

# Pacific Northwest Weather and Climate, Past, Present and Future

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February, 2006



College of Oceanic & Atmospheric Sciences



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# welcome to the Oregon Climate Service

## Oregon Satellite Image

### Current Conditions

#### Corvallis, OR



12:55 PM PDT  
Mostly Cloudy  
60°F  
CALM

Powered by [Addresses.com Weather](#)

#### [Other Oregon Stations](#)

#### What's New

[September 2004](#)

[Fall & Winter Forecast](#)

[Rick's Lightning Images](#)

[August 2004](#)

[Storm Summary](#)

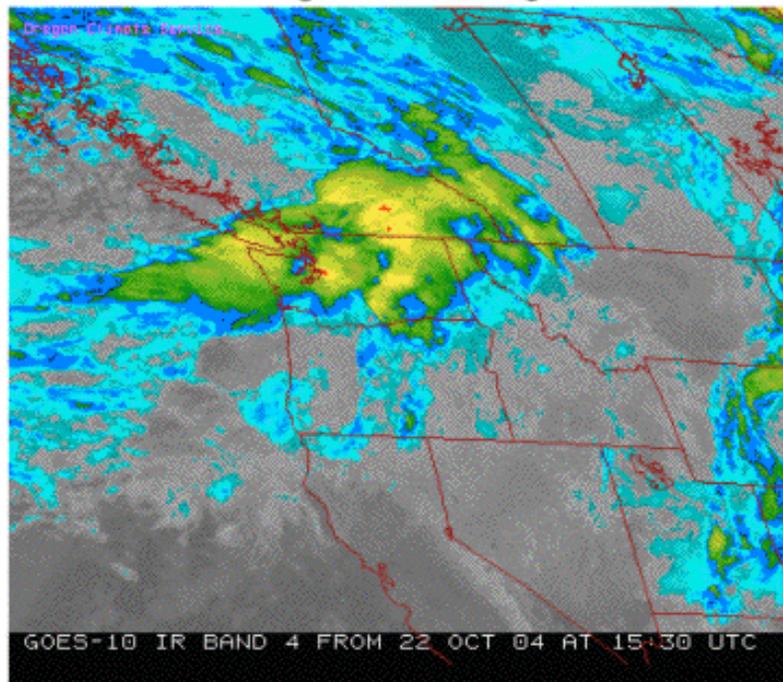
[July 2004](#)

[Severe Weather](#)

(in Northeast Oregon)

[Oregon Atlas Map Images](#)

#### Links



The *Oregon Climate Service* (OCS), located on the Oregon State University campus in Corvallis, Oregon, is the state repository for weather and climate information. We are affiliated with OSU's *College of Oceanic and Atmospheric Sciences* (COAS).

# Weather and Climate

## Weather

What happens “now”

What you get

What clothes to wear

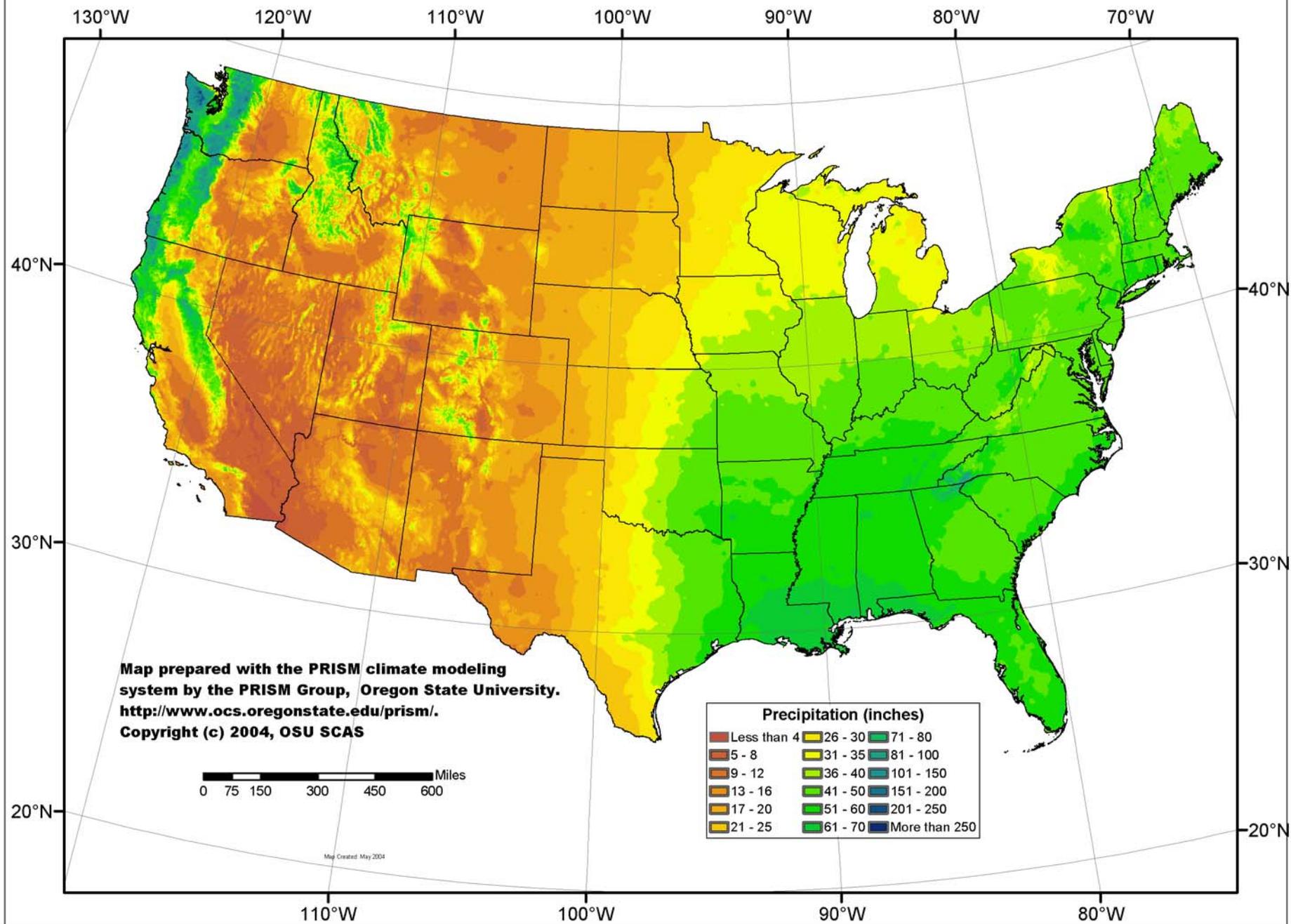
## Climate

Long term average

“Supposed to get”

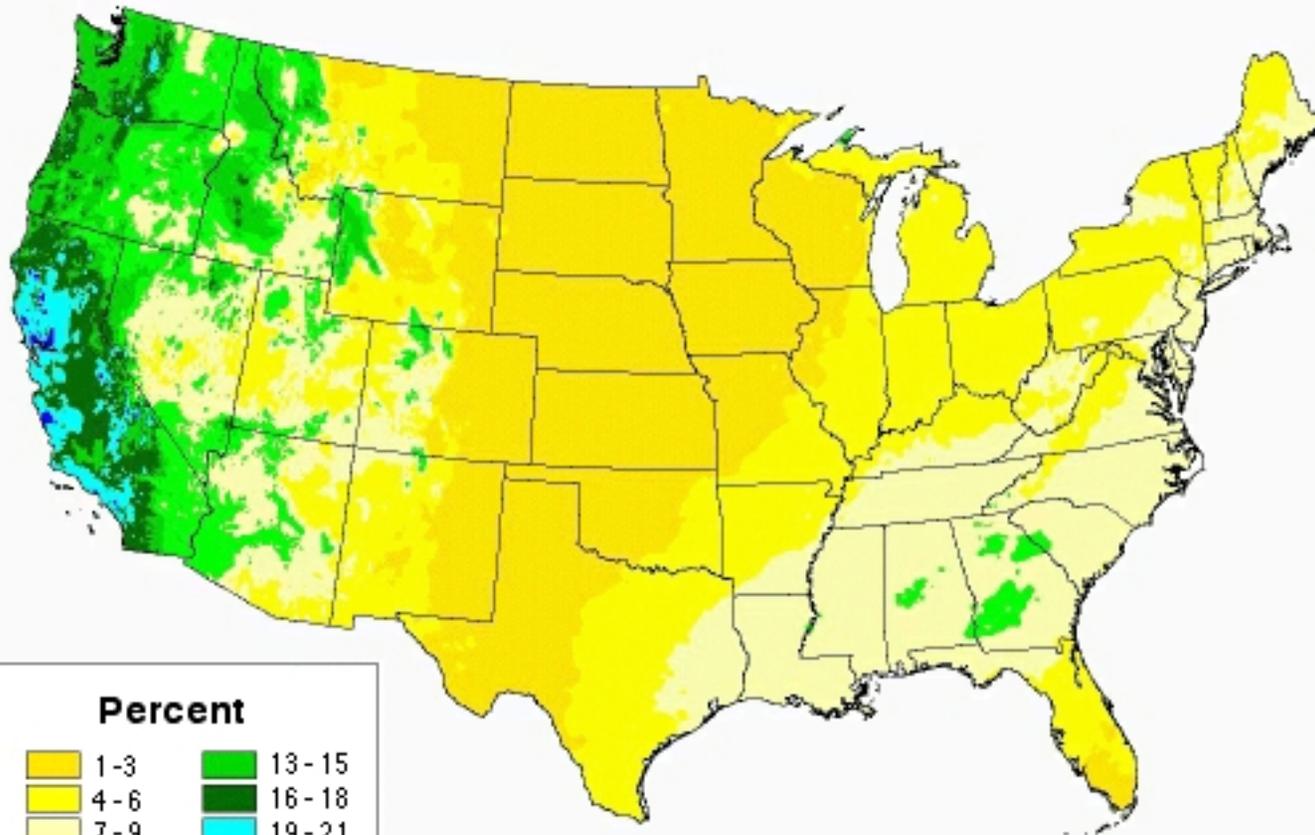
What clothes to buy

# 1971 - 2000 Average Annual Precipitation Continental United States



# Monthly Precipitation (percent of annual)

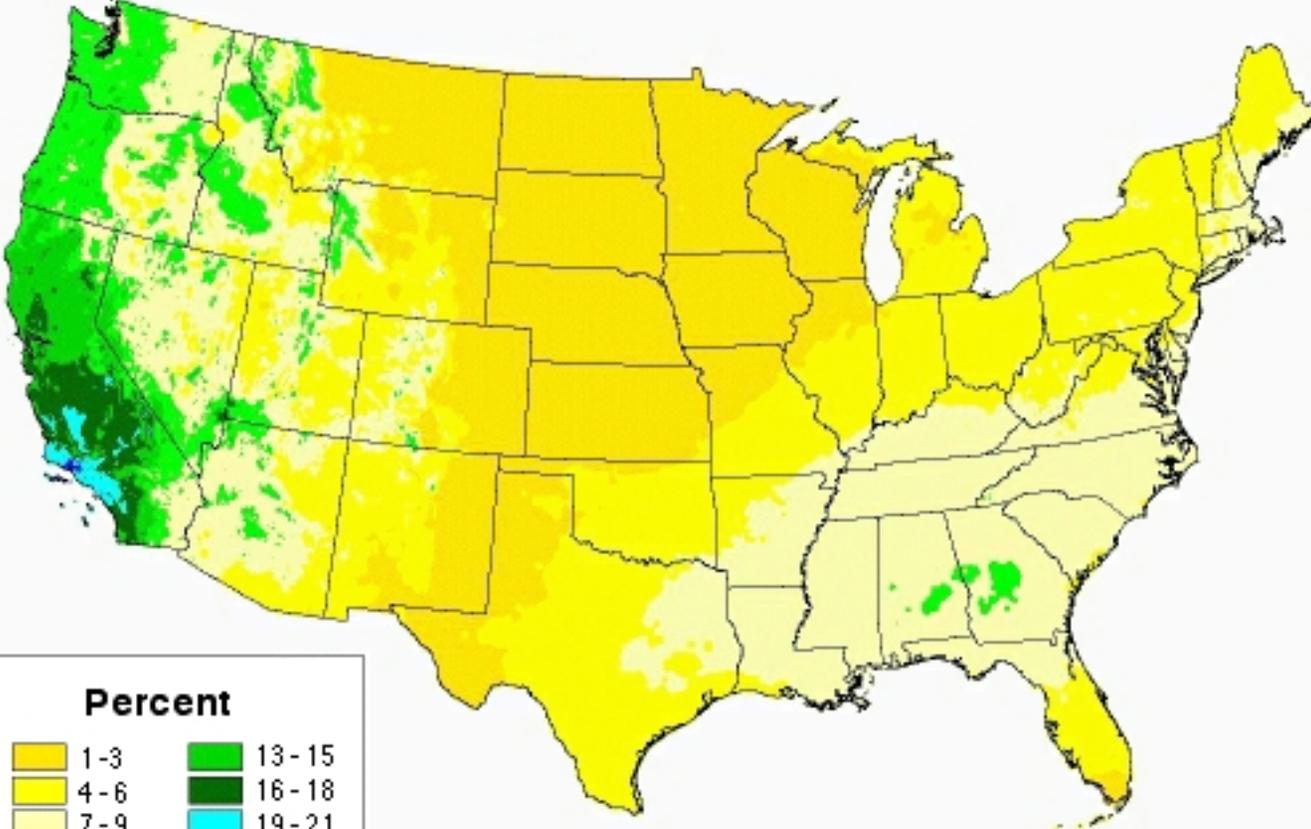
Percent of Annual Precipitation  
January



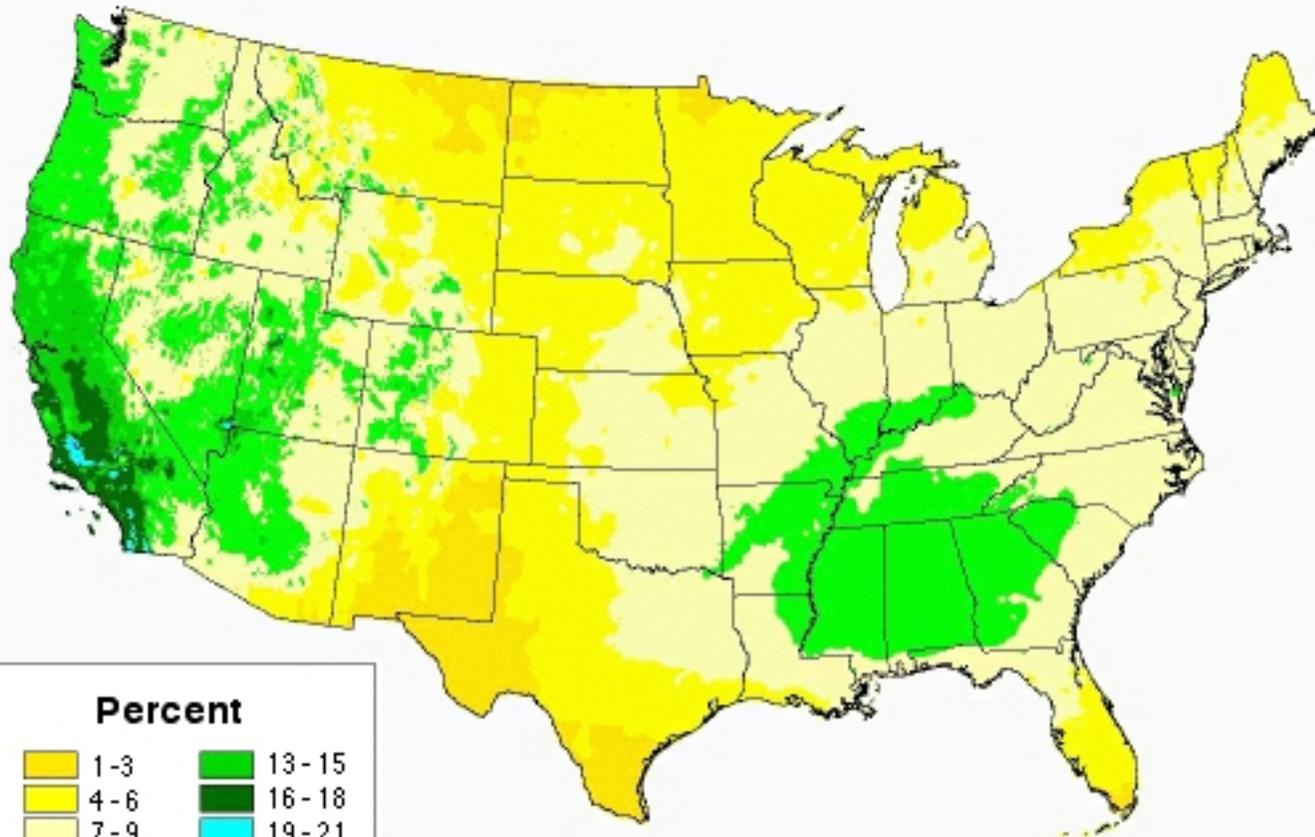
Percent

1-3	13-15
4-6	16-18
7-9	19-21
10-12	22-25

Percent of Annual Precipitation  
February



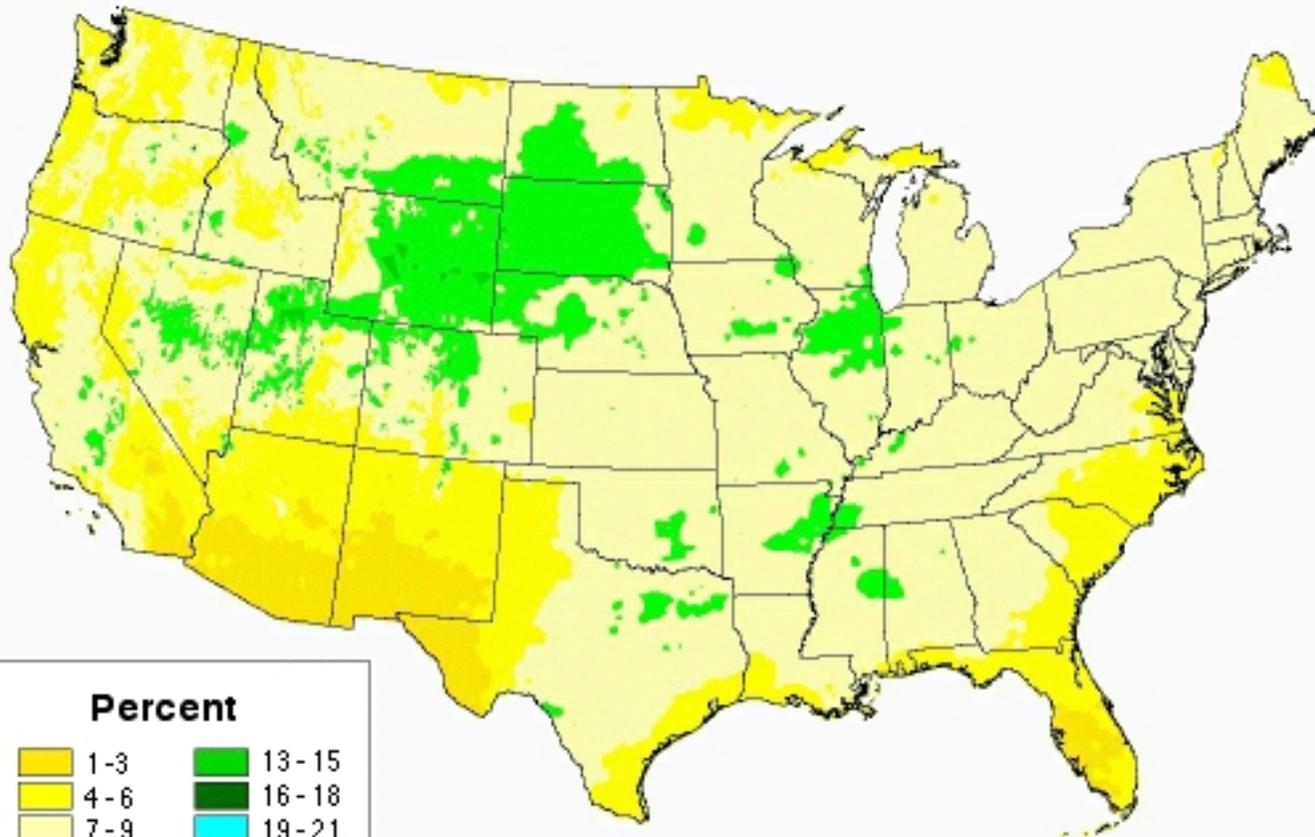
Percent of Annual Precipitation  
March



Percent

1-3	13-15
4-6	16-18
7-9	19-21
10-12	22-25

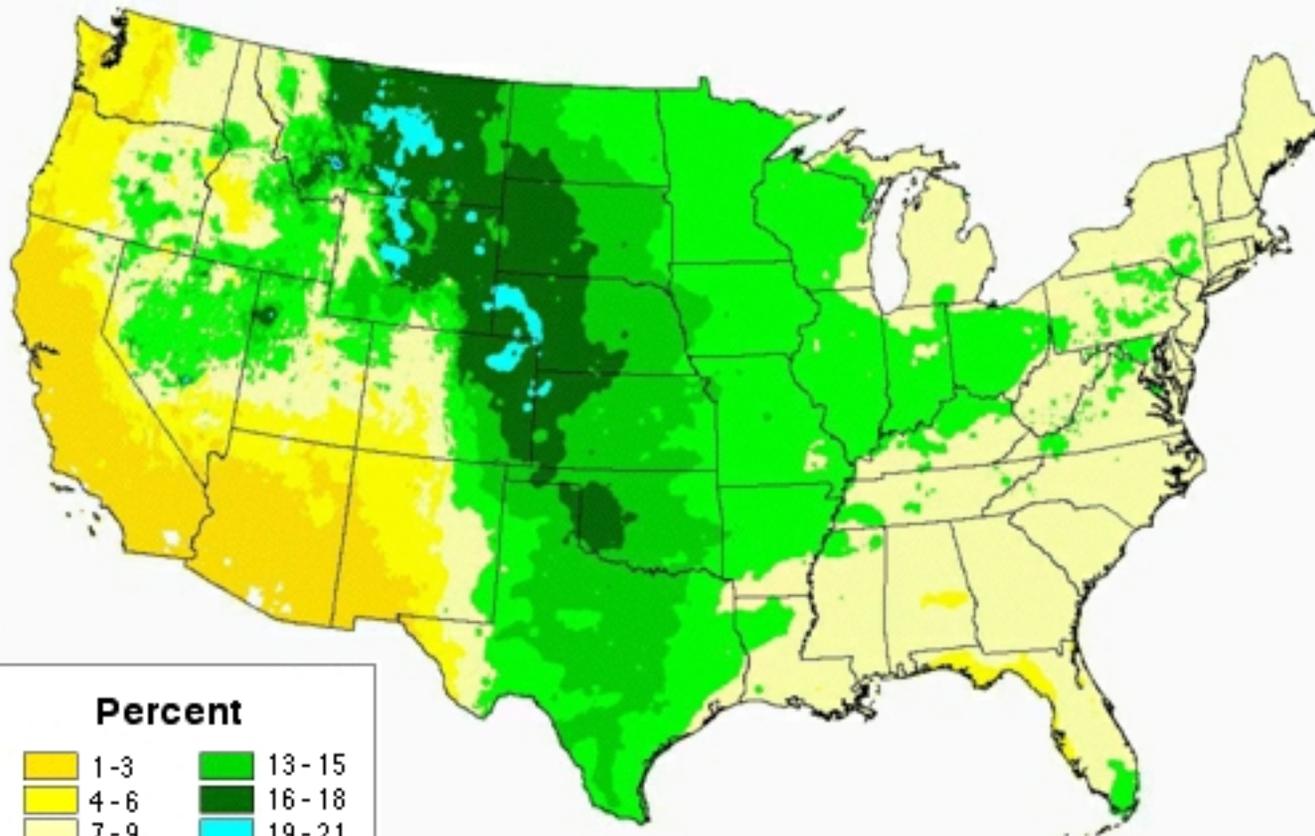
Percent of Annual Precipitation  
April



**Percent**

1-3	13-15
4-6	16-18
7-9	19-21
10-12	22-25

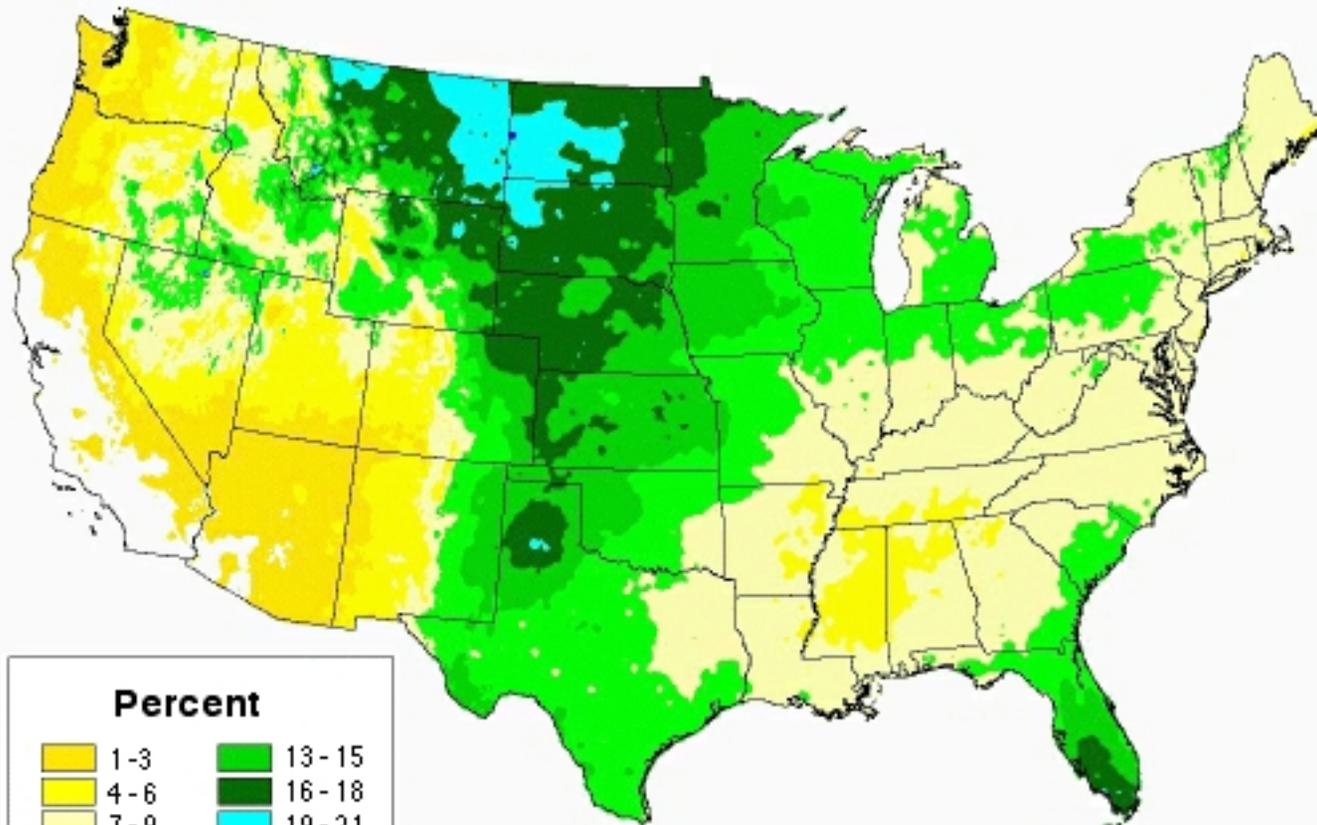
Percent of Annual Precipitation  
May



Percent

1-3	13-15
4-6	16-18
7-9	19-21
10-12	22-25

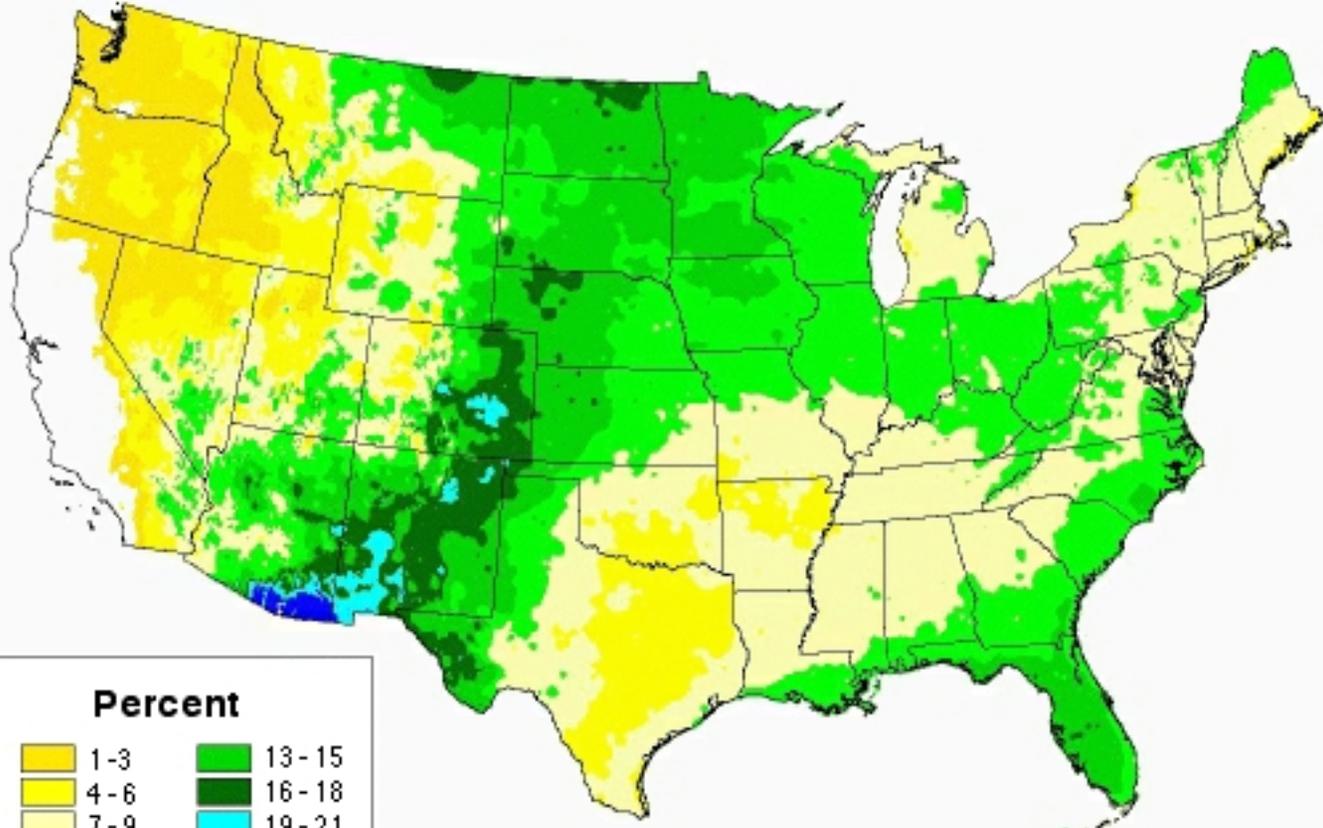
Percent of Annual Precipitation  
June



**Percent**

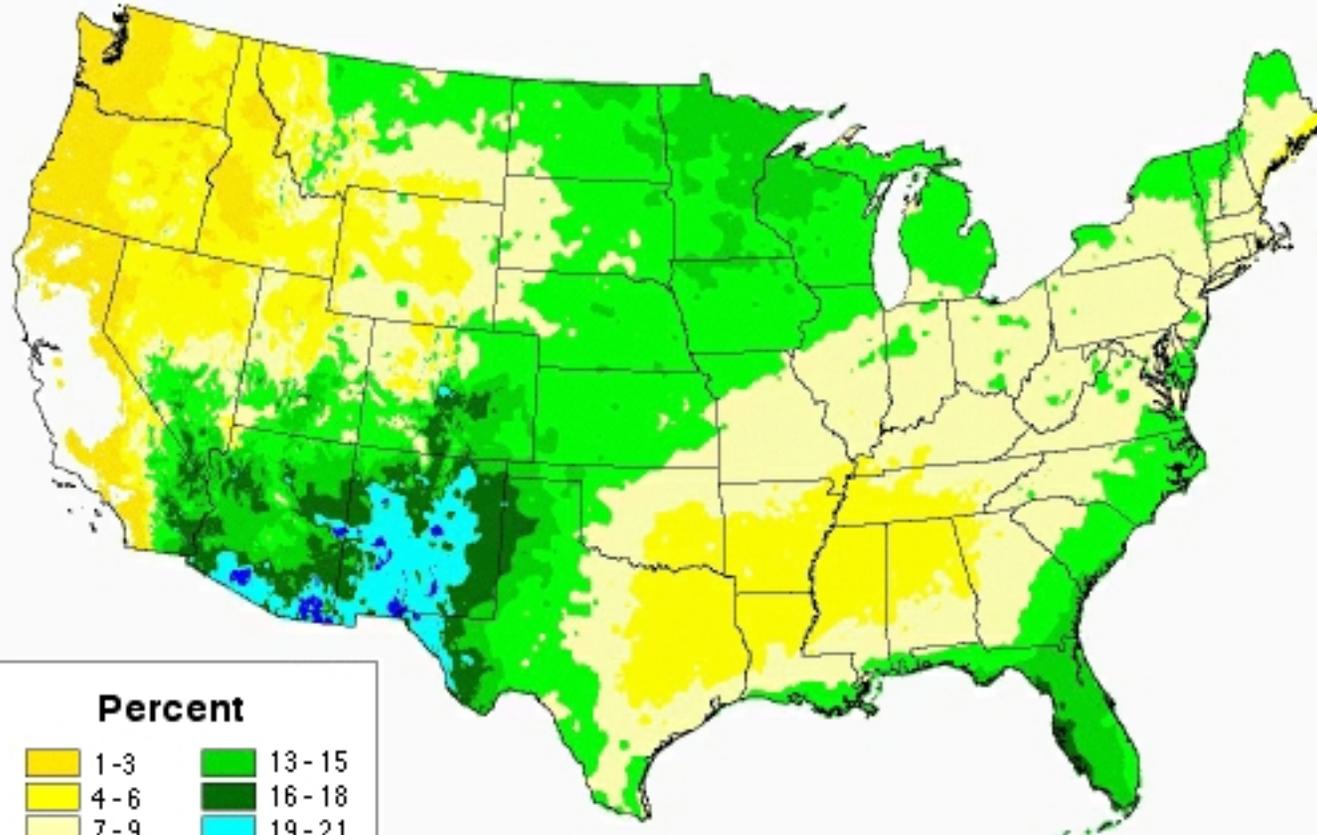
1-3	13-15
4-6	16-18
7-9	19-21
10-12	22-25

Percent of Annual Precipitation  
July



Percent	
1-3	13-15
4-6	16-18
7-9	19-21
10-12	22-25

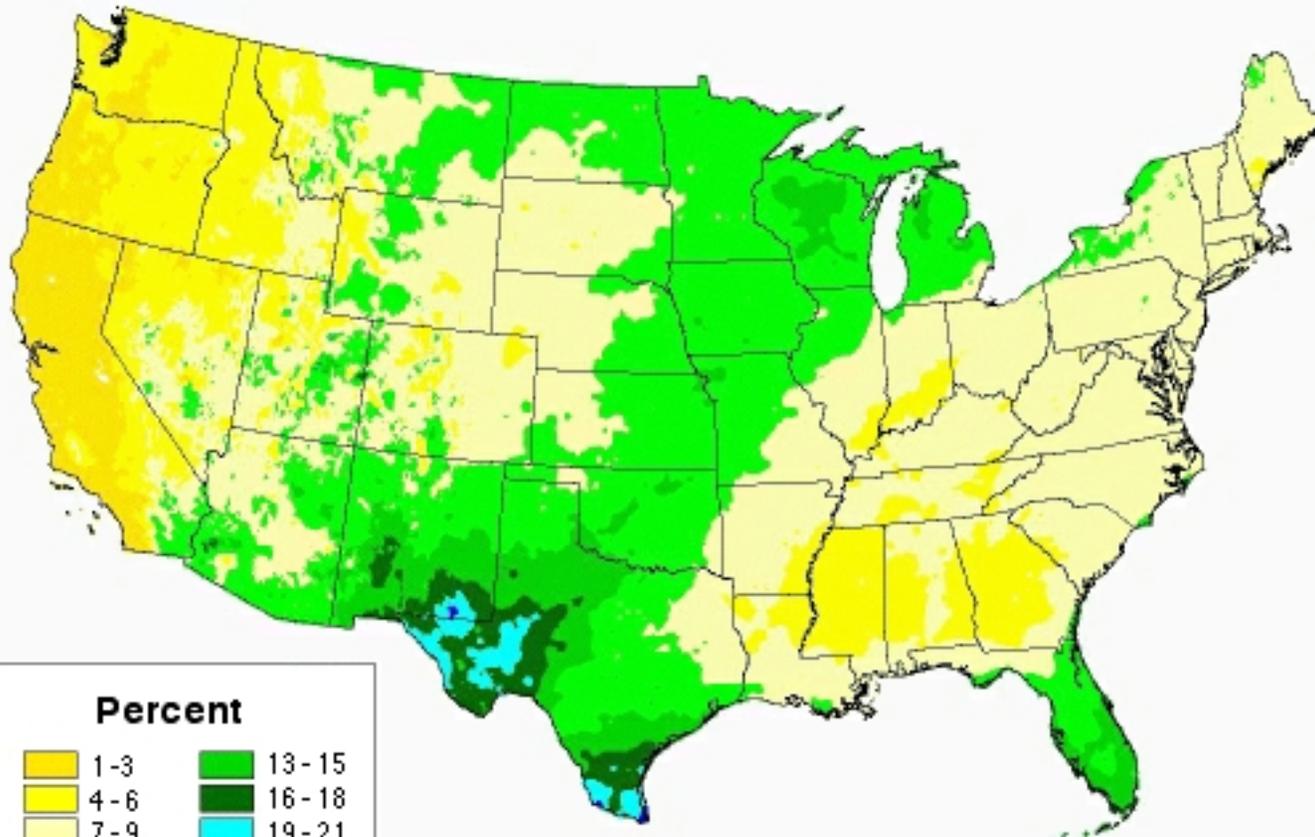
### Percent of Annual Precipitation August



#### Percent

1-3	13-15
4-6	16-18
7-9	19-21
10-12	22-25

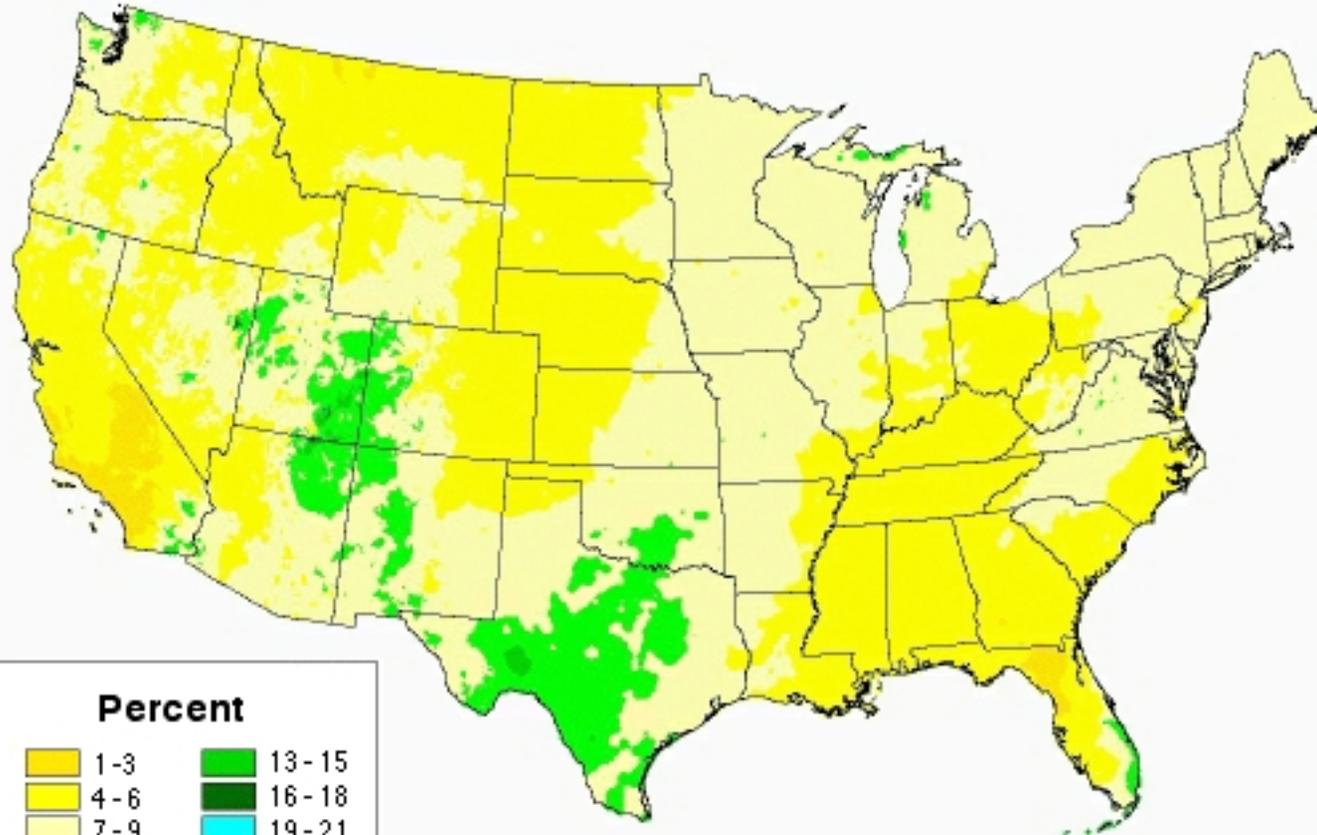
### Percent of Annual Precipitation September



#### Percent

1-3	13-15
4-6	16-18
7-9	19-21
10-12	22-25

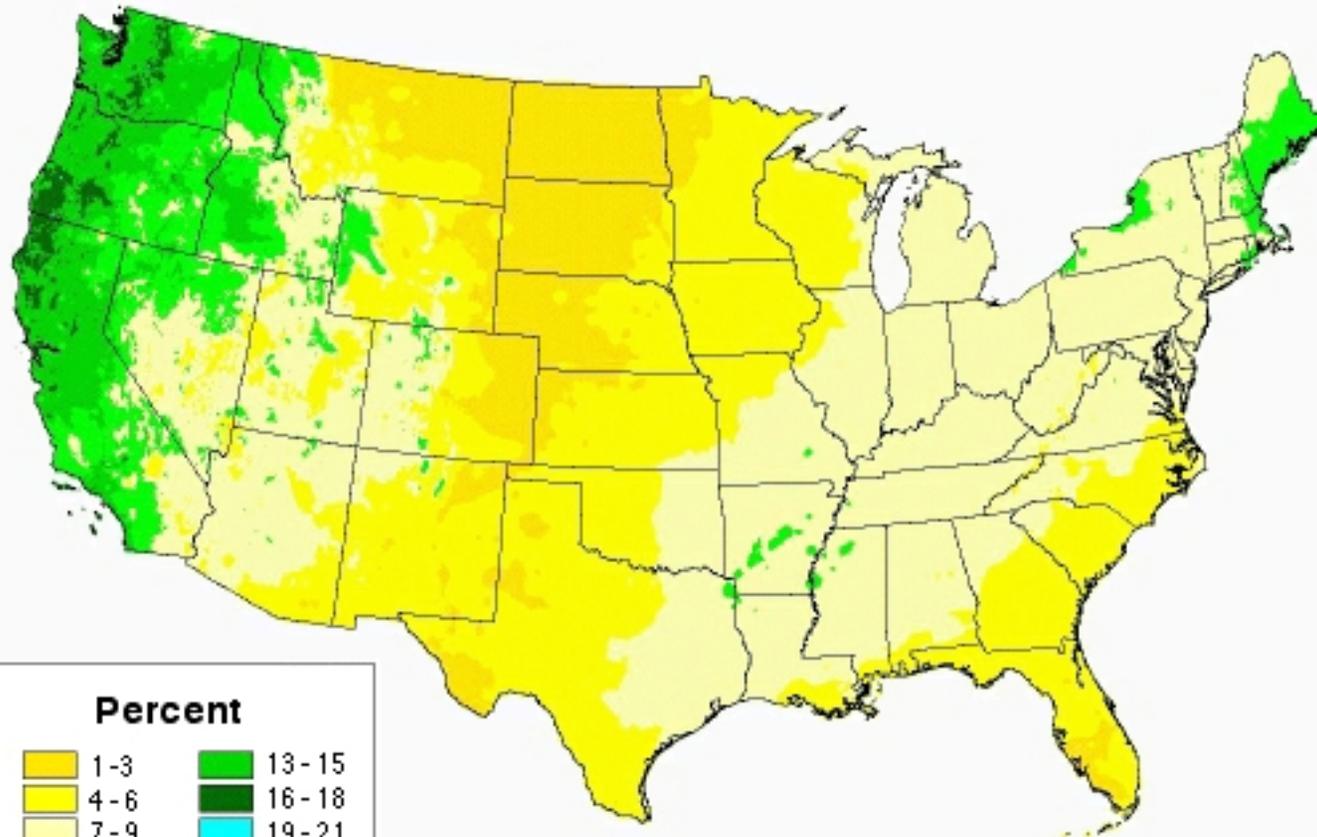
Percent of Annual Precipitation  
October



Percent

1-3	13-15
4-6	16-18
7-9	19-21
10-12	22-25

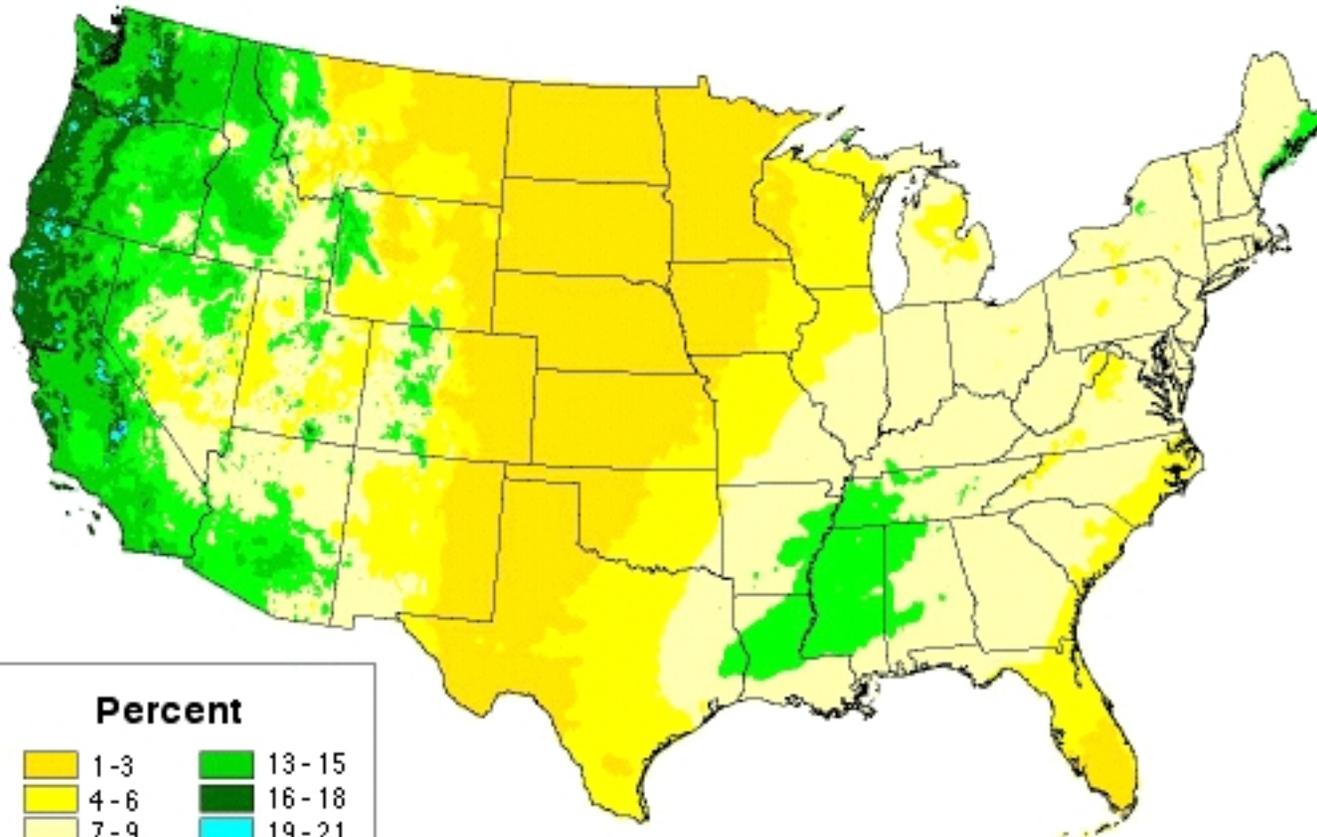
Percent of Annual Precipitation  
November



**Percent**

1-3	13-15
4-6	16-18
7-9	19-21
10-12	22-25

### Percent of Annual Precipitation December

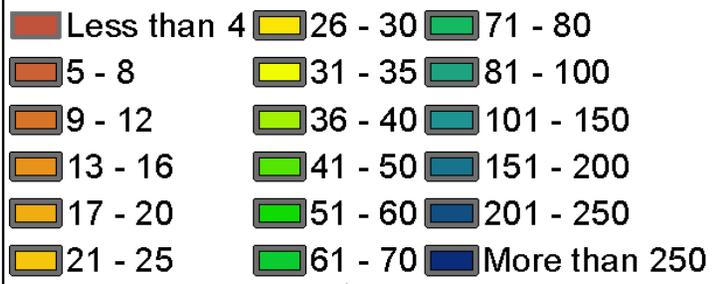


Percent	
1-3	13-15
4-6	16-18
7-9	19-21
10-12	22-25

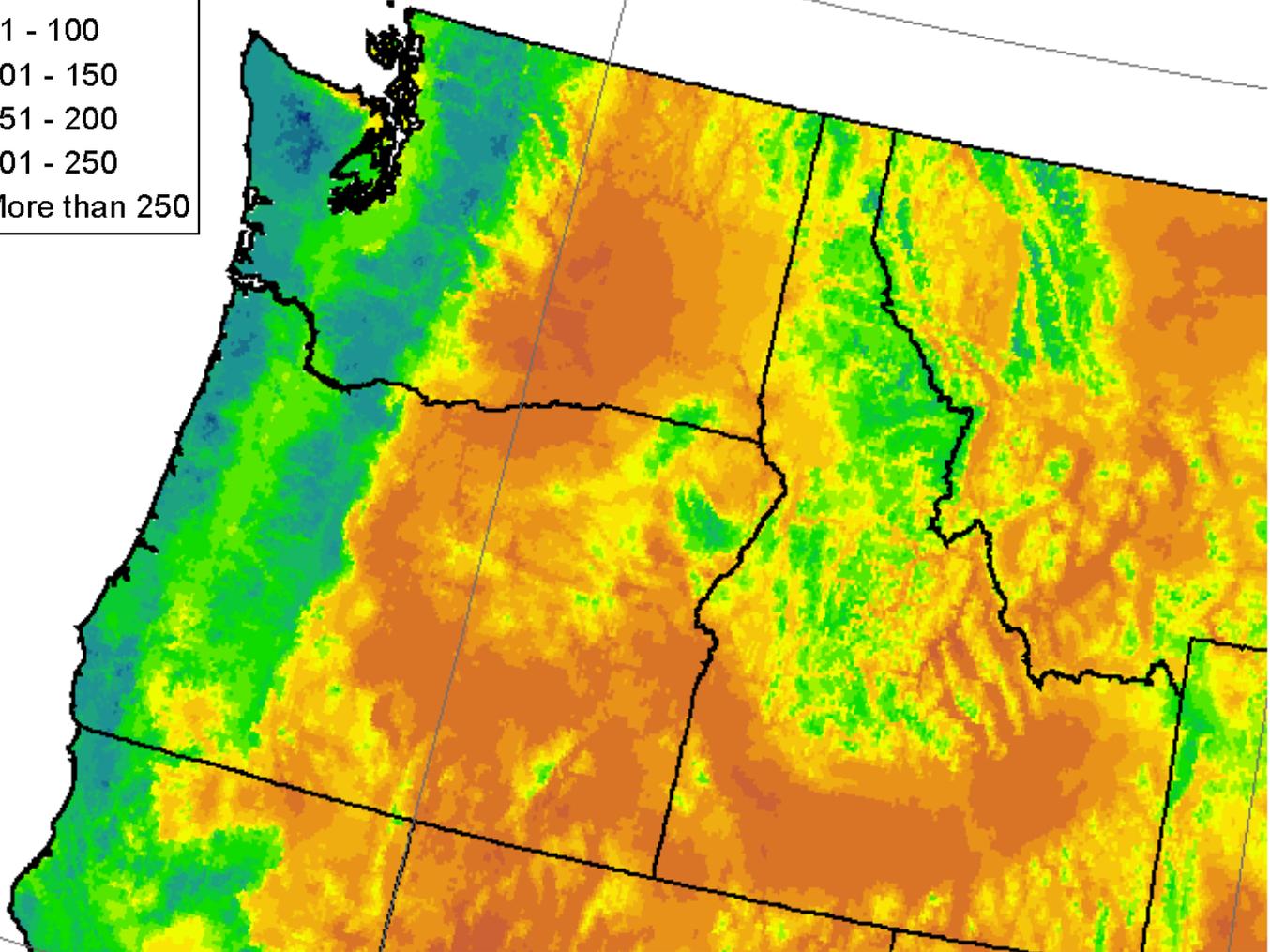
130°W

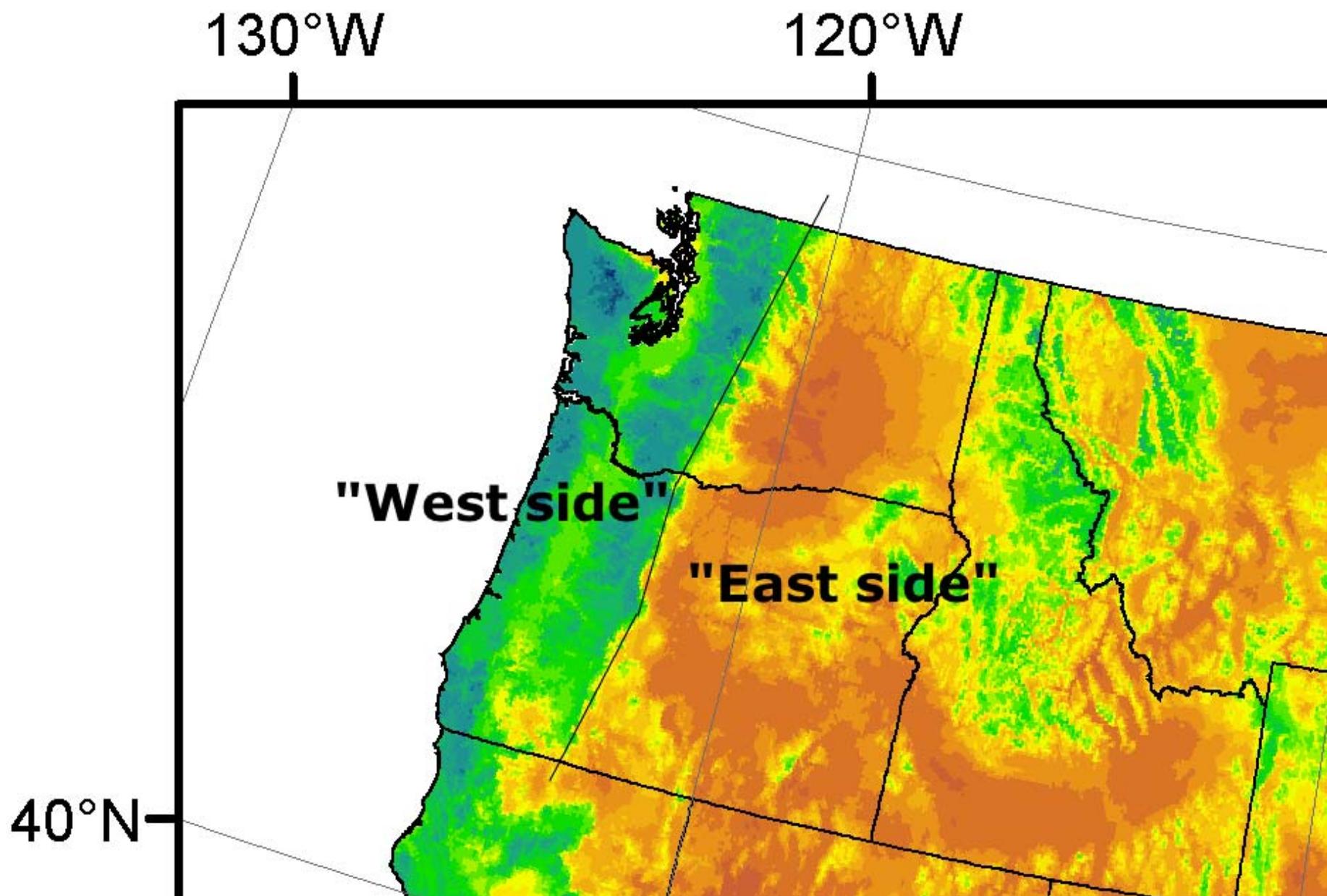
120°W

**Precipitation (inches)**



40°N





## West side climate

## East side climate

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1. Relatively wet (mostly)
2. Winter maximum (Oct-Mar)
3. Wettest near the coast and in the mountains
4. Relatively mild temperatures
5. The most significant storms are large, winter cyclonic storms
6. Rain-on-snow events of special concern

1. Relatively dry (mostly)
2. Somewhat uniform precip annually
3. Wettest in the mountains
4. Significant temperature variability
5. The most significant storms are warm season thunderstorms
6. Rain-on-dirt events of special concern

## West side climate

## East side climate

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7. High and low elevations coupled

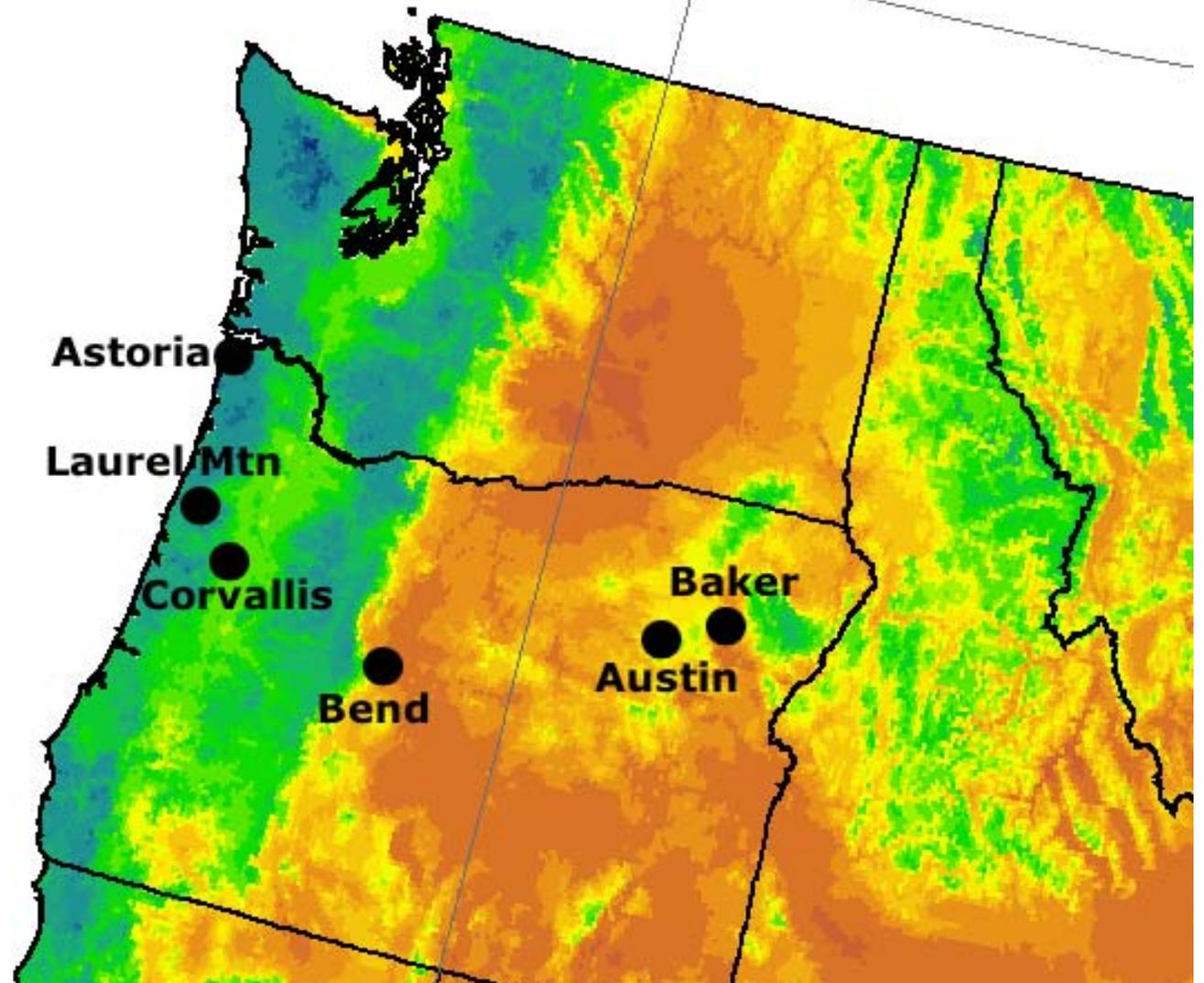
8. Extremes behave like averages

7. High and low elevations decoupled

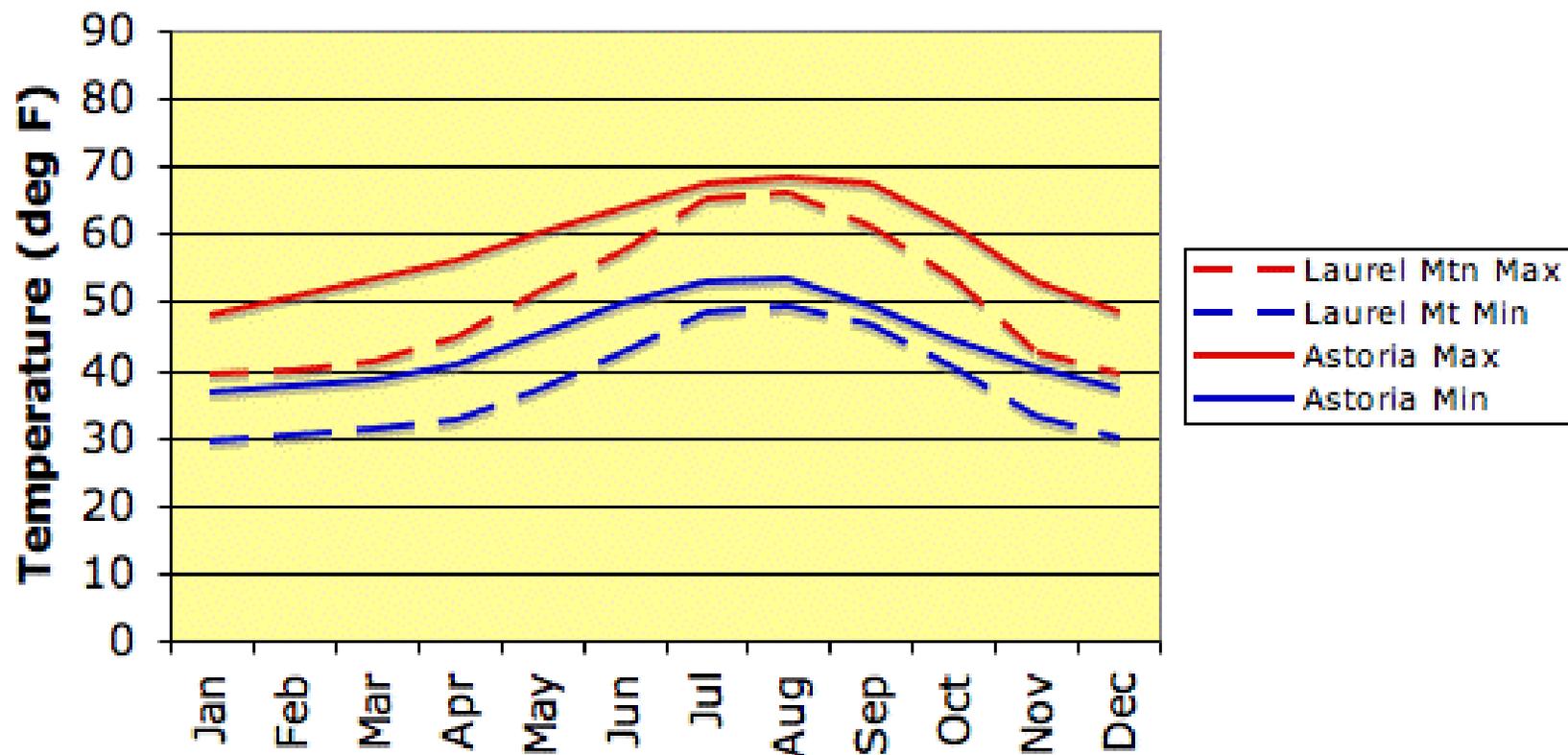
8. Extremes don't behave like averages

130°W

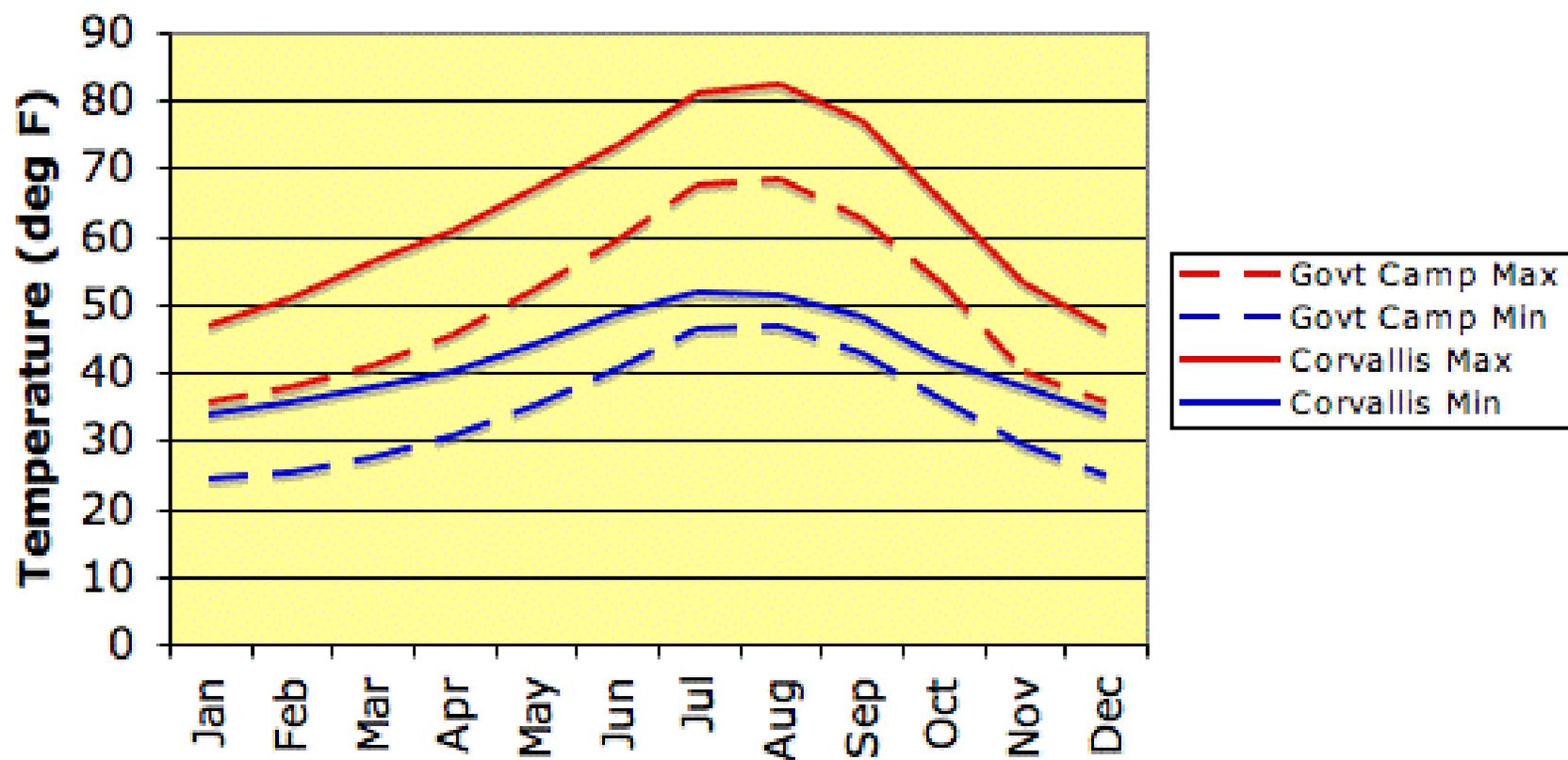
120°W



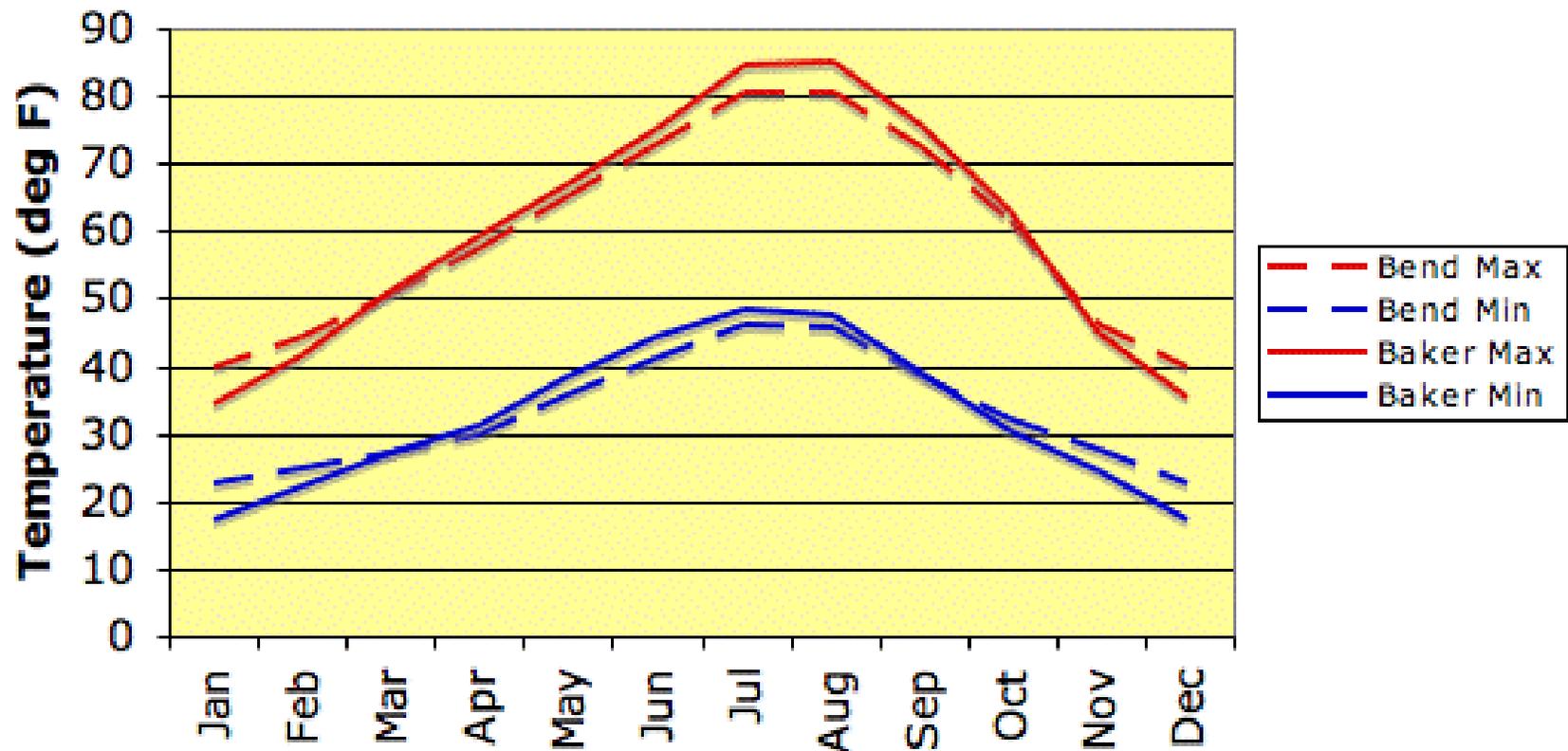
## Monthly Average Temperatures, Astoria and Laurel Mtn



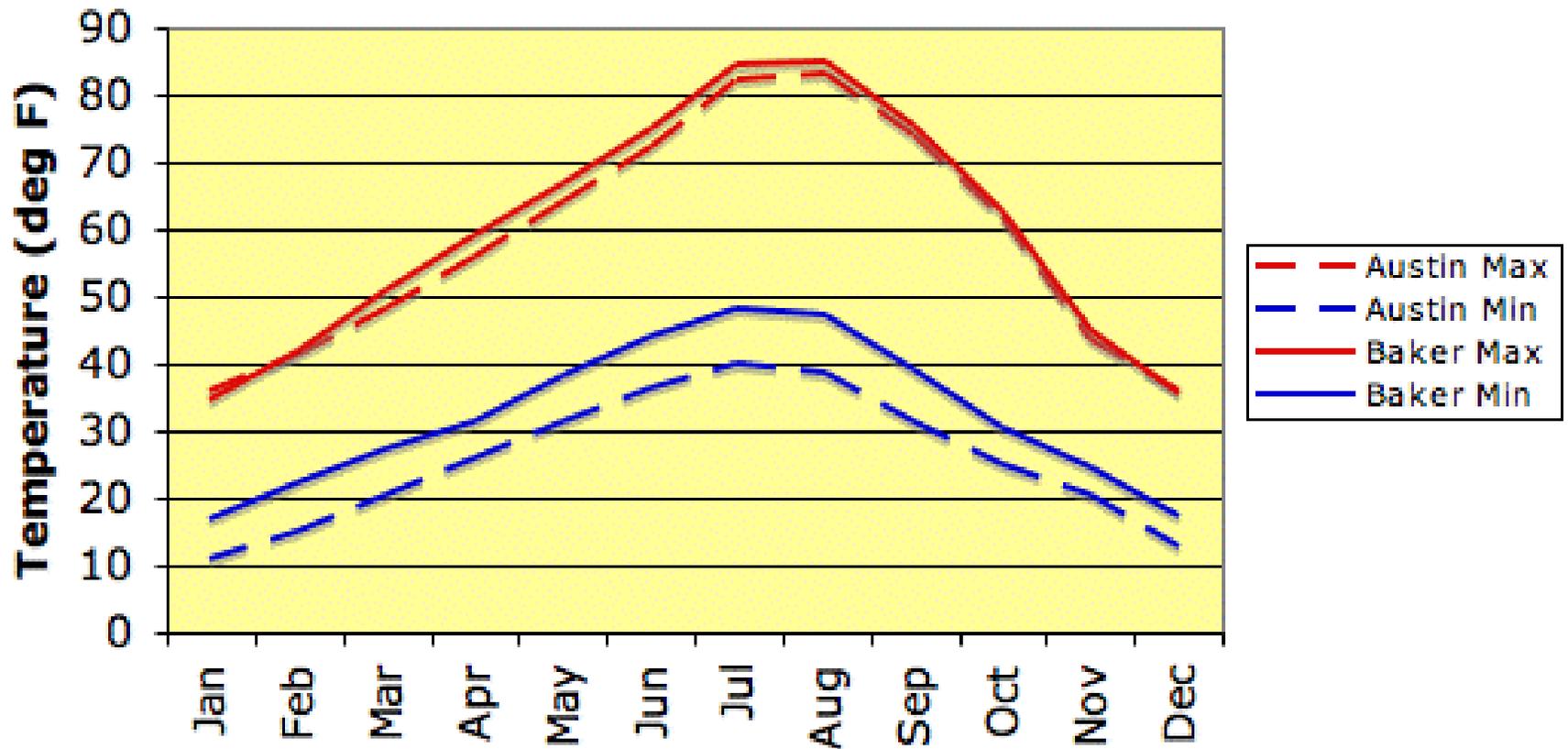
## Monthly Average Temperatures, Corvallis and Govt Camp



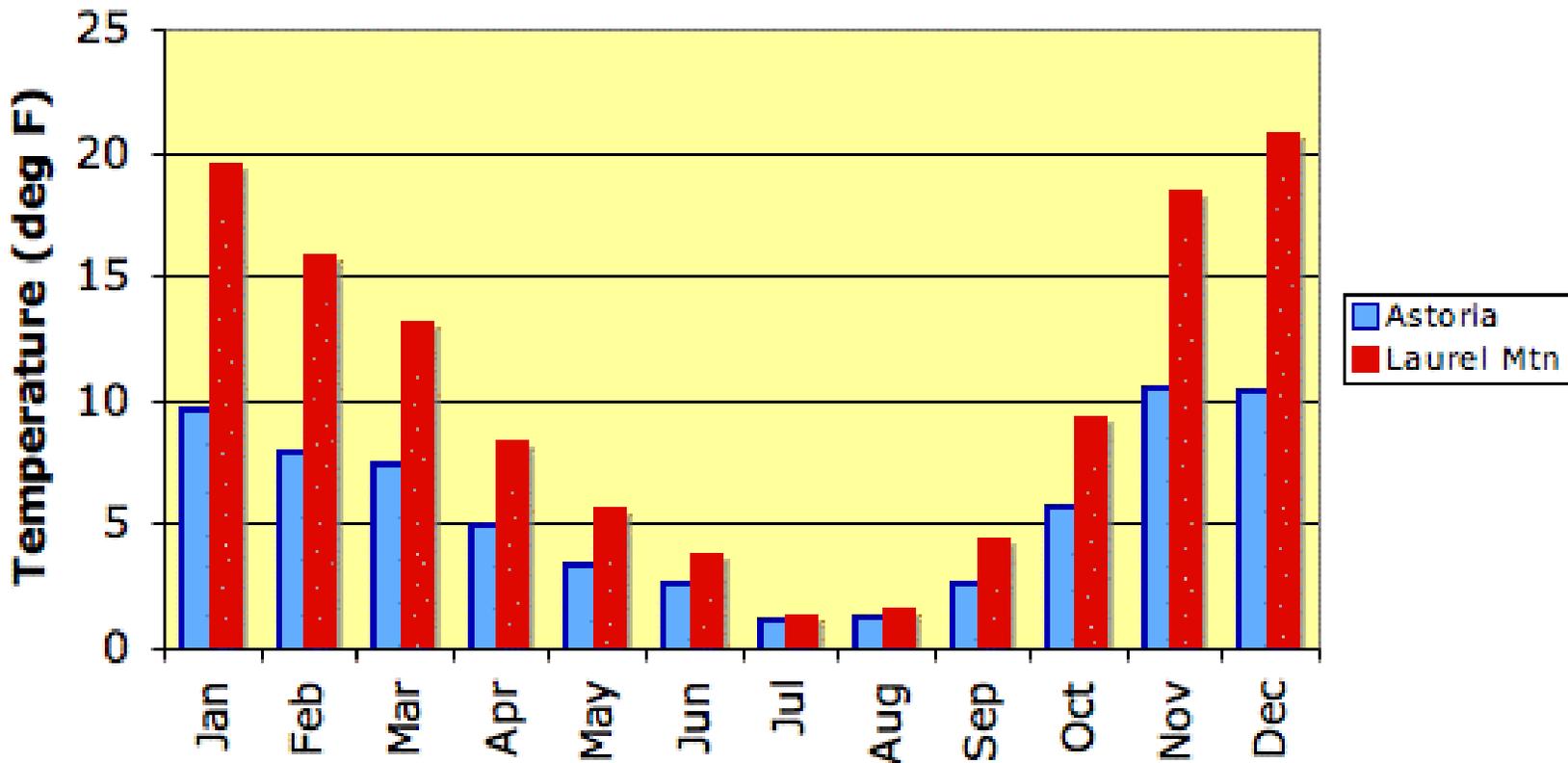
## Monthly Average Temperatures, Bend and Baker



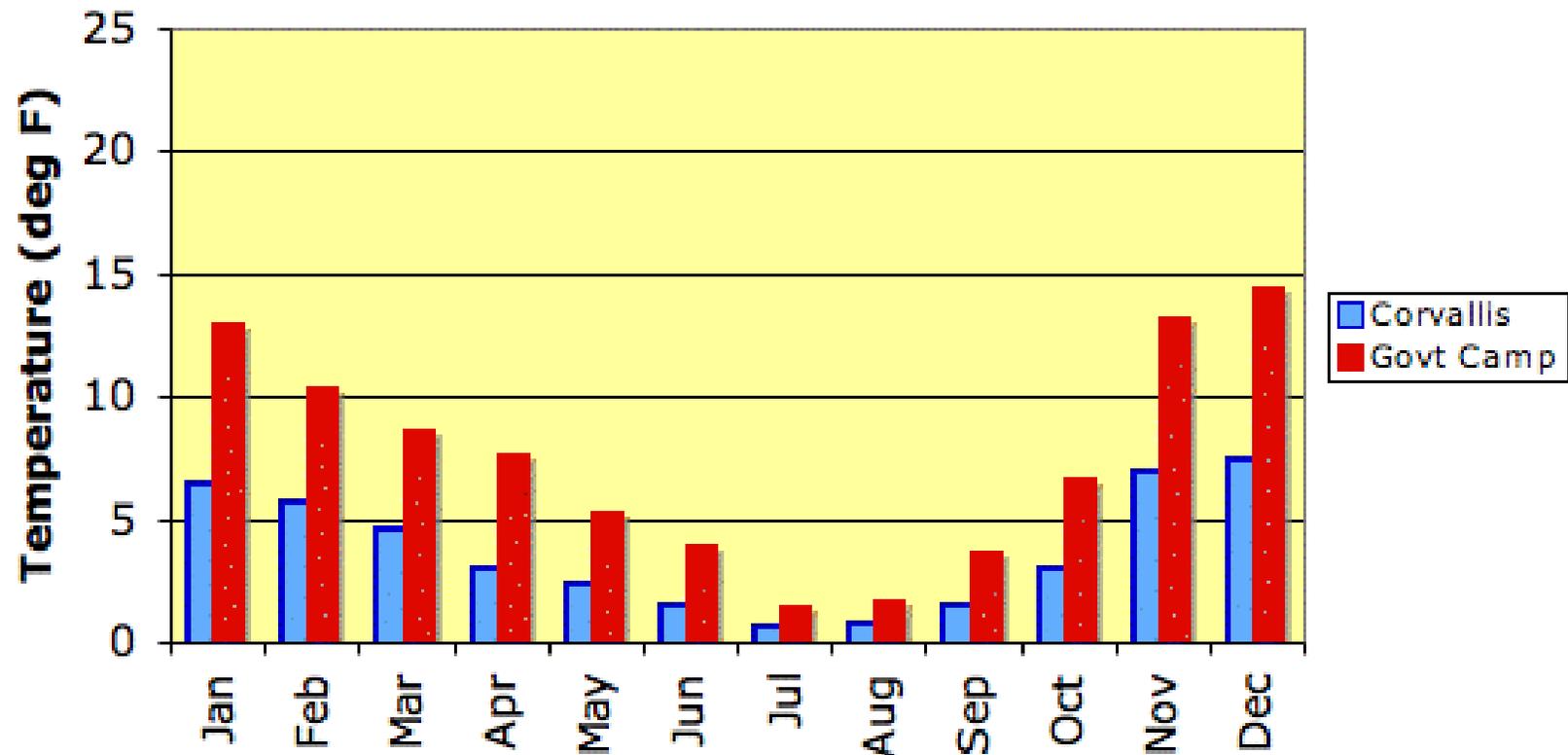
## Monthly Average Temperatures, Baker and Austin



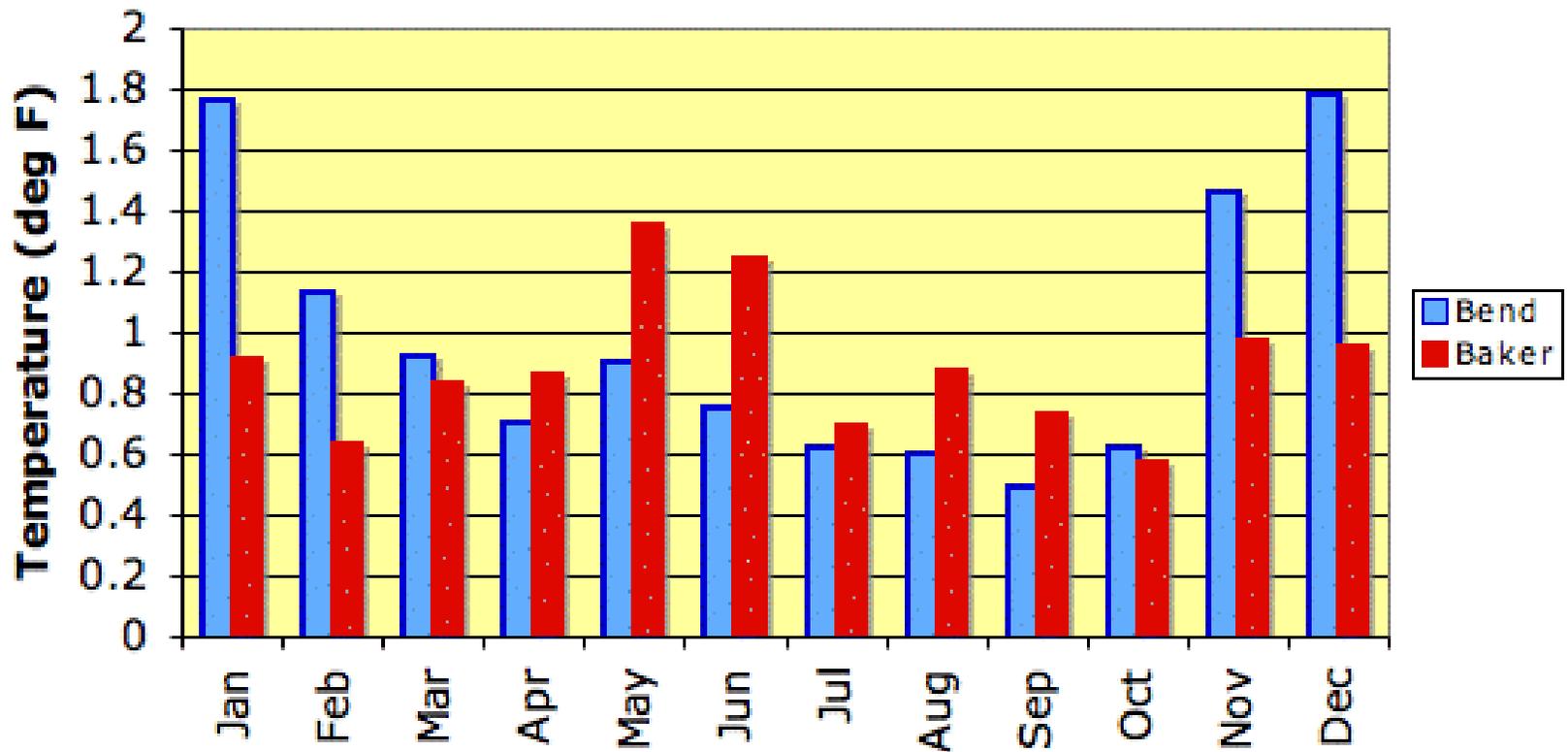
## Monthly Average Precipitation Astoria and Laurel Mtn



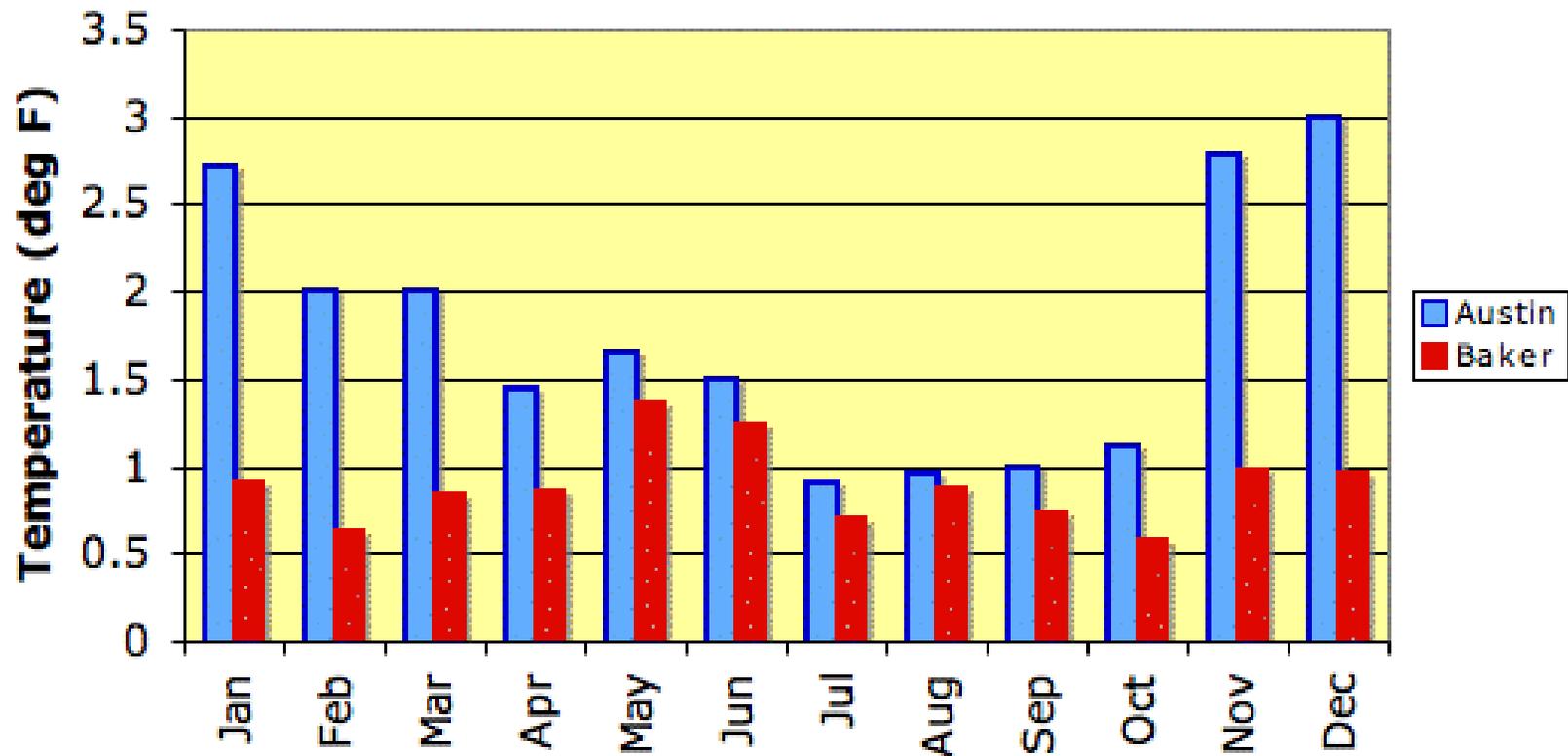
## Monthly Average Precipitation Corvallis and Govt Camp



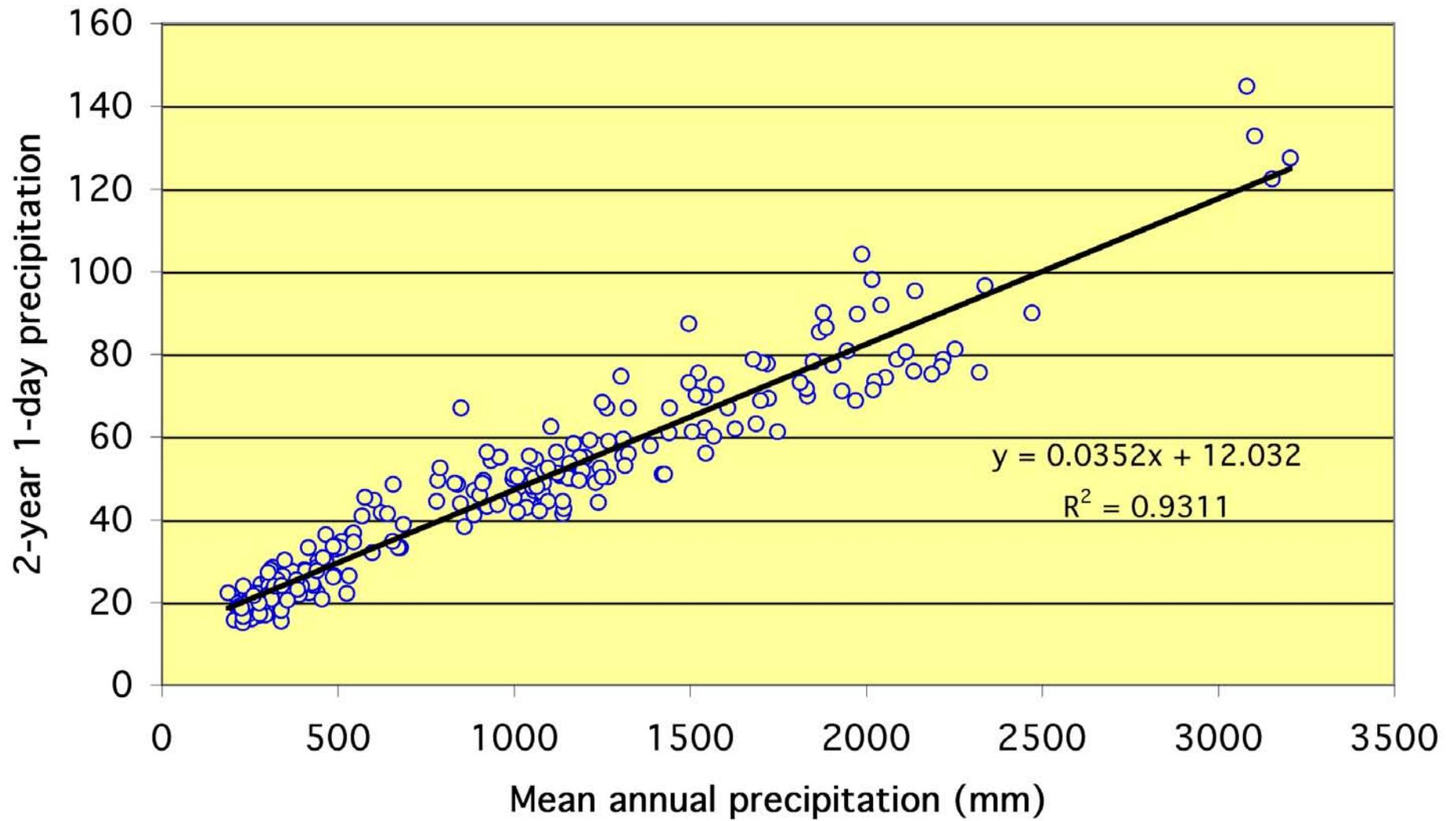
## Monthly Average Precipitation Bend and Baker



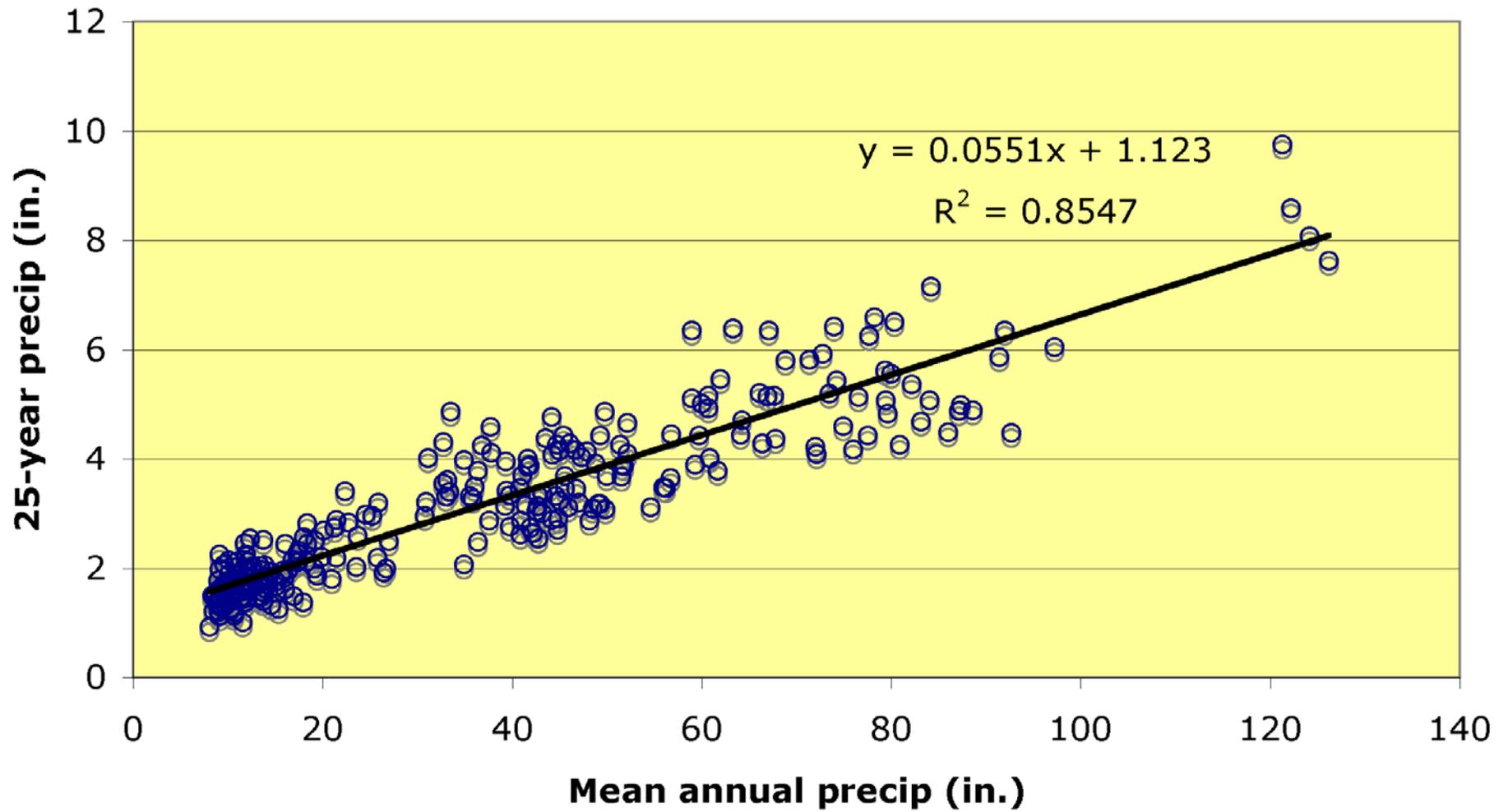
## Monthly Average Precipitation Austin and Baker



## 2-year 1-day vs. Mean Annual Precipitation, Oregon



## 25-year vs Mean Annual Precipitation, Oregon



# Extreme Floods in the Pacific Northwest

Worralie, Ore.  
Feb. 1916.



# Types of Floods

- 1. Flash floods**
2. Debris flow floods
3. Spring snow melt
4. Rain on snow







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Corvallis, Ore.  
Feb. 1916.







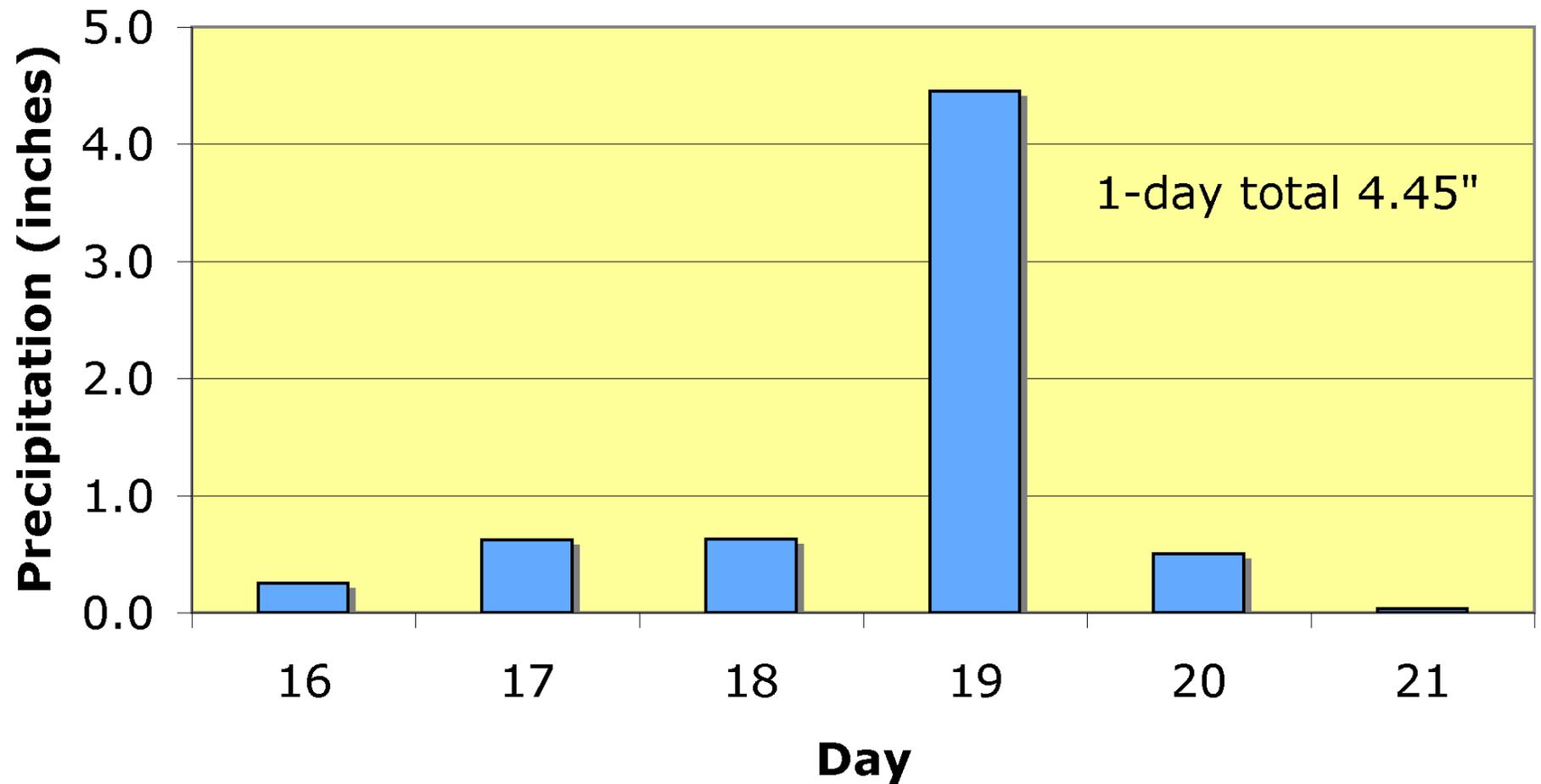


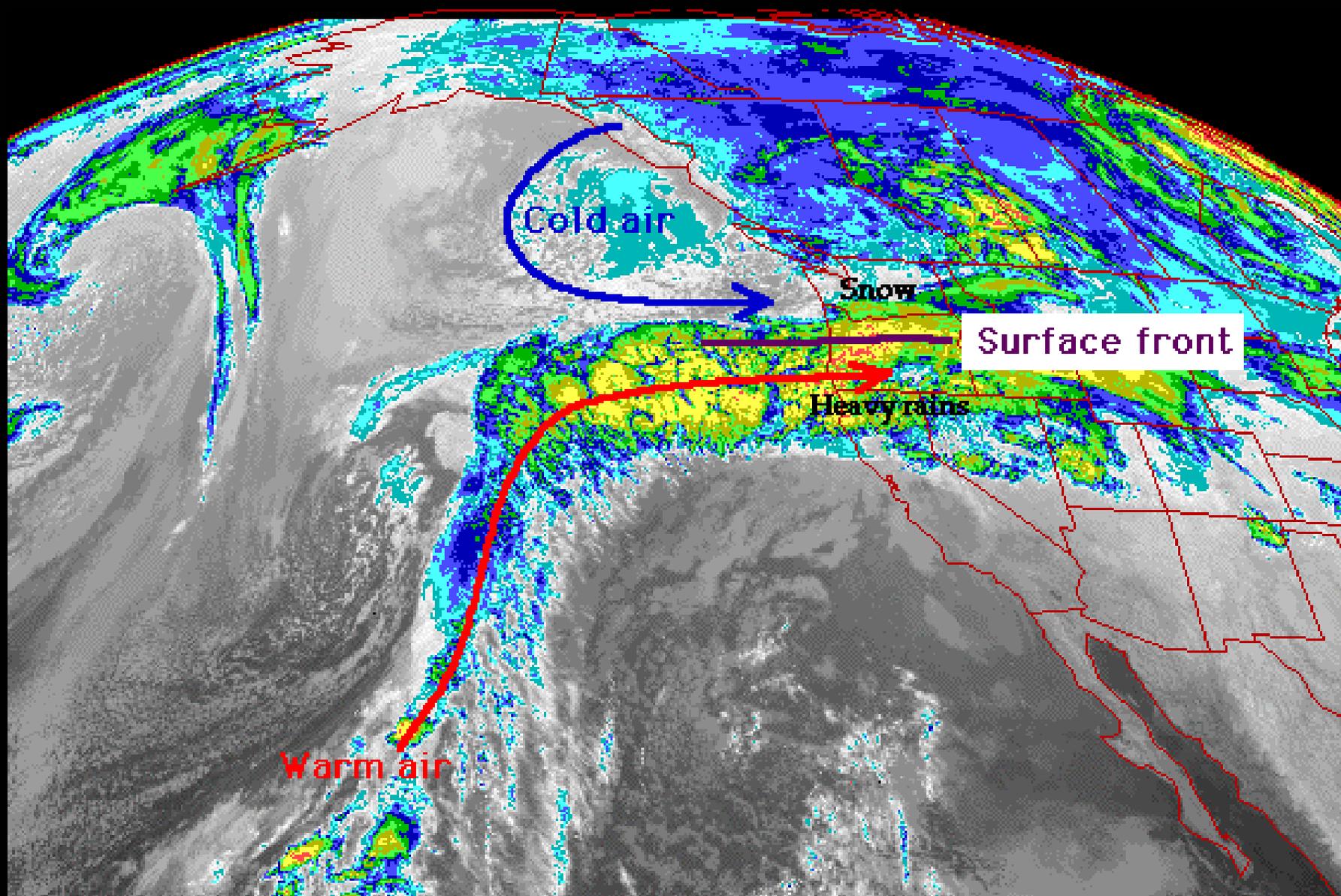
# “Recipe for a Flood”

1. Wet winter
2. Moderate snowpack
3. Brief cold period
4. Intense, warm rain

**A really big  
one-day storm**

## Daily Precipitation, Corvallis, Nov. 1996

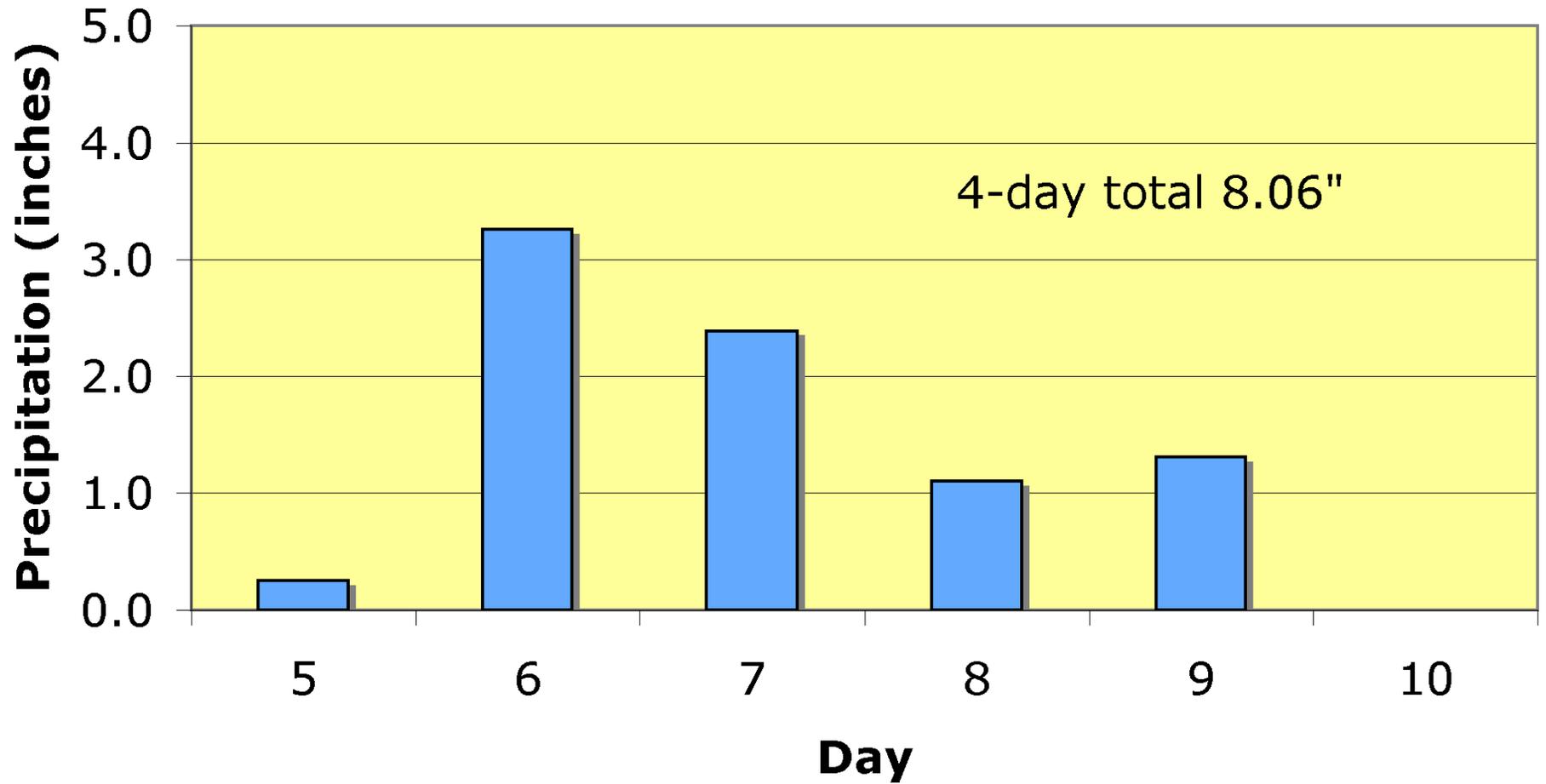




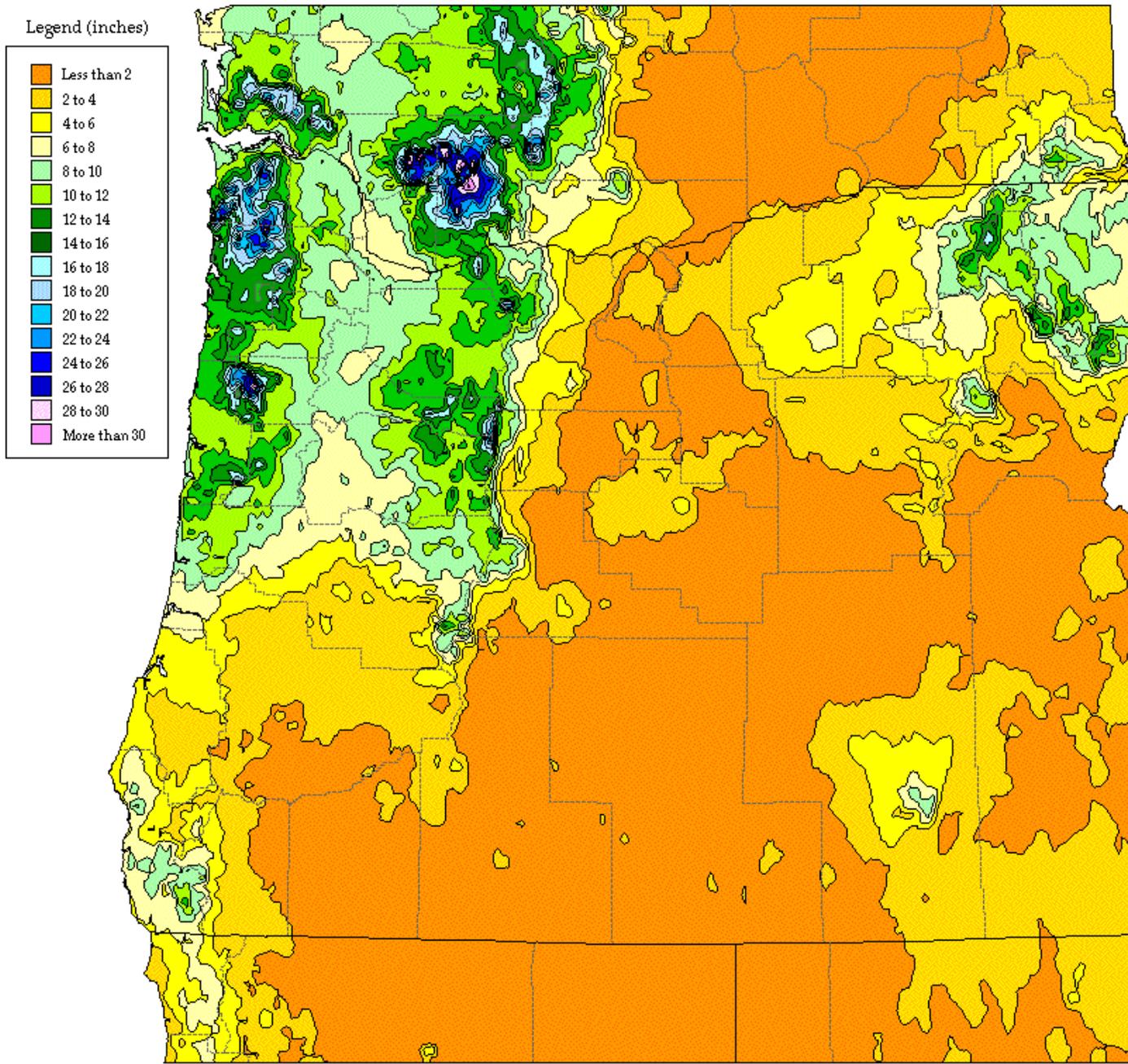
Infrared Satellite picture for November 18, 1996, showing subtropical jet stream bringing heavy rains from the southwest, and cold air mass over Washington.

**A really big  
four-day storm**

## Daily Precipitation, Corvallis, Feb. 1996



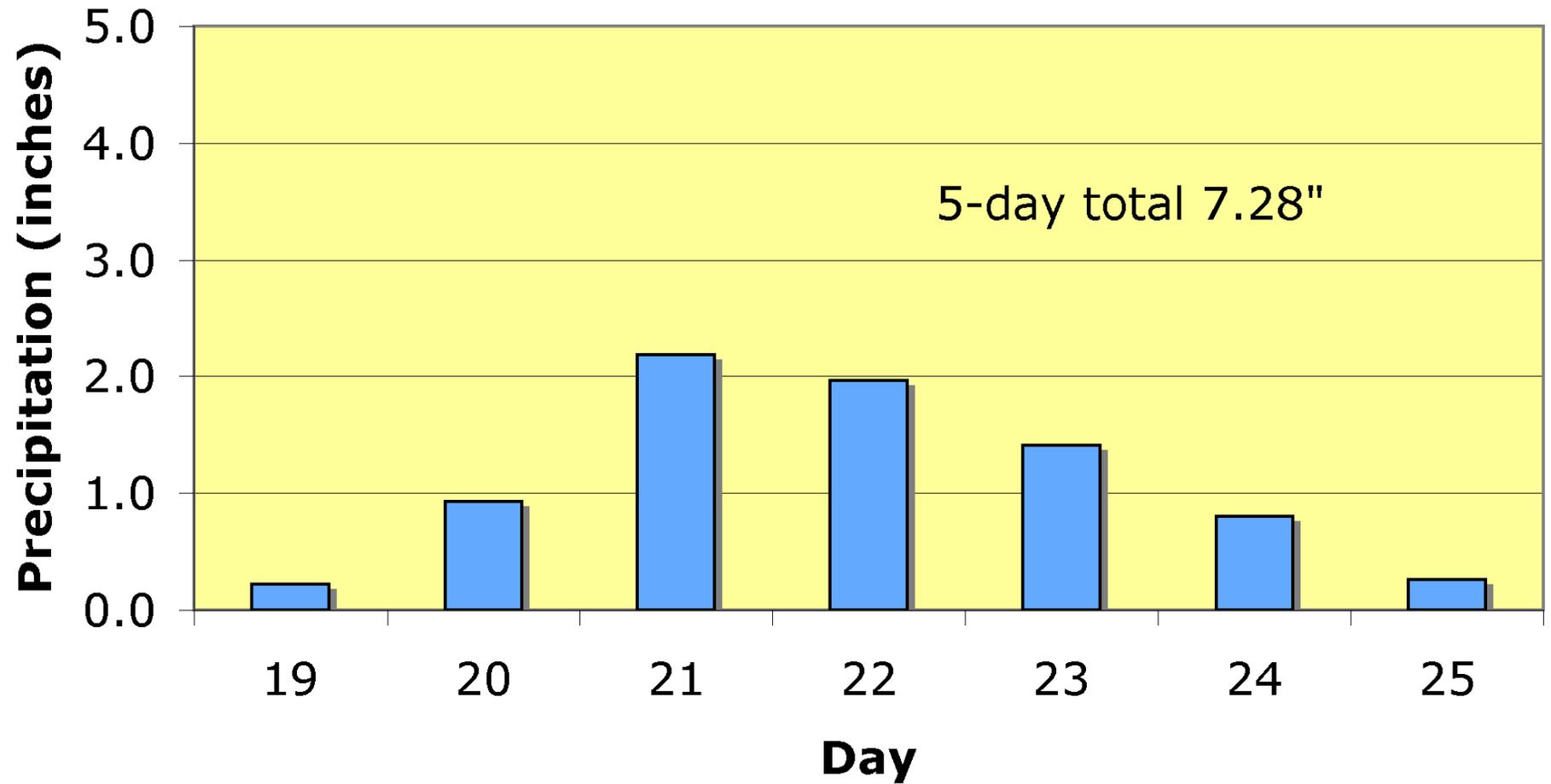
Total Precipitation, Oregon and Surrounding States  
February 5-9, 1996



Total precipitation during the February 1996 flood event was modeled using the PRISM model

For more information contact:

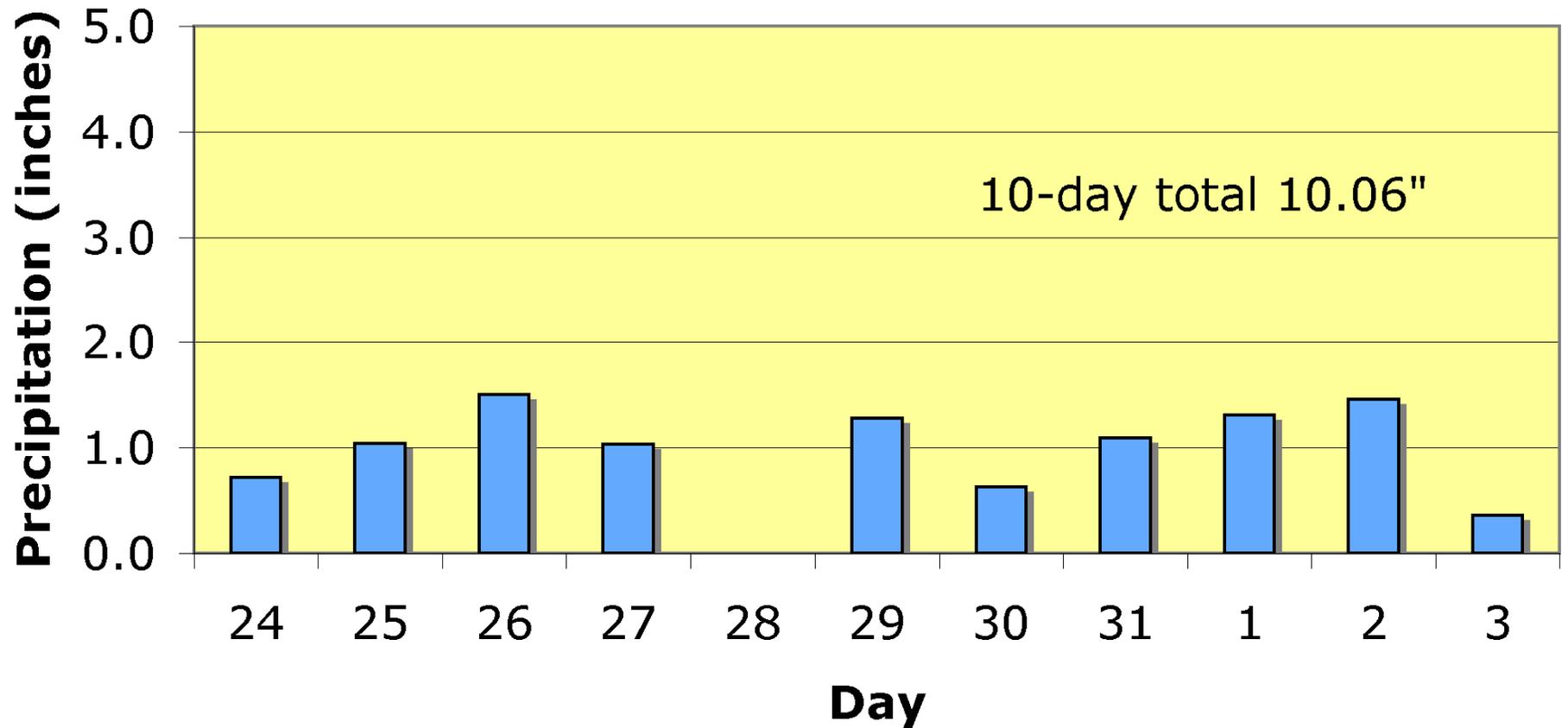
## Daily Precipitation, Corvallis, Dec. 1964





**A really big  
ten-day storm**

## Daily Precipitation, Corvallis, Dec. 96-Jan. 97

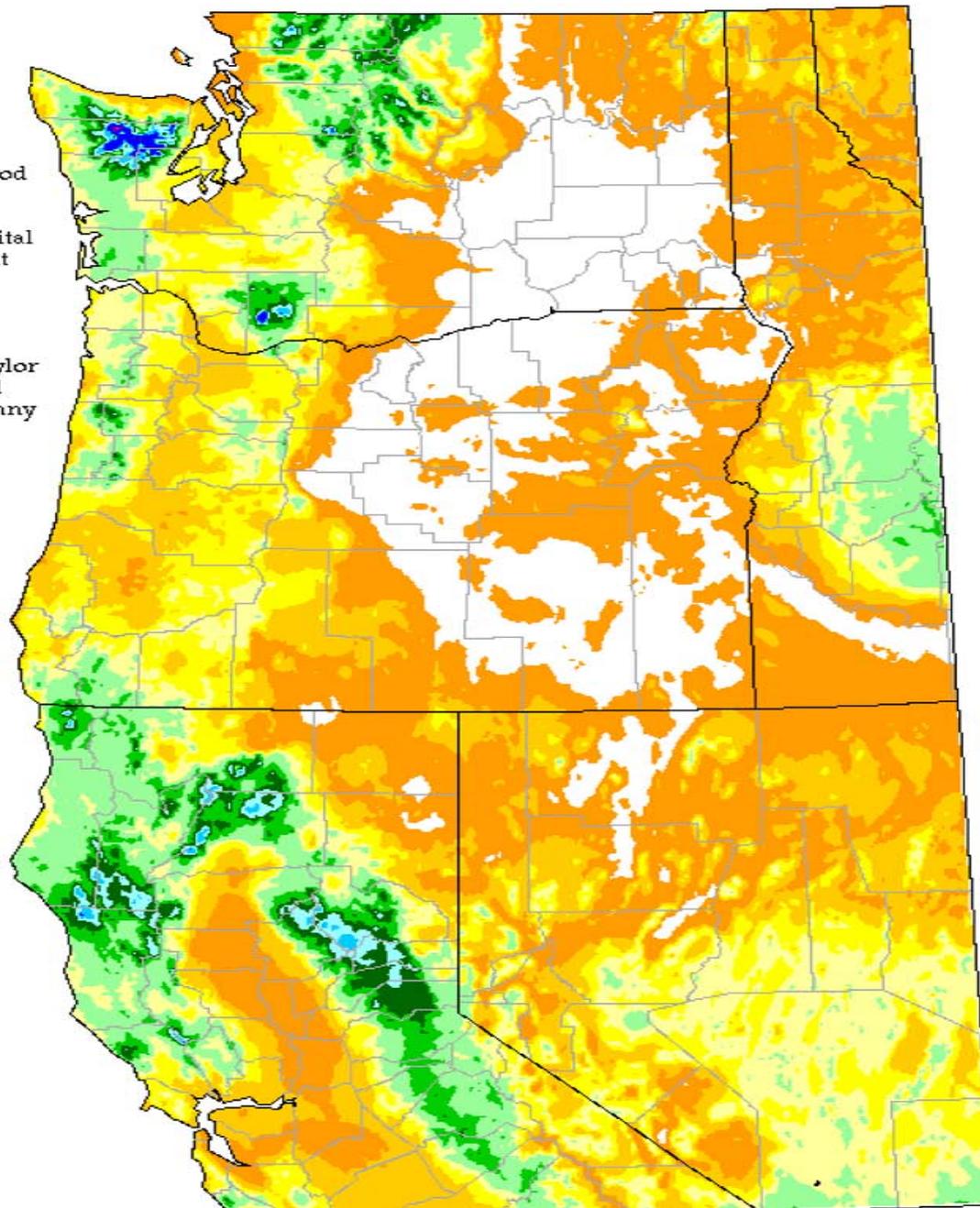
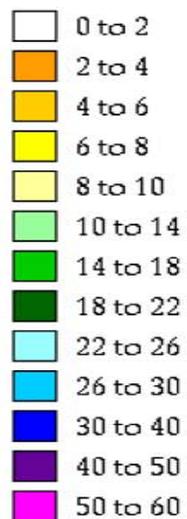


## Total Precipitation, December 29, 1996 - January 3, 1997

Total precipitation for the period December 29, 1996 through January 3, 1997. The PRISM model was used to create a digital coverage using data collected at NOAA cooperative stations, NRCS SNOTEL stations, and USFS/BLM RAWS stations. Modeling was performed by Wayne Gibson and George Taylor of Oregon Climate Service and GIS work was conducted by Jenny Weisberg.

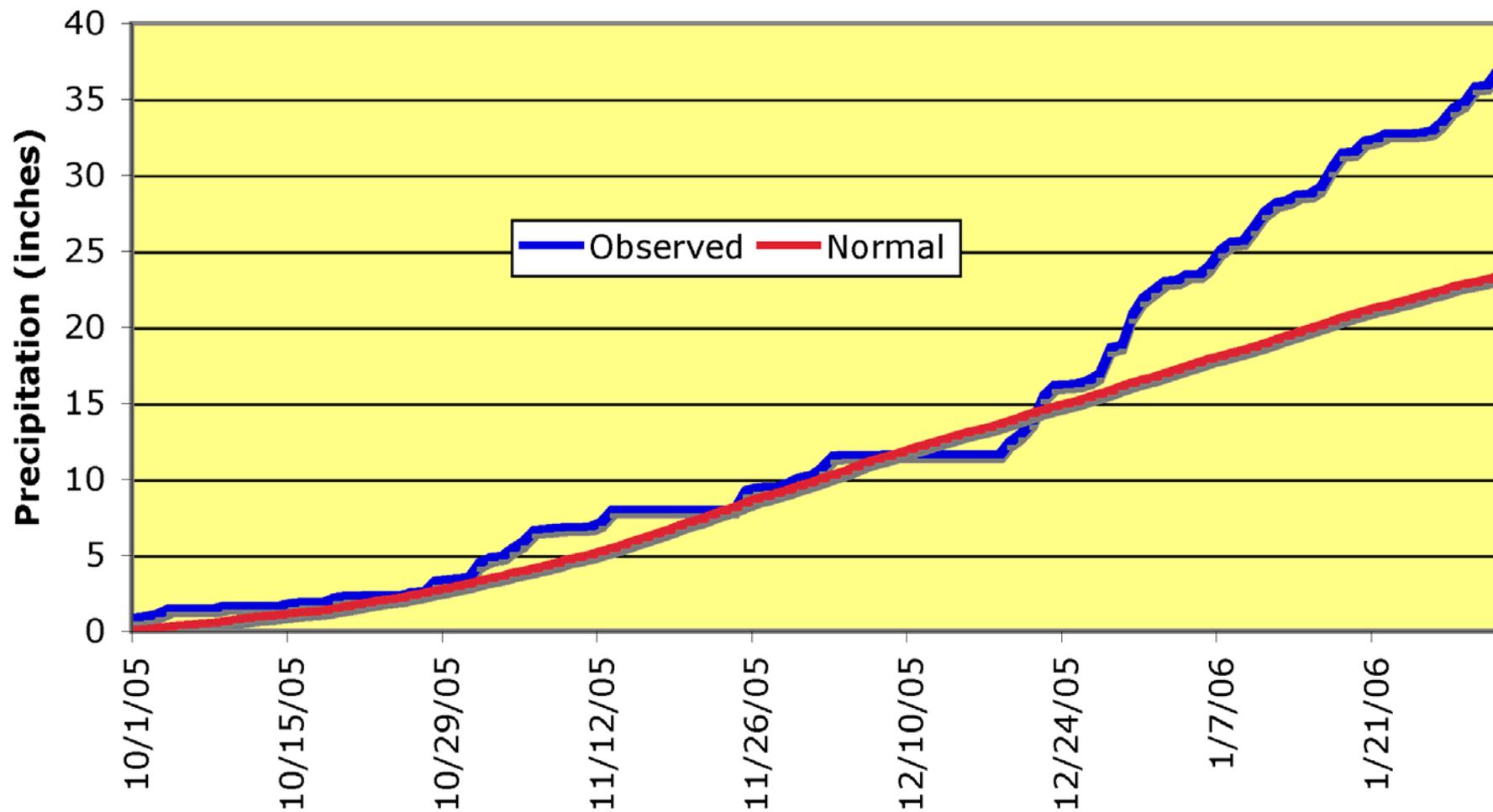
Work was sponsored by U.S. Forest Service, Portland, Oregon

### Legend (inches)



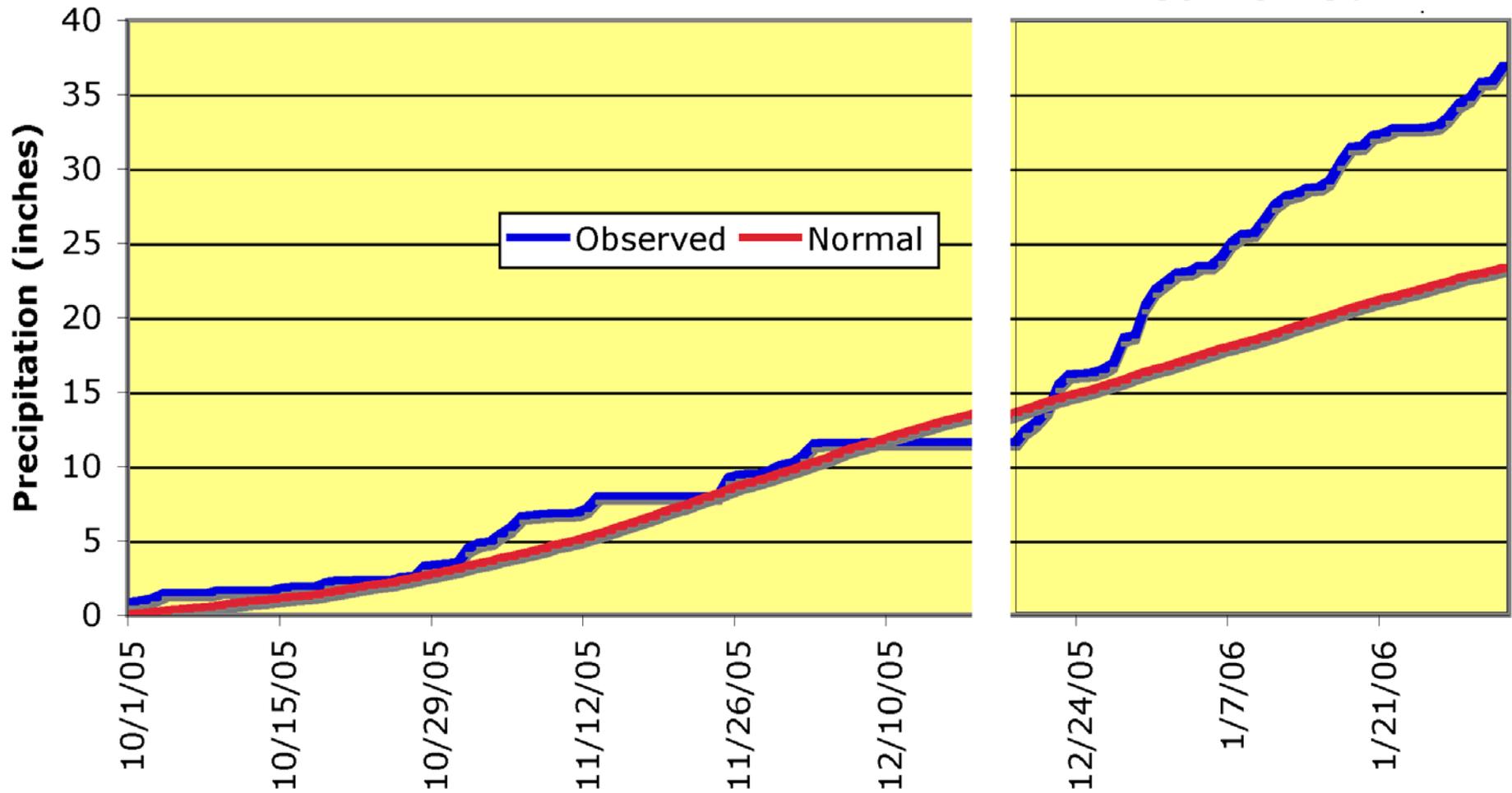
**A really big  
thirty-day storm**

## Cumulative Precipitation, Corvallis, 2006 Water Year



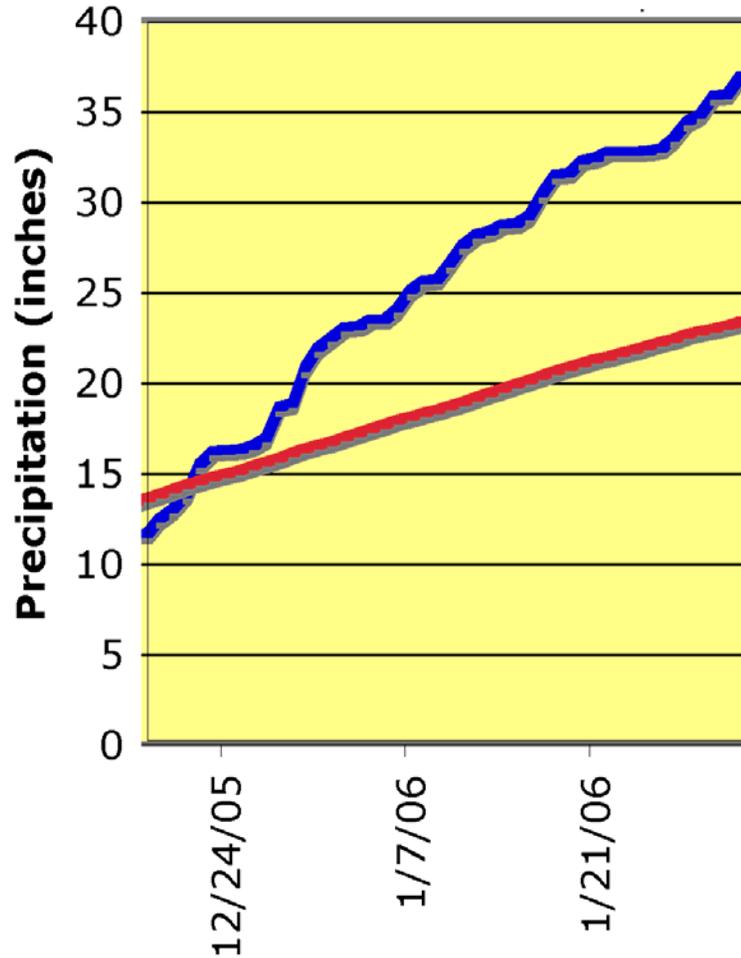
# Cumulative Precipitation, Corvallis, 2006 Water Year

Dec. 18-Feb. 1



## Cumulative Precipitation, Corvallis, 2006 Water Year

Dec. 18-Feb. 1



### 45-day Total:

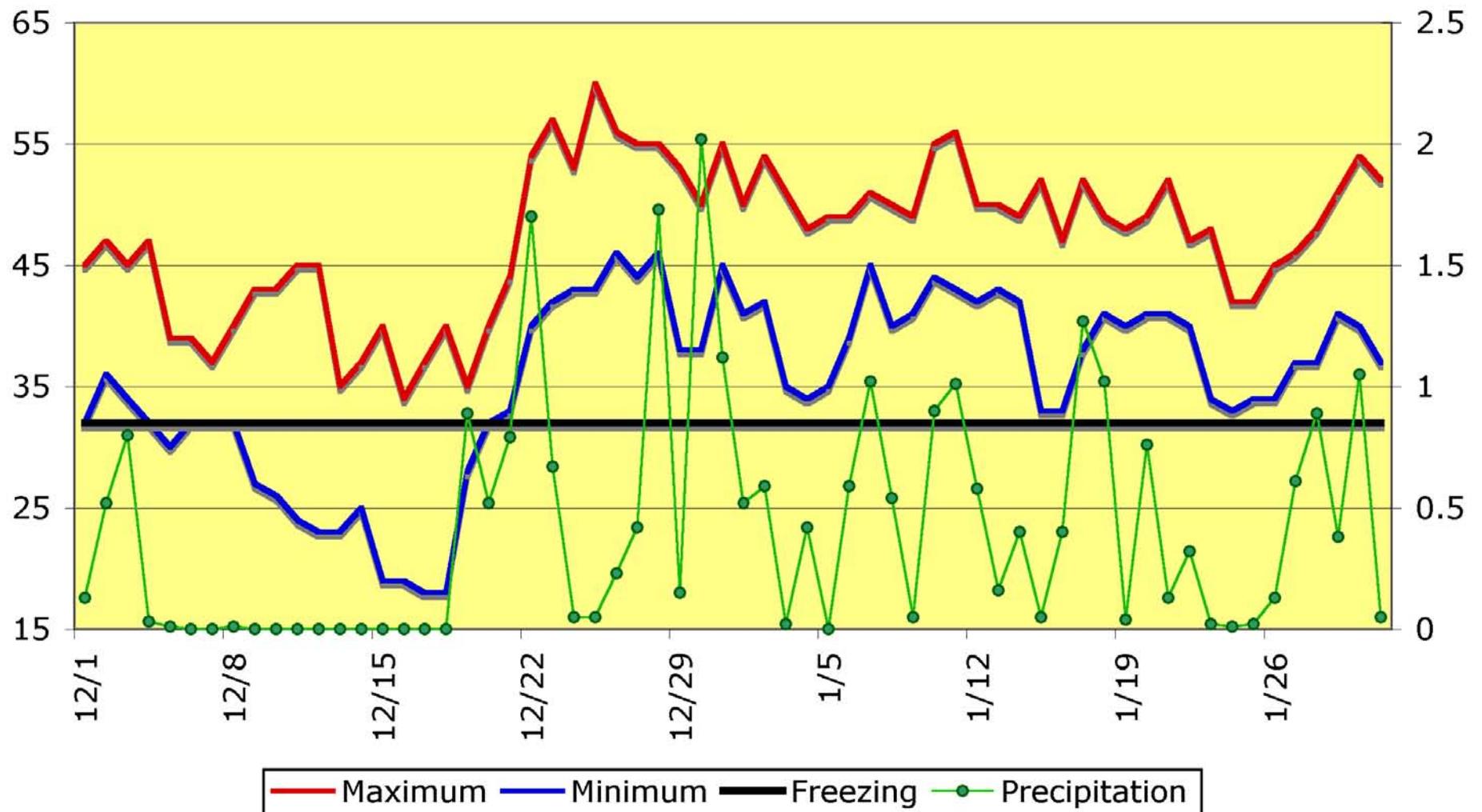
44 wet days (.01" or more)

25.34" precipitation  
(58% of annual average)

10 days with 1" or more  
(annual average is 7)

Thousands of unhappy locals  
(most of whom blame me)

## Corvalis Daily Observations, 12/05-1/06













**The End**