# WINTER SEASON REVIEW AND UPDATE

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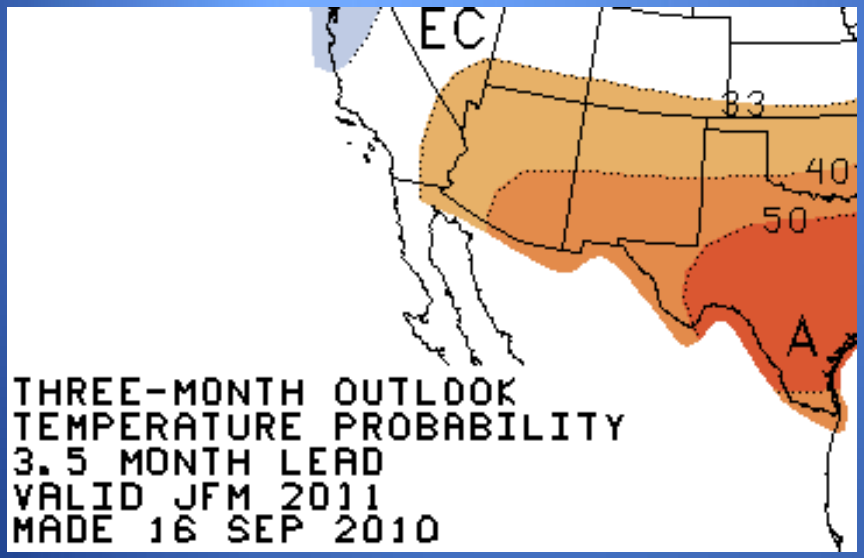
May 11, 2011

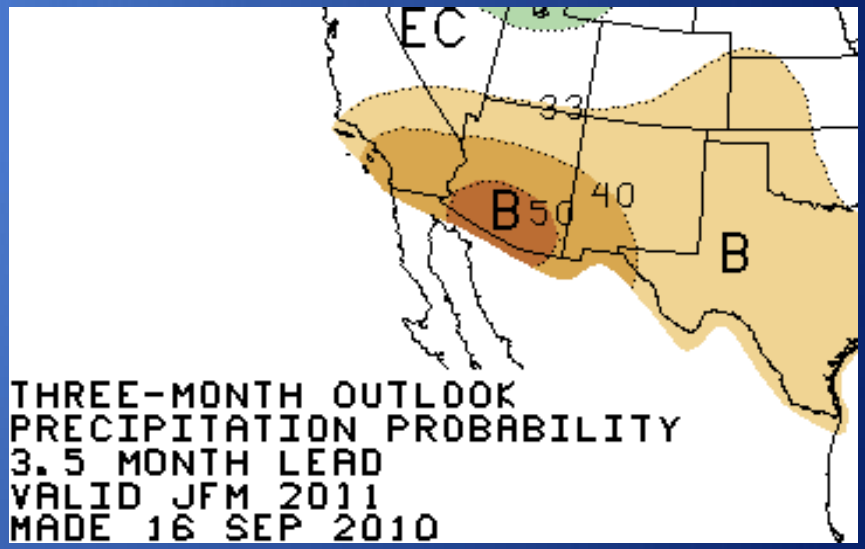
# Outline of presentation

- Winter season review and current status
- Monsoon outlook
- Extras…

  - Evapotranspiration forecasts now available - A new "climate" is coming

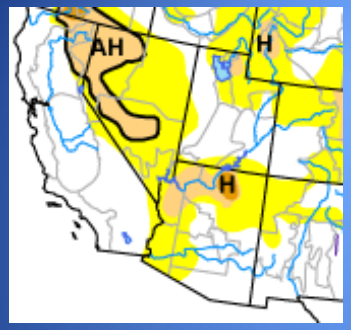
# Official Forecast From September:



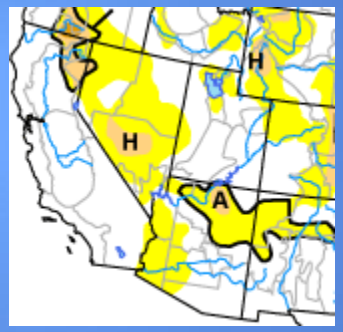




- >50-55% chance of **below average precipitation**
  - Most likely period of dryness in January-April 2011
  - Drought development **likely by late winter**
  - Severe to extreme drought possible by spring (D2 to D3 in the Drought Classification System)
  - Chance of a wet winter very low
- 40% chance of above average temperatures
  - Overall warmth possibly interrupted by harder/more frequent freezes that usual

# Drought Monitor History

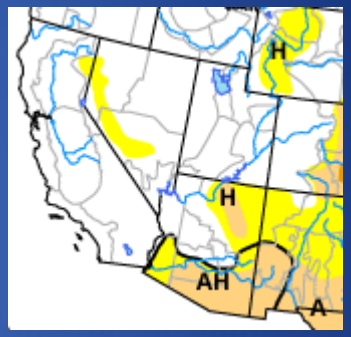



October 2010

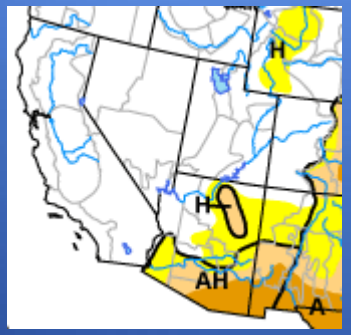



November 2010

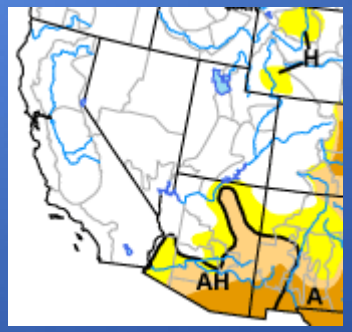
December 2010



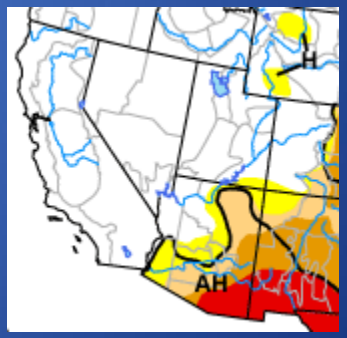

January 2011



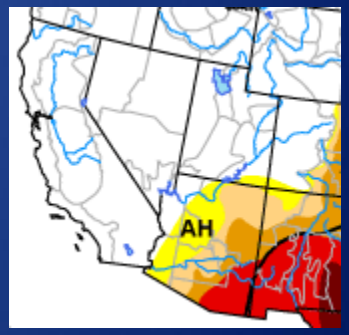

February 2011




March 2011




April 2011




May 2011

*Intensity:*

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

# Pima County Precipitation Details

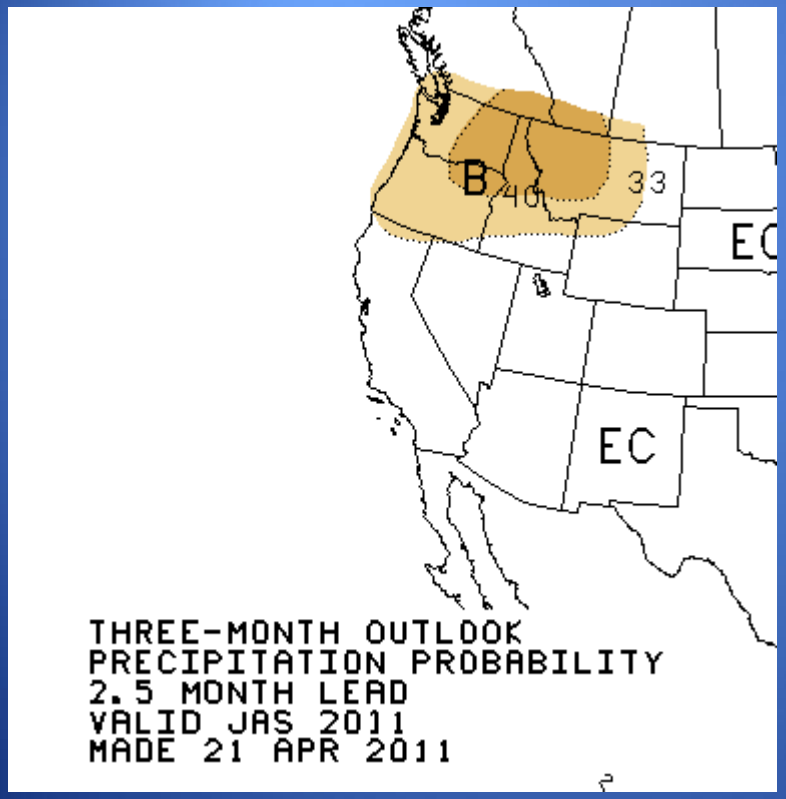
## October through March

| | Total | Normal | Difference | % of Normal |
|---|---|---|---|---|
| TUS | 1.19 | 5.59 | -4.4 | 21 |
| TUS 17 NW | 2.15 | 6.07 | -3.92 | 35 |
| TUS Campbell Ave | 2.44 | 6.47 | -4.03 | 38 |
| TUS U of A (NWS) | 2.36 | 5.79 | -3.43 | 41 |
| Green Valley | 1.57 | 6.24 | -4.67 | 25 |
| Vail 7N | 1.85 | 6.24 | -4.39 | 30 |
| Redington | 2.38 | 7.83 | -5.45 | 30 |
| **Eastern Pima** | **1.99** | **6.32** | **-4.33** | **32** |
| | | | | |
| Anvil Ranch | 1.76 | 5.18 | -3.42 | 34 |
| Arivaca | 4.16 | 7.83 | -3.67 | 53 |
| Kitt Peak | 3.58 | 10.99 | -7.41 | 33 |
| Sasabe INS | 3.9 | 8.26 | -4.36 | 47 |
| **Central Pima** | **3.35** | **7.7** | **-4.35** | **44** |
| | | | | |
| Ajo | 2.71 | 4.11 | -1.4 | 66 |
| Organ Pipe N.M. | 1.77 | 5.18 | -3.41 | 34 |
| **Western Pima** | **2.24** | **4.65** | **-2.41** | **48** |

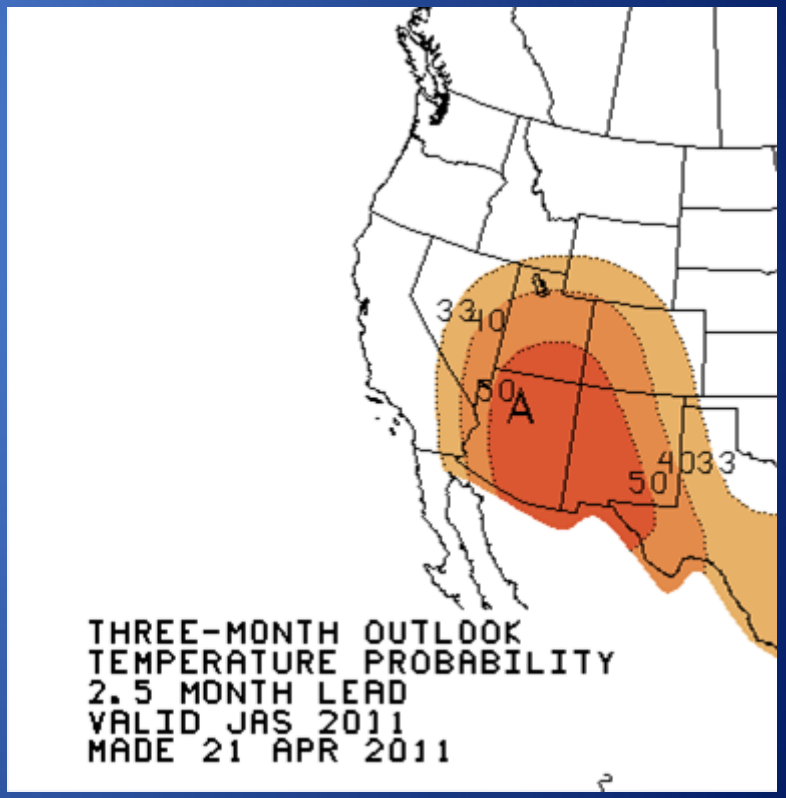
## January through March

| | Total | Normal | Difference | % of Normal |
|---|---|---|---|---|
| TUS | 0.27 | 2.68 | -2.41 | 10 |
| TUS 17 NW | 0.68 | 3.15 | -2.47 | 22 |
| TUS Campbell Ave | 1.06 | 3.15 | -2.09 | 34 |
| TUS U of A (NWS) | 0.31 | 2.88 | -2.57 | 11 |
| Green Valley | 0.25 | 2.66 | -2.41 | 9 |
| Vail 7N | 0.62 | 3.44 | -2.82 | 18 |
| Redington | 0.41 | 4.13 | -3.72 | 10 |
| **Eastern Pima** | **0.51** | **3.16** | **-2.64** | **16** |
| | | | | |
| Anvil Ranch | 0.51 | 2.44 | -1.93 | 21 |
| Arivaca | 0.38 | 3.7 | -3.32 | 10 |
| Kitt Peak | 1.29 | 5.45 | -4.16 | 24 |
| Sasabe INS | 0.06 | 4.09 | -4.03 | 1 |
| **Central Pima** | **0.56** | **3.67** | **-3.11** | **15** |
| | | | | |
| Ajo | 1.3 | 2.1 | -0.8 | 62 |
| Organ Pipe N.M. | 1.06 | 2.66 | -1.6 | 40 |
| **Western Pima** | **1.18** | **2.38** | **-1.2** | **50** |

# Summer Outlook (July – Sept.)




Precipitation




Temperature

# Factors Affecting Monsoon Variability

- Sea surface temperatures
- Large-scale circulation patterns
- Land surface conditions

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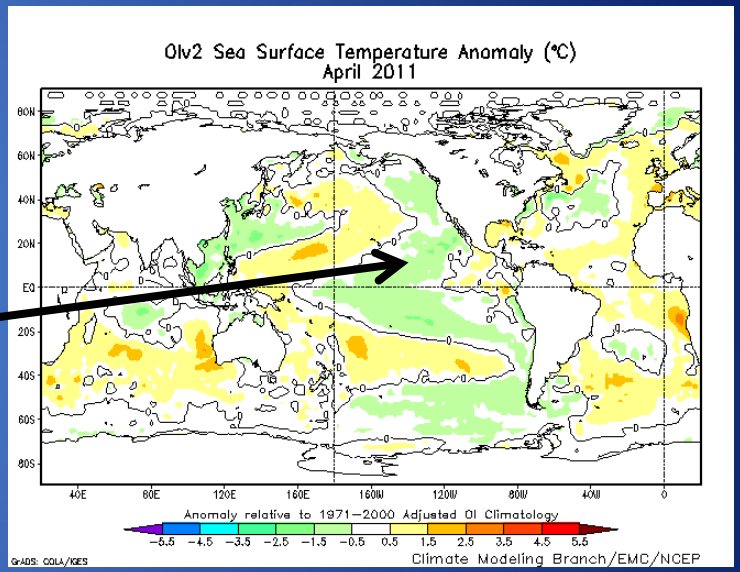


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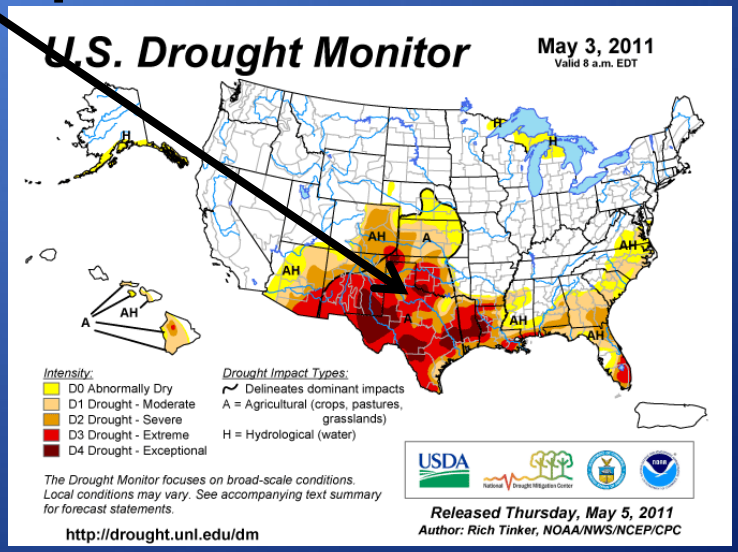
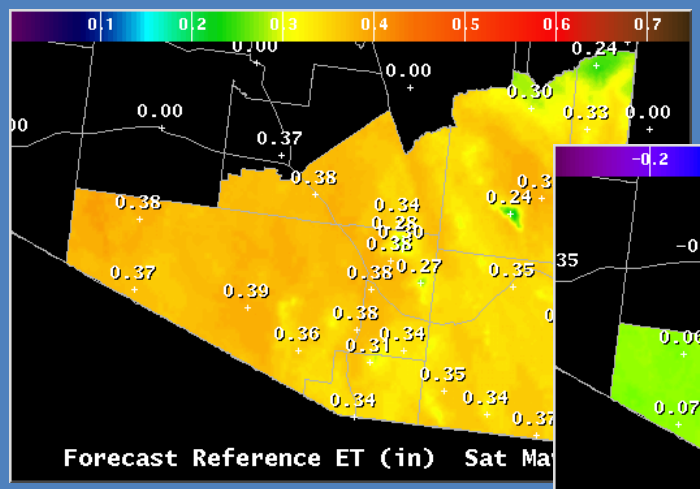
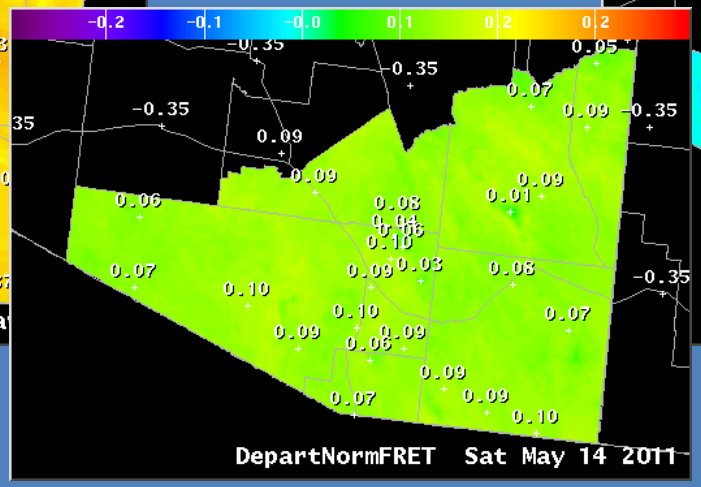


# Evapotranspiration Forecasts

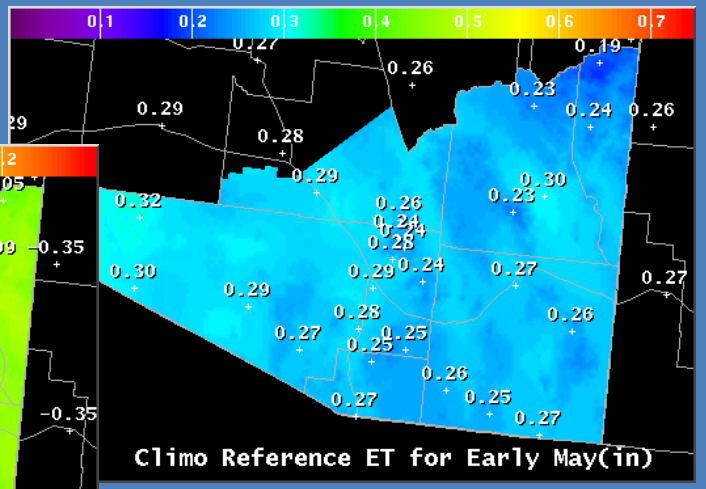
- New product available from the NWS
  - Forecast data based on sunshine, temperature, humidity and wind
  - [http://www.wrh.noaa.gov/forecast/evap/FRET/FRET.php?wfo=twc](http://www.wrh.noaa.gov/forecast/evap/FRET/FRET.php?wfo=twc)




Forecast




Departure from normal

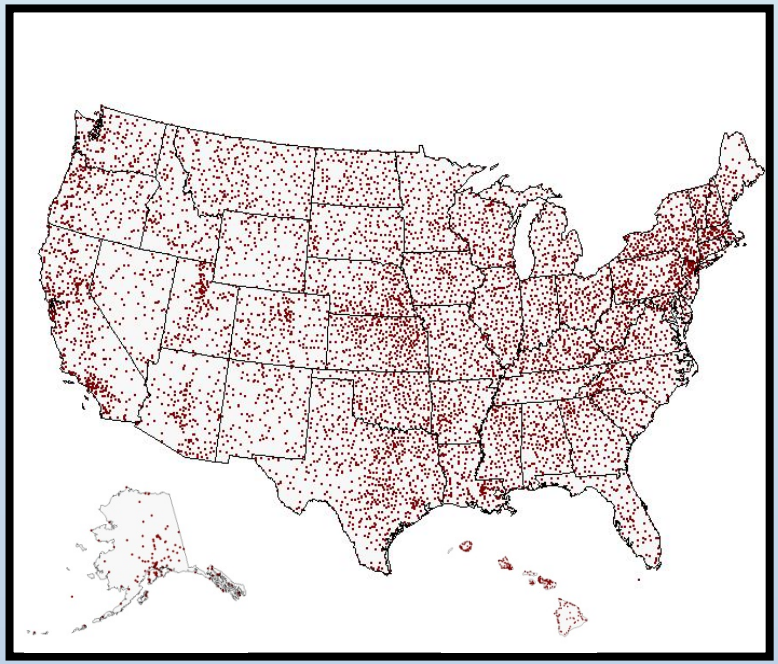



Climatology

# Background: NOAA's Climate Normals

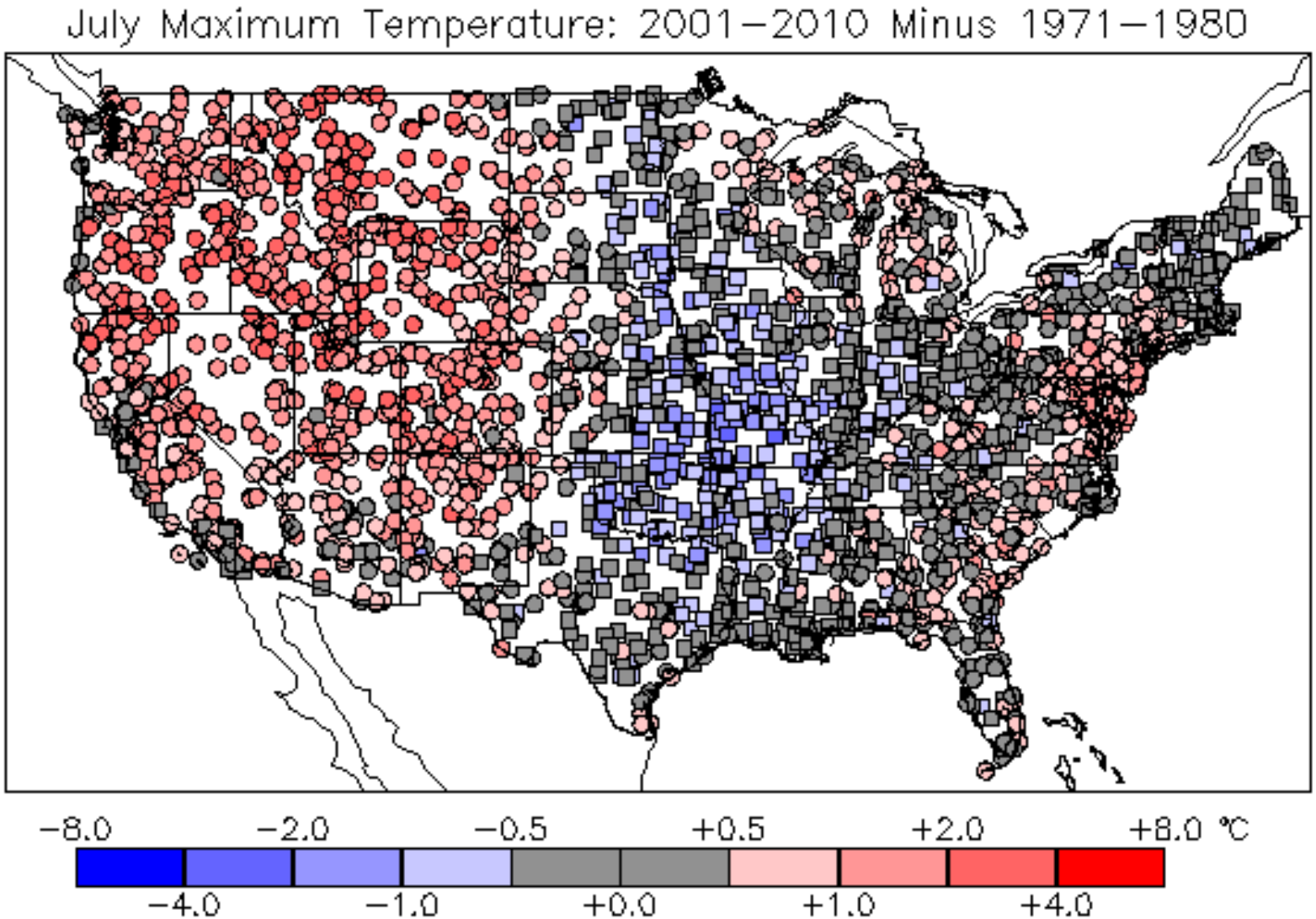
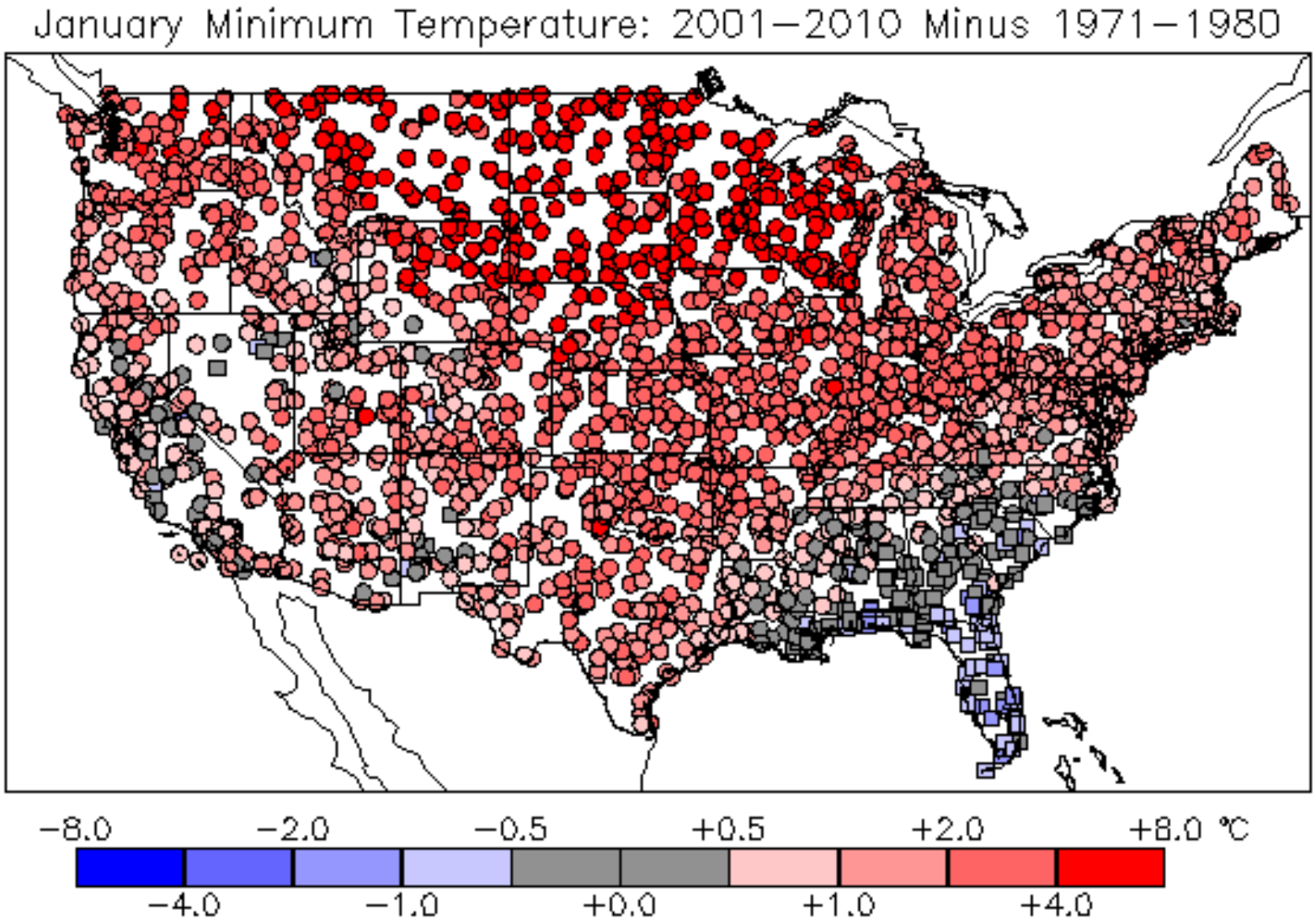
## *Daily, monthly & annual 30 year climate averages*

- **Main Parameters**
  - Temperature (max, min, mean)
  - Heating & Cooling Degree Days
  - Spring/Fall Freeze dates; growing season
  - Precipitation
    - Usually liquid equivalent; Sometimes snow
  - Occasionally: clouds, sea level pressure, RH, others
- **World Meteorological Organization Mandate**
  - Countries Calculate new normals every 30 years
  - Past periods: 1931-60, 1961-90
  - Next period: 1991-2020
- **WMO Recommendation**
  - Countries update normals every 10 years
  - Current period 1971-2000
  - Next scheduled period: 1981-2010



***1971-2000 U.S. Normals***
***~8,000 stations***

# Preliminary Results



# Preliminary Results