Colorado's Climate - Then and Now

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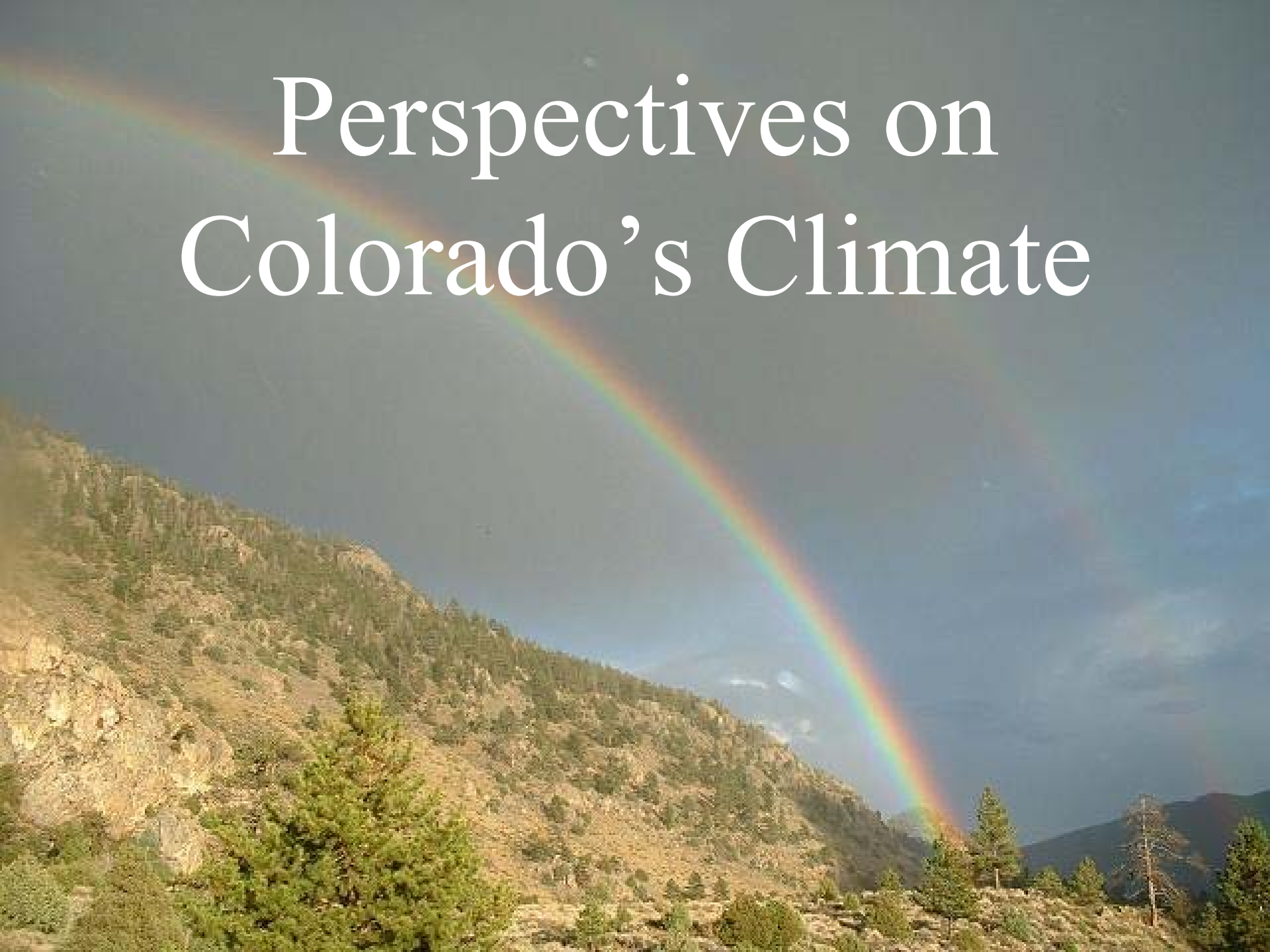
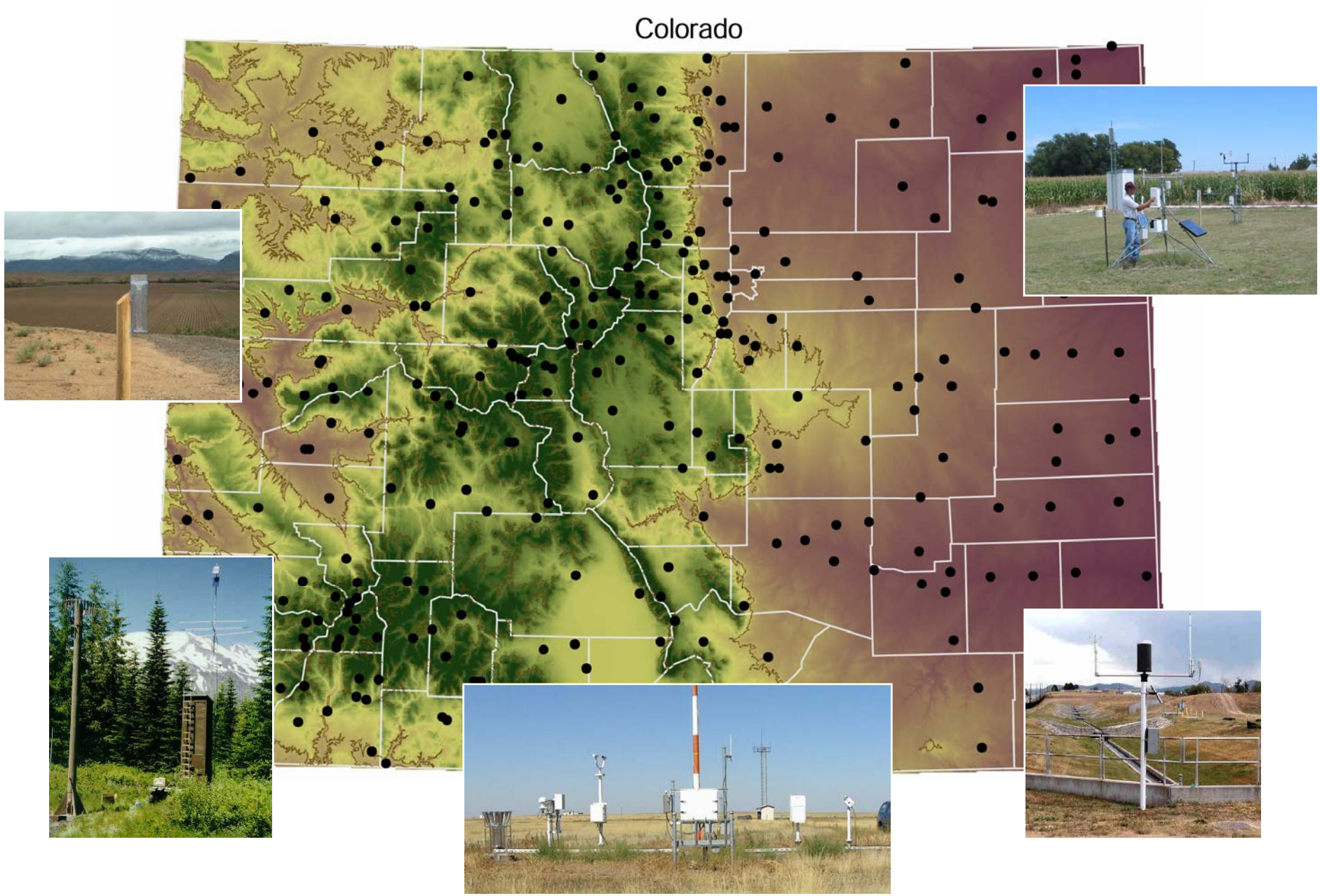
Prepared by Odie Bliss with assistance of Wendy Ryan, Daniel Dennison, and Peter Rogers

Photo by Lynn Kral

Perspectives on Colorado's Climate

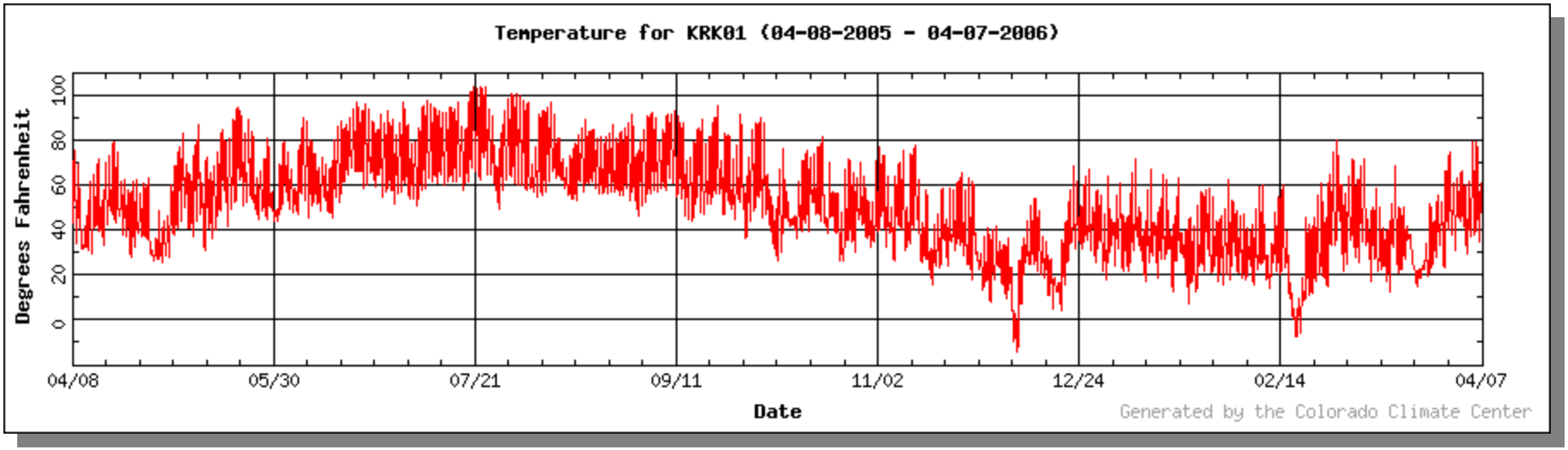


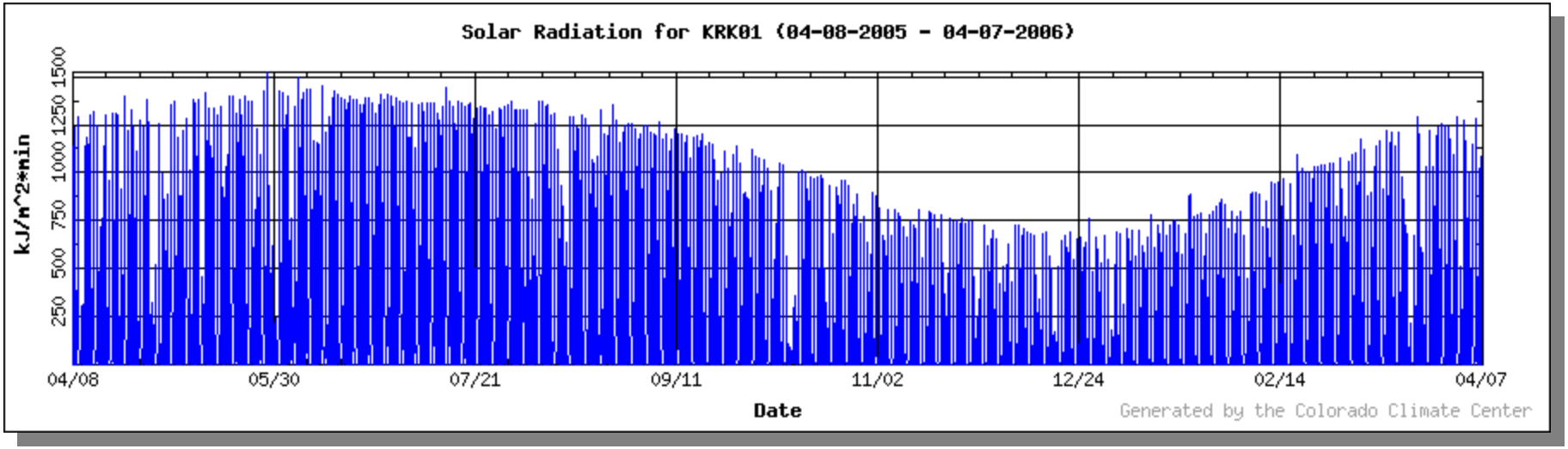
We have a lot of weather data!



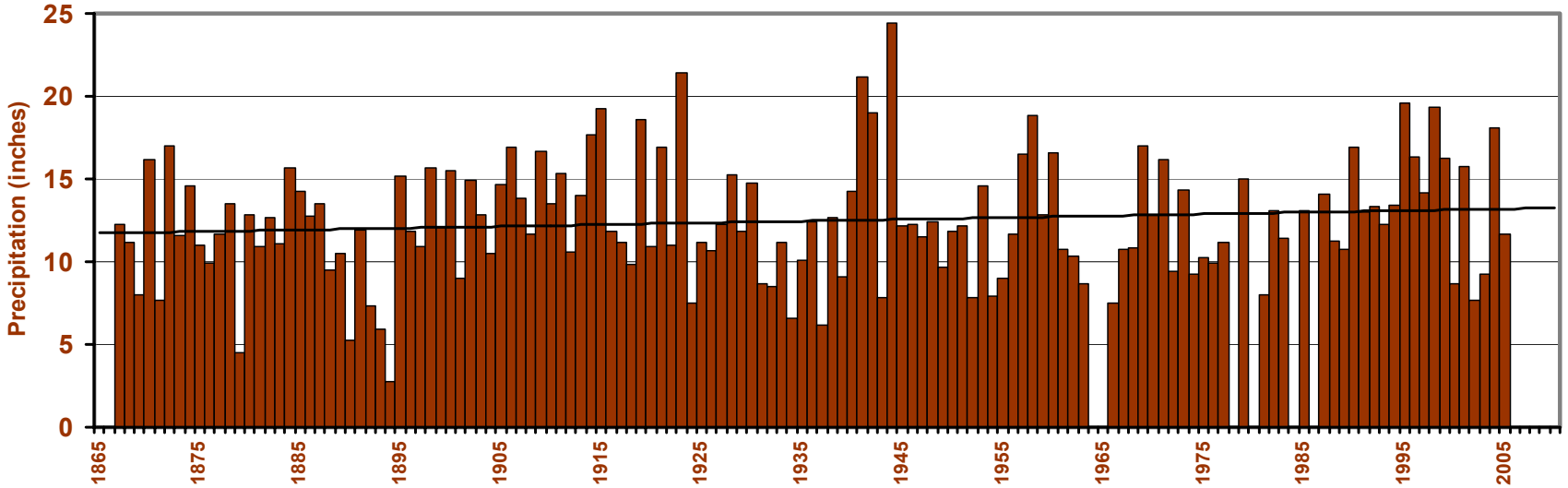
Kirk, Colo, CSU CoAgMet weather

April 2005-2006





http://www.coagmet.com

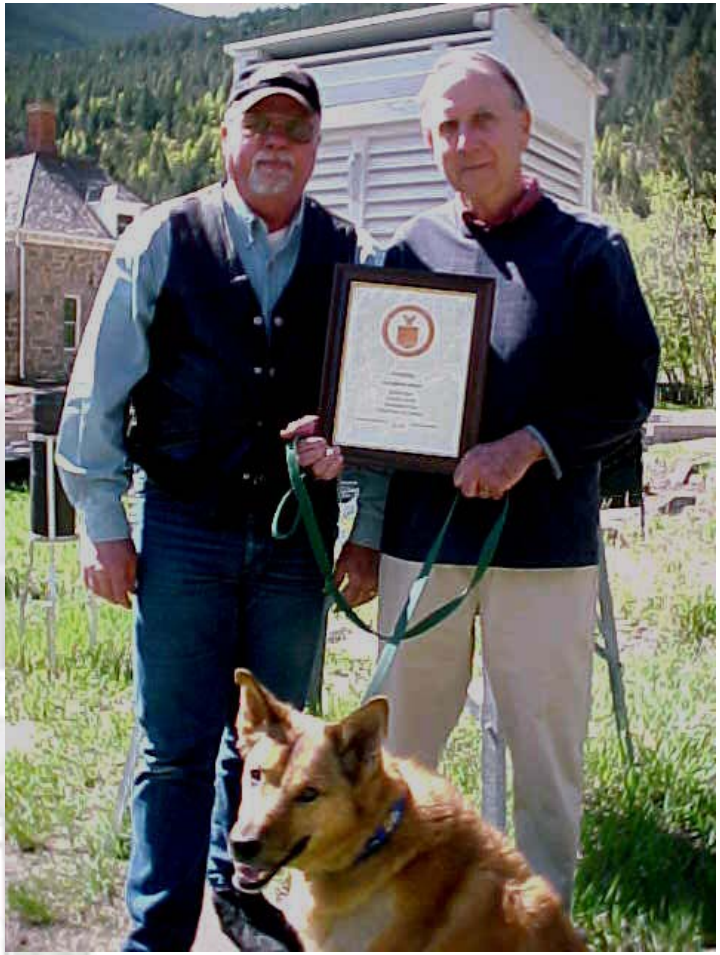


Instrumental weather observations date back to the late 1800s

UTAH 1930

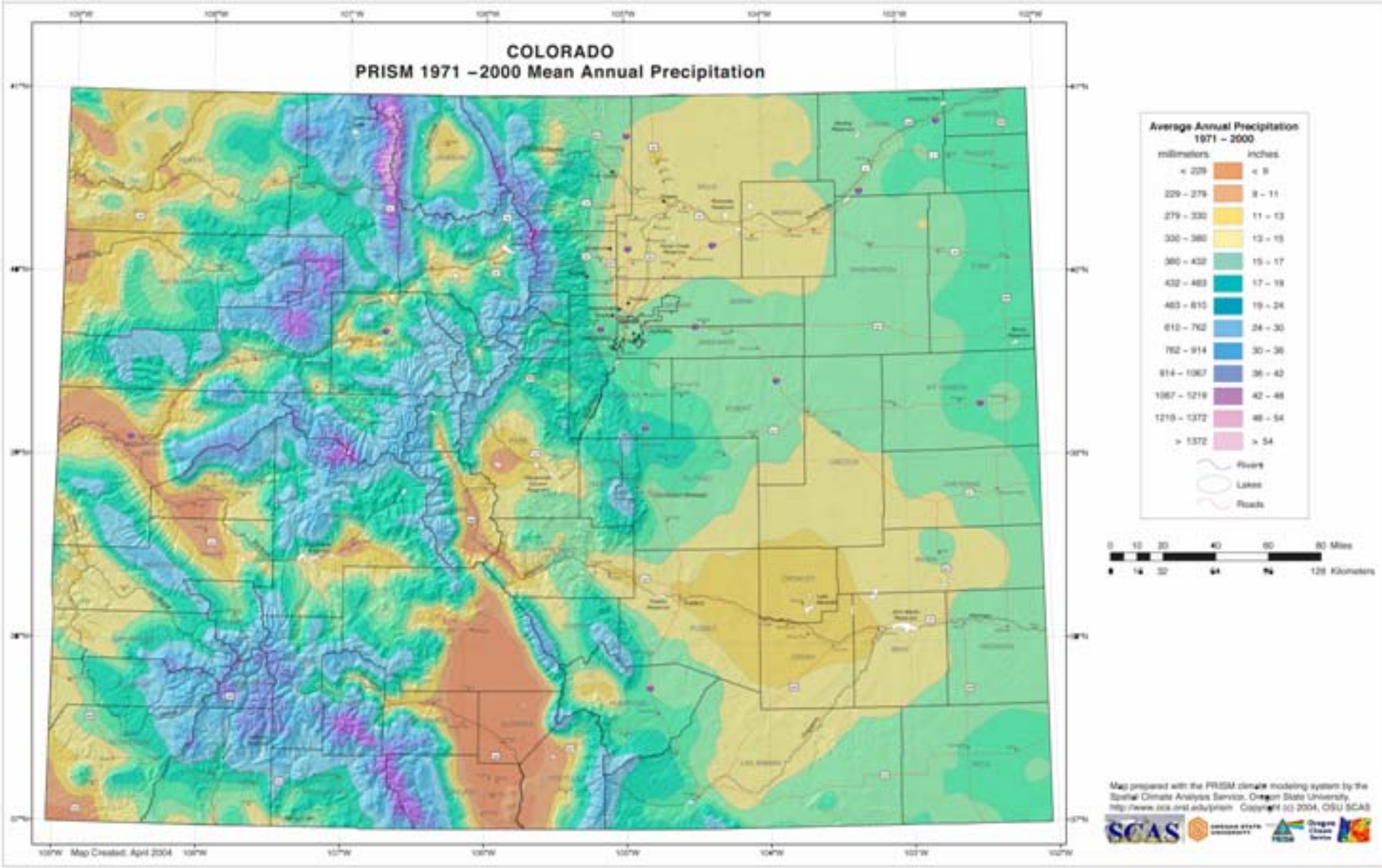
We are indebted to NWS for maintaining long-term weather stations

- Army Signal Service (began 1870-1891)
- Weather Bureau (1890-1969)
- National Weather Service (1970-present)

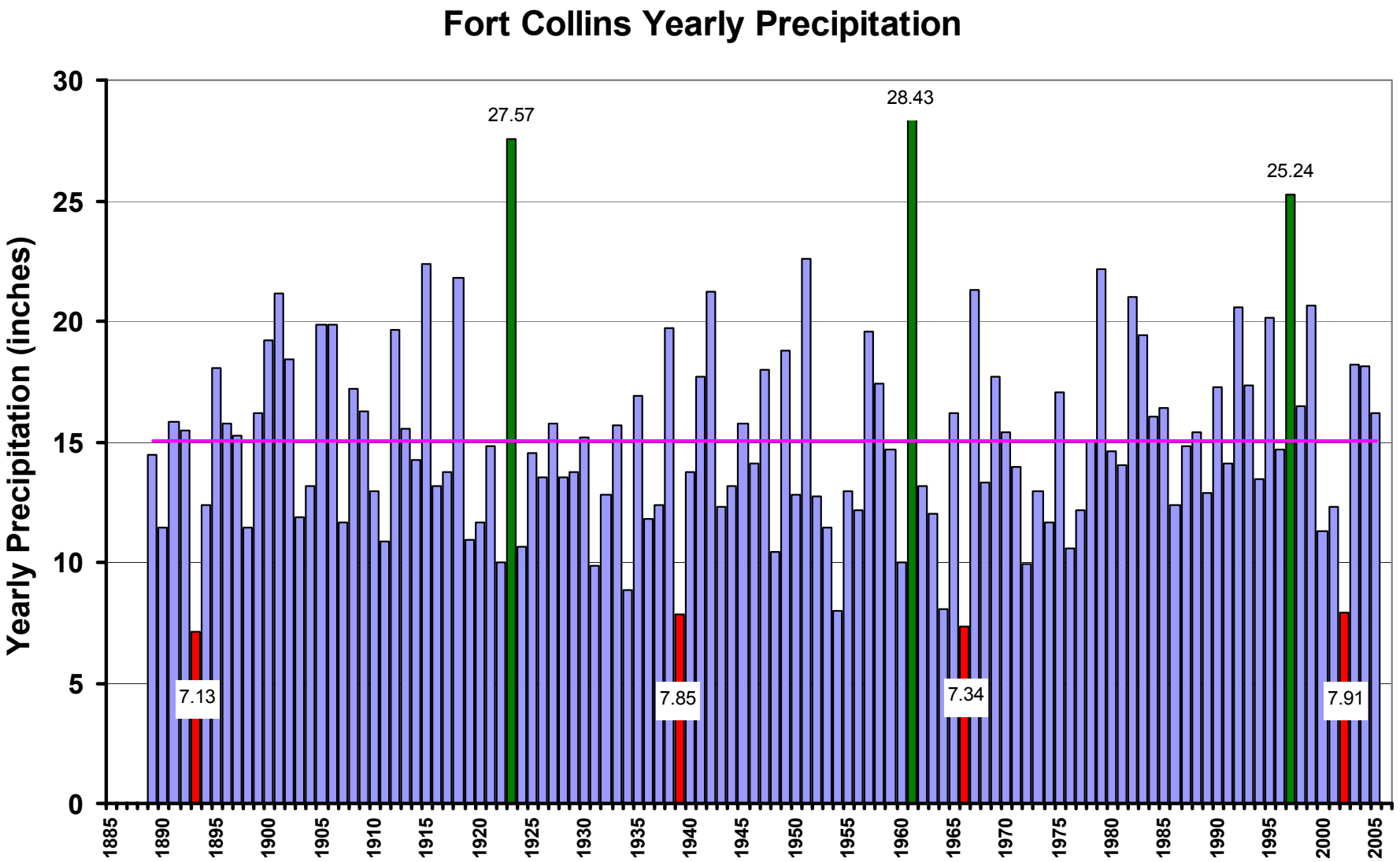


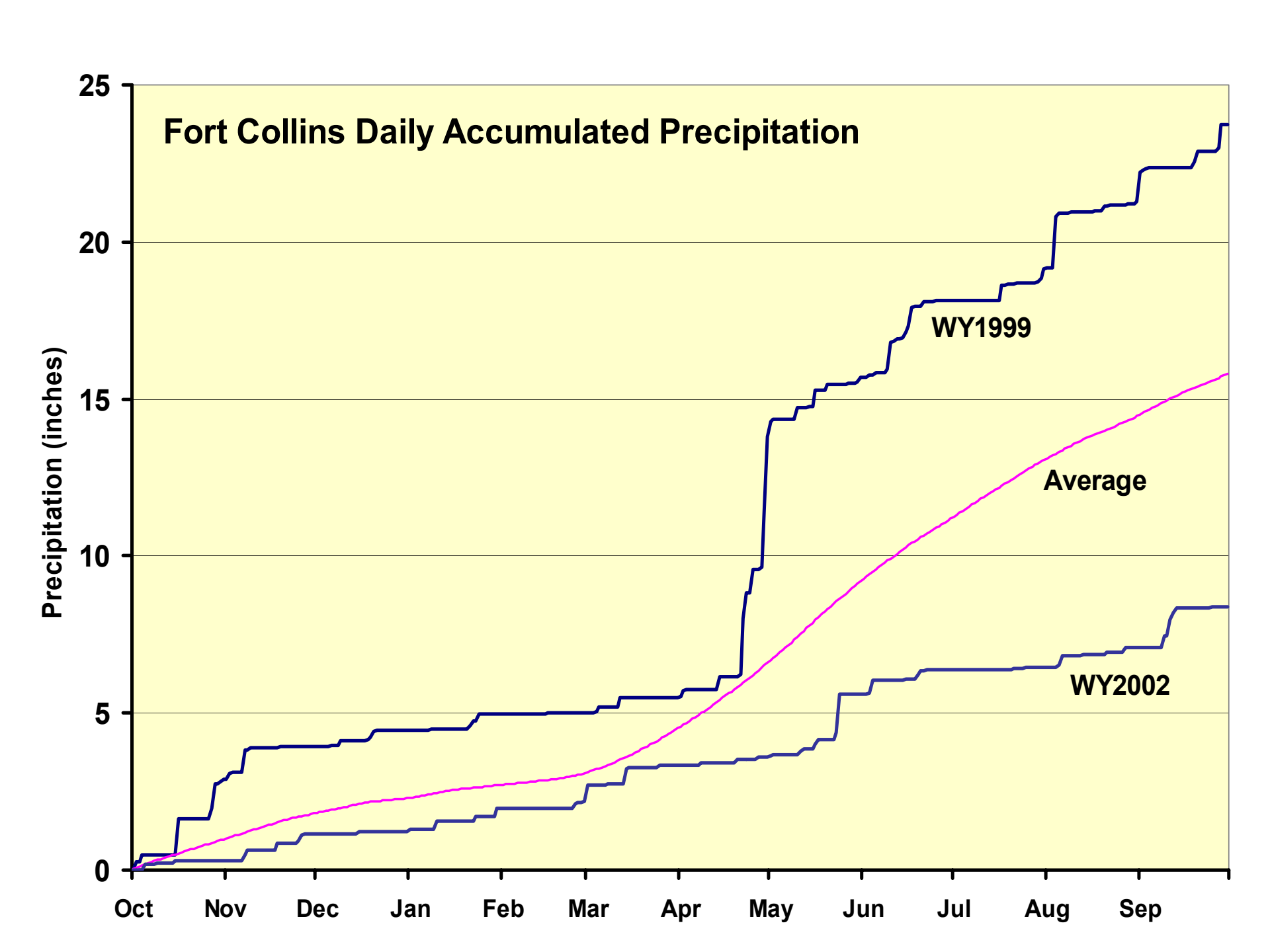
Climate is variable

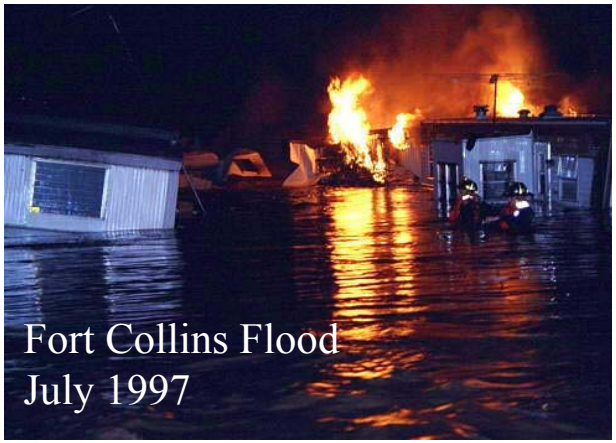
Colorado Average Annual Precipitation

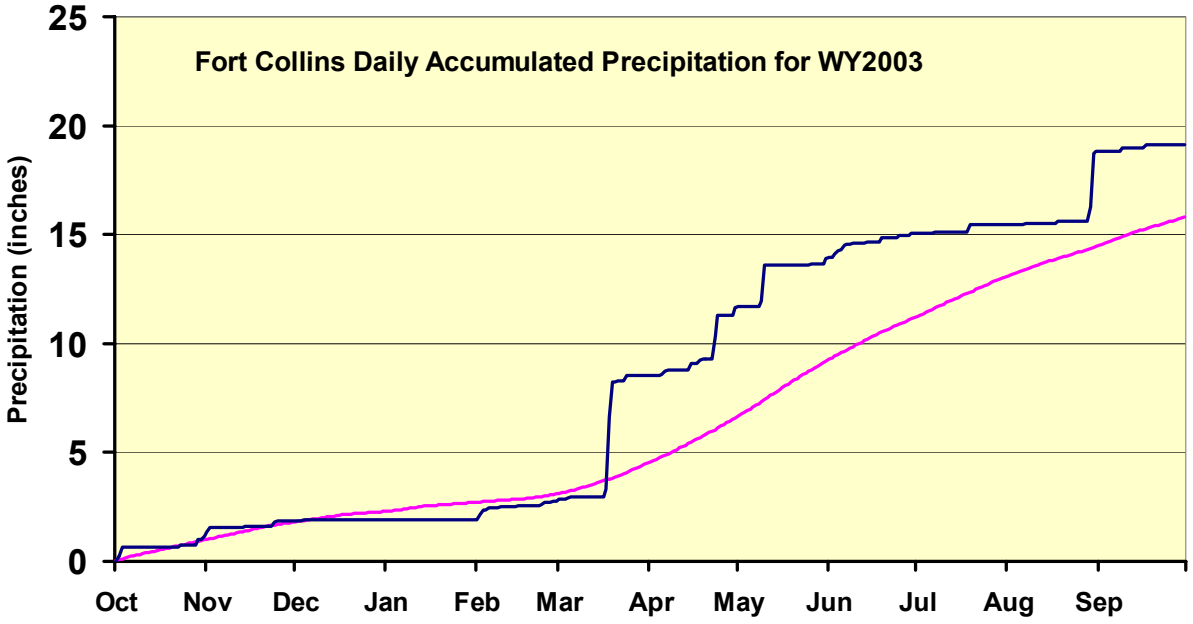


Fort Collins Historic Weather Station – Continuous observations from 1889 to present



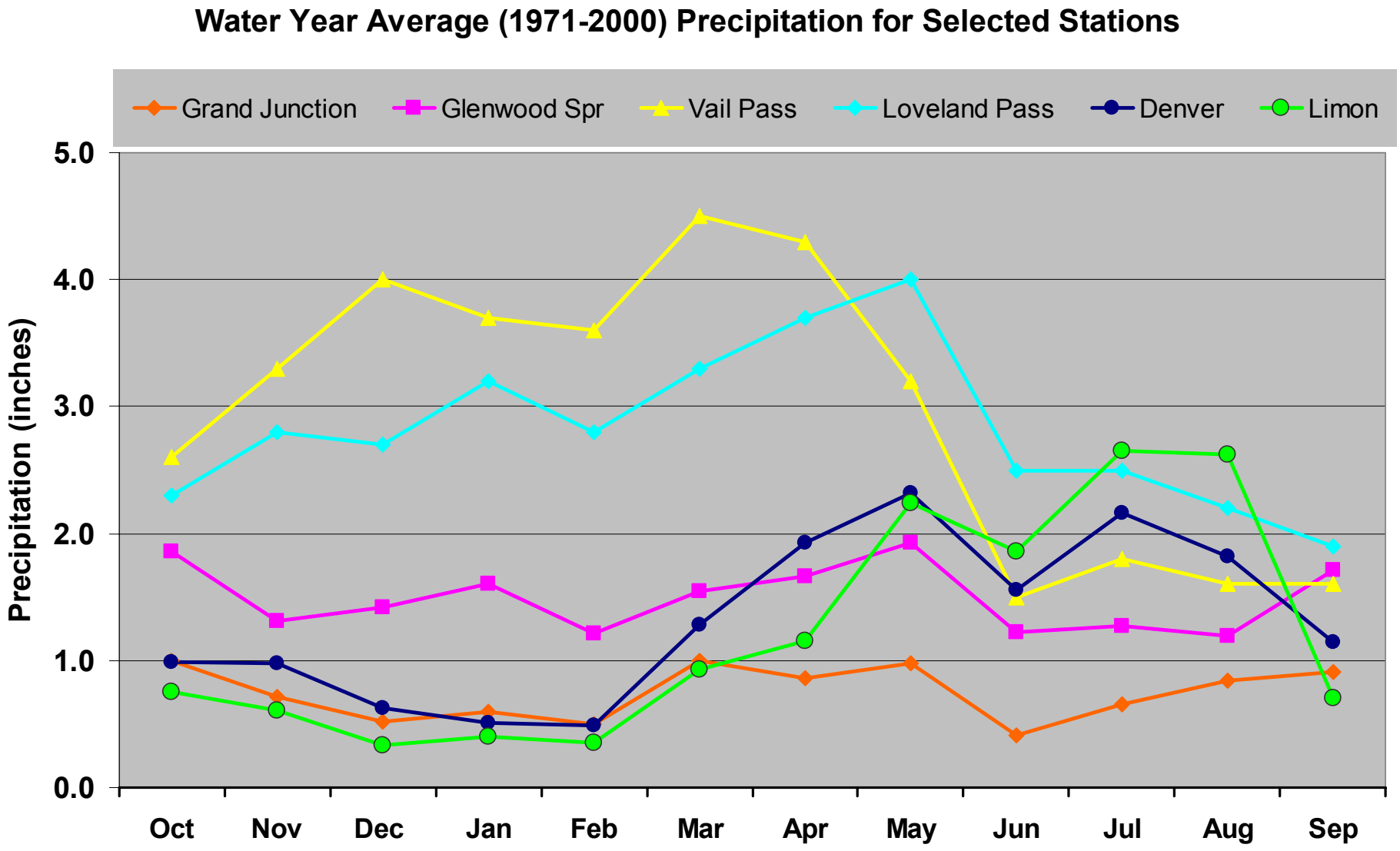

Fort Collins Daily Accumulated Precipitation
Precipitation (inches)
25
20
15
10
5
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
WY1999
Average
WY2002





A few storms contribute a large fraction of our precipitation

Precipitation varies with the seasons

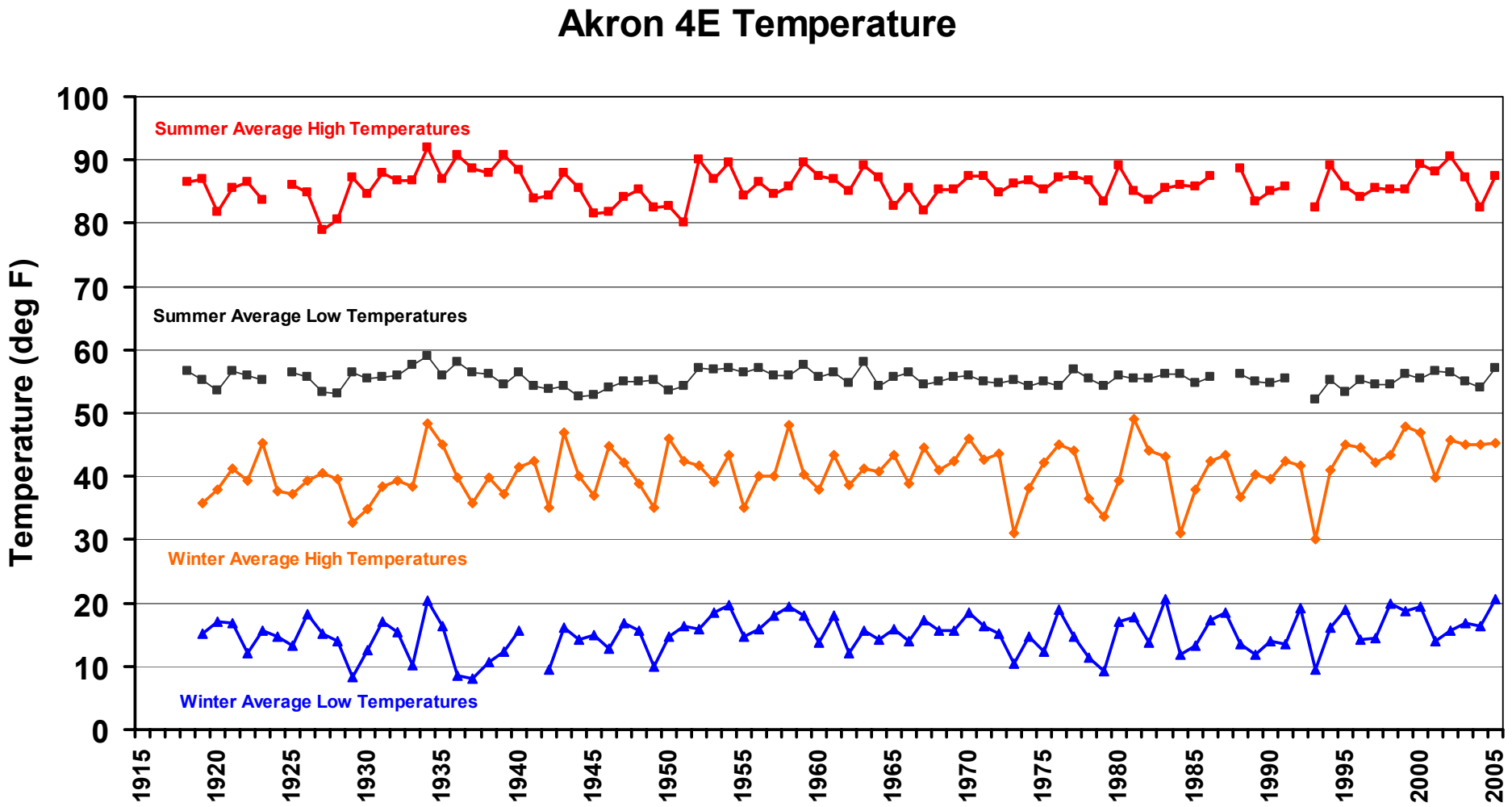


Quiz!

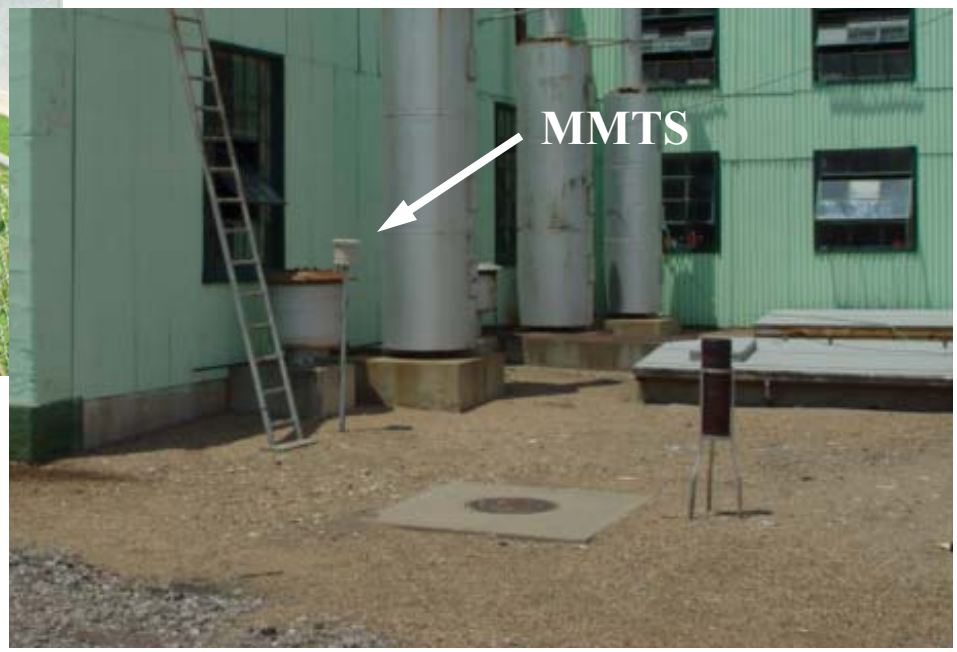
What month is the wettest month of the year (on average) for northeastern Colorado *AND* the driest month of the year for southwestern Colorado?

Photo by Henry Reges

Some climate elements are more consistent than others

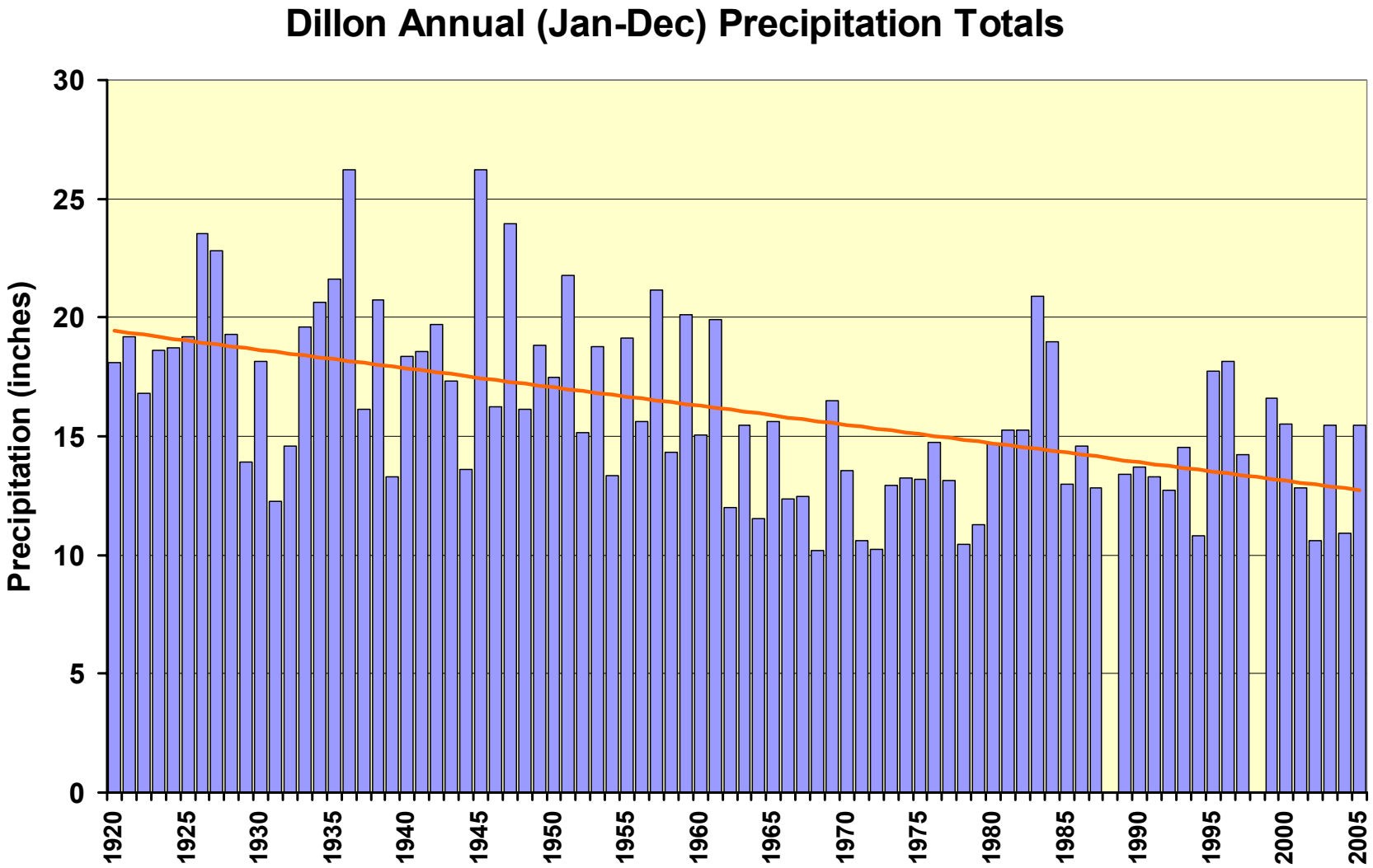


And one more thing to know, the data are good but not great….



Photos by Christopher Davey

This is quickly revealed when we try to explore long-term changes

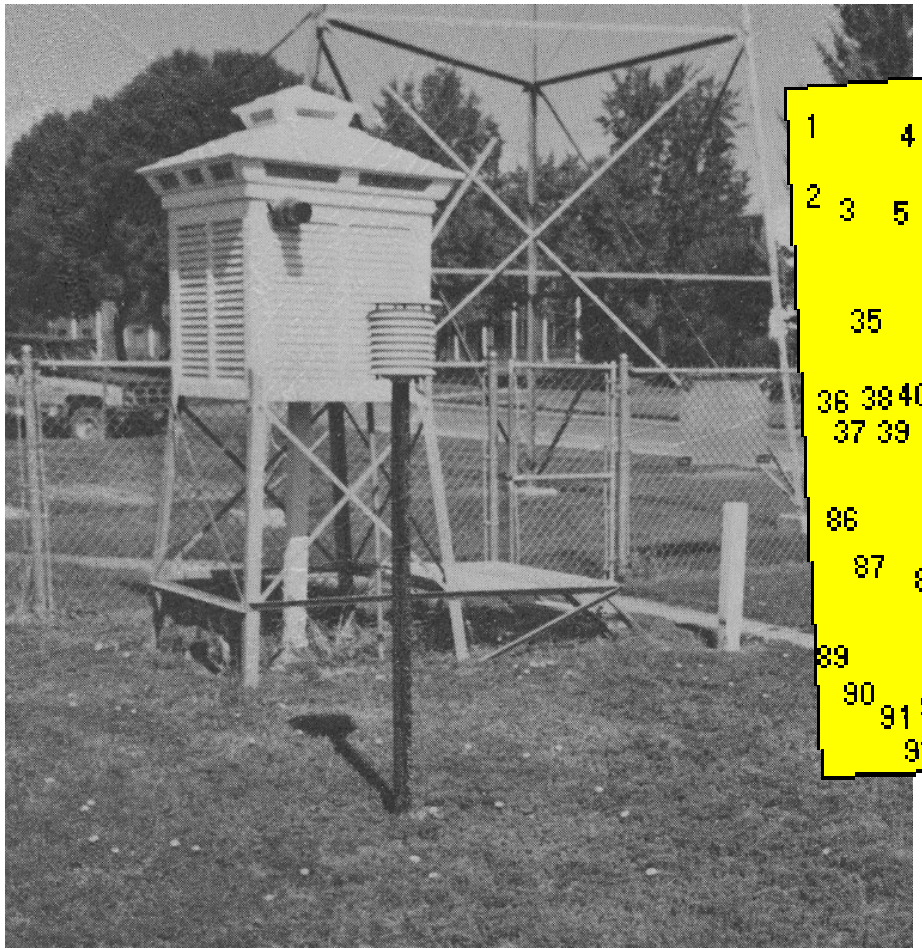


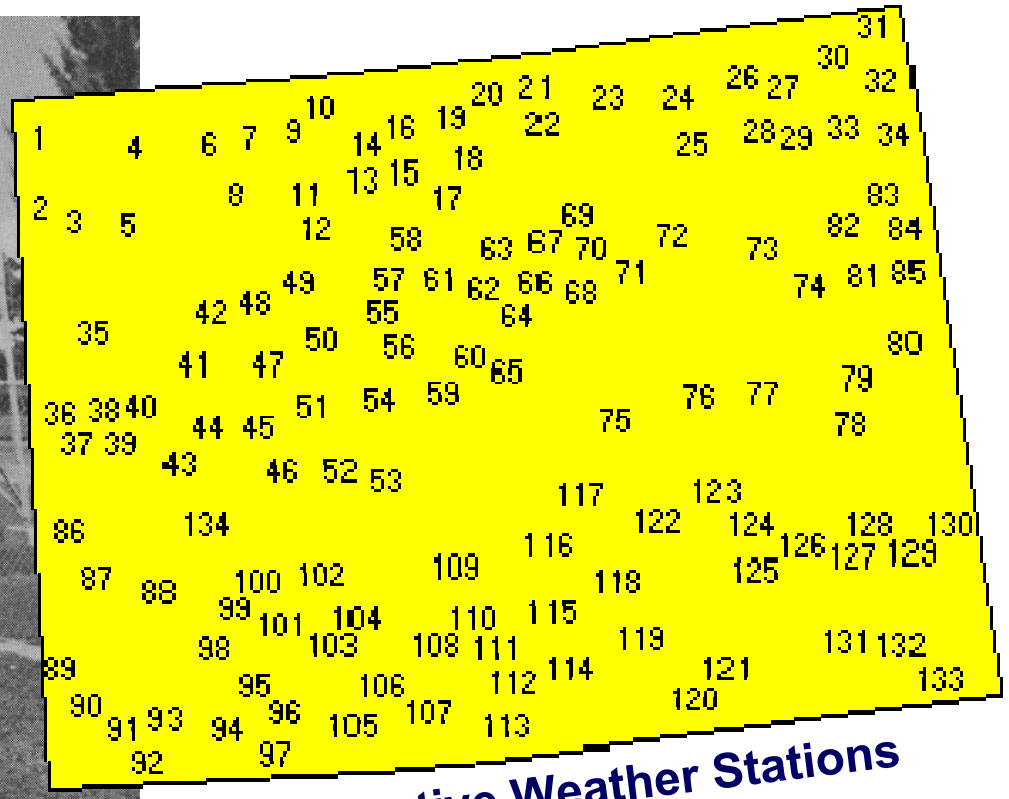
So! Based on our available data, can we tell if our climate is changing?

Photo by Henry Reges

First, let's look at temperatures

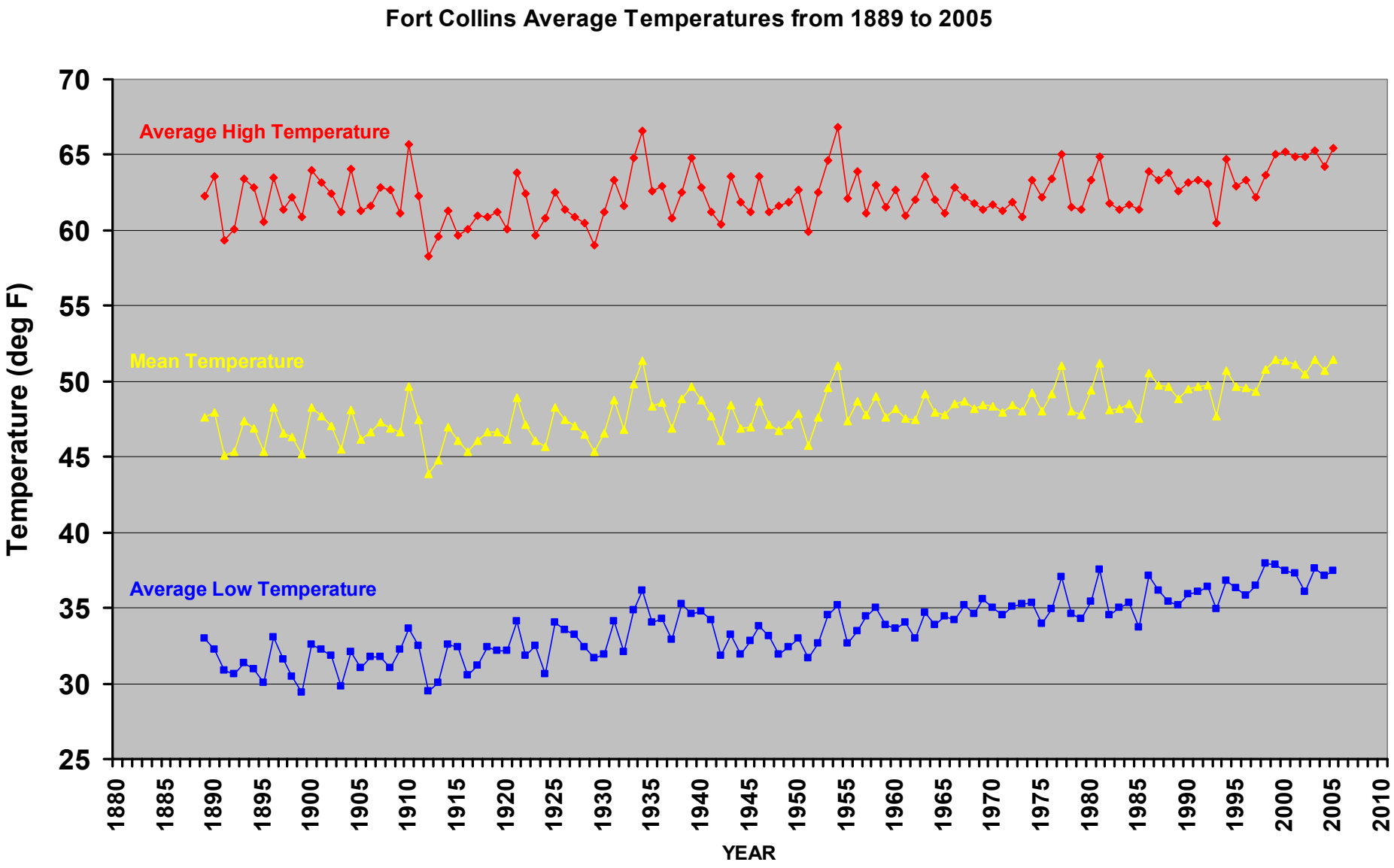
- Of all the state's long-term weather stations, very few have uninterrupted, consistent data for analyzing climate trends.



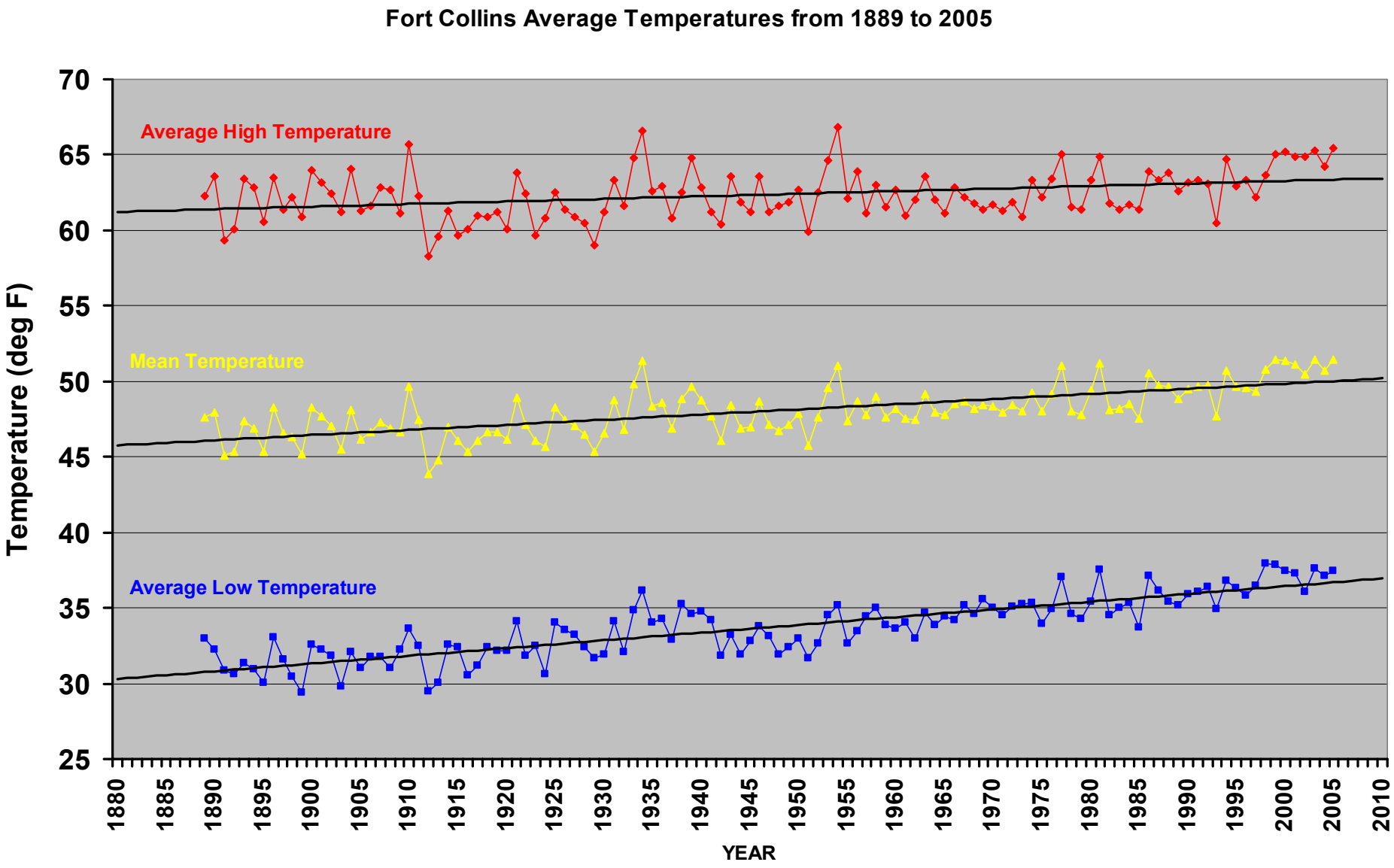


Cooperative Weather Stations in Colorado

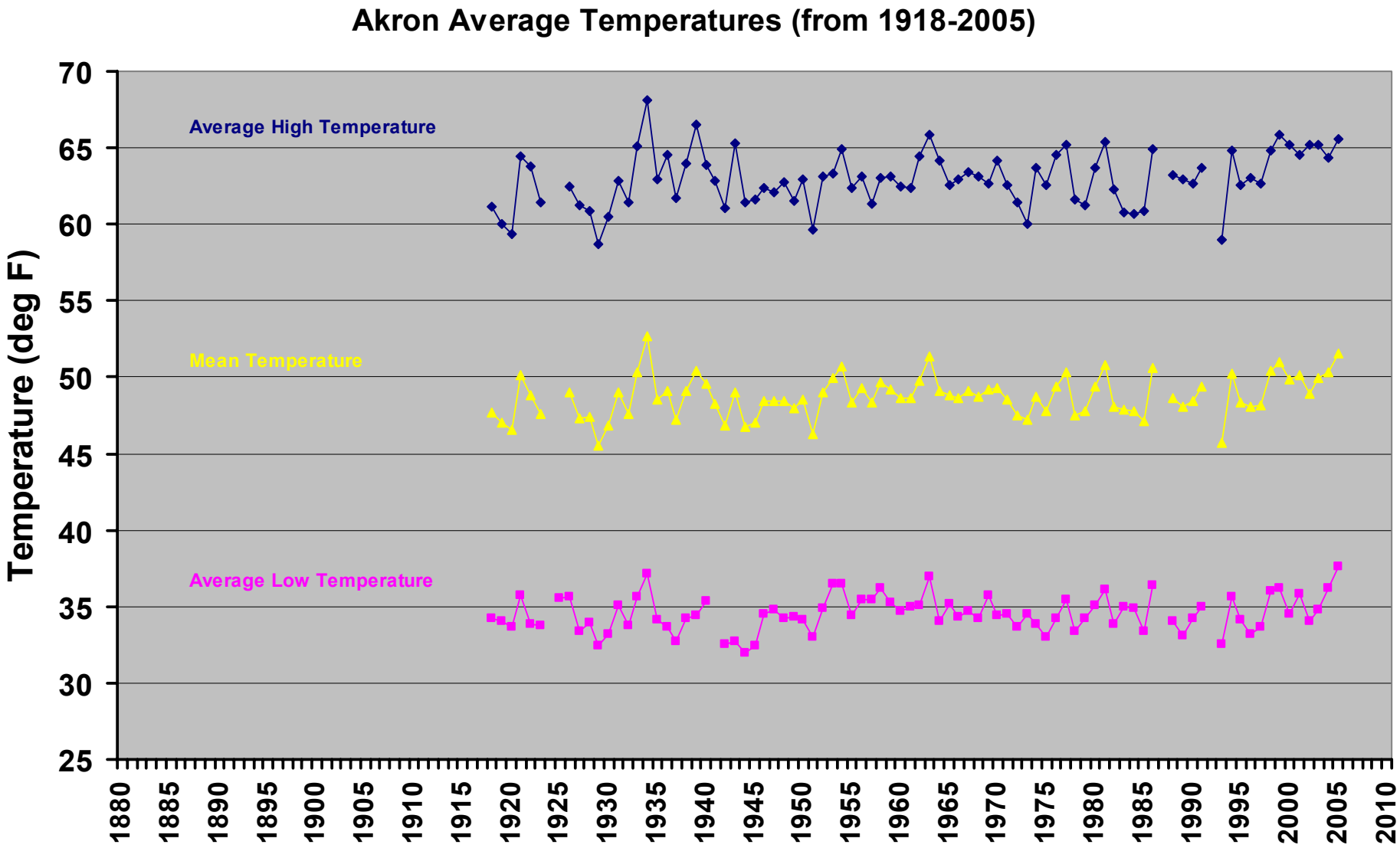
Fort Collins Temperatures



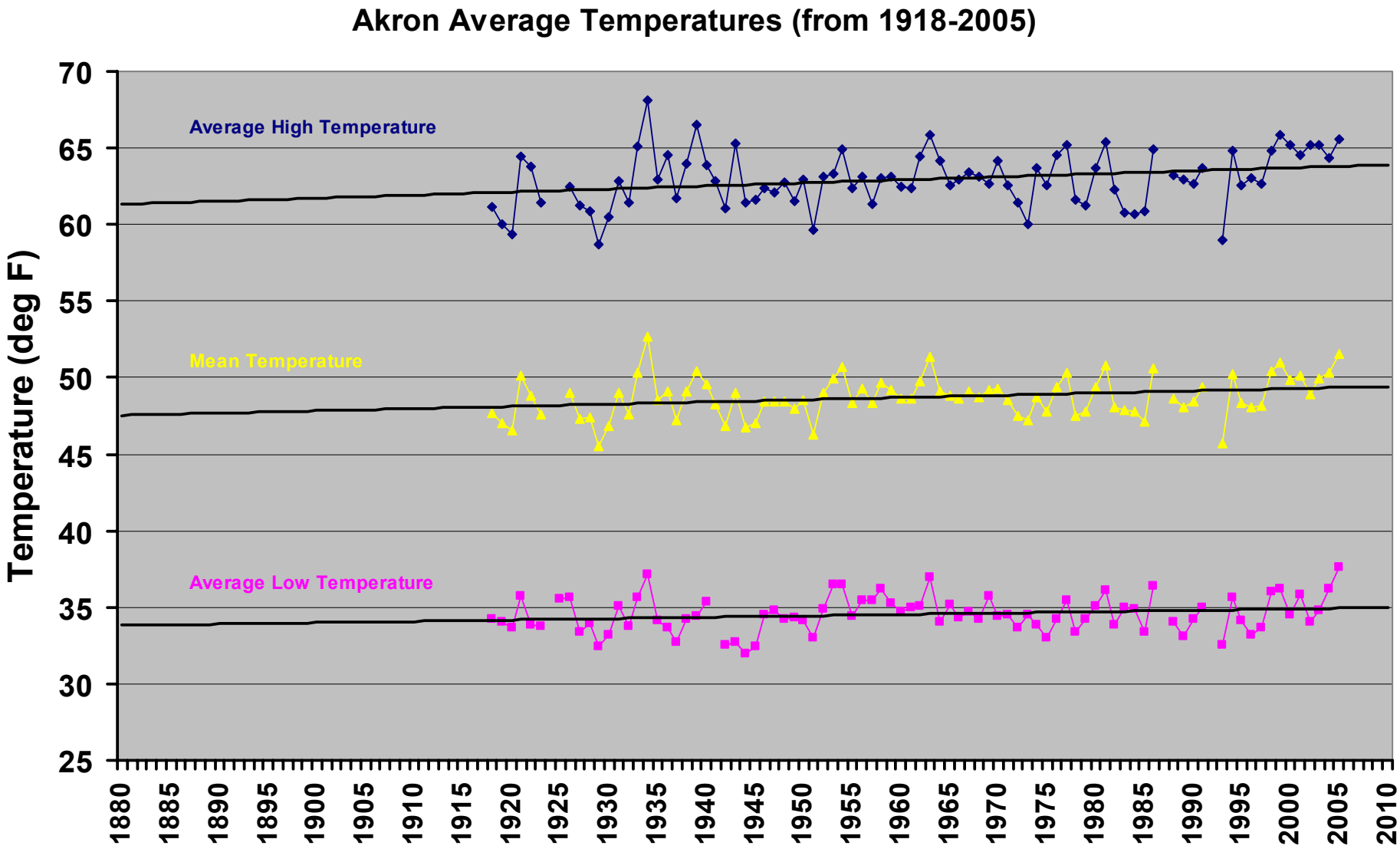
Fort Collins Temperatures



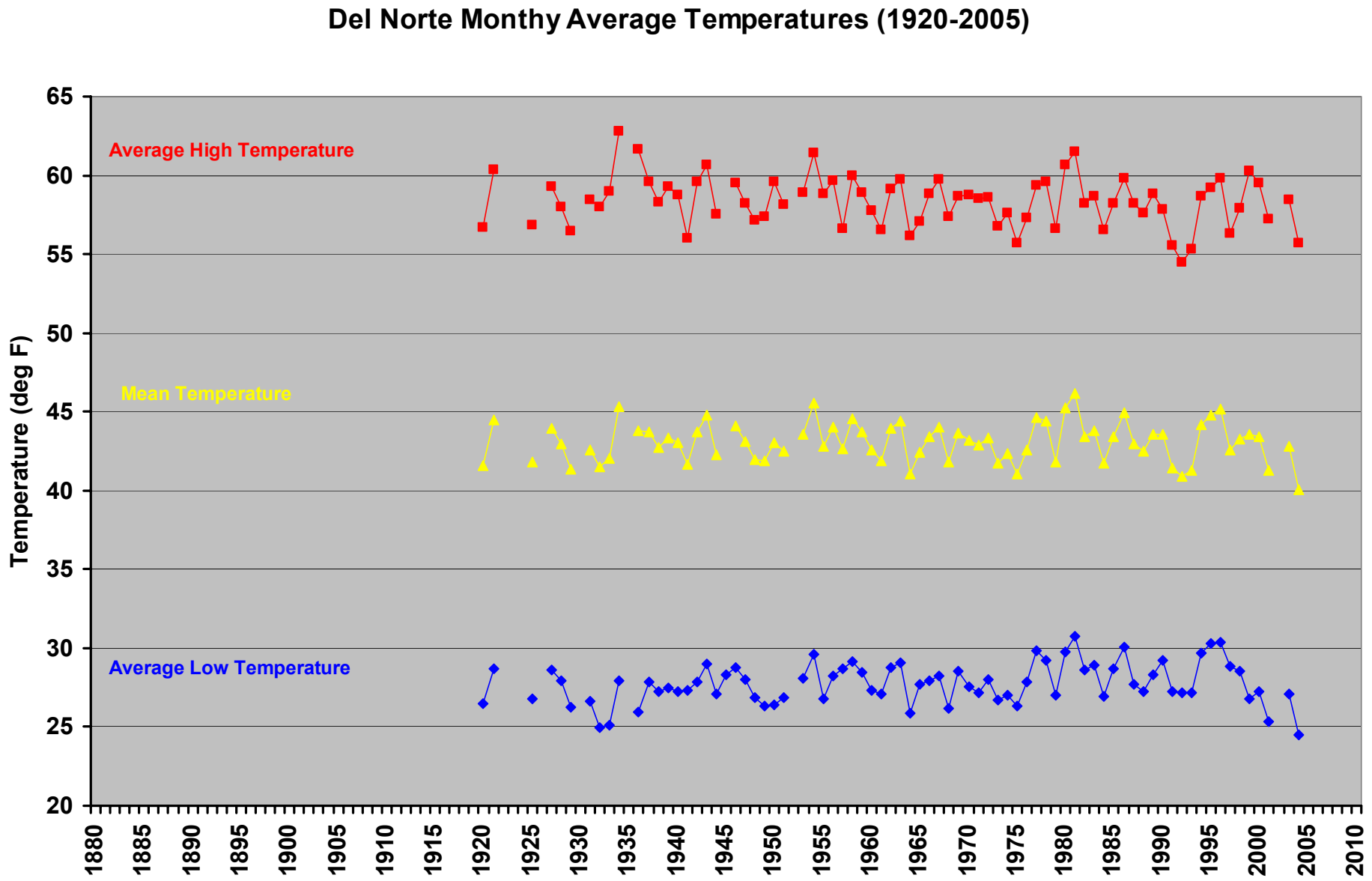
Akron Temperatures



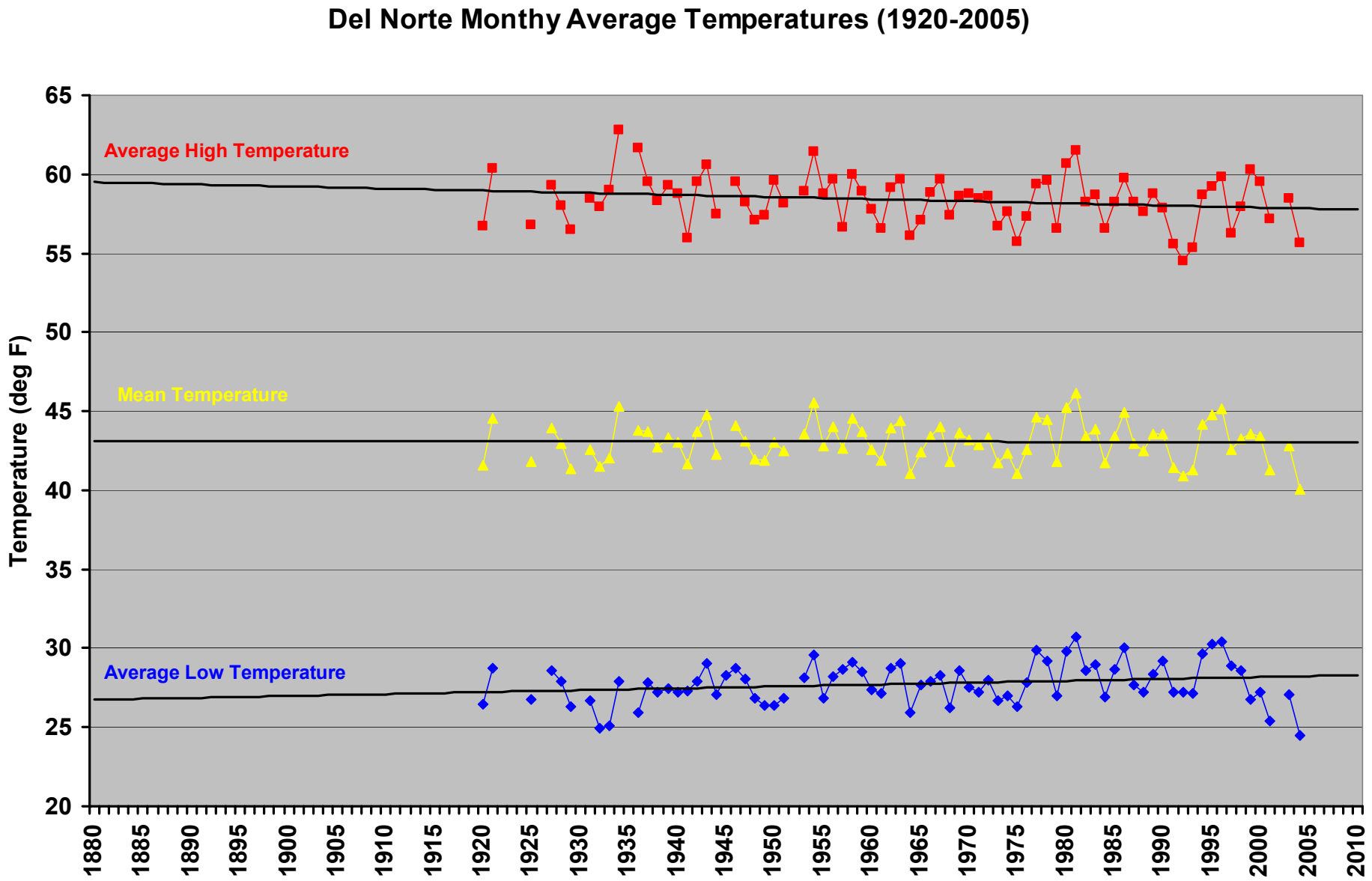
Akron Temperatures



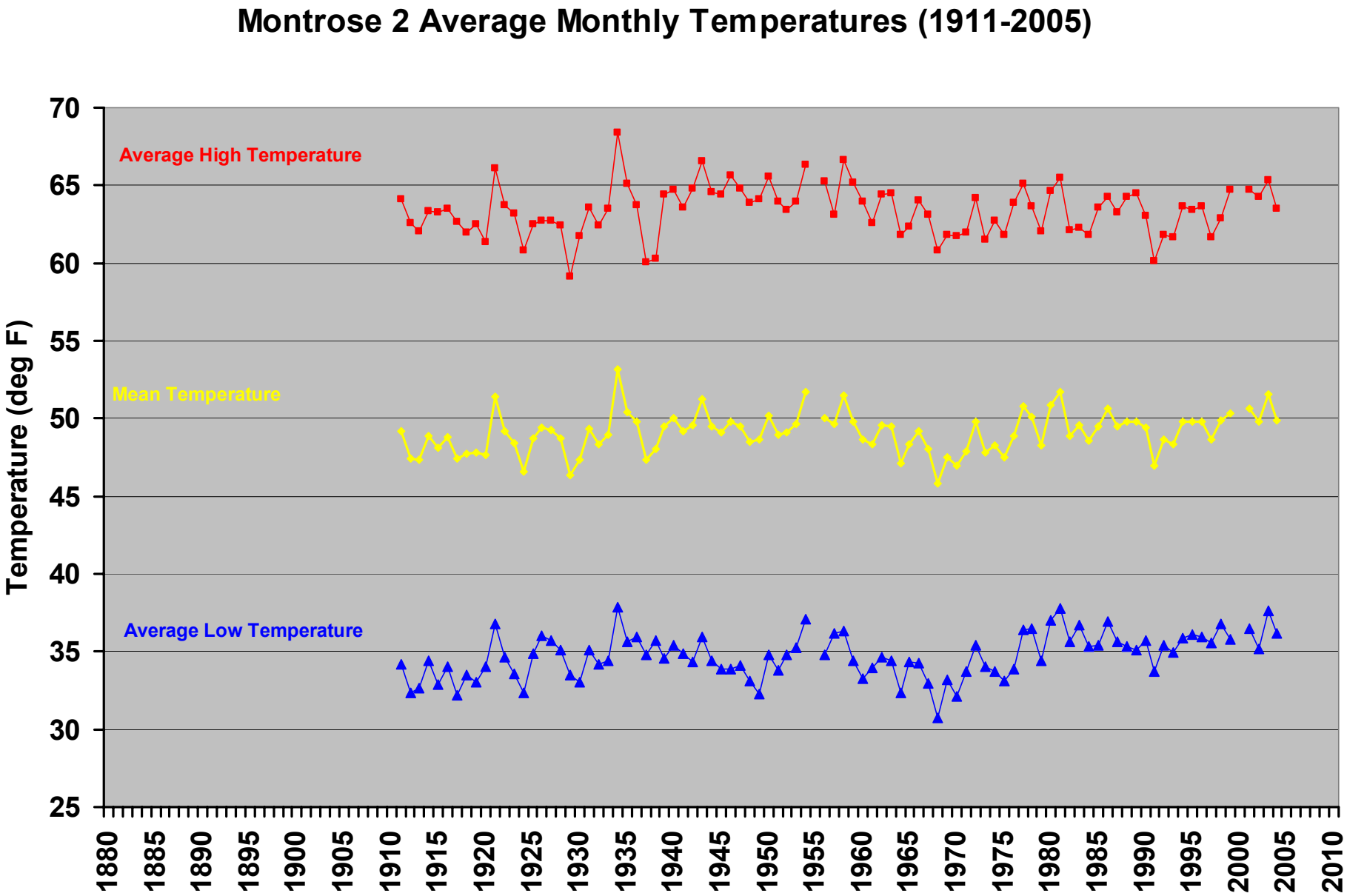
Del Norte Temperatures



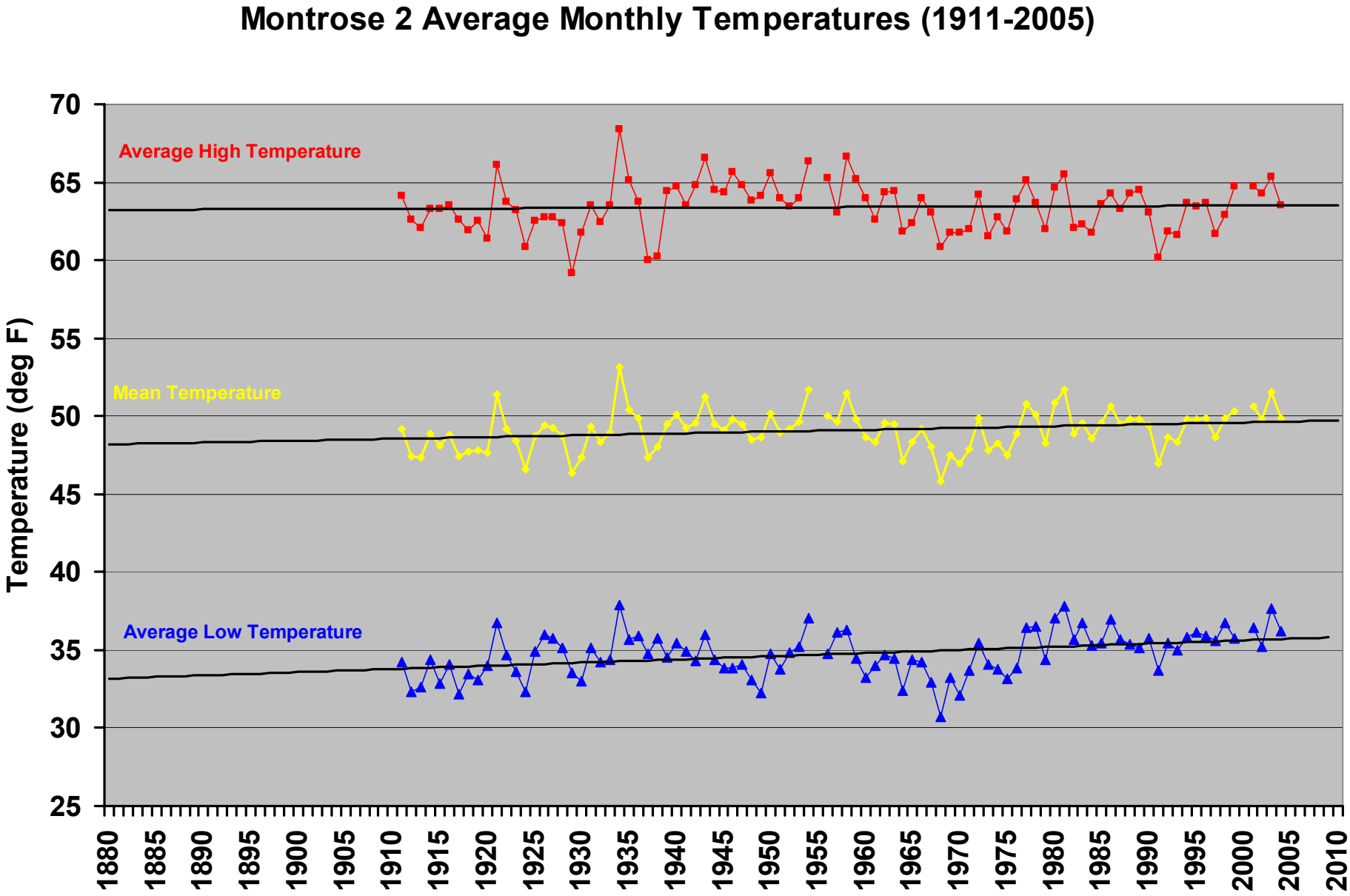
Del Norte Temperatures



Montrose Temperatures

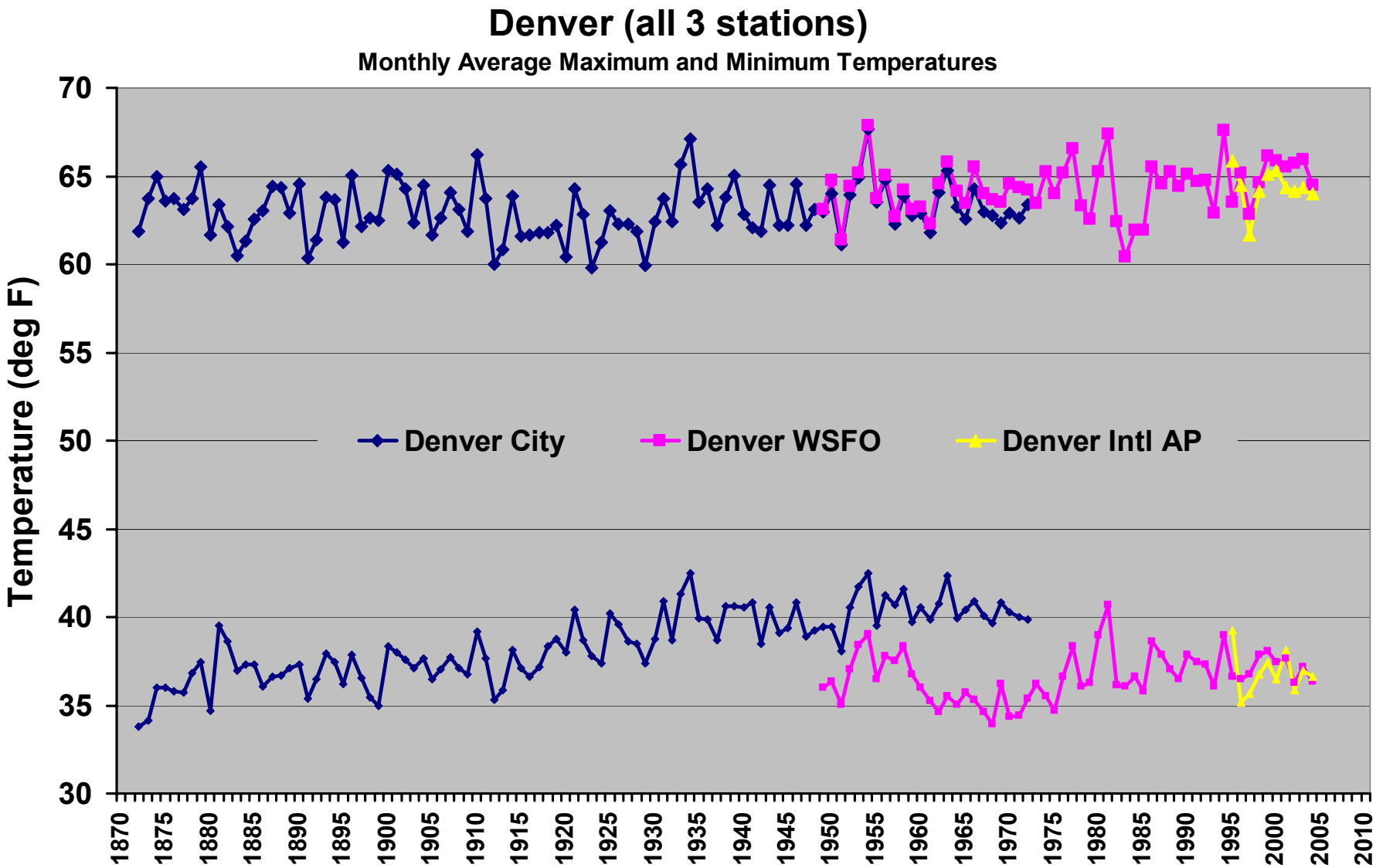


Montrose Temperatures



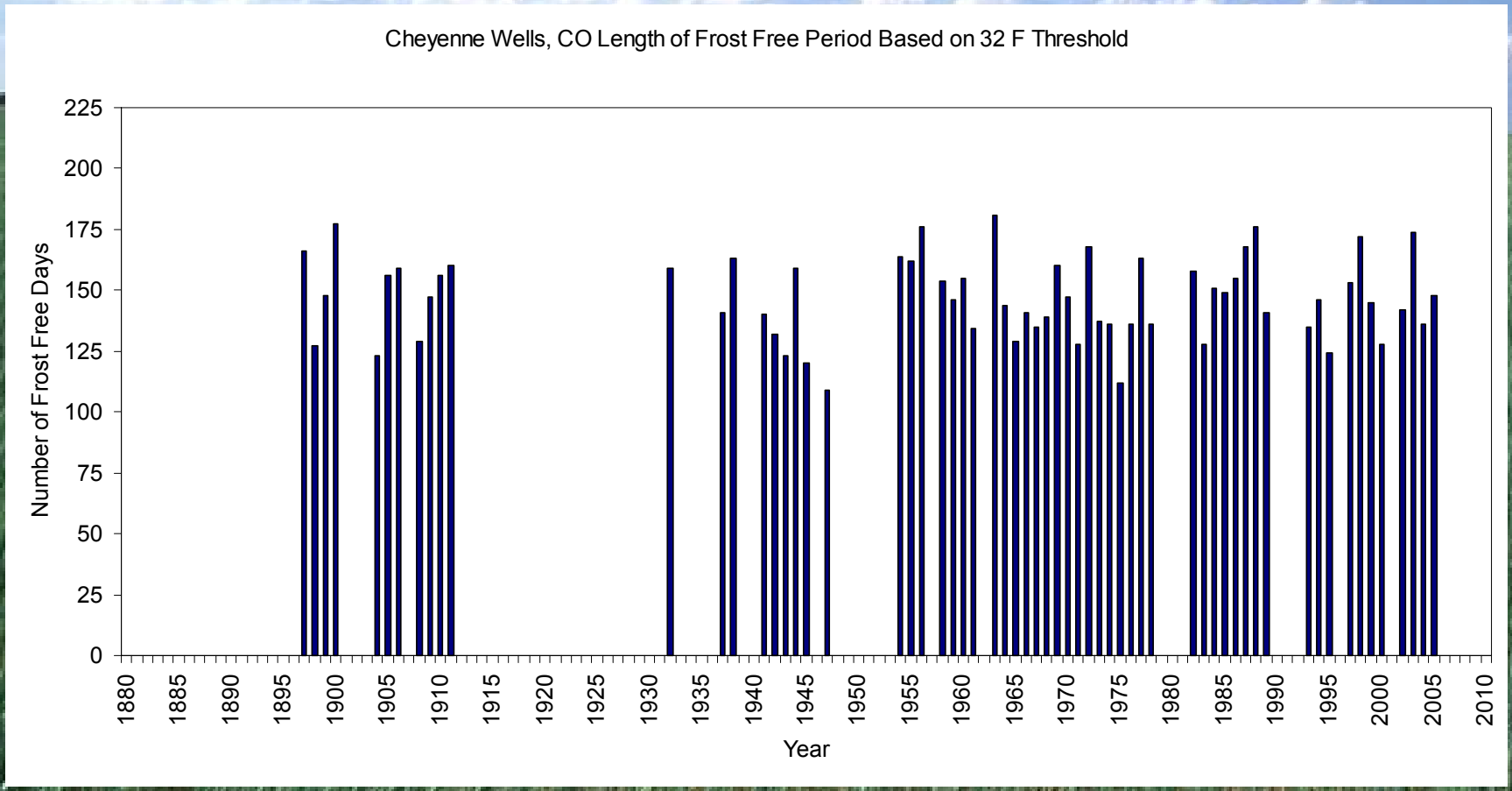
What about Denver?!?

Denver (combined)

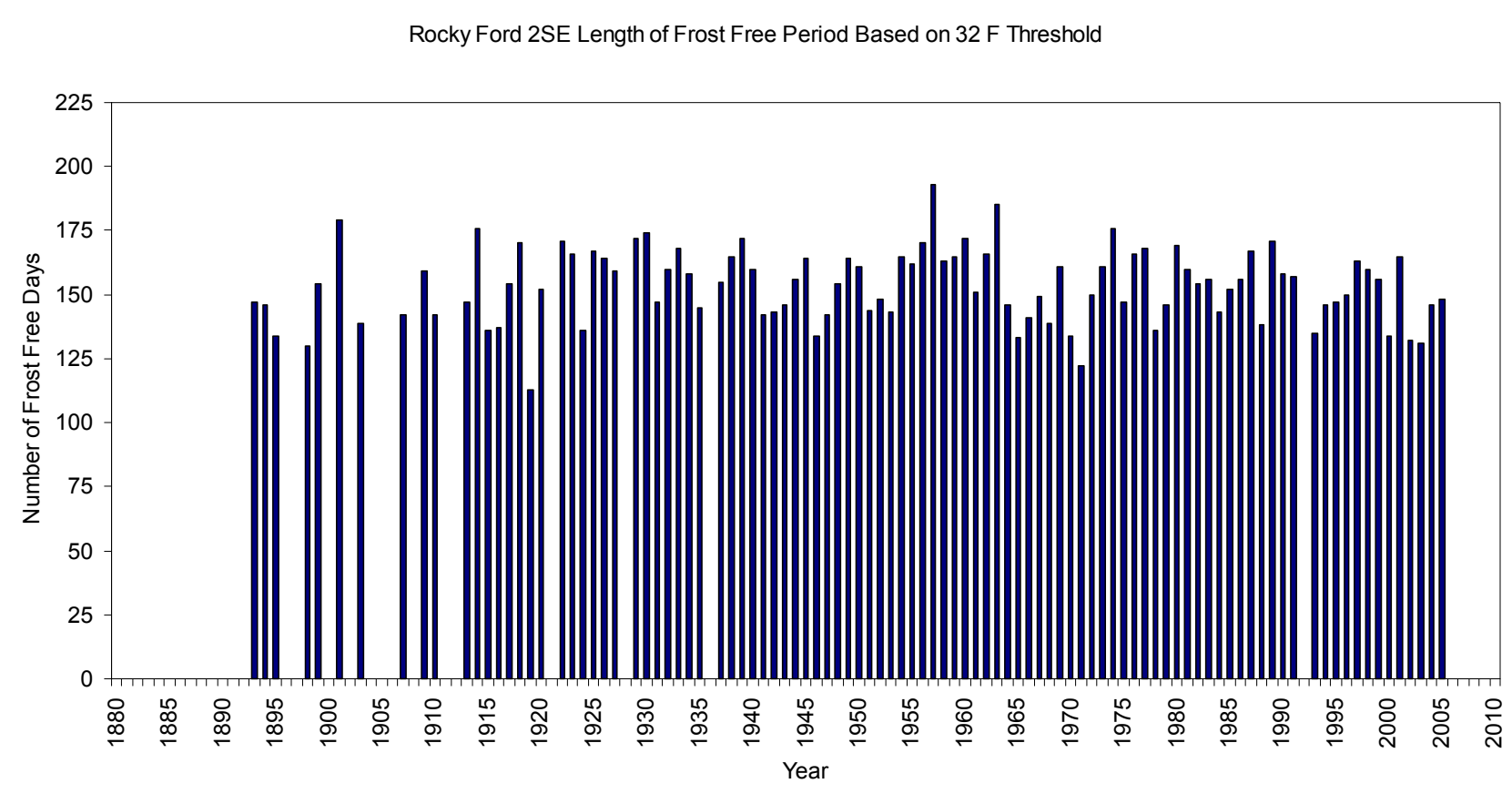


Frost Free Days (Growing Season)

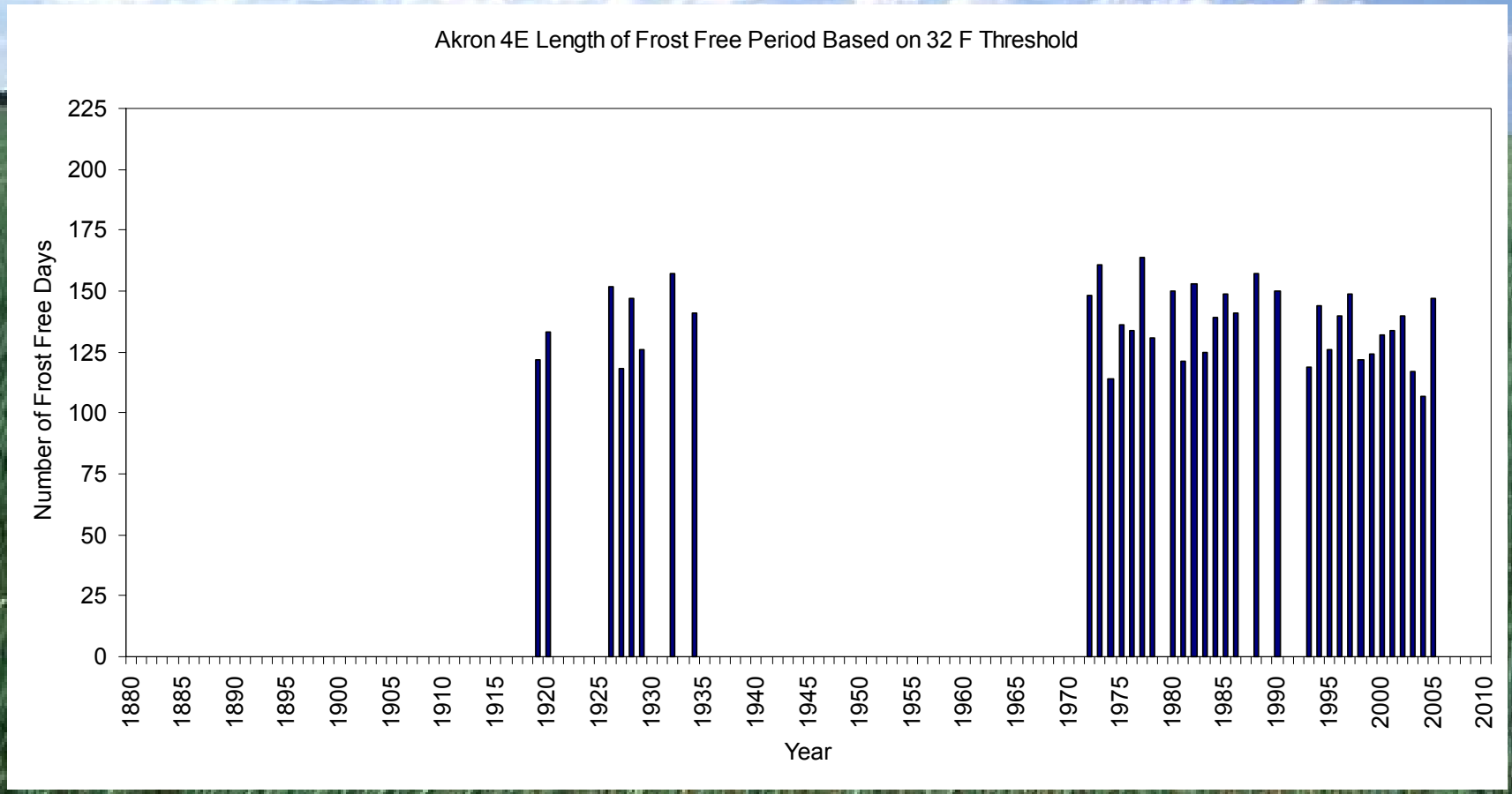
Cheyenne Wells Frost Free Days



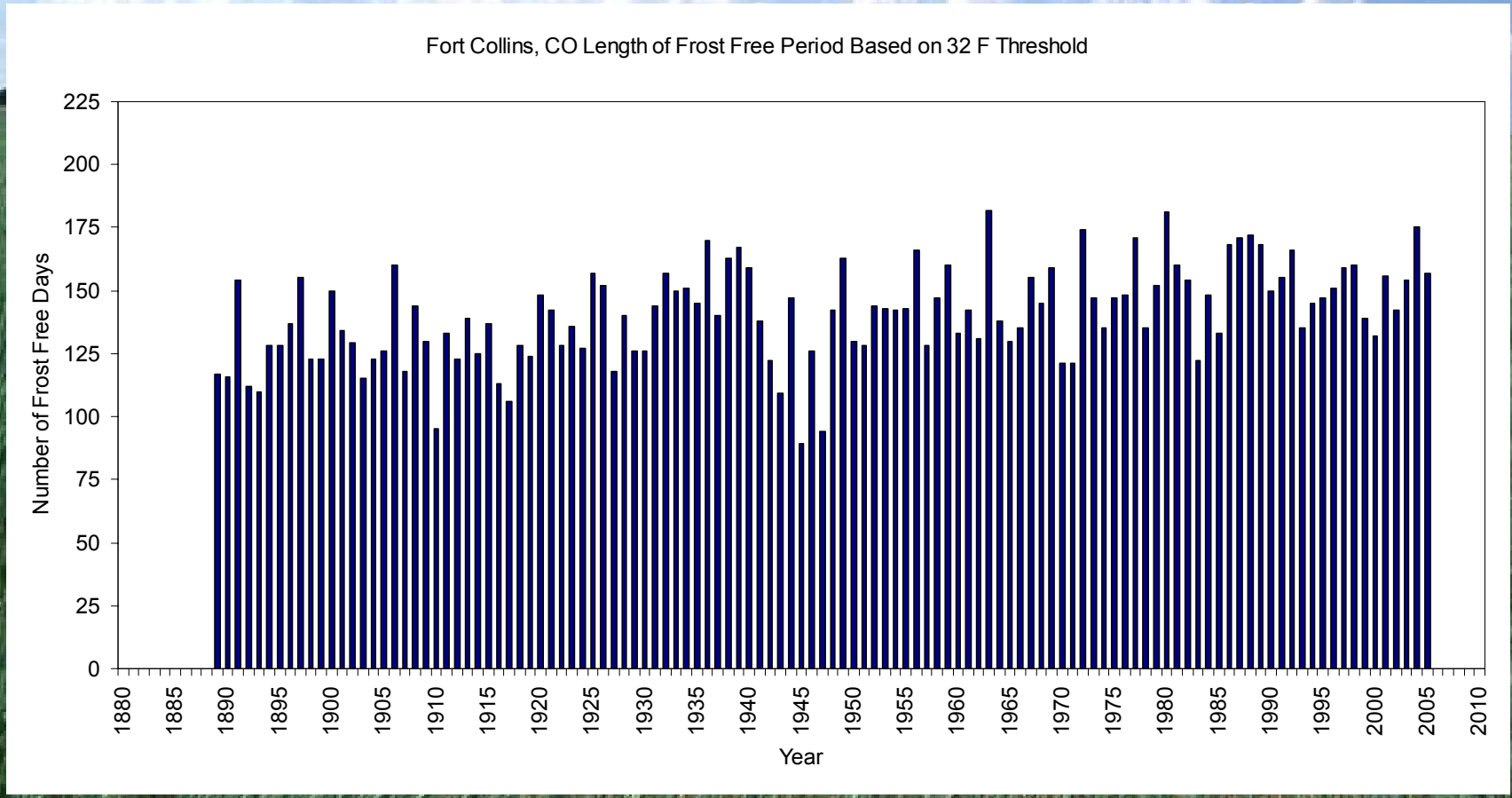
Rocky Ford
Frost Free Days



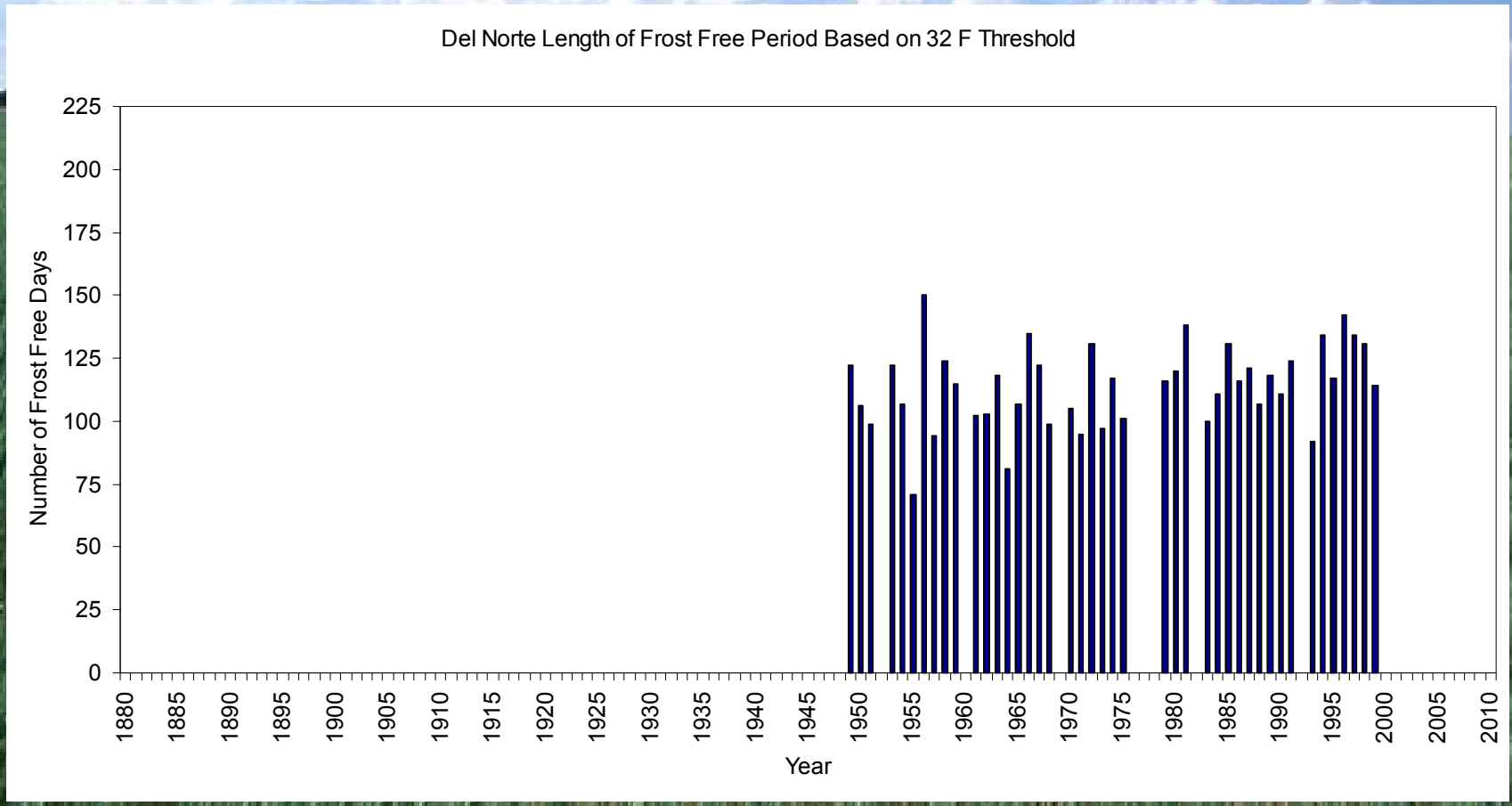
Akron
Frost Free Days



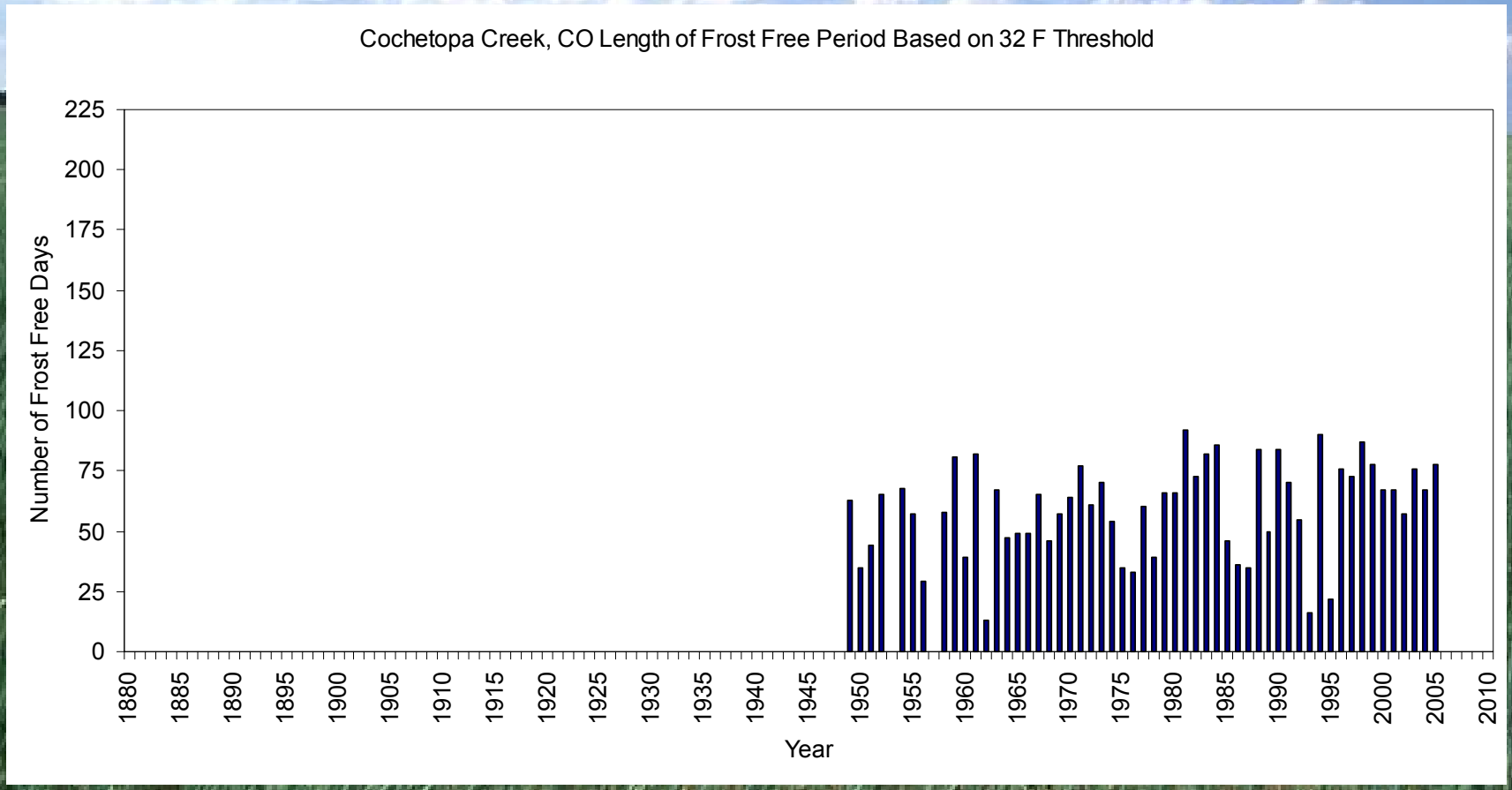
Fort Collins
Frost Free Days



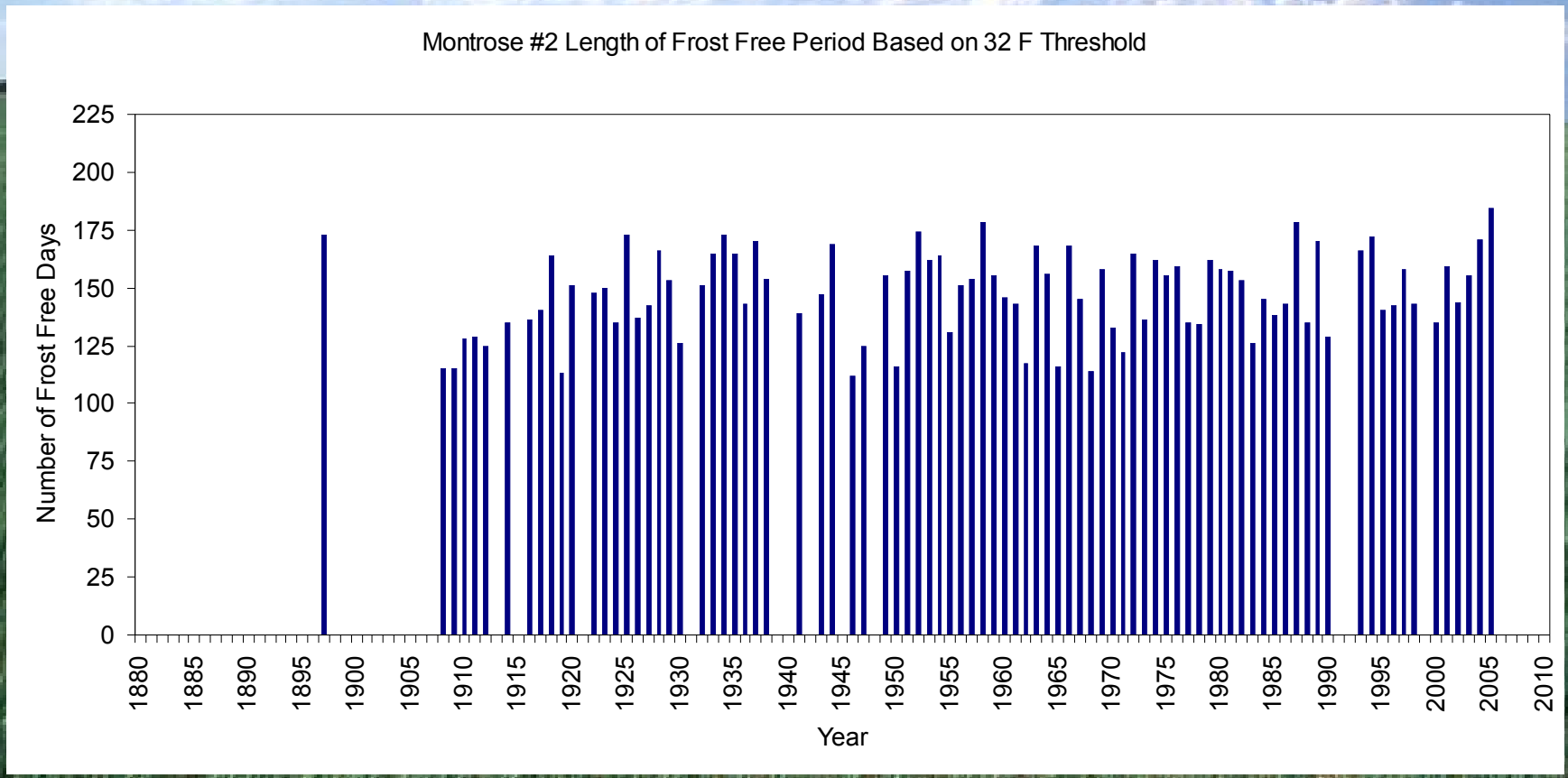
Del Norte
Frost Free Days



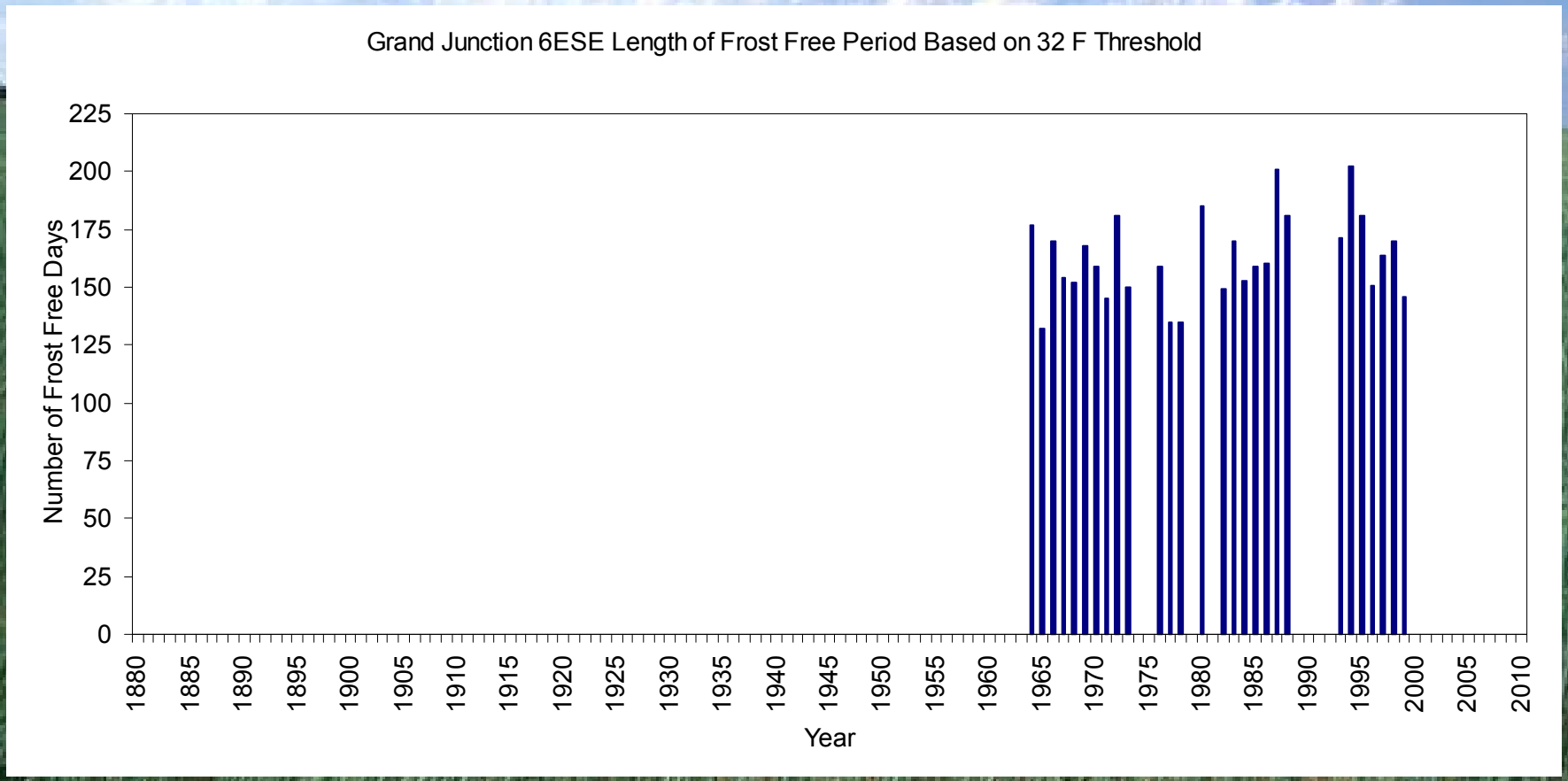
Cochetopa Creek
Frost Free Days



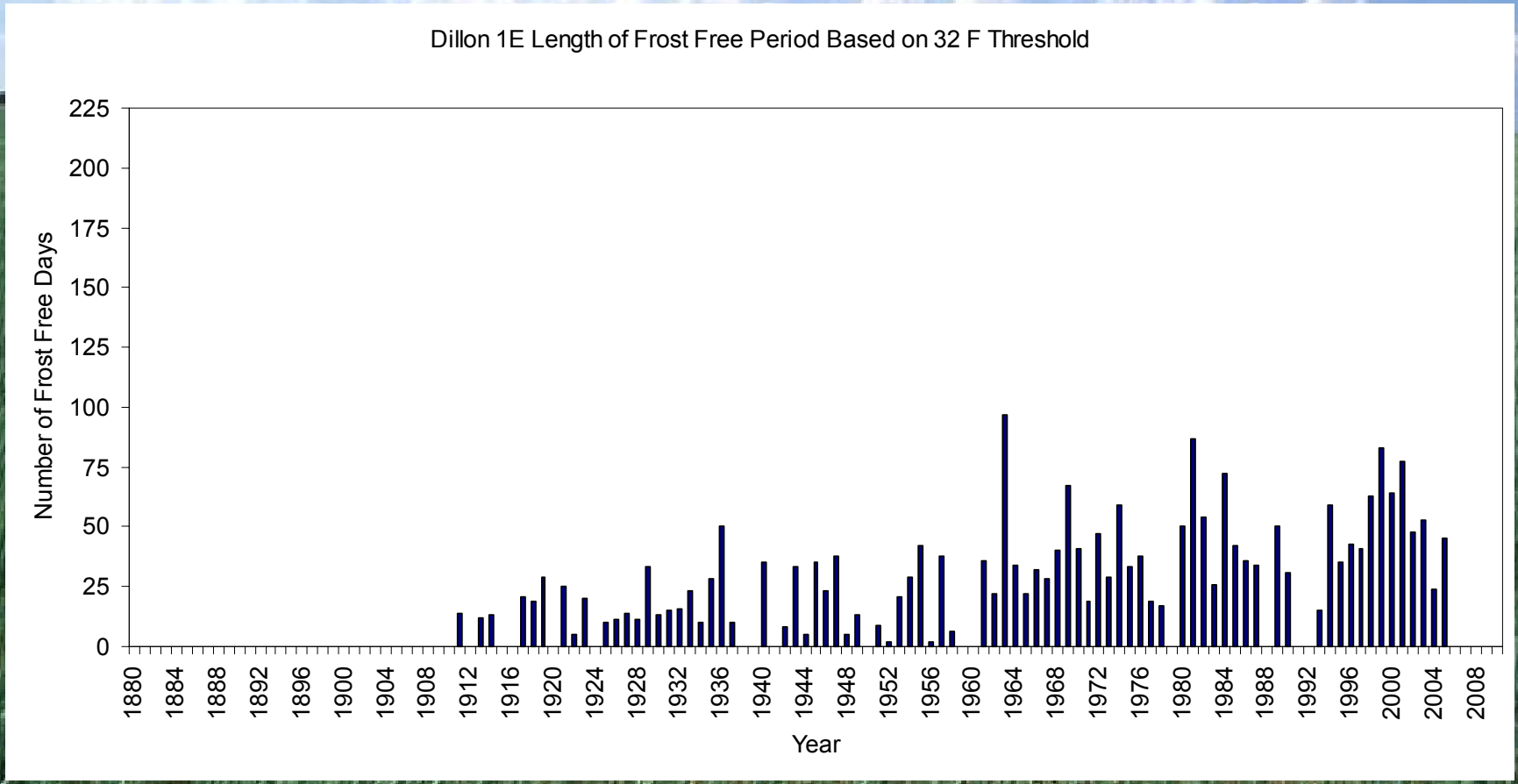
Montrose
Frost Free Days



Grand Junction 6ESE Frost Free Days

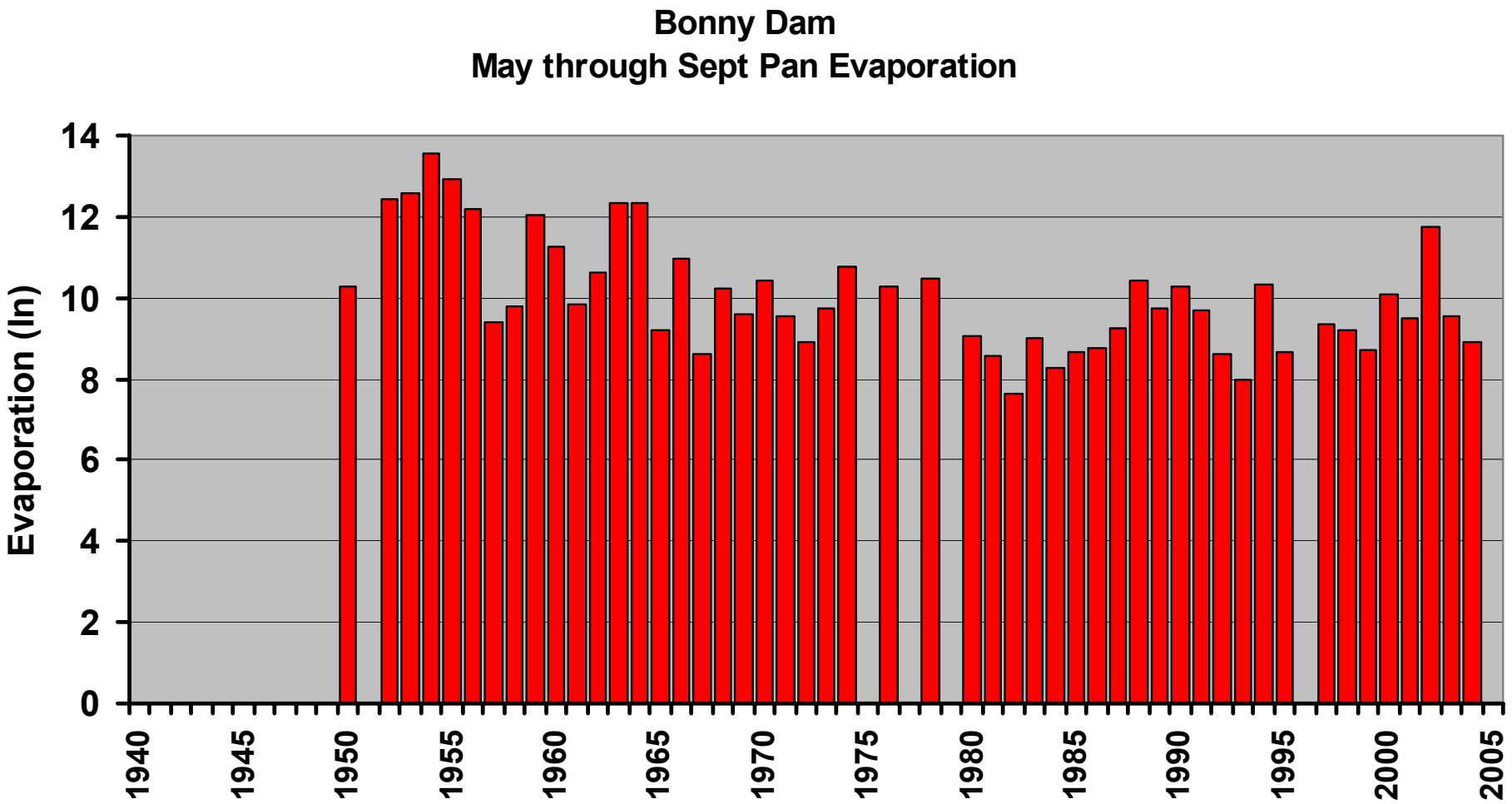


Dillon
Frost Free Days

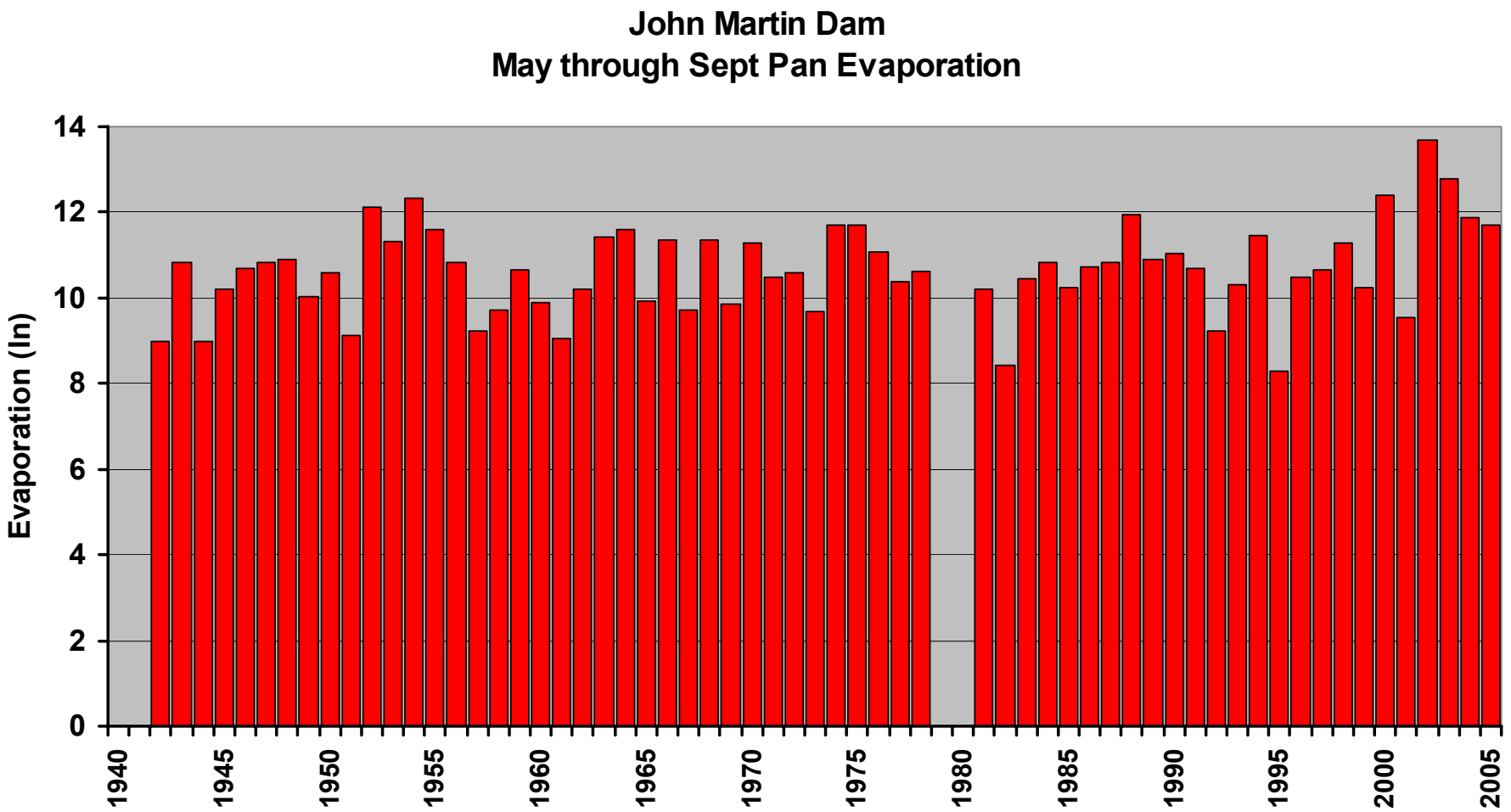


Evaporation

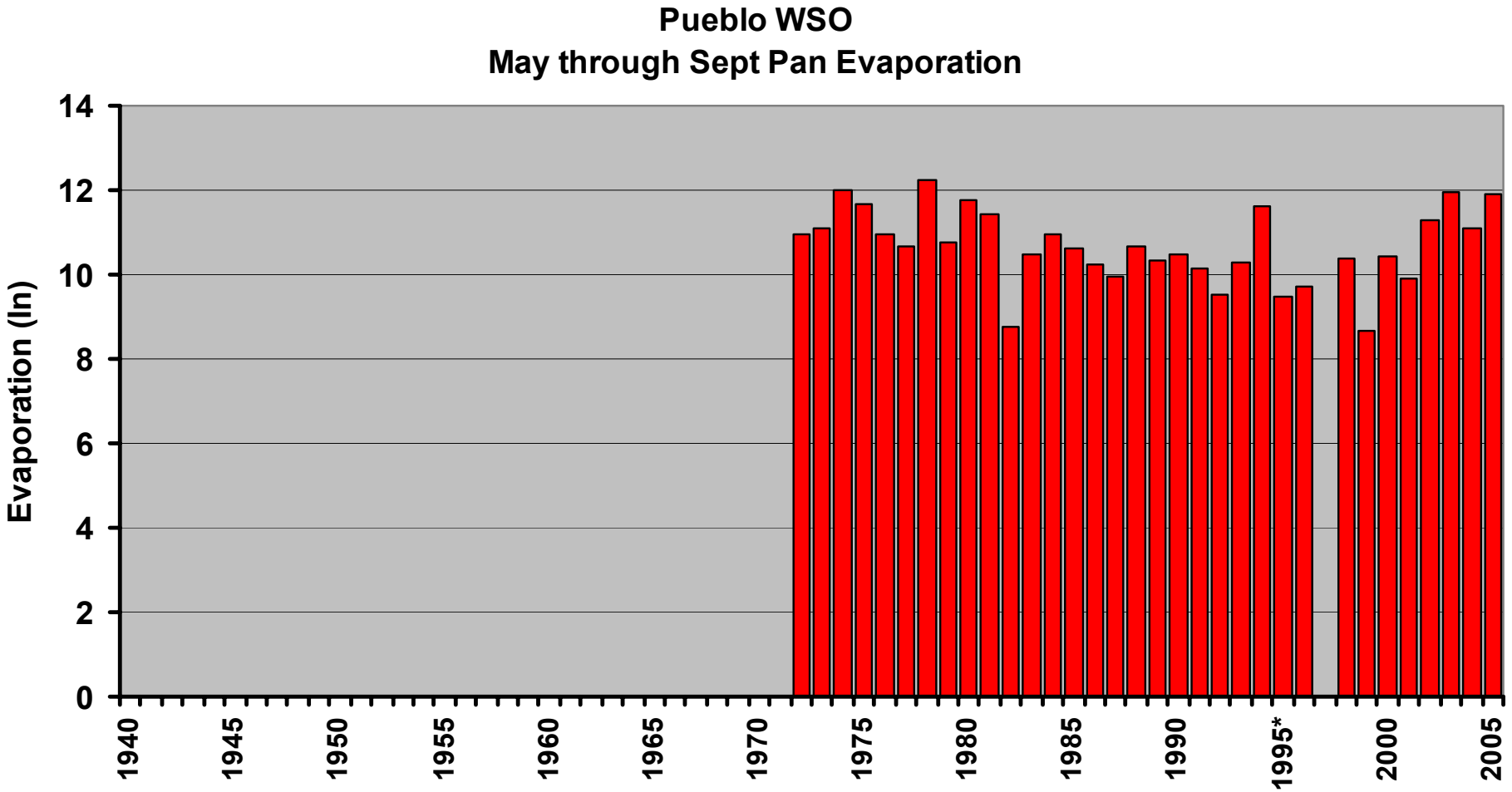
Bonny Dam Evaporation



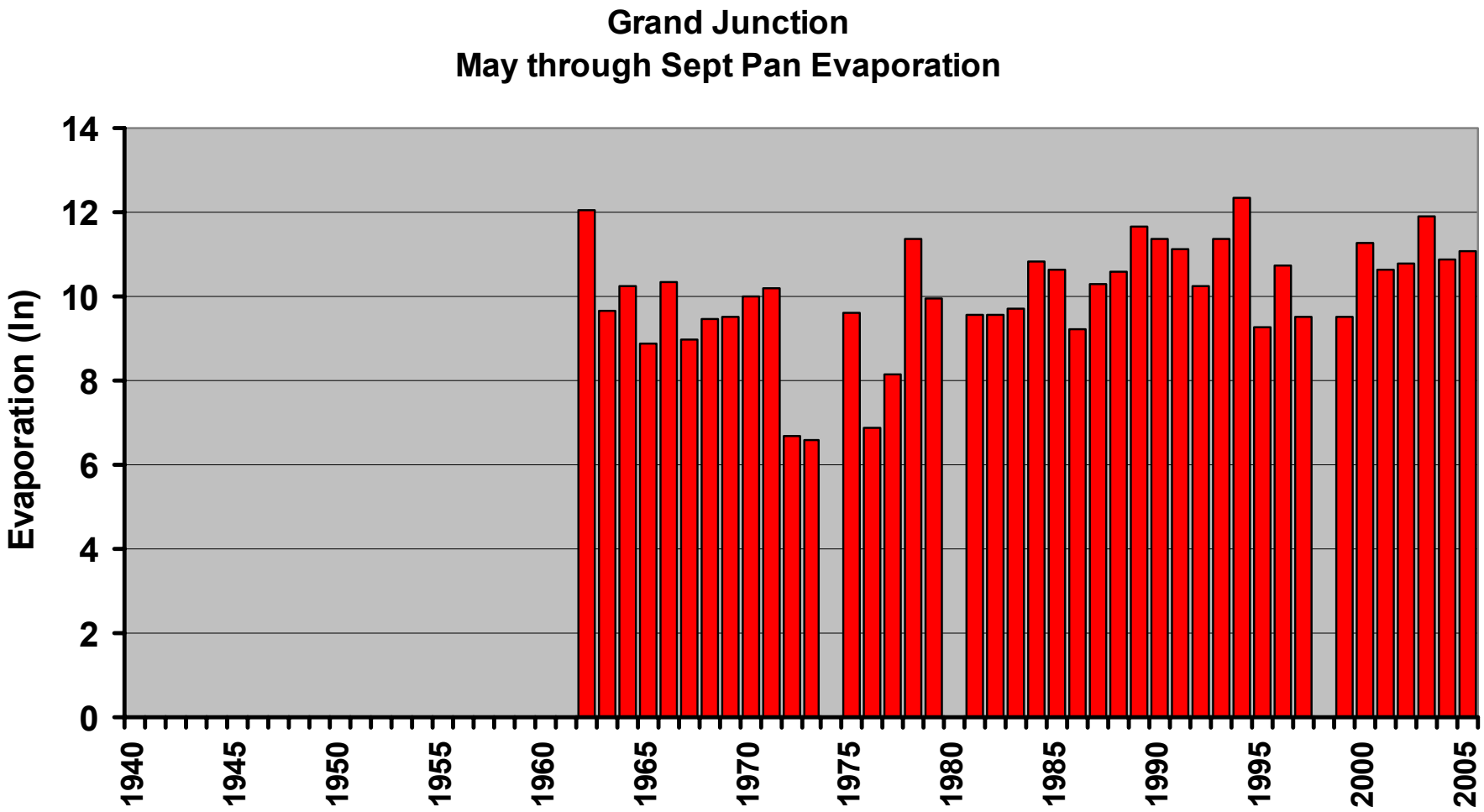
John Martin Dan Evaporation



Pueblo Evaporation



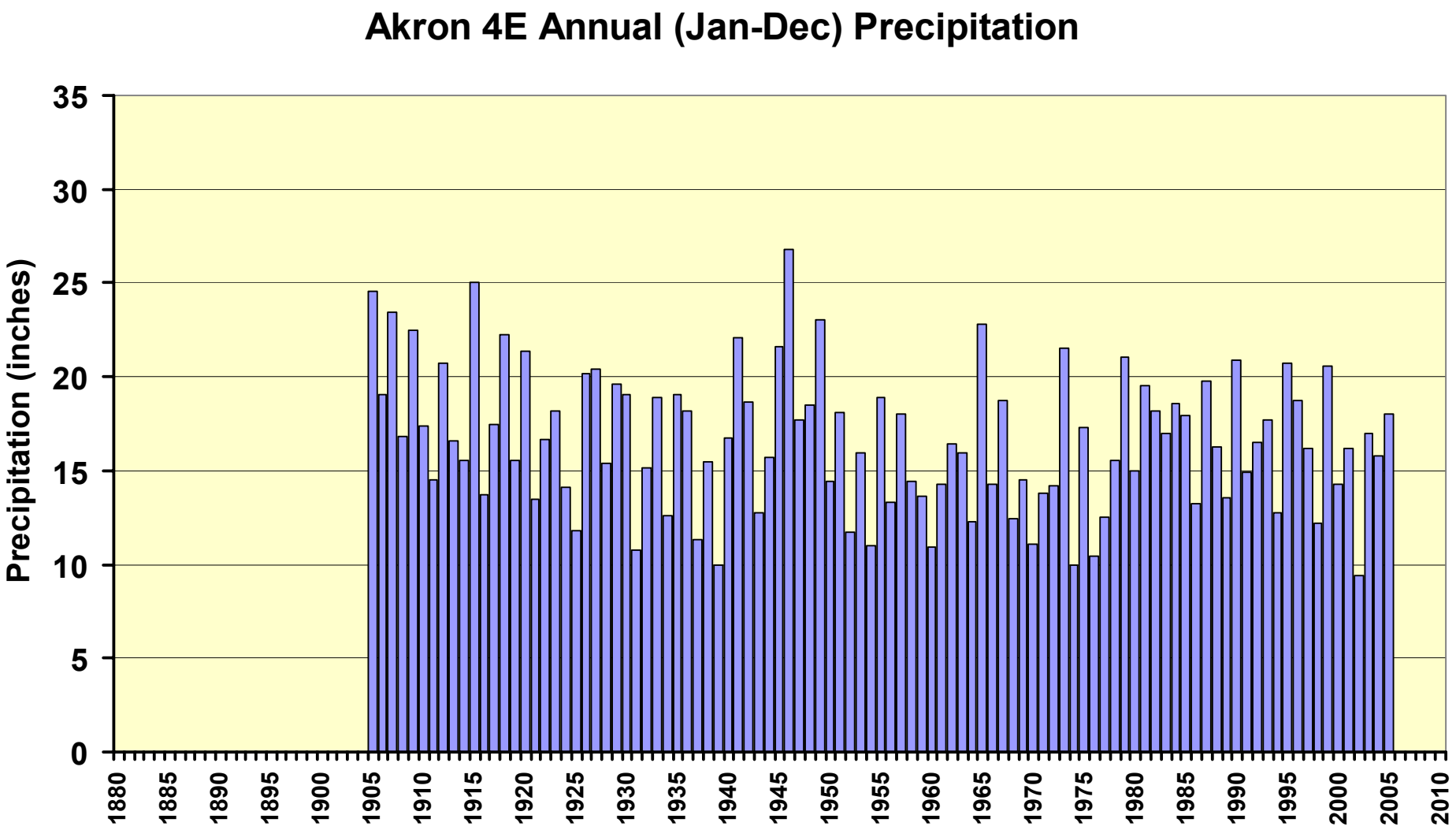
Grand Junction



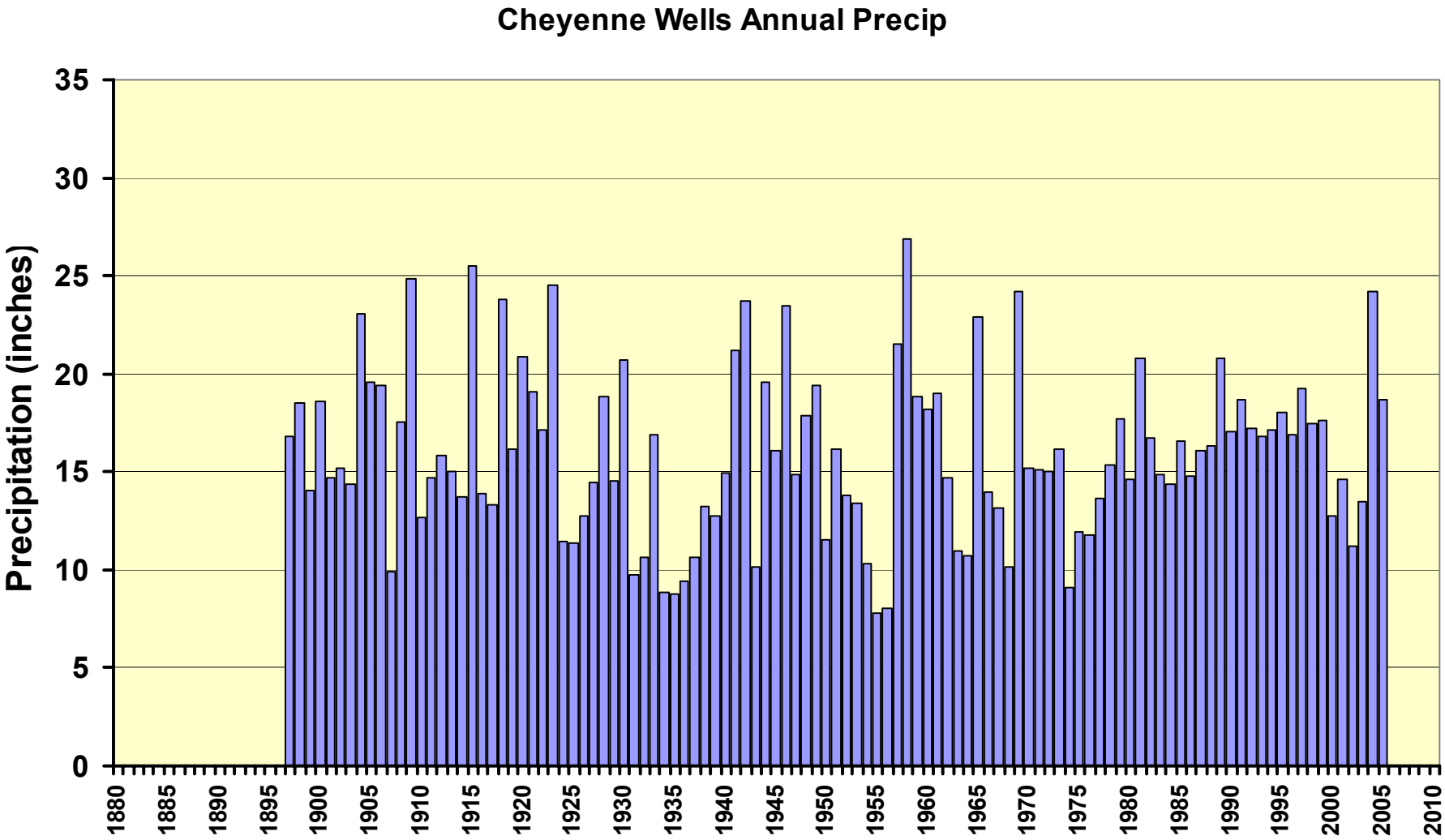
Precipitation

Photo by Wendy Ryan

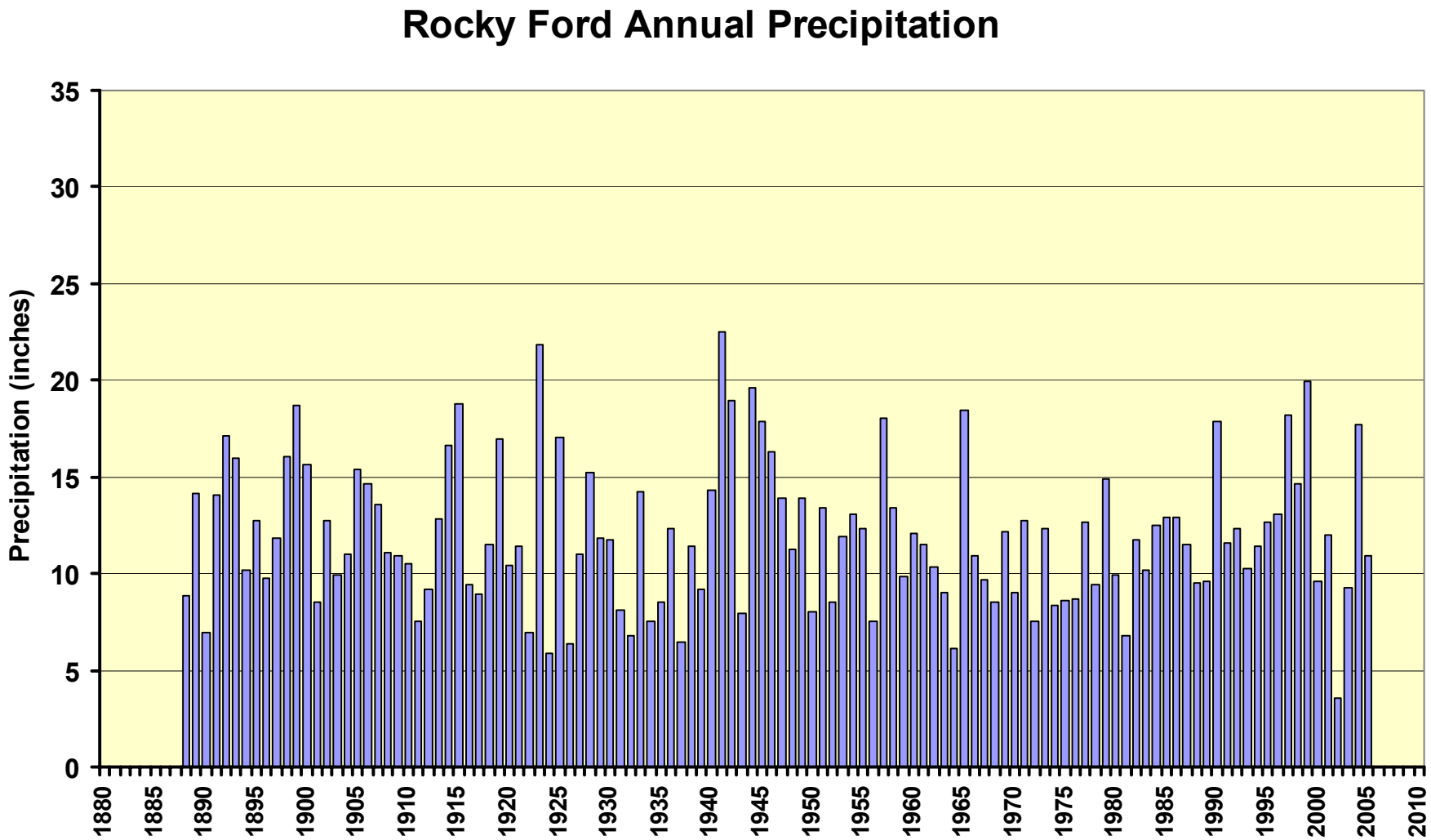
Akron Precipitation



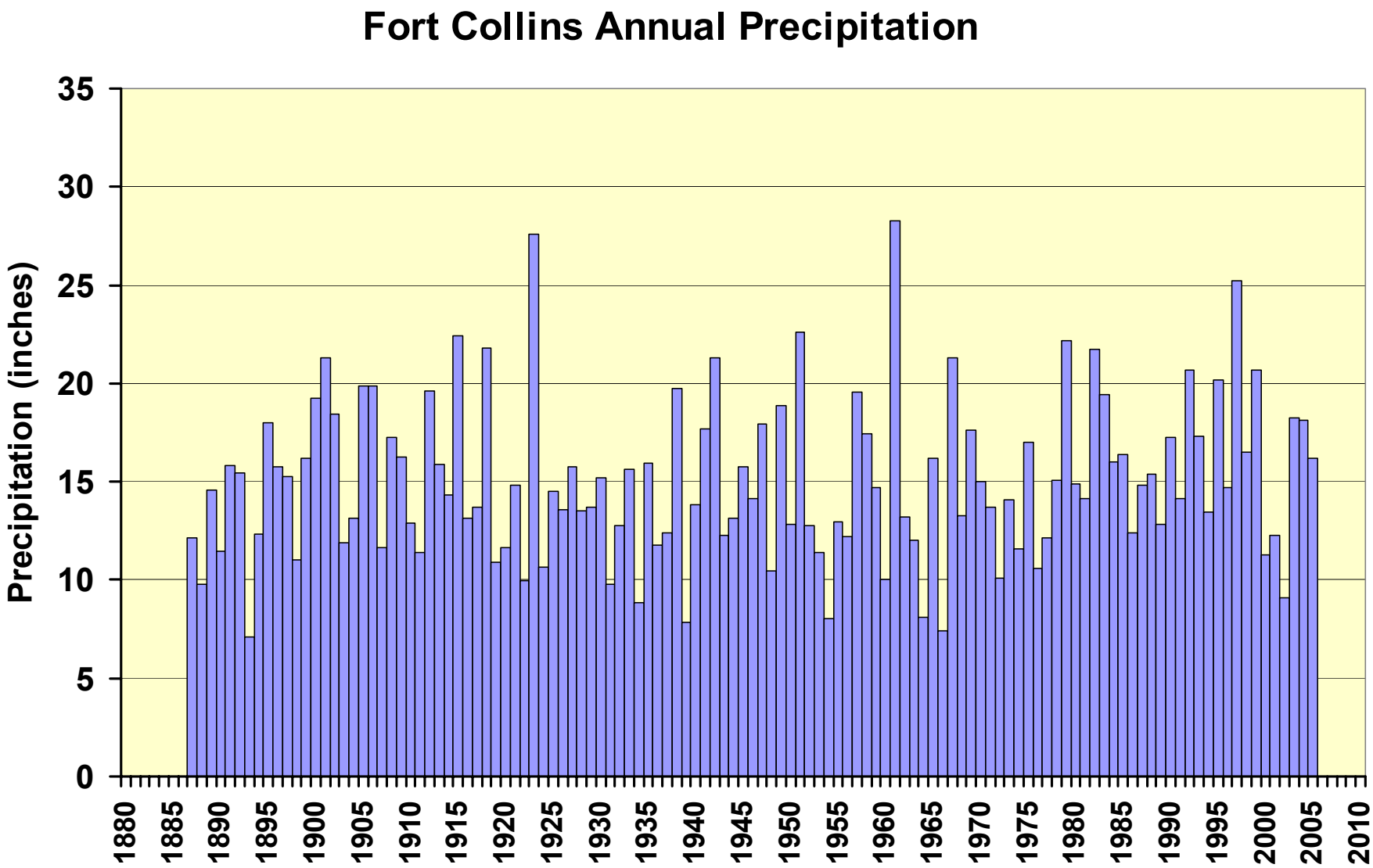
Cheyenne Wells Precipitation



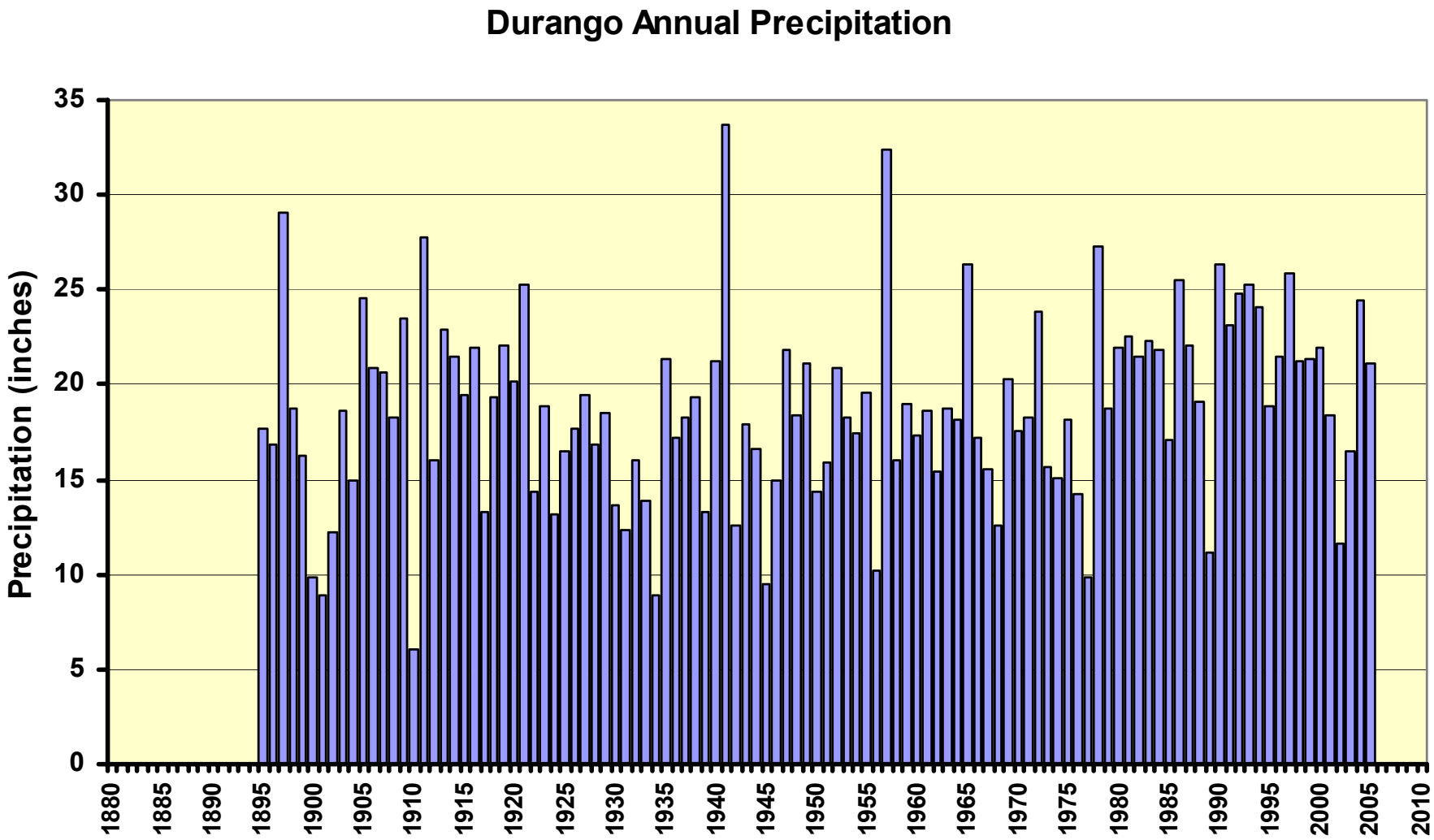
Rocky Ford Precipitation



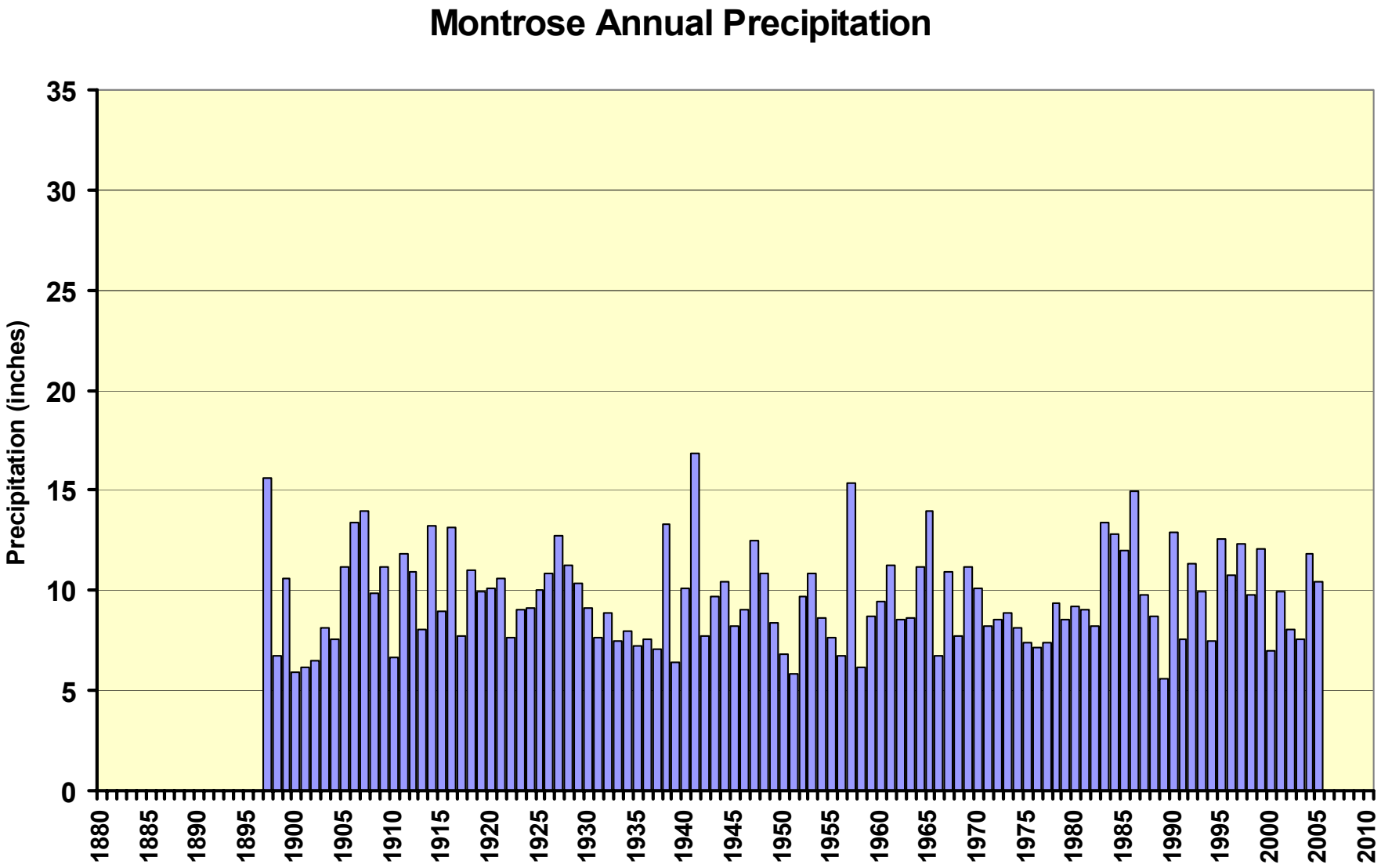
Fort Collins Precipitation



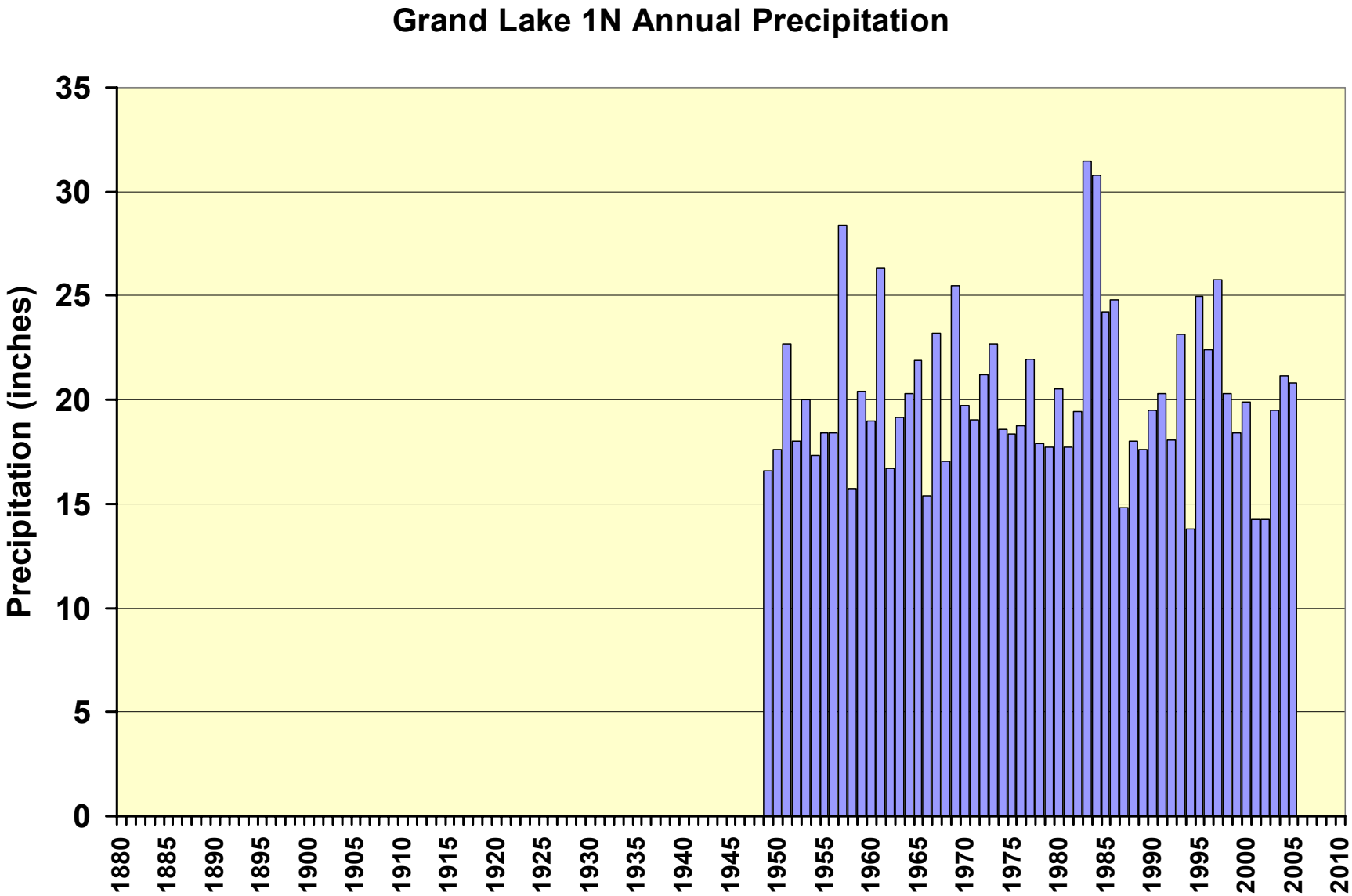
Durango Precipitation



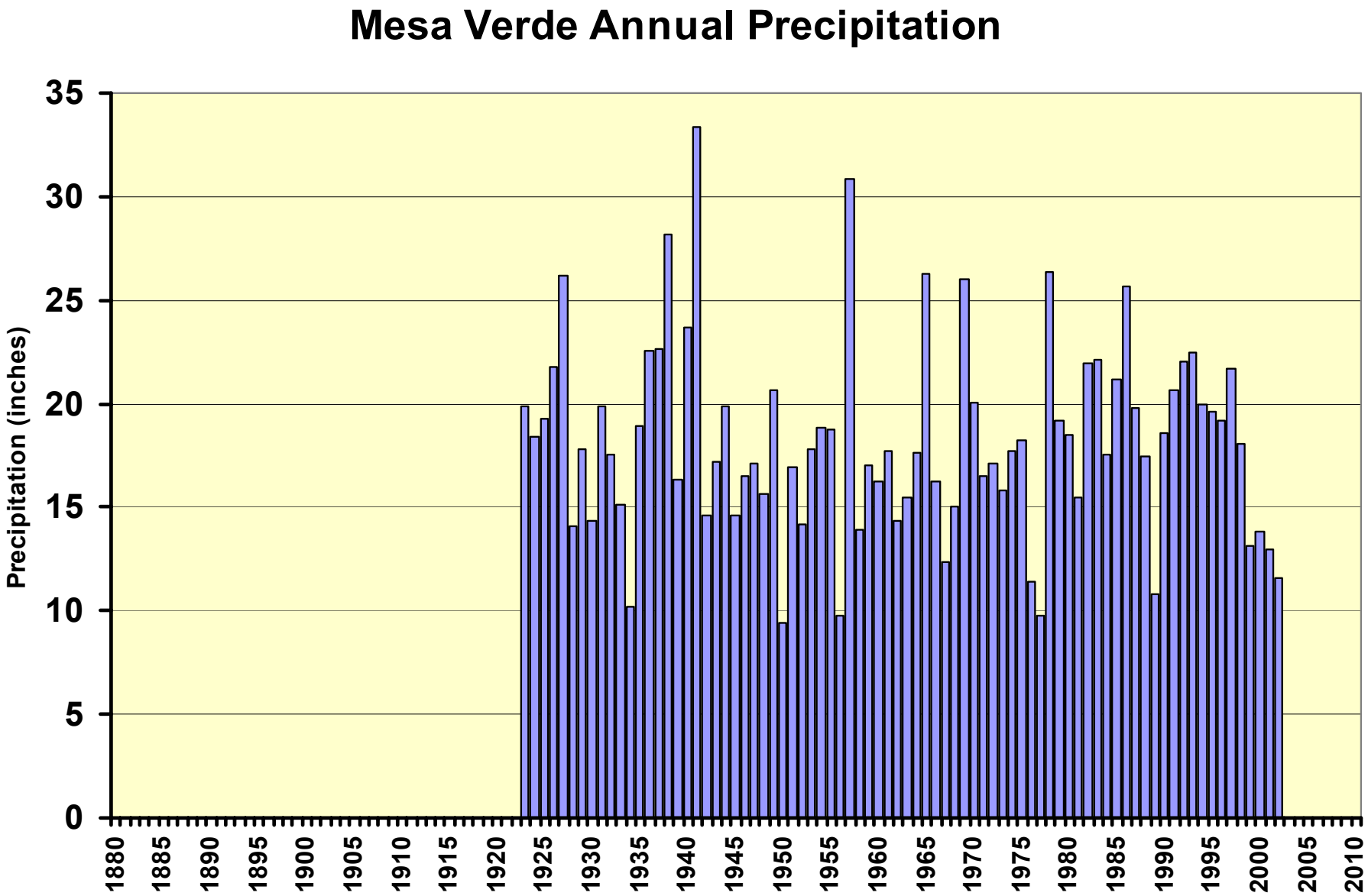
Montrose Precipitation



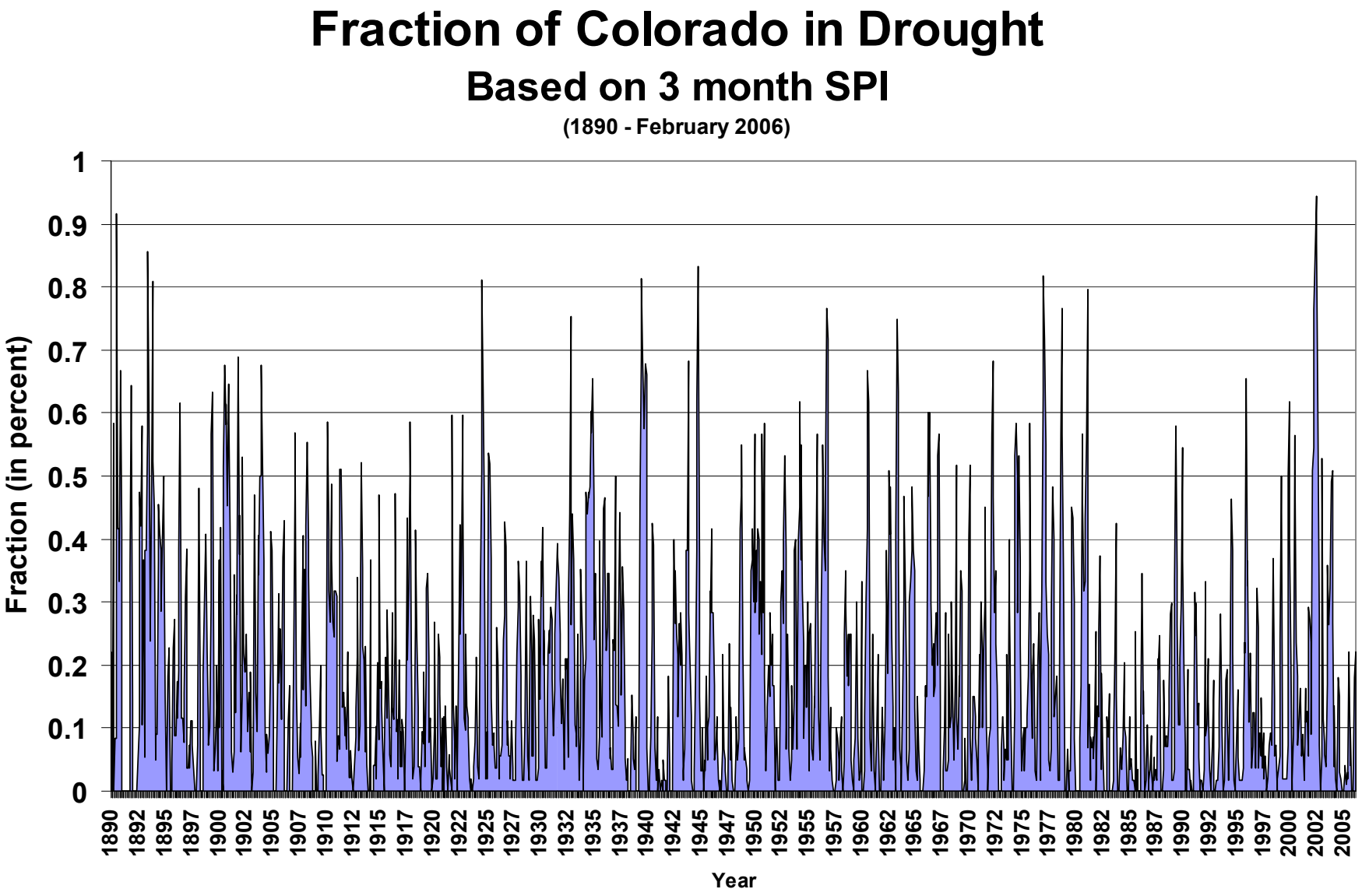
Grand Lake 1N Precipitation



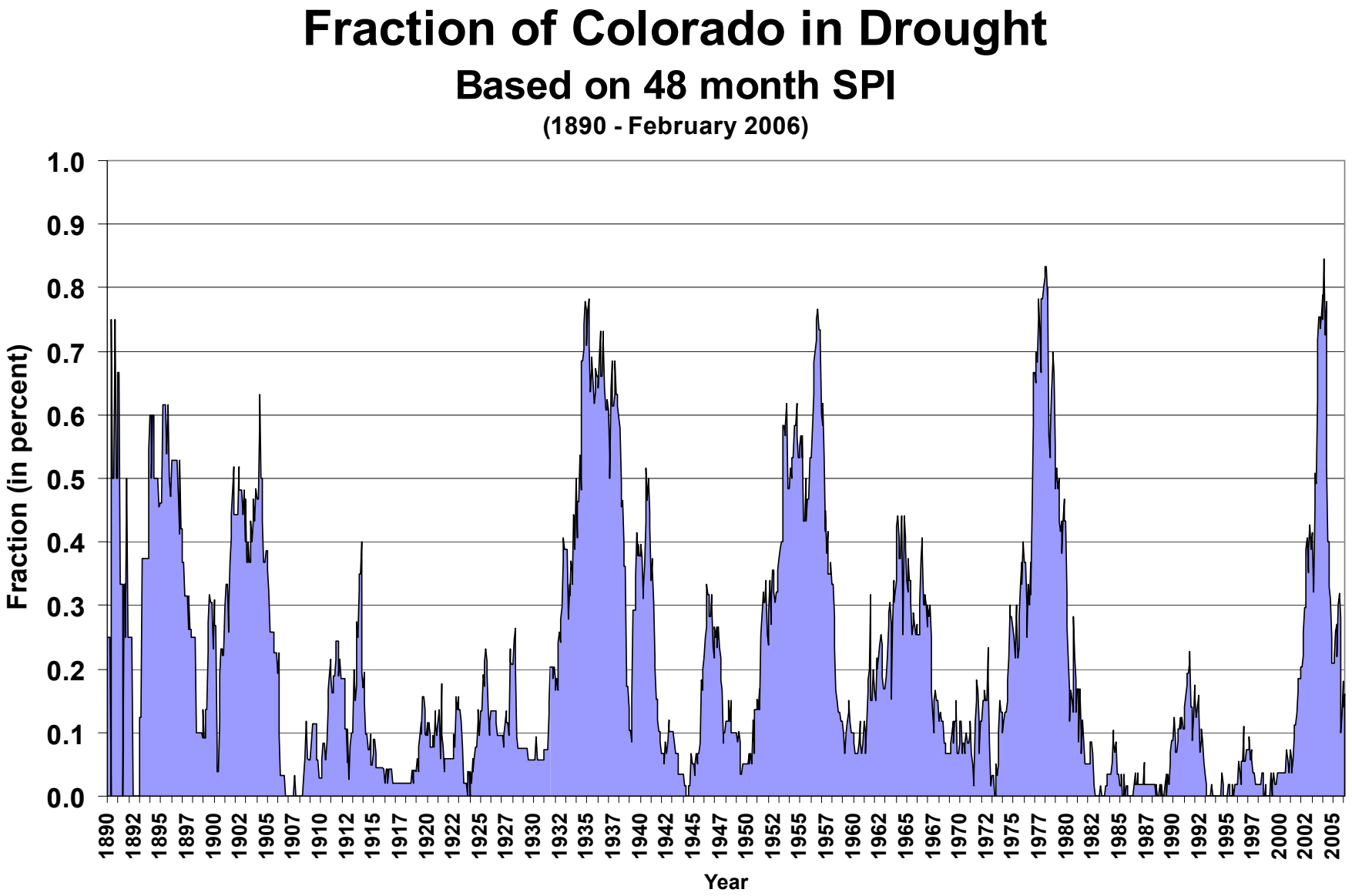
Mesa Verde Precipitation



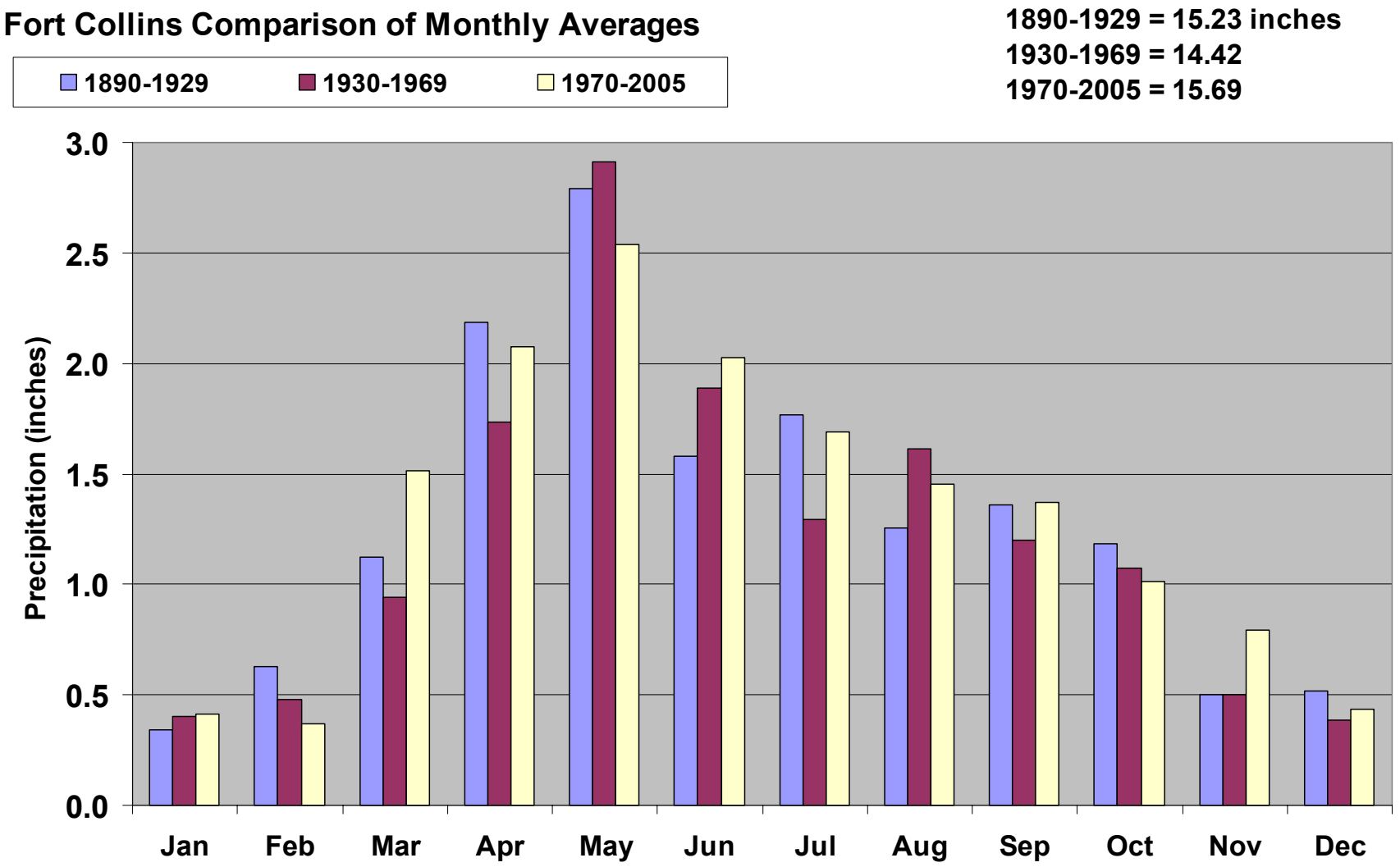
Standardized Precipitation Index 3 Month



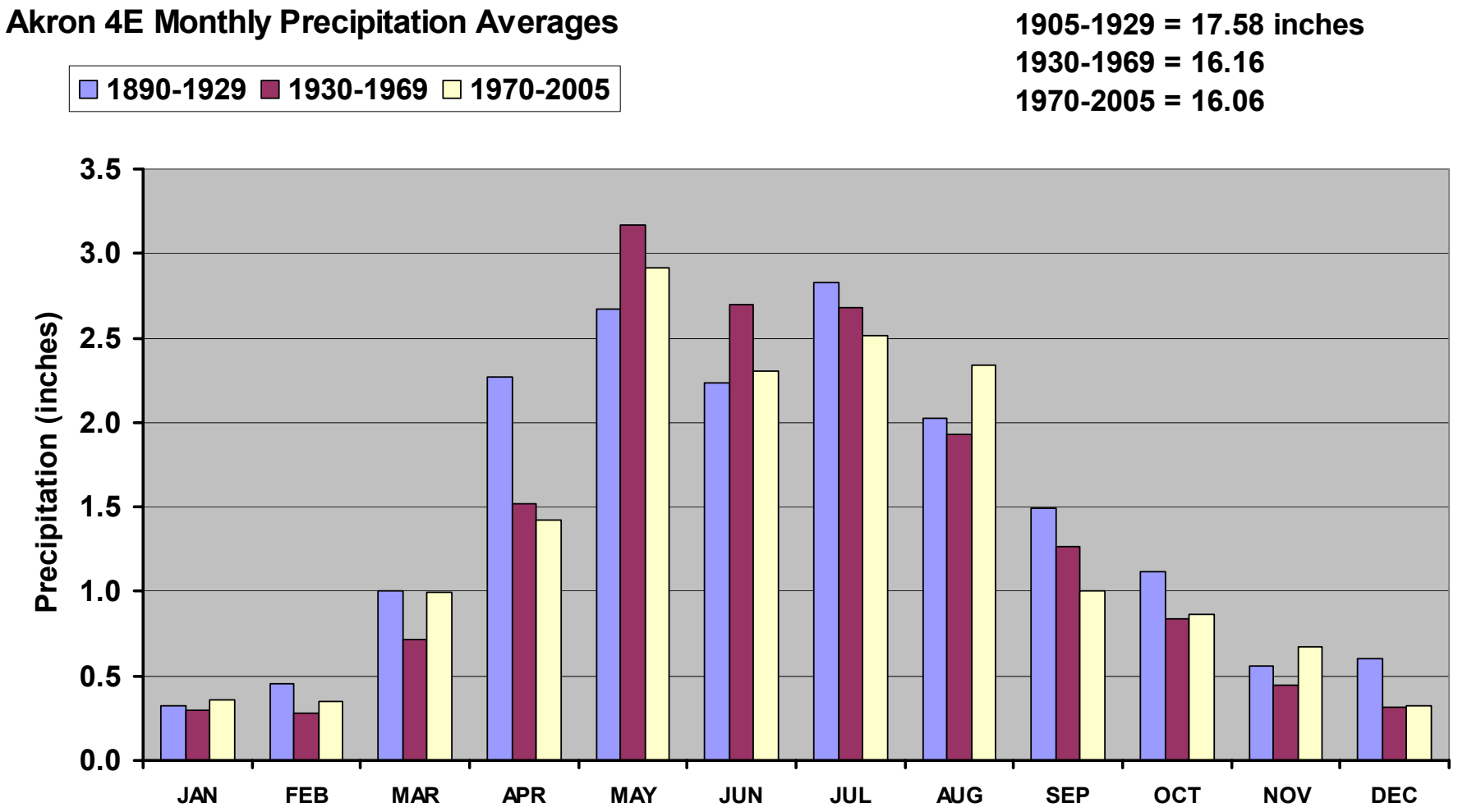
Standardized Precipitation Index 48 month



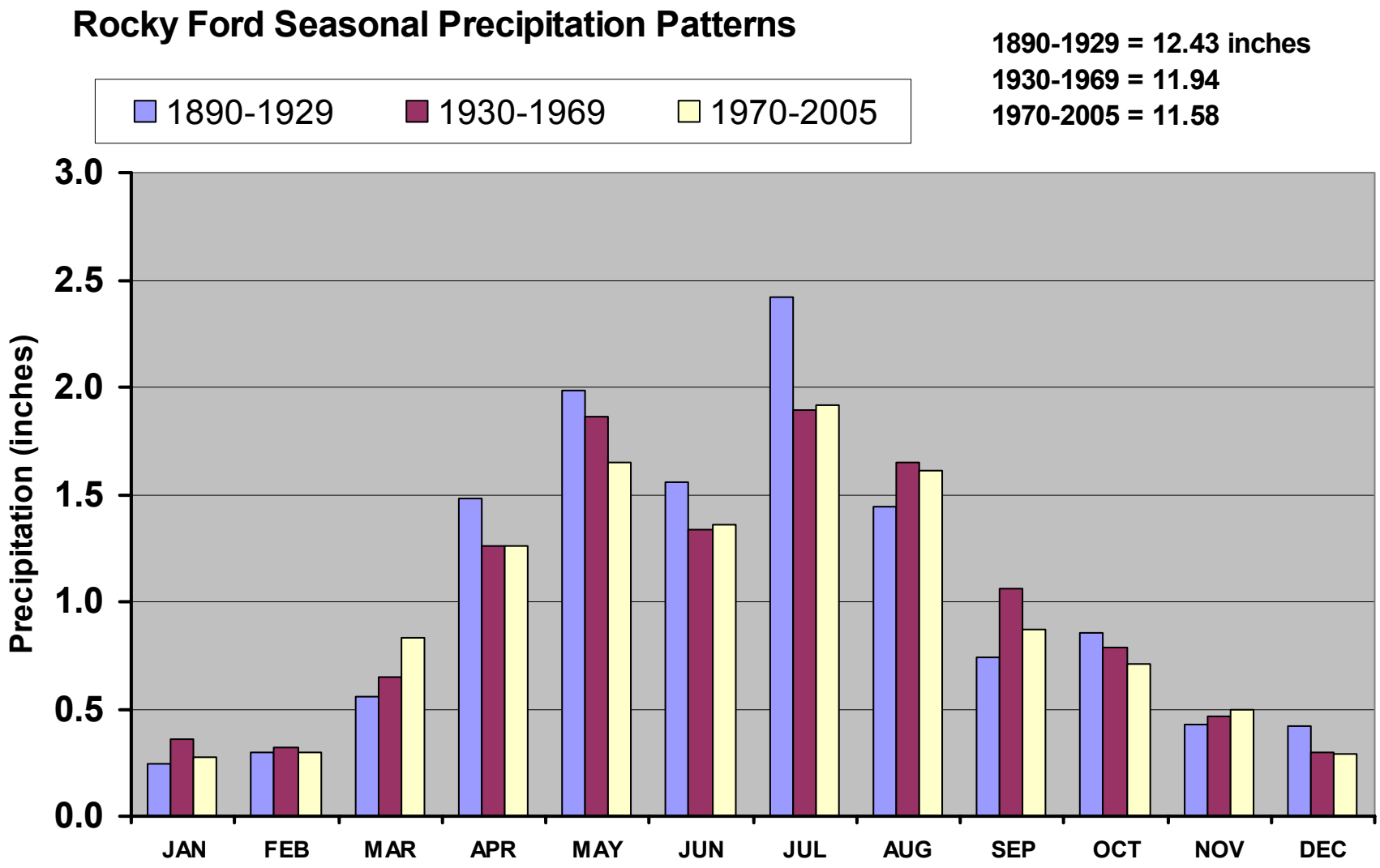
Fort Collins
Seasonal Patterns of Precipitation



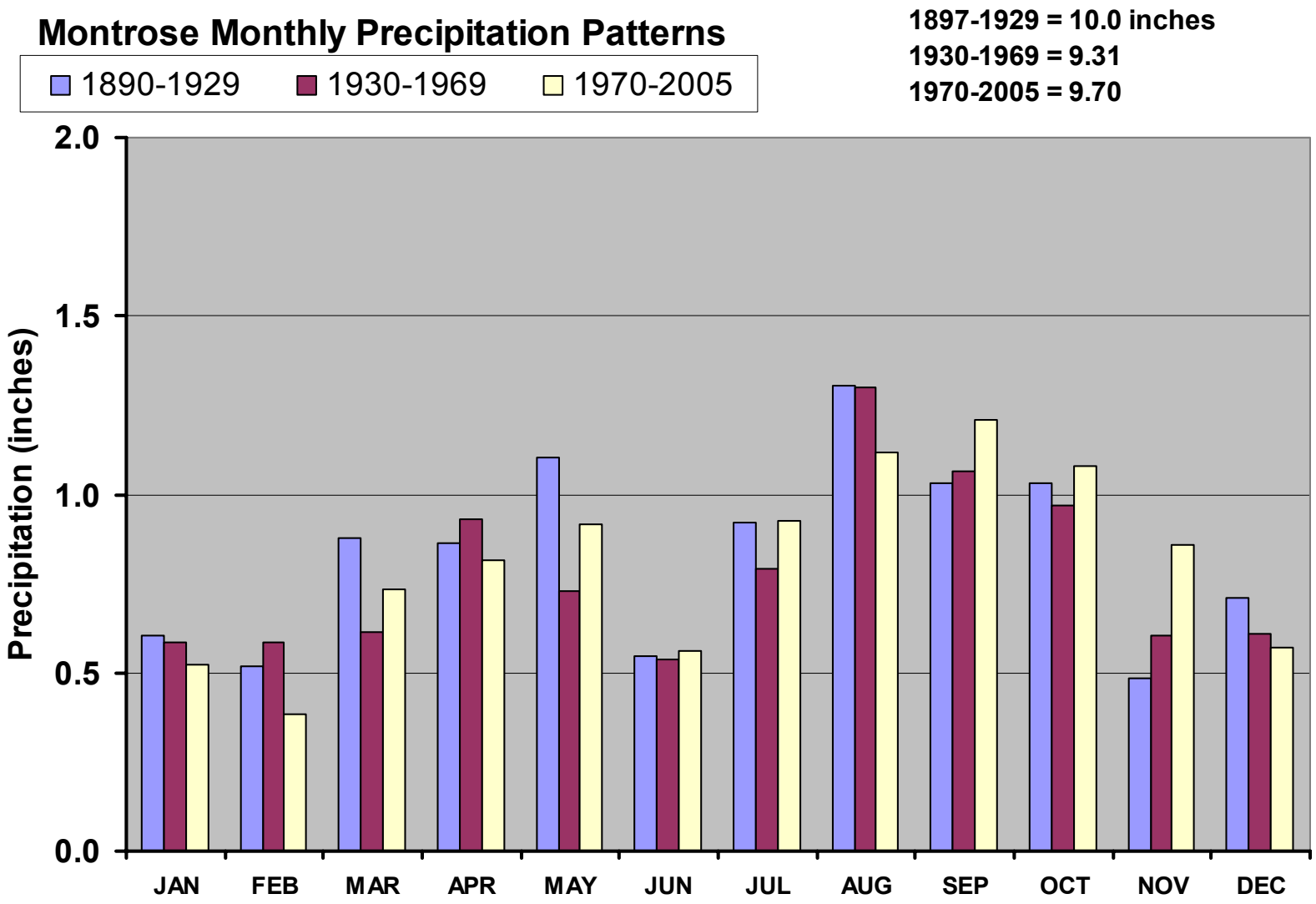
Akron
Seasonal Patterns of Precipitation



Rocky Ford
Seasonal Patterns of Precipitation



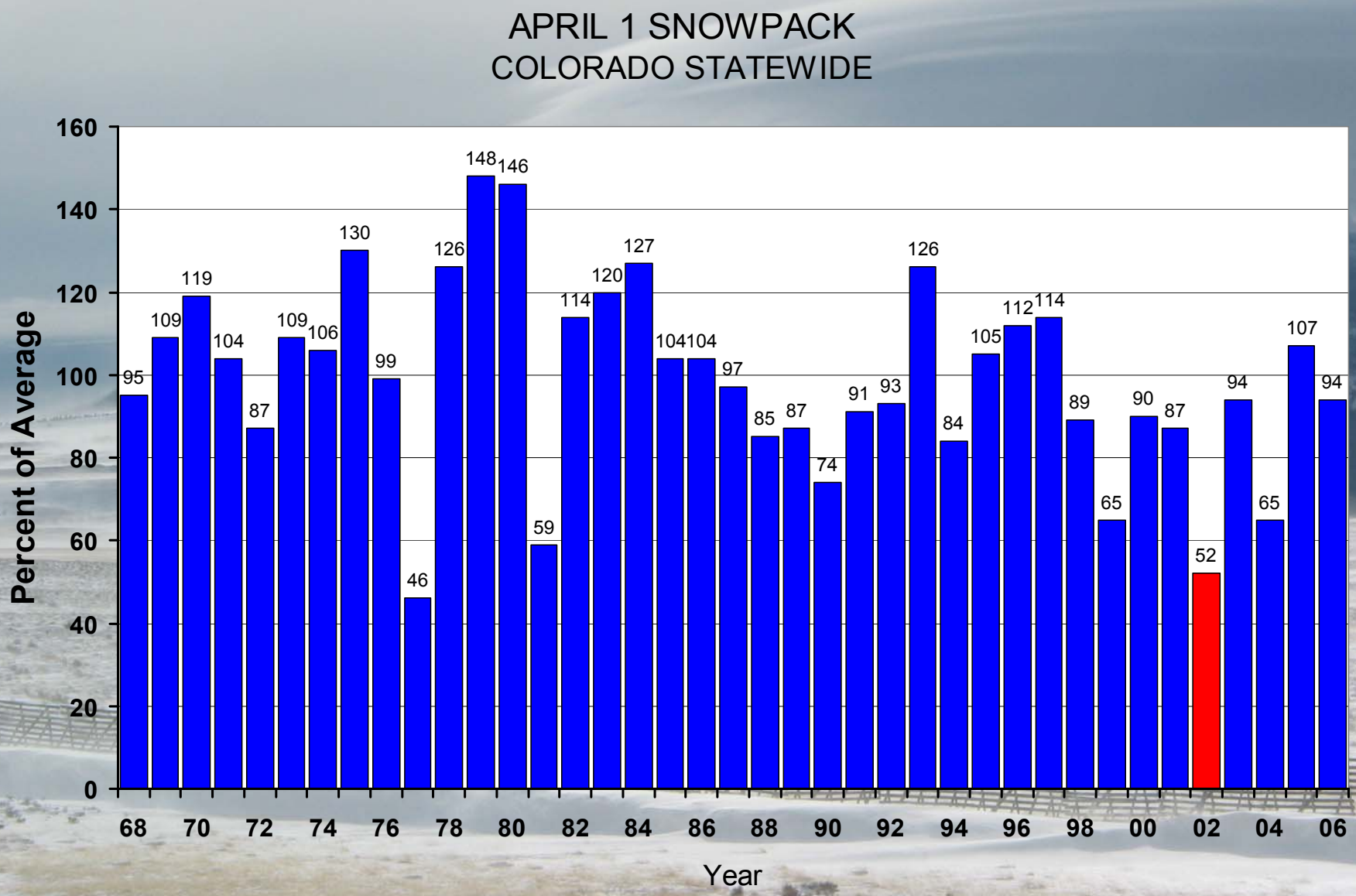
Montrose
Seasonal Patterns of Precipitation



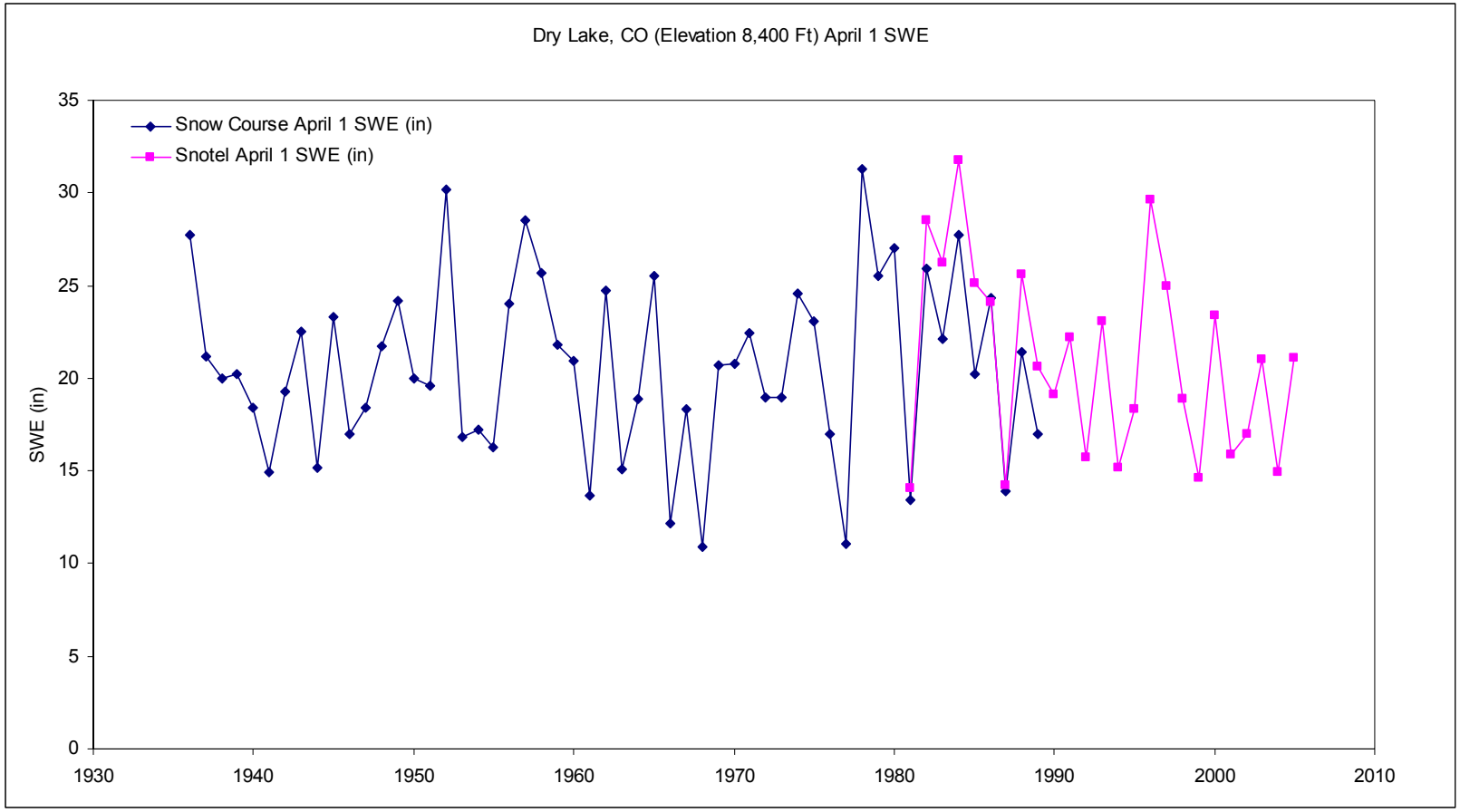
Mountain Snow!

Photo by Wendy Ryan

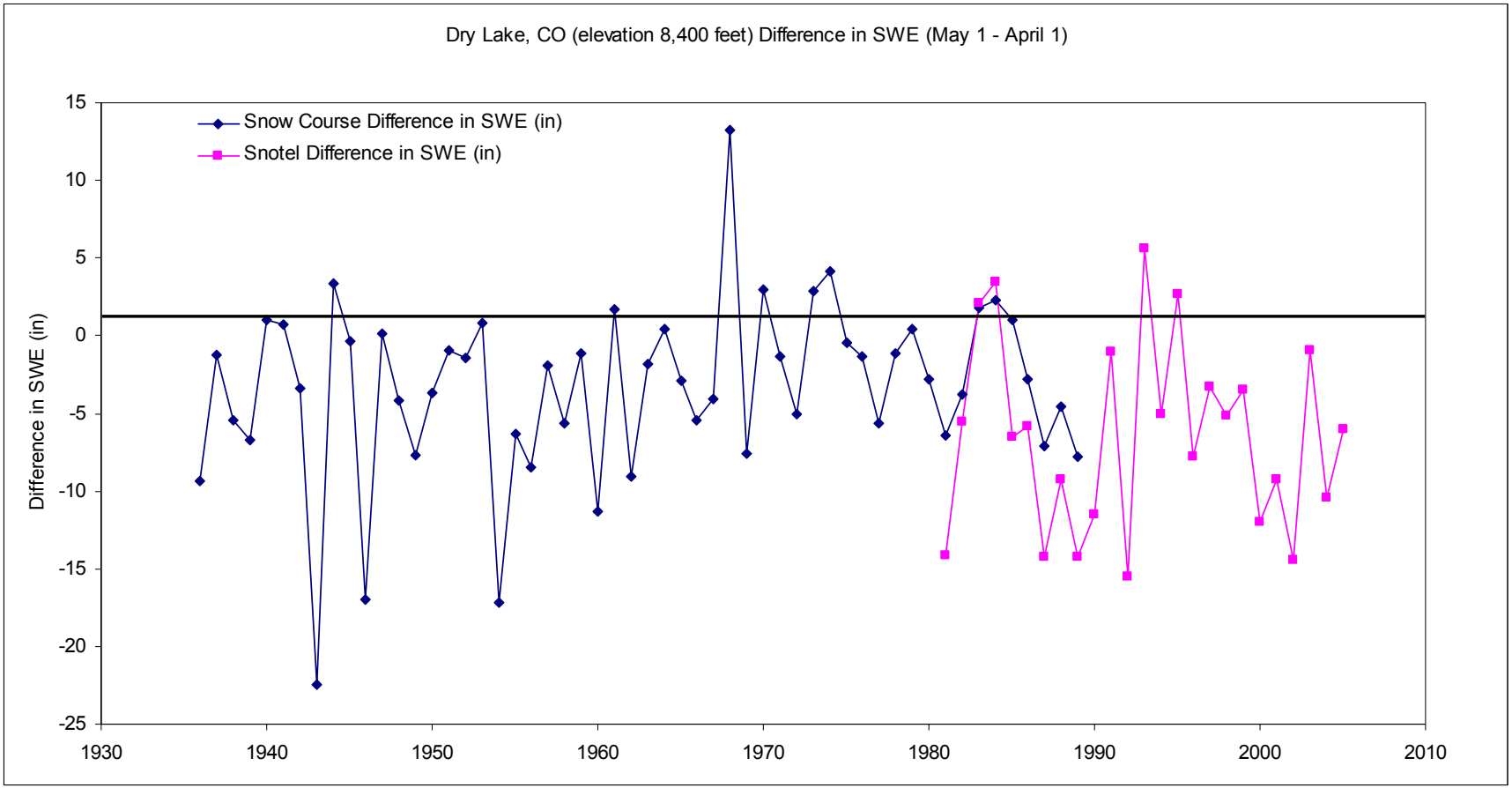
April 1 Colorado Snowpack



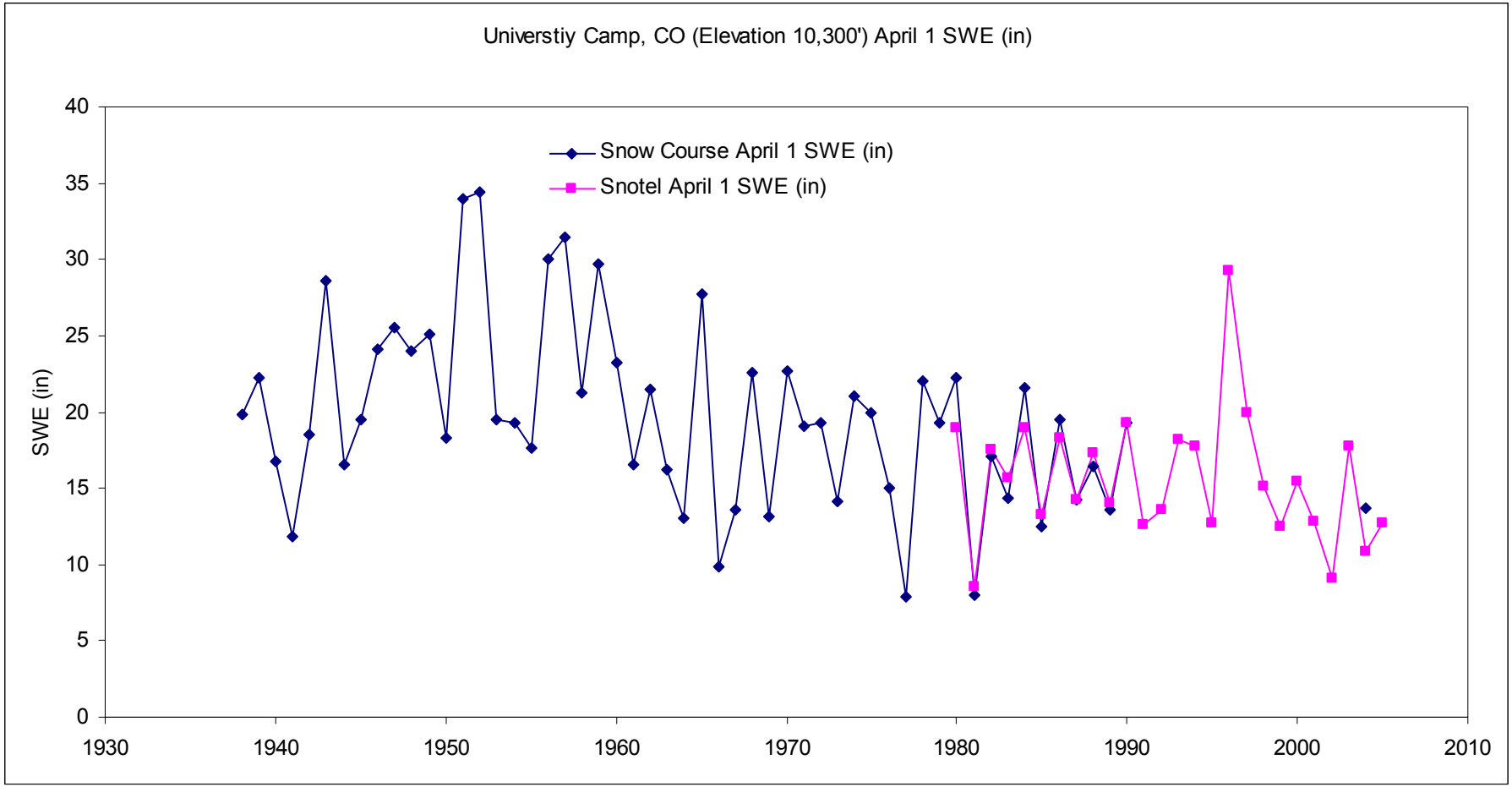
Dry Lake
April 1 Snow Course and Snotel



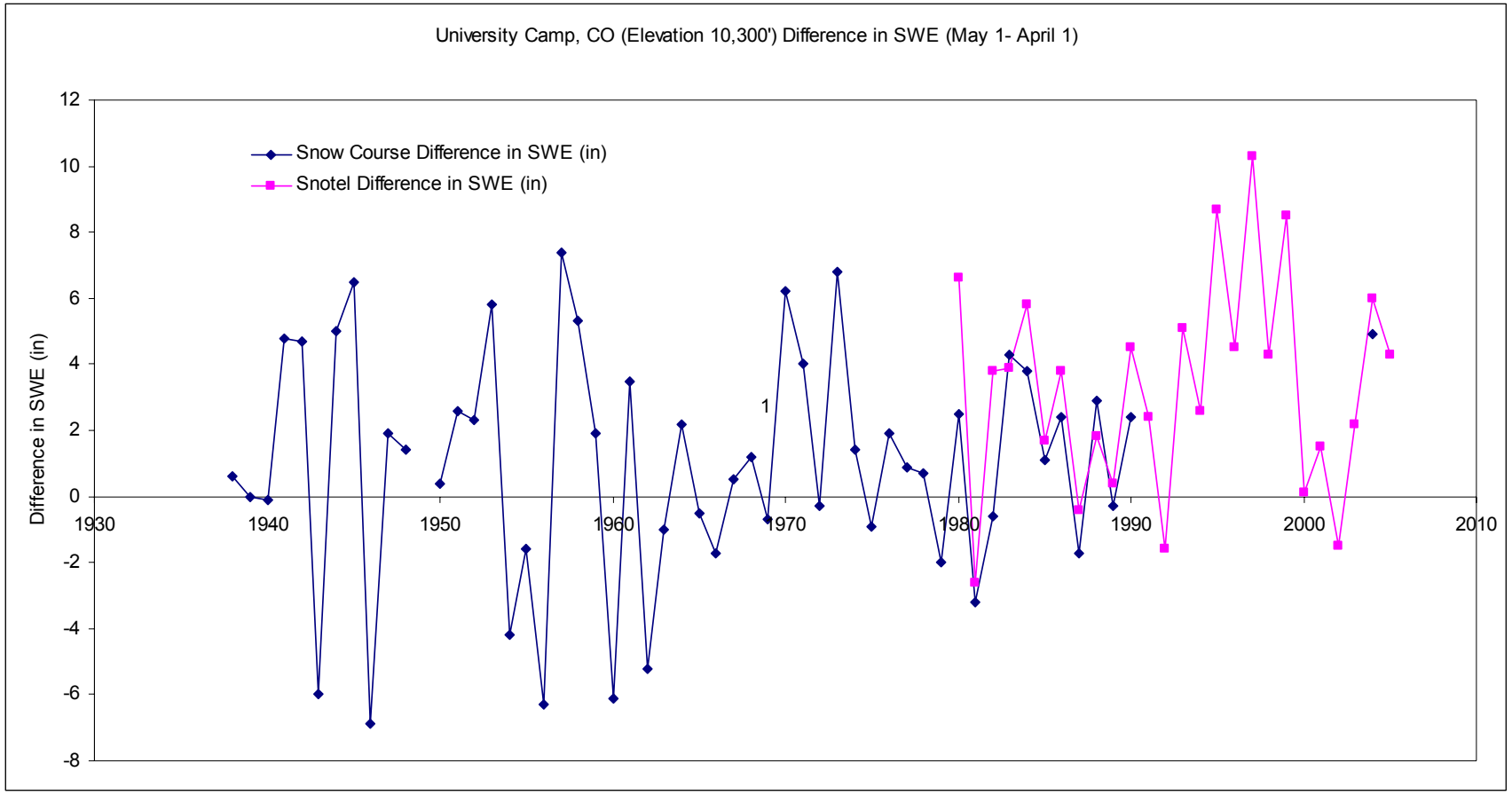
Dry Lake
May 1 – April 1 SWE Difference



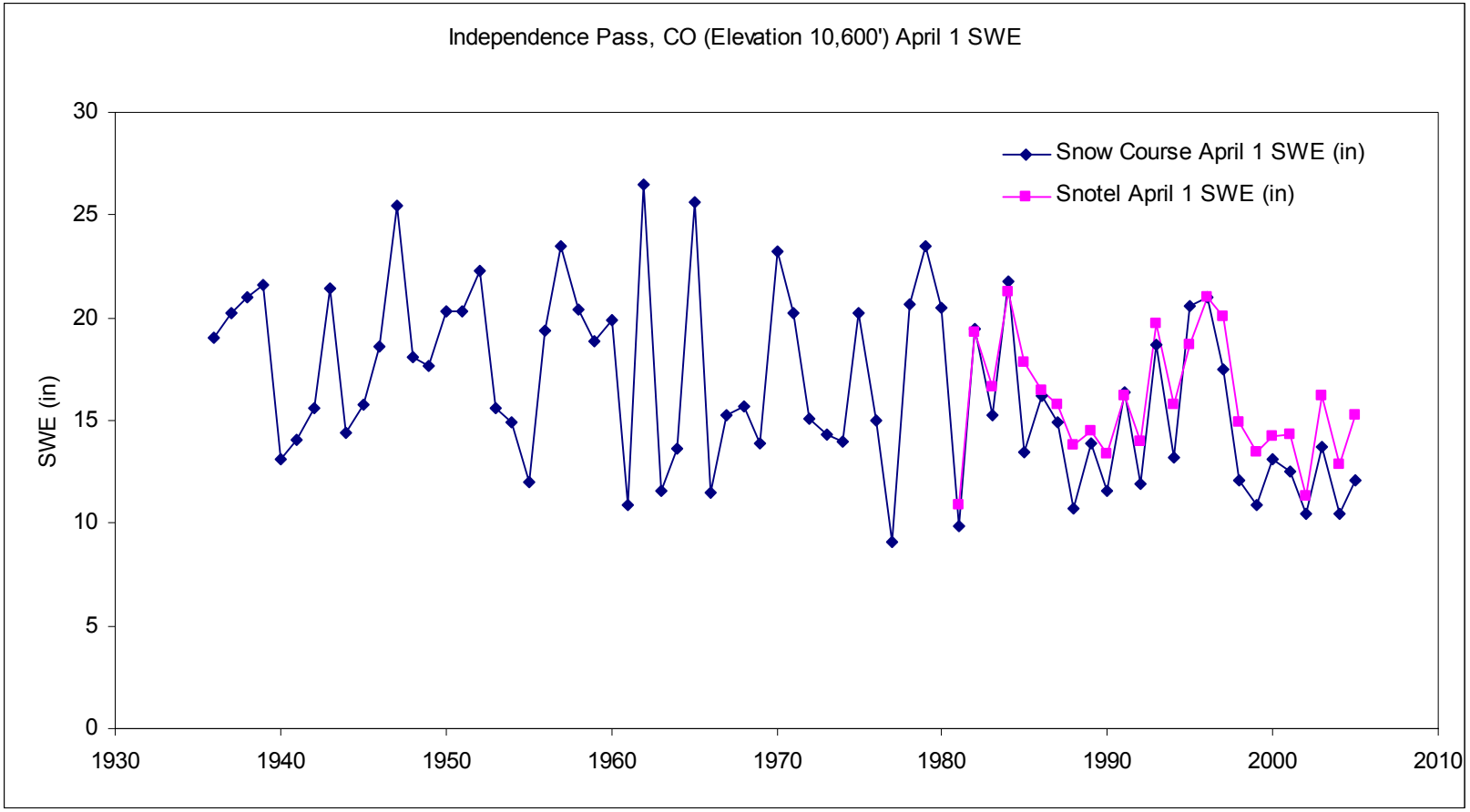
University Camp
April 1 Snow Course and Snotel



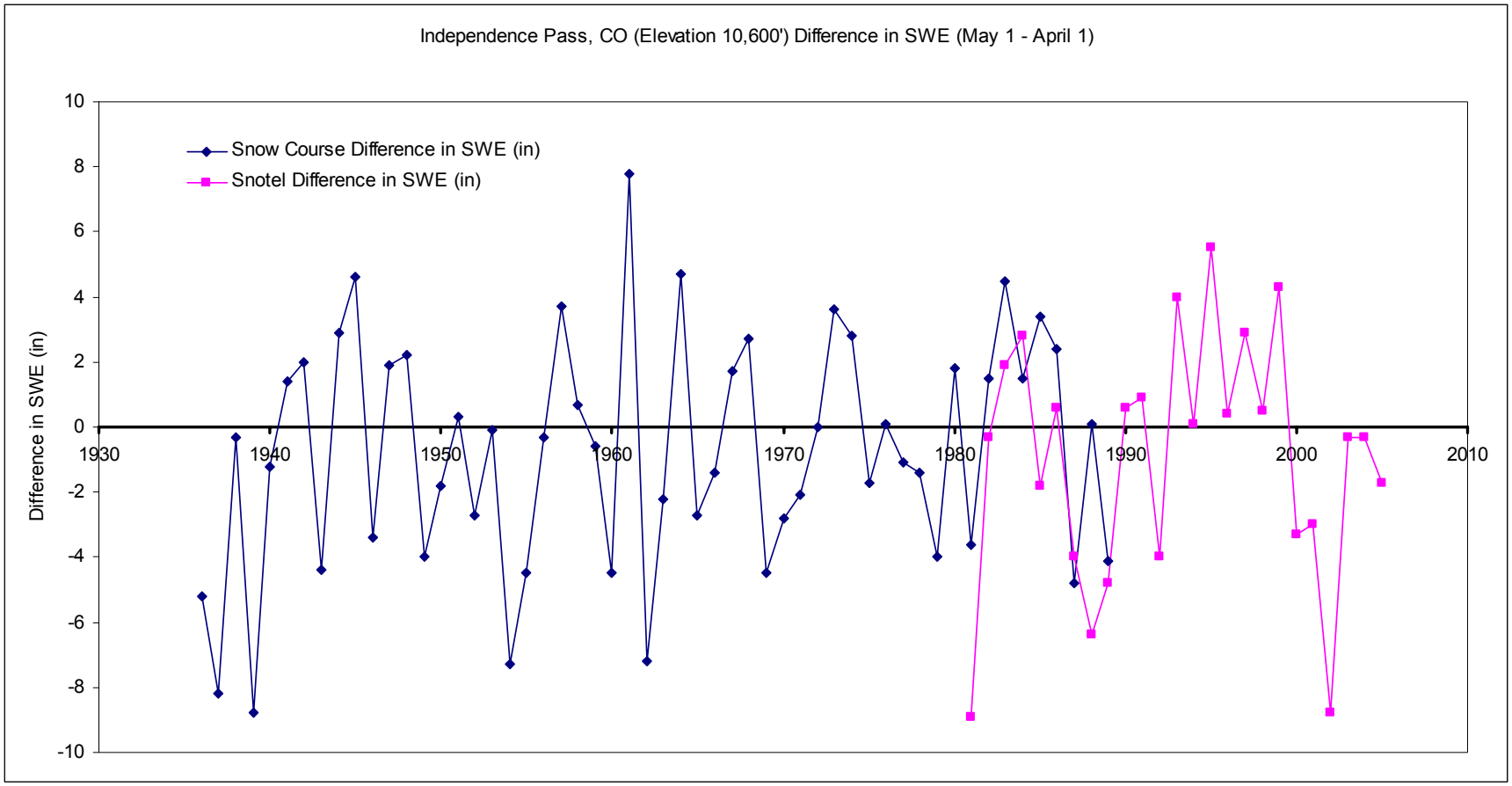
University Camp
May 1 – April 1 SWE Difference



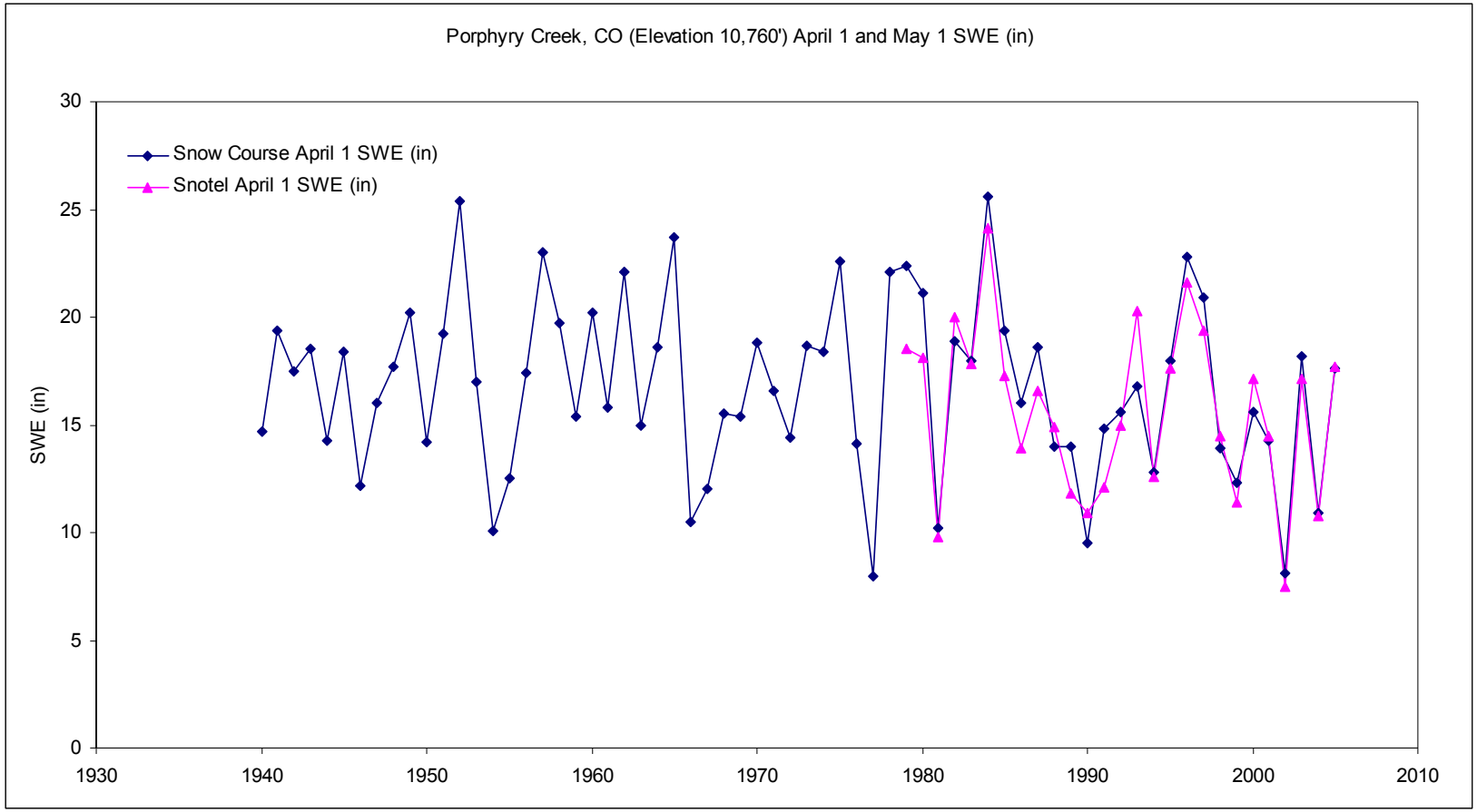
Independence Pass
April 1 Snow Course and Snotel



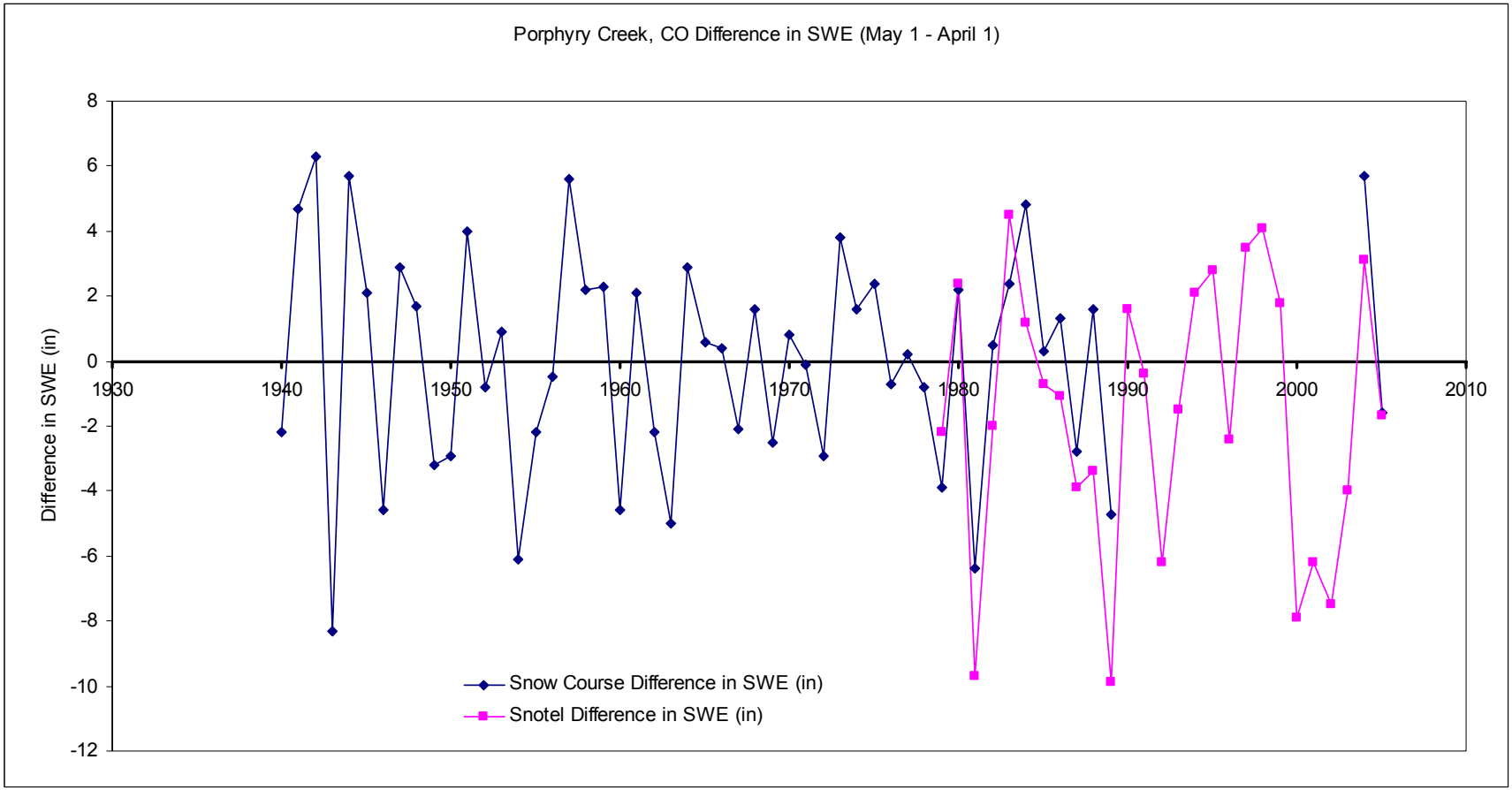
Independence Pass
May 1 – April 1 SWE Difference



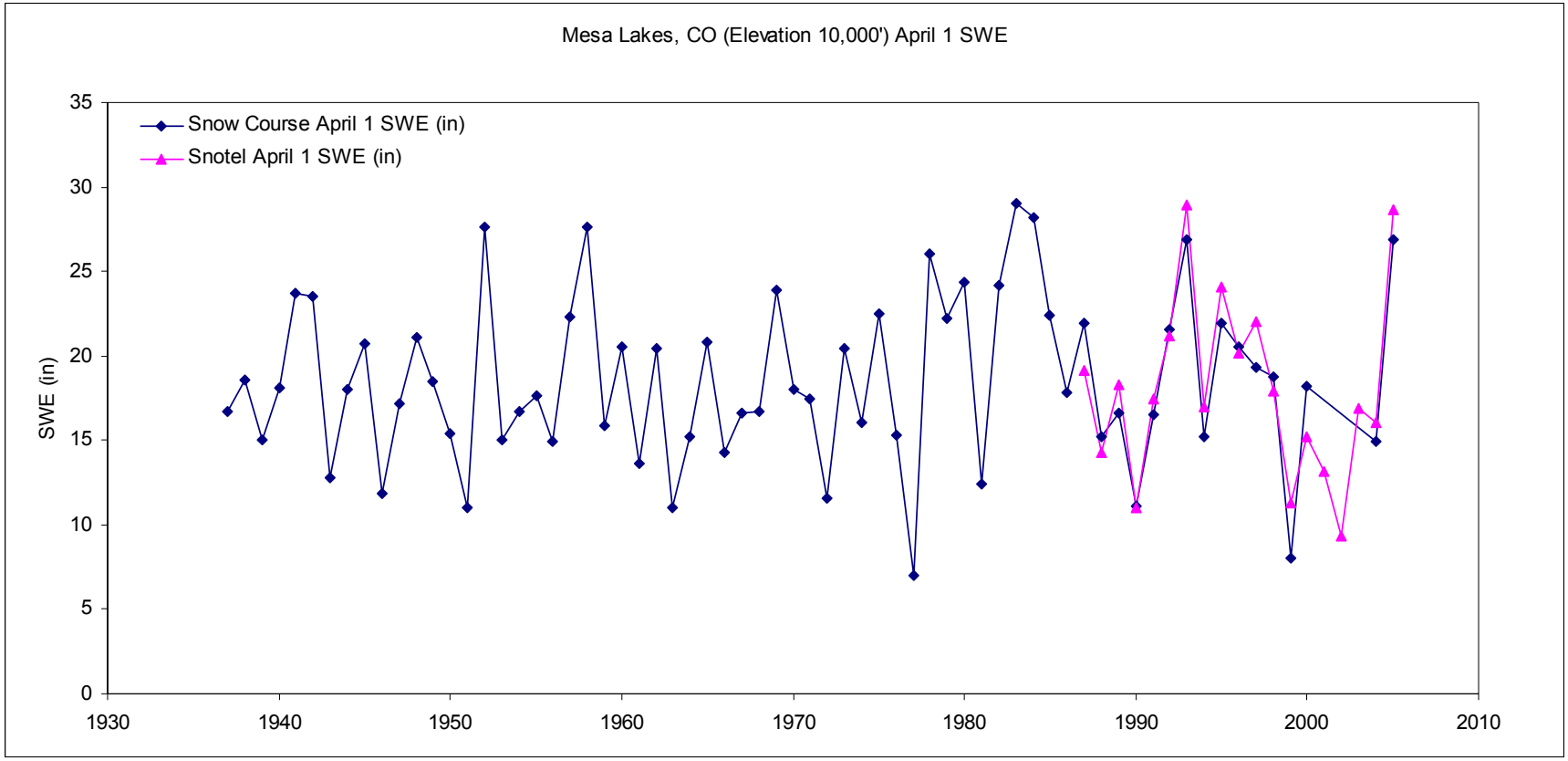
Porphyry Creek
April 1 Snow Course and Snotel



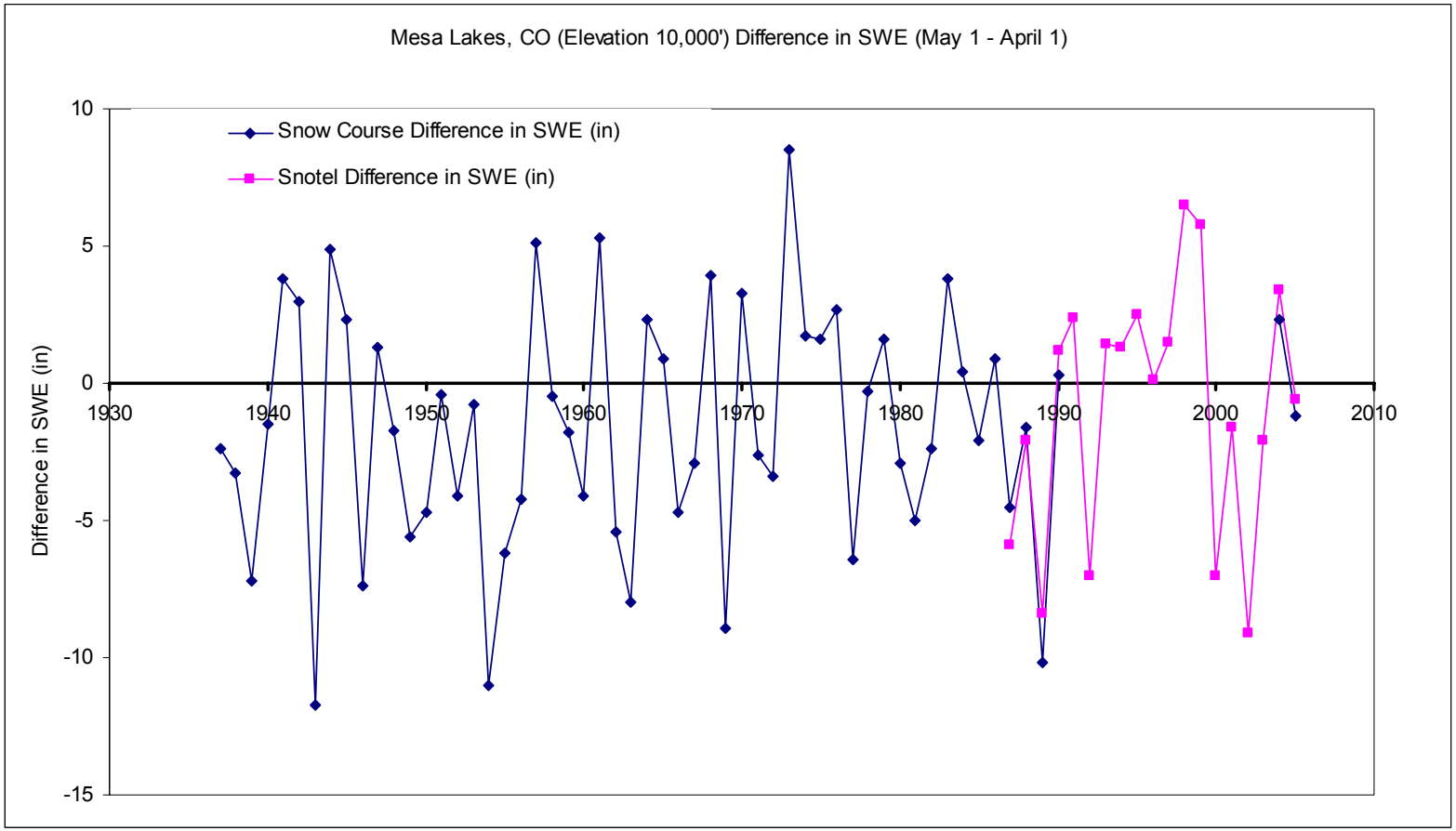
Porphyry Creek
May 1 – April 1 SWE Difference



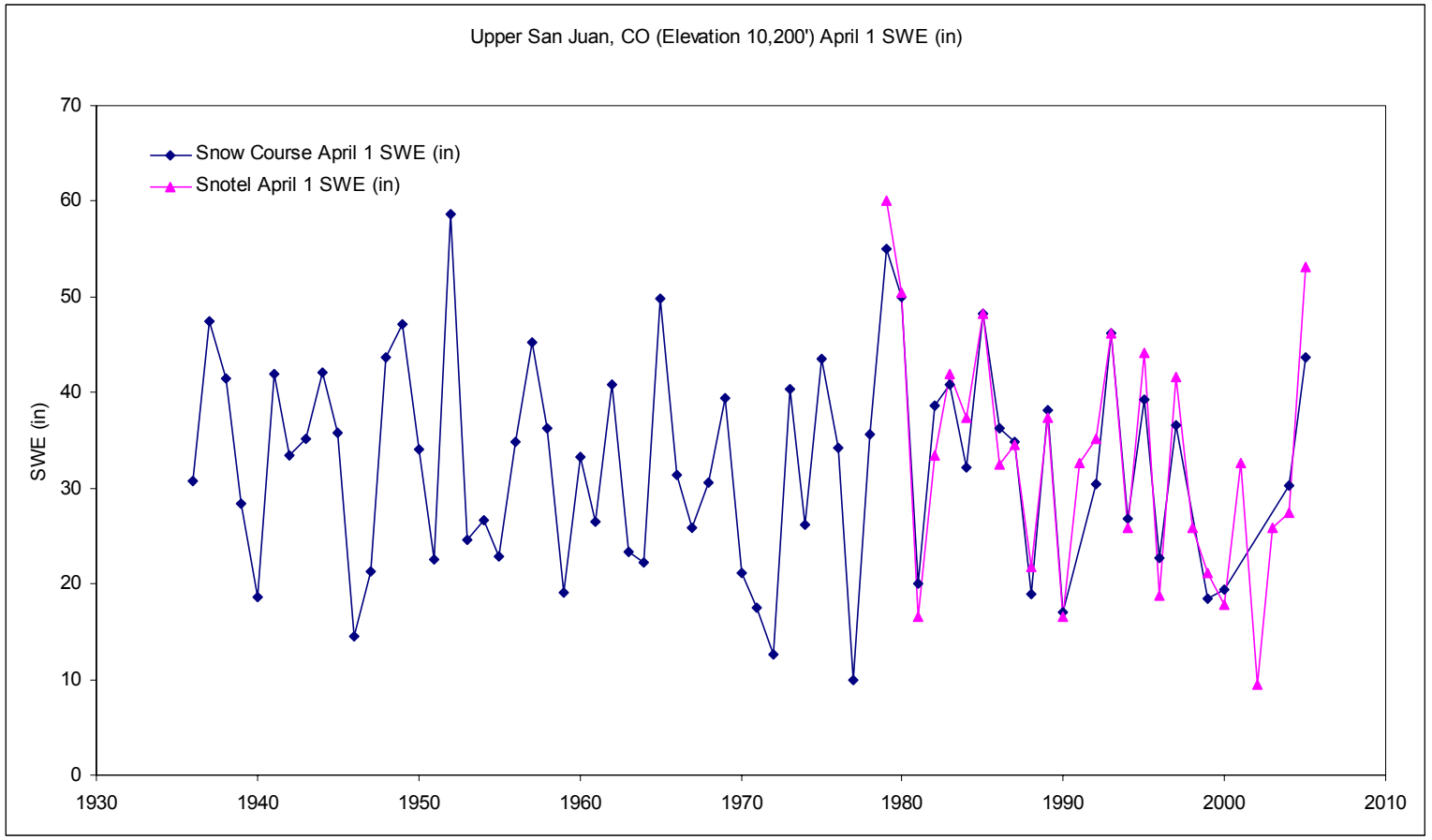
Mesa Lakes
April 1 Snow Course and Snotel



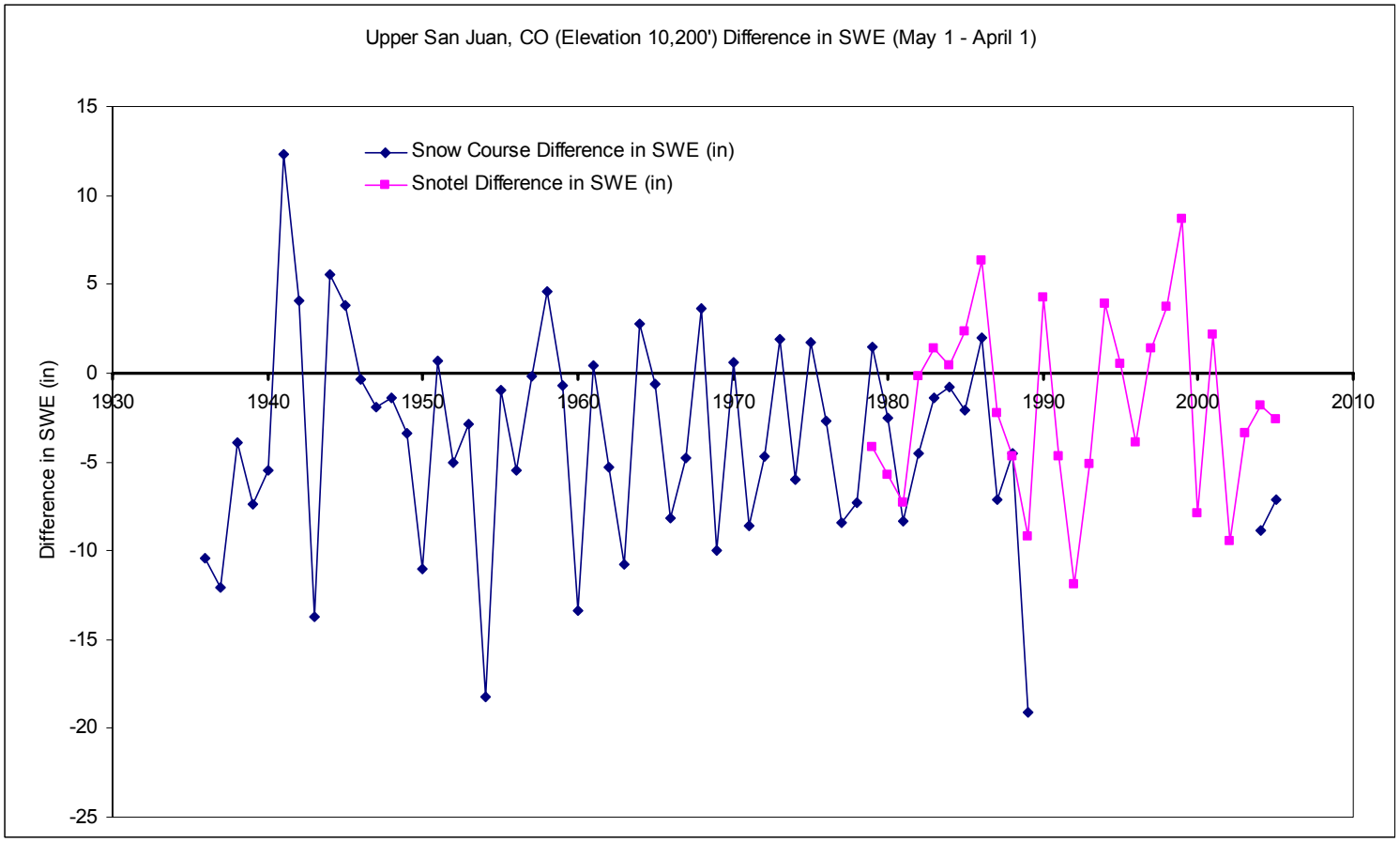
Mesa Lakes
May 1 – April 1 SWE Difference



Upper San Juan
April 1 Snow Course and Snotel



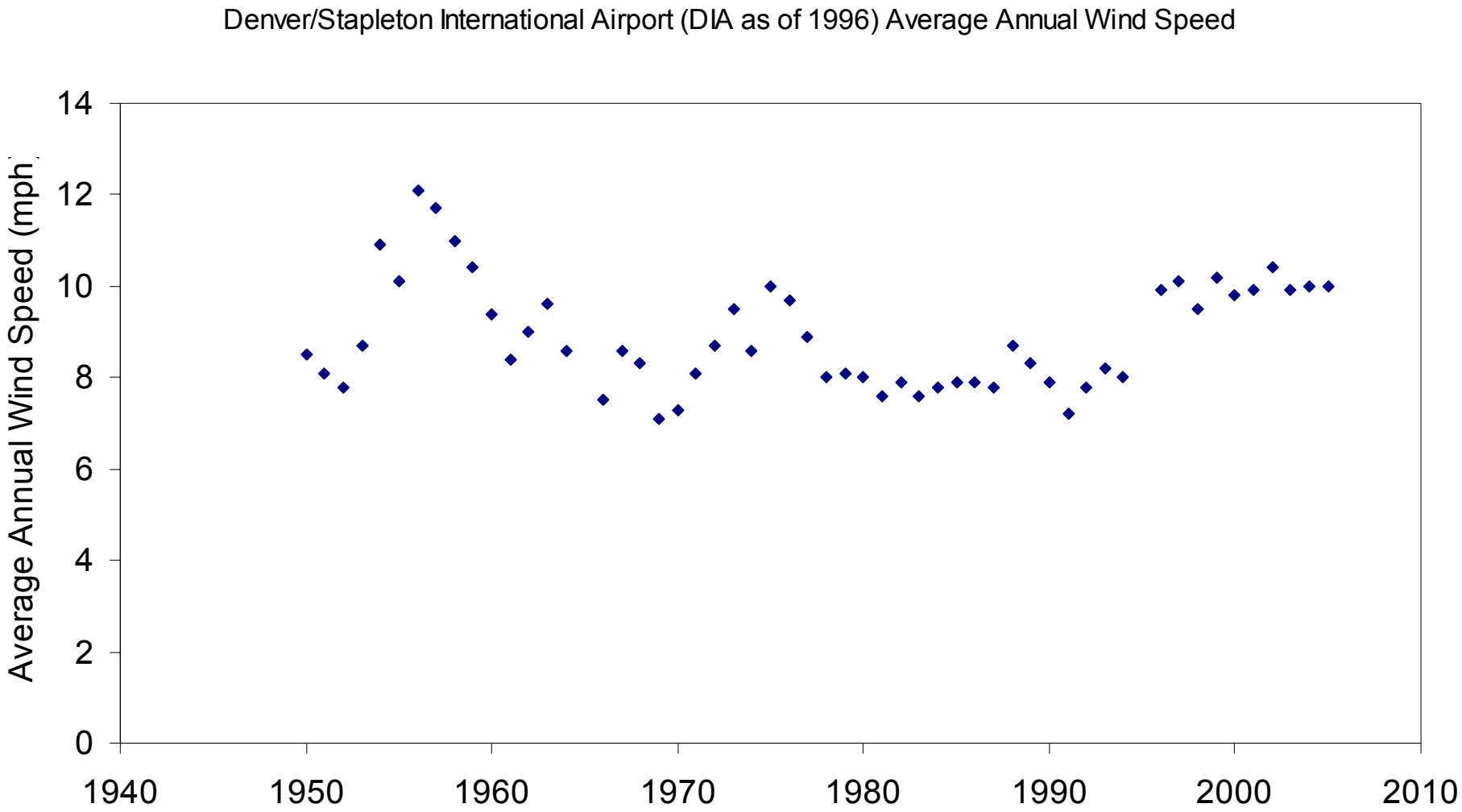
Upper San Juan
May 1 – April 1 SWE Difference



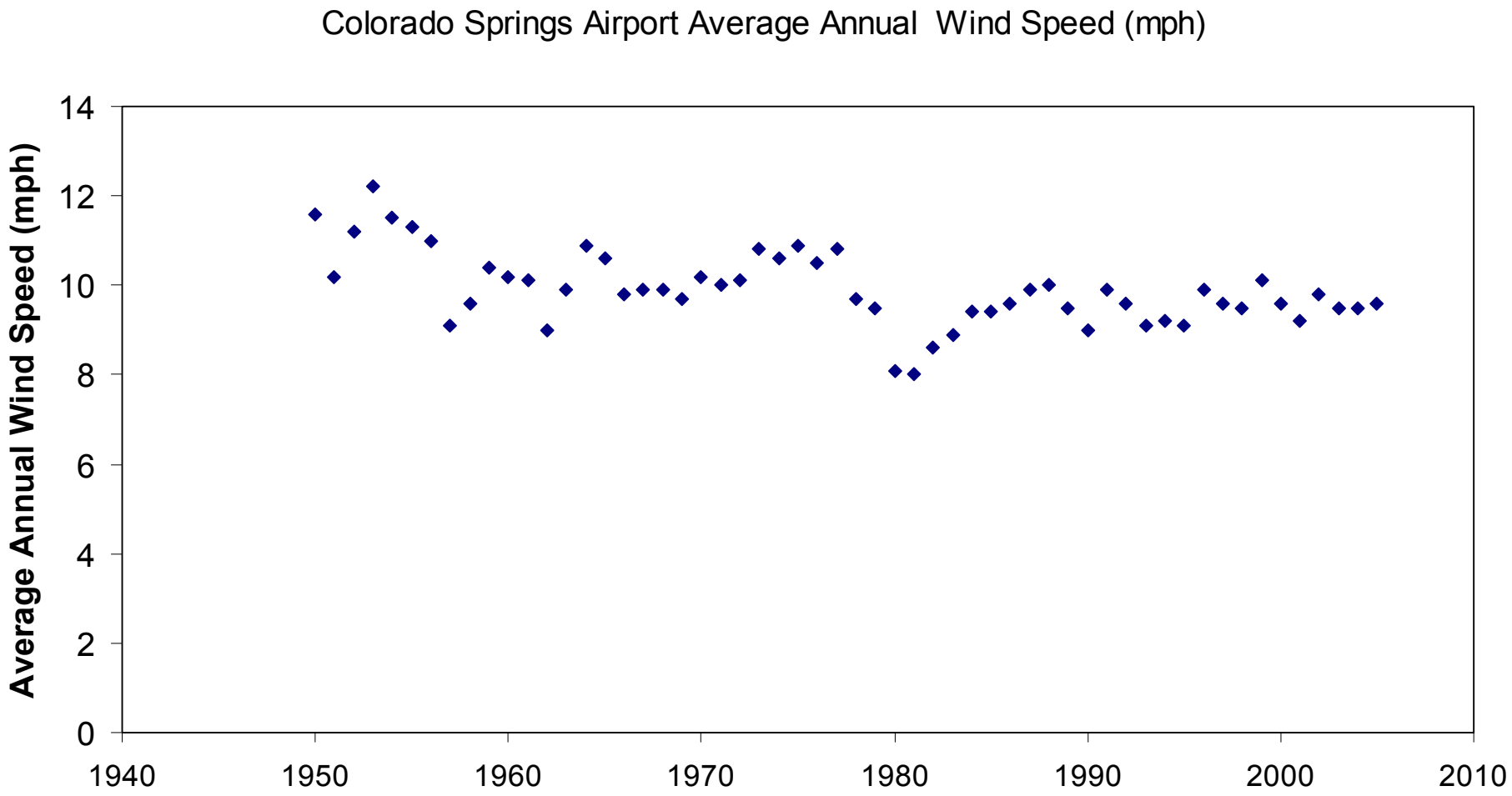
Wind!!

http://www.state.co.us/oemc/programs/renewable/anemometer.htm

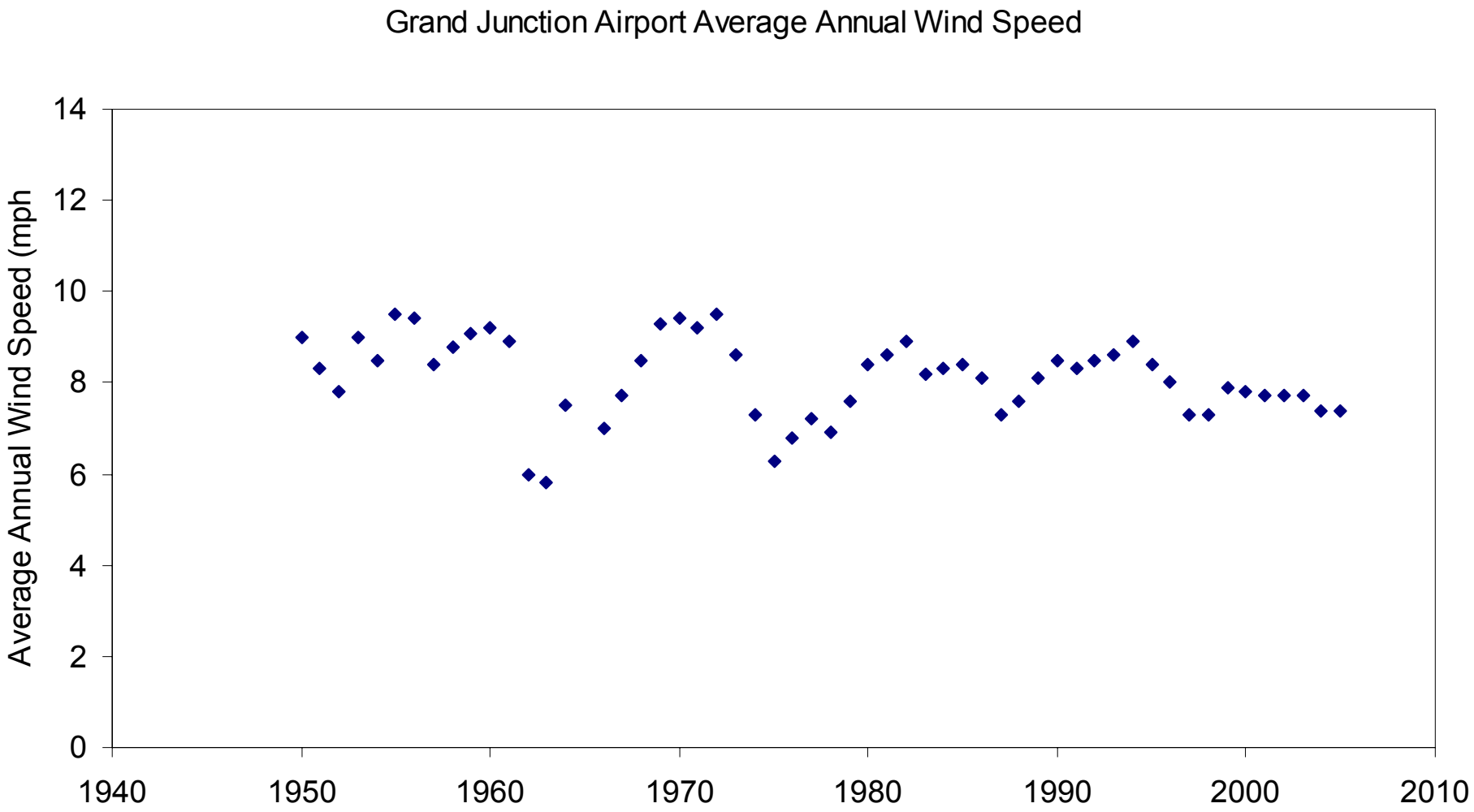
Denver Average Annual Wind Speed

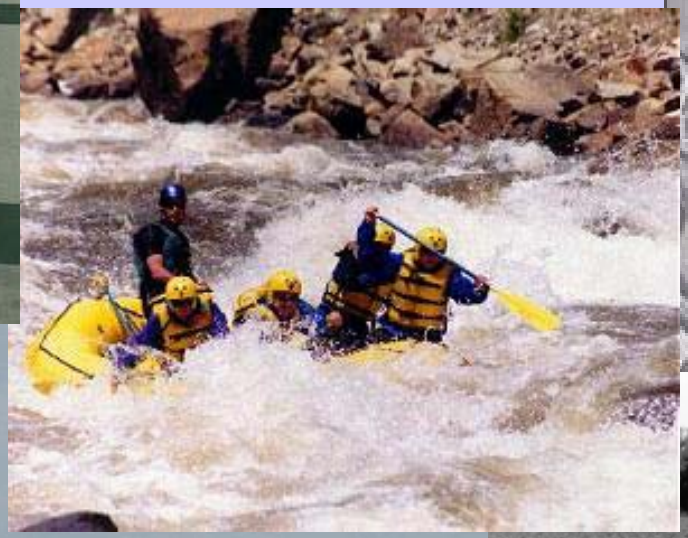


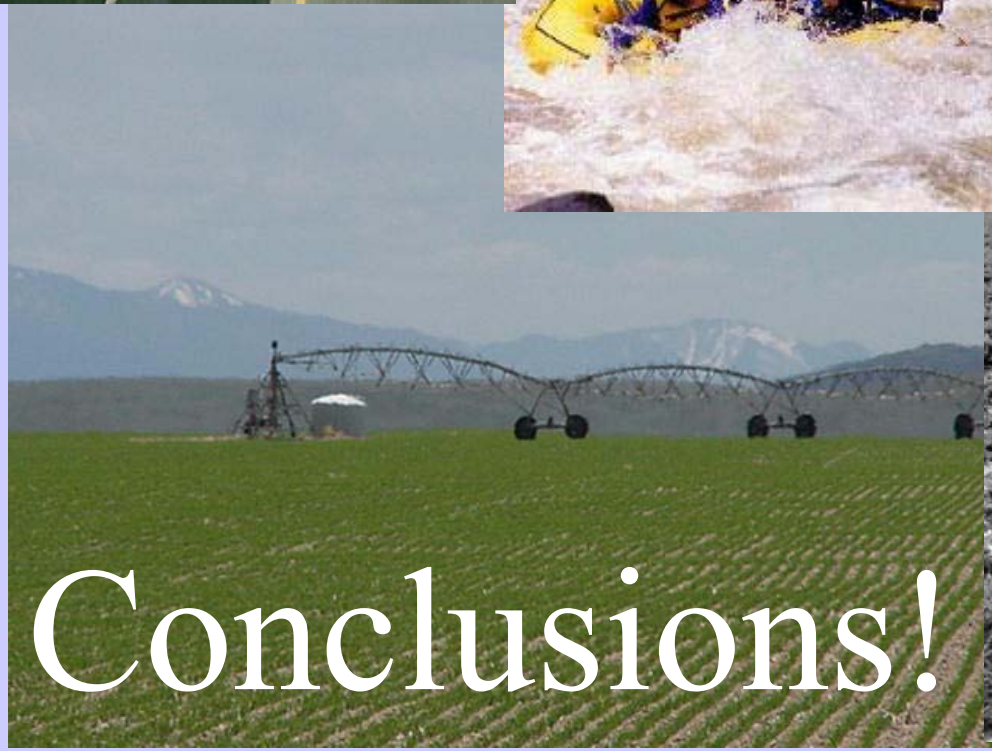
Colorado Springs Average Annual Wind Speed



Grand Junction Average Annual Wind Speed

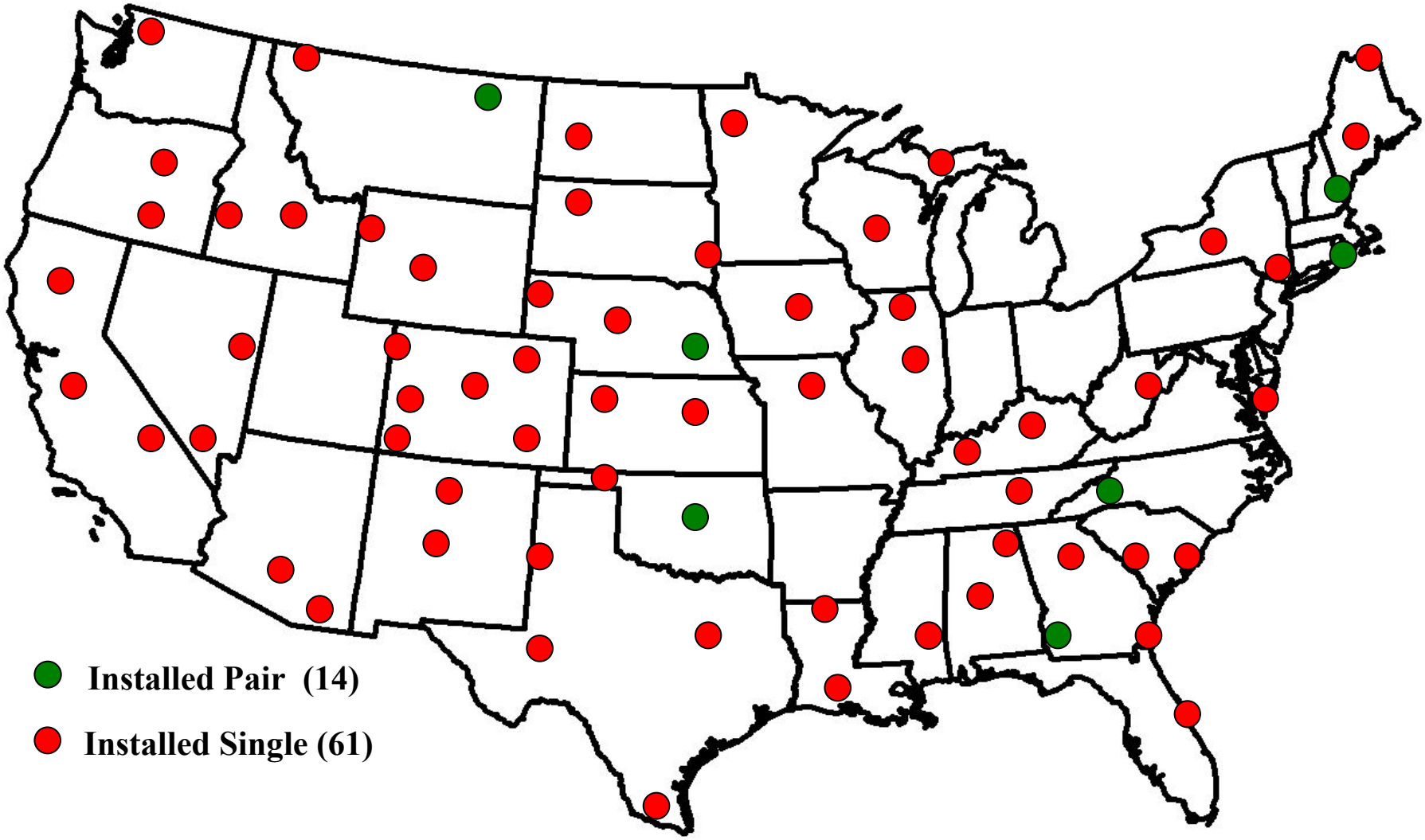






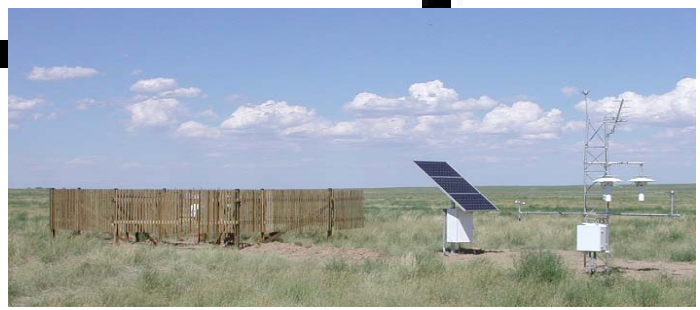
Conclusions!

Climate Reference Network (CRN)



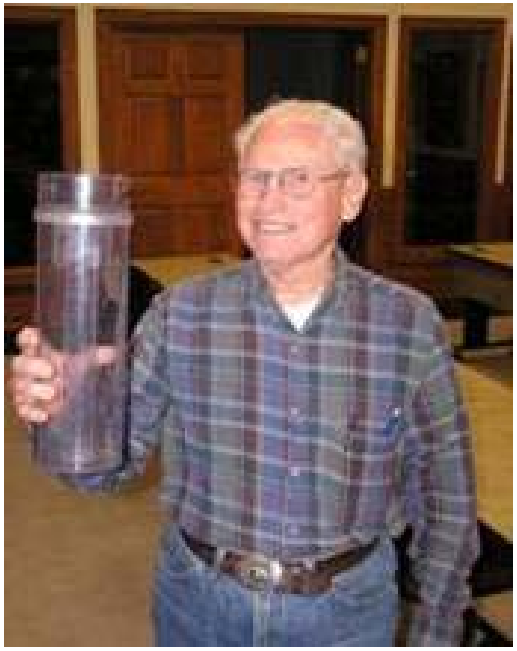
http://www.ncdc.noaa.gov/oa/climate/uscrn/program.html

Climate Reference Network (CRN)



So, what should I do?

- Join CoCoRaHS!



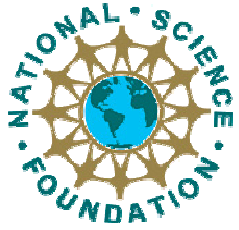
CoCoRaHS

Community Collaborative Rain, Hail & Snow Network

Community Collaborative Rain, Hail and Snow Network

For More Information,
Visit the CoCoRaHS Web Site

http://www.cocorahs.org



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and
many local charter sponsors.

Colorado Climate Center

Data and Power Point Presentations available for downloading

http://ccc.atmos.colostate.edu

- click on “Drought”
- then click on “Presentations”

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Knowledge to Go Places

Colorado Climate Center