2009-10 Winter Season Forecast

Pennsylvania Natural Gas Summit
November 17, 2009

Joe Bastardi
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Chief Hurricane and Long-range Forecaster
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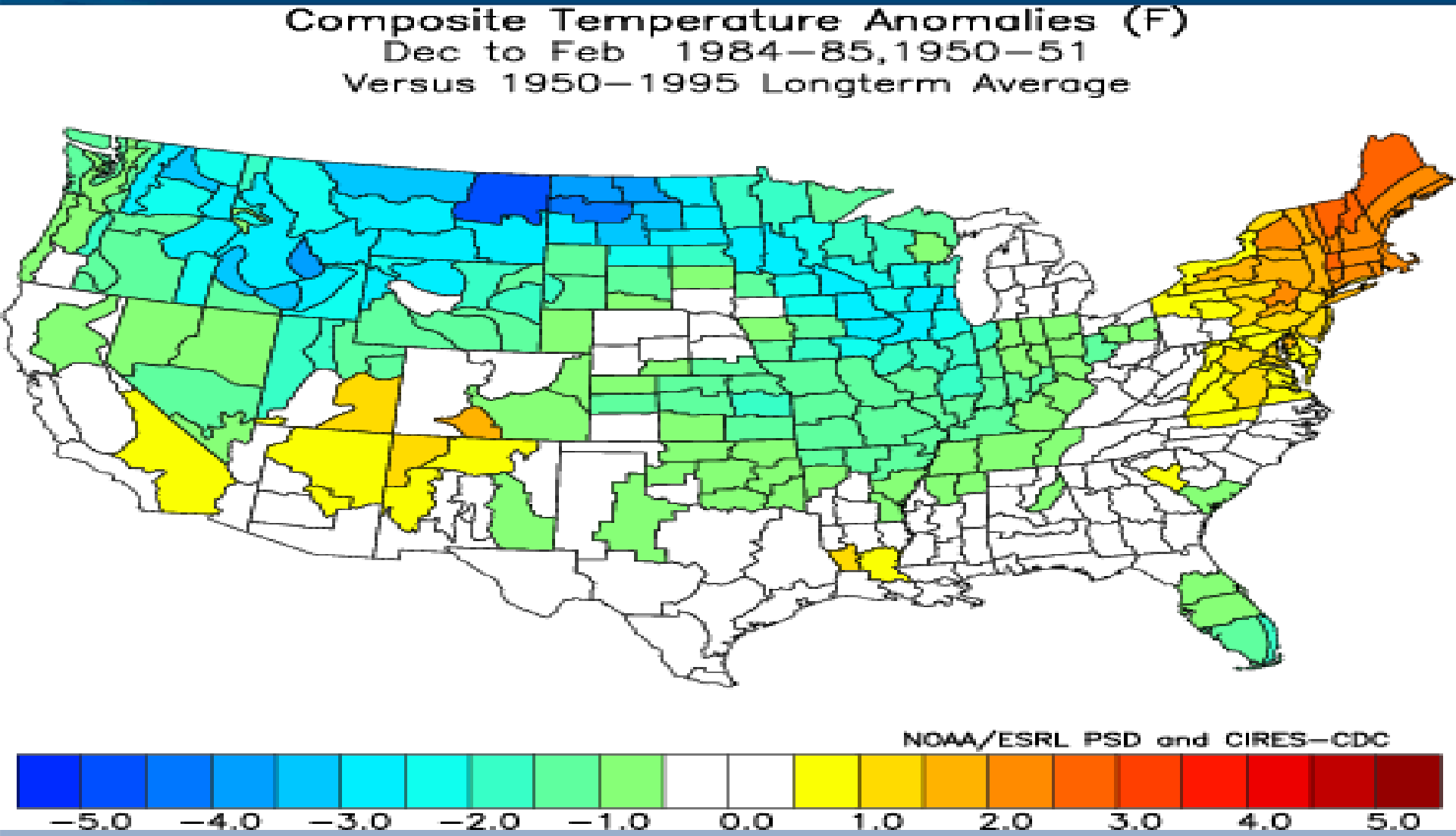
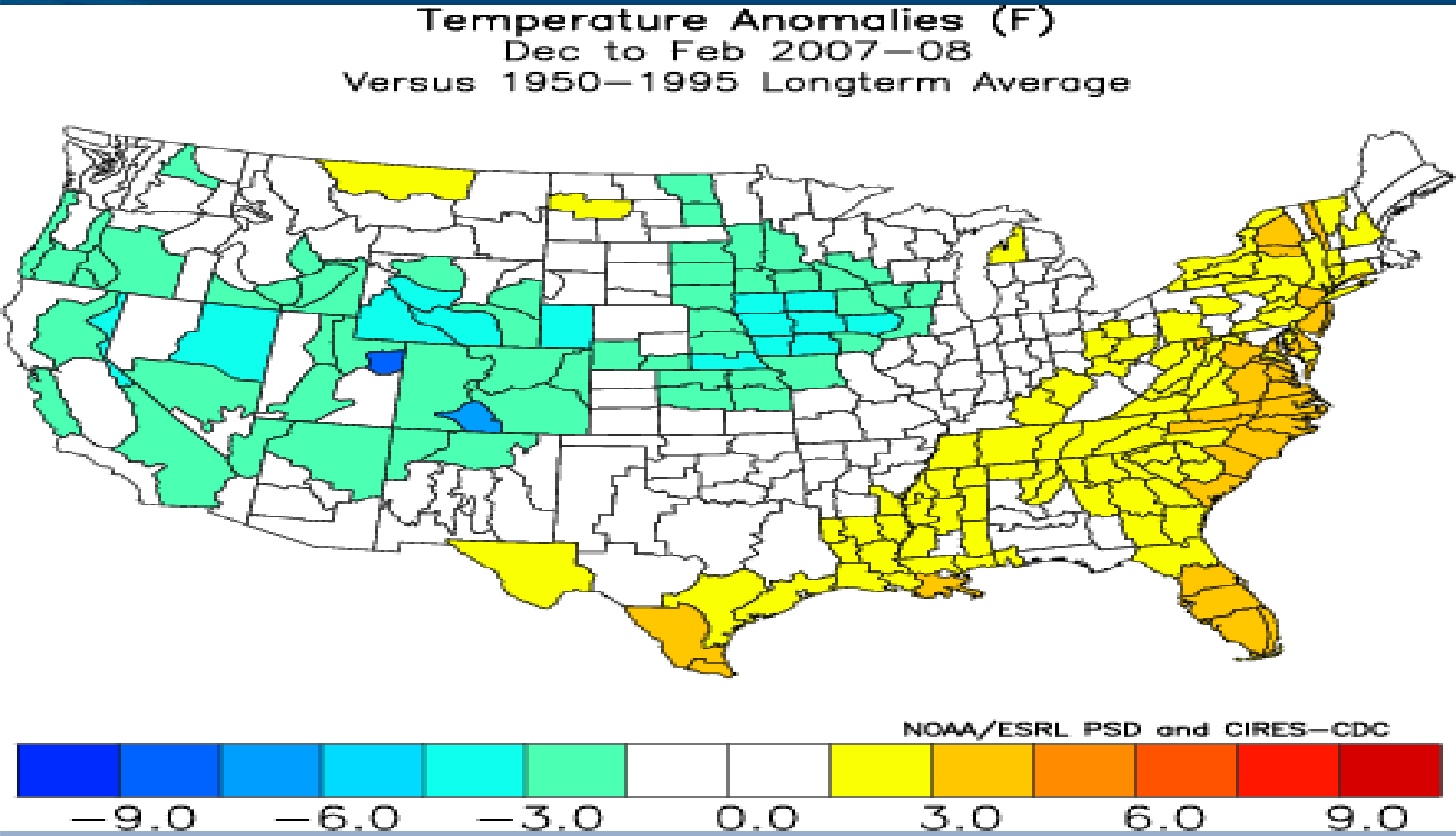
Recent Winters

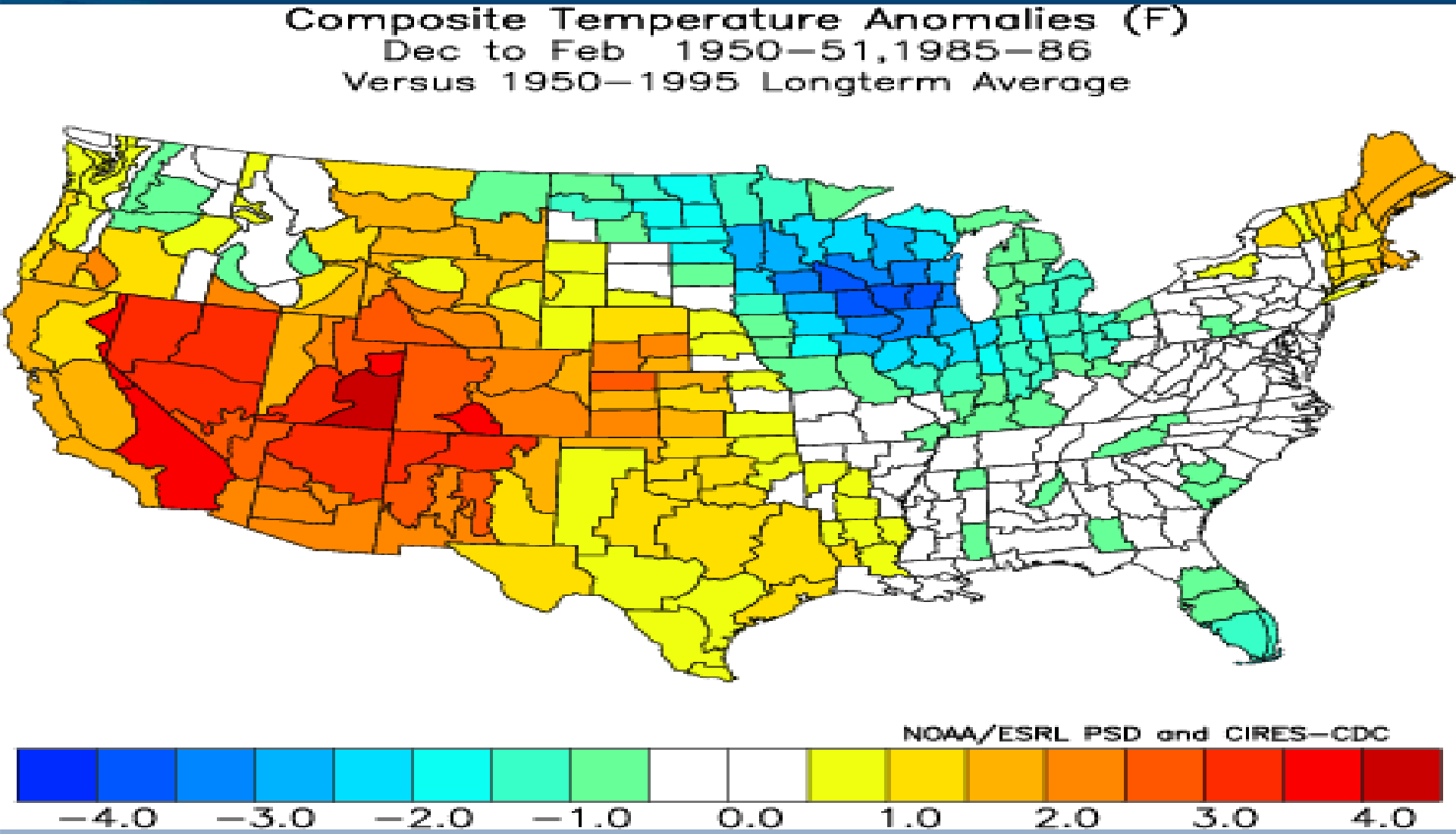
Winter 07-08 Analogues



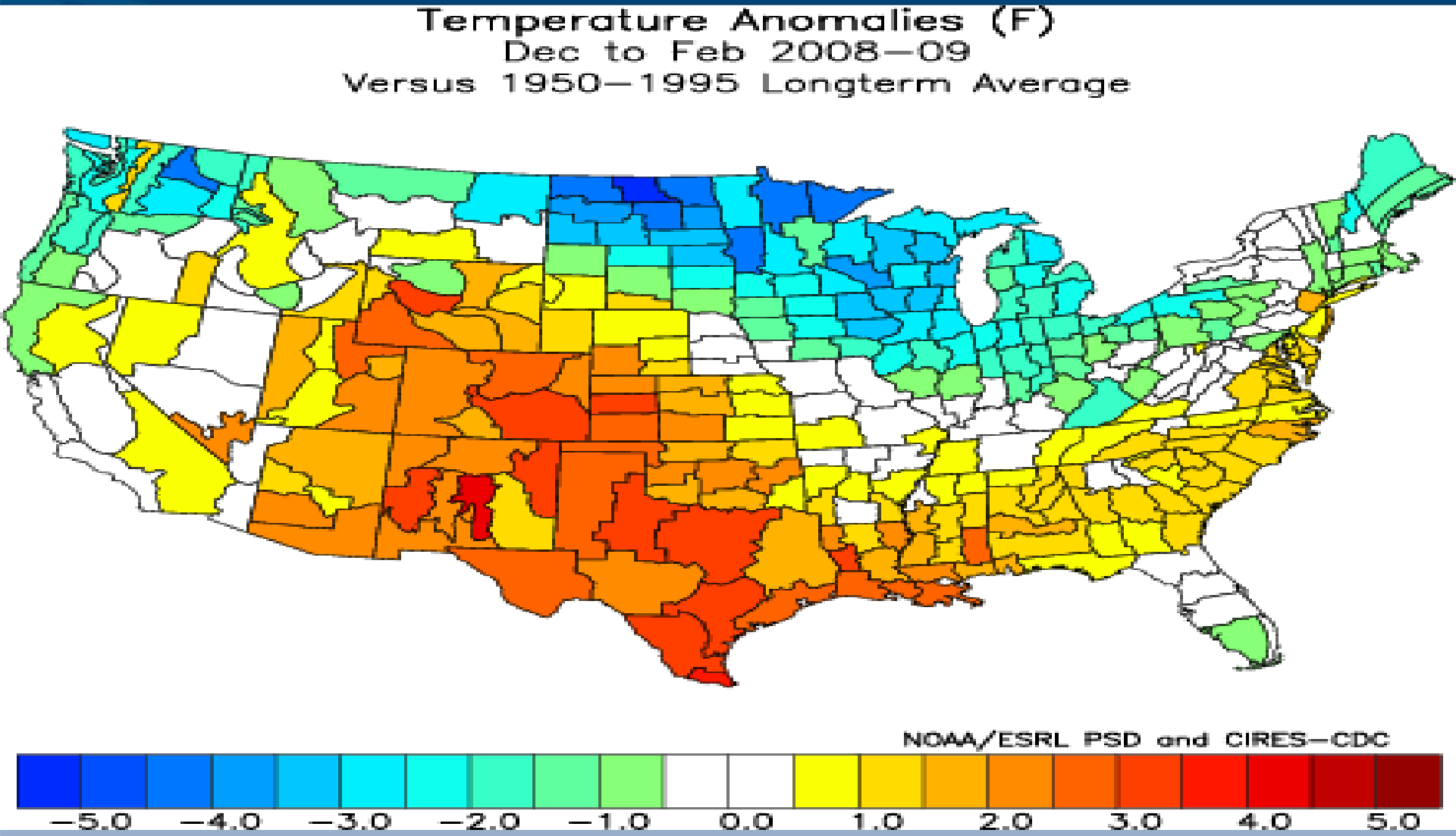
Winter 07-08 Actual



Winter 08-09 Analogues

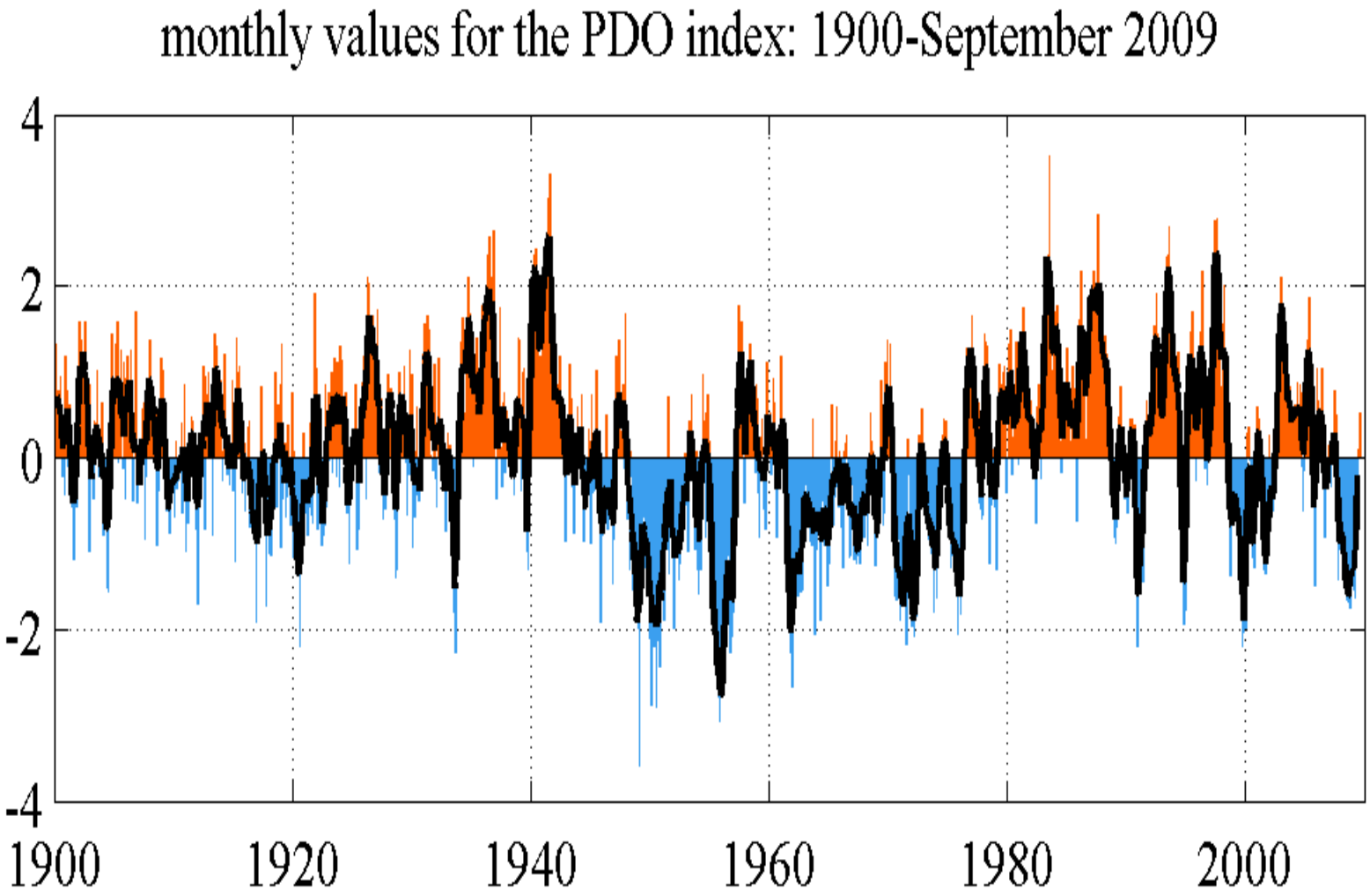


Winter 08-09 Actual



Factors for Winter 09-10

PDO


monthly values for the PDO index: 1900-September 2009
4
2
0
-2
-4
1900
1920
1940
1960
1980
2000

Waning Niño

ECMWF Seasonal Forecast

Mean forecast SST anomaly

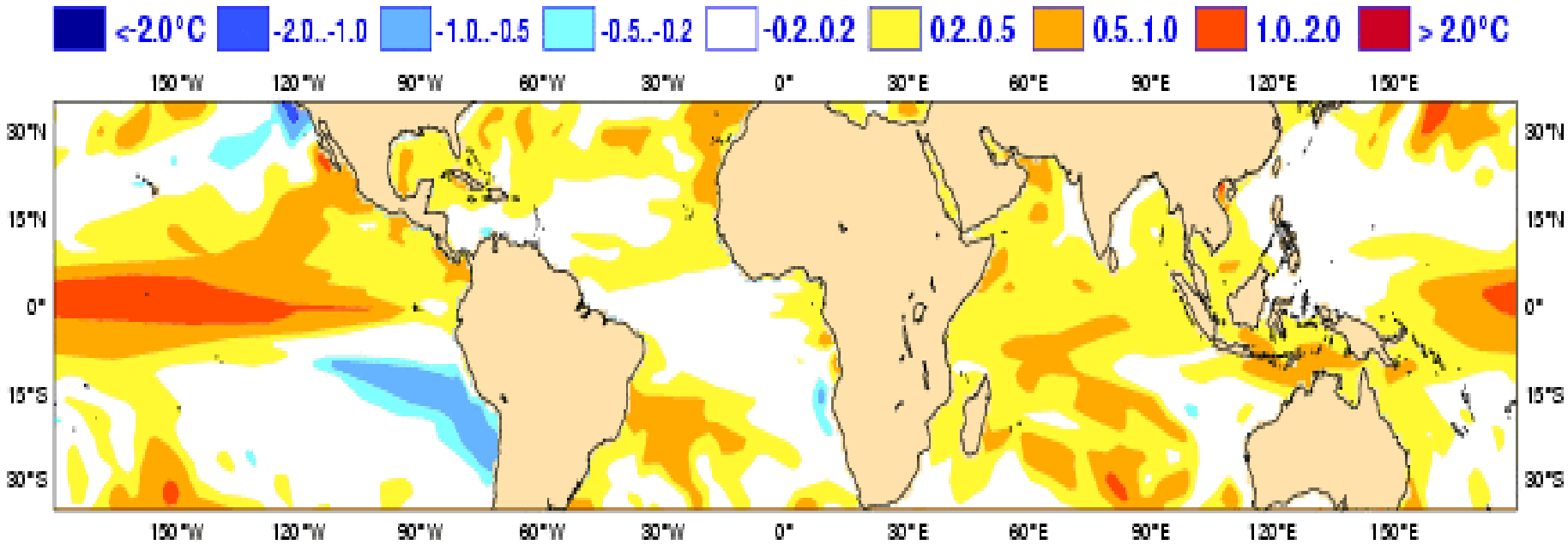
Forecast start reference is 01/10/09

Ensemble size = 41, climate size = 275

System 3

NDJ 2009/10

No significance test applied



Forecast issue date: 15/10/2009

©ECMWF

SST 1

ECMWF Seasonal Forecast

Mean forecast SST anomaly

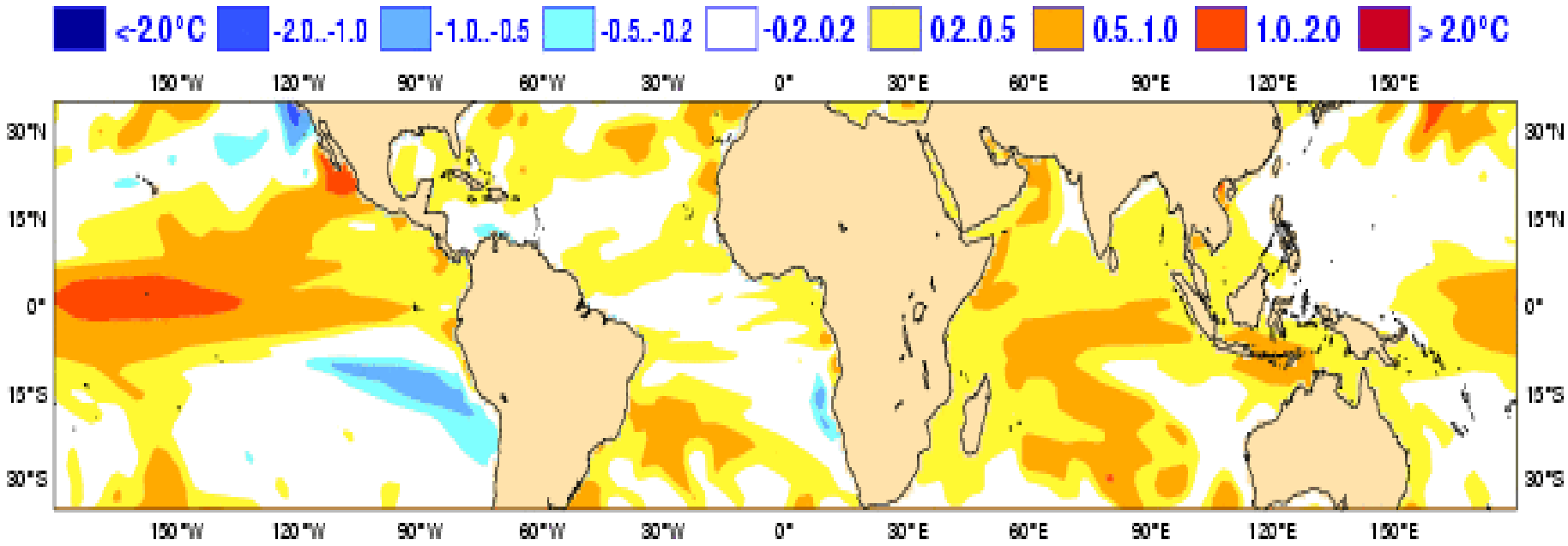
Forecast start reference is 01/10/09

Ensemble size = 41, climate size = 275

System 3

DJF 2009/10

No significance test applied



Forecast issue date: 15/10/2009

©ECMWF

SST 2

ECMWF Seasonal Forecast

Mean forecast SST anomaly

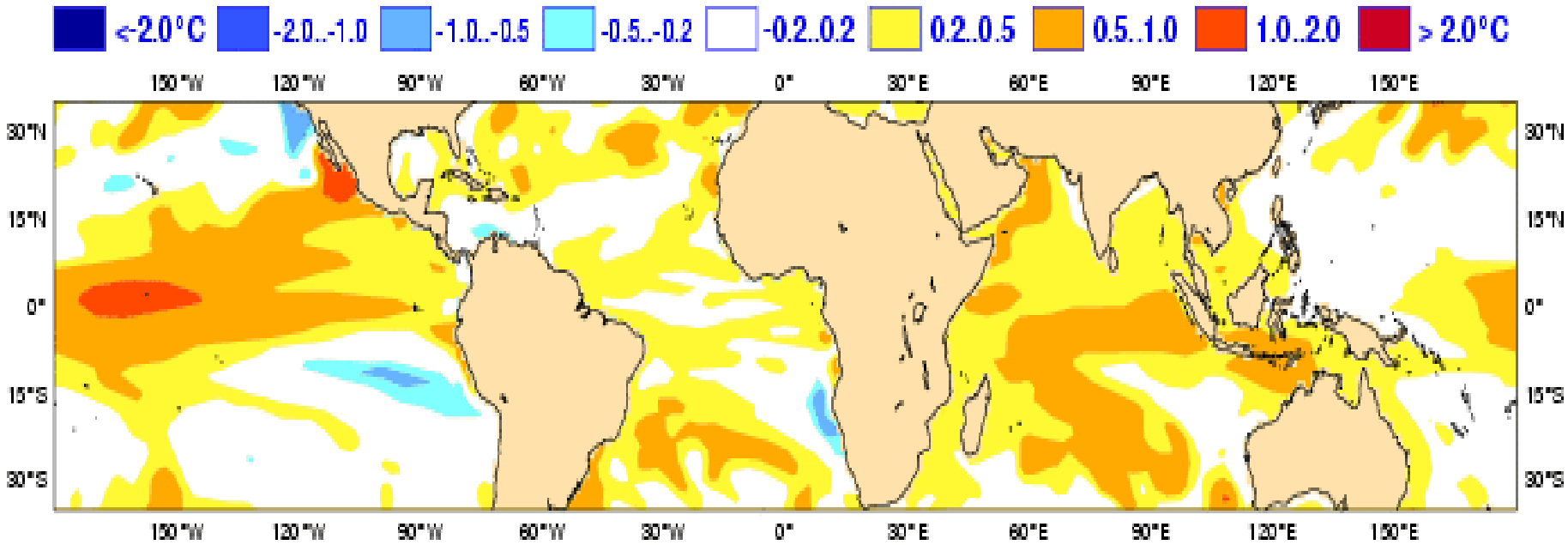
System 3

JFM 2010

Forecast start reference is 01/10/09

Ensemble size = 41, climate size = 275

No significance test applied



Forecast issue date: 15/10/2009

SST 3

ECMWF Seasonal Forecast

Mean forecast SST anomaly

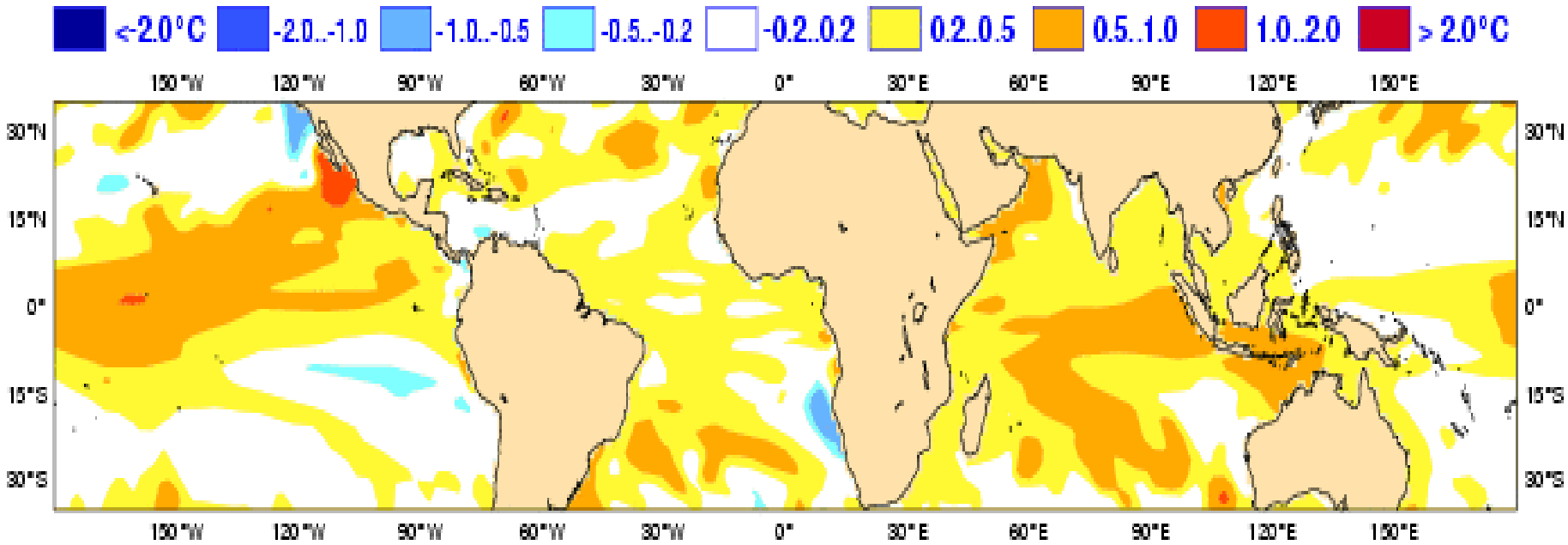
Forecast start reference is 01/10/09

Ensemble size = 41, climate size = 275

System 3

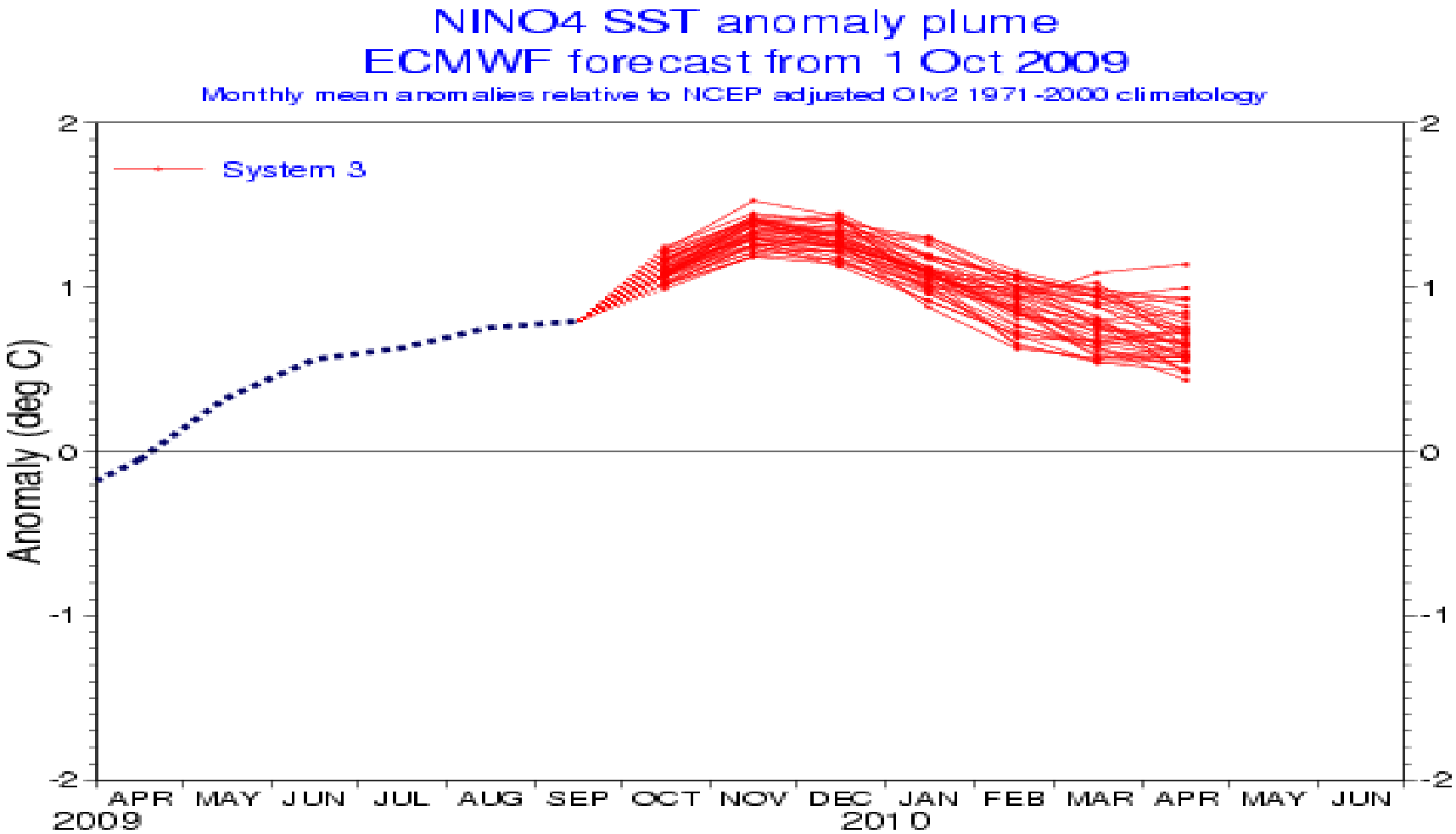
FMA 2010

No significance test applied



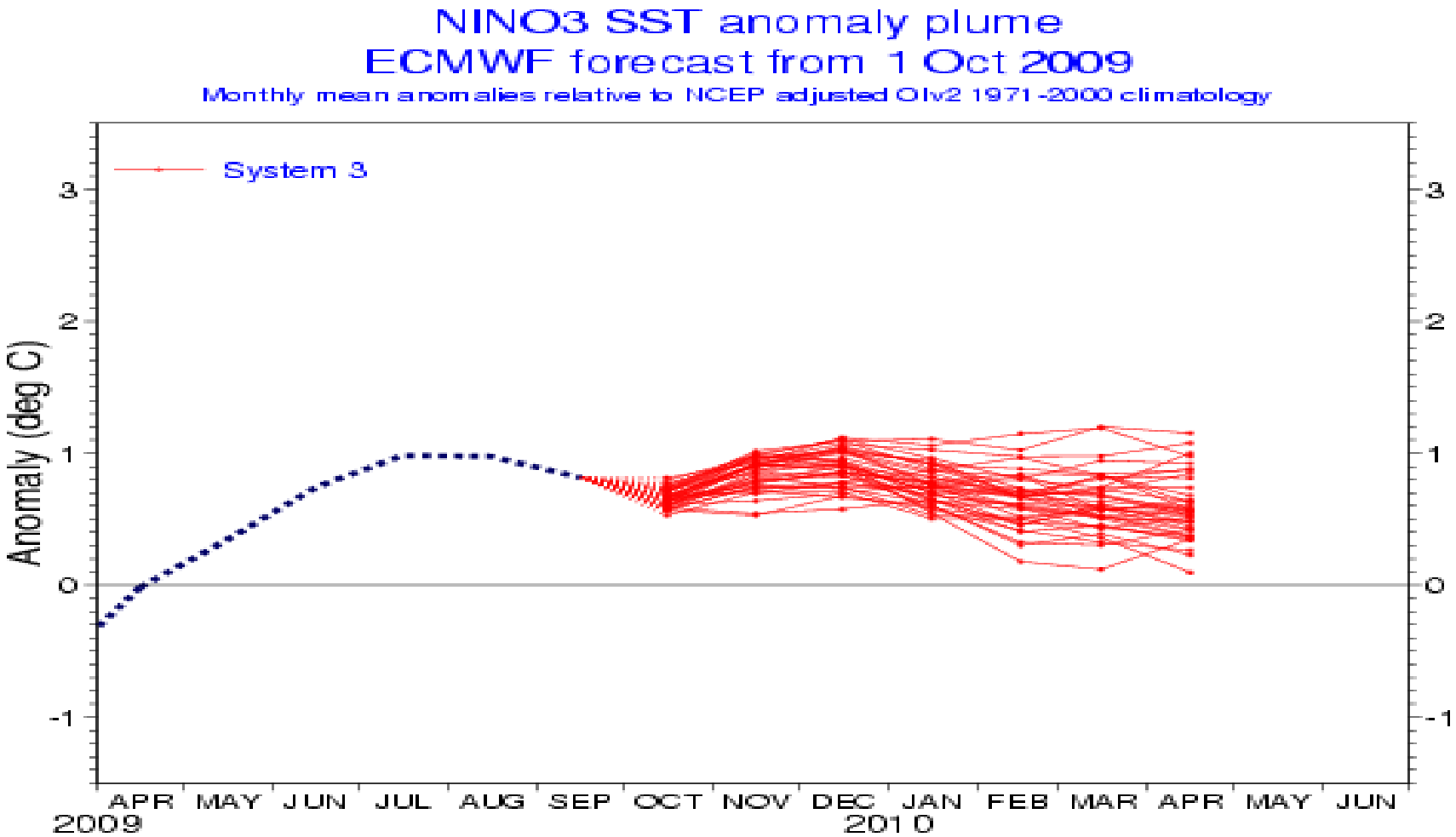
Forecast issue date: 15/10/2009

NINO4, Farthest West



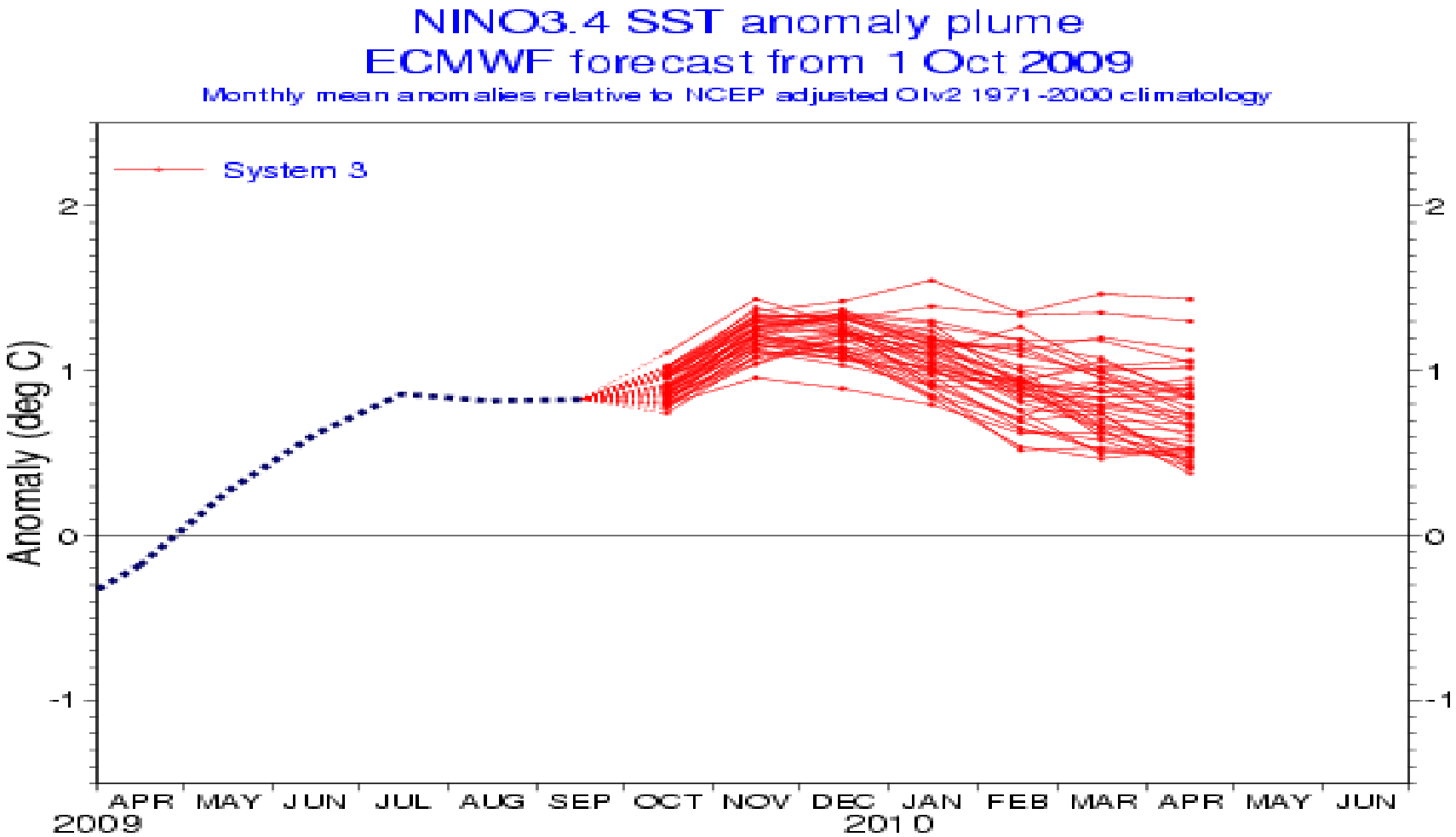
Forecast issue date: 15 Oct 2009

NINO3



Forecast issue date: 15 Oct 2009

NINO3.4

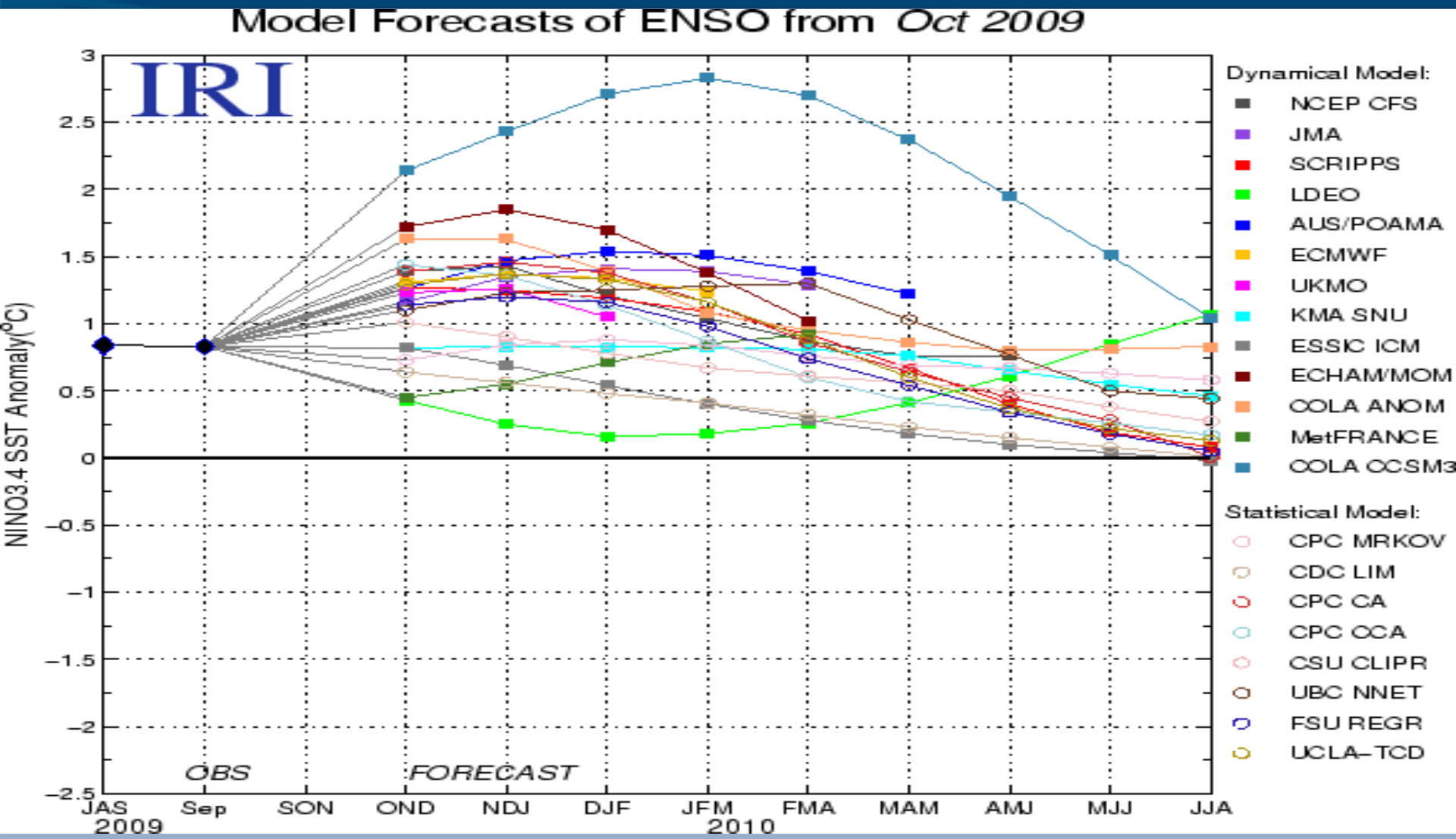


Forecast issue date: 15 Oct 2009

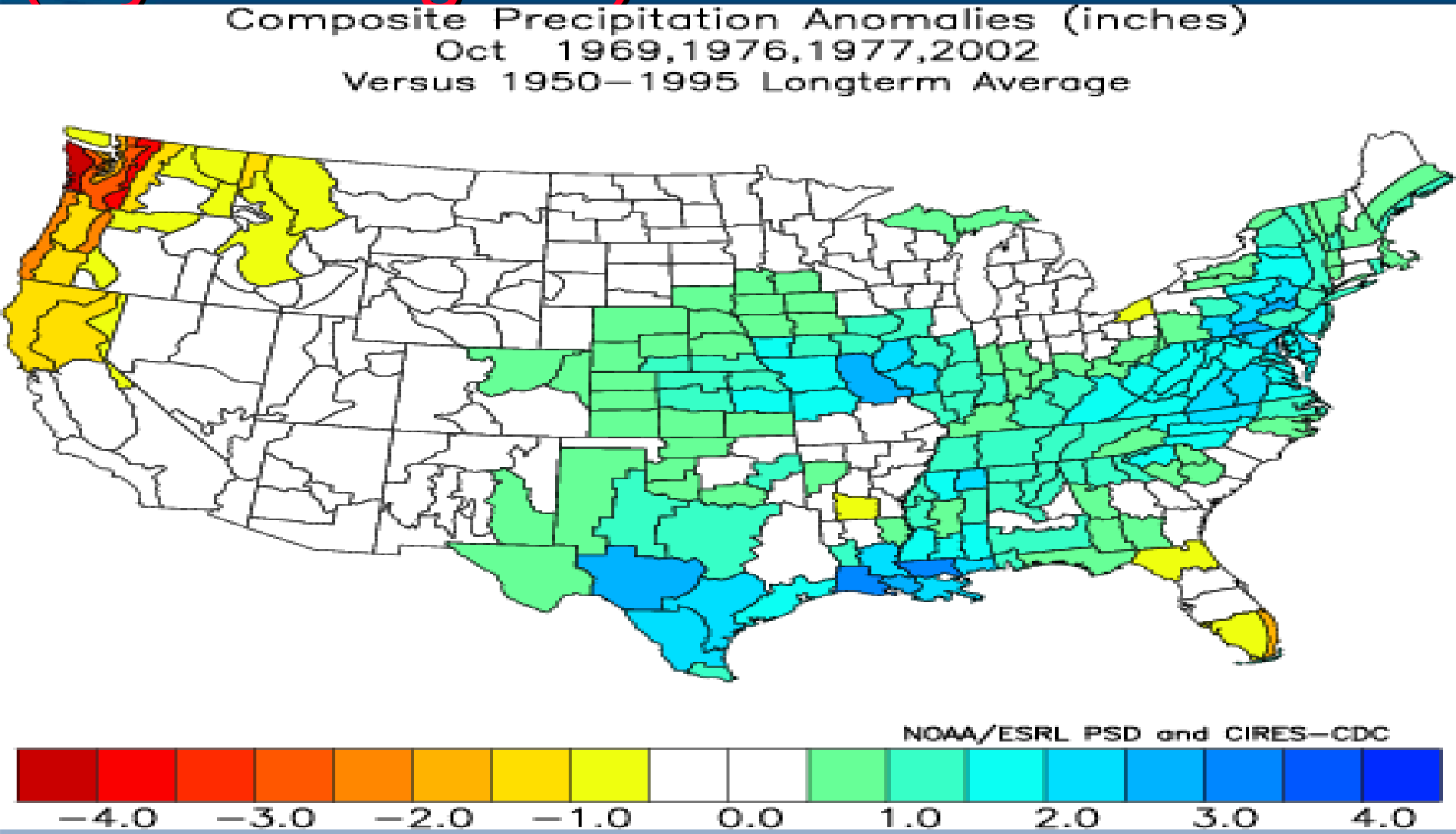
NINO Comments

- Warmest in the western & central areas
- Fading after a November/December peak

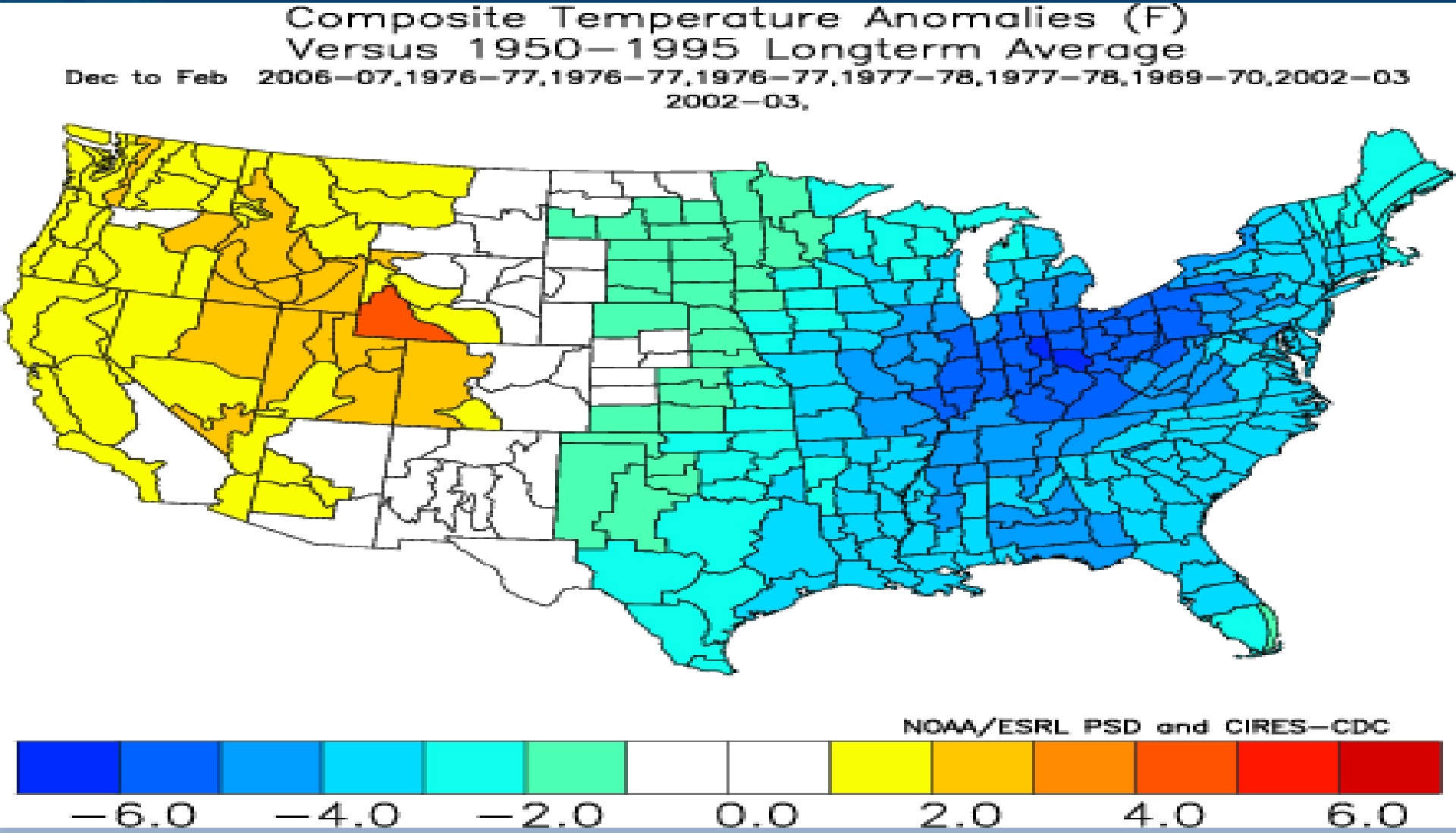
NINO Models


Model Forecasts of ENSO from Oct 2009
IRI
NINO3.4 SST Anomaly(°C)
3
2.5
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
OBS
FORECAST
JAS 2009
Sep
SON
OND
NDJ
DJF
JFM 2010
FMA
MAM
AMJ
MJJ
JJA
Dynamical Model:
NCEP CFS
JMA
SCRIPPS
LDEO
AUS/POAMA
ECMWF
UKMO
KMA SNU
ESSIC ICM
ECHAM/MOM
COLA ANOM
MetFRANCE
COLA CCSM3
Statistical Model:
CPC MRKOV
CDC LIM
CPC CA
CPC OCA
CSU CLIPR
UBC NNET
FSU REGR
UCLA–TCD

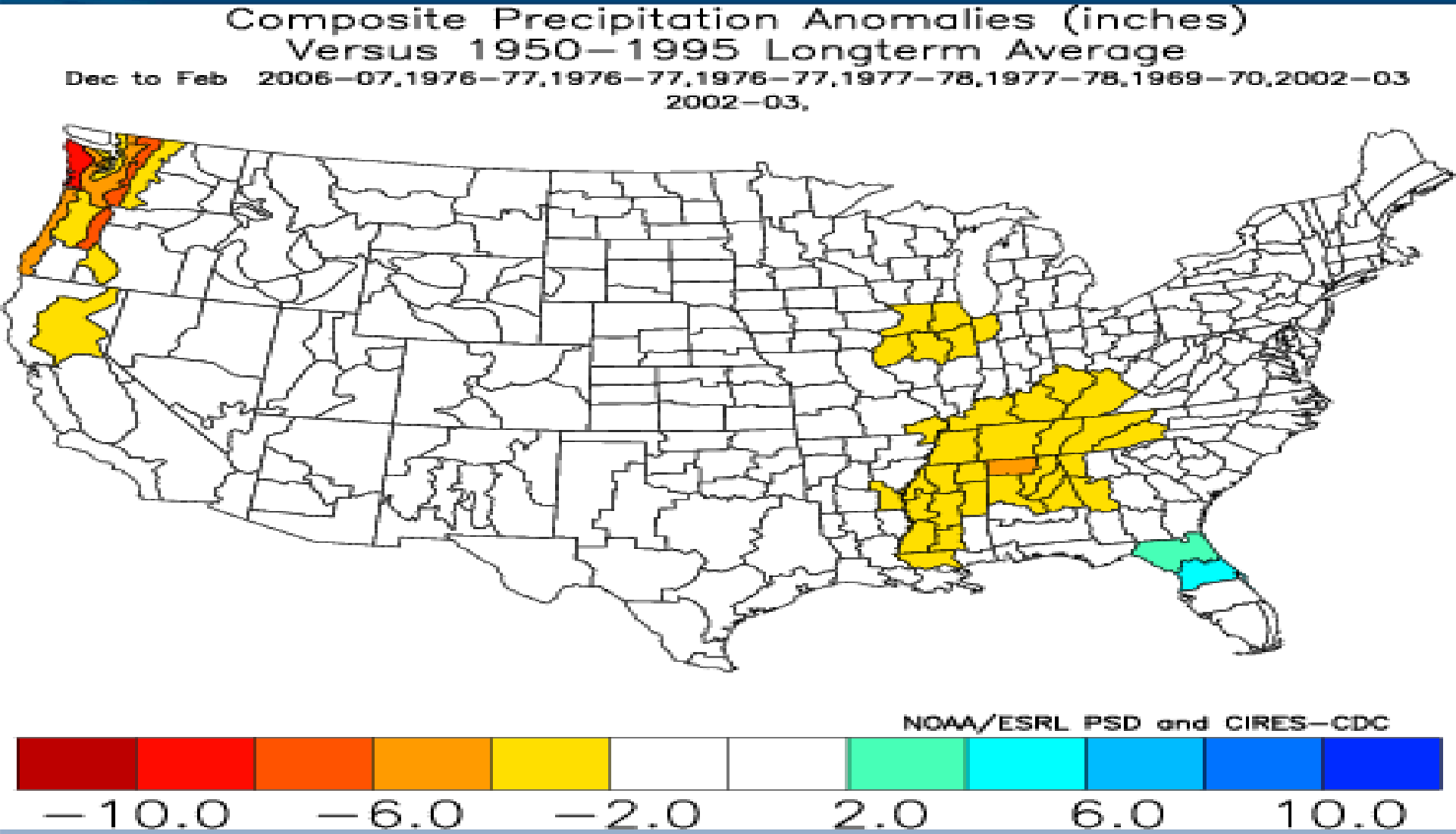
October Precipitation (My Analogues)



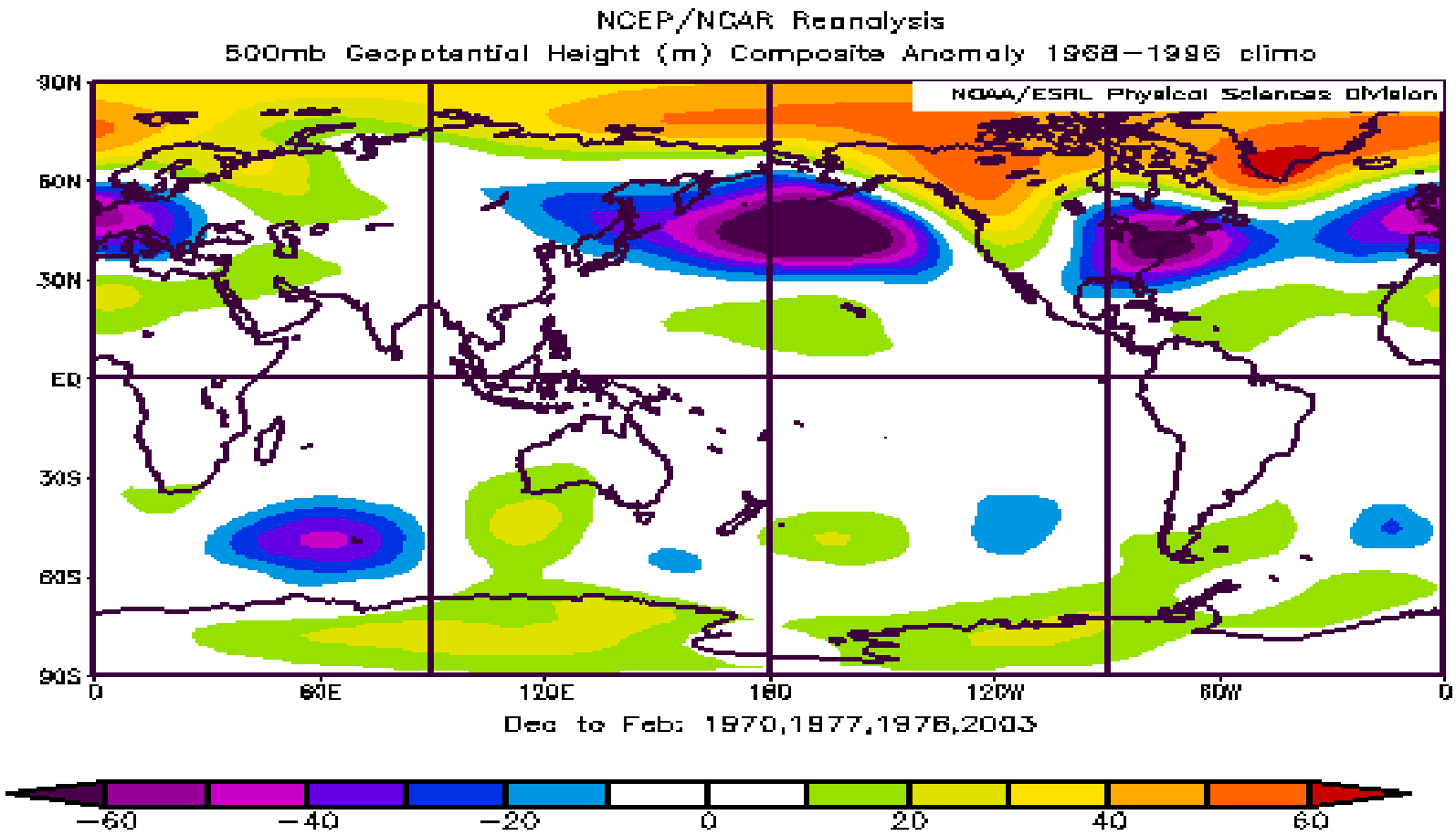
The Following Winters



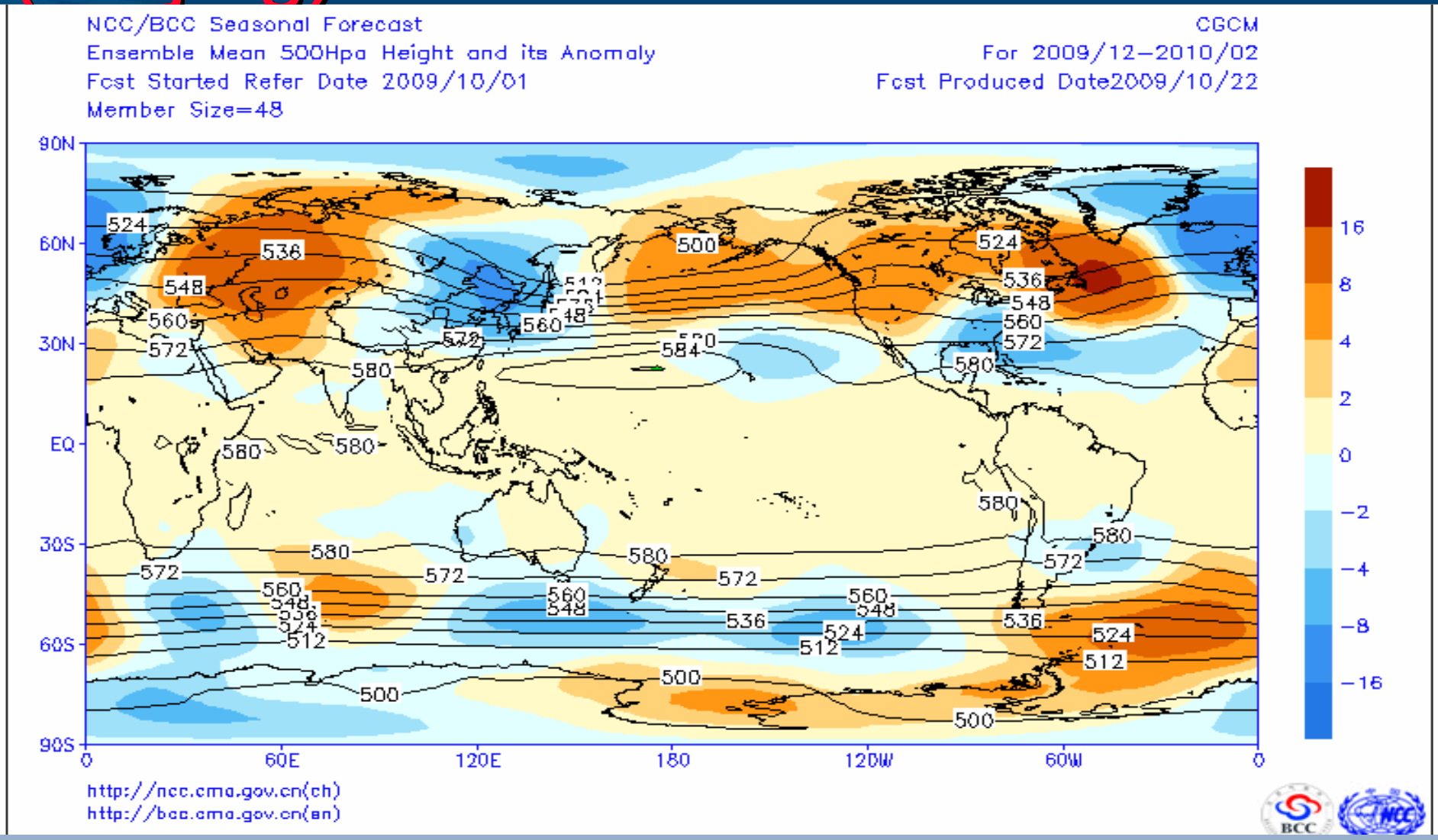
Precipitation



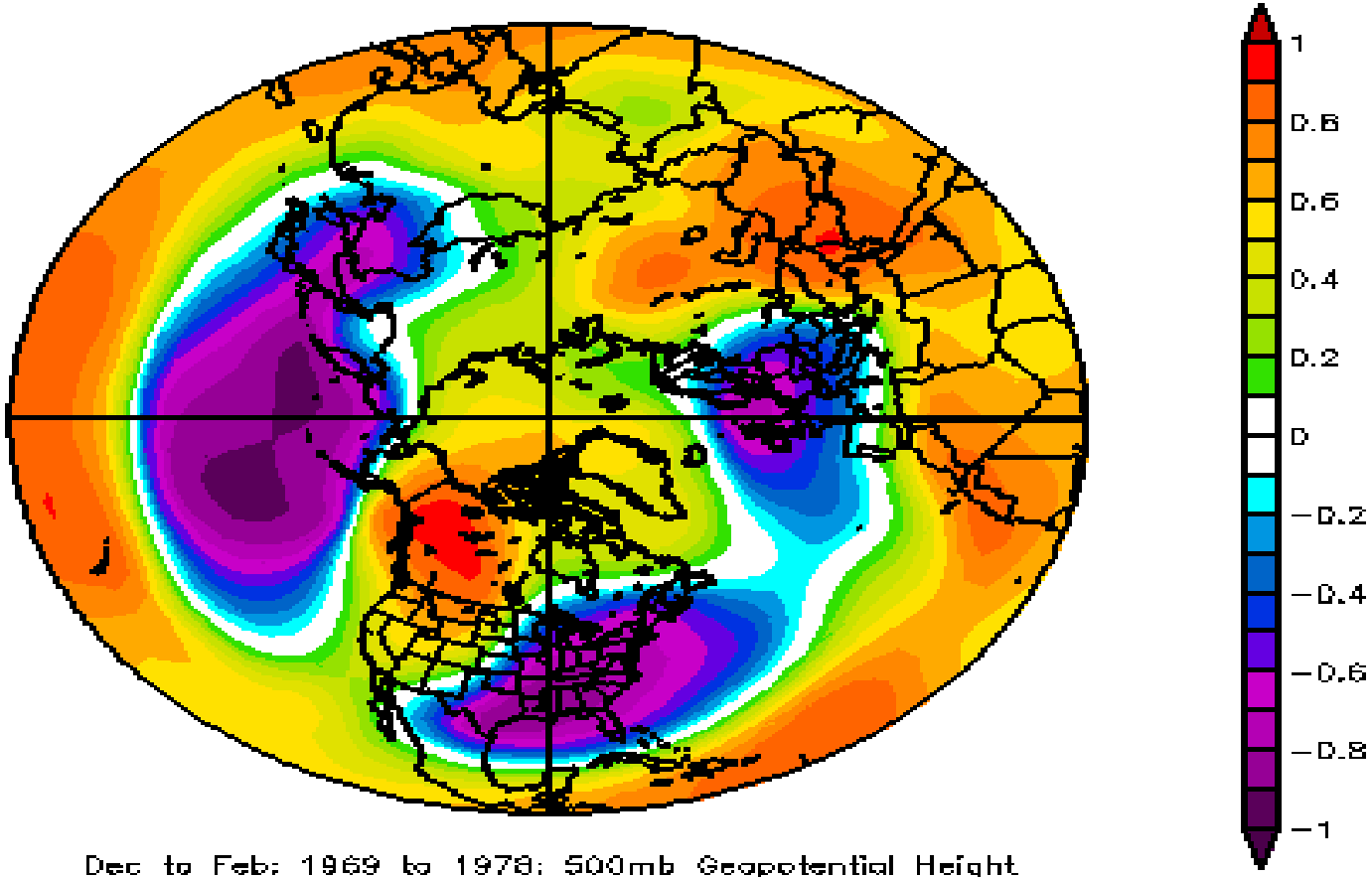
500 MB of Those Winters



500 MB Forecast (Beijing)



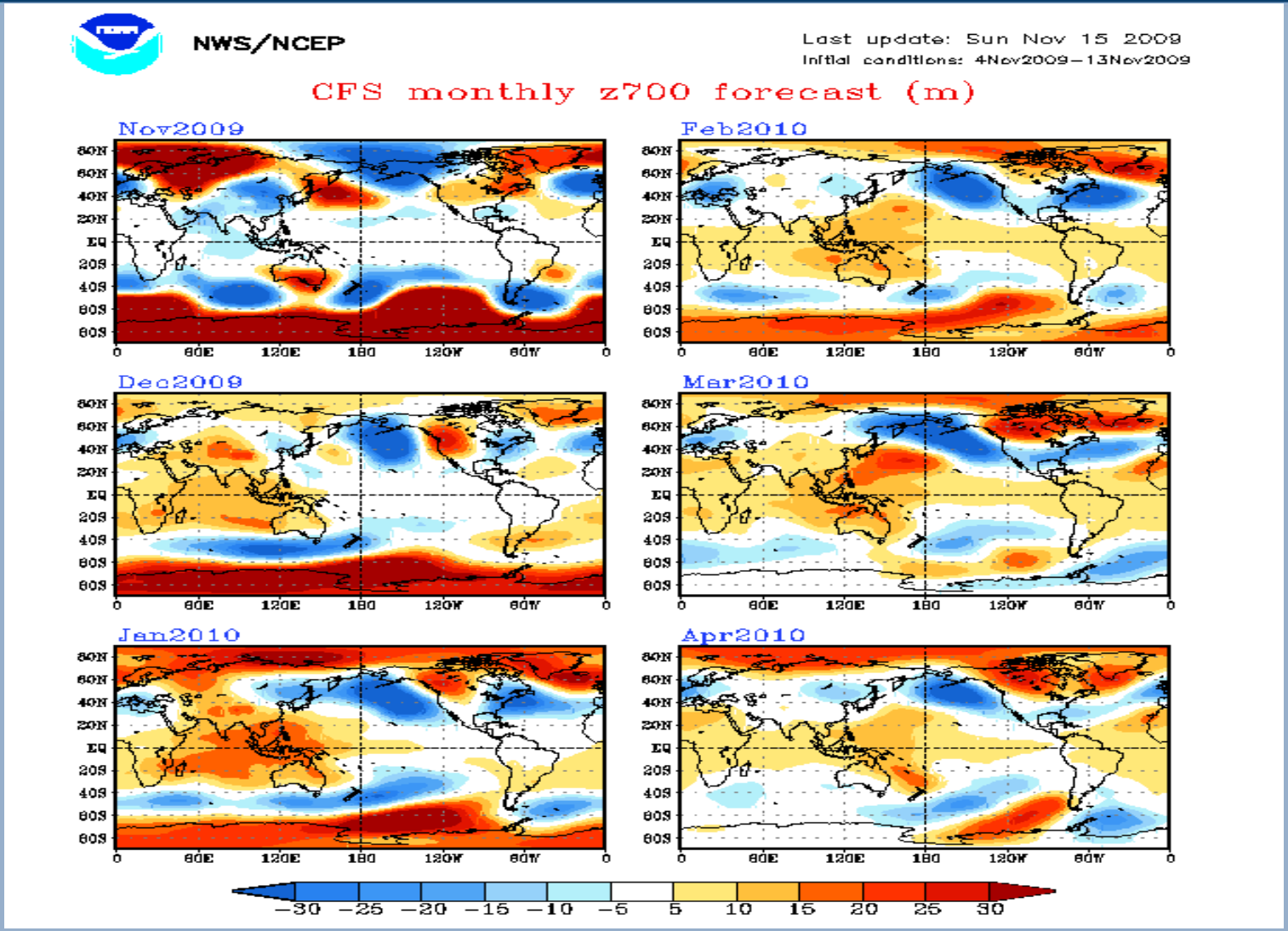
PDO Correlation



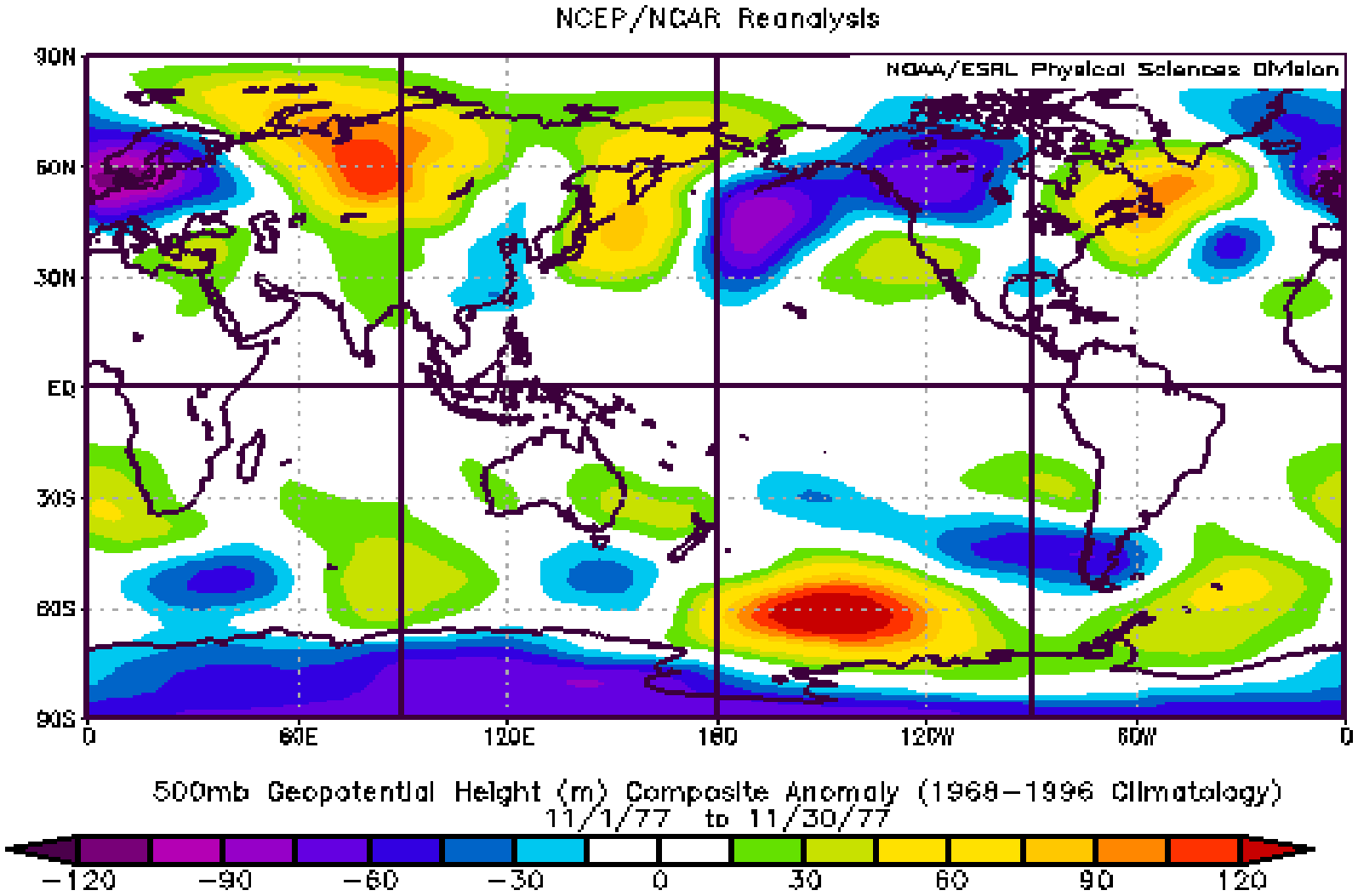
Dec to Feb: 1969 to 1978: 500mb Geopotential Height
Seasonal Correlation w/ Dec to Feb PDO
NCEP/NCAR Reanalysis

NOAA/ESRL Physical Sciences Division

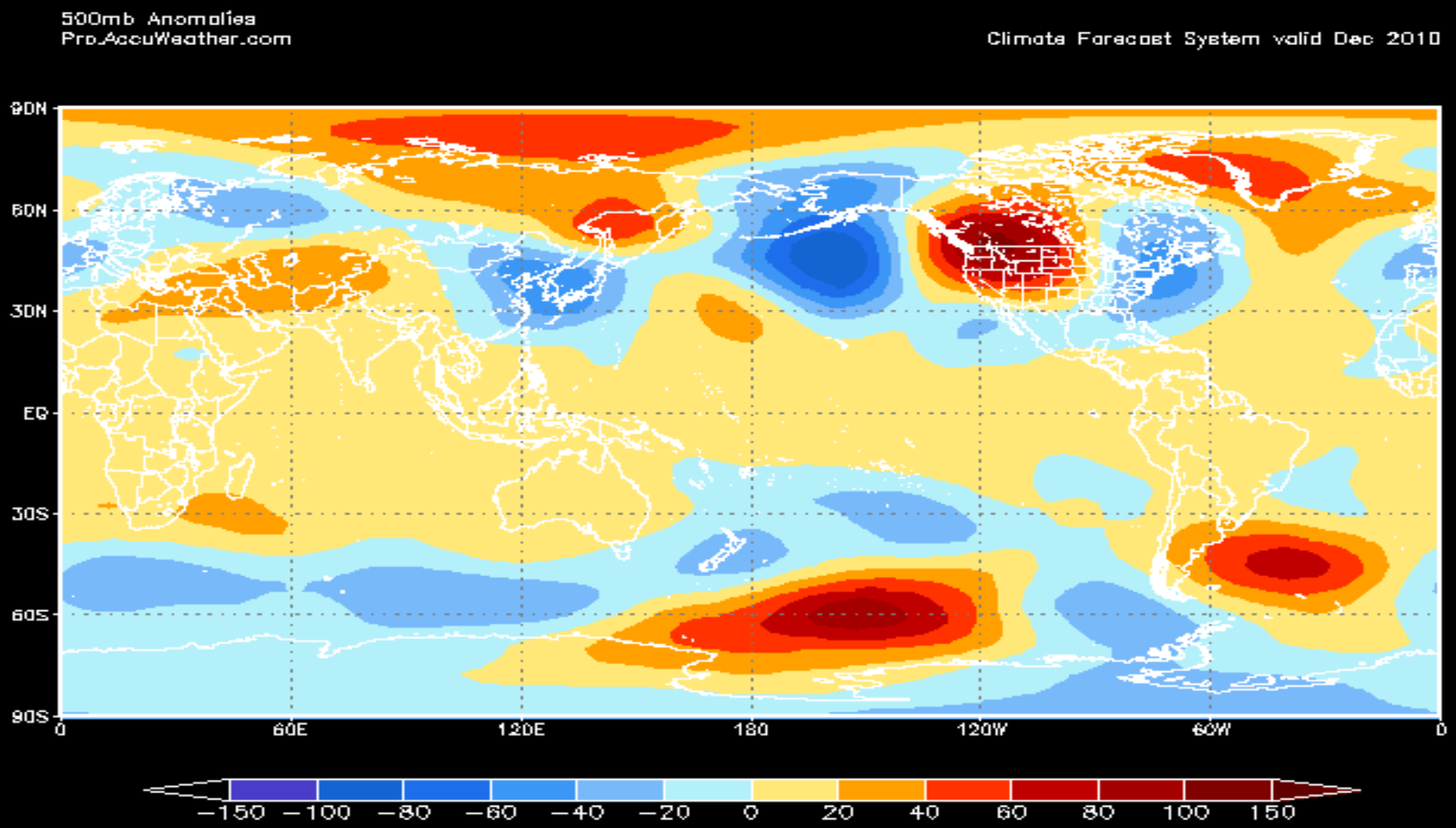
Notice November



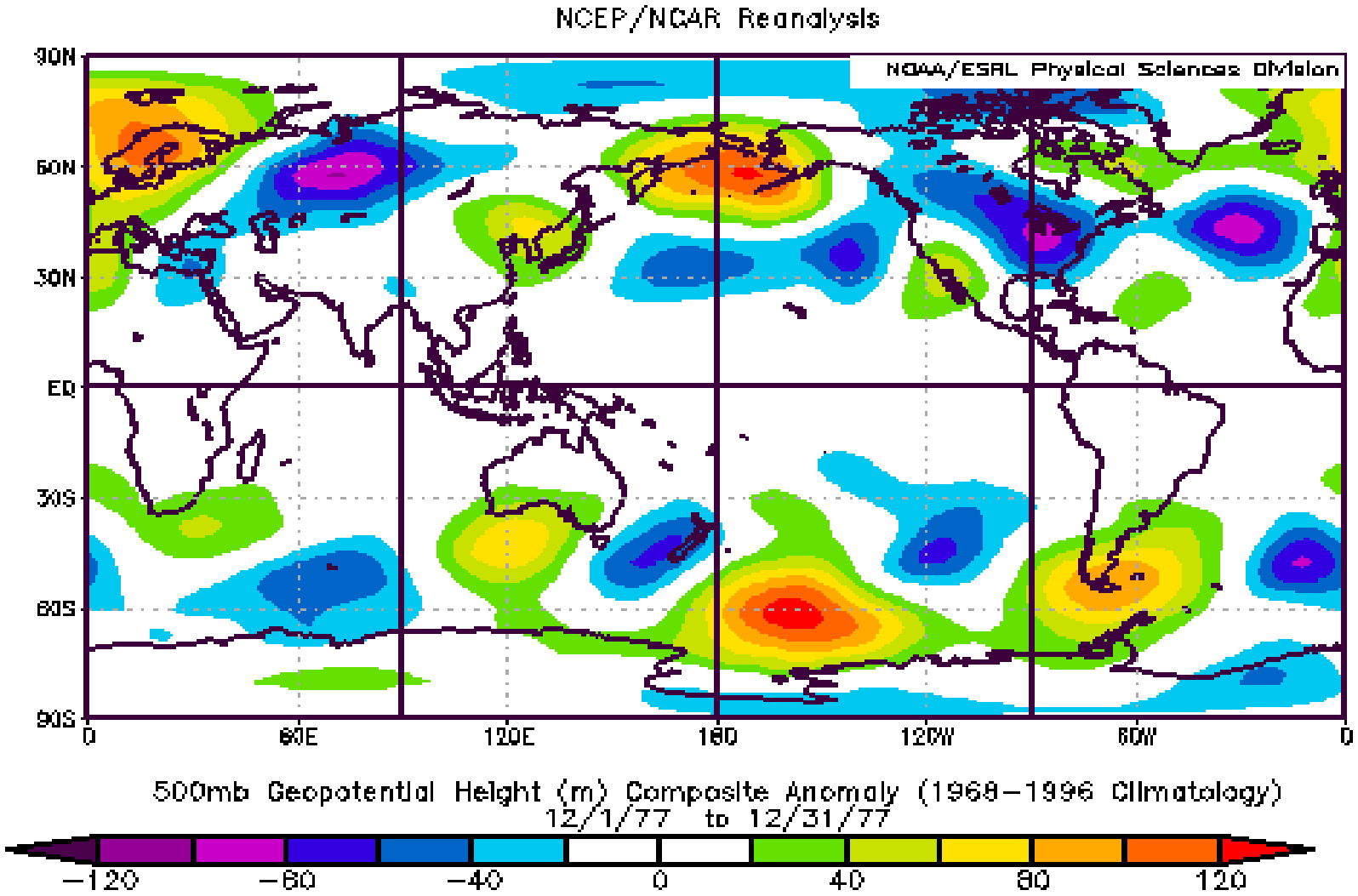
November 1977 …No Big Deal



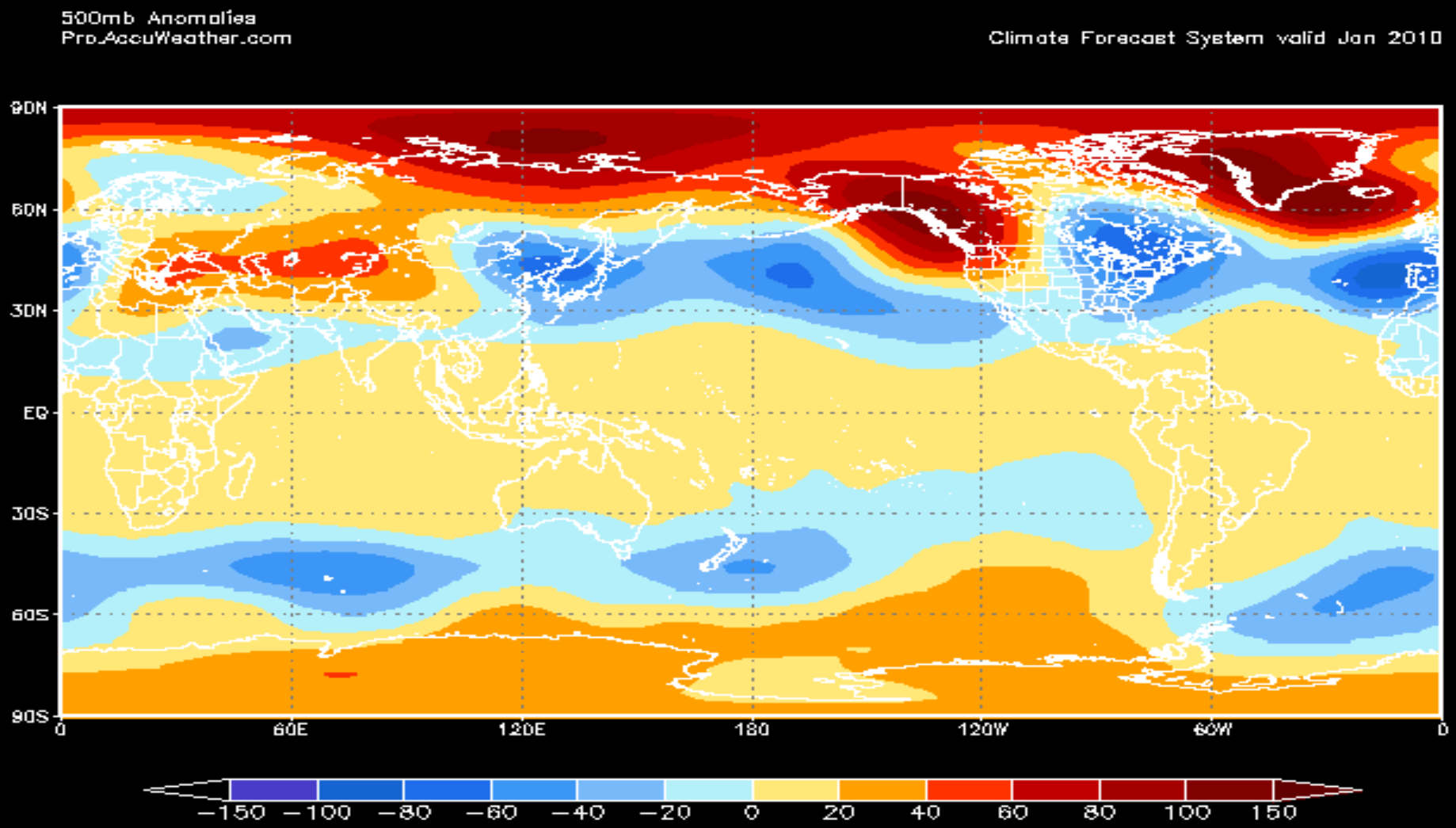
DecemBRRRR!!!


500mb Anomalies
ProAccuWeather.com
Climate Forecast System valid Dec 2010
90N
60N
30N
EQ
30S
60S
90S
0
60E
120E
180
120W
60W
0
−150 −100 −80 −60 −40 −20 0 20 40 60 80 100 150

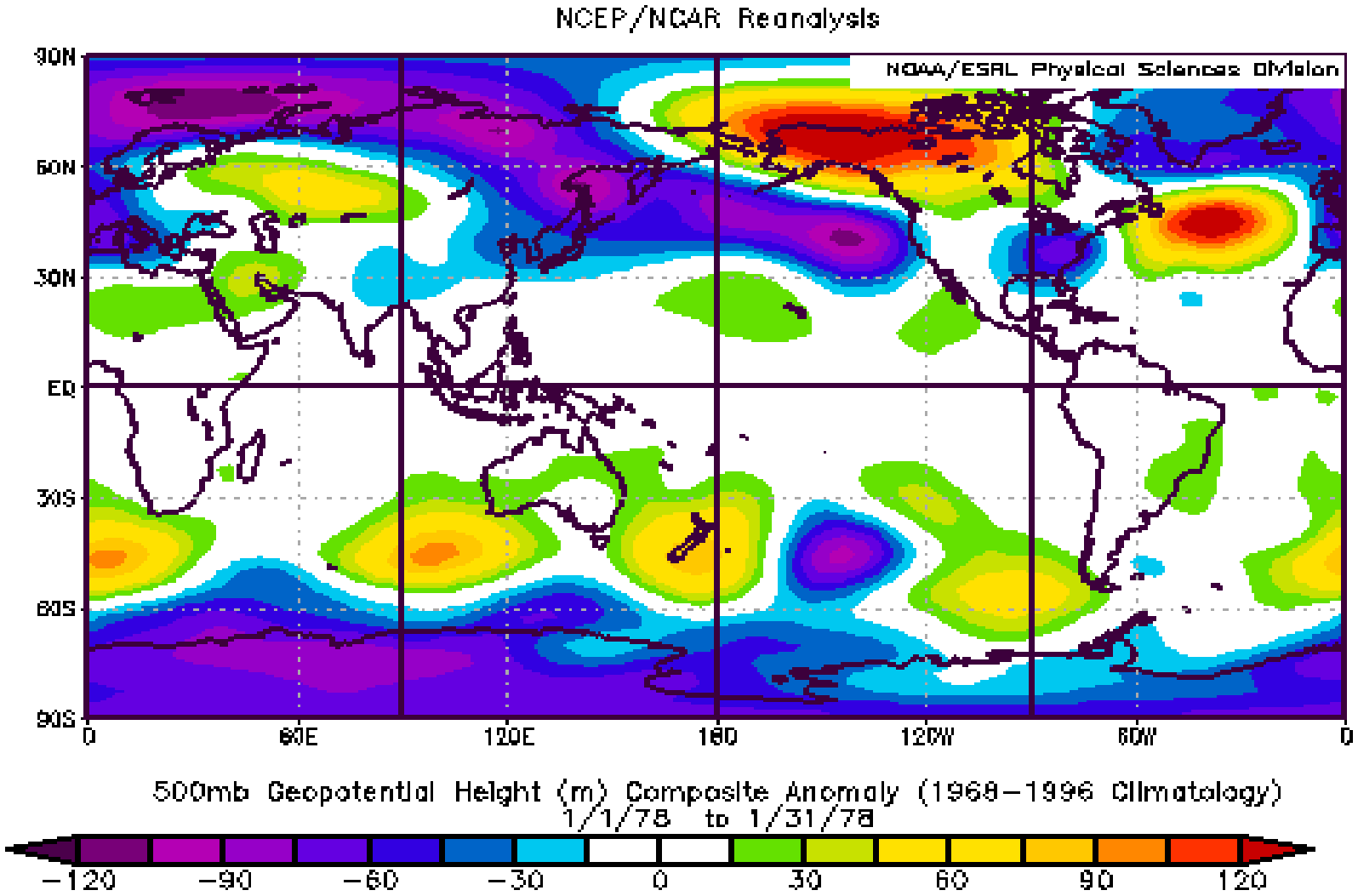
GASP!! (1977 Looked Like This)



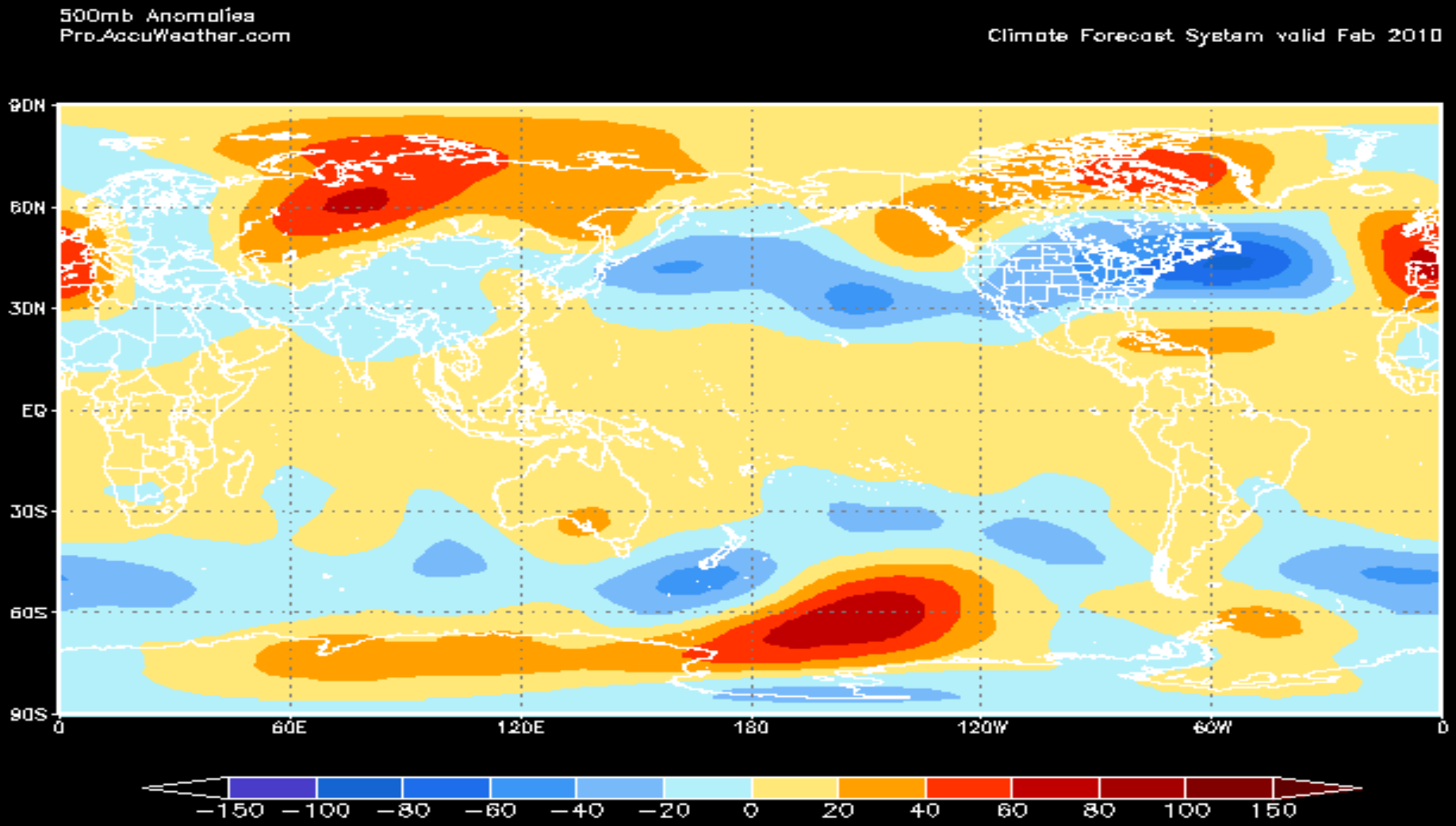
January … BRRR! BRRR!



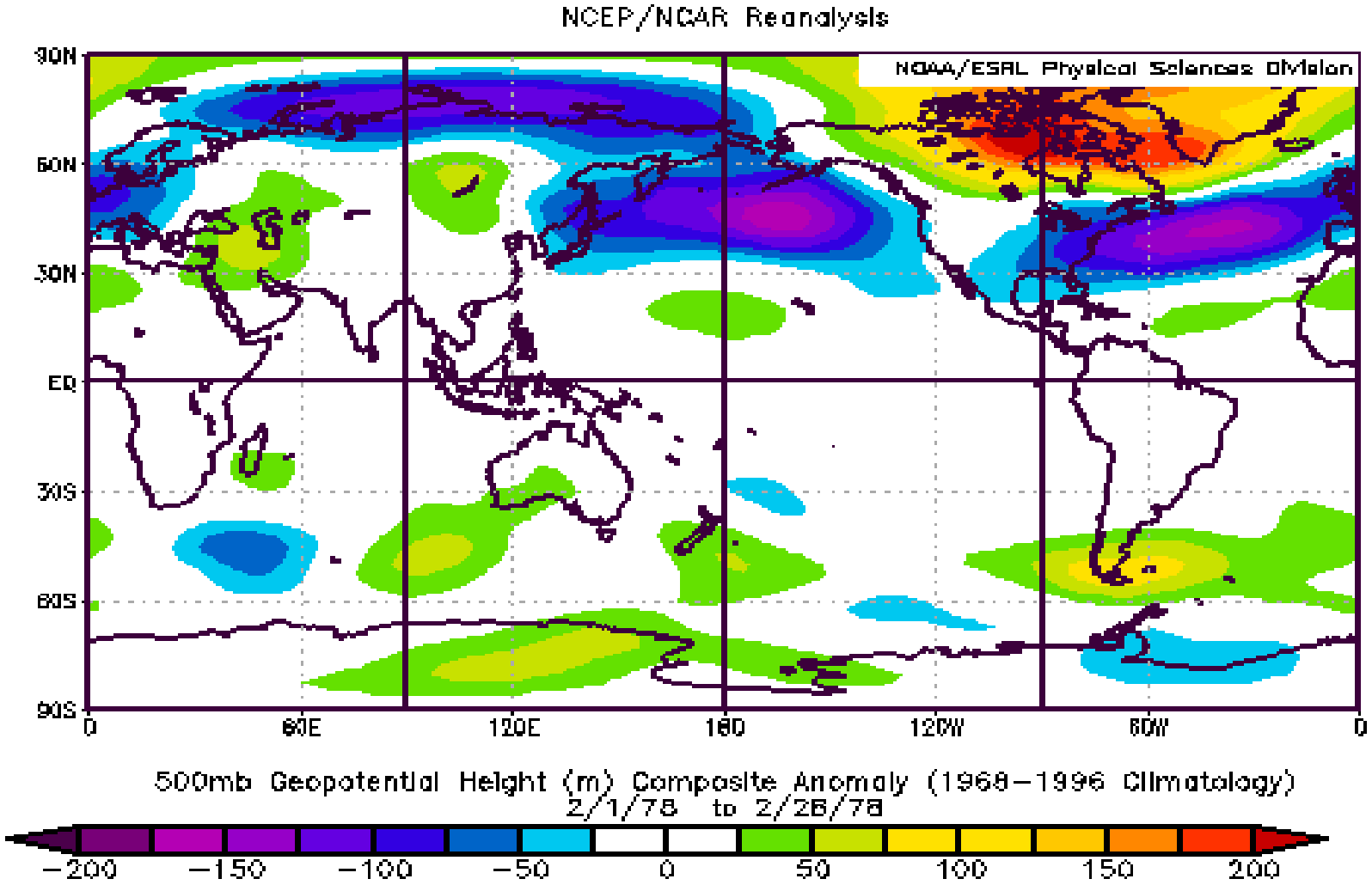
January 1978 … Similar



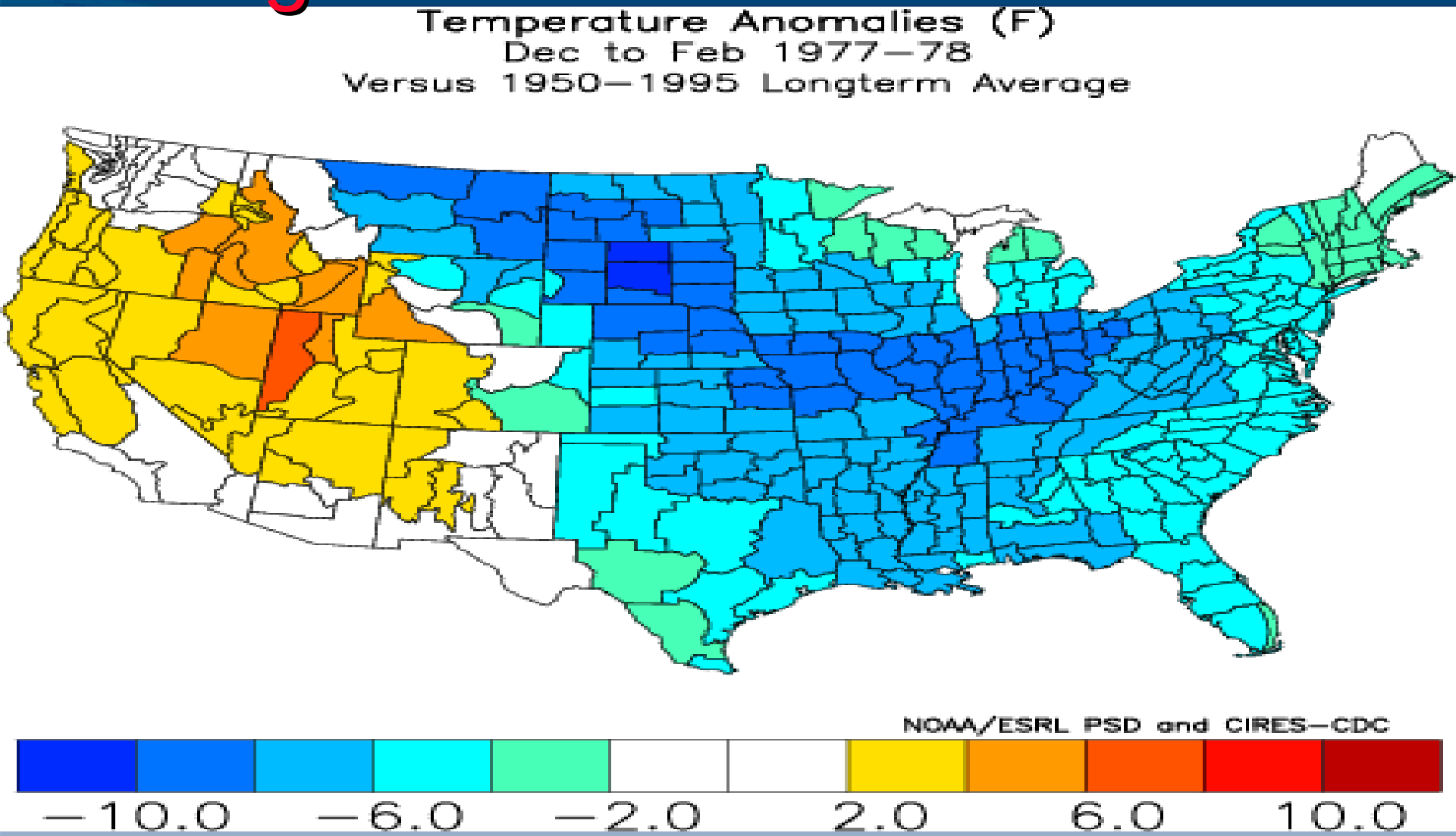
We'Re In Big Trouble!



Is This Déjà Vu All Over Again?



Or A Nightmare in Dream Waiting?

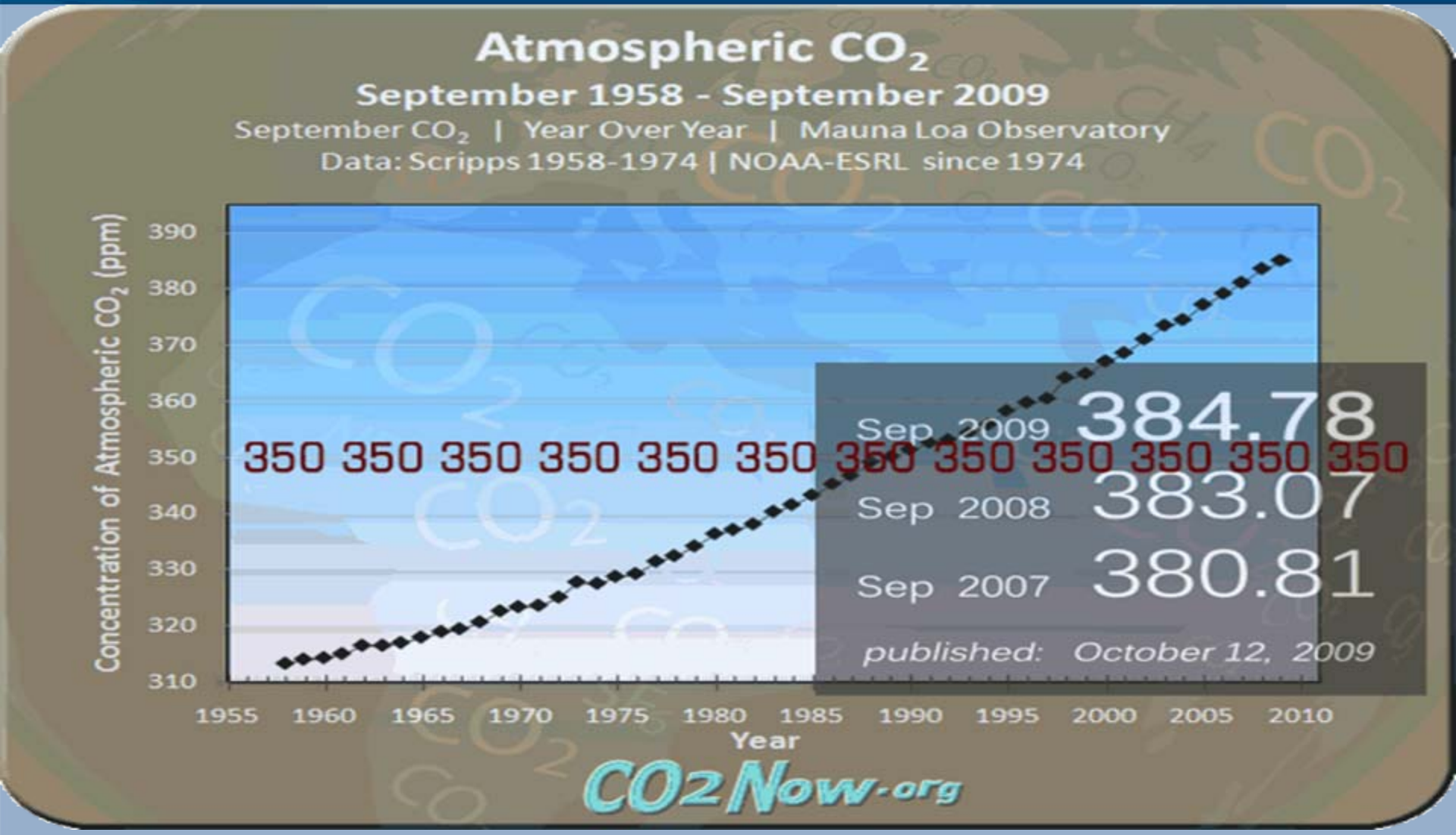


And now … what you really want!

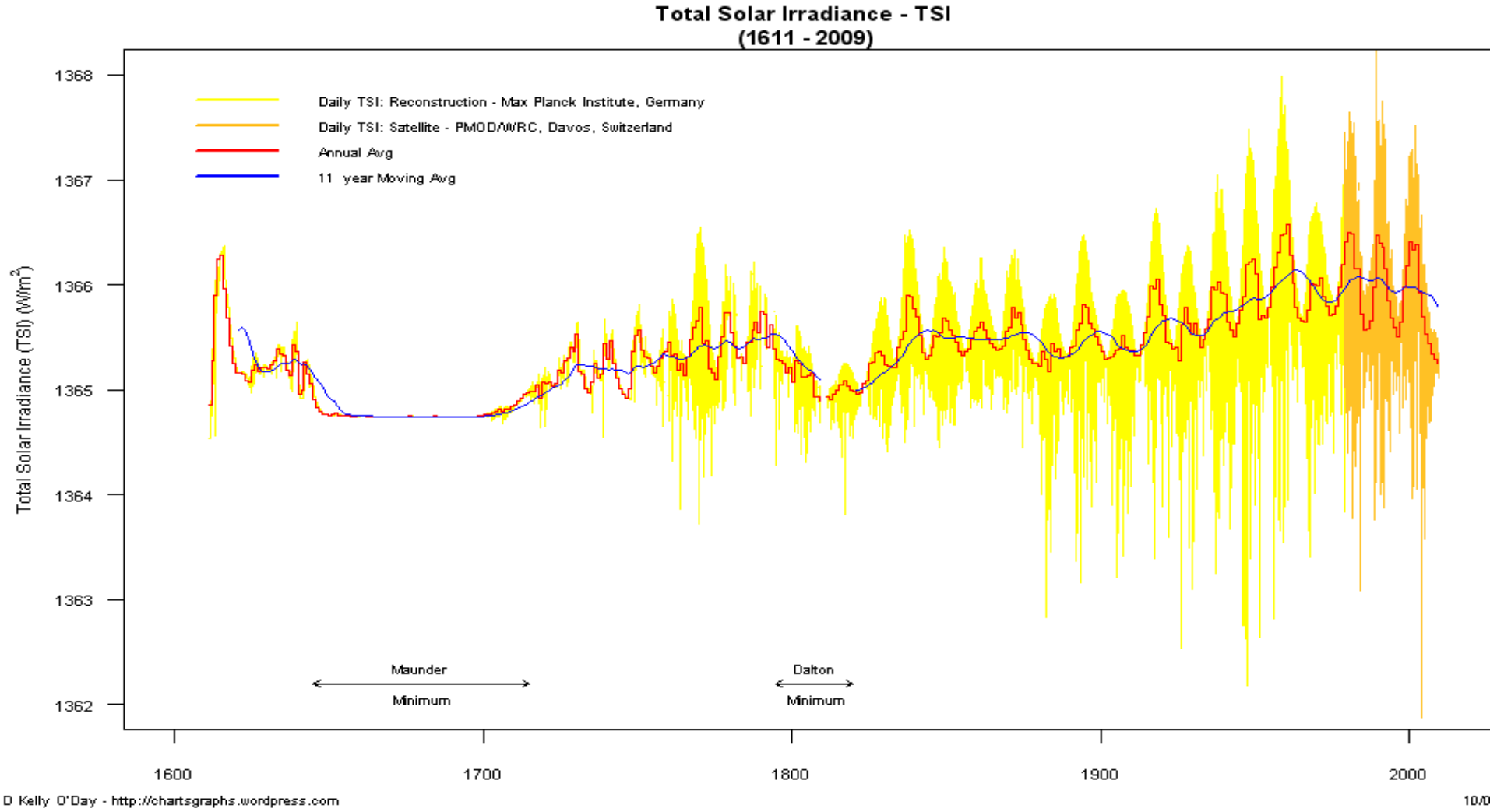
Fun with Global Warming

(Let's see what the AL-GORE-ithms show)

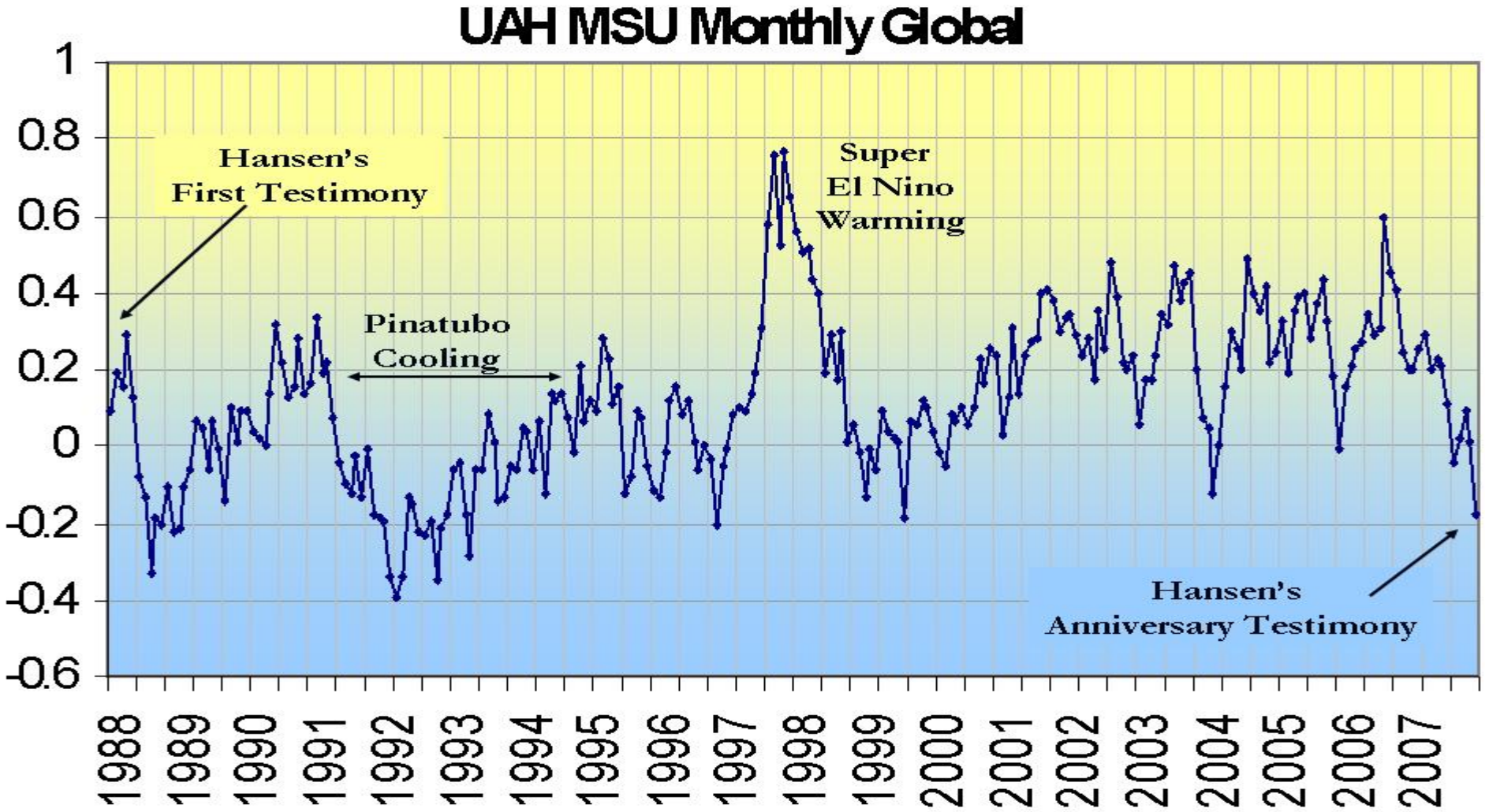
Latest CO_2


Atmospheric CO2
September 1958 - September 2009
September CO2 | Year Over Year | Mauna Loa Observatory
Data: Scripps 1958-1974 | NOAA-ESRL since 1974
Concentration of Atmospheric CO2 (ppm)
390
380
370
360
350
340
330
320
310
350 350 350 350 350 350 350 350 350 350 350 350
Sep 2009 384.78
Sep 2008 383.07
Sep 2007 380.81
published: October 12, 2009
1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010
Year
CO2Now.org

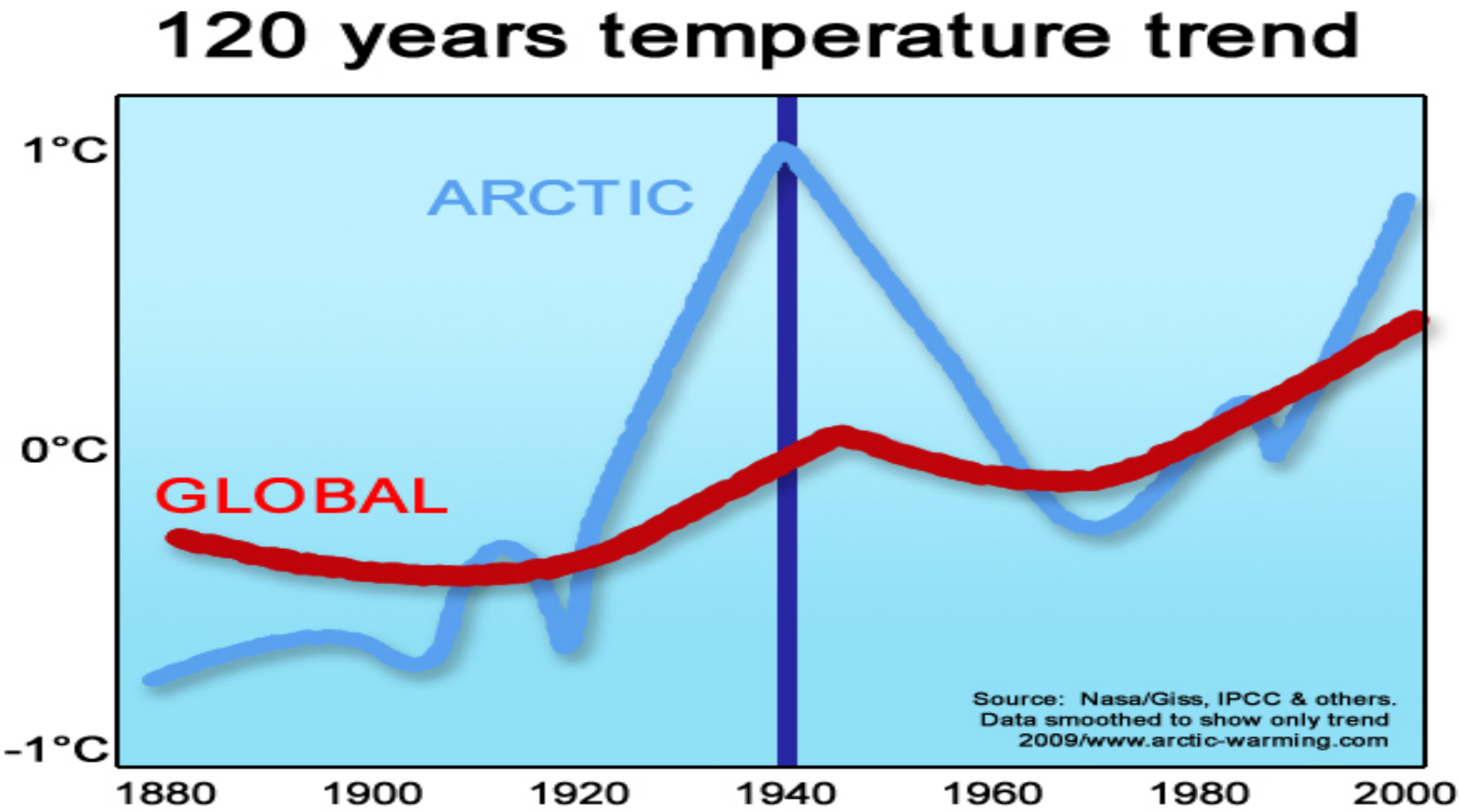
Total Solar Irradiance



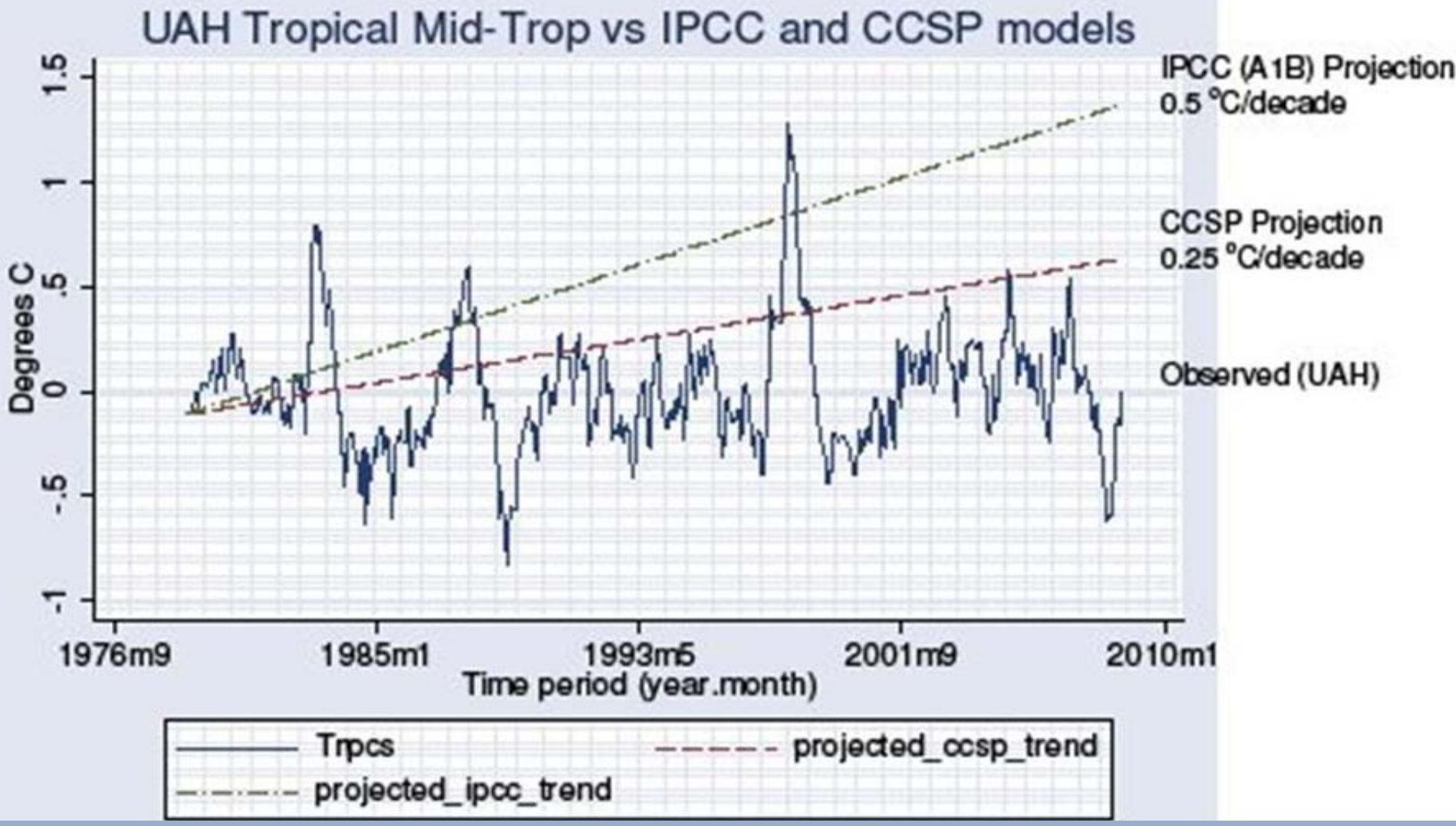
Satellite Temperatures



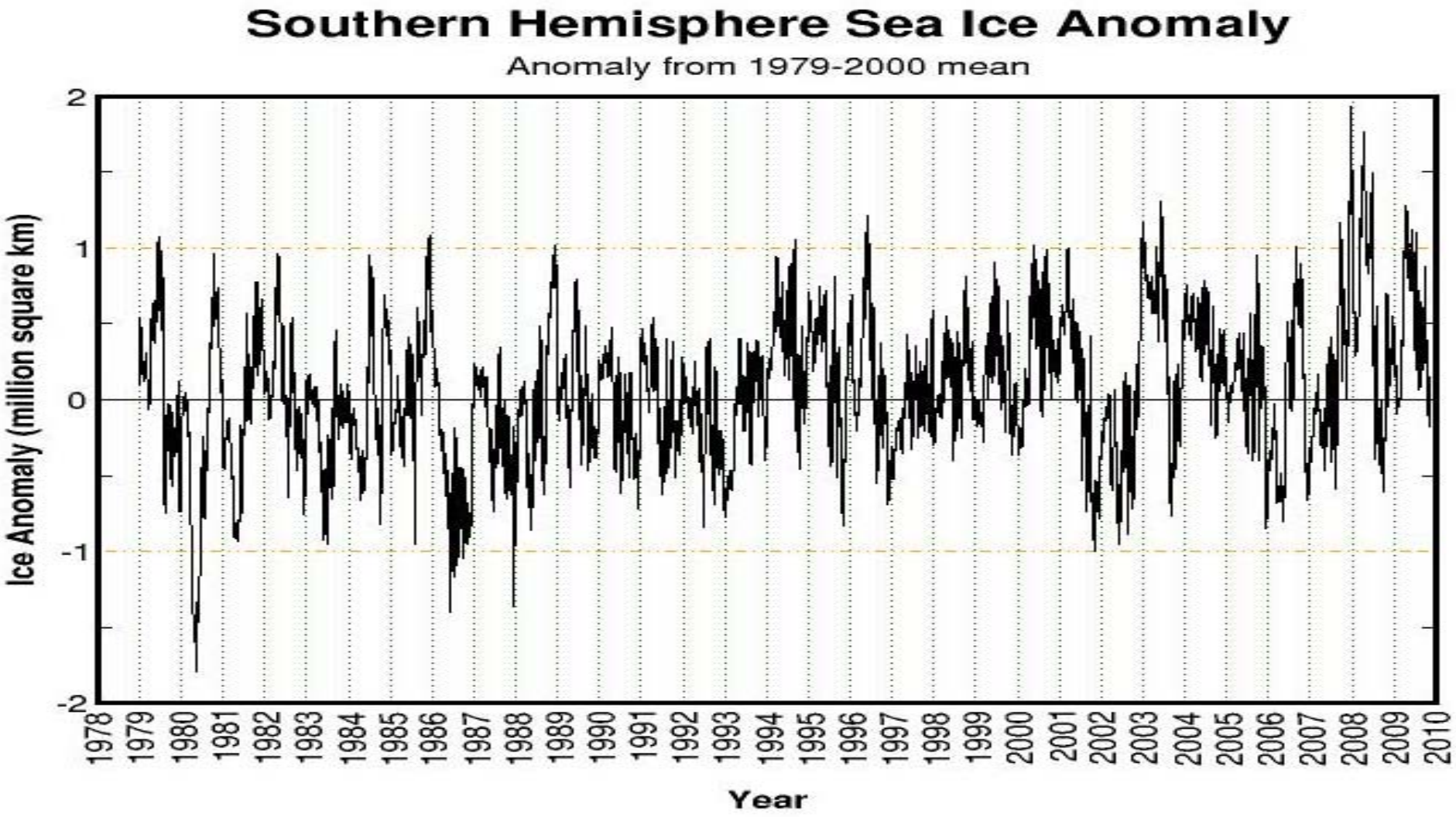
120-Year Temperature Trend



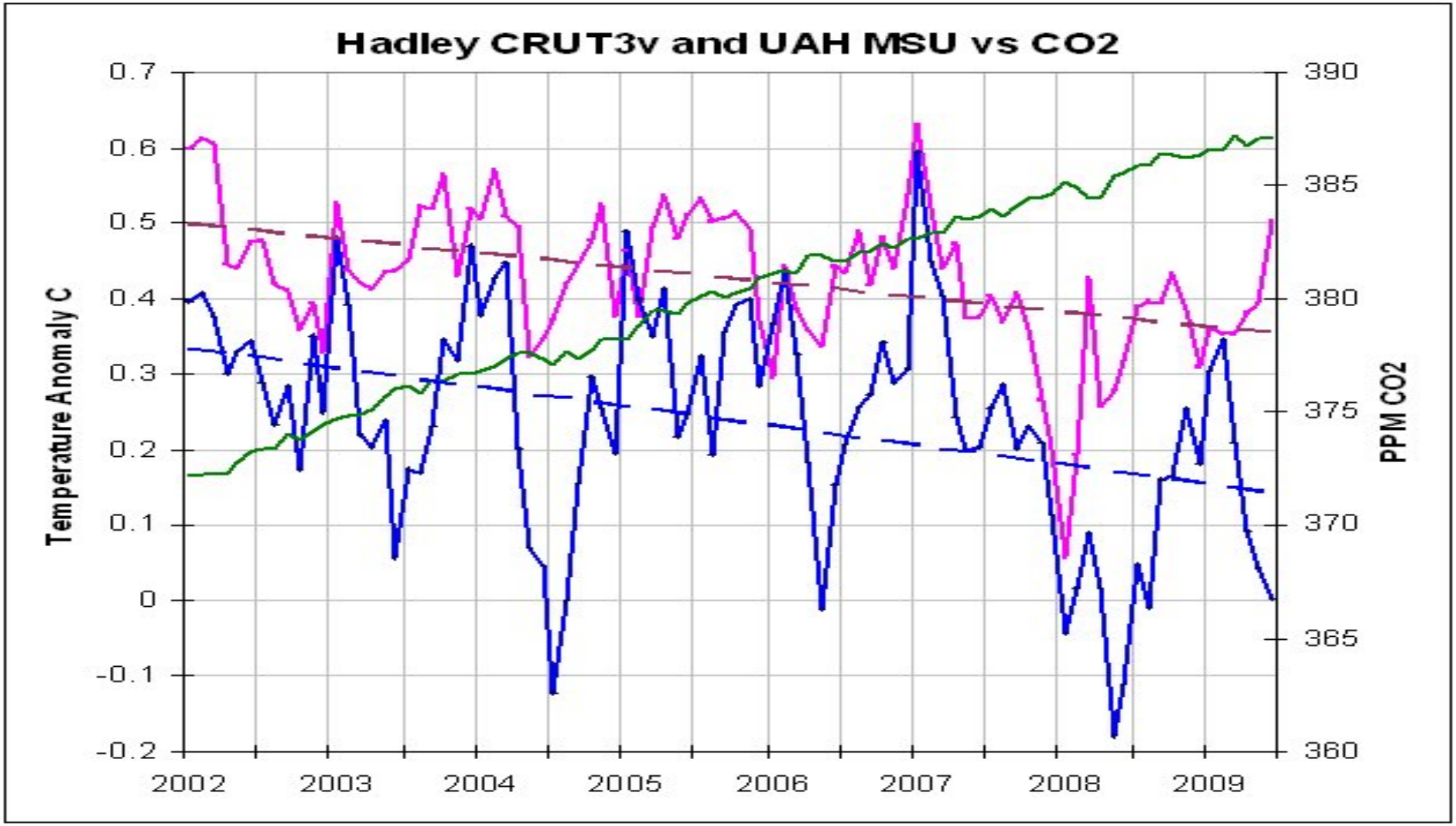
CO_2 and Temperature



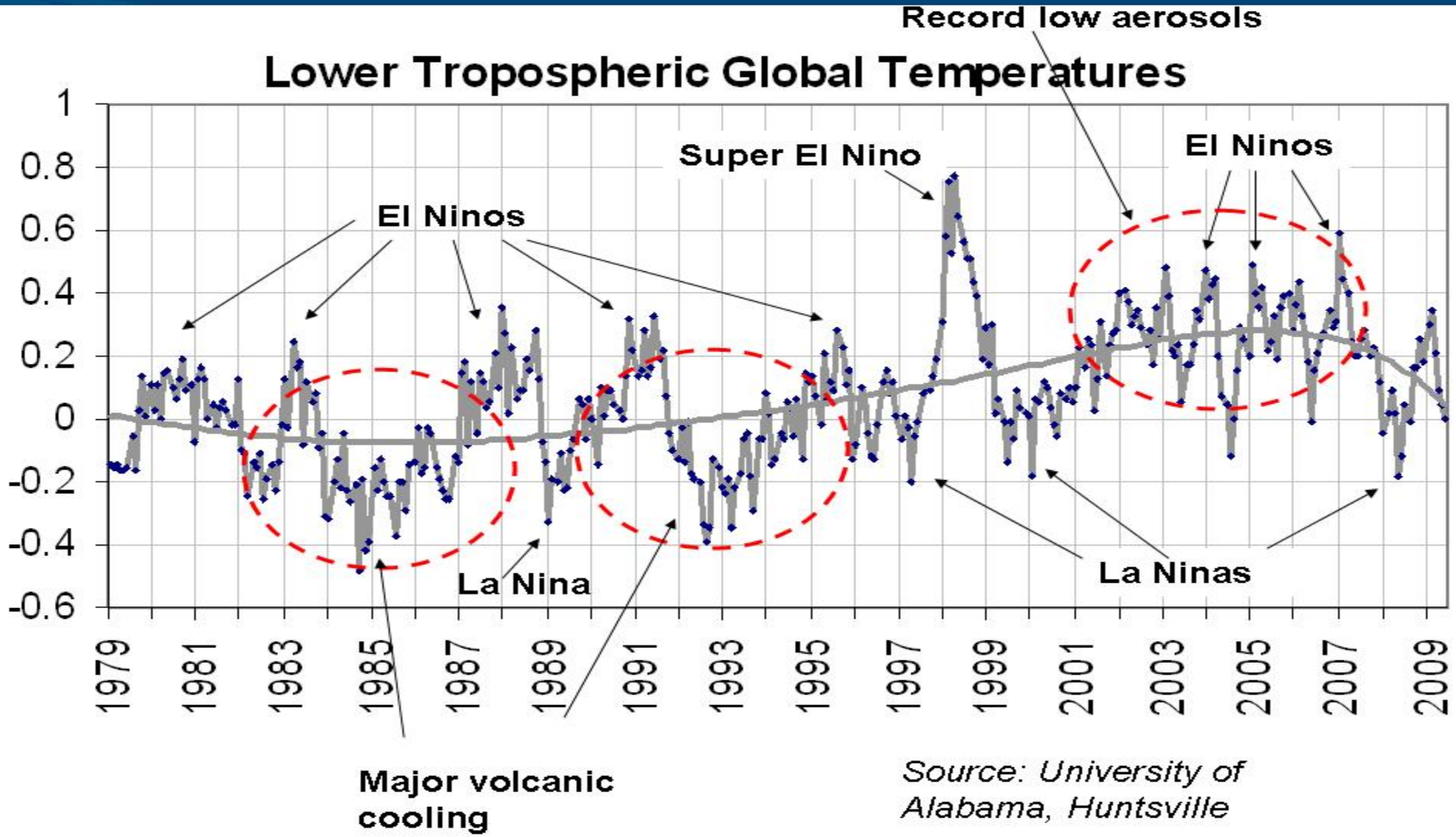
Not Much Melting Down Under



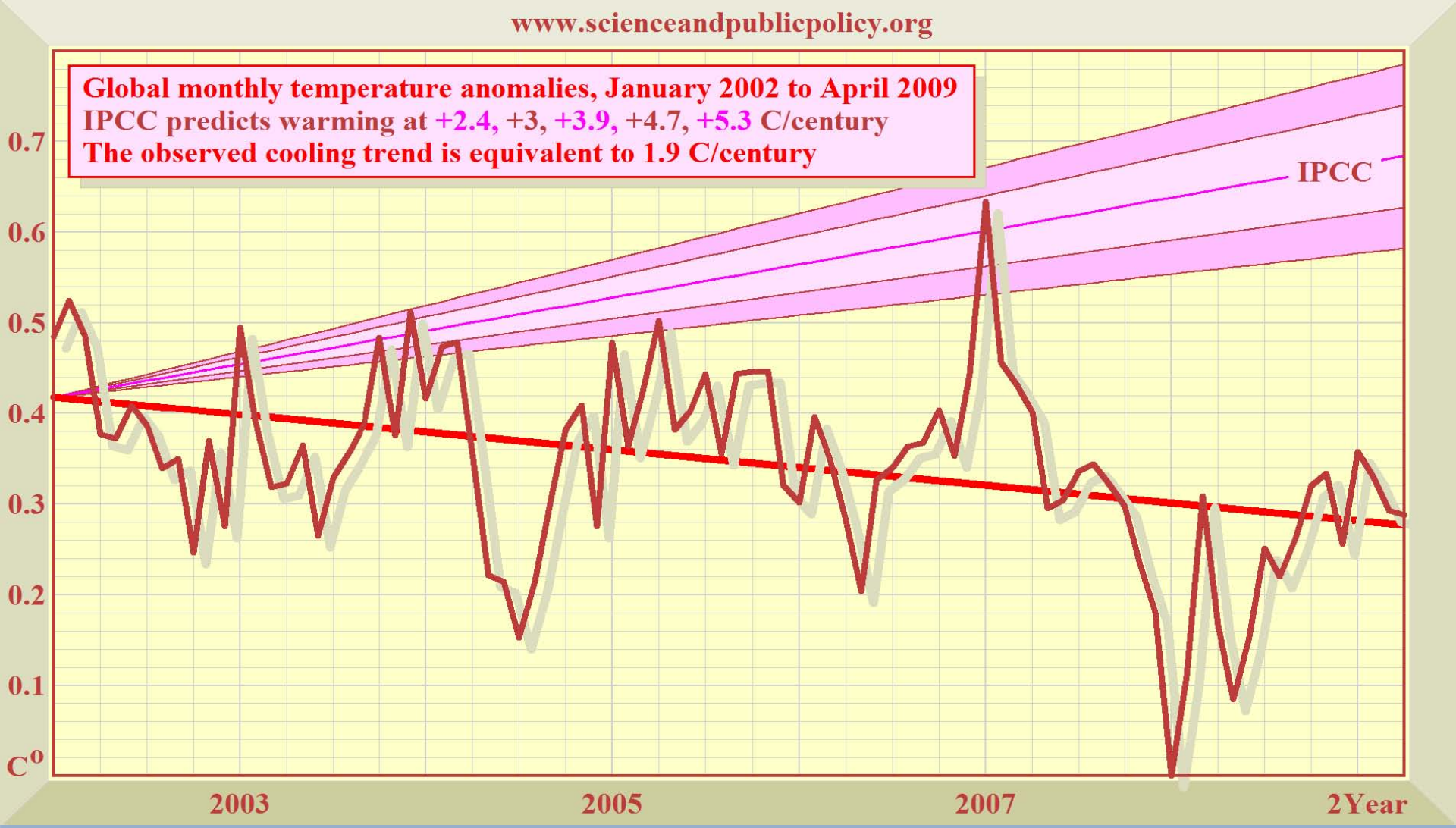
Another Look at CO_2



The Last 30 Years



Oops – "Lucy got some Splainin' to do"



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