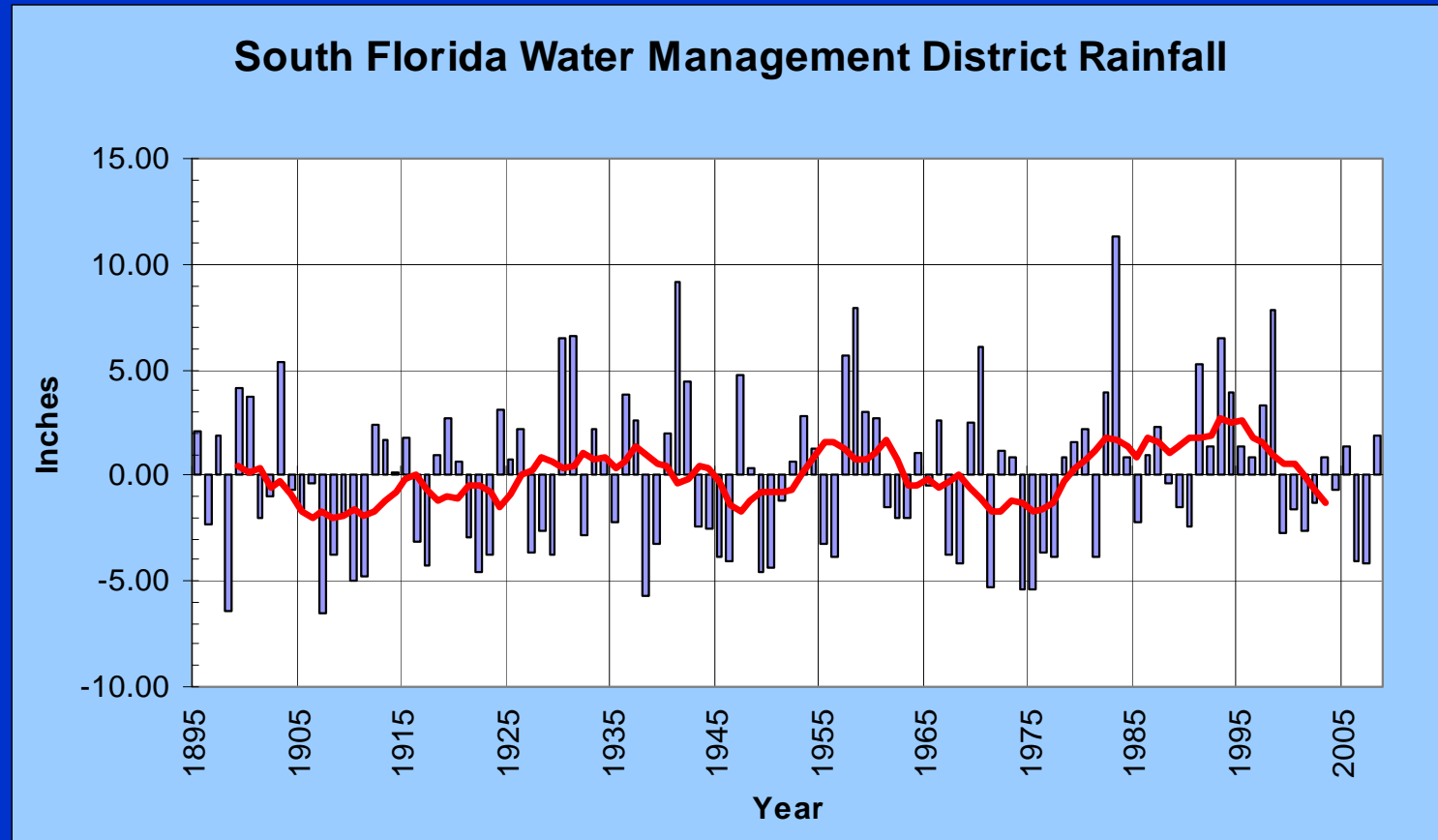


## Weekly Climate Update January 20<sup>th</sup> 2009

- An area of cooler than normal sea surface temperatures along the central and eastern equatorial Pacific extending northward to higher latitudes along the west coast of North America are a result of a strengthening La Nina event and the cold phase of the Pacific Decadal Oscillation. These anomalies are indicative of an increase chance of below normal rainfall during the ongoing dry season months.
- The negative subsurface temperature anomalies in the equatorial Pacific Ocean are a sign of La Nina conditions should persist for several more months. The latest IRI and CFS models simulate increased chances of drier than normal conditions for south Florida for this upcoming dry season.
- The Official climate outlook calls for an increased probability of below normal rainfall for the remainder of January through mid- April.
- The Position Analysis in slide 13 - 17 illustrate projected water levels for Lake Okeechobee and Water the Conservation Areas

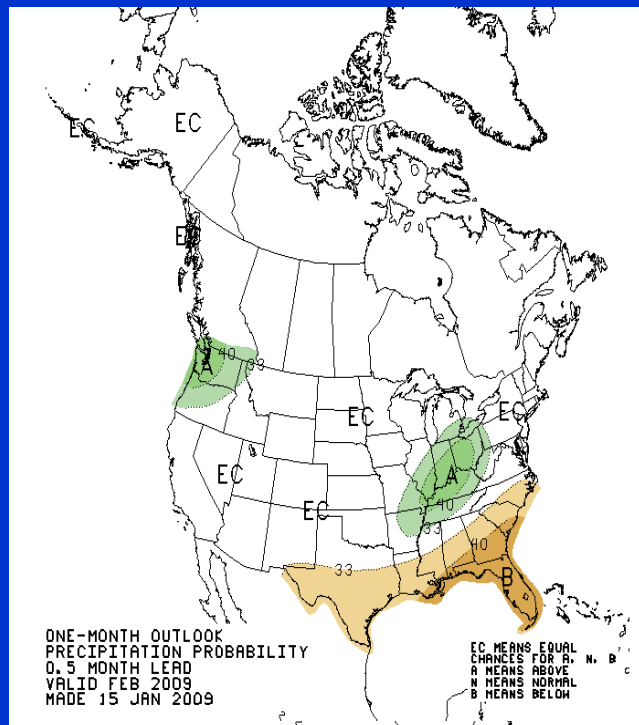
# January-May 10 year moving average Rainfall following PDO closely during recent decades



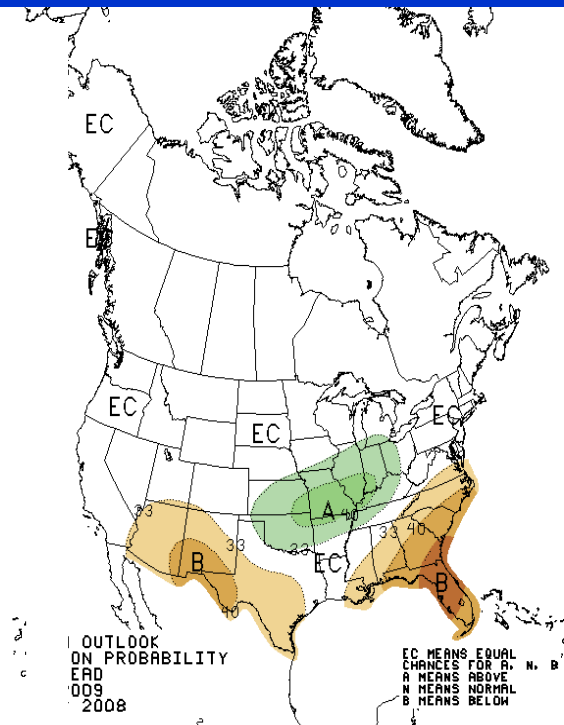
➤ Red line equals 10 year centered average rainfall  
1905- 1925 cold Phase; 1926-

# Official CPC Seasonal Rainfall Outlook

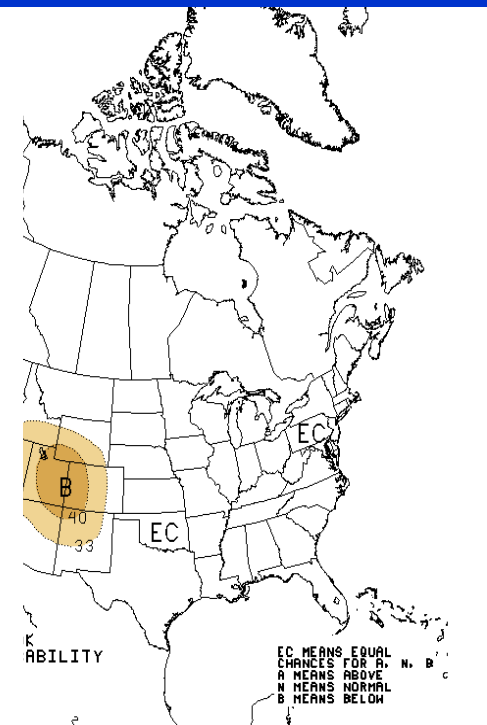
February



February-April

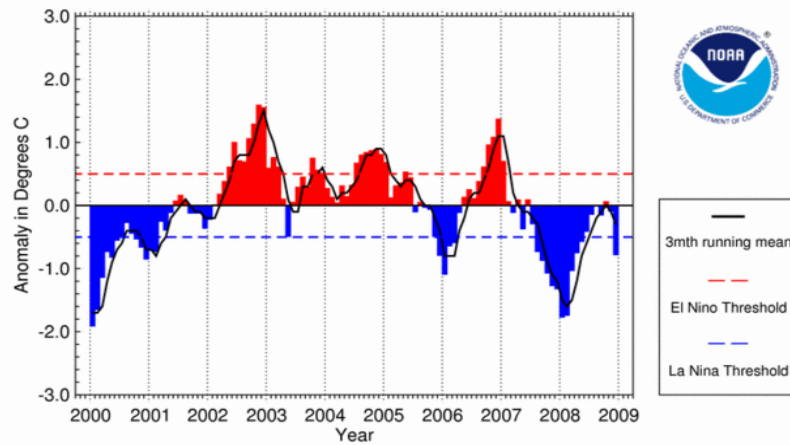


May-July



# El Nino-Southern Oscillation

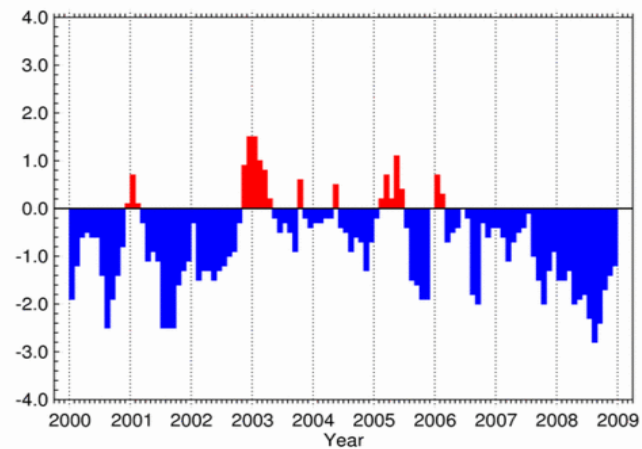
SST Anomaly in Nino 3.4 Region (5N-5S,120-170W)



National Climatic Data Center / NESDIS / NOAA

# Pacific Decadal Oscillation

Pacific Decadal Oscillation (PDO)



National Climatic Data Center / NESDIS / NOAA

# Drought Monitor

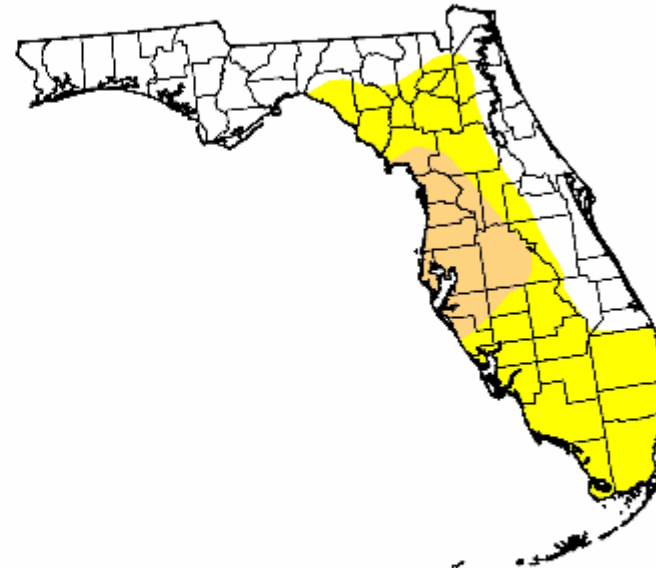
## U.S. Drought Monitor Florida

January 6, 2009

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	44.0	56.0	13.4	0.0	0.0	0.0
Last Week (12/30/2008 map)	74.7	25.3	11.7	0.0	0.0	0.0
3 Months Ago (10/14/2008 map)	75.7	24.3	0.0	0.0	0.0	0.0
Start of Calendar Year (01/06/2009 map)	44.0	56.0	13.4	0.0	0.0	0.0
Start of Water Year (10/07/2008 map)	75.8	24.2	0.0	0.0	0.0	0.0
One Year Ago (01/08/2008 map)	31.8	68.2	33.1	19.7	2.6	0.0



### Intensity:

<span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> D0 Abnormally Dry	<span style="background-color: red; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> D3 Drought - Extreme
<span style="background-color: orange; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> D1 Drought - Moderate	<span style="background-color: darkred; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> D4 Drought - Exceptional
<span style="background-color: darkorange; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> D2 Drought - Severe	

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

<http://drought.unl.edu/dm>



Released Thursday, January 8, 2009

Author: Brian Fuchs, National Drought Mitigation Center

- Tampa Drought Region has spread eastward into some portions of the Kissimmee
- Most of the rest of the District is abnormally dry

# Table of Contents

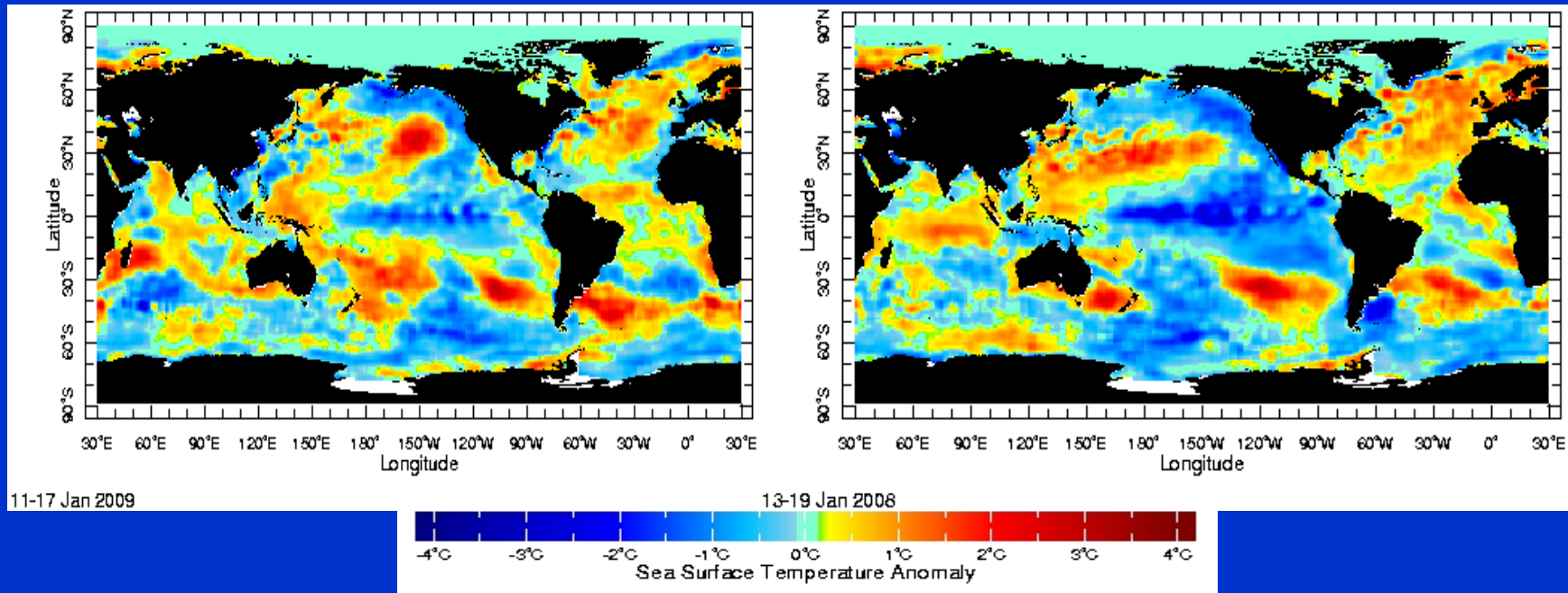
	Slide
Most recent week Global sea surface temperature anomaly.....	<a href="#"><u>6</u></a>
The evolution of sea surface temperature anomalies (SSTA) in the east-central equatorial Pacific Ocean.....	<a href="#"><u>7</u></a>
Time series of Nino indices which are used to estimate the state of ENSO .....	<a href="#"><u>8</u></a>
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# Latest Weekly Sea Surface Temperature Anomaly

## International Research Institute

2009

2008



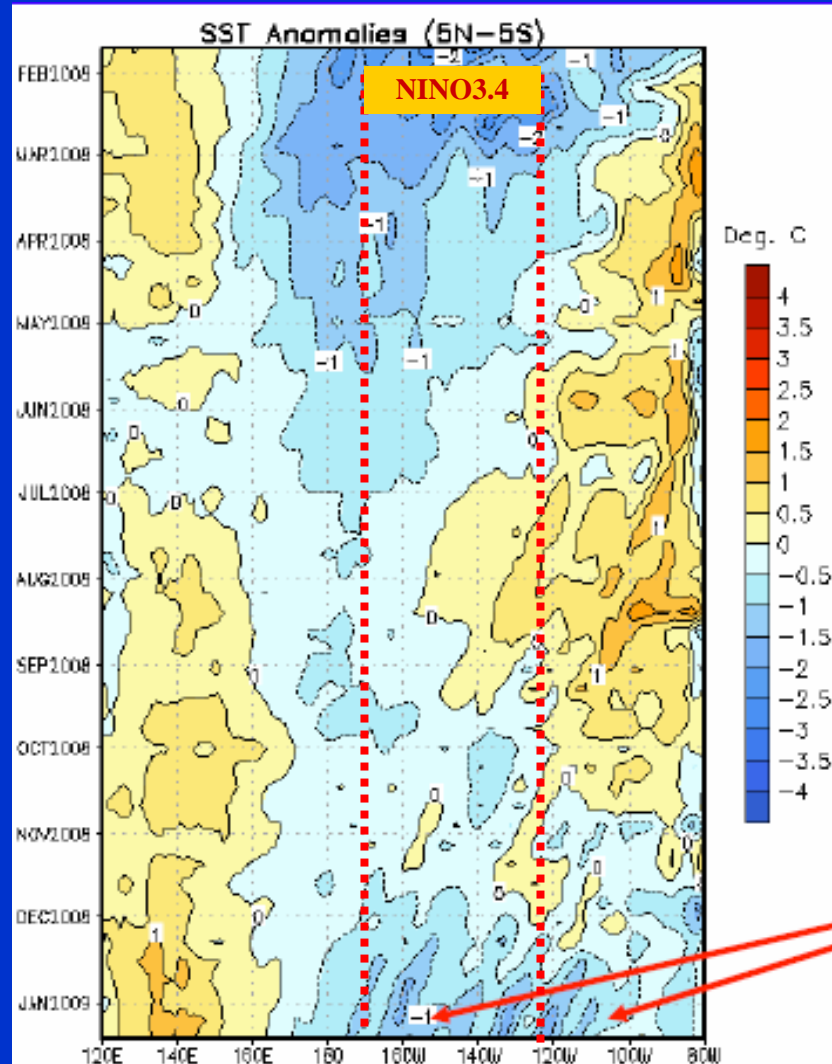
Large area of cooler than normal sea surface temperatures in the equatorial Pacific extending northward to higher latitudes along the west coast of North America are a result of a La Nina conditions and the cold phase of the Pacific Decadal Oscillation.

# Recent Evolution of Equatorial Pacific SST Departures (°C)

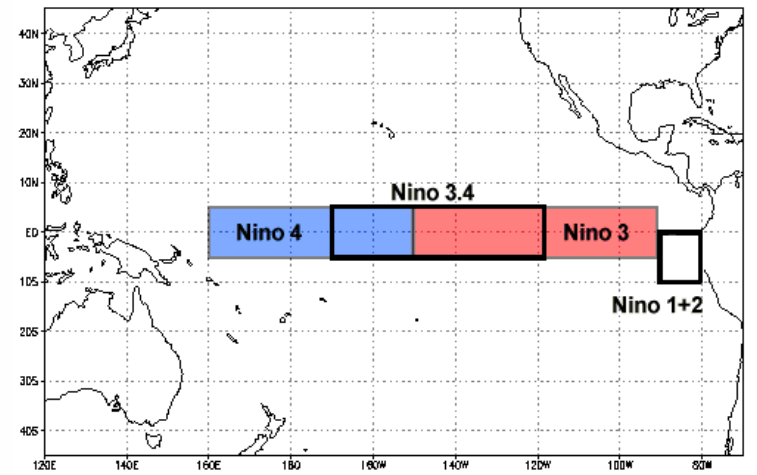
## Climate Prediction Center

### El Nino-Southern Oscillation Weekly Update

Feb.  
May  
**Time**  
↓  
Oct.  
Jan.



**Longitude**



Since October 2008, negative sea surface temperature anomalies continue in the central and eastern equatorial Pacific Ocean.



# Recent Evolution of Niño Region SST Departures (°C)

## Climate Prediction Center

### El Niño-Southern Oscillation Weekly Update

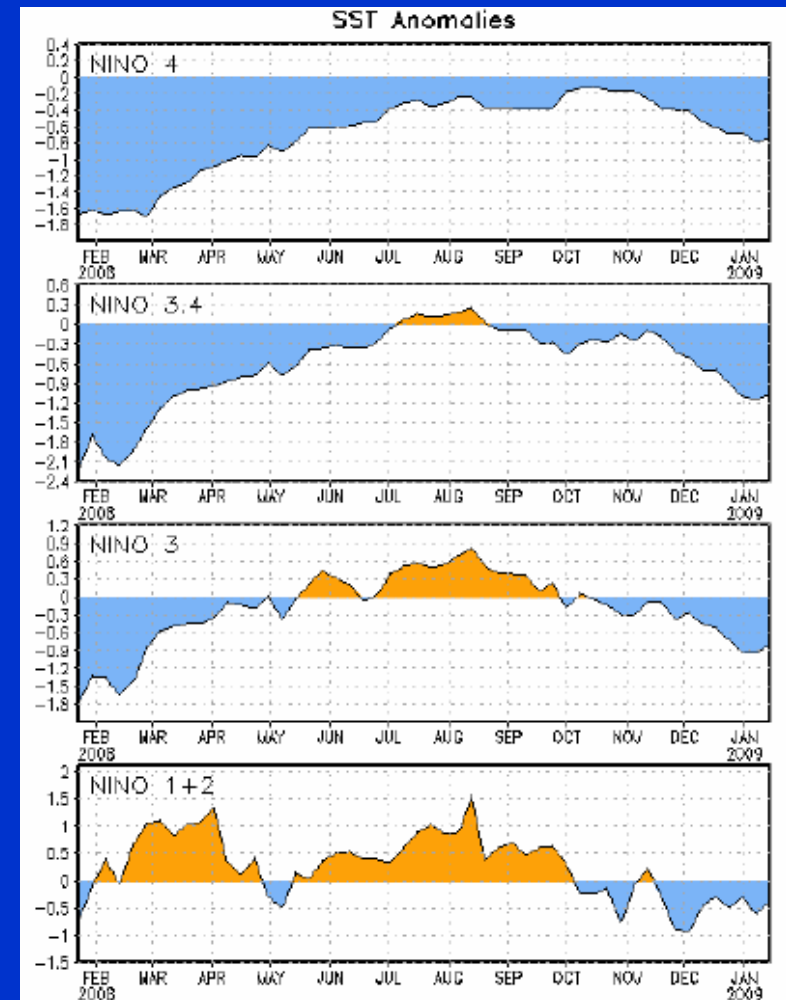
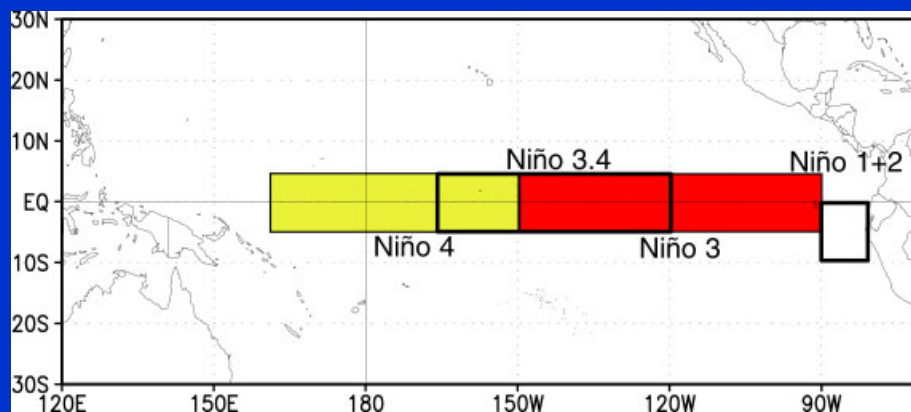
The latest weekly SST departures are:

Niño 4 -0.7°C

Niño 3.4 -1.1°C

Niño 3 -0.8°C

Niño 1+2 -0.3°C



# Equatorial Pacific Subsurface Temperature Anomalies

2008-2009

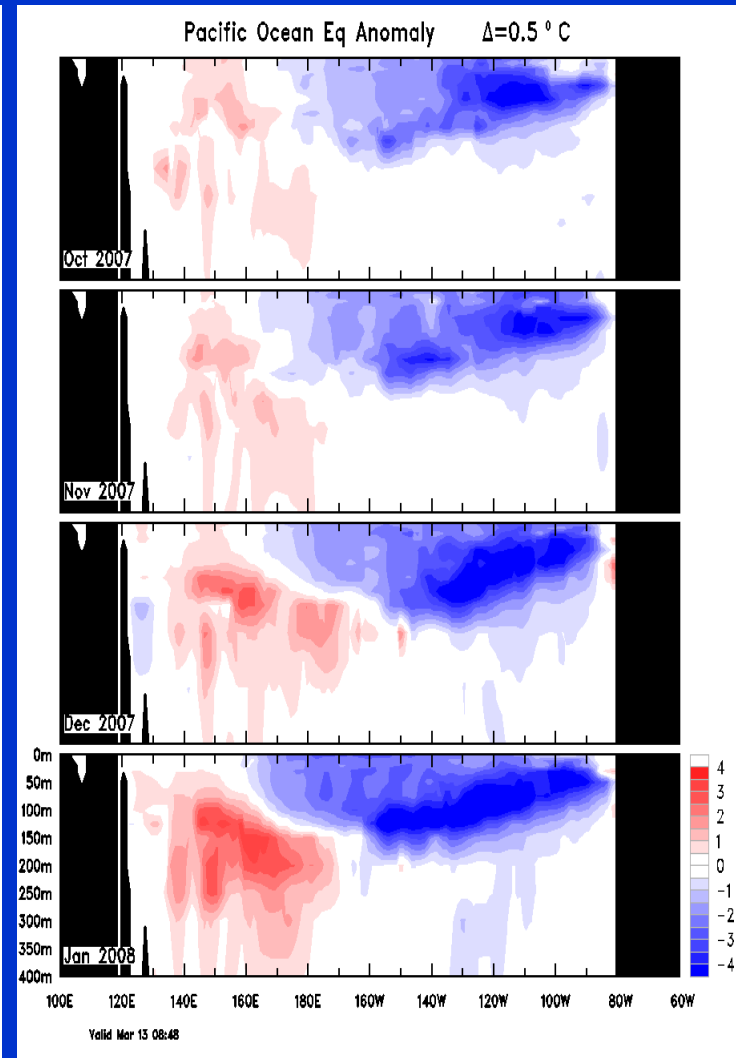
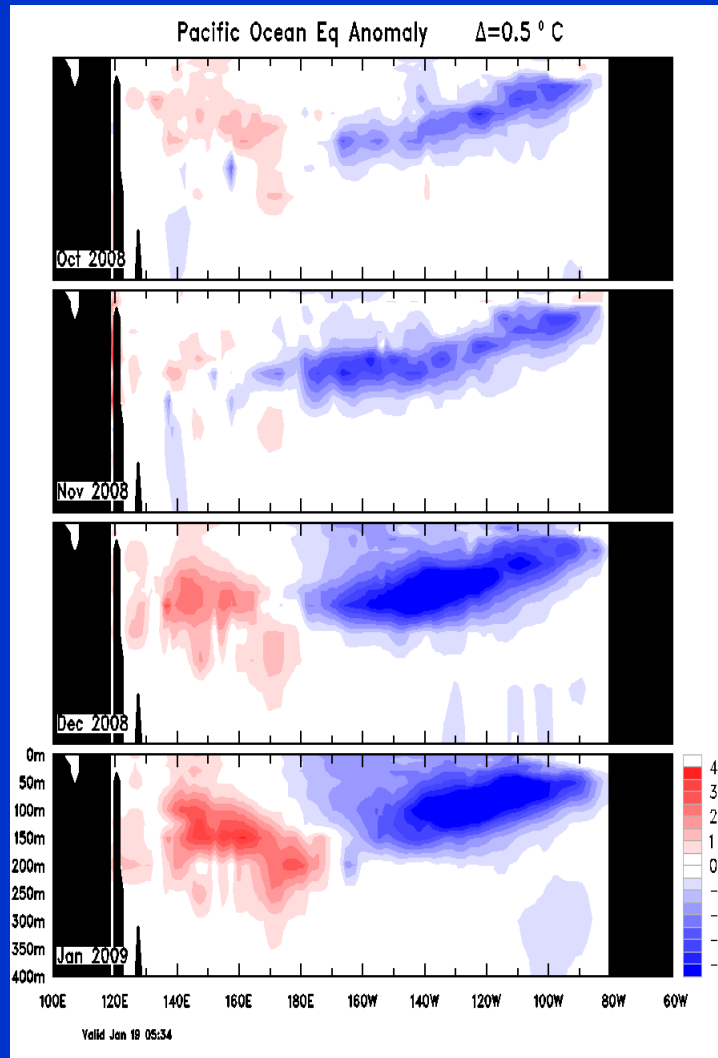
2007-2008

October

November

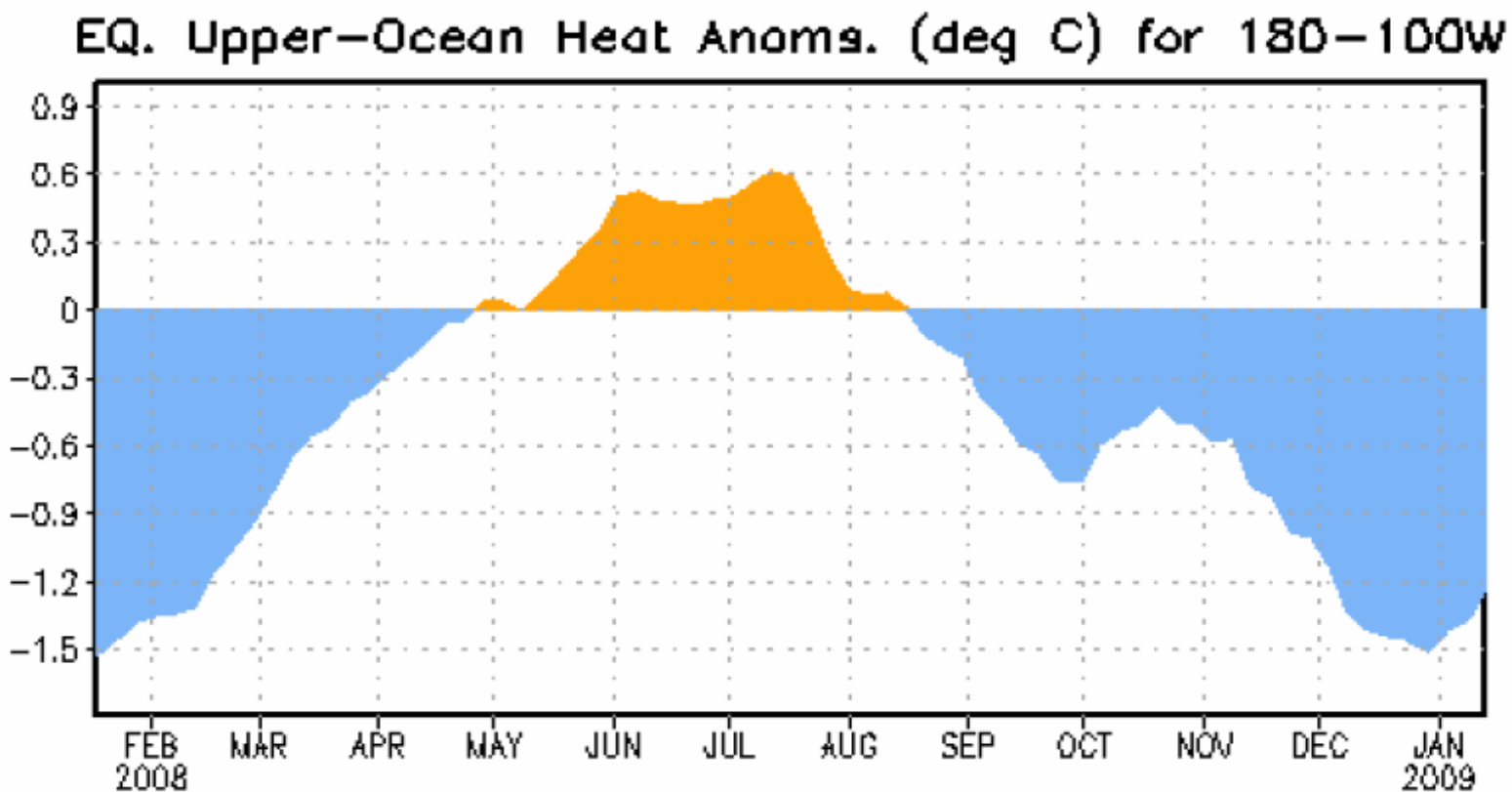
December

January





## Central & Eastern Pacific Upper-Ocean (0-300 m) Weekly Heat Content Anomalies



The upper ocean heat content was below-average across the eastern half of the equatorial Pacific Ocean between January and April 2008 and again since mid-August 2008. The negative heat content anomalies have weakened slightly since late December 2008.

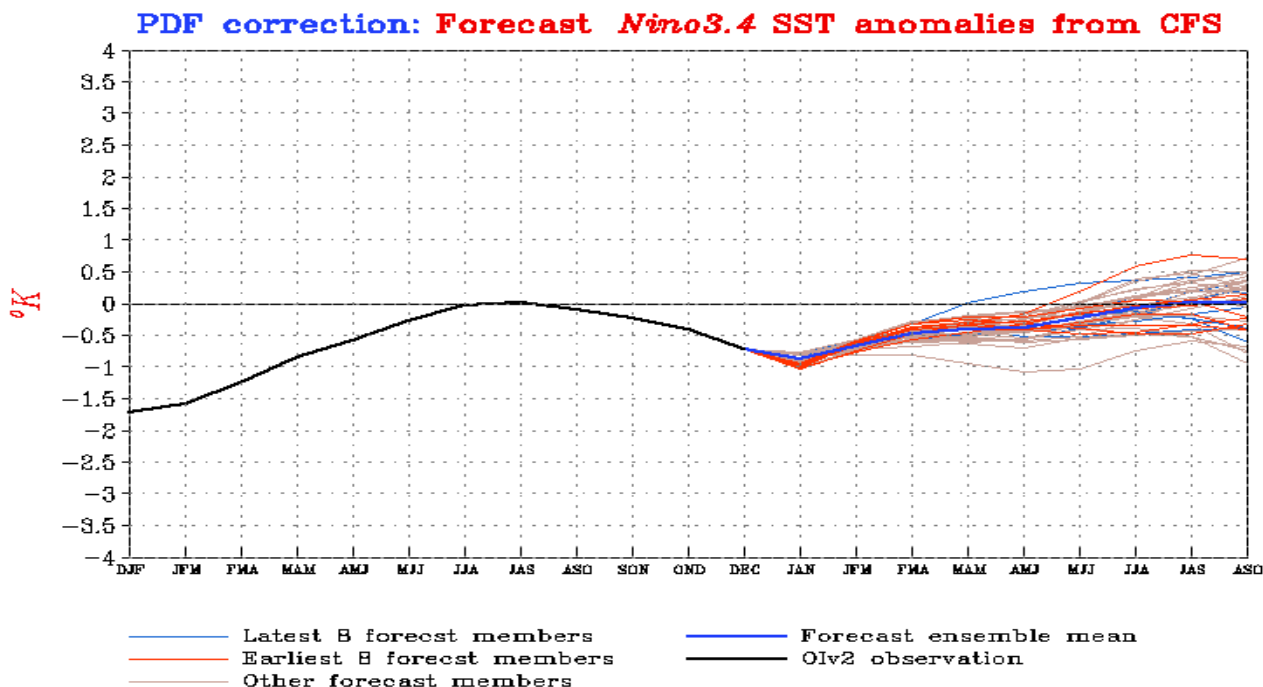
# Equatorial Pacific SST Forecast- NCEP Climate Forecast System

## Issued January 20<sup>th</sup> 2009



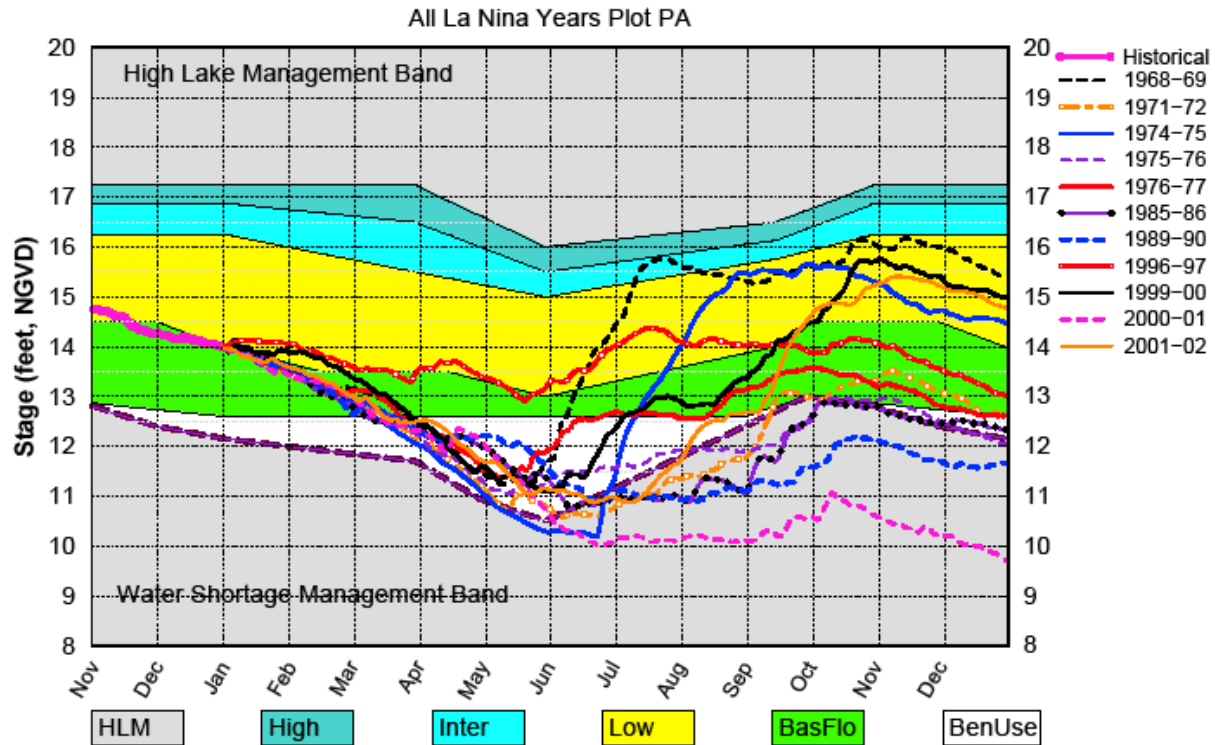
NWS/NCEP

Last update: Mon Jan 19 2009  
Initial conditions: 8Jan2009-17Jan2009



# January 1<sup>st</sup> Position Analysis for La Nina Years

## Lake Okeechobee SFWMM January 2009 Position Analysis



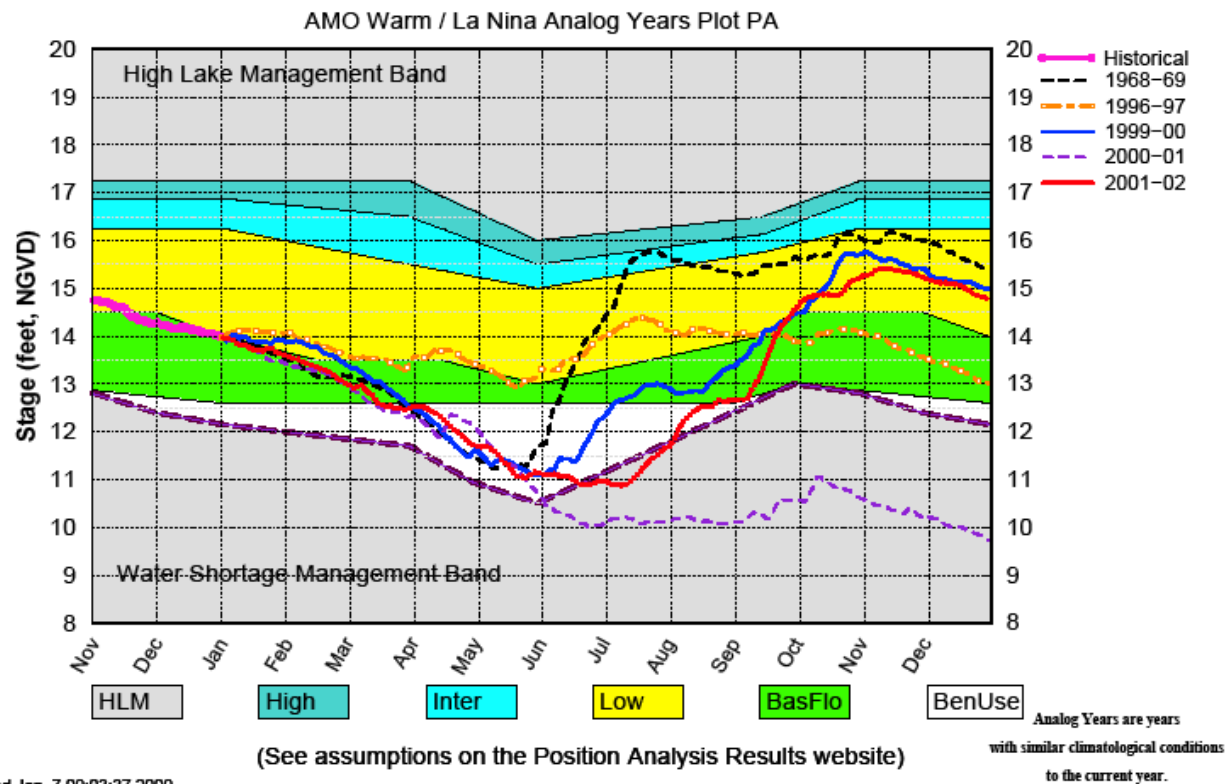
(See assumptions on the Position Analysis Results website)

Wed Jan 7 09:03:38 2009

# January 1<sup>st</sup> Position Analysis

## La Nina /AMO Warm sub sampling

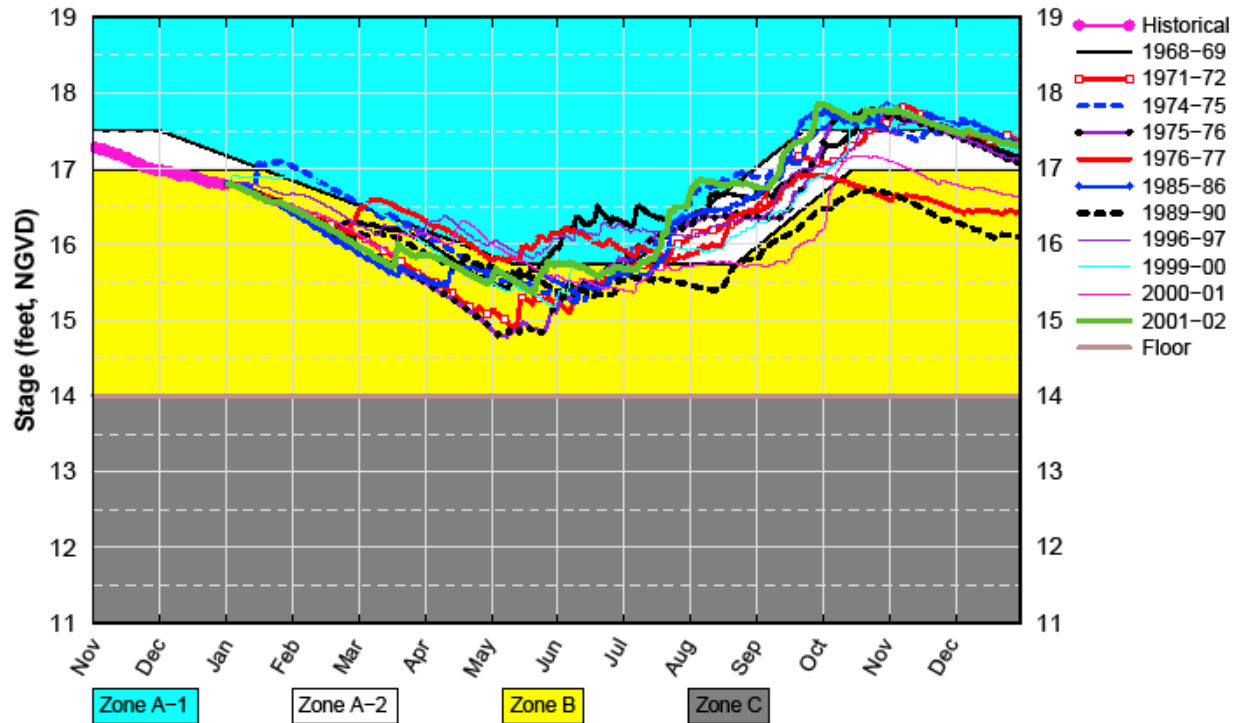
### Lake Okeechobee SFWMM January 2009 Position Analysis



# January 1<sup>st</sup> Position Analysis for La Nina Years

## WCA1 SFWMM January 2009 Position Analysis

All La Nina Years Plot PA

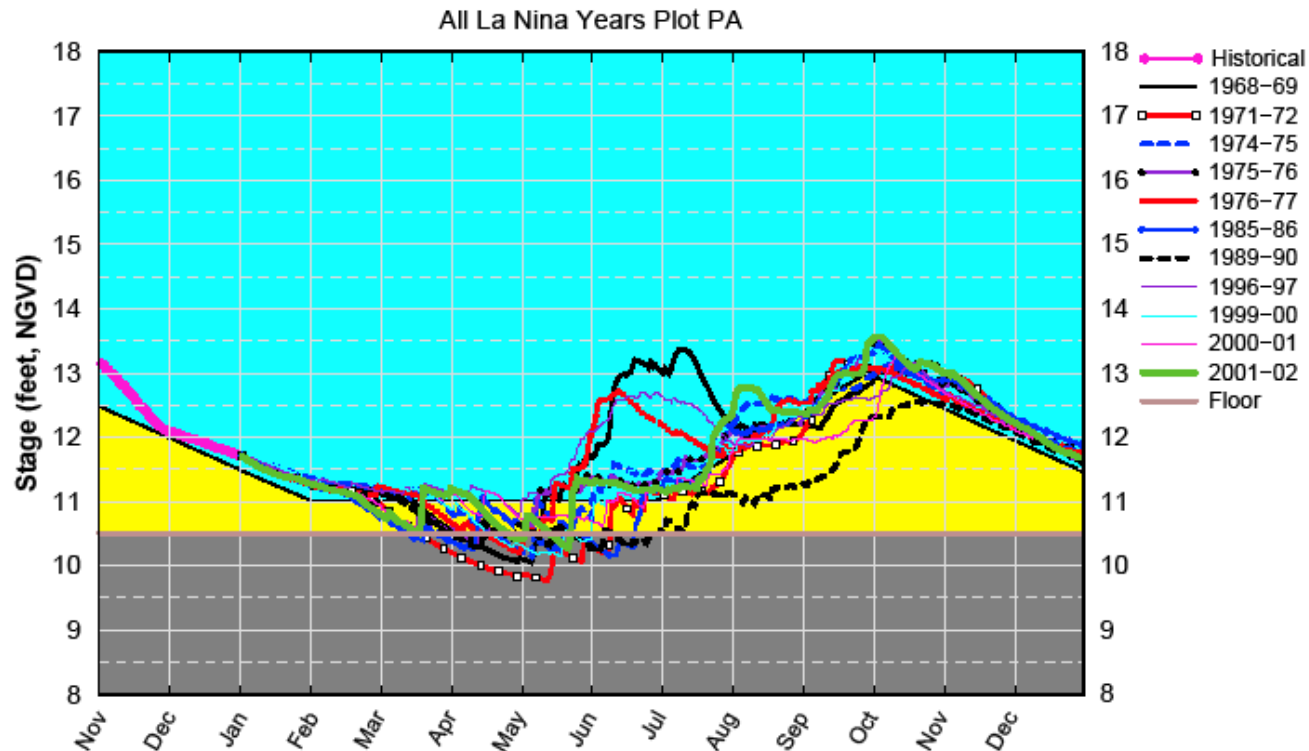


(See assumptions on the Position Analysis Results website)

Wed Jan 7 09:03:40 2009

# January 1<sup>st</sup> Position Analysis for La Nina Years

## WCA2A SFWMM January 2009 Position Analysis



(See assumptions on the Position Analysis Results website)

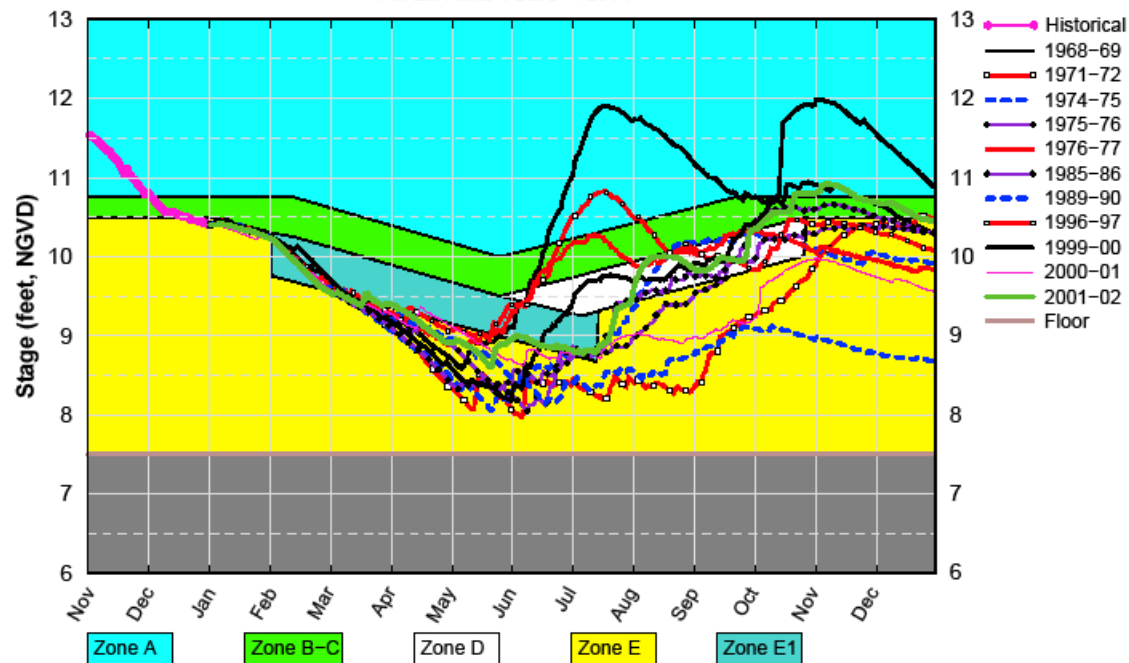
Wed Jan 7 09:03:43 2009



# WCA3A January 1<sup>st</sup> Position for La Nina Years

## WCA3A SFWMM January 2009 Position Analysis

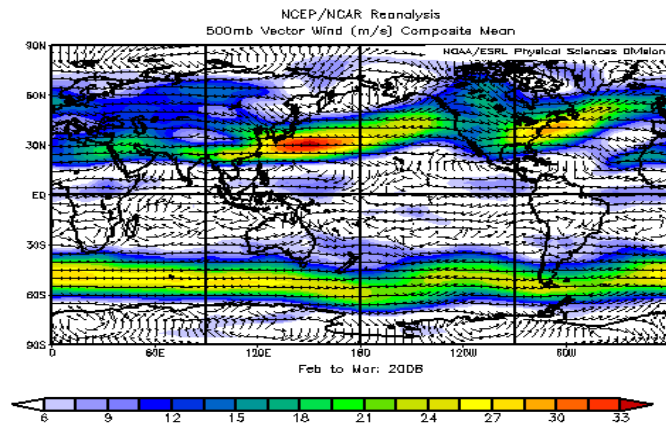
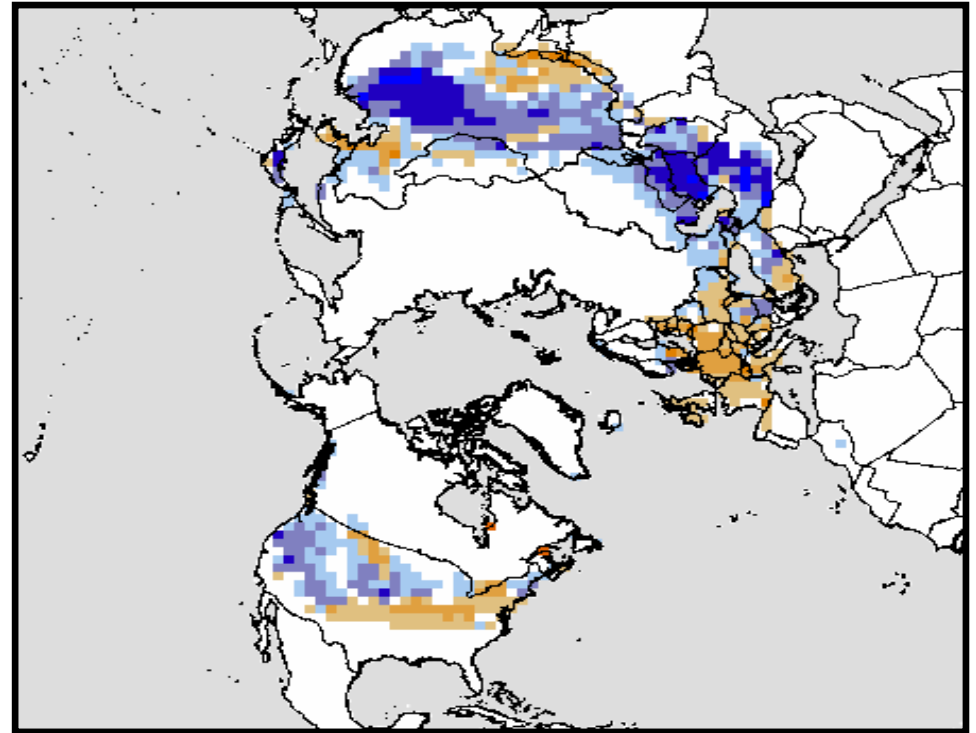
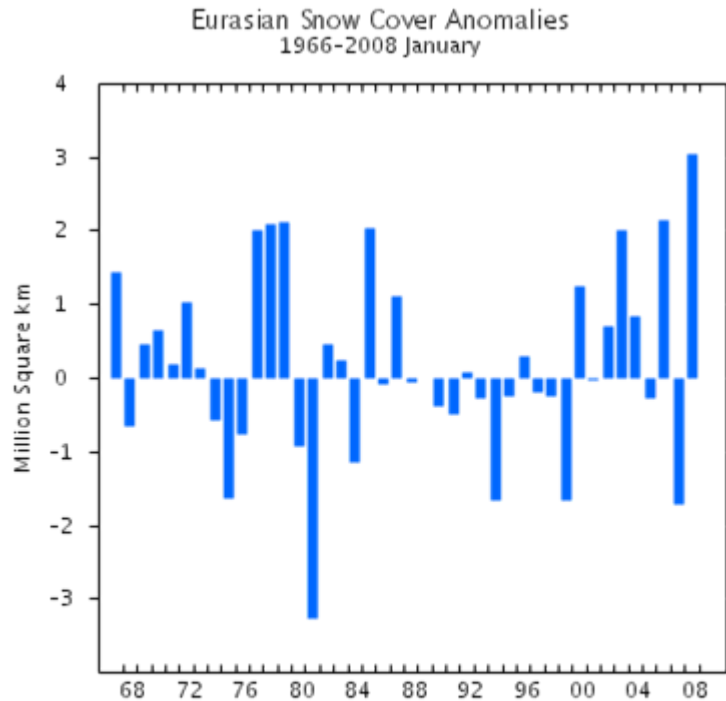
All La Nina Years Plot PA



(See assumptions on the Position Analysis Results website)

Wed Jan 7 09:03:46 2009

# January 2008 Eurasian Record Snow depths and late winter- early spring 2008 District RF



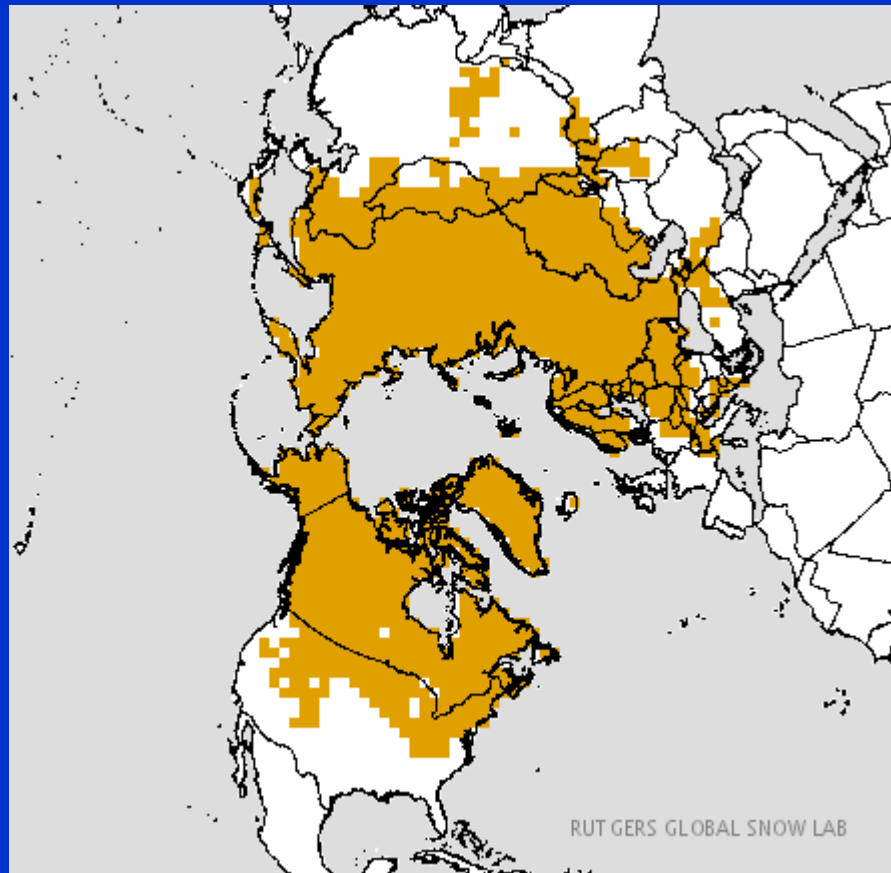
Normally during La Nina Events the jet stream is pushed north of Florida. However in 2008 for the period after January tremendous snow anomaly the storm track was pushed further south allowing for normal rainfall in south Florida the second half of the dry season.

## References

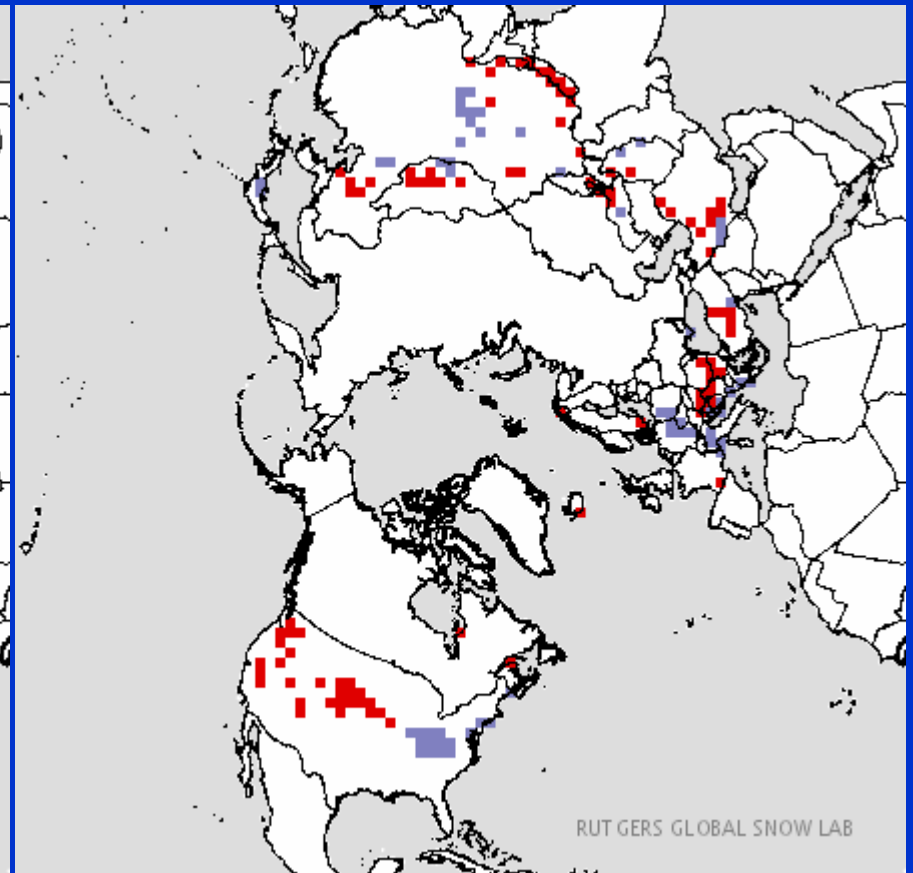
<http://ams.allenpress.com/archive/1520-0442/15/3/pdf/i1520-0442-15-3-306.pdf>

[http://sciencepolicy.colorado.edu/admin/publication\\_files/resource-314-2000.25.pdf](http://sciencepolicy.colorado.edu/admin/publication_files/resource-314-2000.25.pdf)

# 2009 Northern Hemisphere Daily Snow Cover



Daily Snow Cover - January 19, 2009 (Day 12)

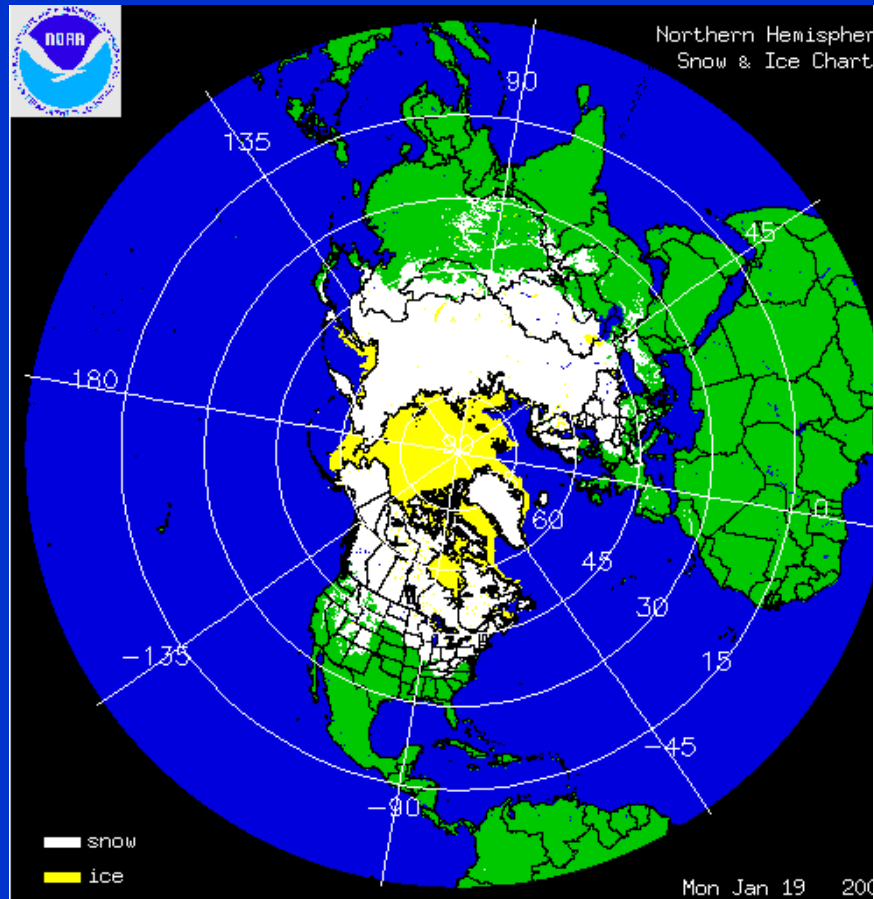


Daily Snow Cover Anomaly - January 19, 2009 (Day 12)

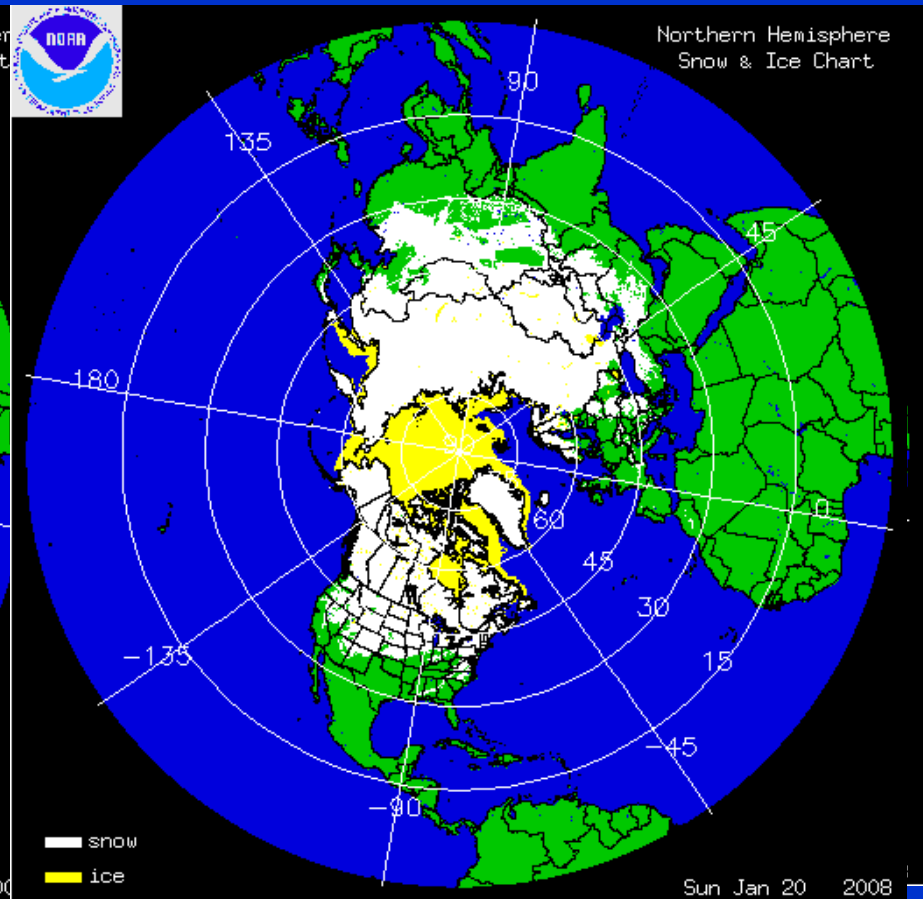
The Eurasian snow depths are currently about normal. If this winter has normal snowfall it can be expected with greater certainty there will be below normal rainfall in south Florida. Recently the monitoring of global snow cover on a daily basis has become possible at the at the following link: <http://climate.rutgers.edu/snowcover/>

# Northern Hemispheric Snow Cover

2009



2008



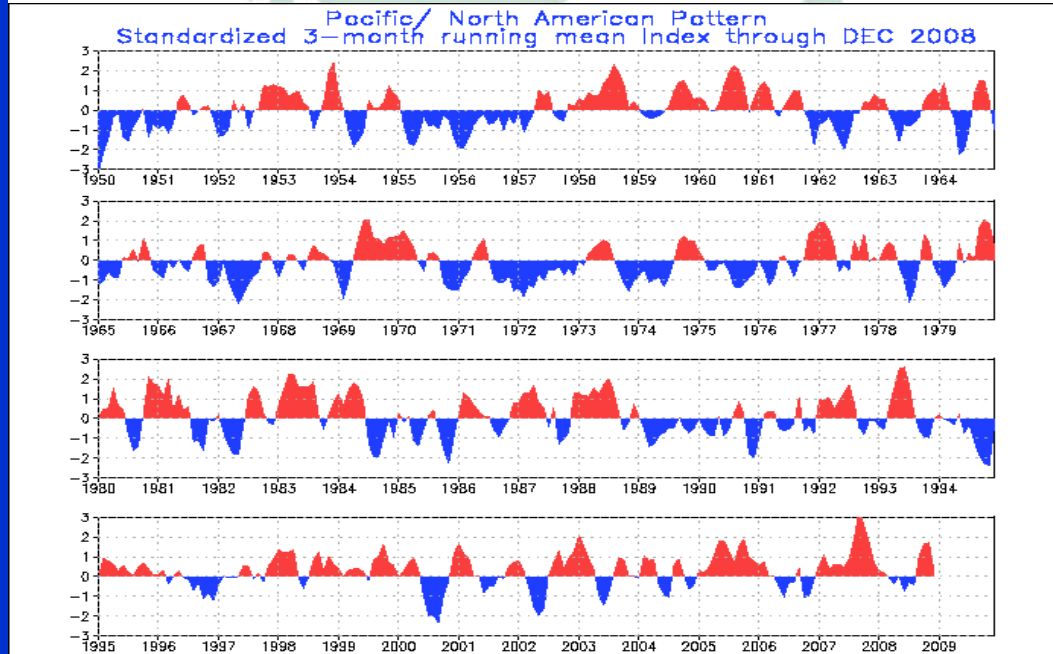
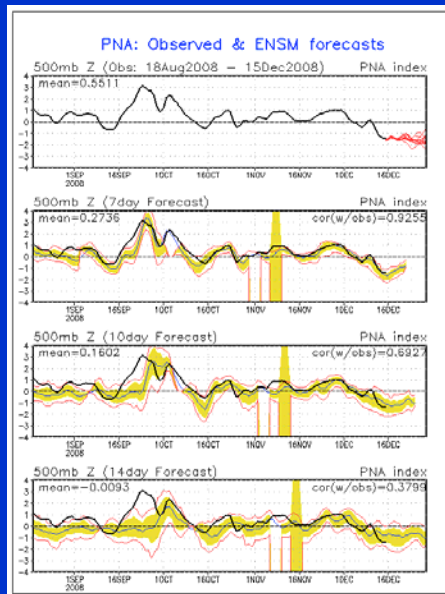
In recent decades with the aid of satellite imagery it has been found that the (anomalous ) extent of snow cover can have important effects on the strength and positioning of the jet stream. Last year, the greater than normal snow cover in Eurasia beginning in late January likely offset the affect that La Nina normally has on Florida dry season rainfall. This year to date the Eurasia snow is more normal so that La Nina may be expected to bring drier conditions to Florida in late winter and spring.

# Backup Slides with additional support material

# Pacific – North American Index

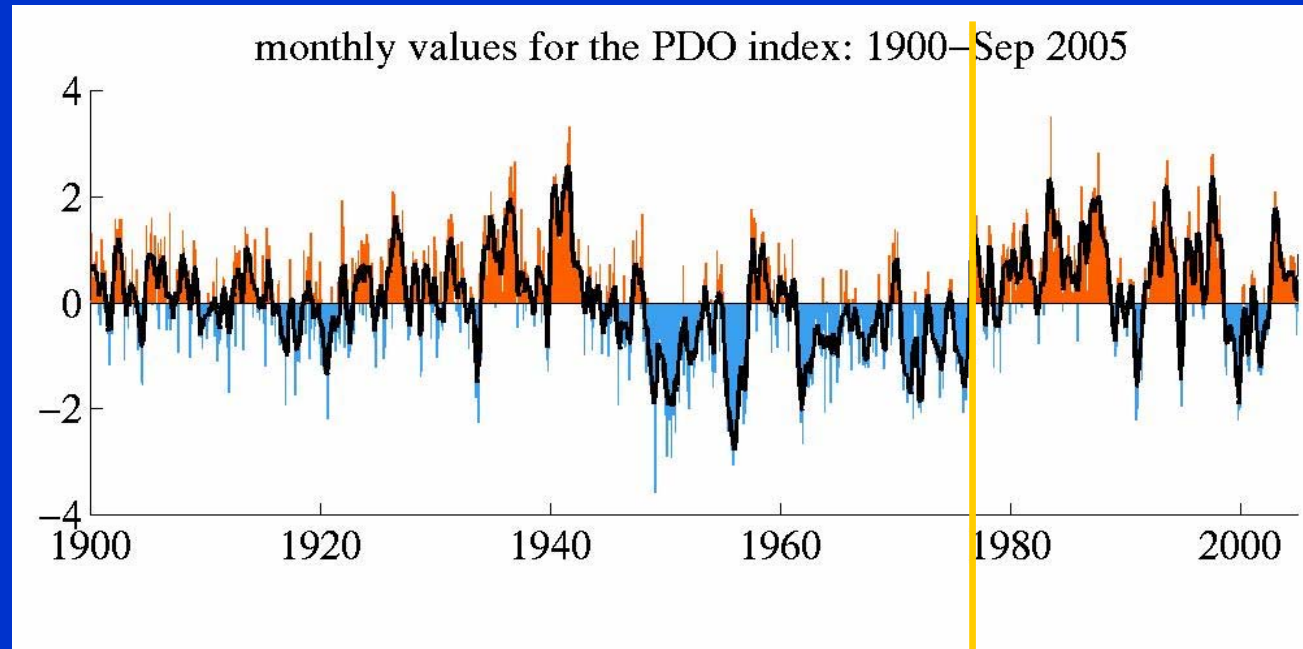


Pacific/ North American Pattern  
Standardized 3-month running mean Index through DEC 2008



Currently  
transitioning  
to cold phase of  
PDO

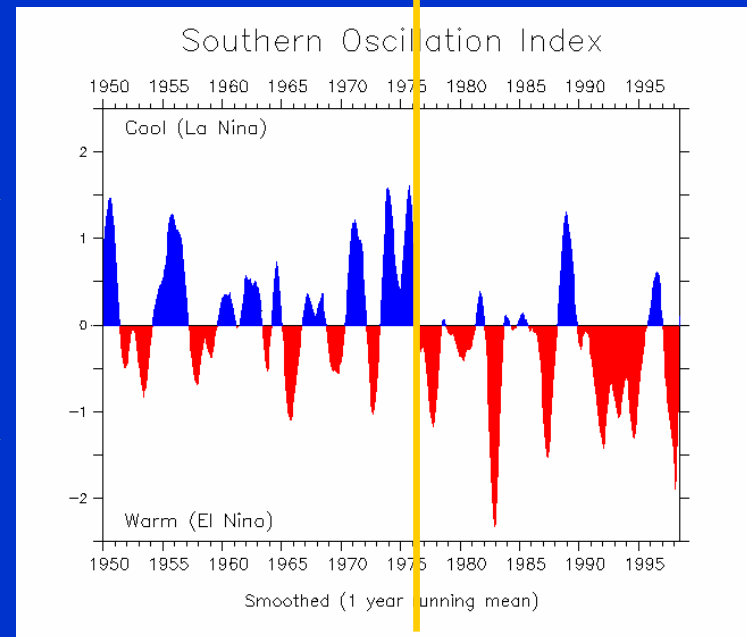
## PDO



## ENSO

La Nina predominates when  
PDO is in negative phase →

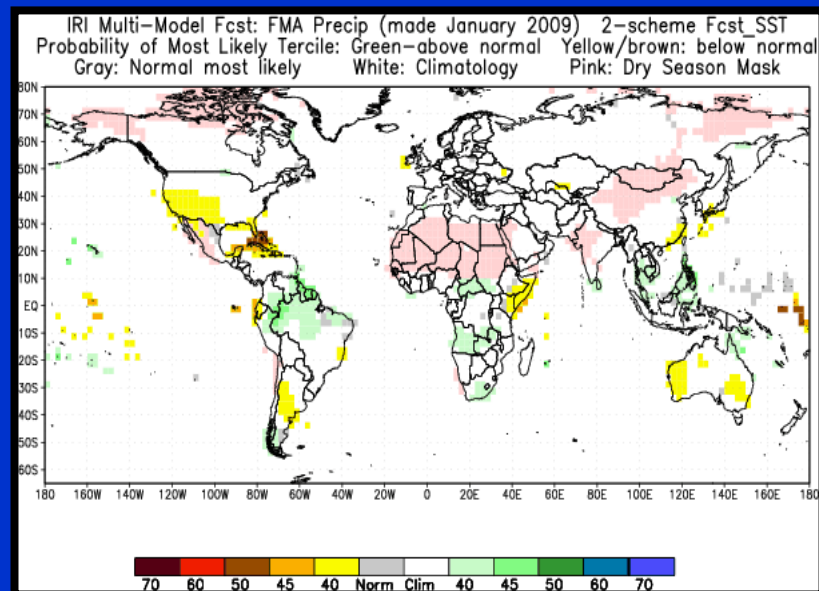
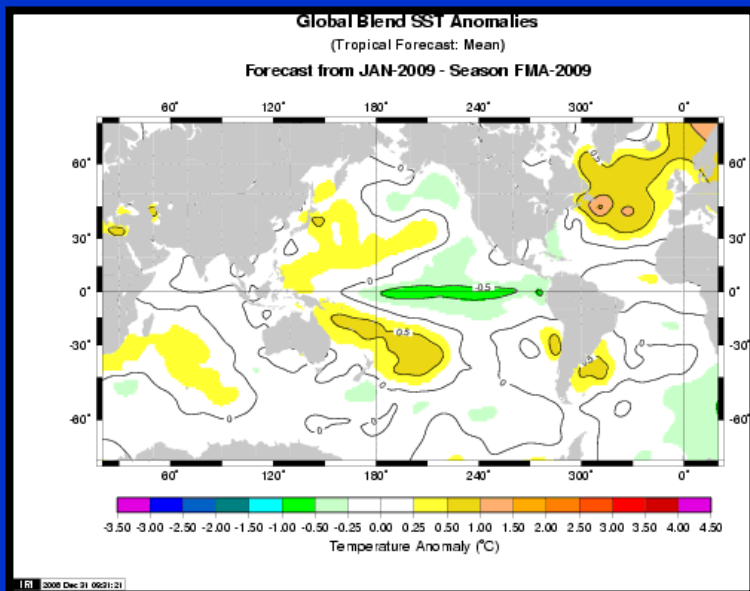
El Nino predominates when  
PDO is in positive phase →



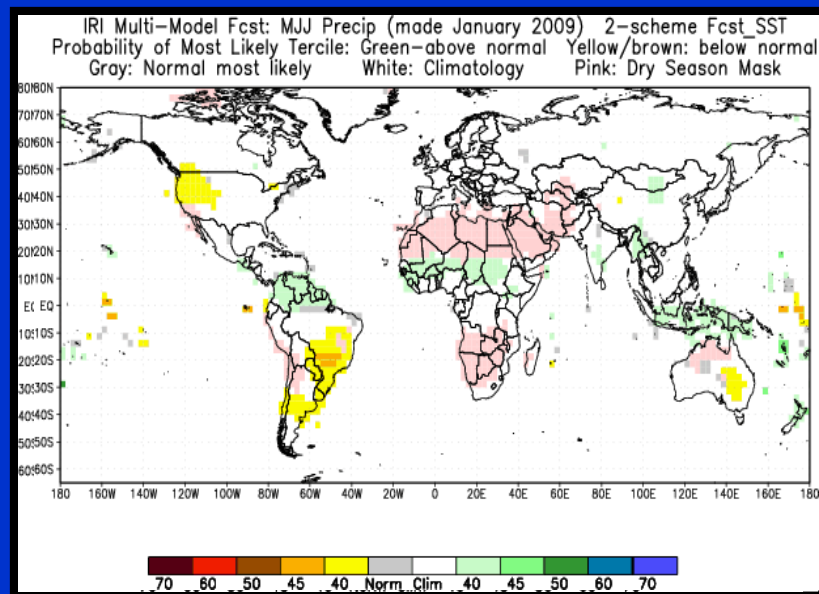
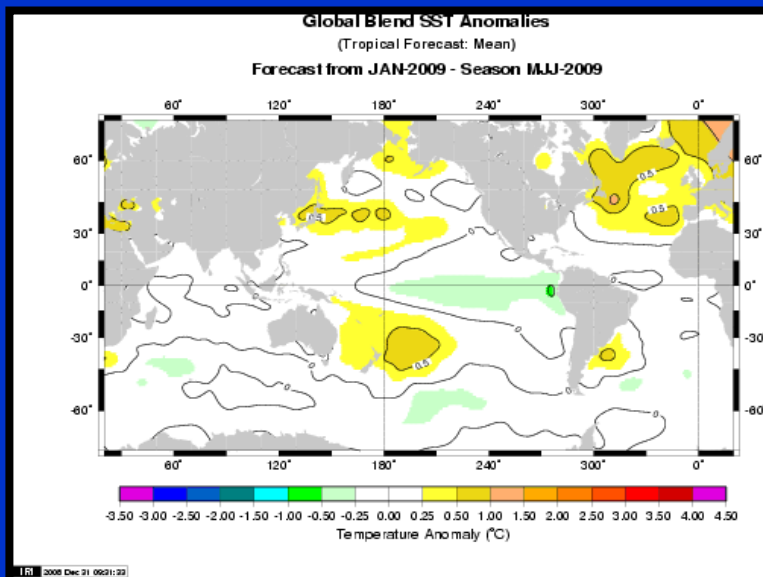


# IRI Multi-Model Forecasts 2008-2009

FMA



MJJ



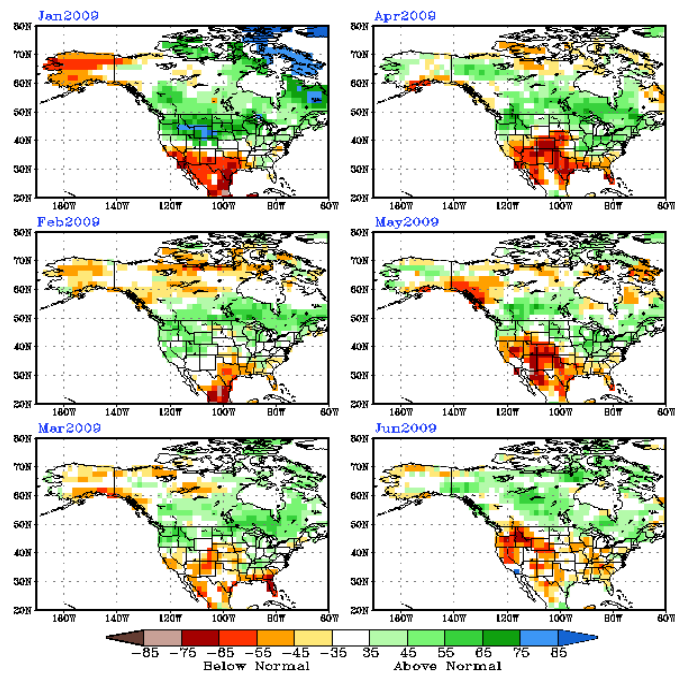




NWS/NCEP

Last update: Mon Jan 5 2009  
Initial conditions: 25Dec2008-03Jan2009

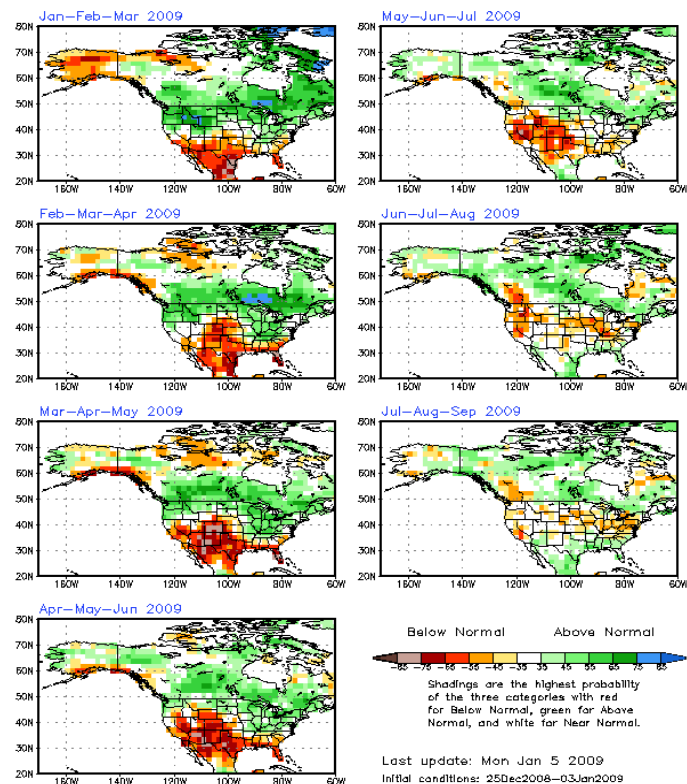
## CFS monthly Prec probability forecast



Shadings are the highest probability of the three categories with blue for Below Normal, red for Above Normal, and white for Near Normal.

Ensemble average of 40 members from initial conditions of 25Dec2008 to 03Jan2009.  
Base period for climatology is 1982-2003. Base period for bias correction is 1982-2003.

## CFS seasonal Prec probability forecast



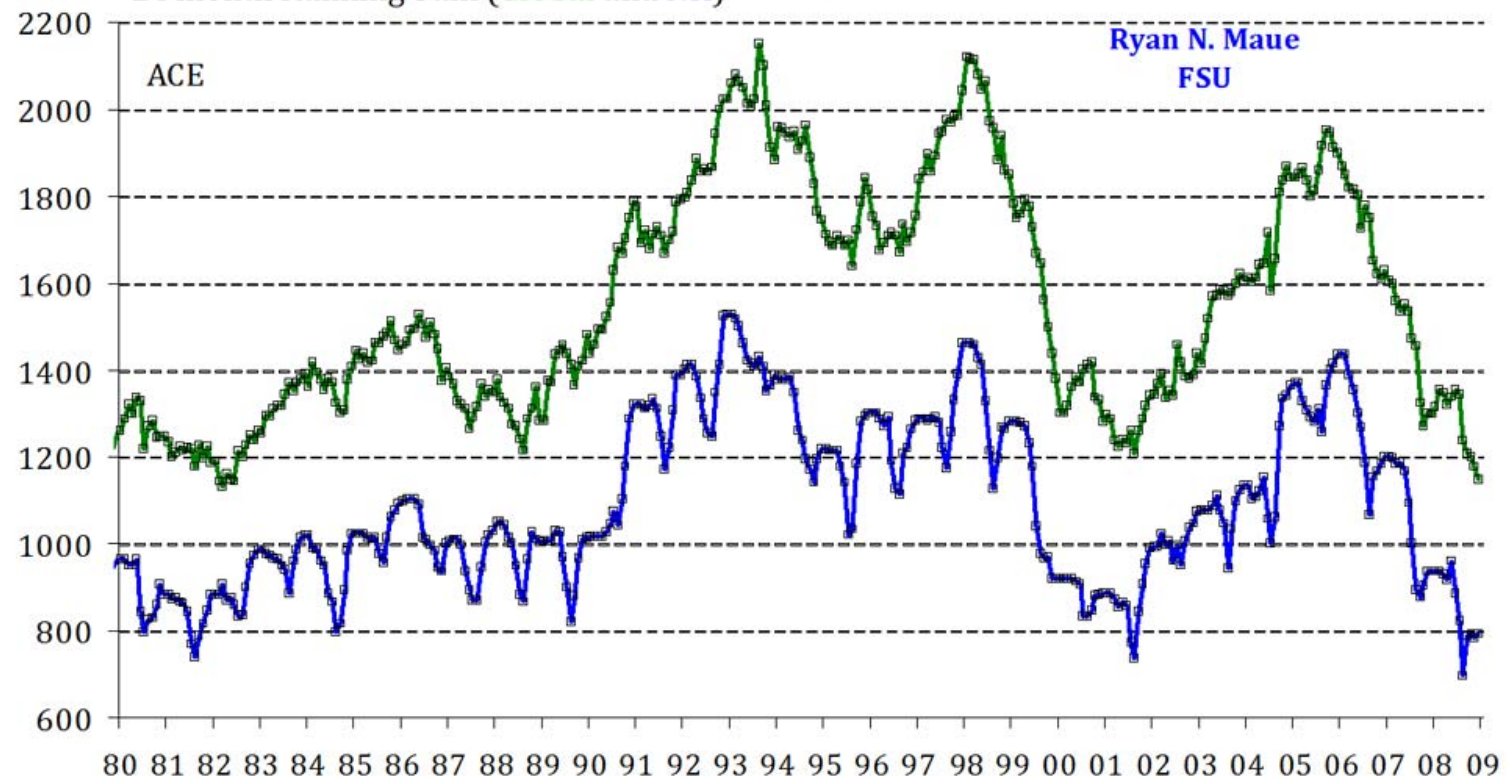
Last update: Mon Jan 5 2009  
Initial conditions: 25Dec2008-03Jan2009



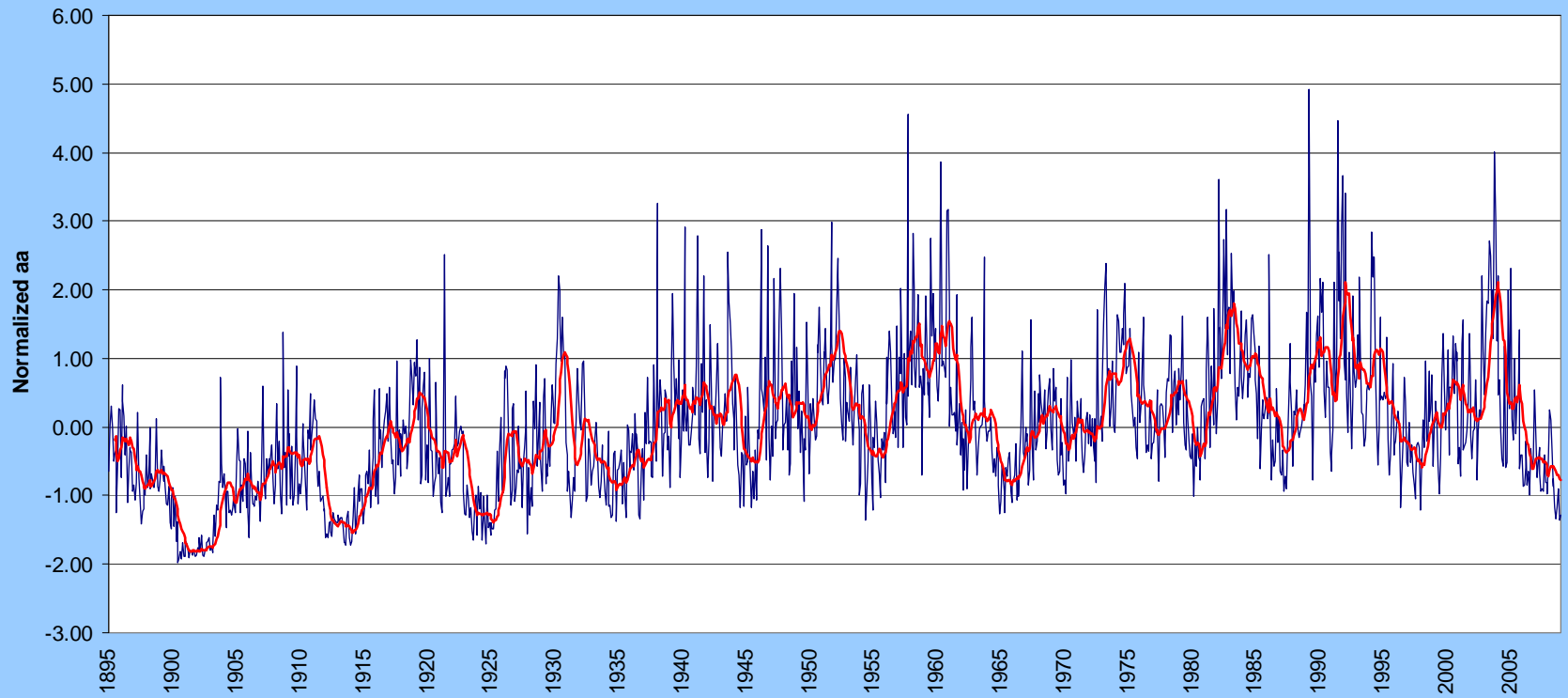
NWS/NCEP

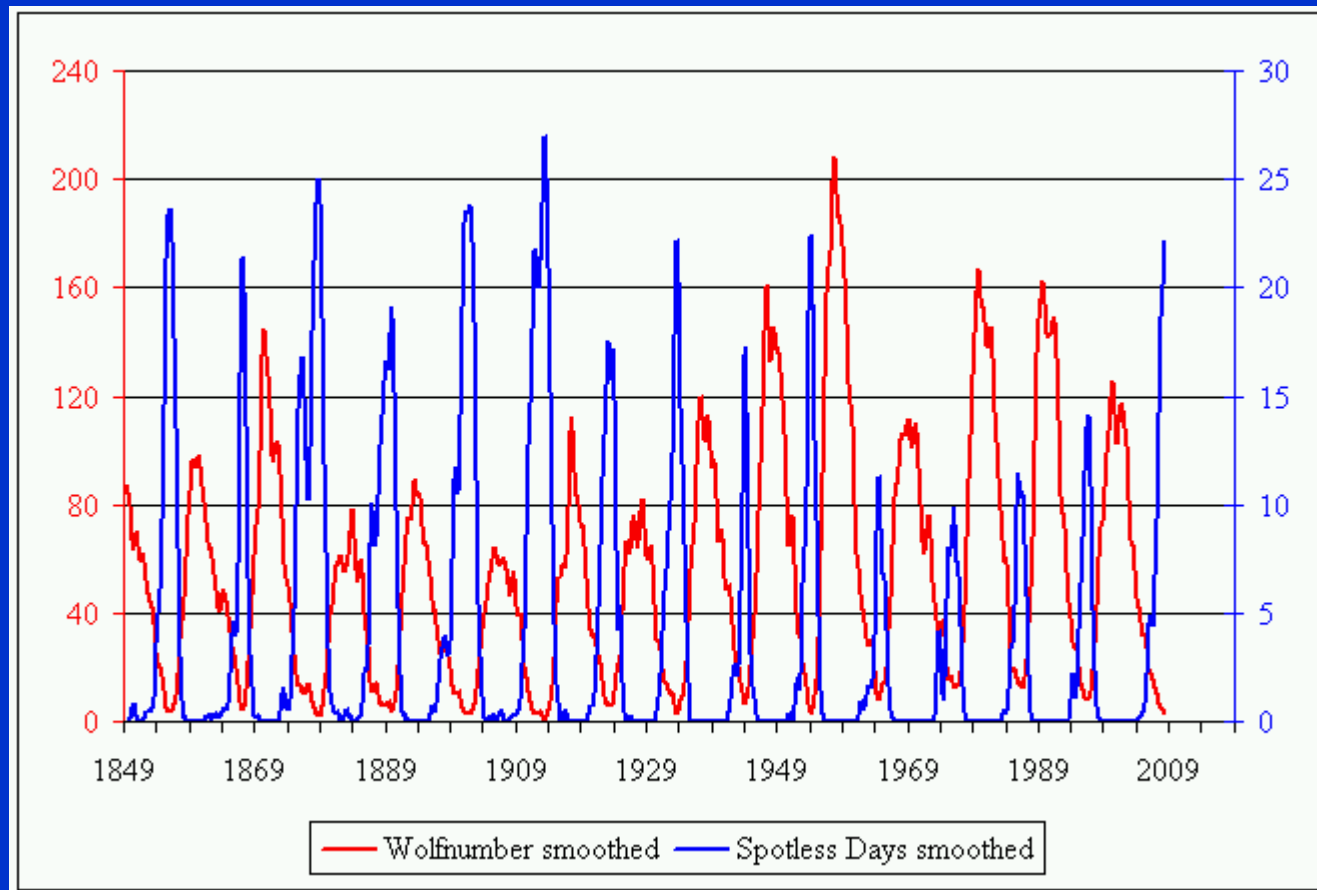
Tropical Cyclone ACE 1980-2008  
24 month Running Sum (Global and NH)

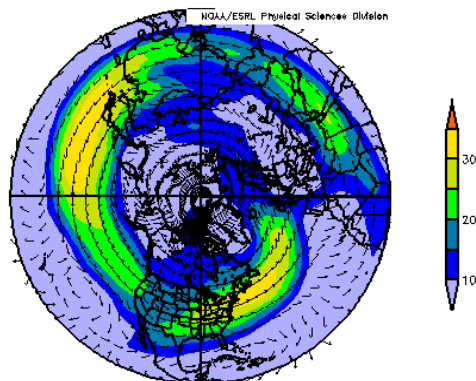
Updated Through December 31, 2008



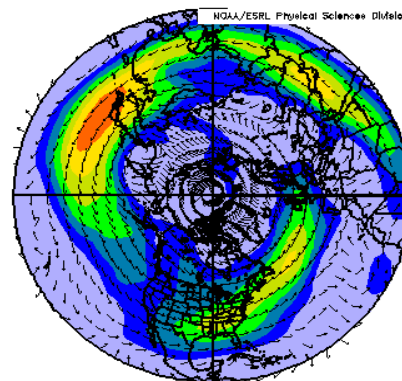
**Solar Activity (aa index smoothed)**



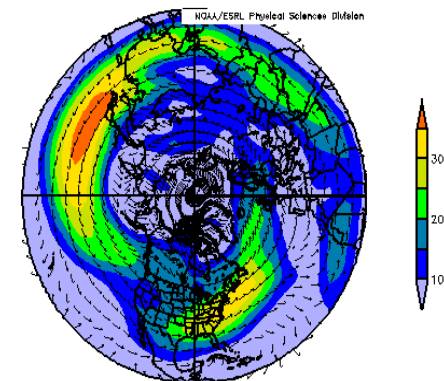




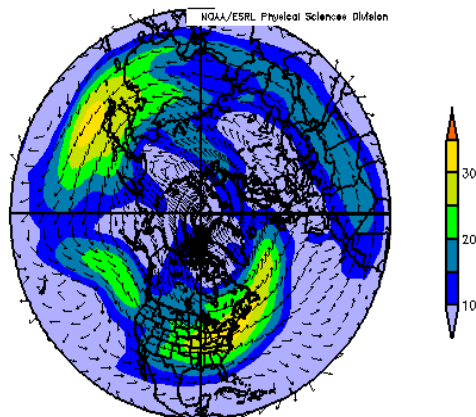
500mb Vector Wind (m/s) Composite Mean  
12/1/07 to 12/31/07  
NCEP/NCAR Reanalysis



500mb Vector Wind (m/s) Composite Mean  
1/1/08 to 1/31/08  
NCEP/NCAR Reanalysis



500mb Vector Wind (m/s) Composite Mean  
2/1/08 to 2/26/08  
NCEP/NCAR Reanalysis



500mb Vector Wind (m/s) Composite Mean  
12/1/08 to 12/31/08  
NCEP/NCAR Reanalysis