S
20S
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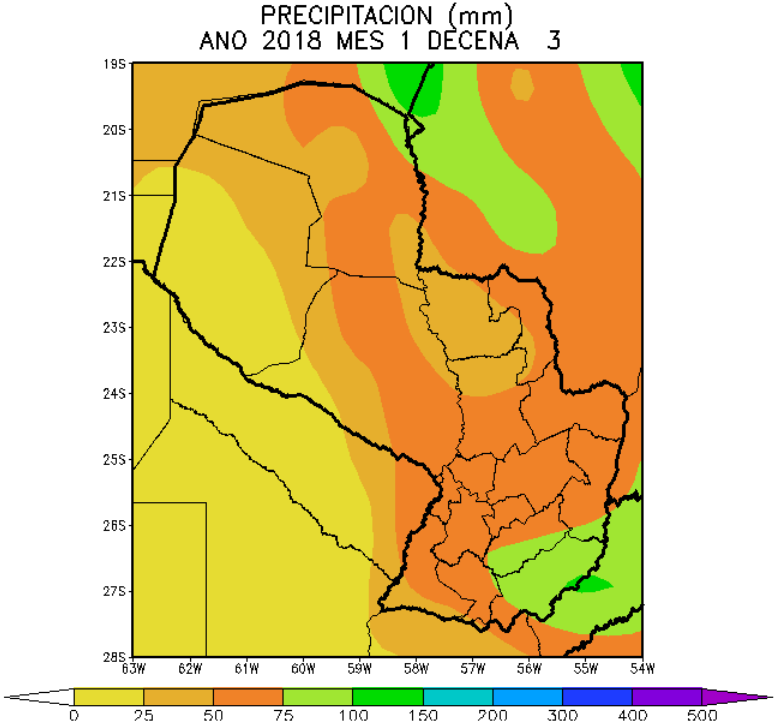
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-5 0 5 10 15 20 25 30 35 40


PRECIPITACION (mm)
ANO 2018 MES 1 DECENA 3
19S
20S
21S
22S
23S
24S
25S
26S
27S
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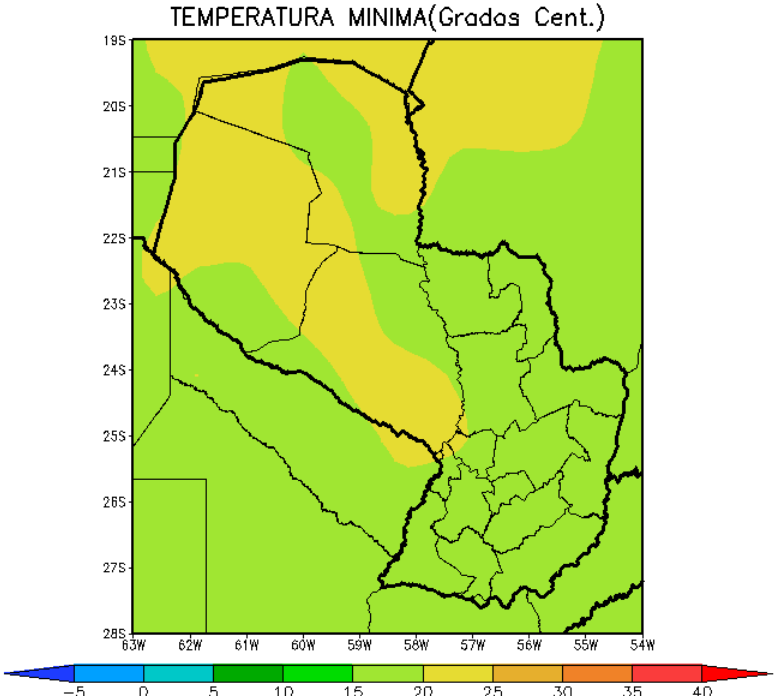
TEMPERATURA MINIMA(Grados Cent.)
19S
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28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
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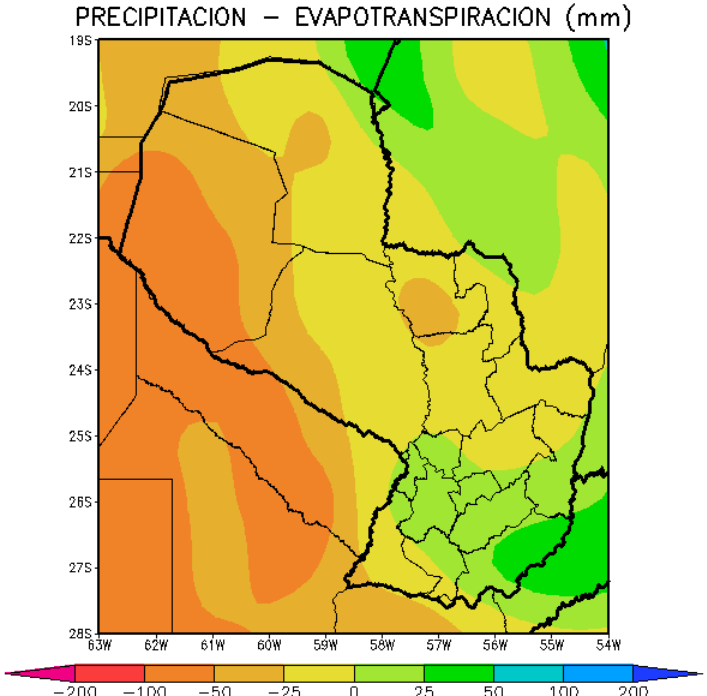
PRECIPITACION - EVAPOTRANSPIRACION (mm)
19S
20S
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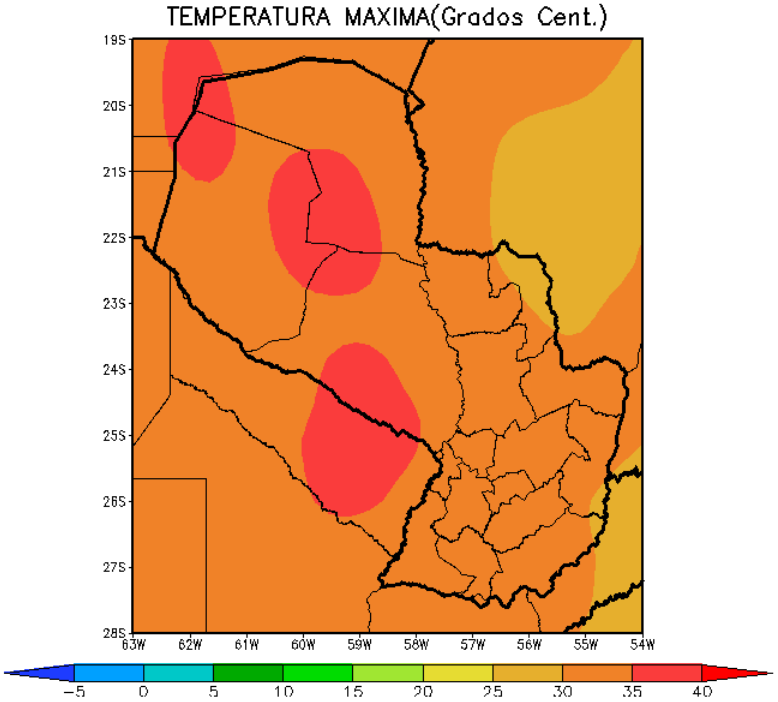
TEMPERATURA MAXIMA(Grados Cent.)
19S
20S
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22S
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28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
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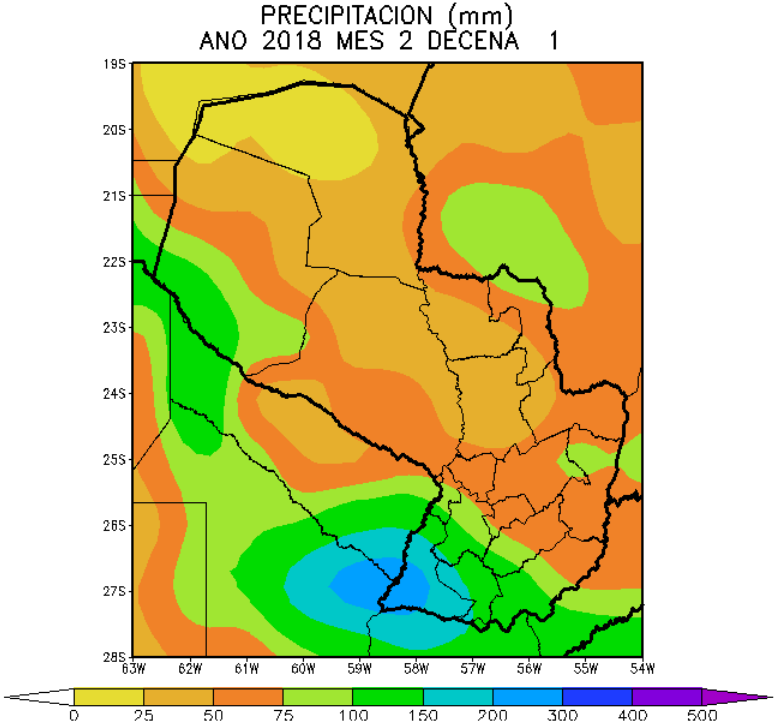
PRECIPITACION (mm)
ANO 2018 MES 2 DECENA 1
19S
20S
21S
22S
23S
24S
25S
26S
27S
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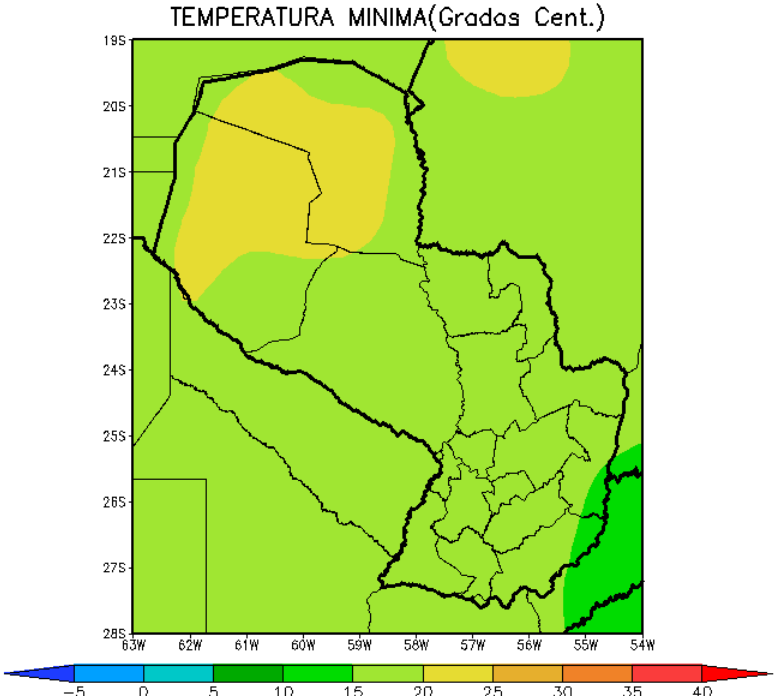
0 25 50 75 100 150 200 300 400 500


TEMPERATURA MINIMA(Grados Cent.)
19S
20S
21S
22S
23S
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63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
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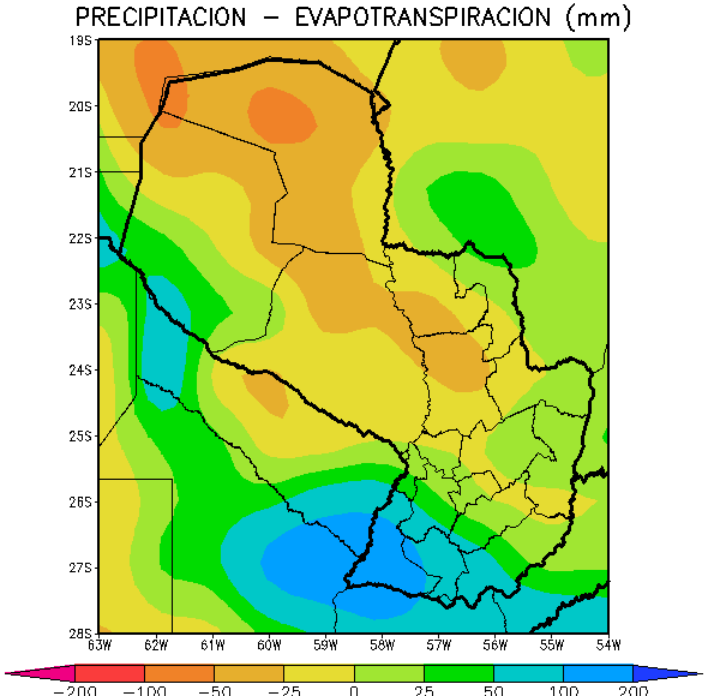
PRECIPITACION - EVAPOTRANSPIRACION (mm)
19S
20S
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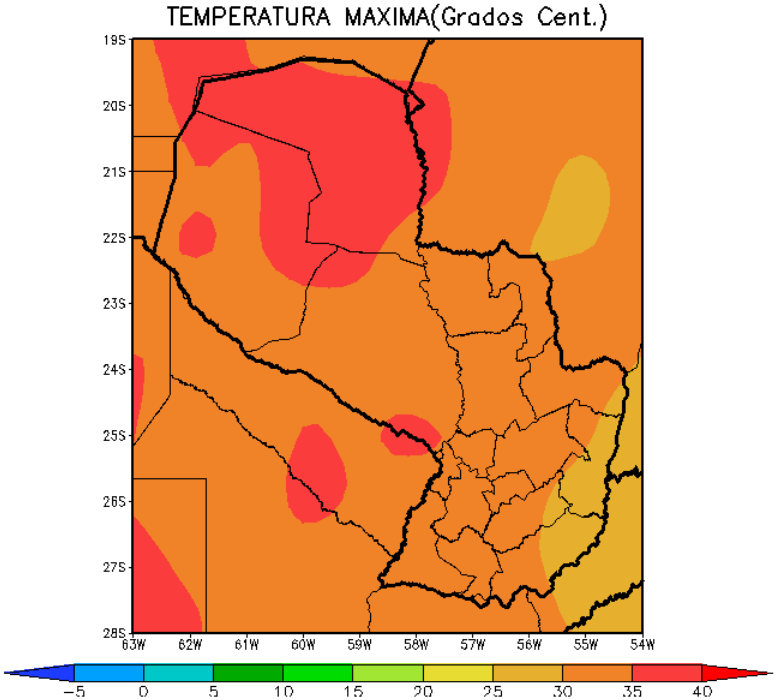
TEMPERATURA MAXIMA(Grados Cent.)
19S
20S
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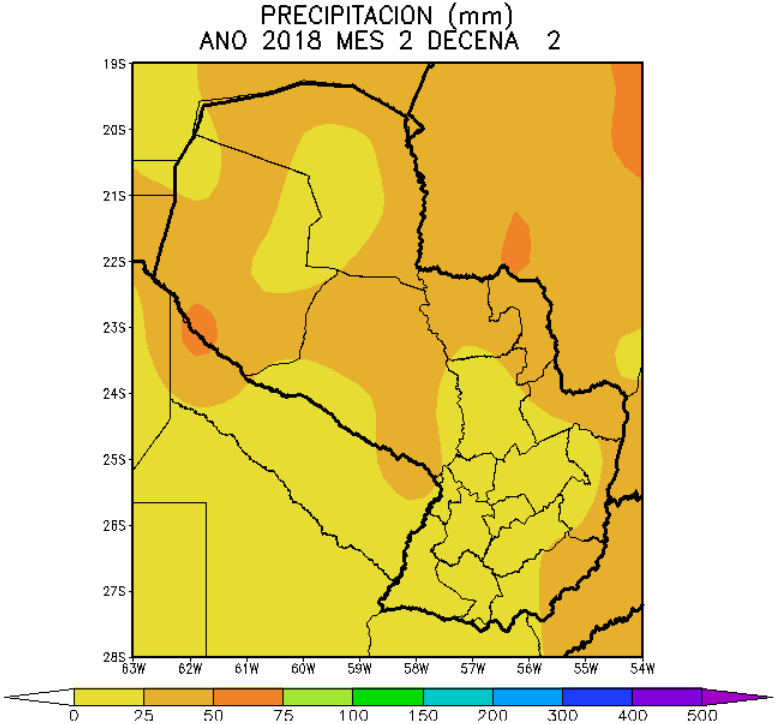
PRECIPITACION (mm)
ANO 2018 MES 2 DECENA 2
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20S
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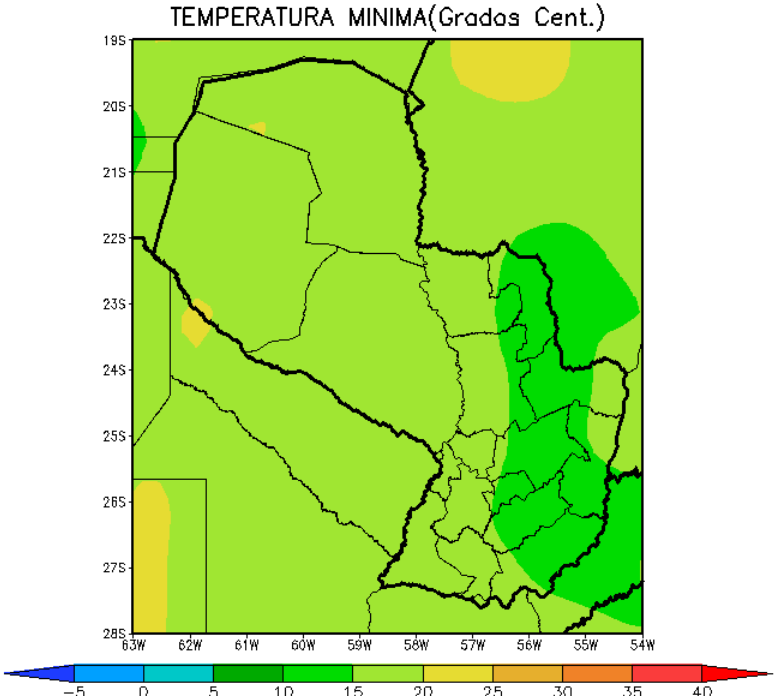
TEMPERATURA MINIMA(Grados Cent.)
19S
20S
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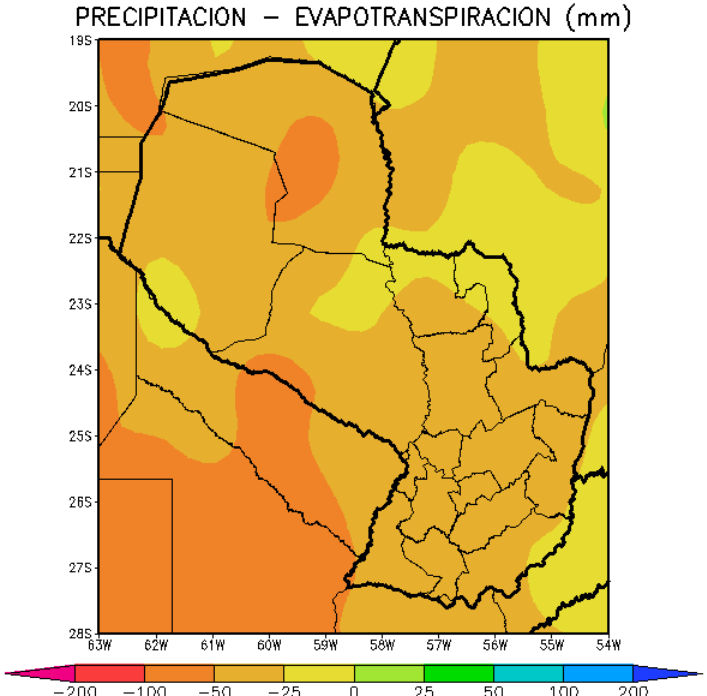
PRECIPITACION - EVAPOTRANSPIRACION (mm)
19S
20S
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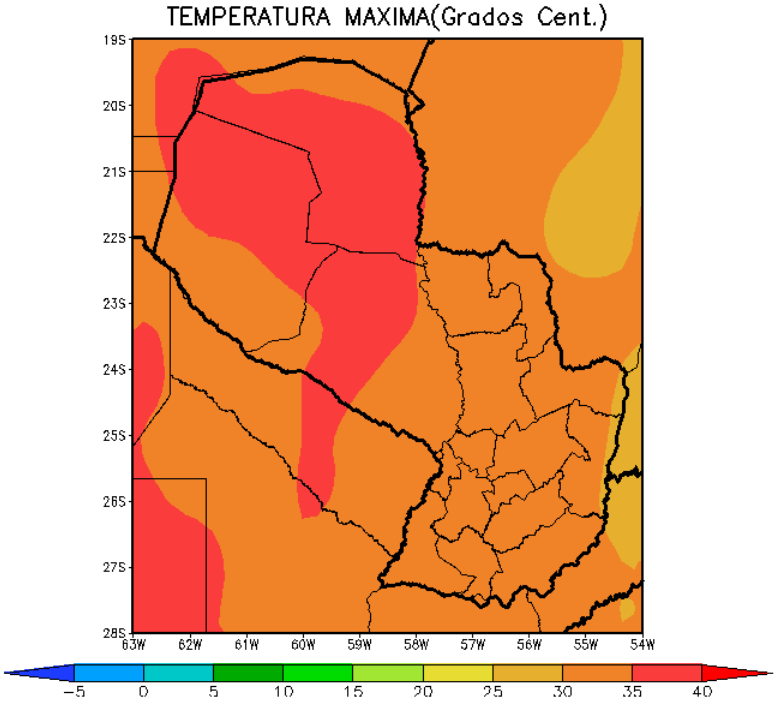
TEMPERATURA MAXIMA(Grados Cent.)
19S
20S
21S
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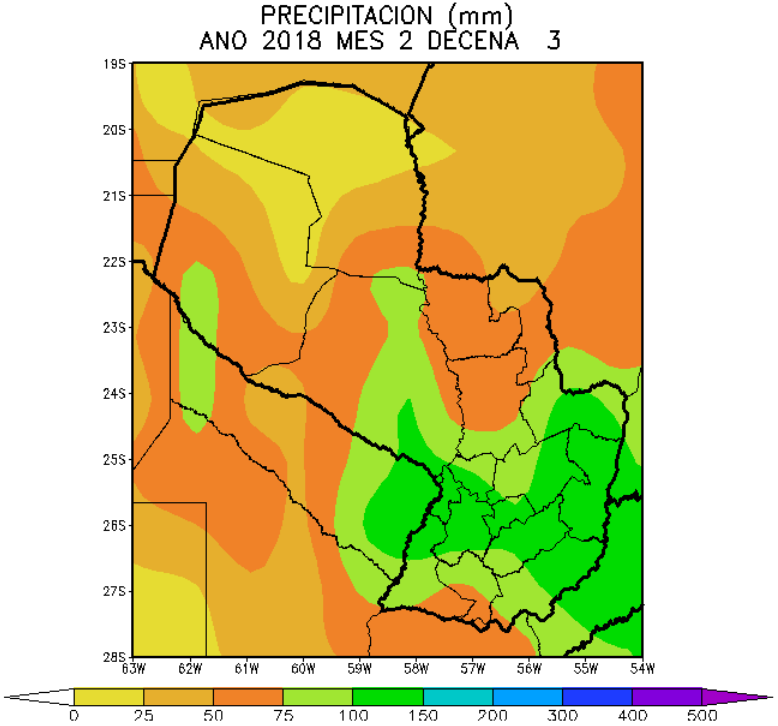
PRECIPITACION (mm)
ANO 2018 MES 2 DECENA 3
19S
20S
21S
22S
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24S
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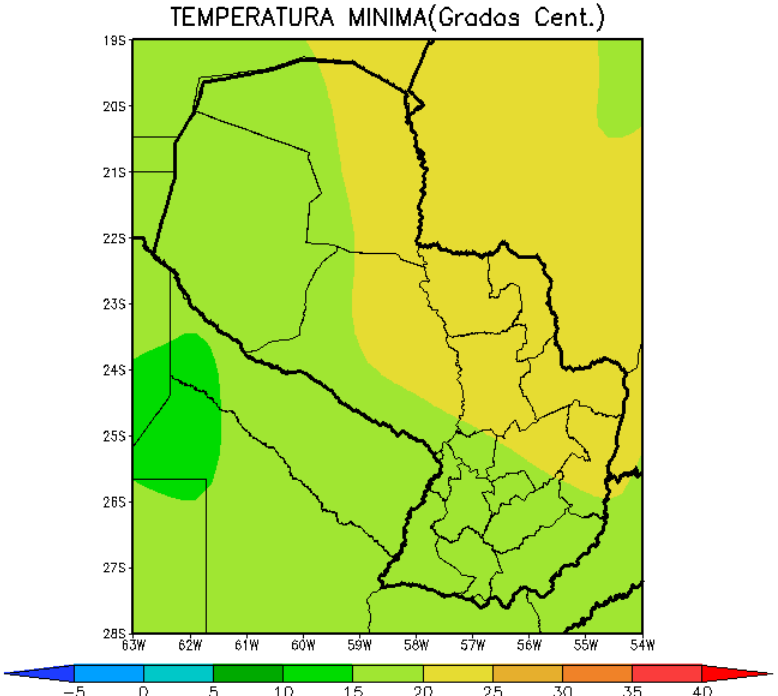
TEMPERATURA MINIMA(Grados Cent.)
19S
20S
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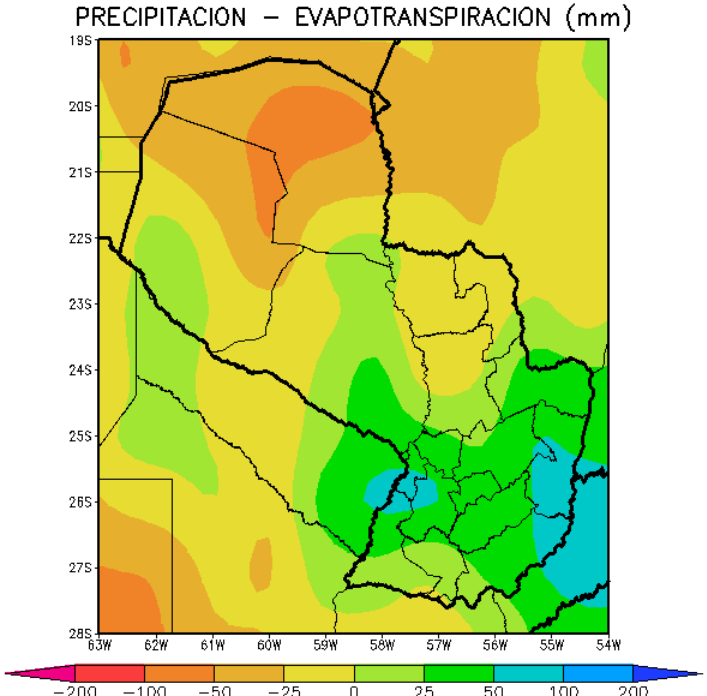
PRECIPITACION - EVAPOTRANSPIRACION (mm)
19S
20S
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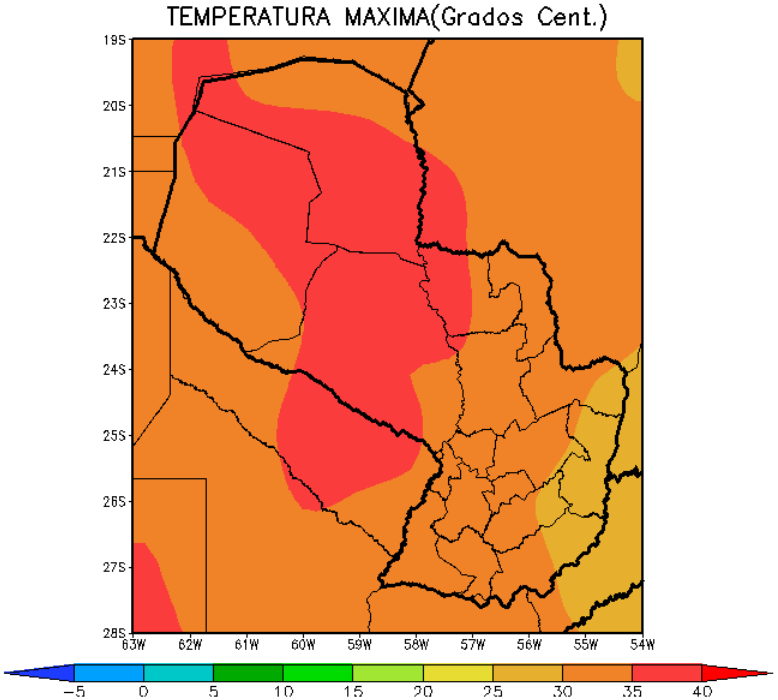
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-200 -100 -50 -25 0 25 50 100 200


TEMPERATURA MAXIMA(Grados Cent.)
19S
20S
21S
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28S
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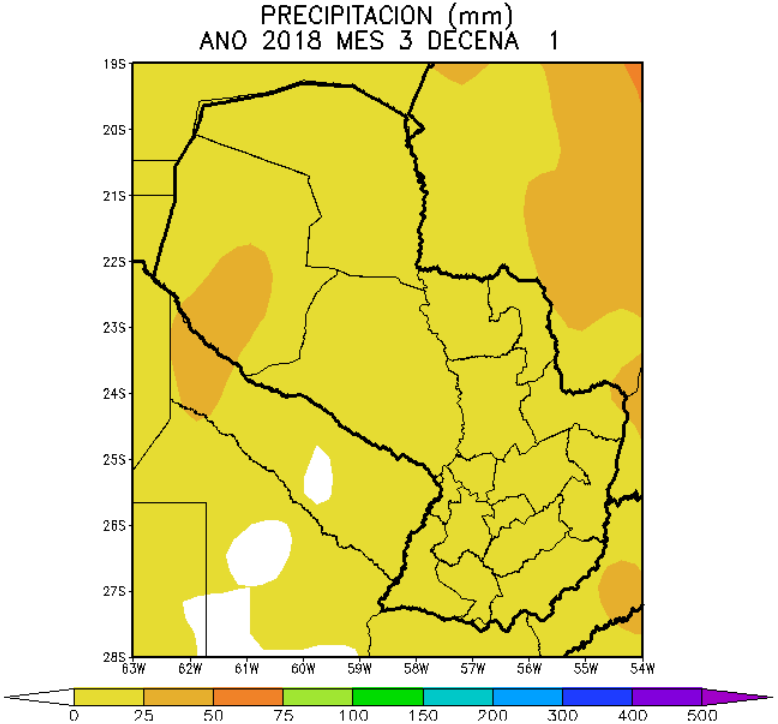
PRECIPITACION (mm)
ANO 2018 MES 3 DECENA 1
19S
20S
21S
22S
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26S
27S
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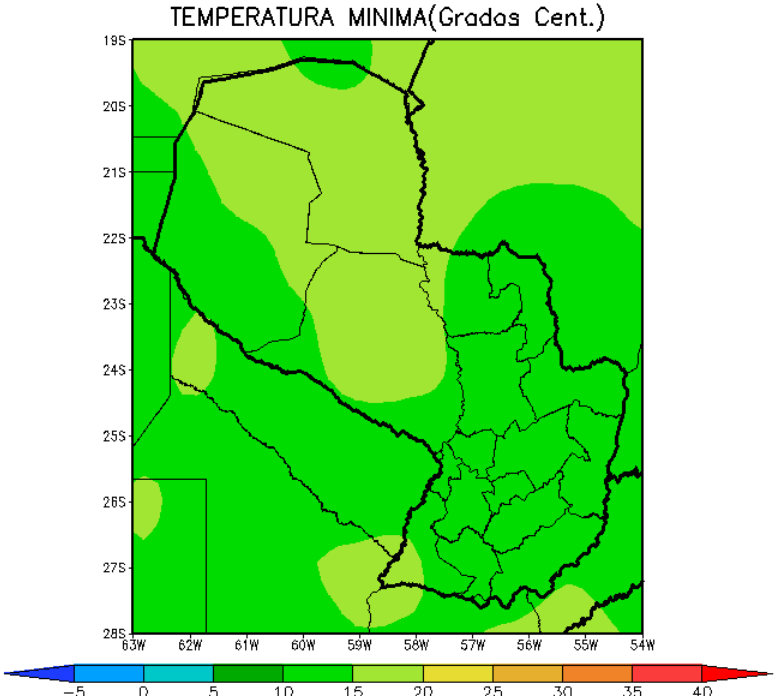
TEMPERATURA MINIMA(Grados Cent.)
19S
20S
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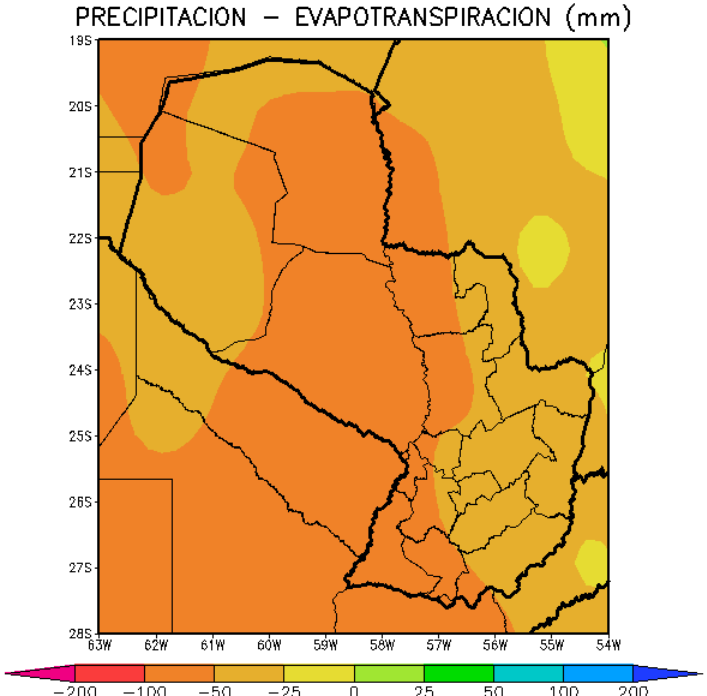
PRECIPITACION - EVAPOTRANSPIRACION (mm)
19S
20S
21S
22S
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26S
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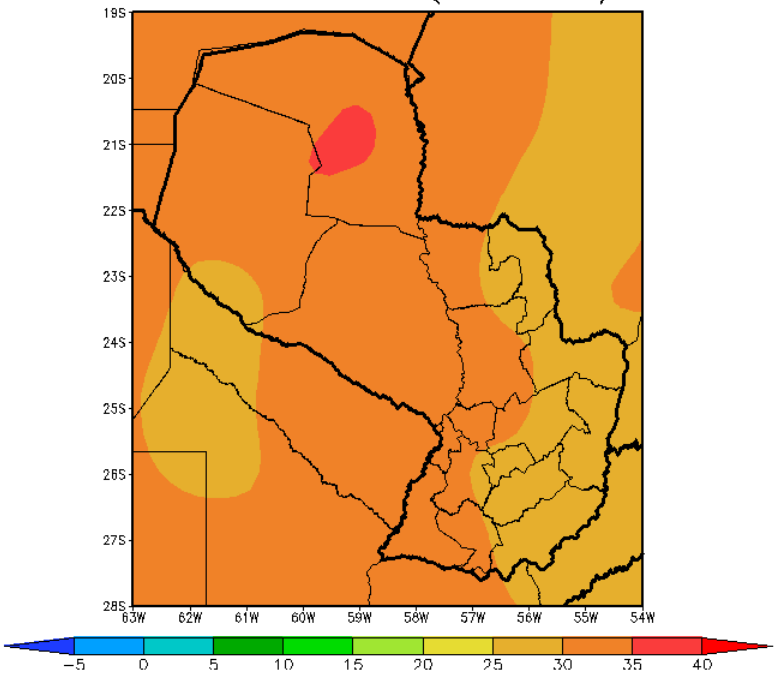
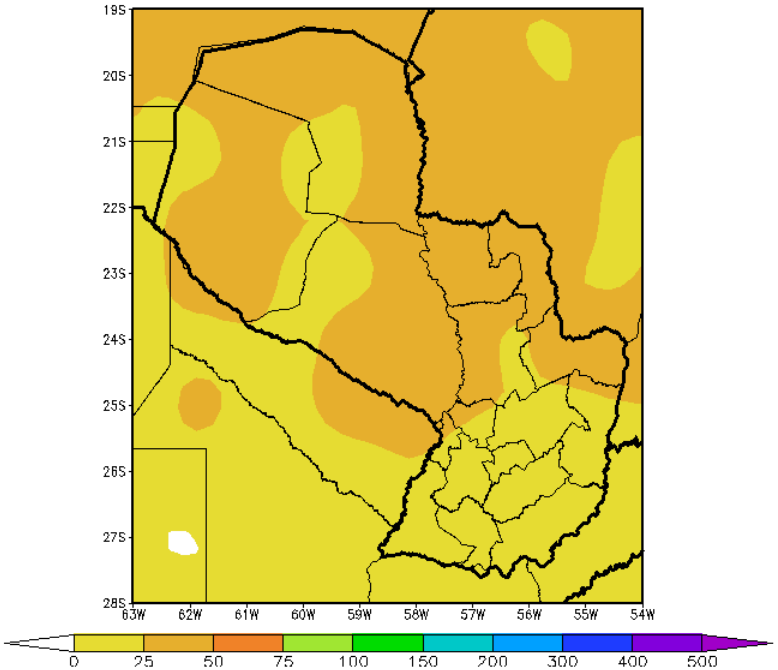
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-200 -100 -50 -25 0 25 50 100 200

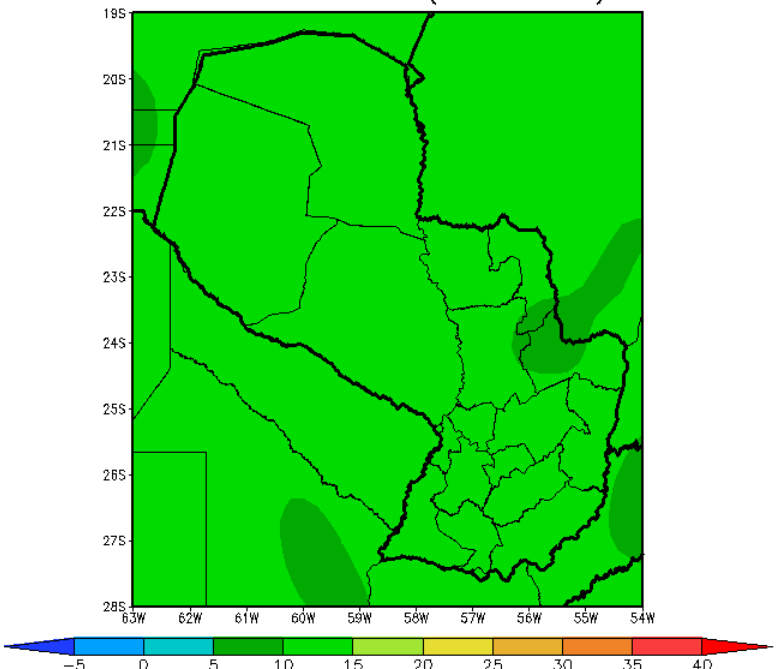
TEMPERATURA MAXIMA(Grados Cent.)



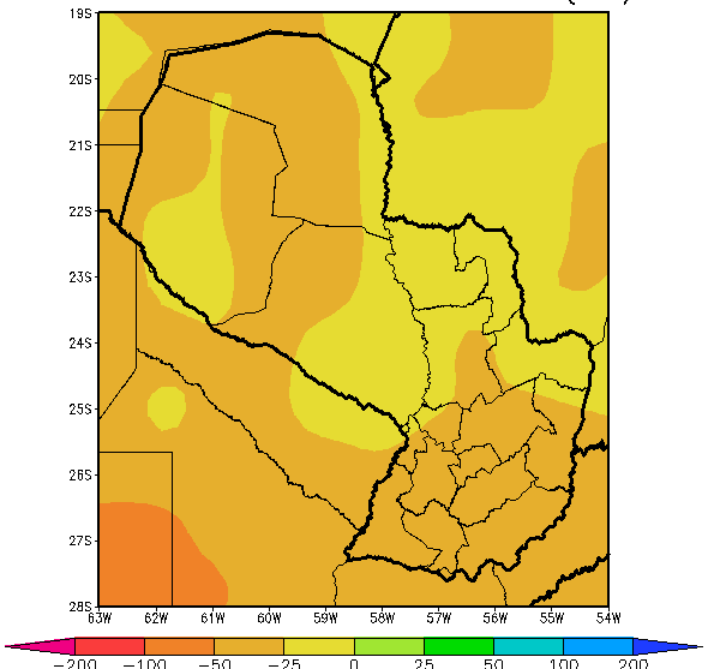
PRECIPITACION (mm)
ANO 2018 MES 3 DECENA 2

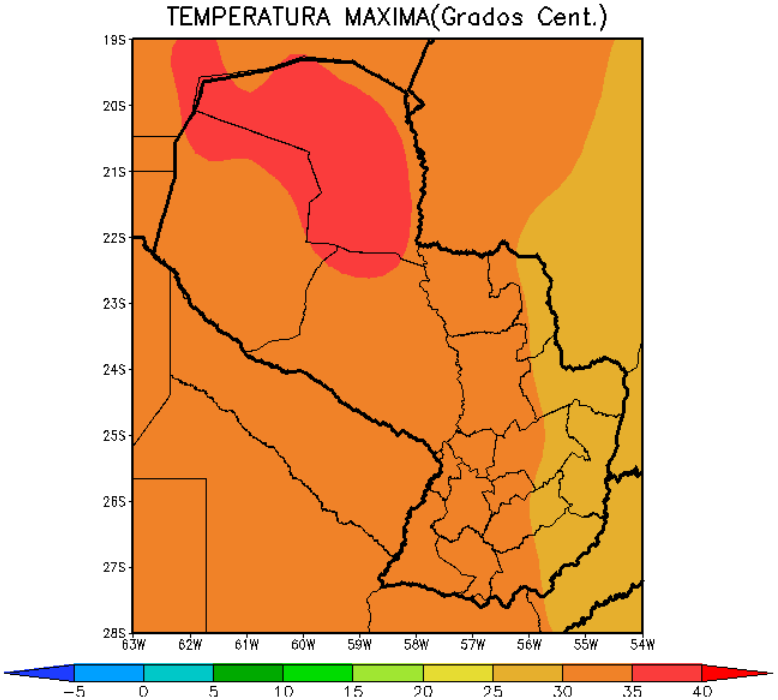


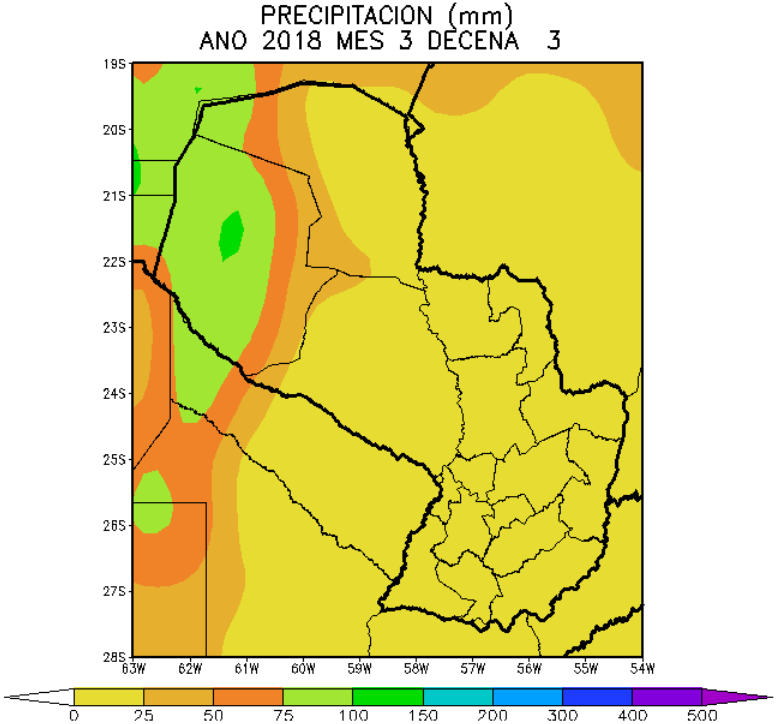
TEMPERATURA MINIMA(Grados Cent.)

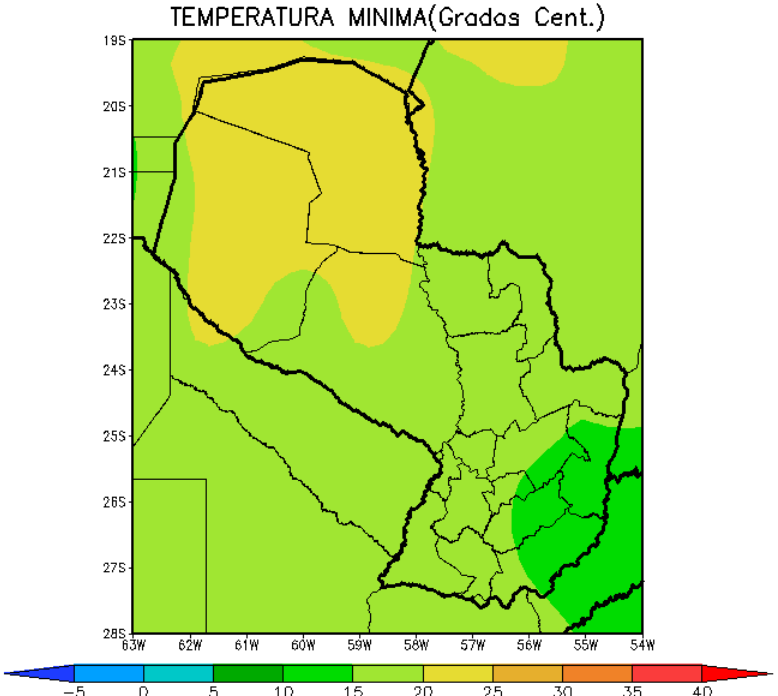


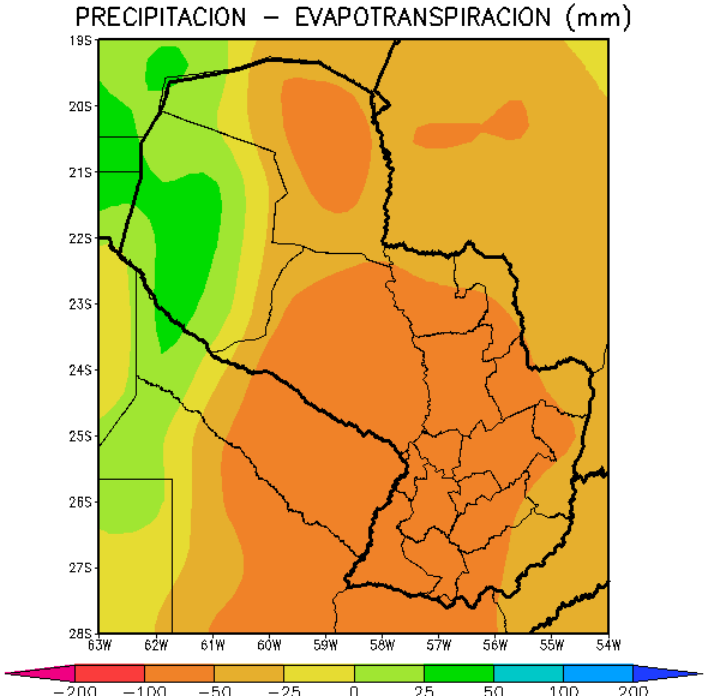
PRECIPITACION - EVAPOTRANSPIRACION (mm)



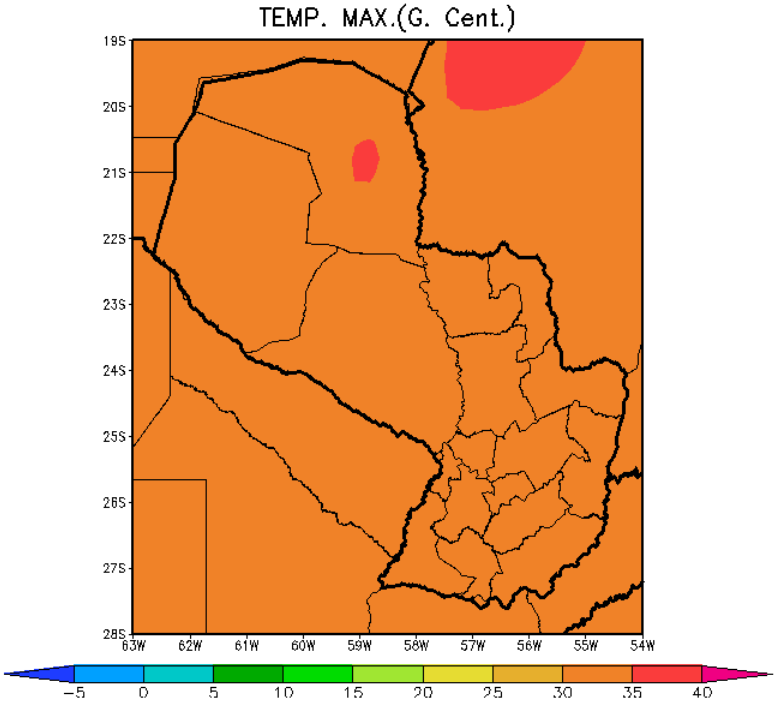

TEMPERATURA MAXIMA(Grados Cent.)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-5 0 5 10 15 20 25 30 35 40

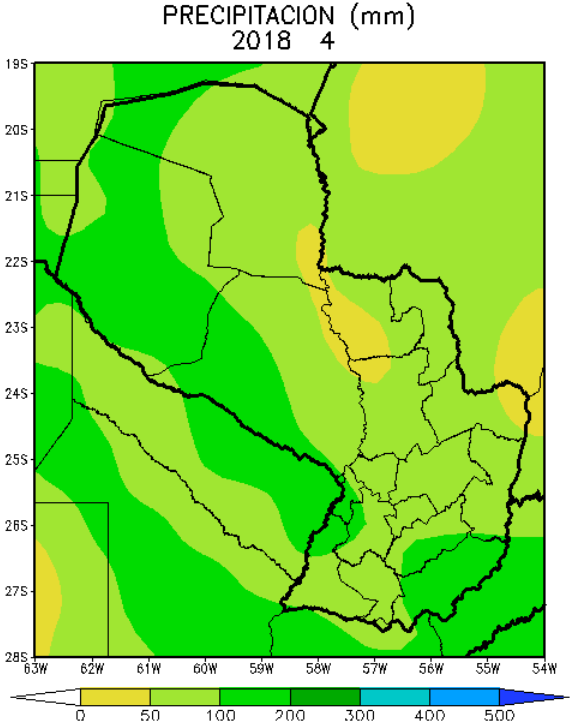

PRECIPITACION (mm)
ANO 2018 MES 3 DECENA 3
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
0 25 50 75 100 150 200 300 400 500


TEMPERATURA MINIMA(Grados Cent.)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-5 0 5 10 15 20 25 30 35 40


PRECIPITACION - EVAPOTRANSPIRACION (mm)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-200 -100 -50 -25 0 25 50 100 200

PERSPECTIVA PARA EL OTOÑO 2018


TEMP. MAX.(G. Cent.)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-5 0 5 10 15 20 25 30 35 40


PRECIPITACION (mm)
2018 4
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
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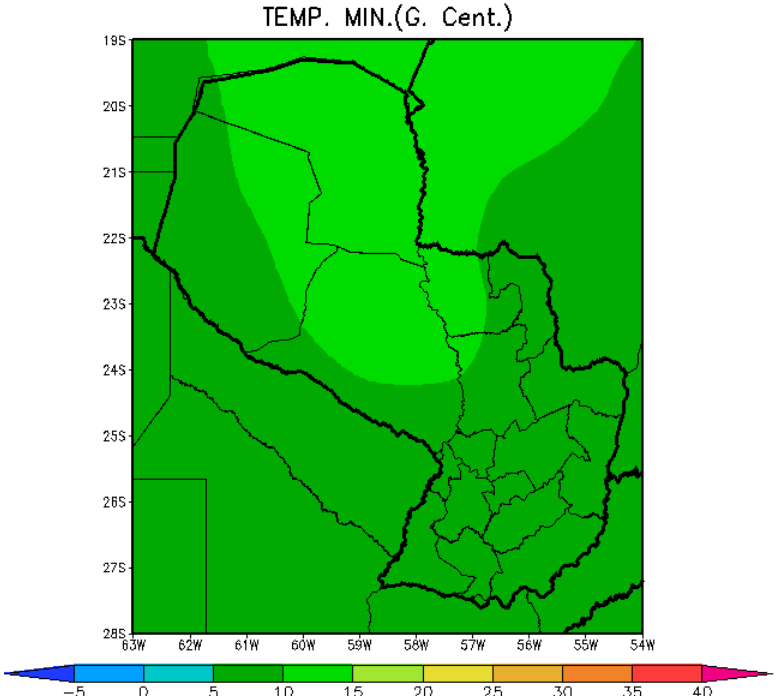
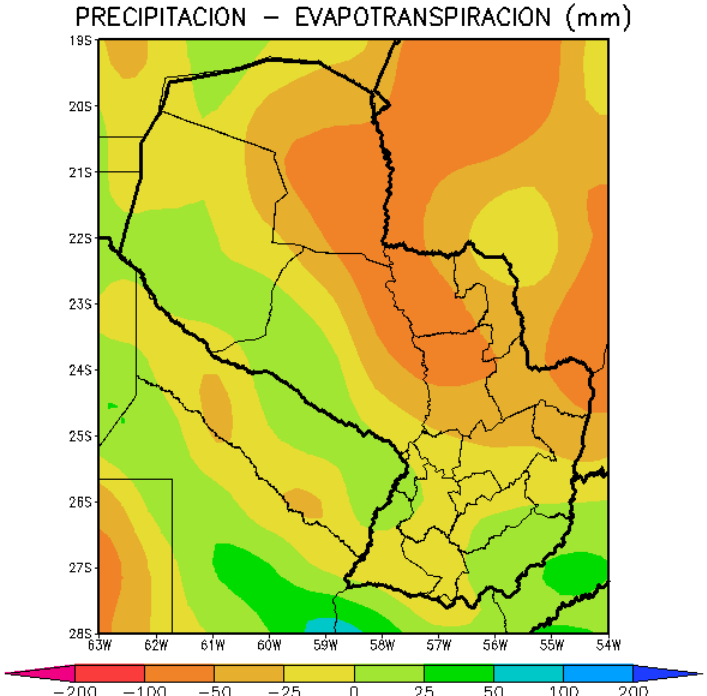

TEMP. MIN.(G. Cent.)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-5 0 5 10 15 20 25 30 35 40


PRECIPITACION - EVAPOTRANSPIRACION (mm)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
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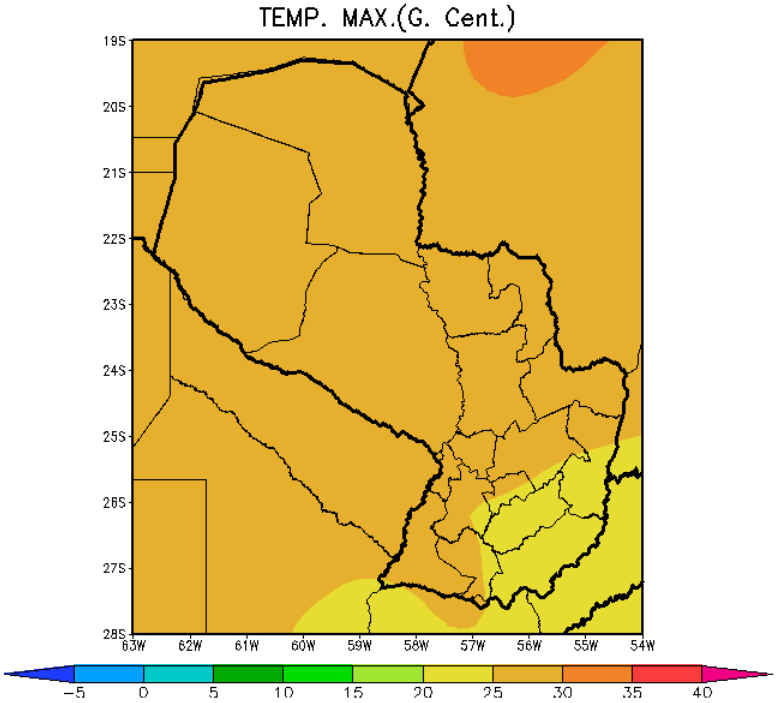
TEMP. MAX.(G. Cent.)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
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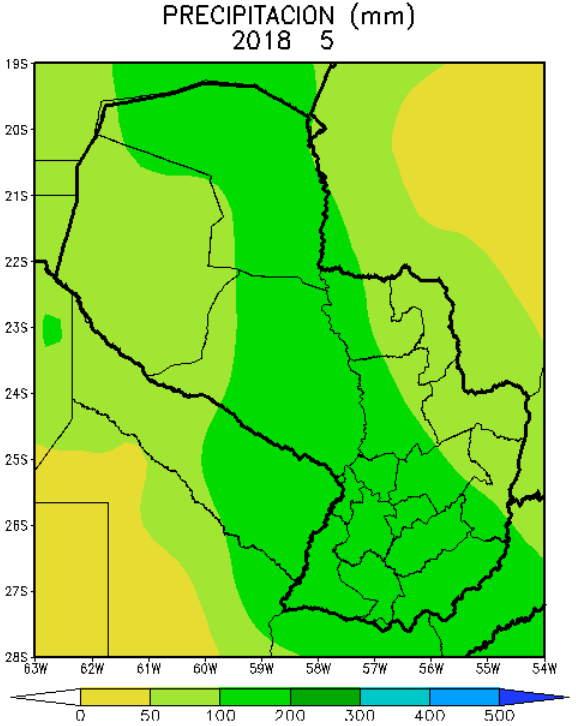
PRECIPITACION (mm)
2018 5
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
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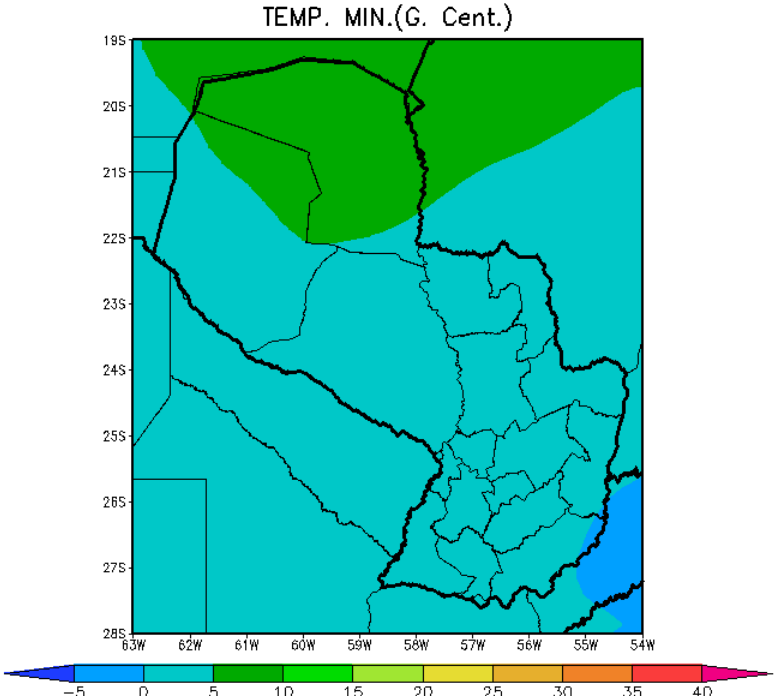
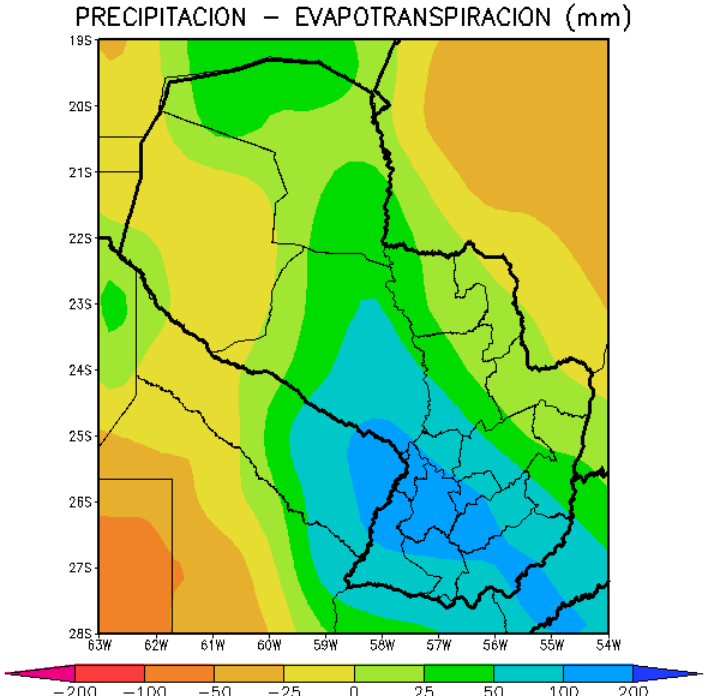
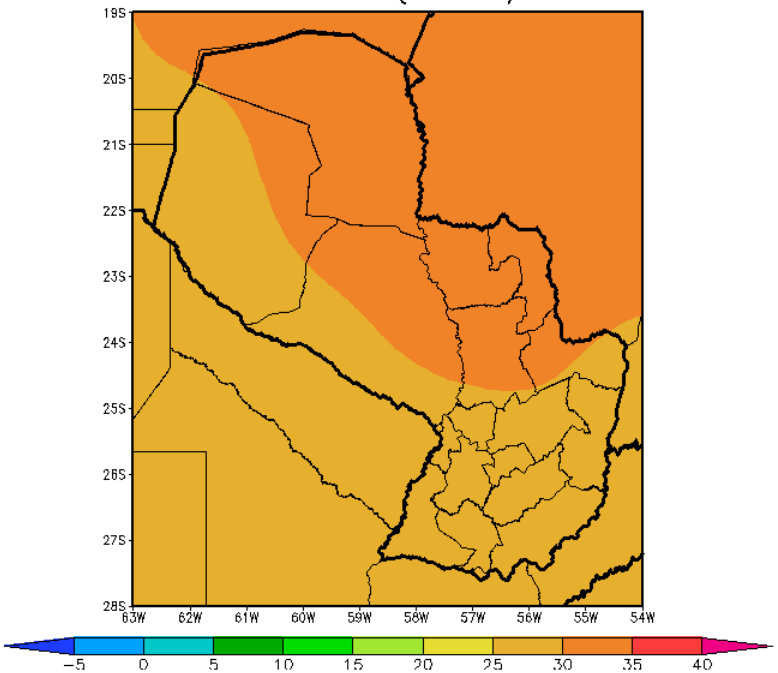
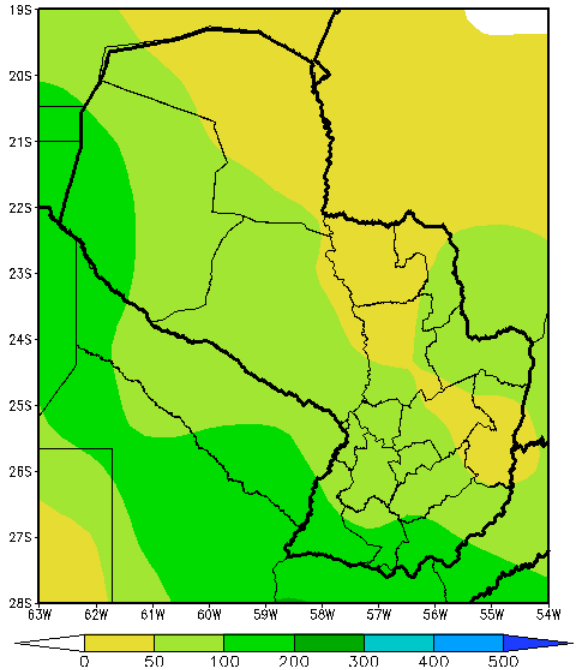

TEMP. MIN.(G. Cent.)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-5 0 5 10 15 20 25 30 35 40


PRECIPITACION - EVAPOTRANSPIRACION (mm)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-200 -100 -50 -25 0 25 50 100 200

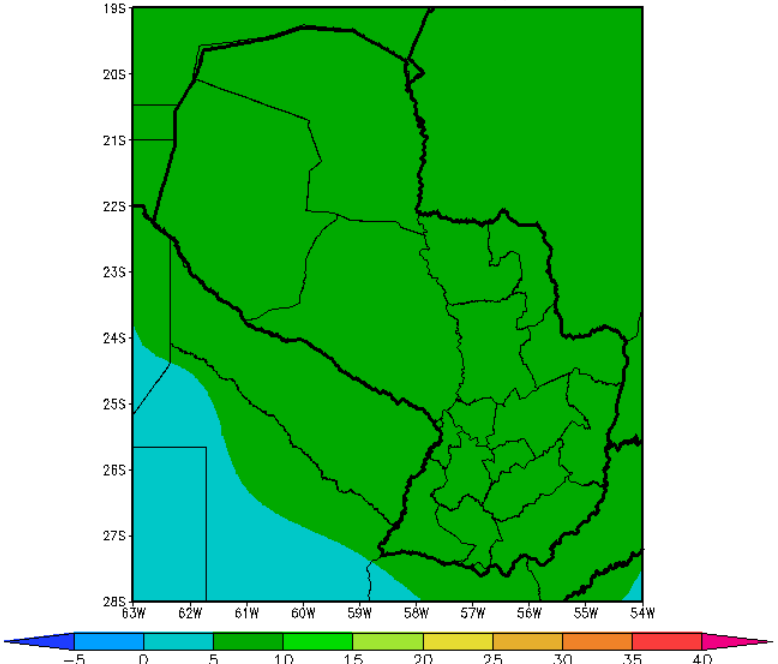
TEMP. MAX.(G. Cent.)



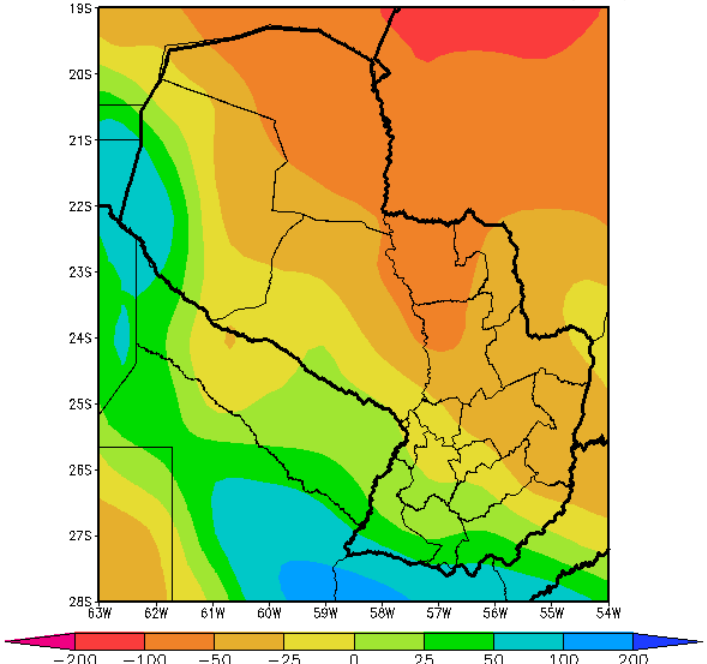
PRECIPITACION (mm)
2018 6



TEMP. MIN.(G. Cent.)

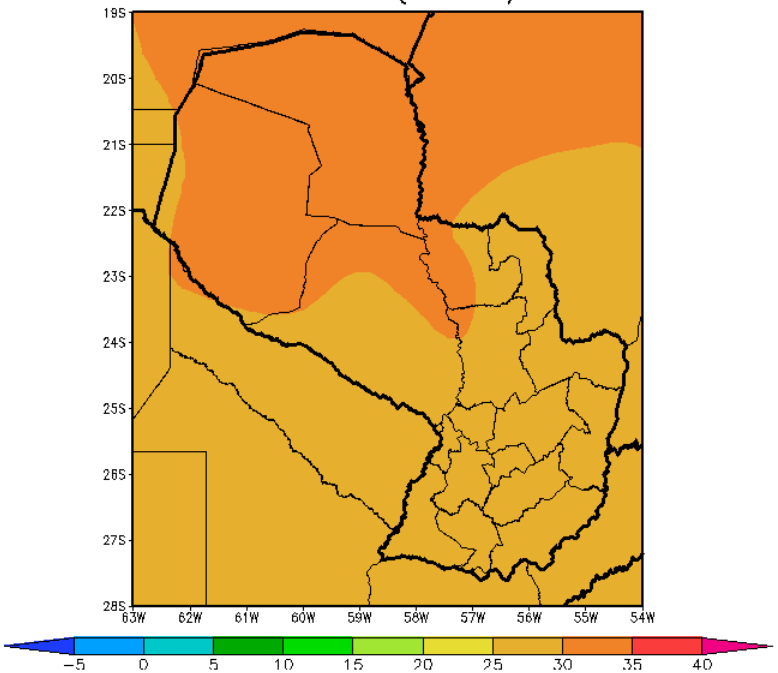


PRECIPITACION – EVAPOTRANSPIRACION (mm)

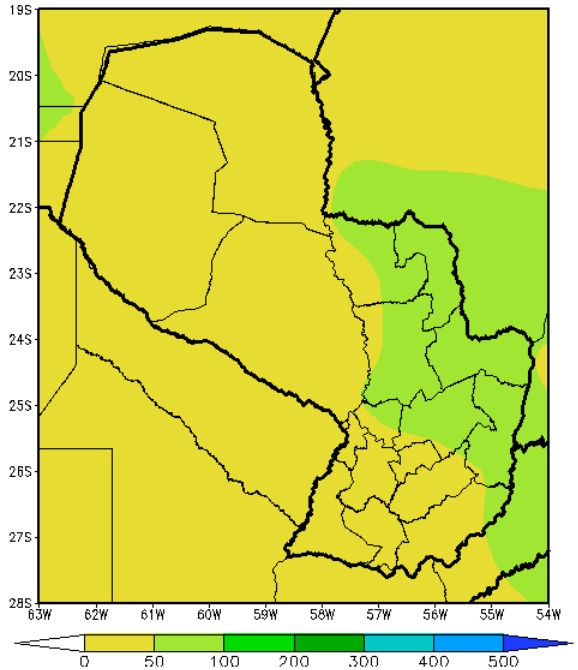


PERSPECTIVA PARA EL INVIERNO 2018

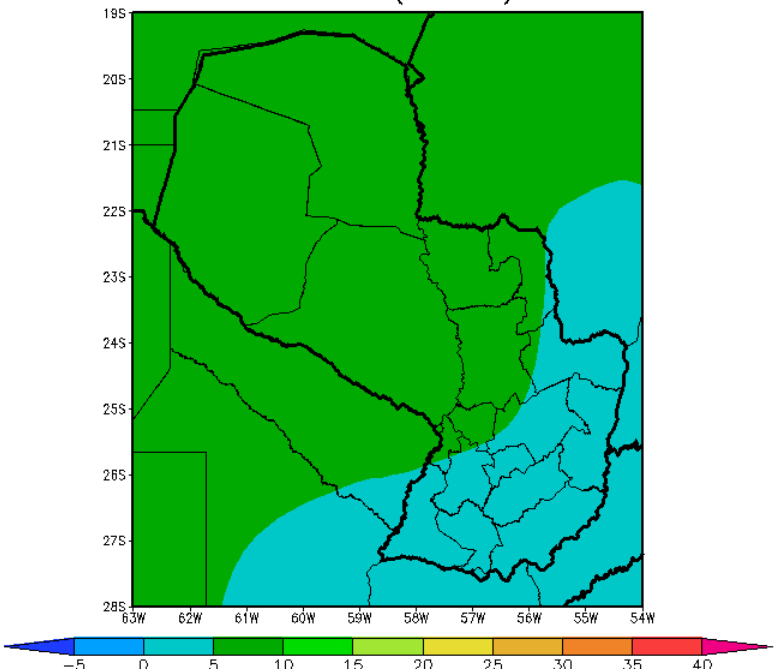
TEMP. MAX.(G. Cent.)



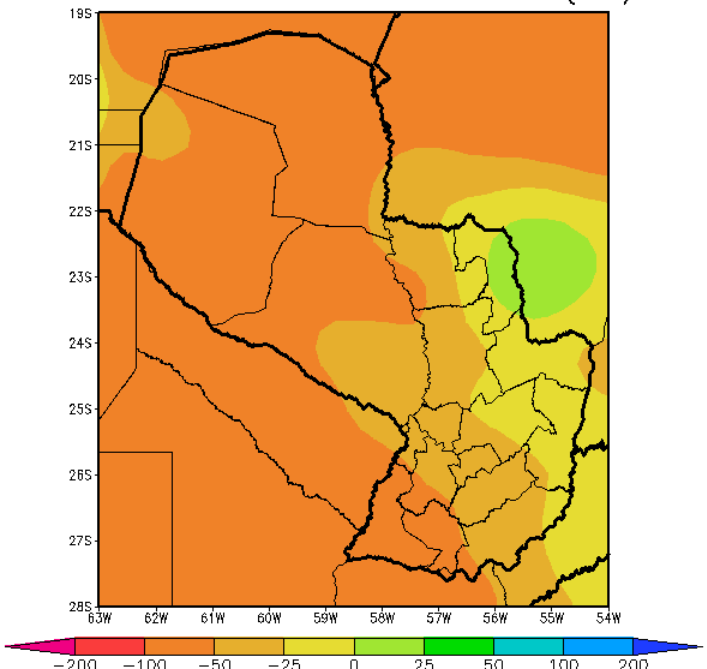
PRECIPITACION (mm)
2018 7

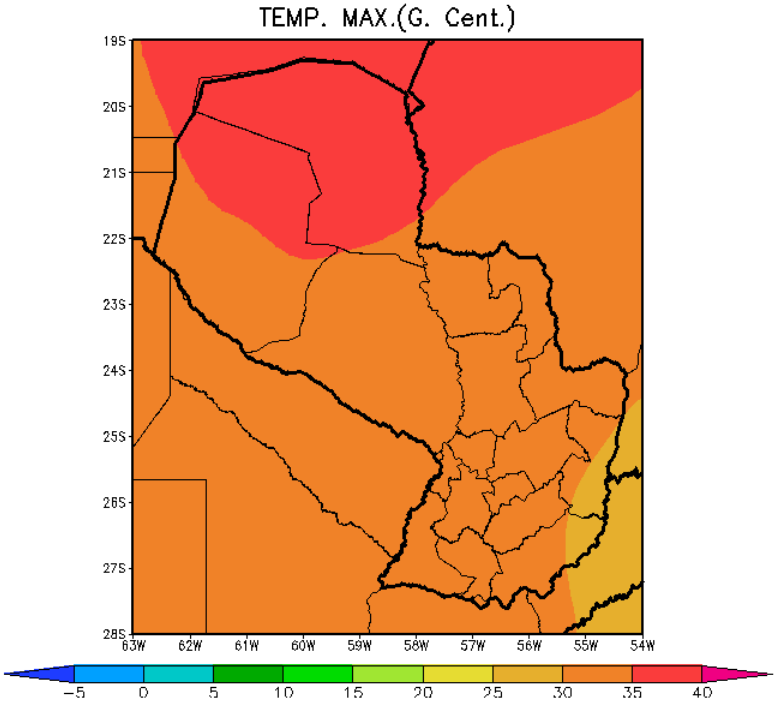


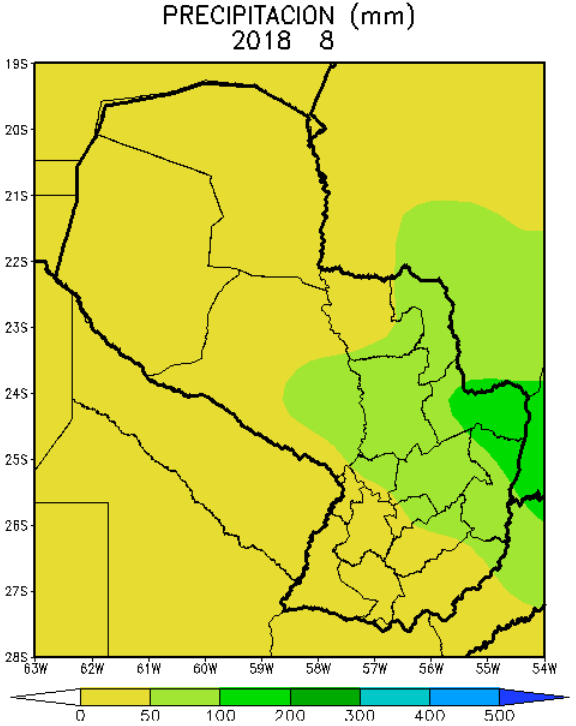
TEMP. MIN.(G. Cent.)

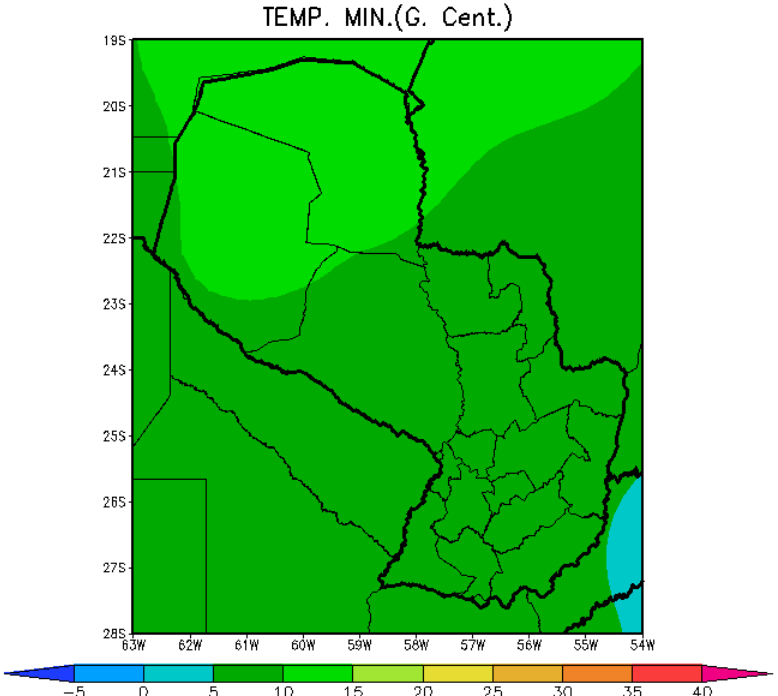


PRECIPITACION – EVAPOTRANSPIRACION (mm)




TEMP. MAX.(G. Cent.)
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-5 0 5 10 15 20 25 30 35 40


PRECIPITACION (mm)
2018 8
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
0 50 100 200 300 400 500


TEMP. MIN.(G. Cent.)
19S
20S
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22S
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25S
26S
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28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
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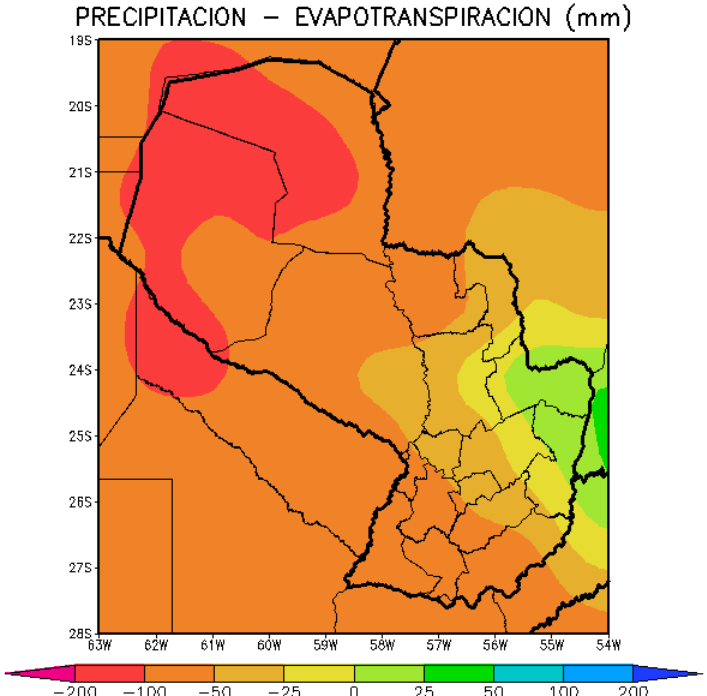
PRECIPITACION - EVAPOTRANSPIRACION (mm)
19S
20S
21S
22S
23S
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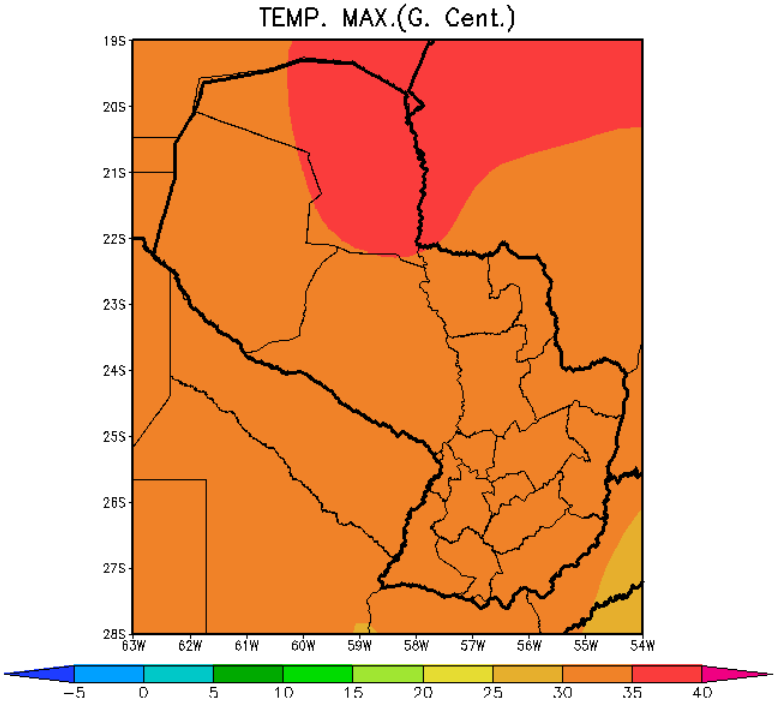
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-200 -100 -50 -25 0 25 50 100 200


TEMP. MAX.(G. Cent.)
19S
20S
21S
22S
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26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
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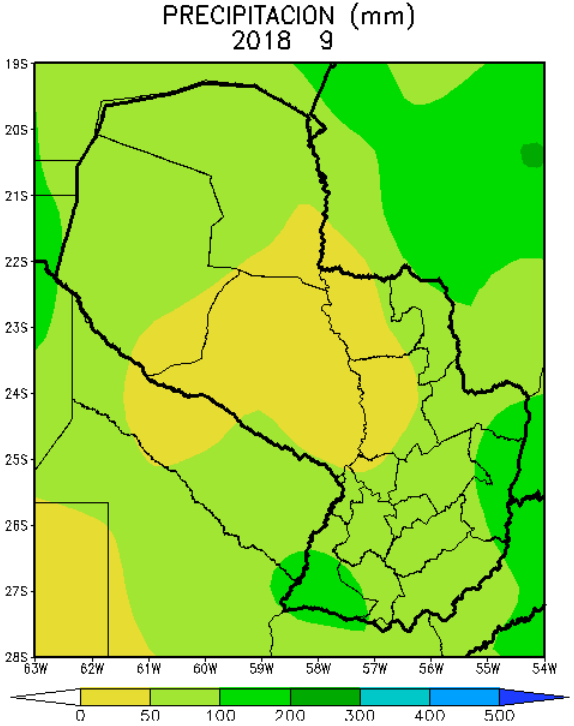
PRECIPITACION (mm)
2018 9
19S
20S
21S
22S
23S
24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
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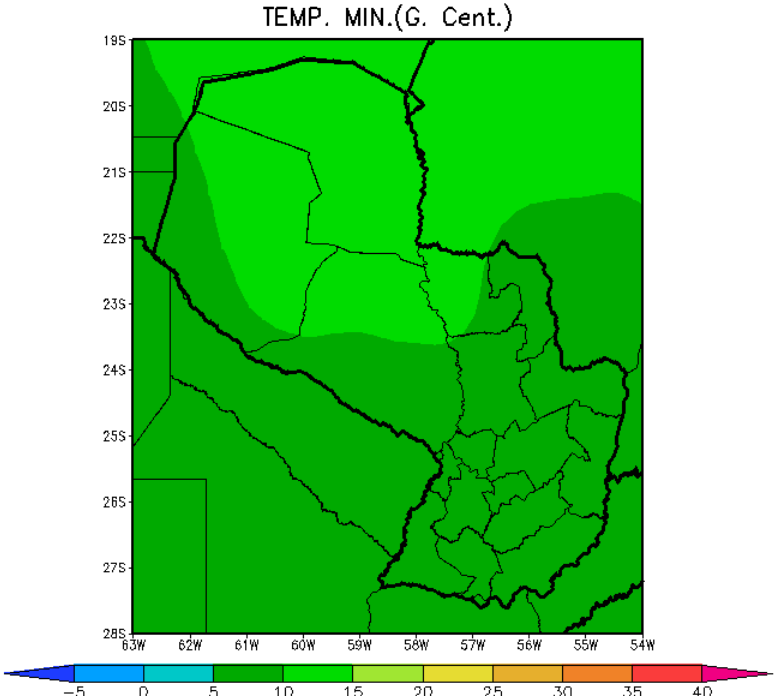
TEMP. MIN.(G. Cent.)
19S
20S
21S
22S
23S
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25S
26S
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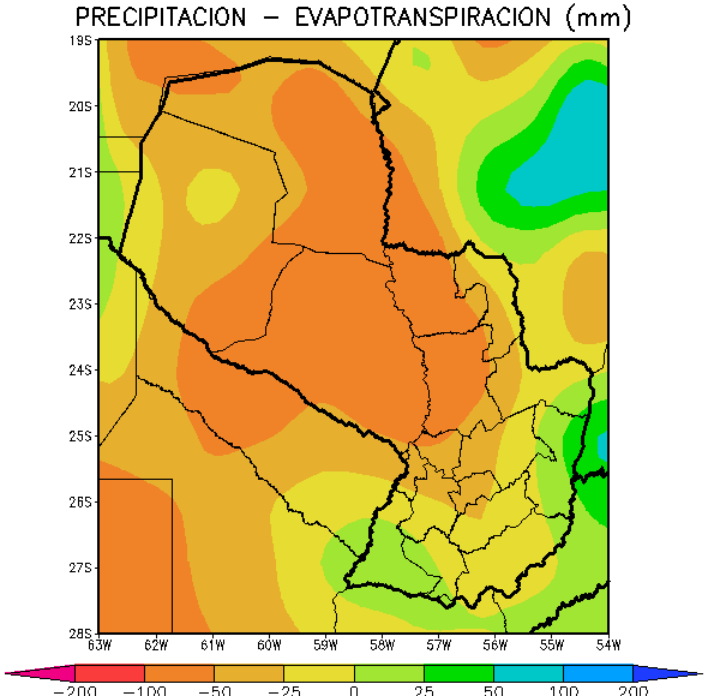
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-5 0 5 10 15 20 25 30 35 40


PRECIPITACION - EVAPOTRANSPIRACION (mm)
19S
20S
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22S
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24S
25S
26S
27S
28S
63W 62W 61W 60W 59W 58W 57W 56W 55W 54W
-200 -100 -50 -25 0 25 50 100 200

MUCHAS GRACIAS

POR SU ATENCION

edmasi@fibertel.com.ar