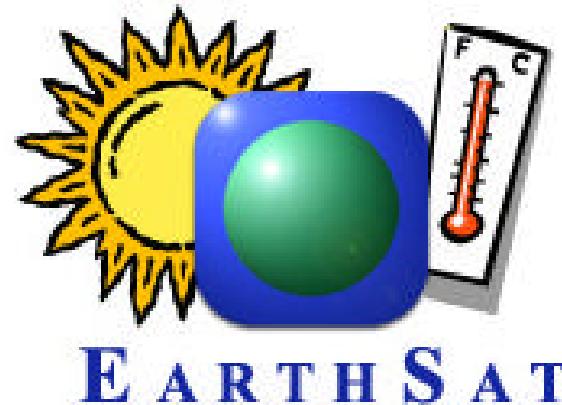


EARTHSAT SUMMER SEMINAR

March 2001



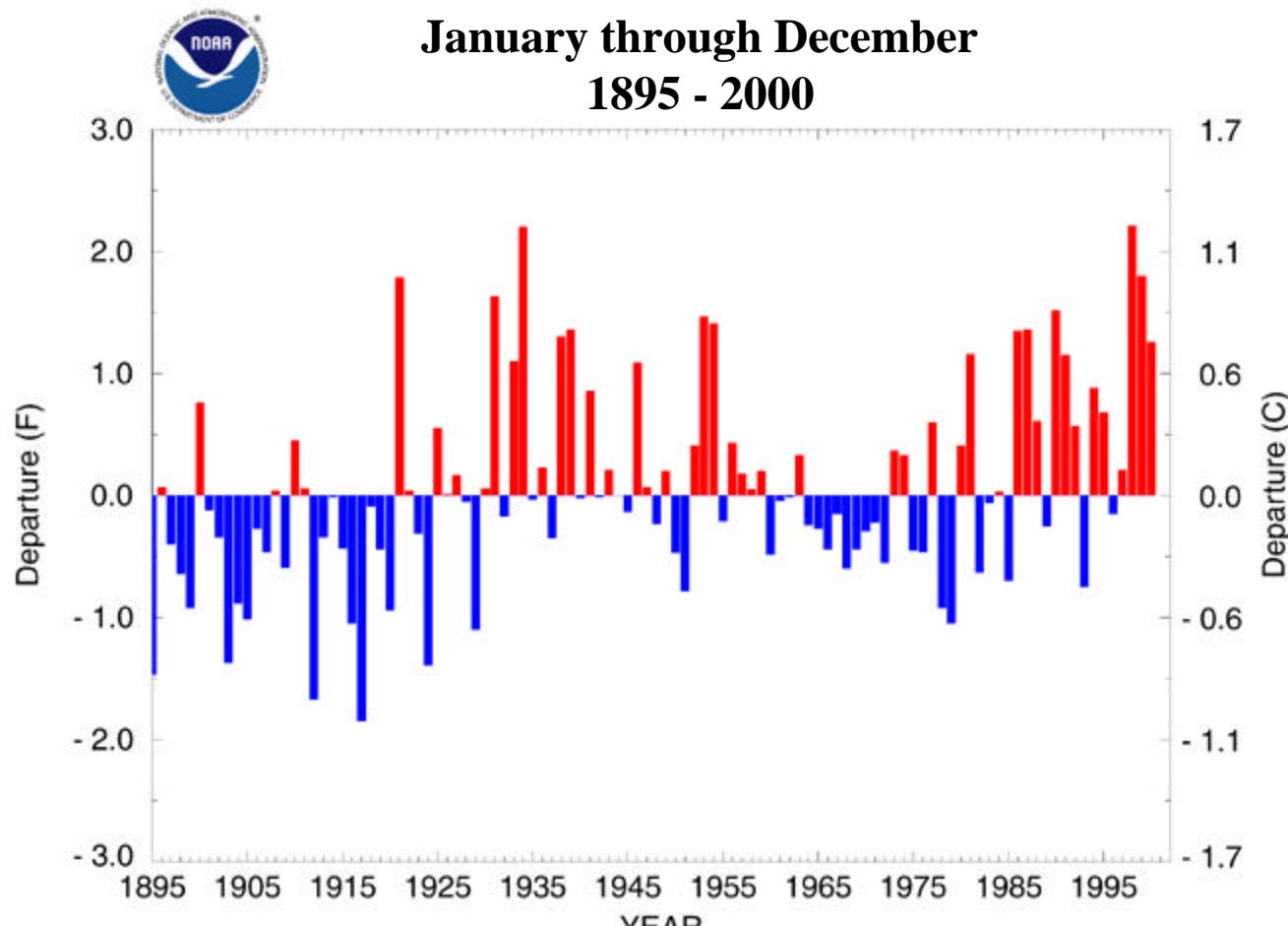


SEMINAR GOALS

- What's New In Weather---New Normals!
- Summer Outlook
- Hurricane Outlook
- Winter Preview



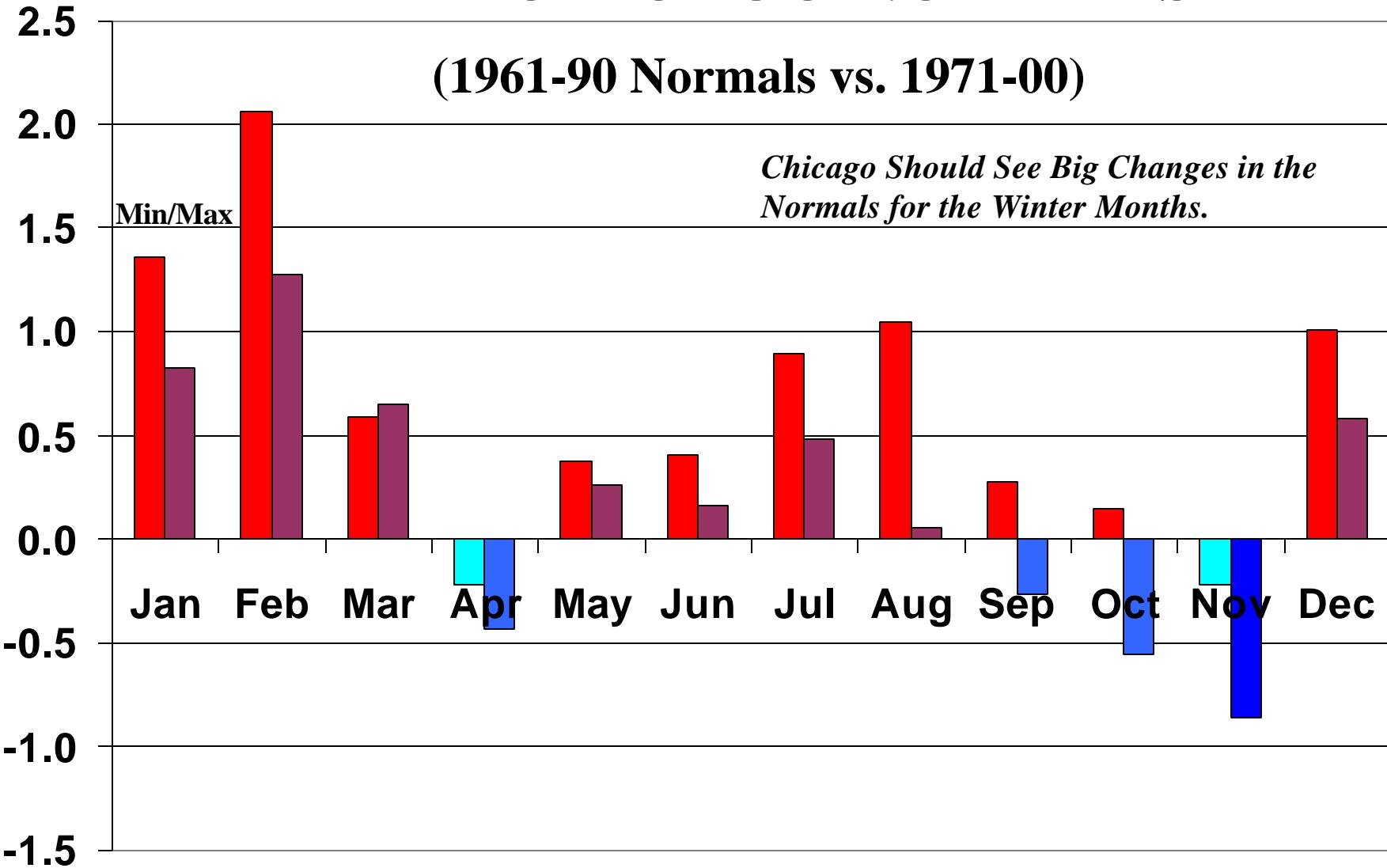
U.S. NATIONAL TEMPERATURE ANOMALIES



National Climatic Data Center, NOAA

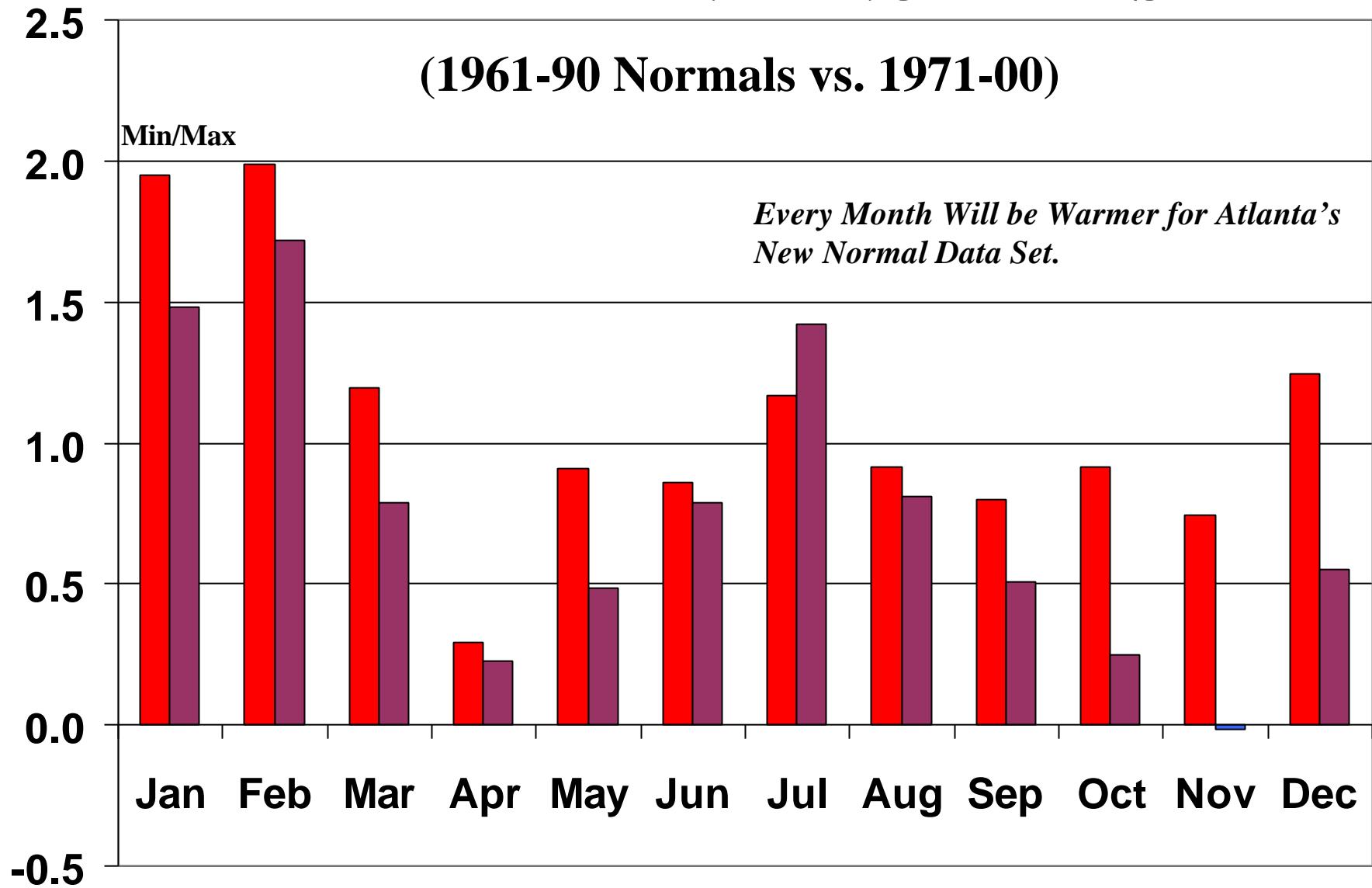


EXPECTED CHANGES FOR THE CHICAGO NORMALS



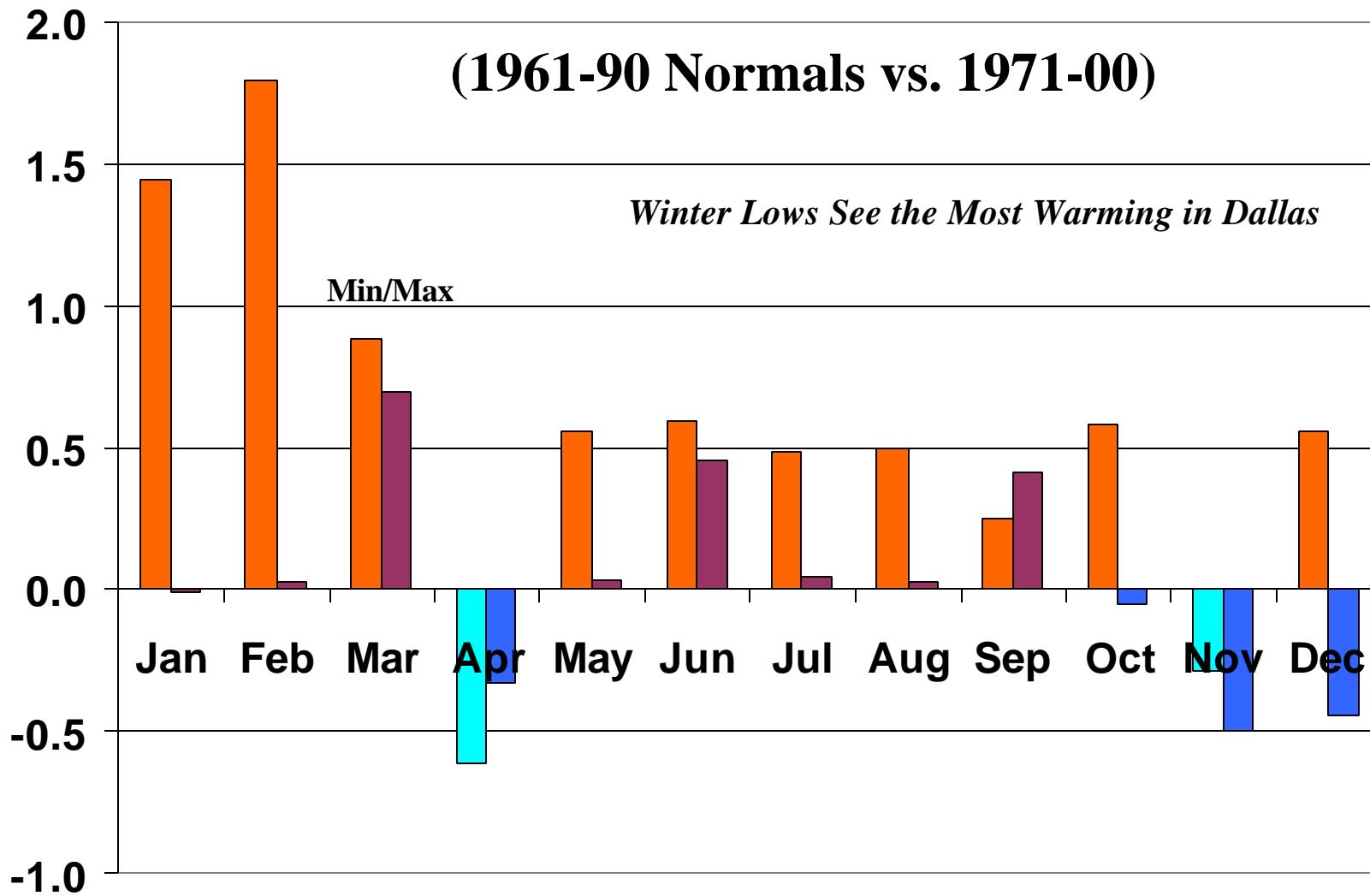


EXPECTED CHANGES FOR THE ATLANTA NORMALS



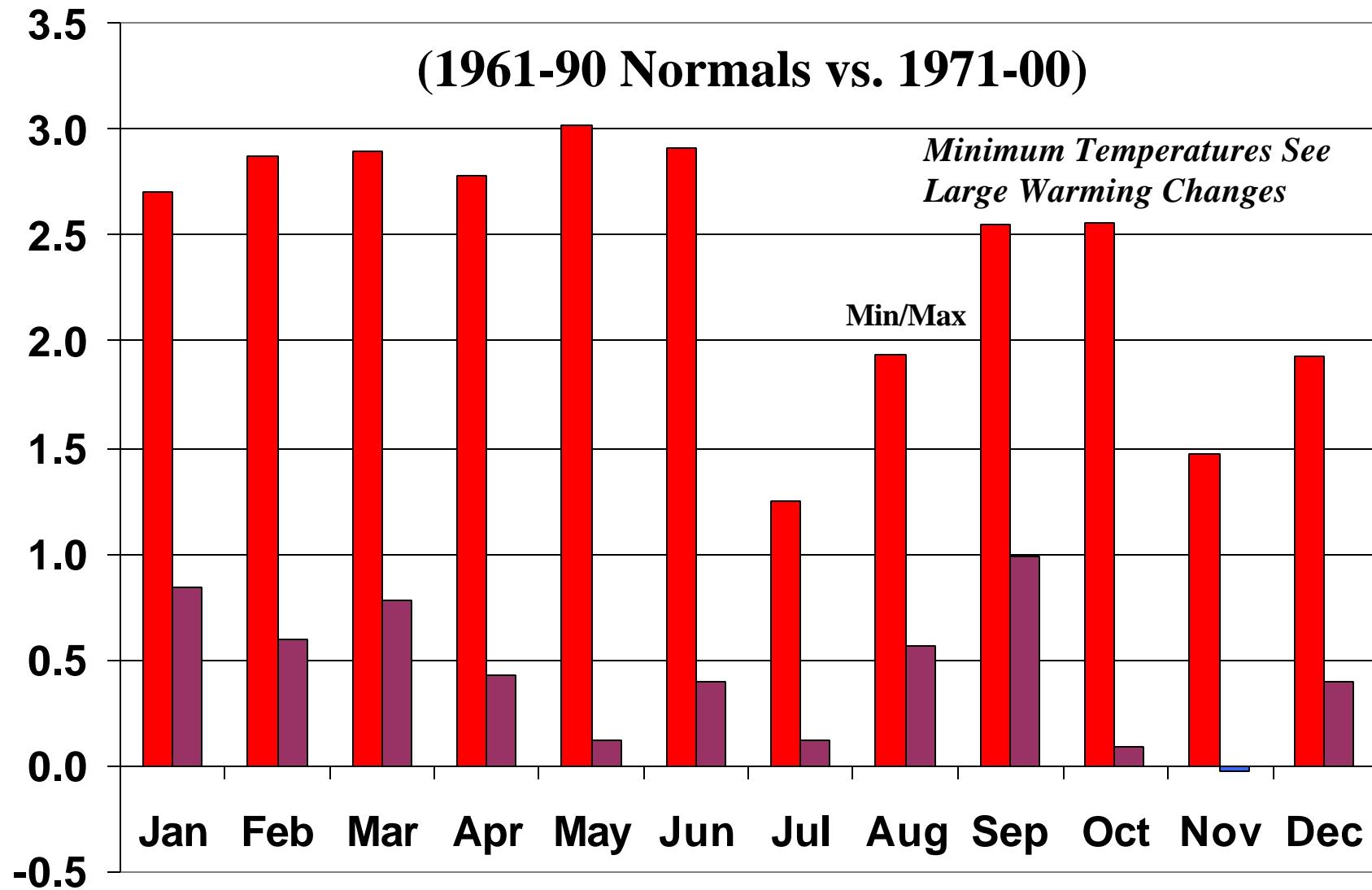


EXPECTED CHANGES FOR THE DALLAS NORMALS



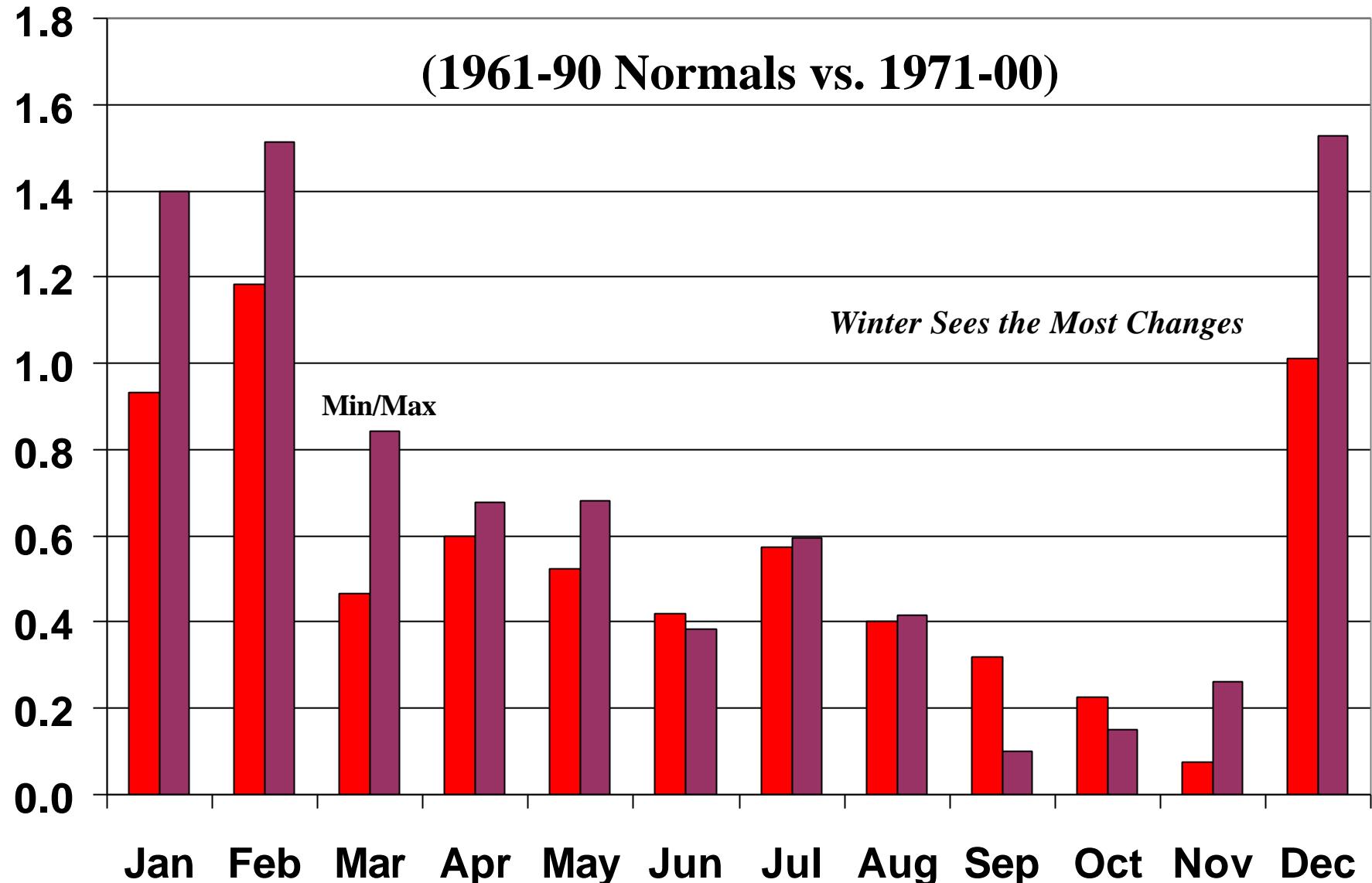


EXPECTED CHANGES FOR THE PHOENIX NORMALS



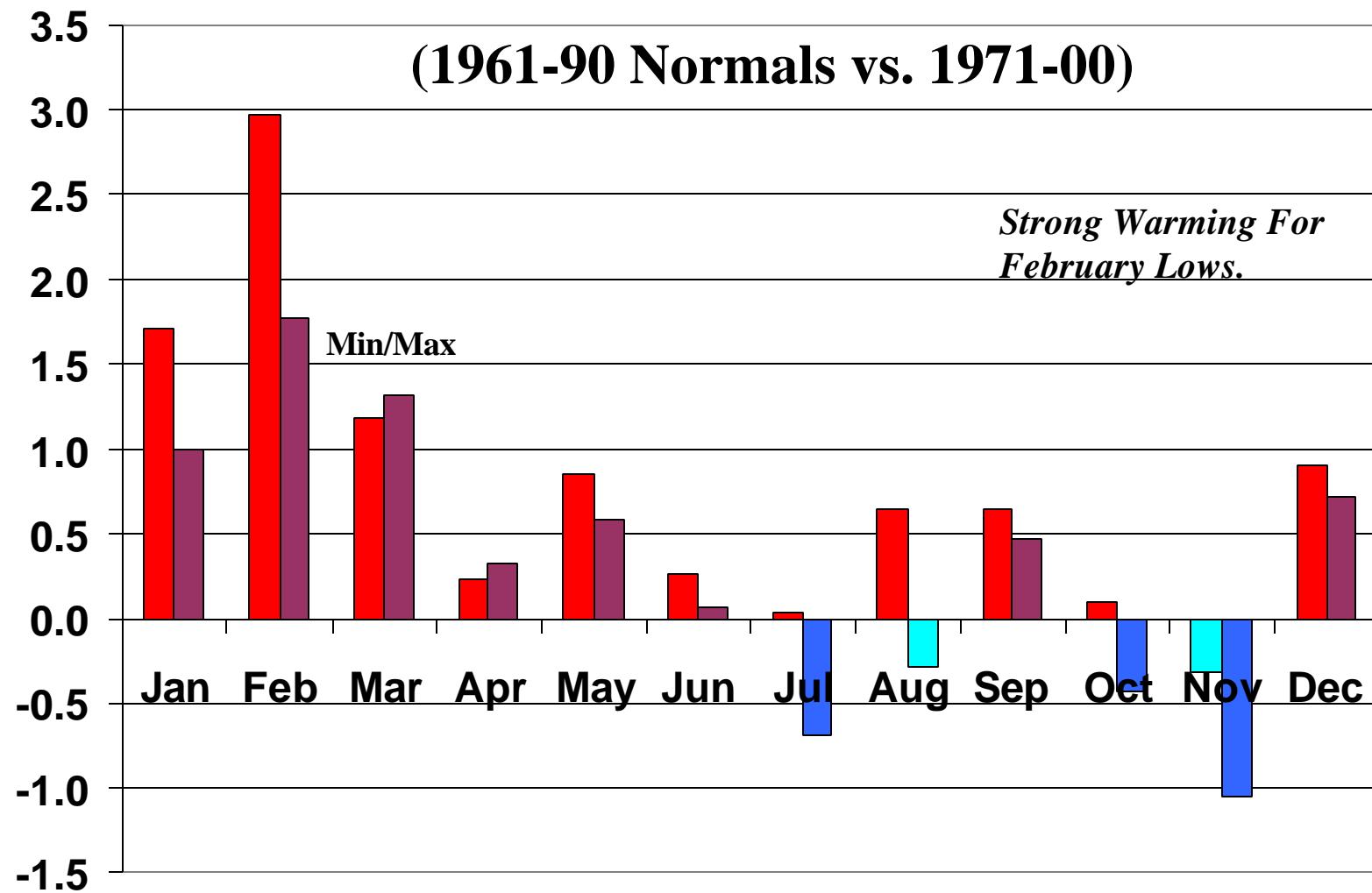


EXPECTED CHANGES FOR THE NEW YORK NORMALS





EXPECTED CHANGES FOR THE MINNEAPOLIS NORMALS



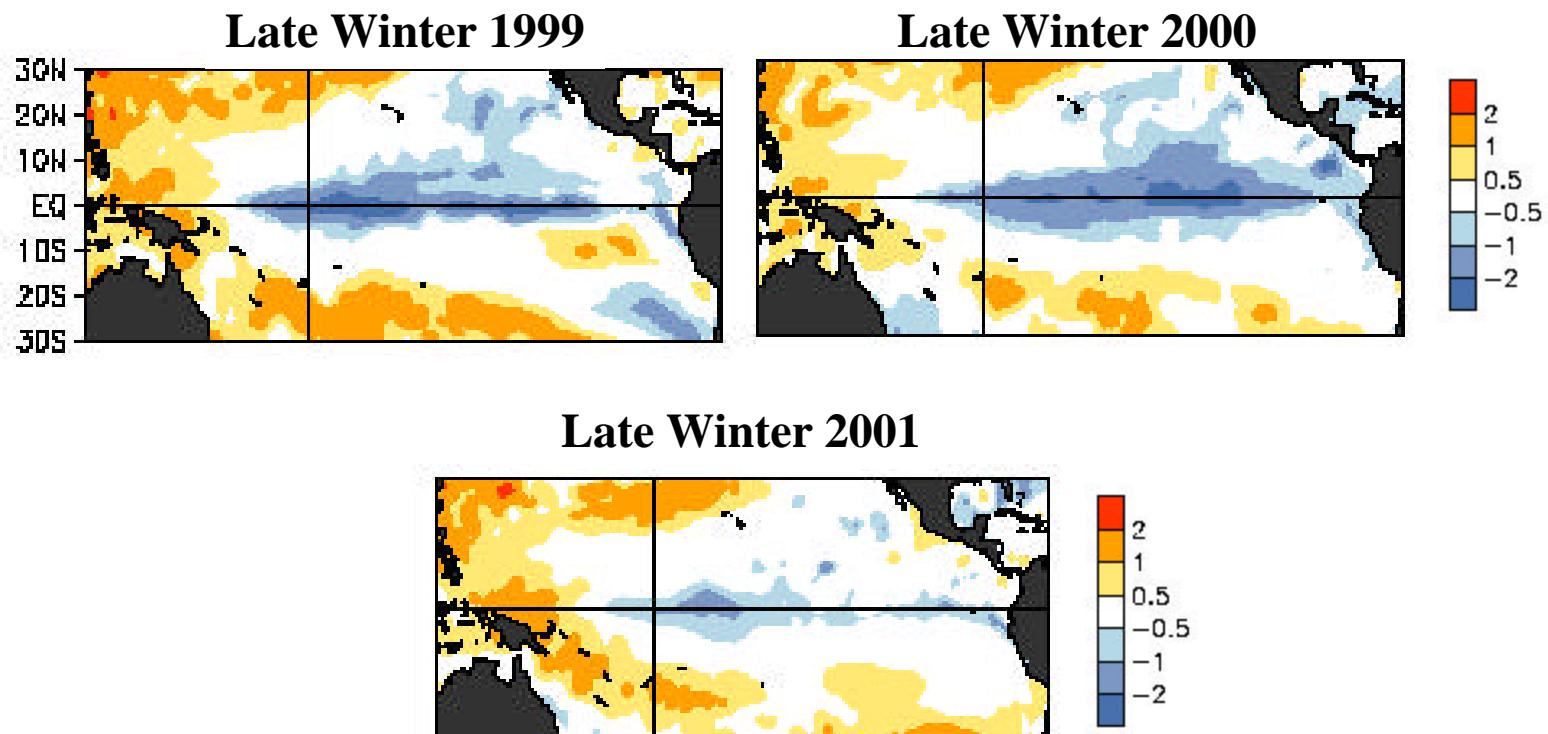


CURRENT TROPICAL PACIFIC DIAGNOSTIC DISCUSSION

- **Tropical Pacific Sea Surface Temperatures (SST)**
 - Most significant cooling is confined to the central portions of the Pacific
 - The SST anomaly in January 2001 is weaker than January 1999 and 2000
- **Southern Oscillation Index (SOI)**
 - The SOI has increased significantly over the past three months
 - The February SOI is (+1.5). The five month running SOI is (+1.3)
- **Equatorial Subsurface Water Temperatures**
 - Depth of anomalous cold water remains substantial
 - Magnitude of anomalies is moderating compared to last year and last month
- **Tropical Pacific Cloud Cover (OLR) and Rainfall Patterns**
 - Drier-than-normal conditions over central Pacific
 - Clearest (cloud-free) conditions in over a year

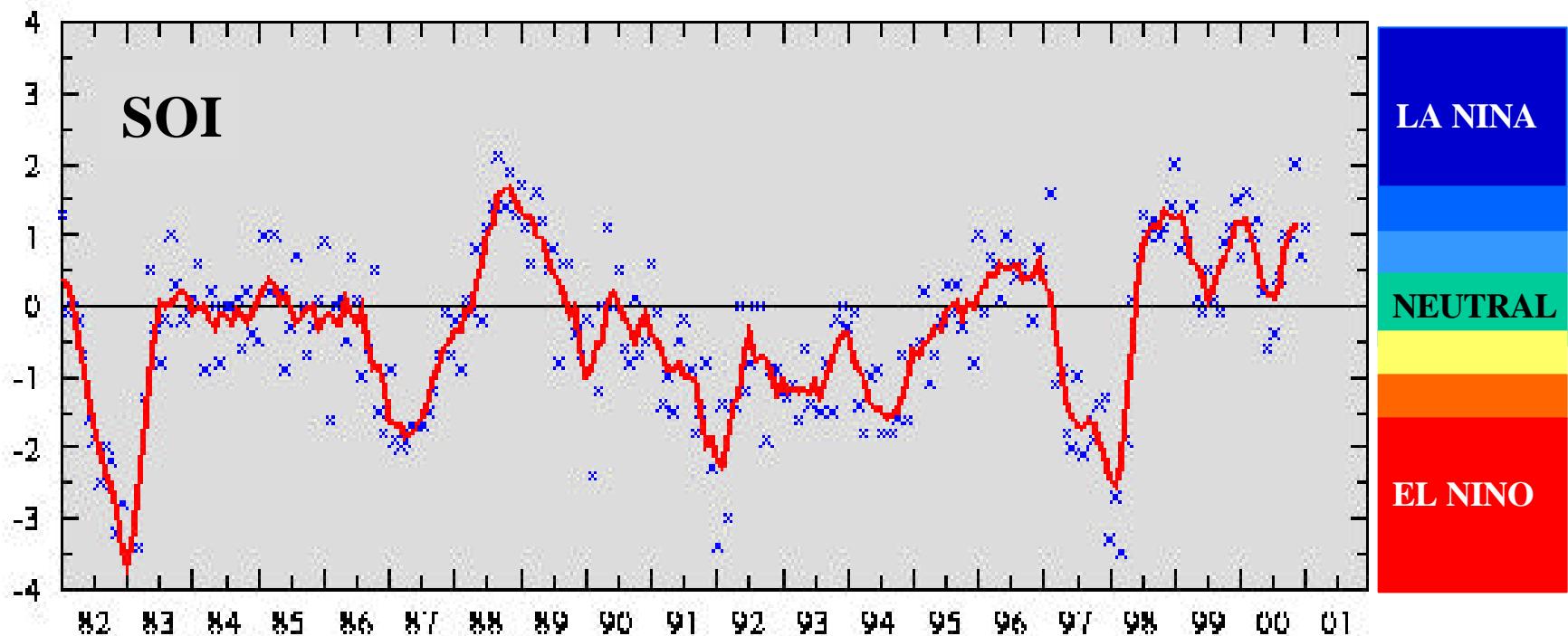


MONITORING TROPICAL PACIFIC SEA SURFACE TEMPERATURES ANOMALIES



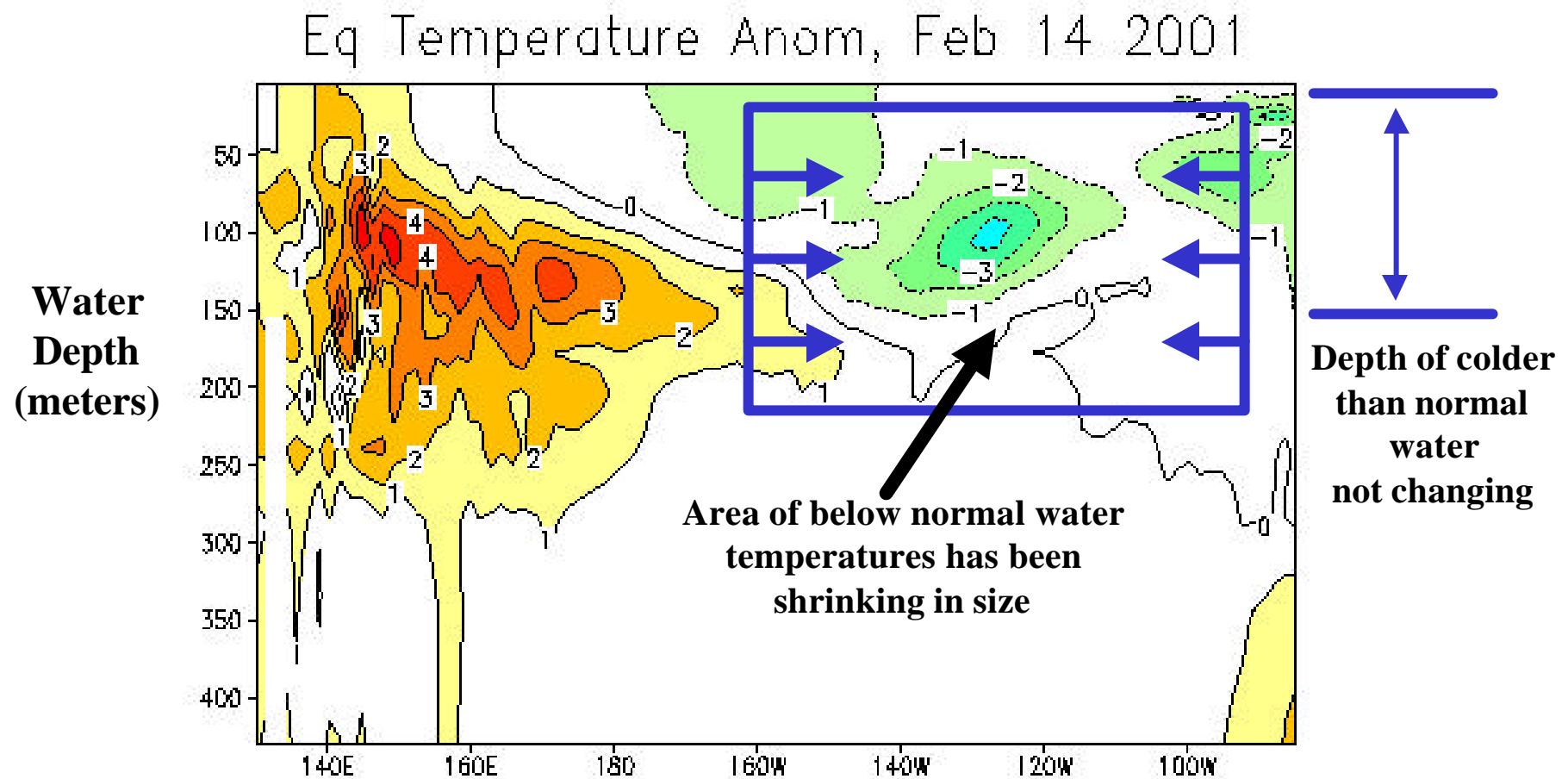


MONITORING TROPICAL PACIFIC SOUTHERN OSCILLATION INDEX (SOI)



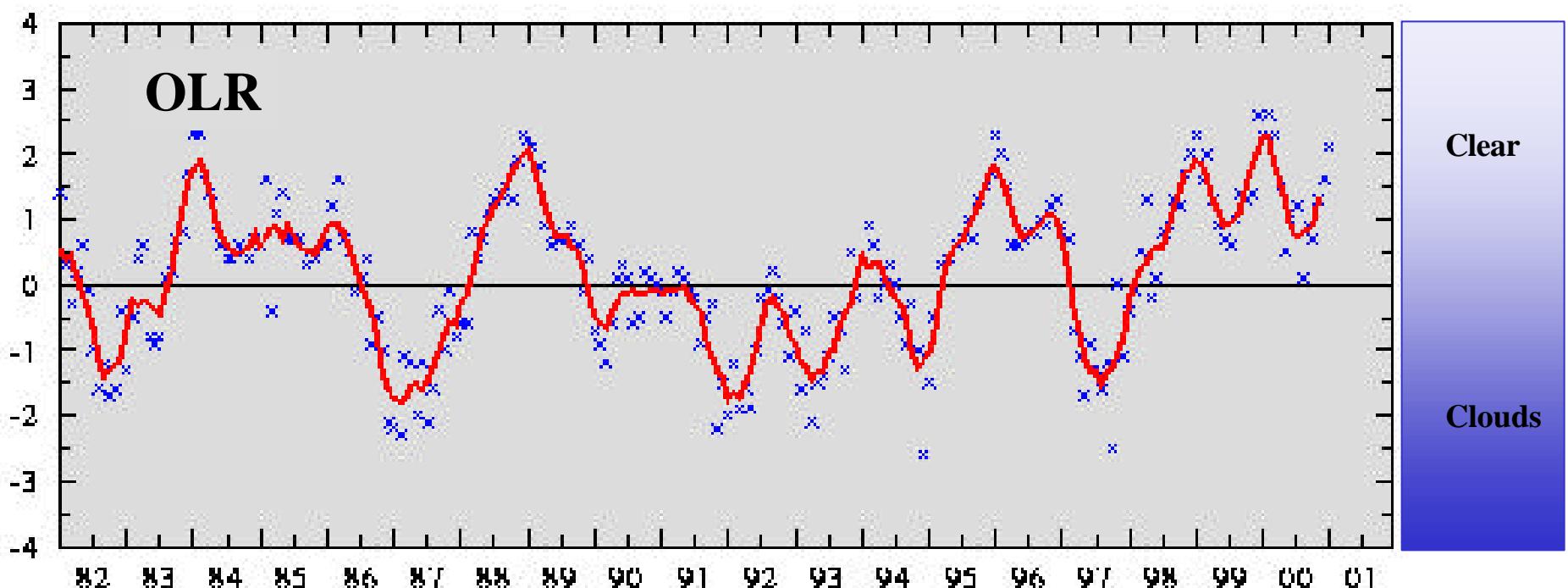


MONITORING THE TROPICAL PACIFIC SUB SURFACE WATER TEMPERATURES





MONITORING TROPICAL PACIFIC OUTGOING LONG WAVE RADIATION (OLR)

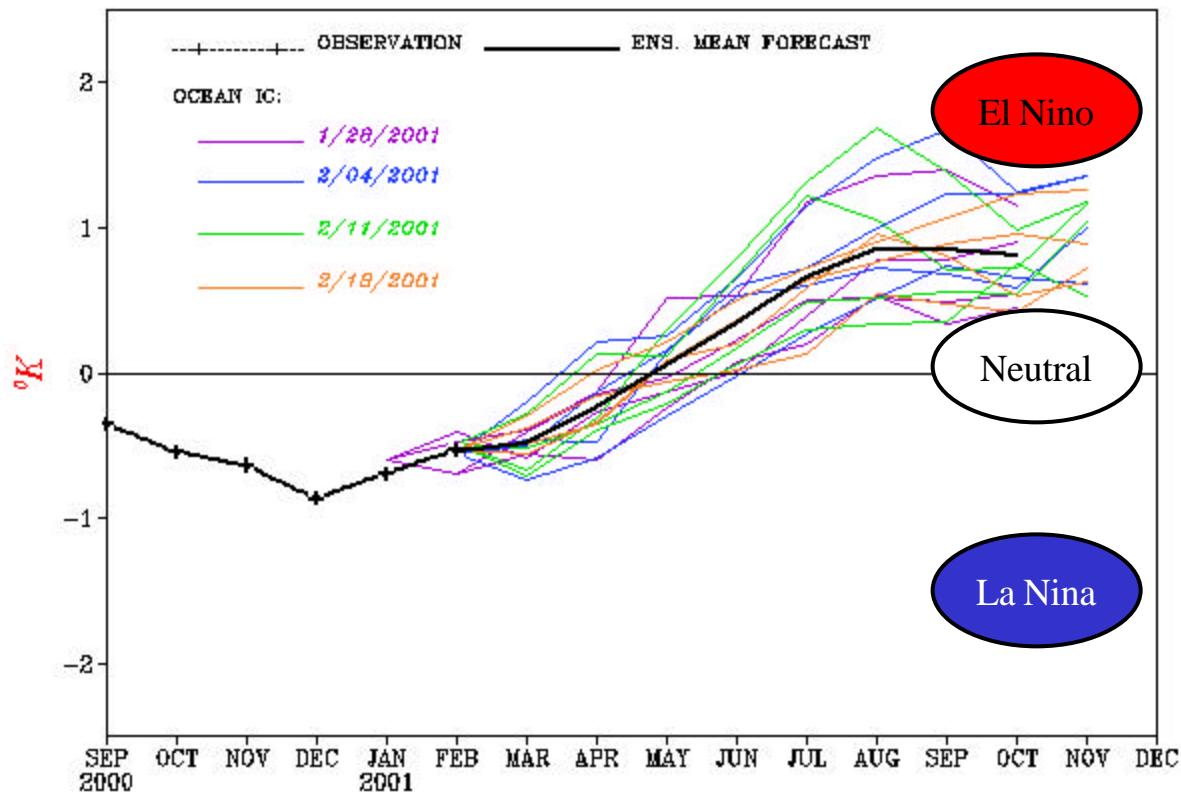




NCEP/CMB

COOLING SEASON MODEL RUN

FORECAST Niño3.4 SST ANOMALIES



Updated: Tuesday, March 6, 2001

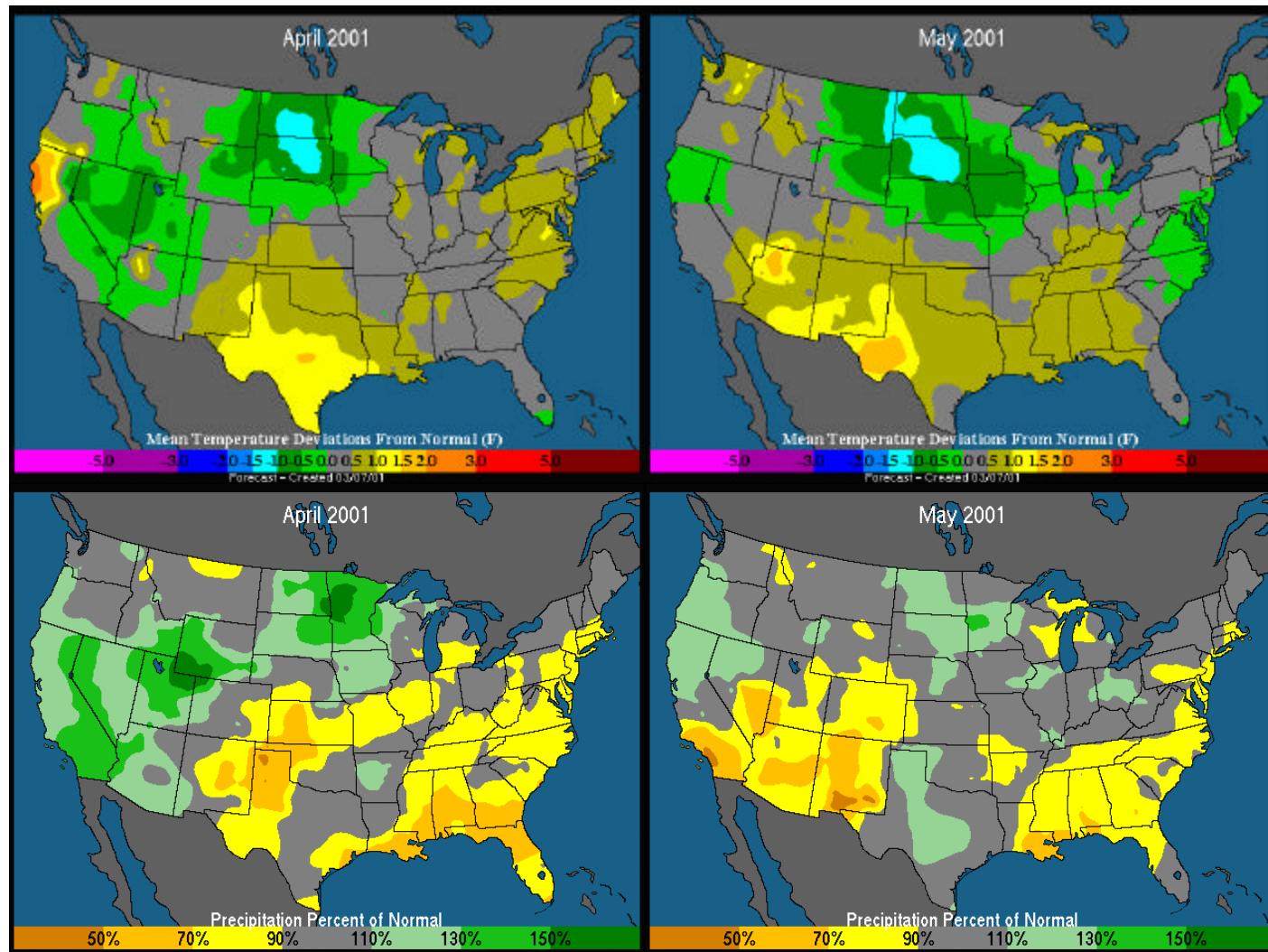
EarthSat's

Similar Years	Model
Summers	Weight (%)
1963	19.6
1986	17.8
1968	13.0
1951	12.9
1996	7.3
1965	6.8
1972	6.7
1962	6.2
1957	5.1
1966	4.5



SPRING FORECAST

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EARTH SATELLITE CORPORATION'S ENERGY WEATHER OUTLOOK

COOLING SEASON 2001



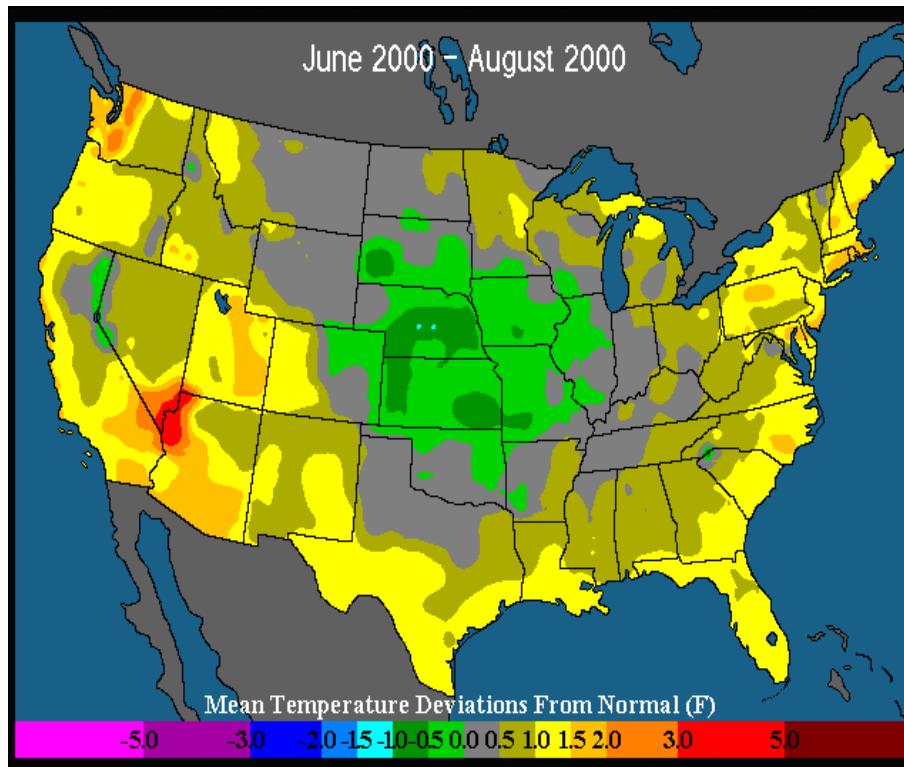
LONG RANGE FORECAST TOOLS

- Trend/Persistence
- Similar Year's Analysis
- Tropical Pacific Correlations

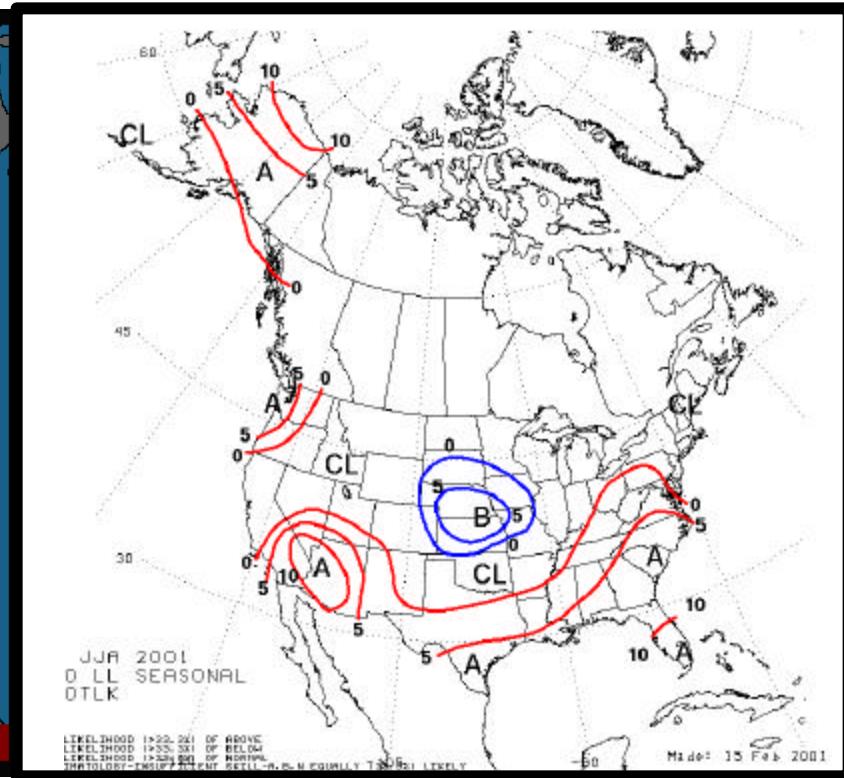


FORECAST COMPARISON

Using Decadal Trends



Forecast Prepared: Spring 2000
Forecast Valid: Summer 2000



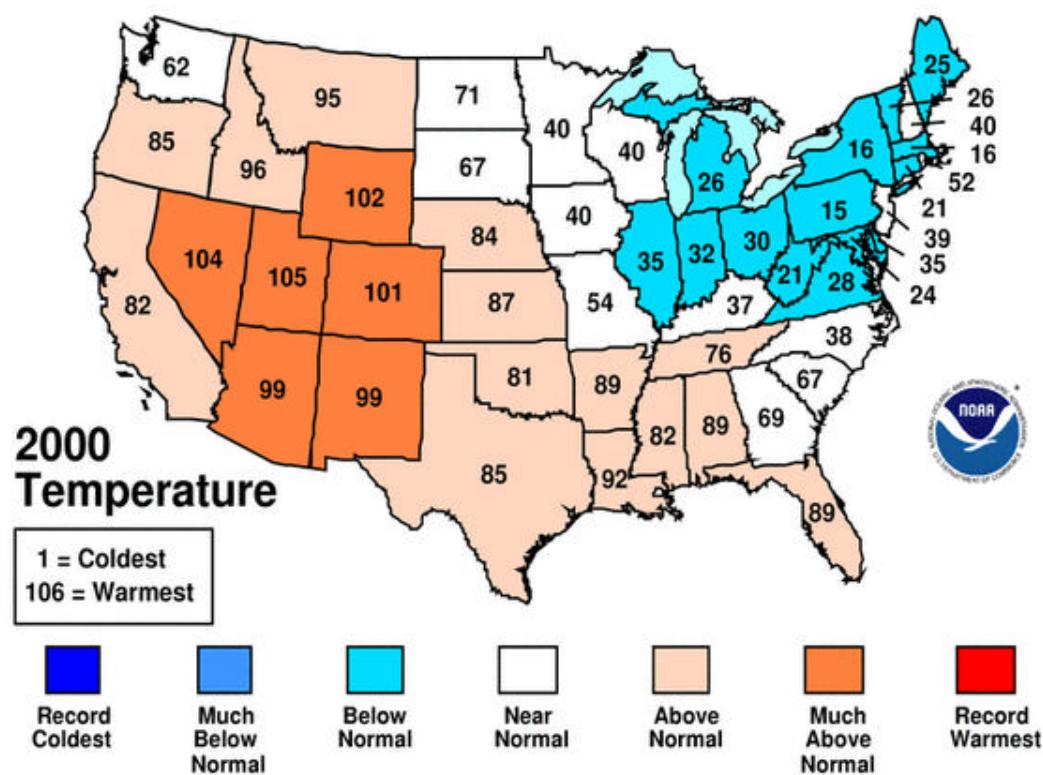
Forecast Prepared: February 2001
Forecast Valid: Summer 2001



STATEWIDE RANKS

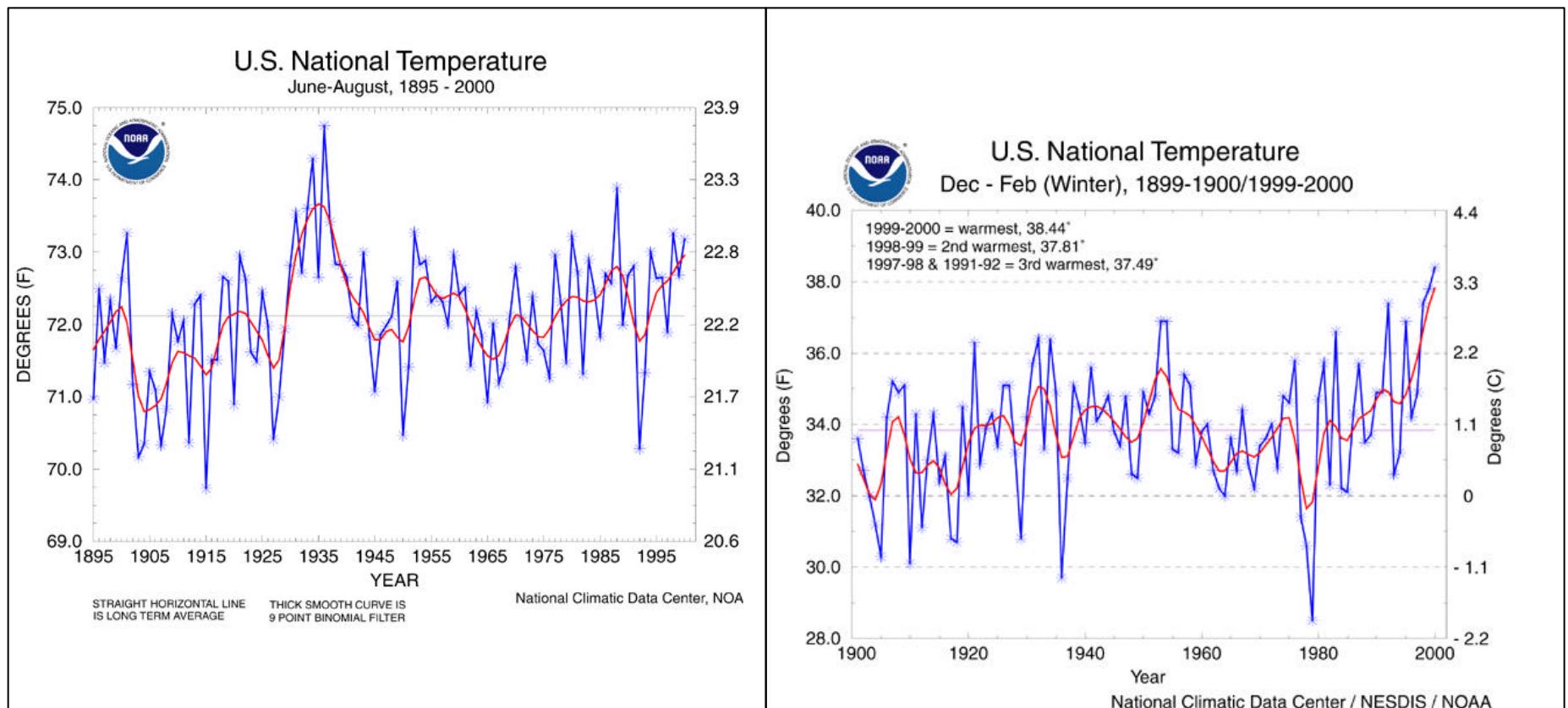
JUNE – AUGUST 2000

National Climatic Data Center/NESDIS/NOAA



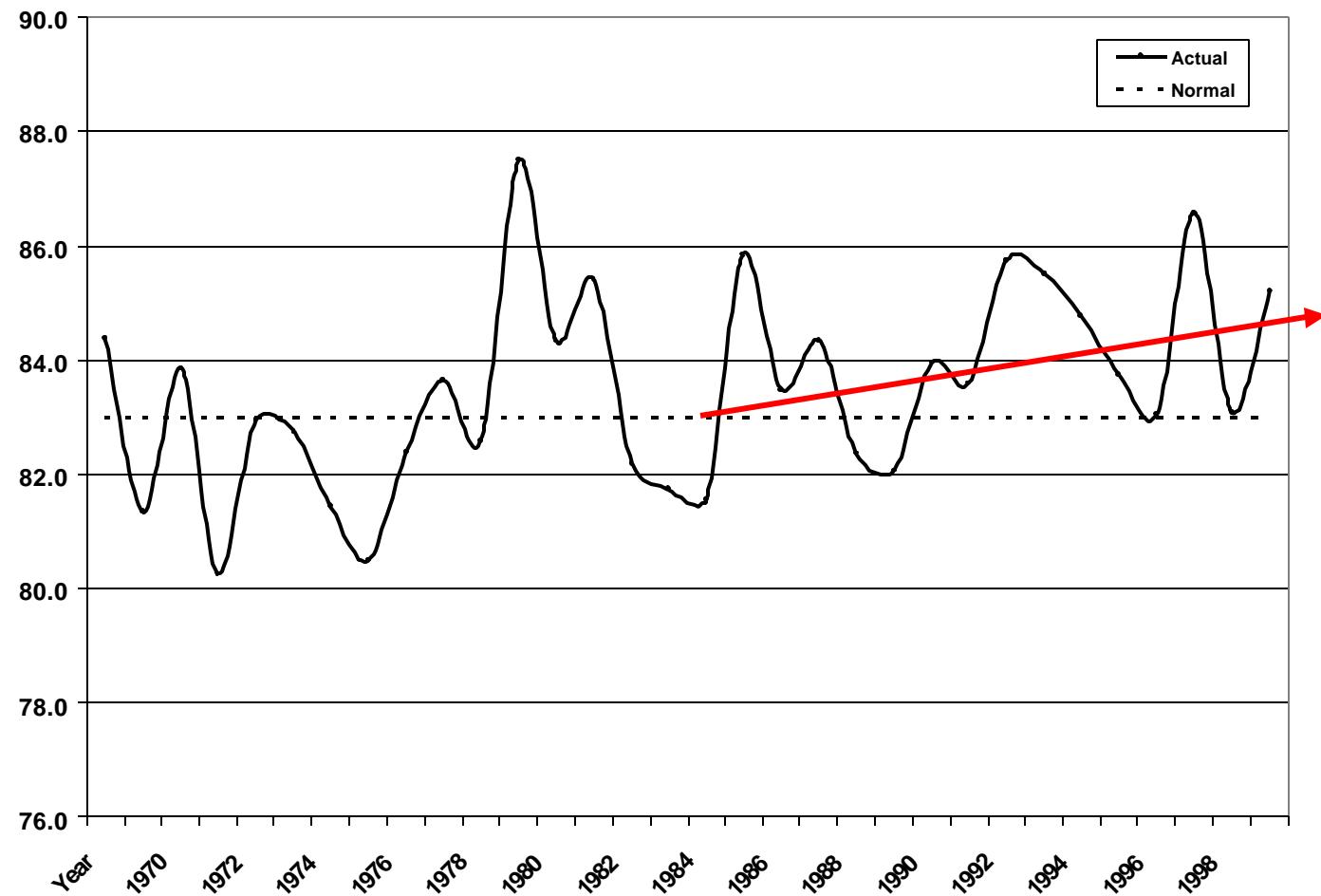


SUMMER VERSUS WINTER TRENDS....



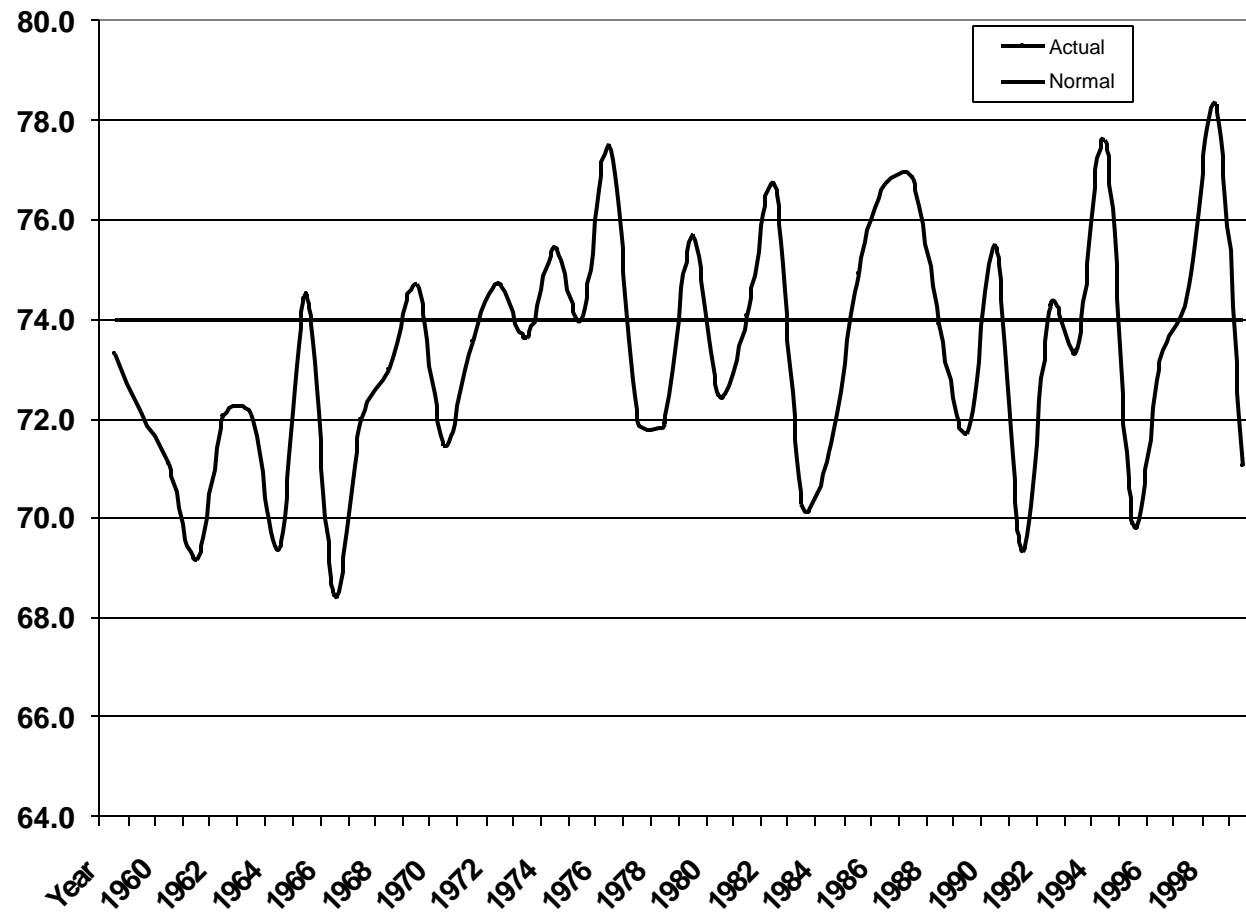


JULY LONG TERM TRENDS IN HOUSTON





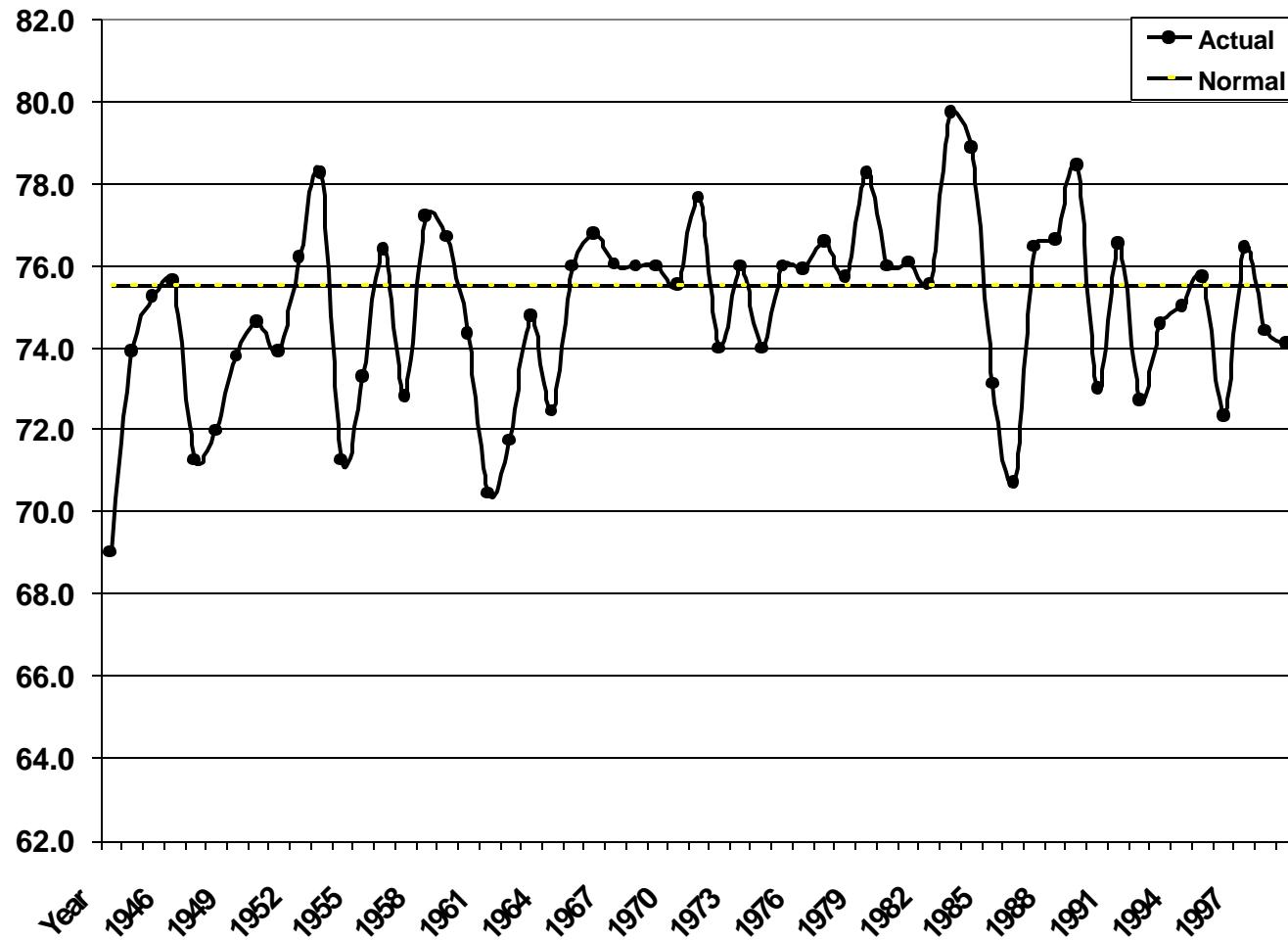
JULY LONG TERM TRENDS IN CHICAGO



No Obvious Trends for Chicago Summer Heat



JULY LONG TERM TRENDS IN BURBANK

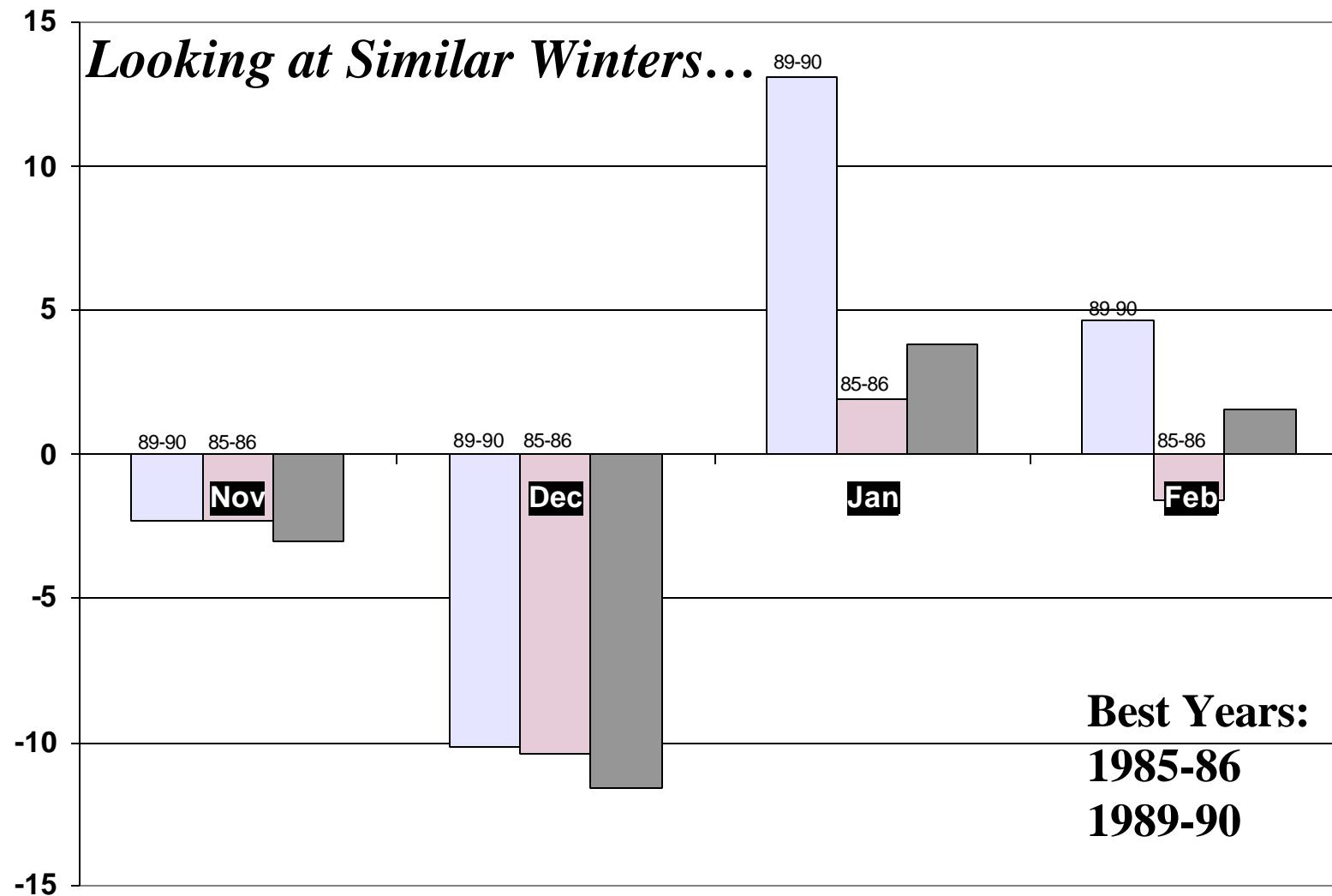


No Major Trends---Possible Cooling in Last Decade.



SIMILAR YEARS ANALYSIS

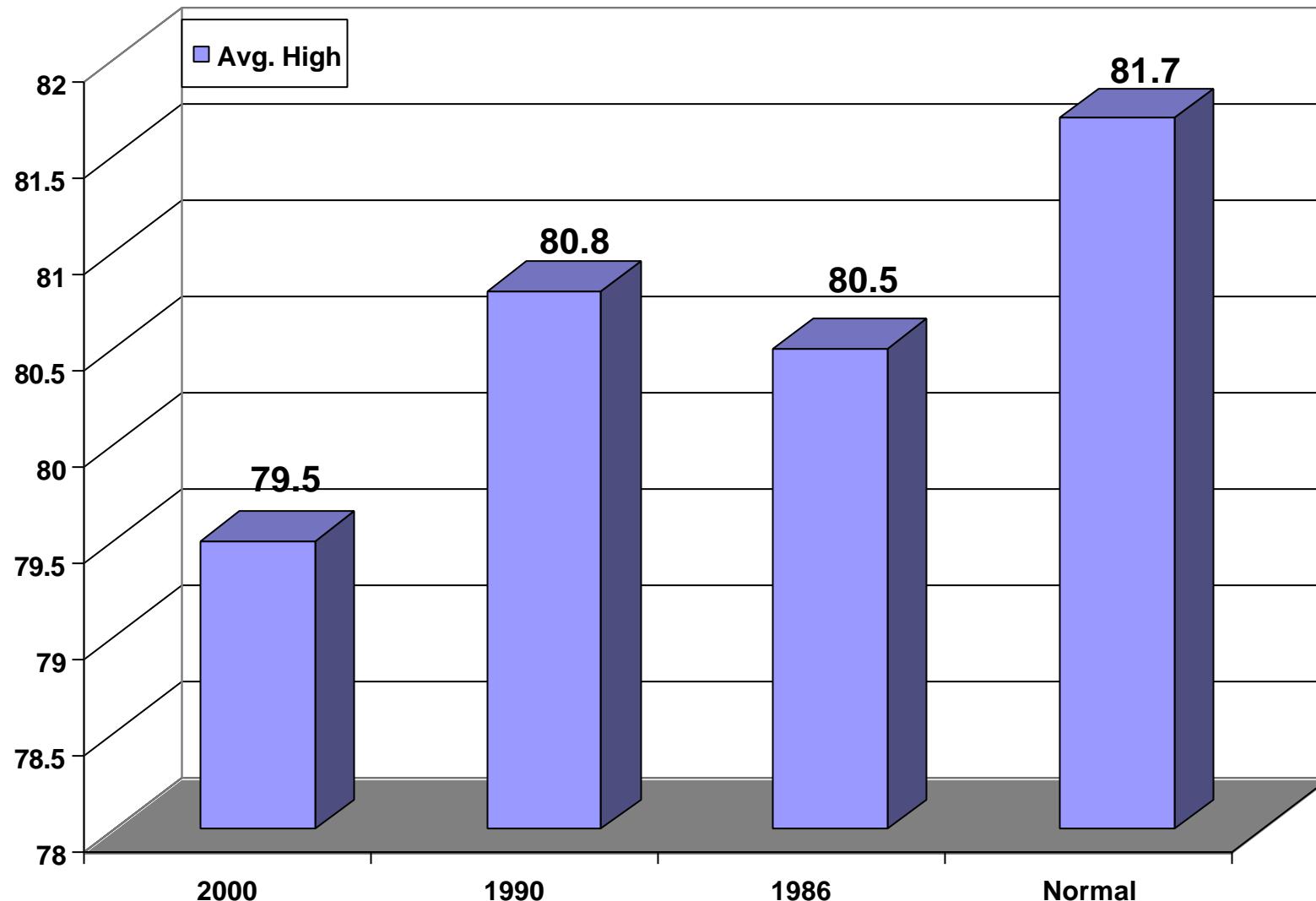
Using Chicago as a Benchmark





AVERAGE HIGH FOR CHICAGO

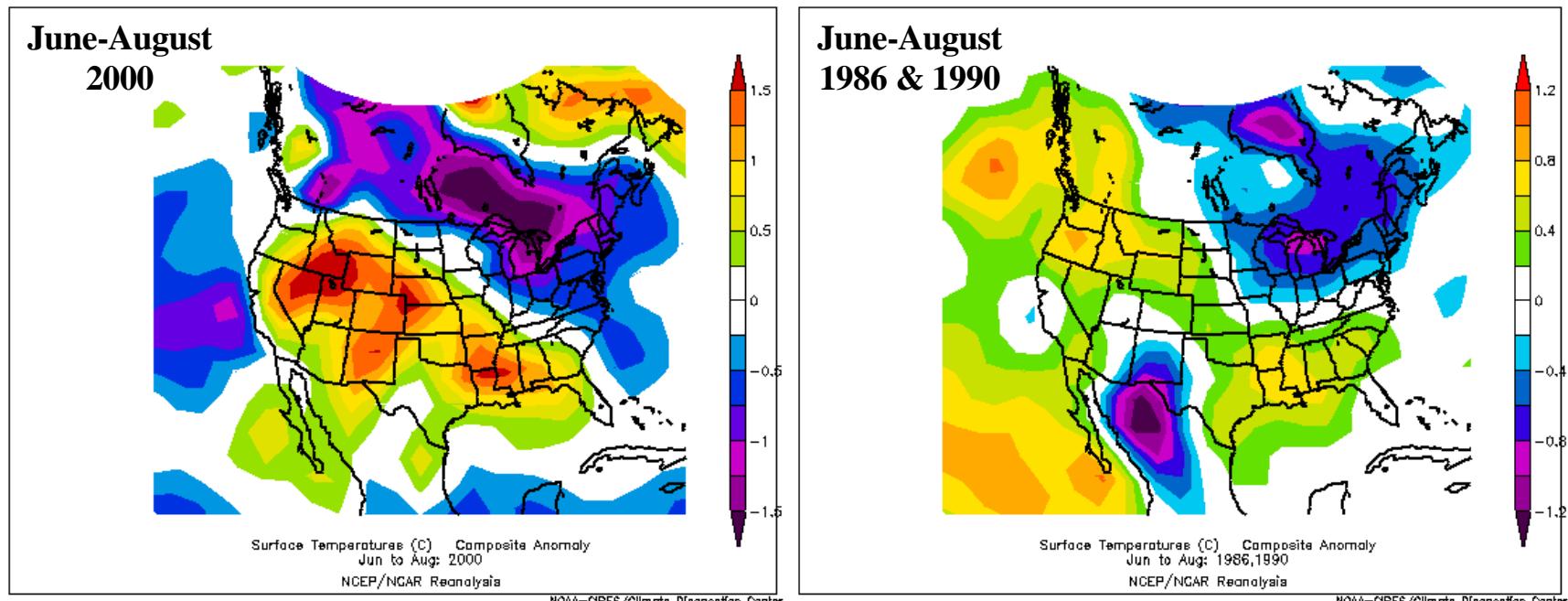
June - August





SIMILAR YEARS vs. LAST YEAR

June through August



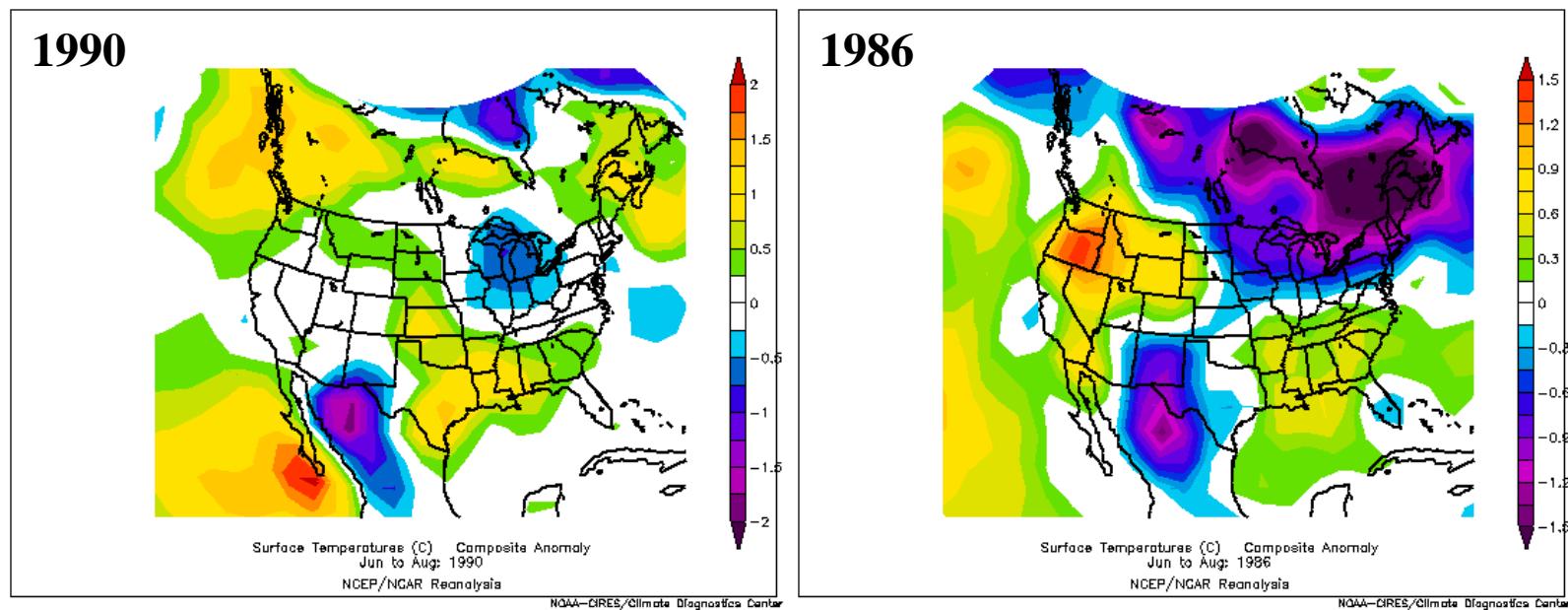
Analogs Offer Similar Patterns to Last Year....

<http://www.cdc.noaa.gov/Composites/>



SIMILAR YEARS vs. LAST YEAR

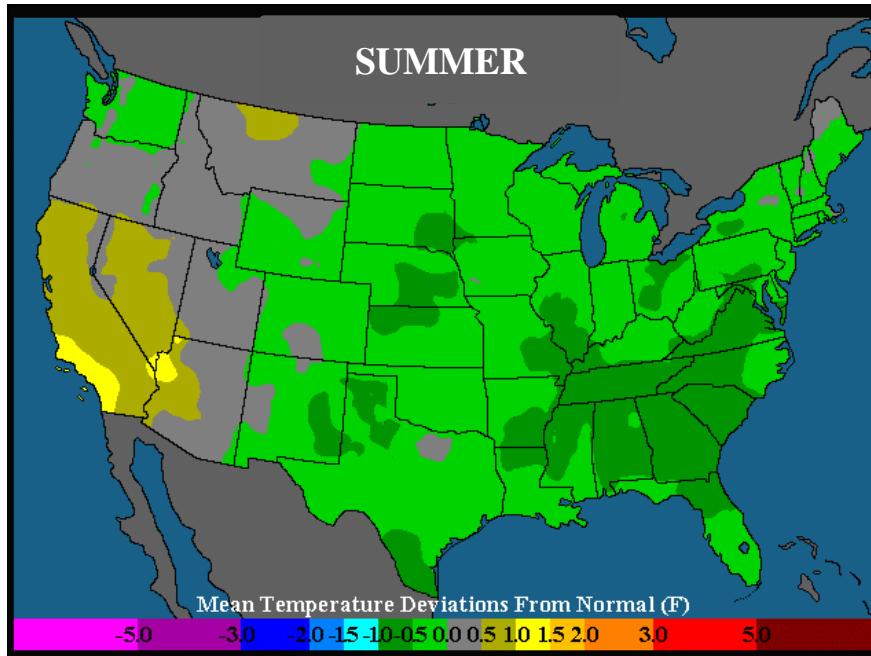
June through August



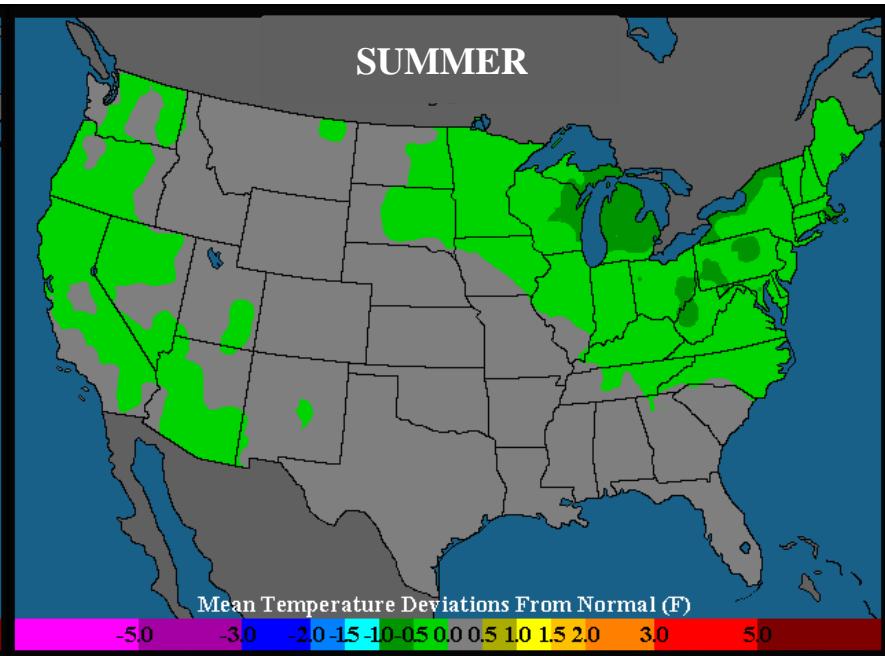


ANALOG YEAR STUDIES FOR THE SUMMER

Weak La Niña



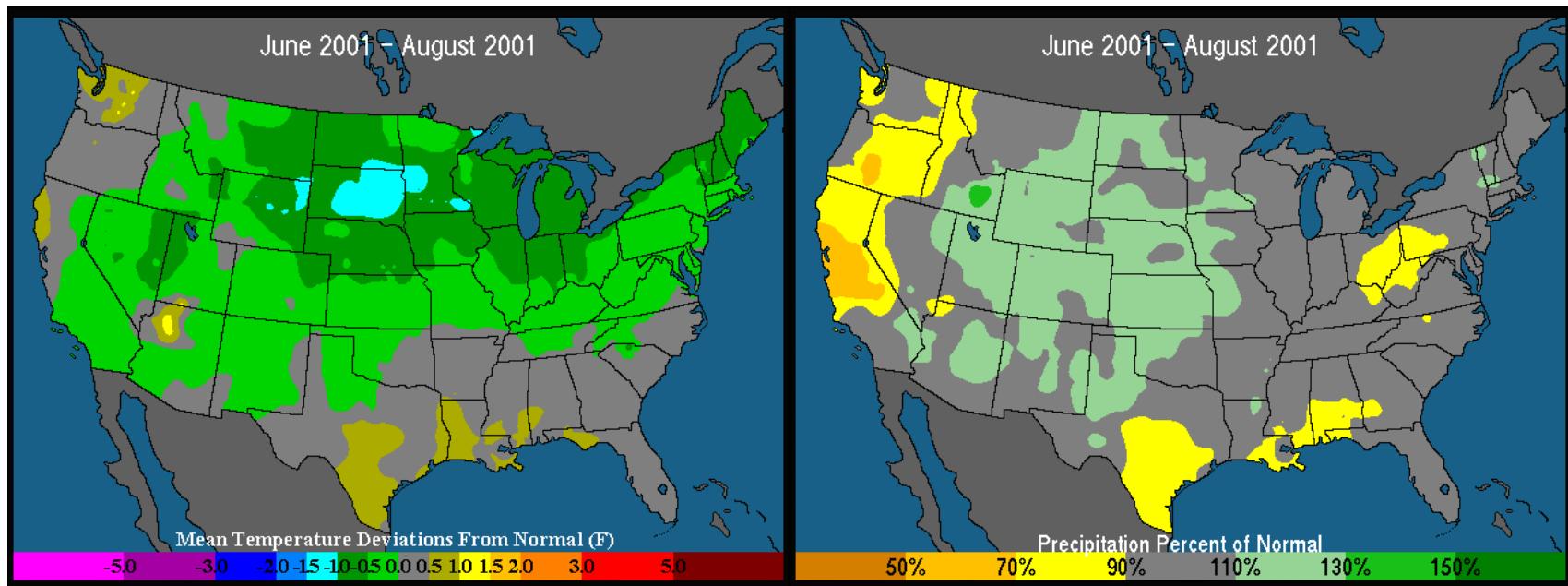
Neutral





SUMMER FORECAST

(Based on SST Analog Analysis)



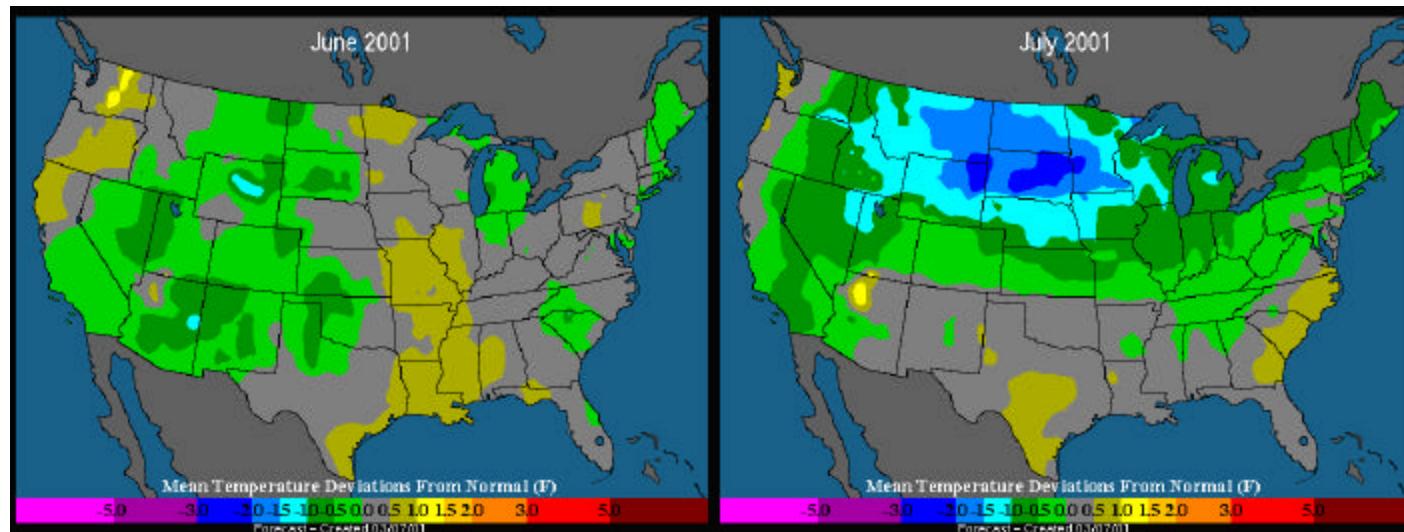
Temperature Anomalies

Precipitation Anomalies

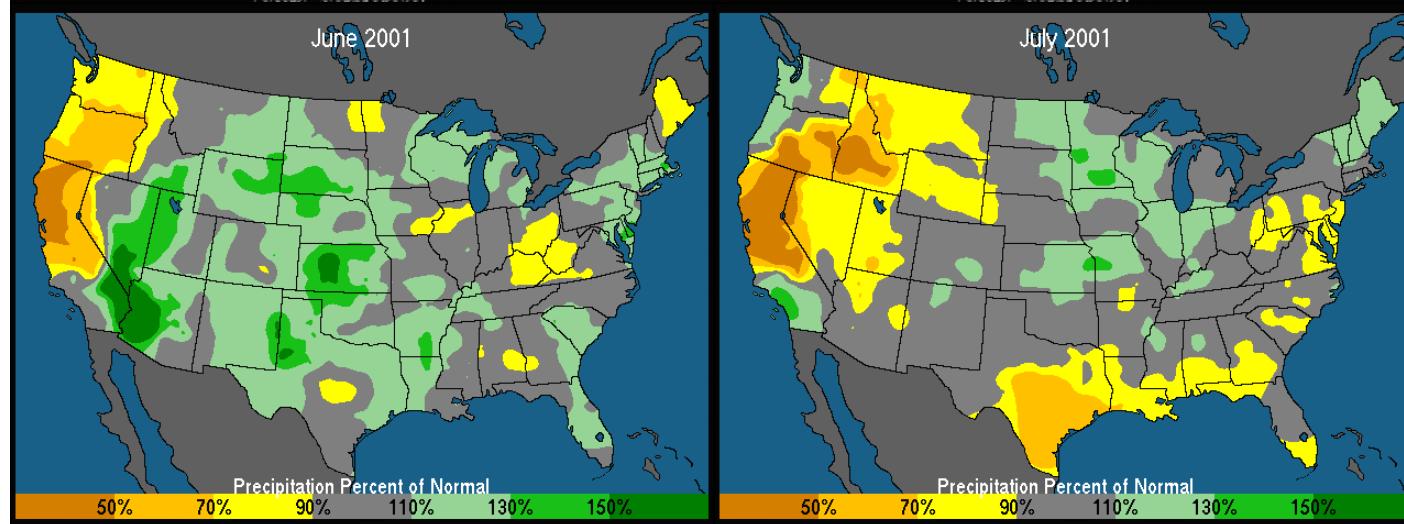


EARLY SUMMER FORECAST

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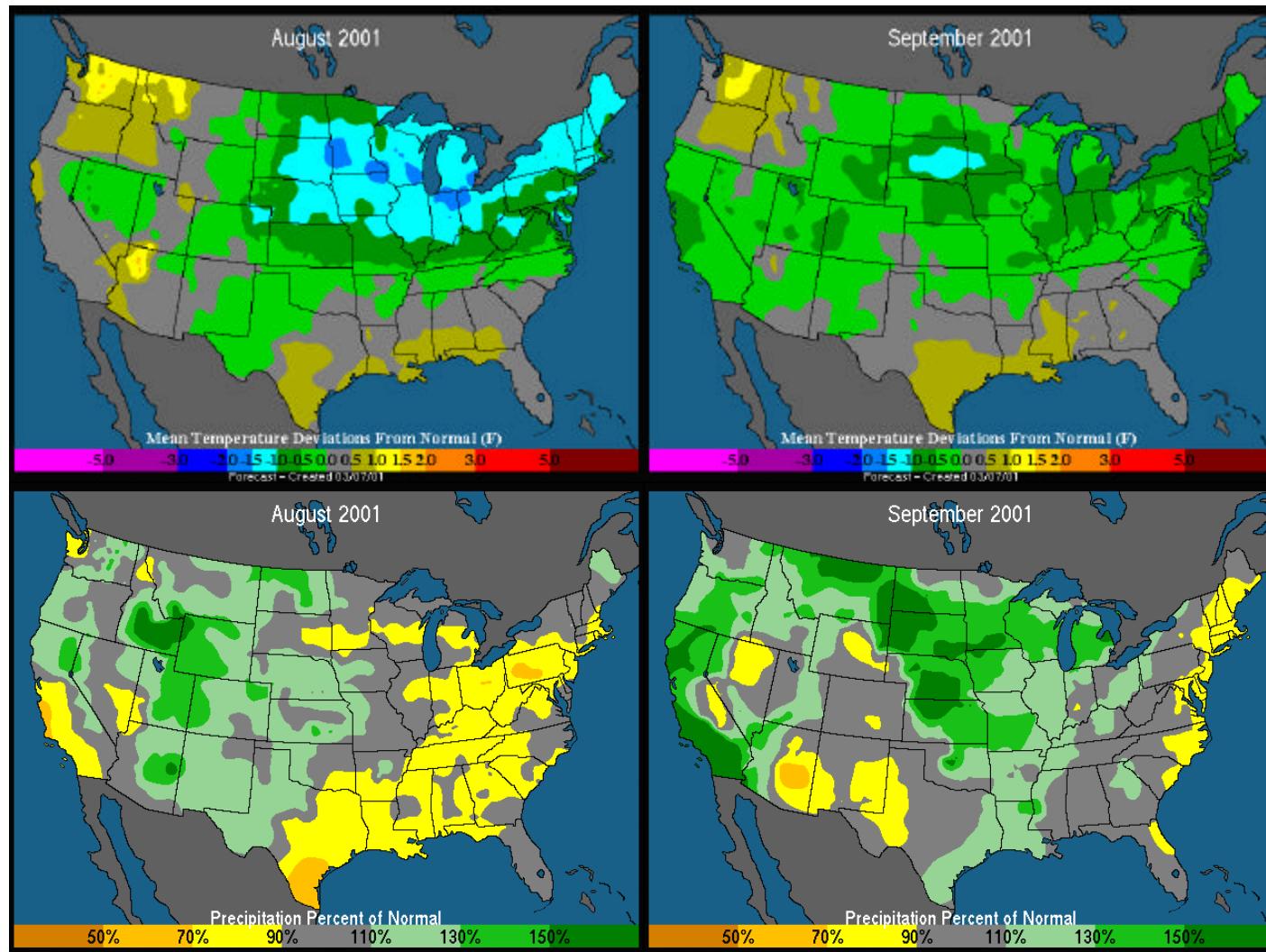
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LATE SUMMER FORECAST

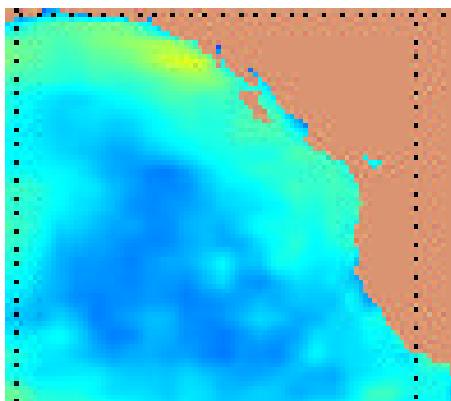
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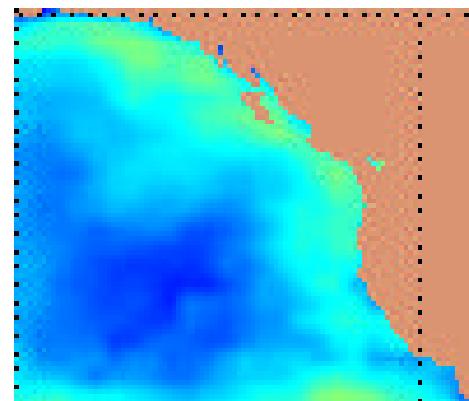
CALIFORNIA EQUATION: LOOKING AT SSTs

March 9, 2001



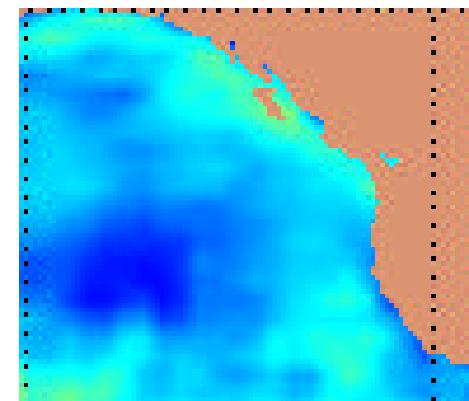
Result: N (A)

March 10, 2000



Result: N - A

March 11, 1999



Result: B



SUMMER FORECAST TALLY

REGION	TREND	SIM. YR.	SST	FORECAST
MIDWEST	—	B	B	B
SOUTH	A	A	N	N - A
SOUTHEAST	A	A	N	N - A
NORTHEAST	—	B	B	B
MID-ATLANTIC	—	N	B	N - B
WEST	A	A	N - B	N - A



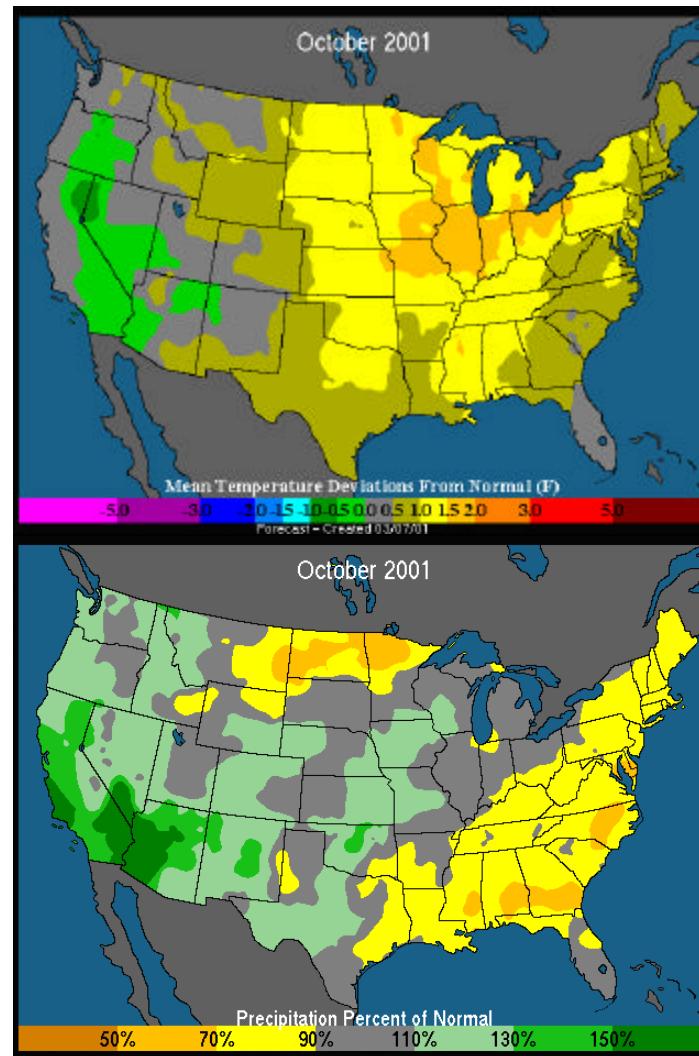
COOLING SEASON FORECAST CONCLUSIONS

- Forecast Tool Consensus for Seasonal to Cool Midwest and Northeast
- South Forecast to Be Seasonal to Hot
- West Most Uncertain (Seasonal-Above)
- Factors to Watch: SST Trends off California Coast, Dry Conditions in Pacific Northwest, Spike Events in Midwest/East.



FALL FORECAST

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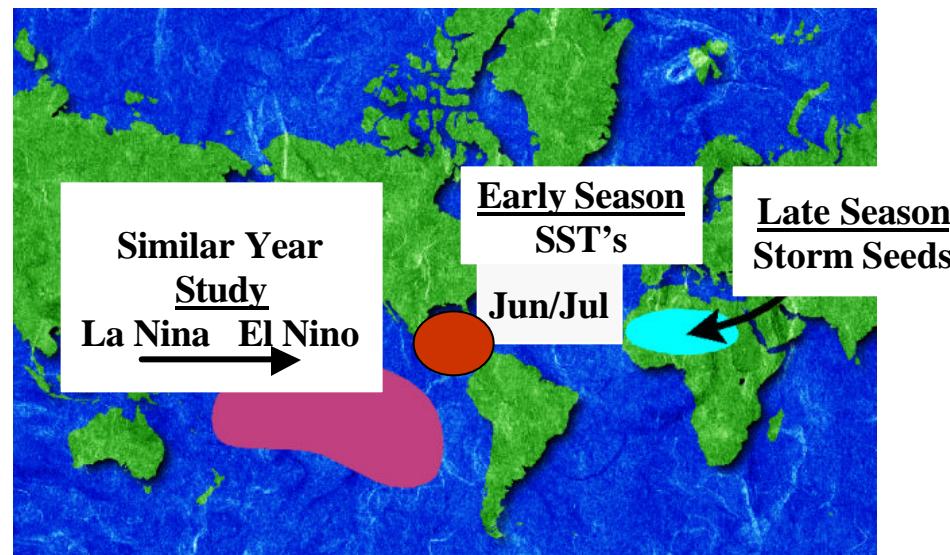
EARTH SATELLITE CORPORATION'S ENERGY WEATHER OUTLOOK

HURRICANE SEASON 2001



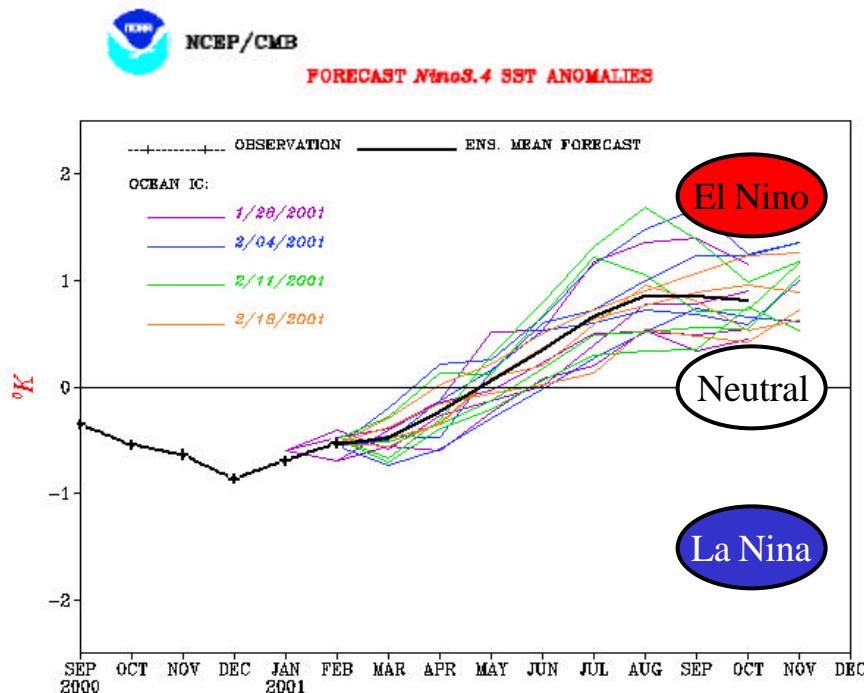
2001 ATLANTIC BASIN HURRICANE HIGHLIGHTS

- Similar year study reveals a normal 2001 tropical storm season.
- La Nina phase in tropical Pacific could aid in possible early season tropical activity.
- Wetter than normal season in W. Africa should support storms during heart of season.
- Neutral/El Nino phase may hinder late season storm development.
- Eight named storms will form in 2001.
- Five of the eight will become hurricanes.
- One of the five hurricanes will reach major hurricane status.





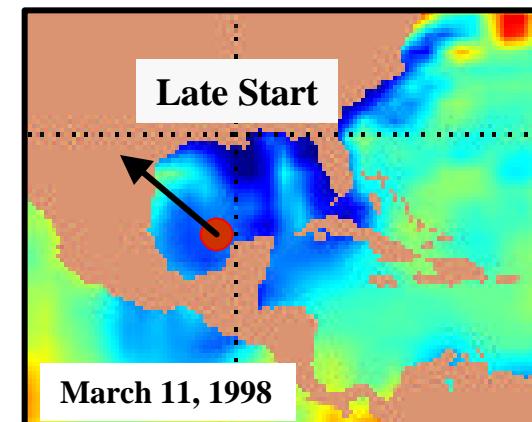
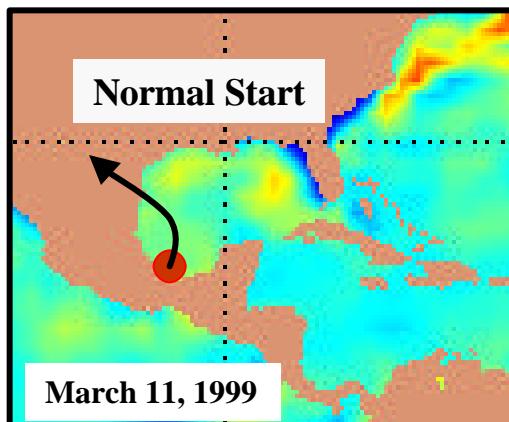
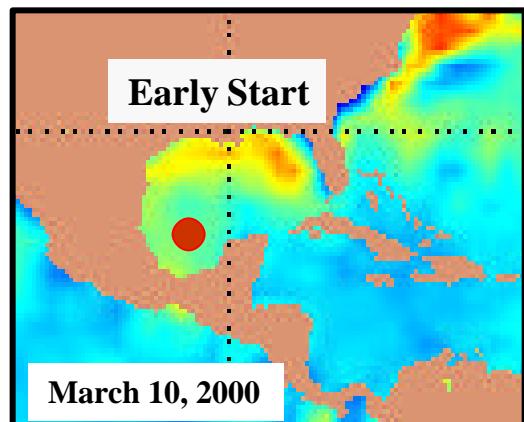
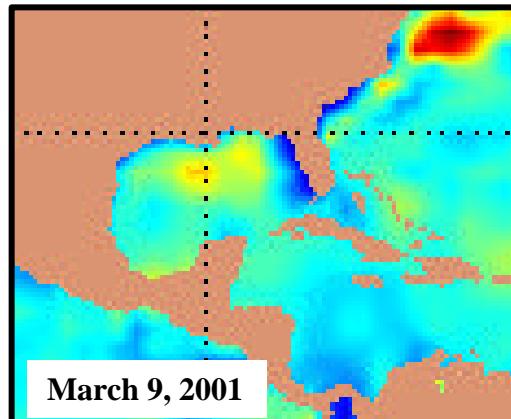
THE SIMILAR YEARS MODEL 2001 HURRICANE SEASON (Atlantic Basin)



Similar Years Summers (%)	Named Storms (34-73)	Hurricanes Minor (74-110)	Hurricanes Major (111+)
1963 (19.6)	9	7	2
1986 (17.8)	6	4	0
1968 (13.0)	8	5	0
1951 (12.9)	10	5	3
1996 (7.3)	13	9	6
1965 (6.8)	6	4	1
1972 (6.7)	7	3	0
1962 (6.2)	5	3	1
1957 (5.1)	8	3	2
1966 (4.5)	11	7	3
Weighted Average:	8	5	1
100 Year Normal:	9	6	2



WATER TEMPERATURES IN GULF AND CARIBBEAN



- TD #1 – Early June
- T-Storms abundant

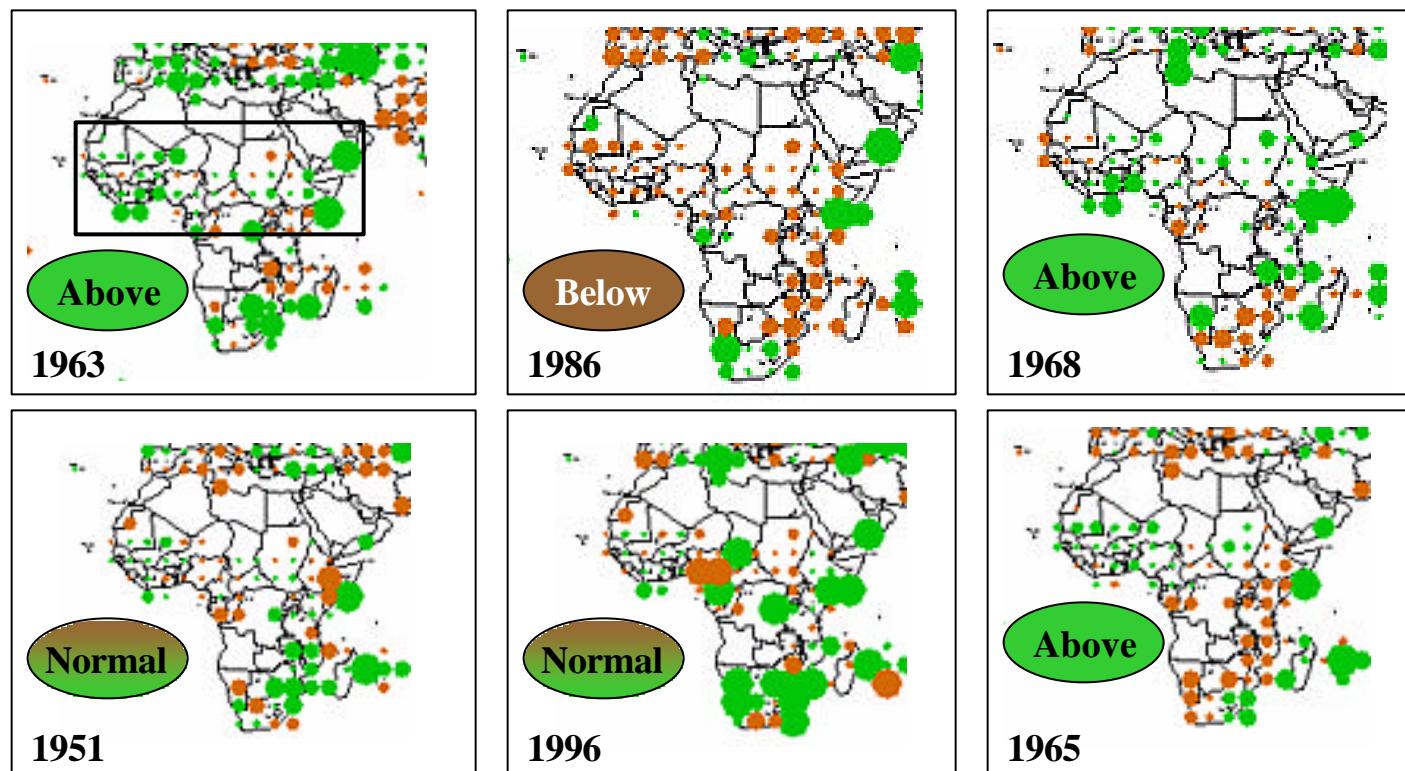
- T-Storms abundant
- Bret strikes in August

- No T-Storms/Clouds
- Charley strikes in August



WEST AFRICA PRECIPITATION AUGUST-OCTOBER STORMS

(Summer as compared to normal)



→ 1986, 1972*

* = Map Not Shown

→ 1951, 1996, 1966*

→ 1963, 1968, 1965, 1962*, 1957*



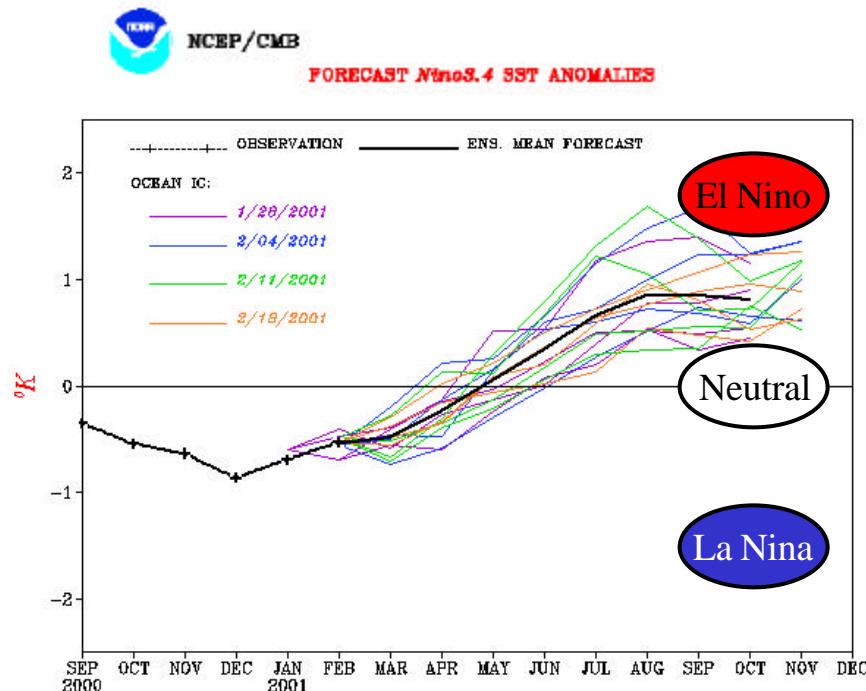
2001 GULF OF MEXICO HIGHLIGHTS

- Similar year study reveals a normal 2001 tropical storm season in the Gulf.
- La Nina phase in tropical Pacific will aid in possible early season tropical activity.
- Water temps in the Gulf will be warm enough to support activity in June and July.

- Very good chance that at least one named storm will reach the western Gulf. (80%)
- A decent chance that this western Gulf storm will reach minor hurricane status. (70%)
- Western Gulf event has a chance of becoming a major hurricane. (40%)



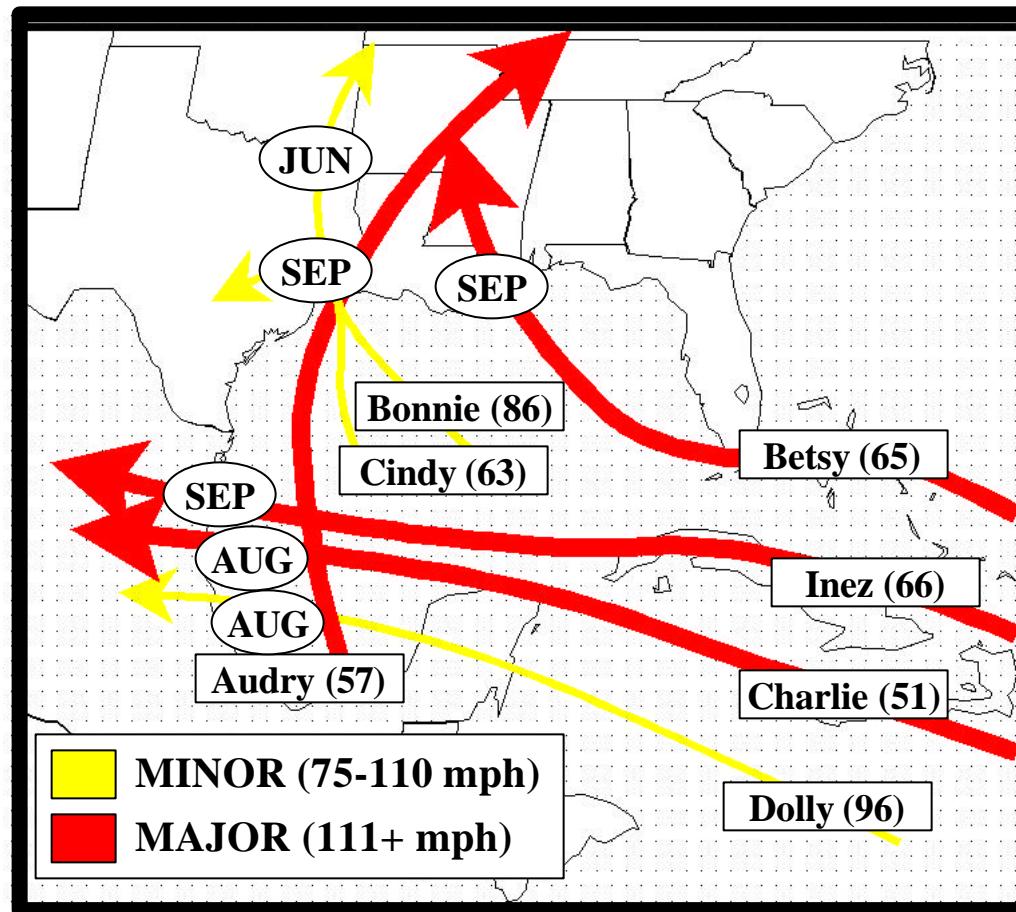
THE SIMILAR YEARS MODEL 2001 HURRICANE SEASON (Western Gulf)



Similar Years Summers (%)	Named Storms (34-73)	Hurricanes Minor (74-110)	Hurricanes Major (111+)
1963 (19.6)	1	1	0
1986 (17.8)	1	1	0
1968 (13.0)	1	0	0
1951 (12.9)	2	1	1
1996 (7.3)	1	1	0
1965 (6.8)	2	1	1
1972 (6.7)	0	0	0
1962 (6.2)	0	0	0
1957 (5.1)	3	1	1
1966 (4.5)	2	1	1
Weighted Average:	1	< 1	< 1



HURRICANE LANDFALLS THE ANALOG YEAR STUDY (Western Gulf)





2001 HURRICANE SEASON CONCLUSIONS

- Analog year study reveals a normal Atlantic Basin and Gulf tropical storm season.
- La Nina could aid in possible early season tropical activity over the Gulf/Caribbean
- Water temperatures in Gulf will be warm enough to support activity in June and July.
- West Africa storm seeds should support Atlantic storm formation during August/Sept.
- Neutral/El Nino phase may hinder late September and October storm development.

- Eight named storms will form in 2001.
- Five of the eight will become hurricanes.
- One of the five hurricanes will reach major hurricane status.

- Very good chance that one tropical event will reach the western Gulf.
- A decent chance that the western Gulf event will be of minor hurricane status.

- Very little skill in long range prediction of where storms will make landfall.



EARTH SATELLITE CORPORATION'S ENERGY WEATHER OUTLOOK

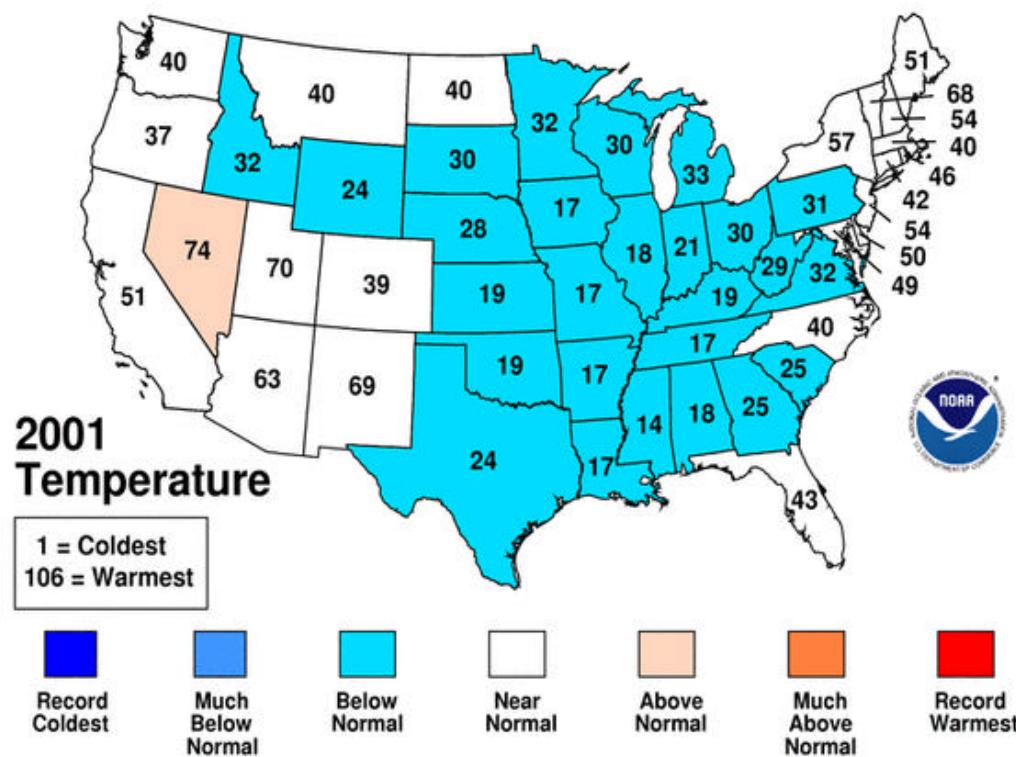
HEATING SEASON 2001-02



STATEWIDE RANKS

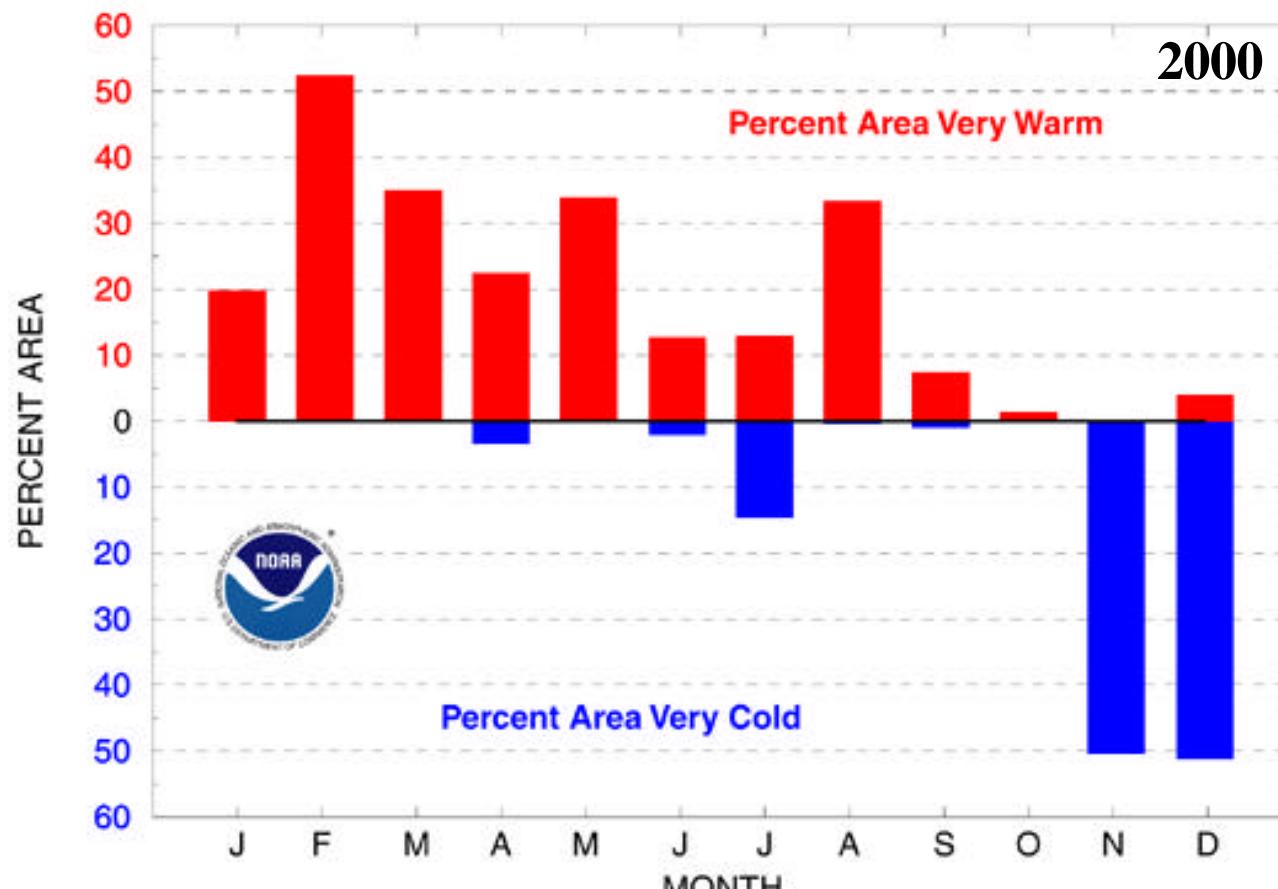
DECEMBER 2000 – FEBRUARY 2001

National Climatic Data Center/NESDIS/NOAA





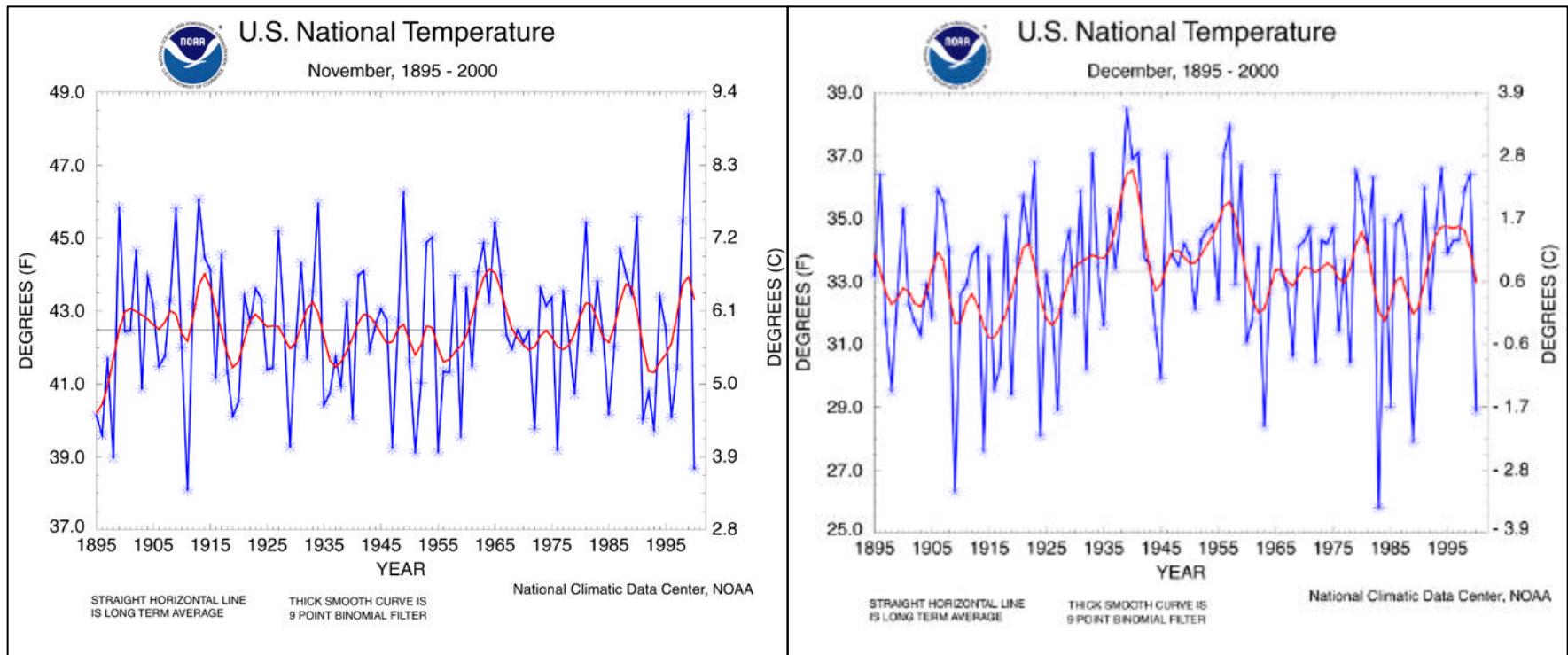
U.S. NATIONAL PERCENT AREA VERY WARM & VERY COLD



National Climatic Data Center, NOAA



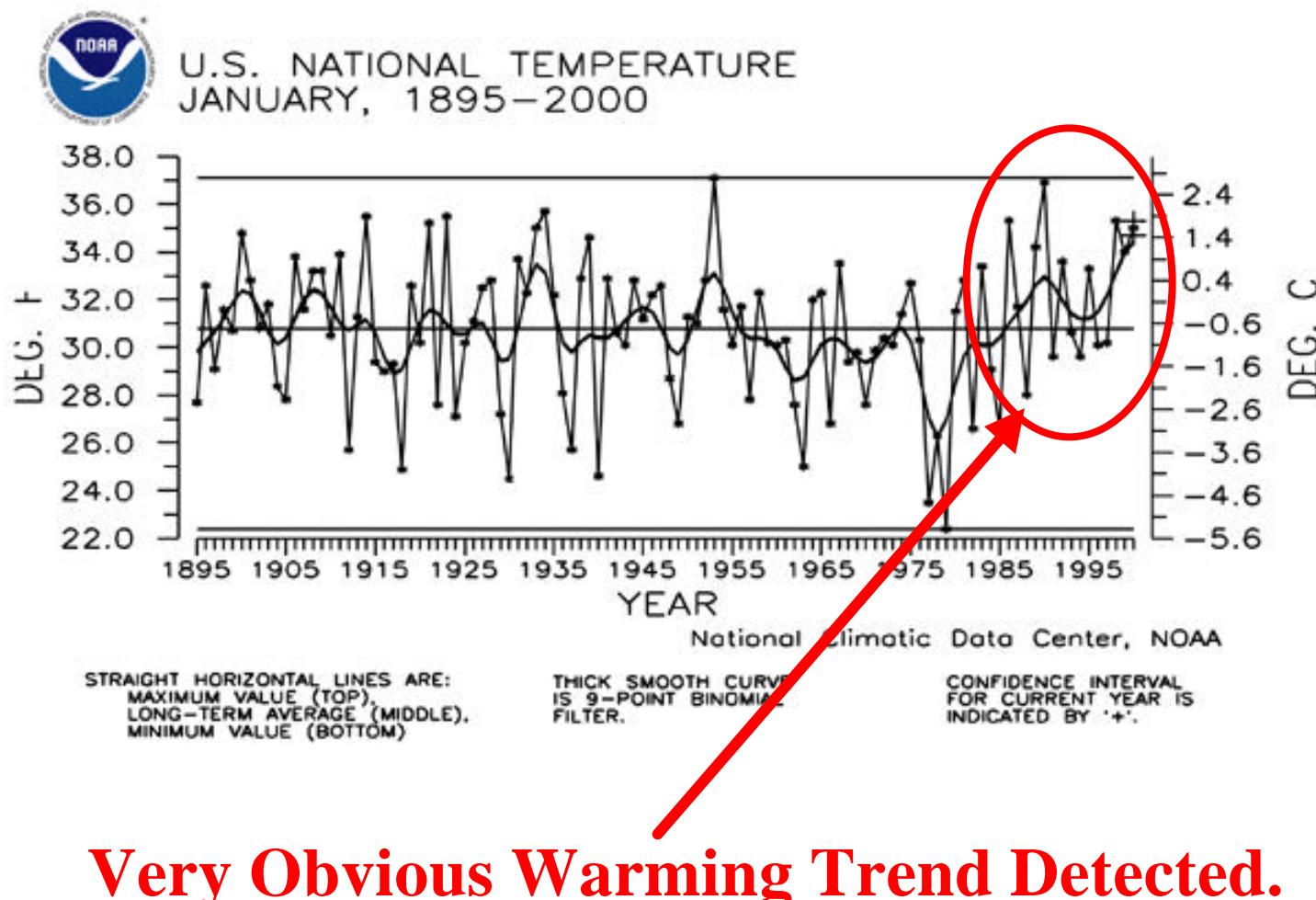
NOVEMBER – DECEMBER TRENDS....



Little to No Trend Noted in Early Heating Season

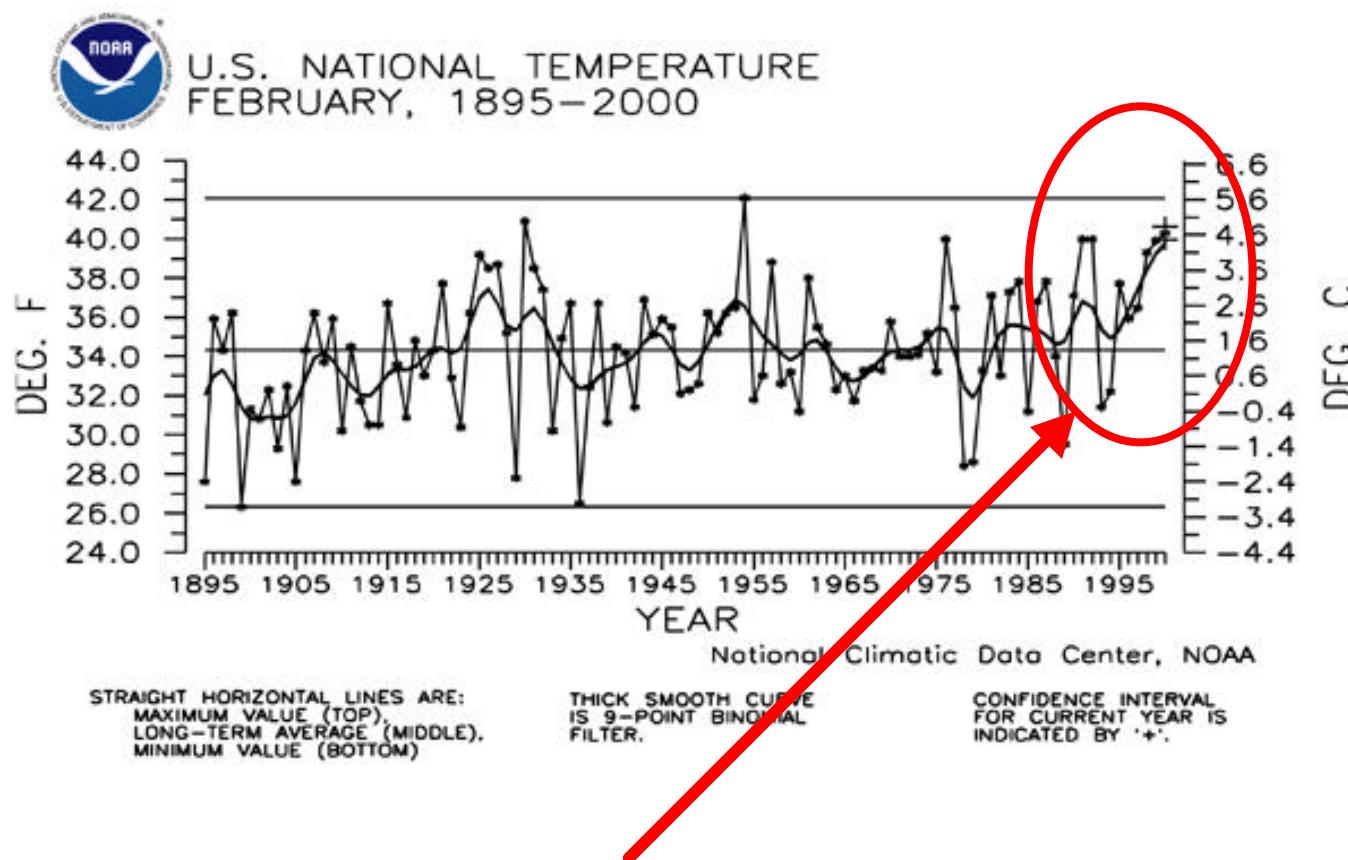


JANUARY TRENDS....





FEBRUARY TRENDS....

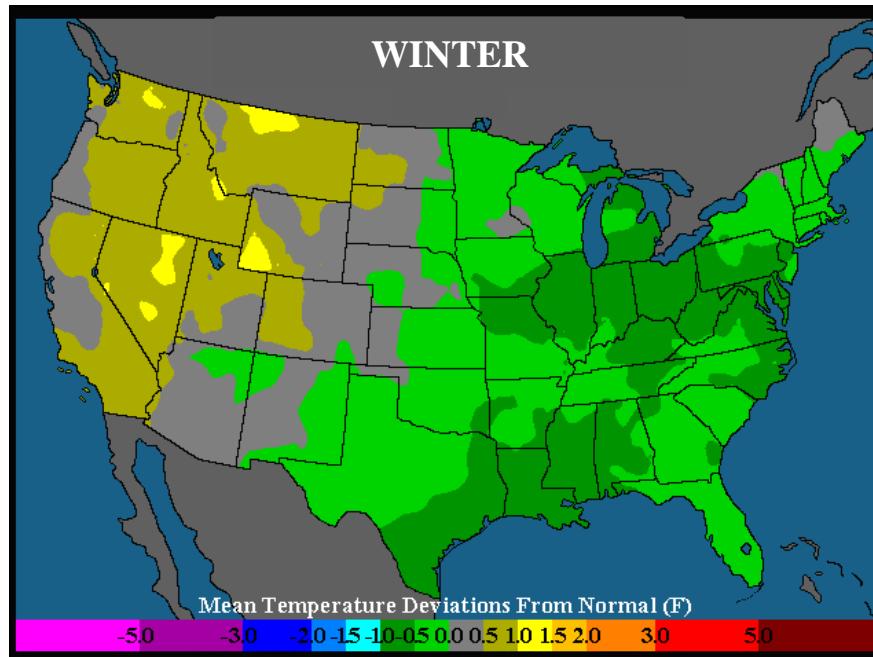


February Trend Stronger than January.

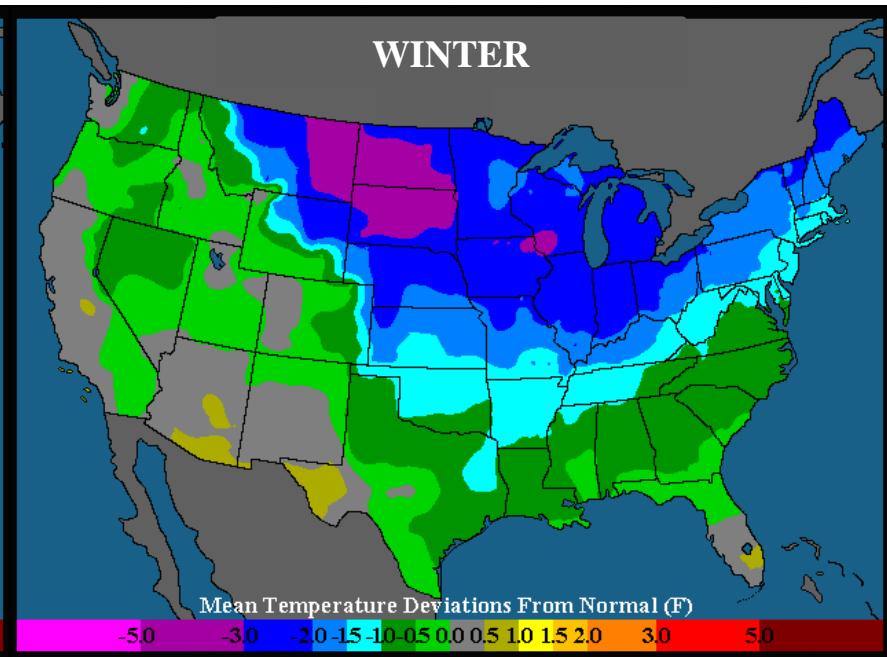


ANALOG YEAR STUDIES FOR THE WINTER

Neutral

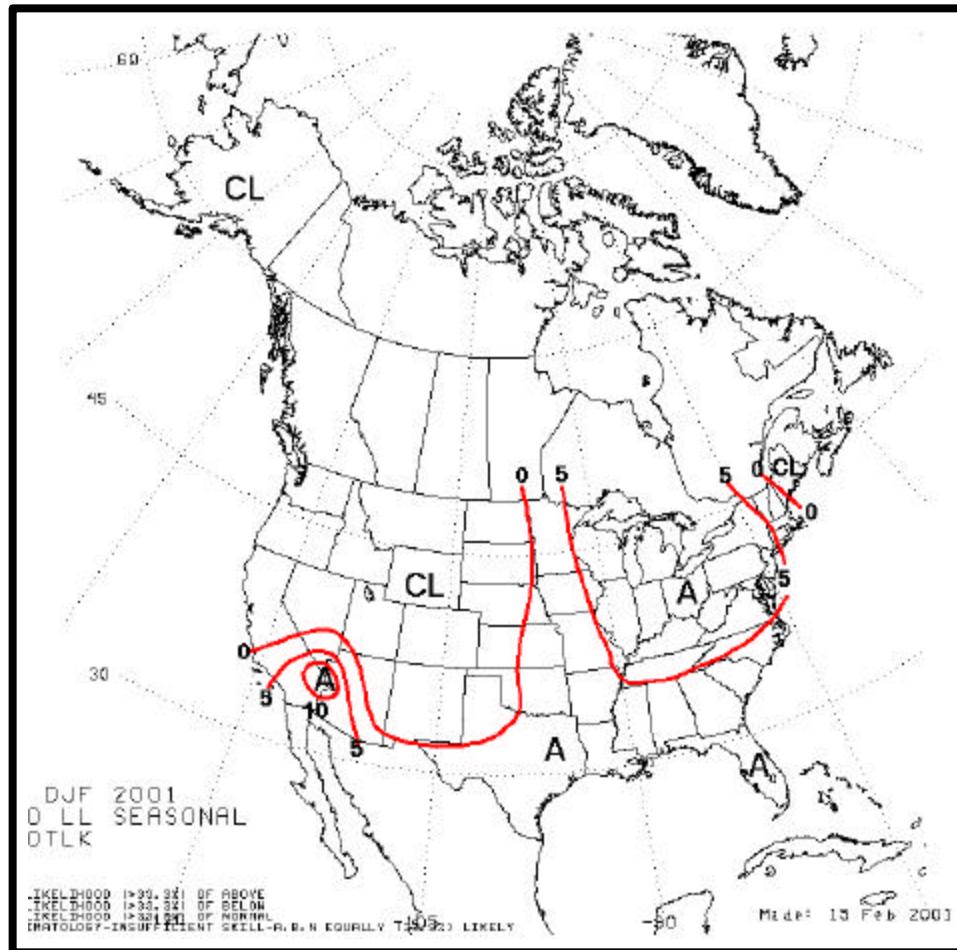


Weak El Nino



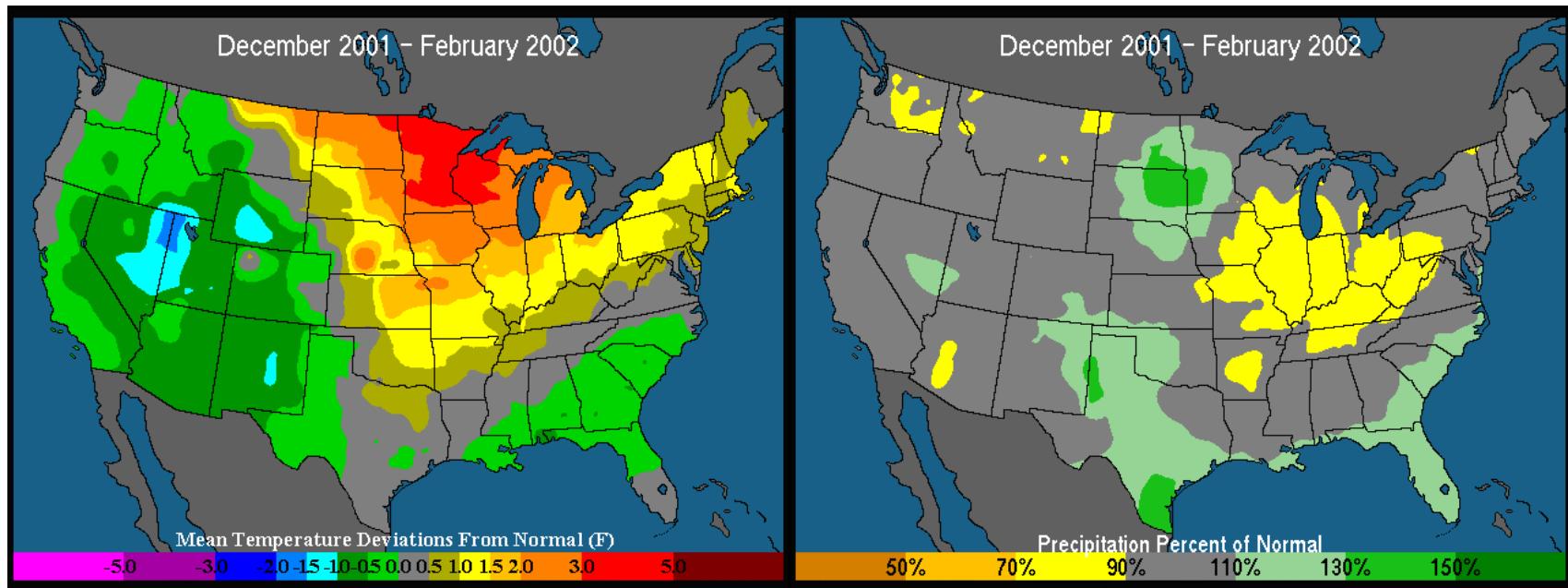


NWS WINTER OUTLOOK





WINTER FORECAST



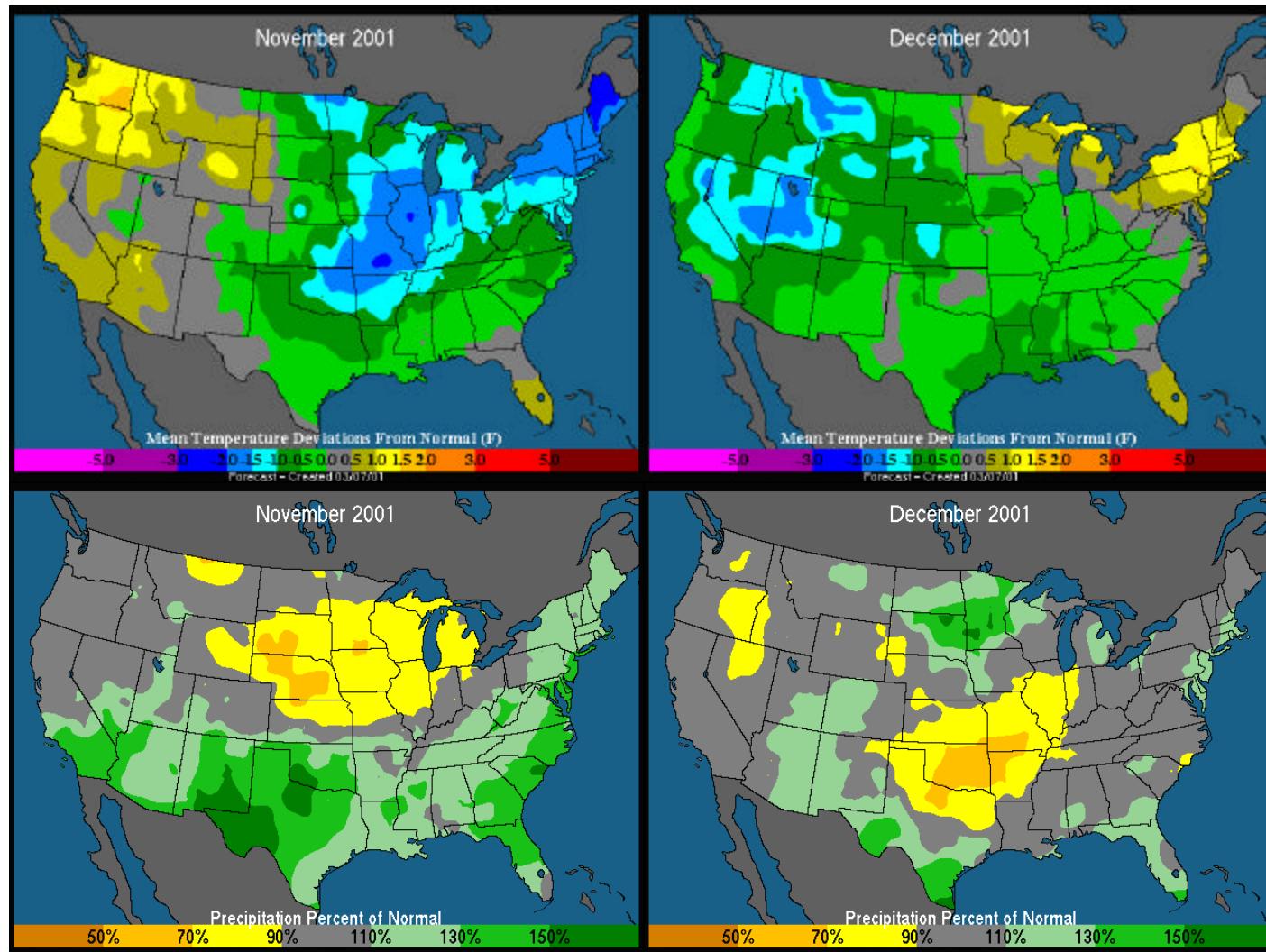
Temperature Anomalies

Precipitation Anomalies



EARLY WINTER FORECAST

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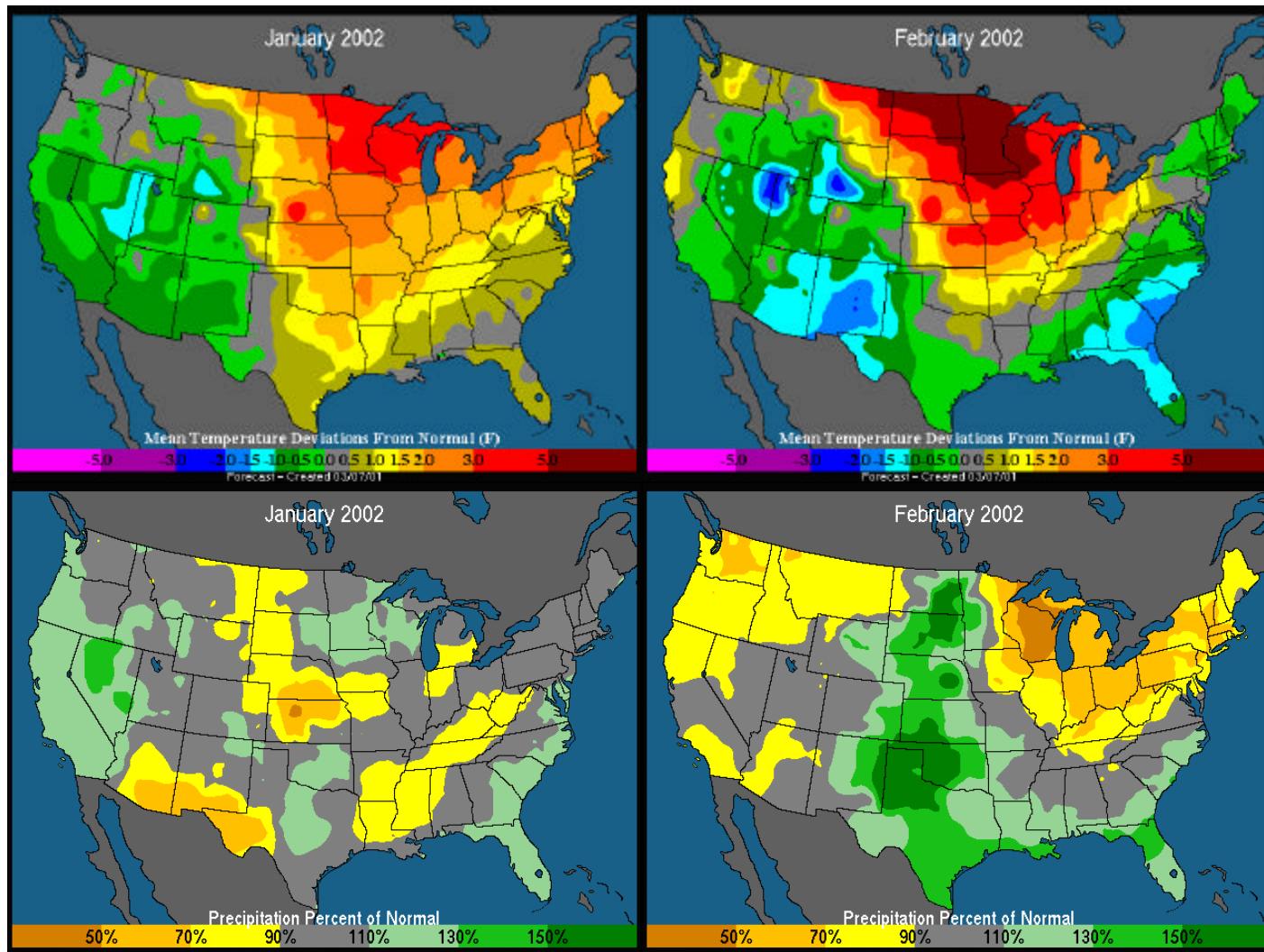


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WINTER FORECAST

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HEATING SEASON FORECAST CONCLUSIONS

- Status of Tropical Pacific Uncertain
- Weak El Nino Could Mean Colder Winter Overall
- November/December Have Best Cold Potential
- January/February to Be Warmest Months (anomaly)
- Remember the Normals!



QUESTION
&
ANSWER