

# Precipitation Characteristics of the San Luis Valley during Summer 2006

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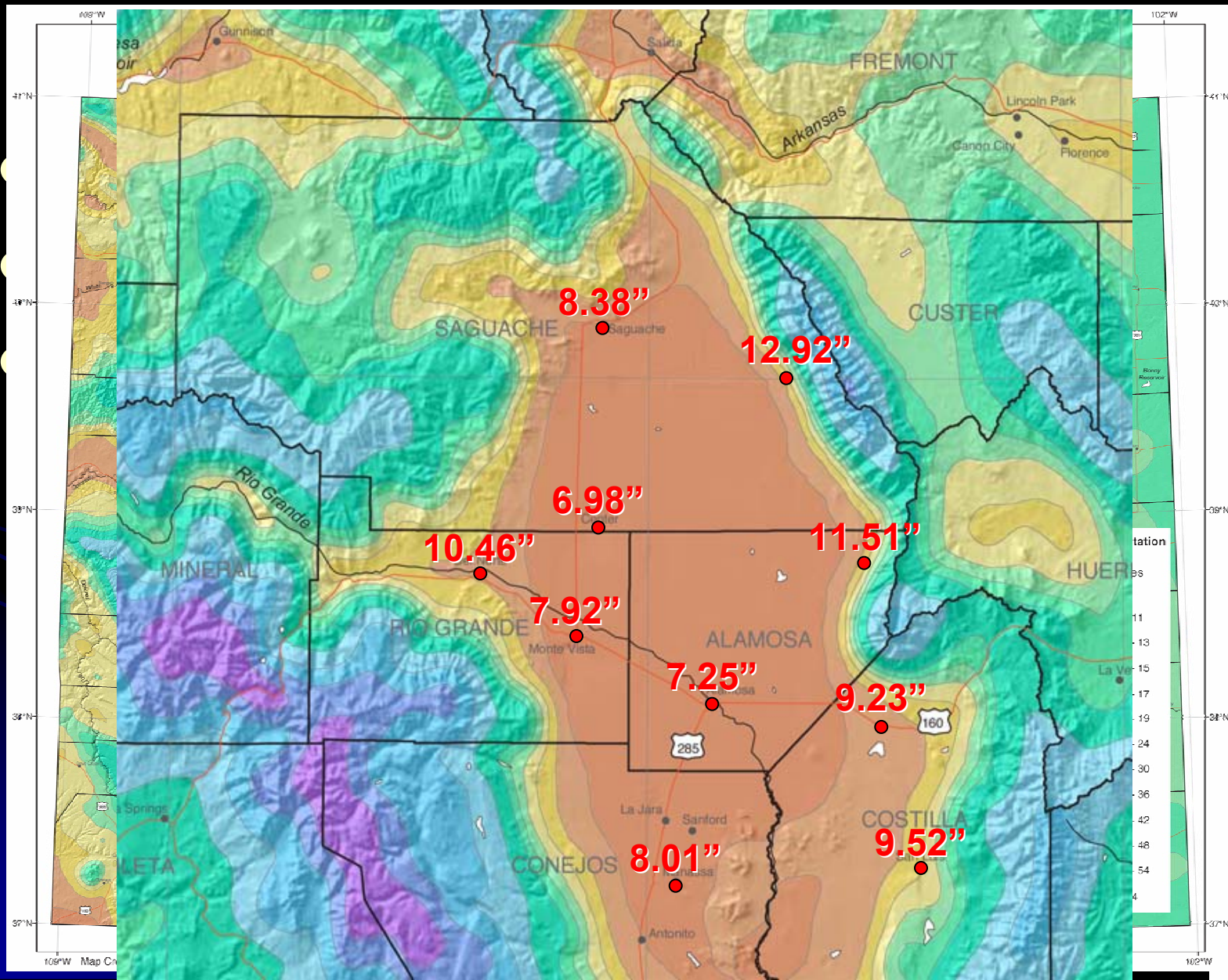
Prepared for Colorado Water Conservation Board  
Town Hall Meeting, November 27, 2006, Center, CO

# San Luis Valley Climate

- Driest part of Colorado with average annual precipitation 7-8 inches annually
- Normal wet season is July-August
- Much ground water originates as snow melt from surrounding mountains

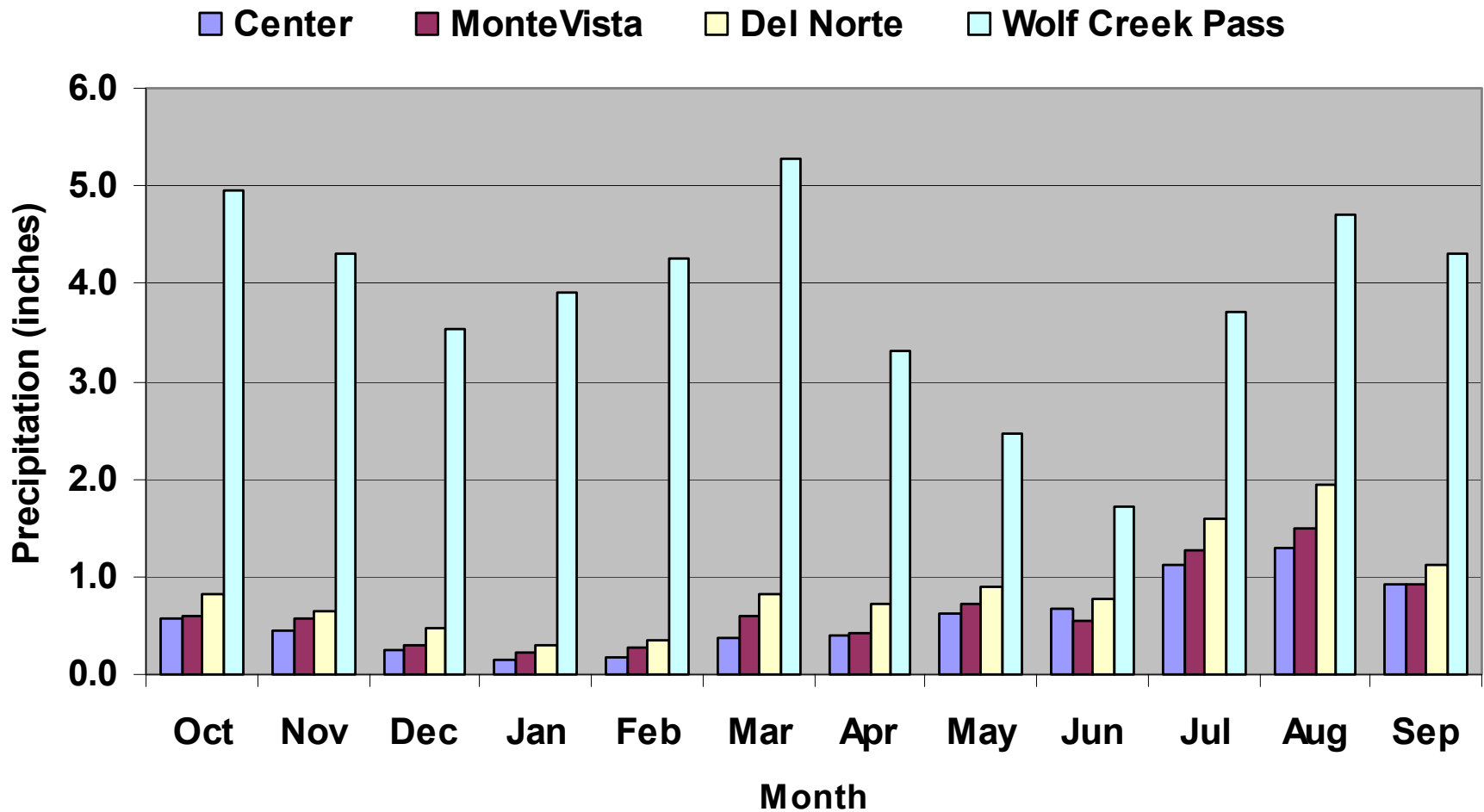


# Precipitation Climatology



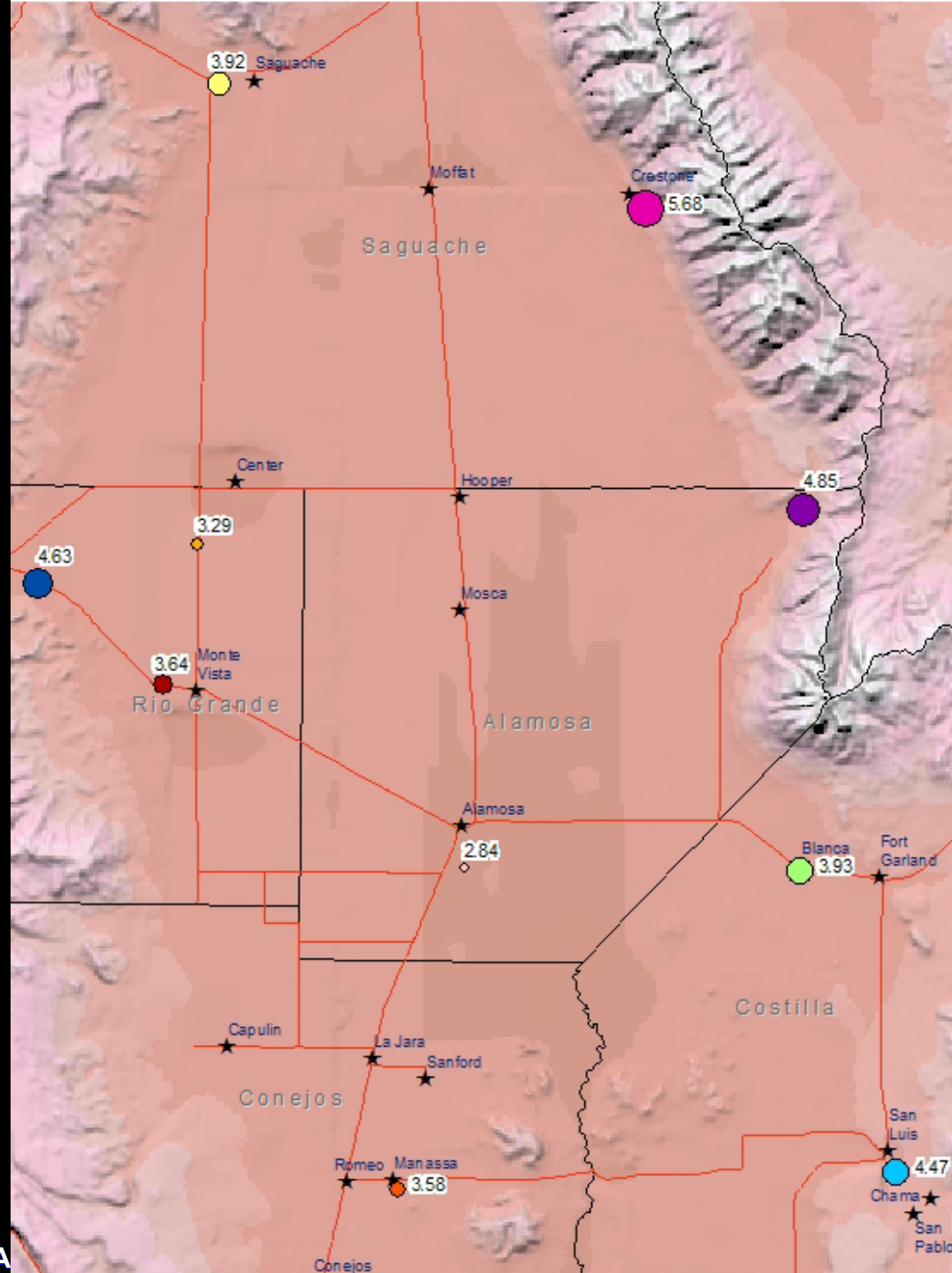
# Seasonal Patterns of Precipitation

Water Year Precipitation Averages (1971-2000)





# June 15 – Sept 15 Average (1971-2000) Precipitation for NWS Stations

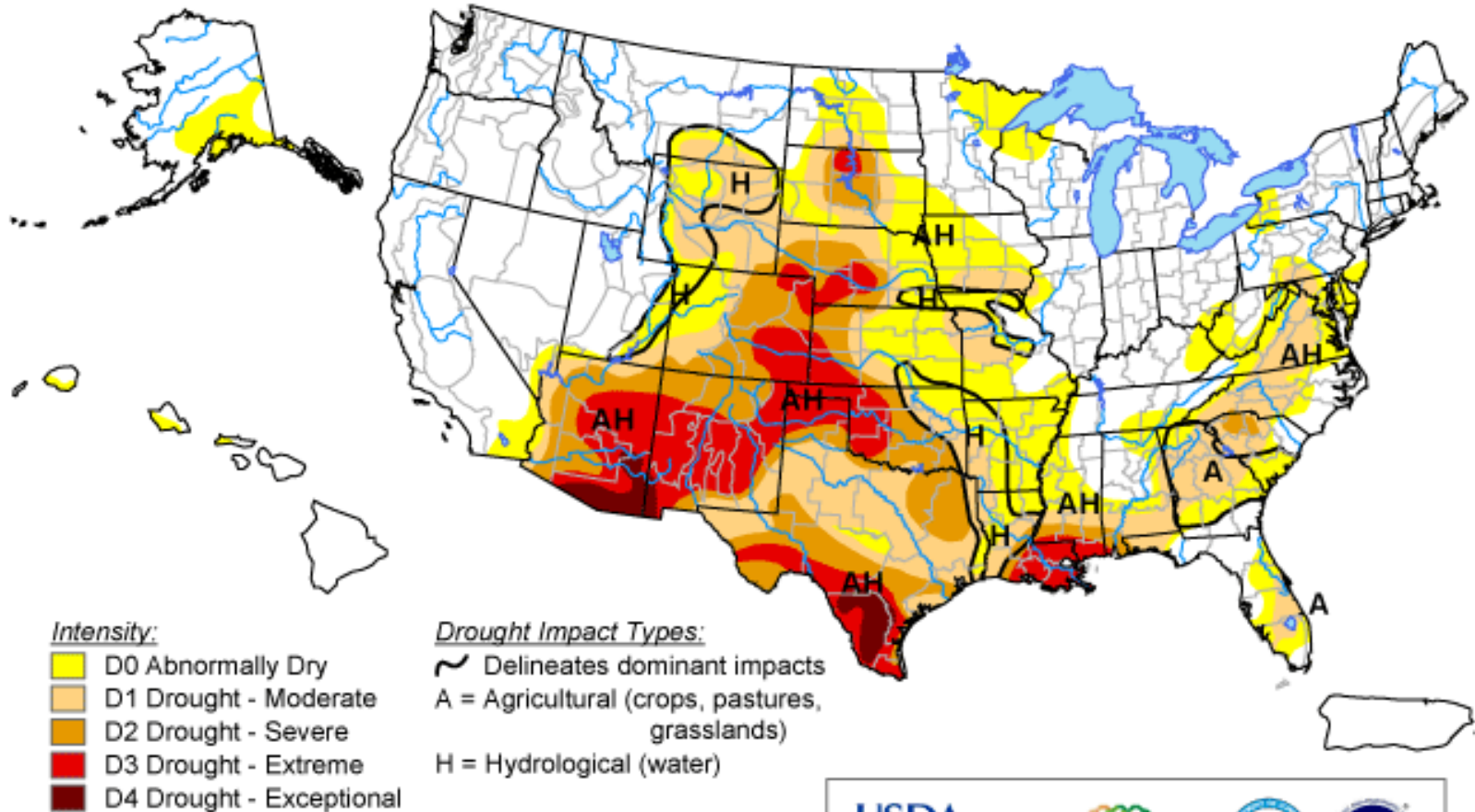


# U.S. Drought Monitor

## U.S. Drought Monitor

June 13, 2006

Valid 8 a.m. EDT



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

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

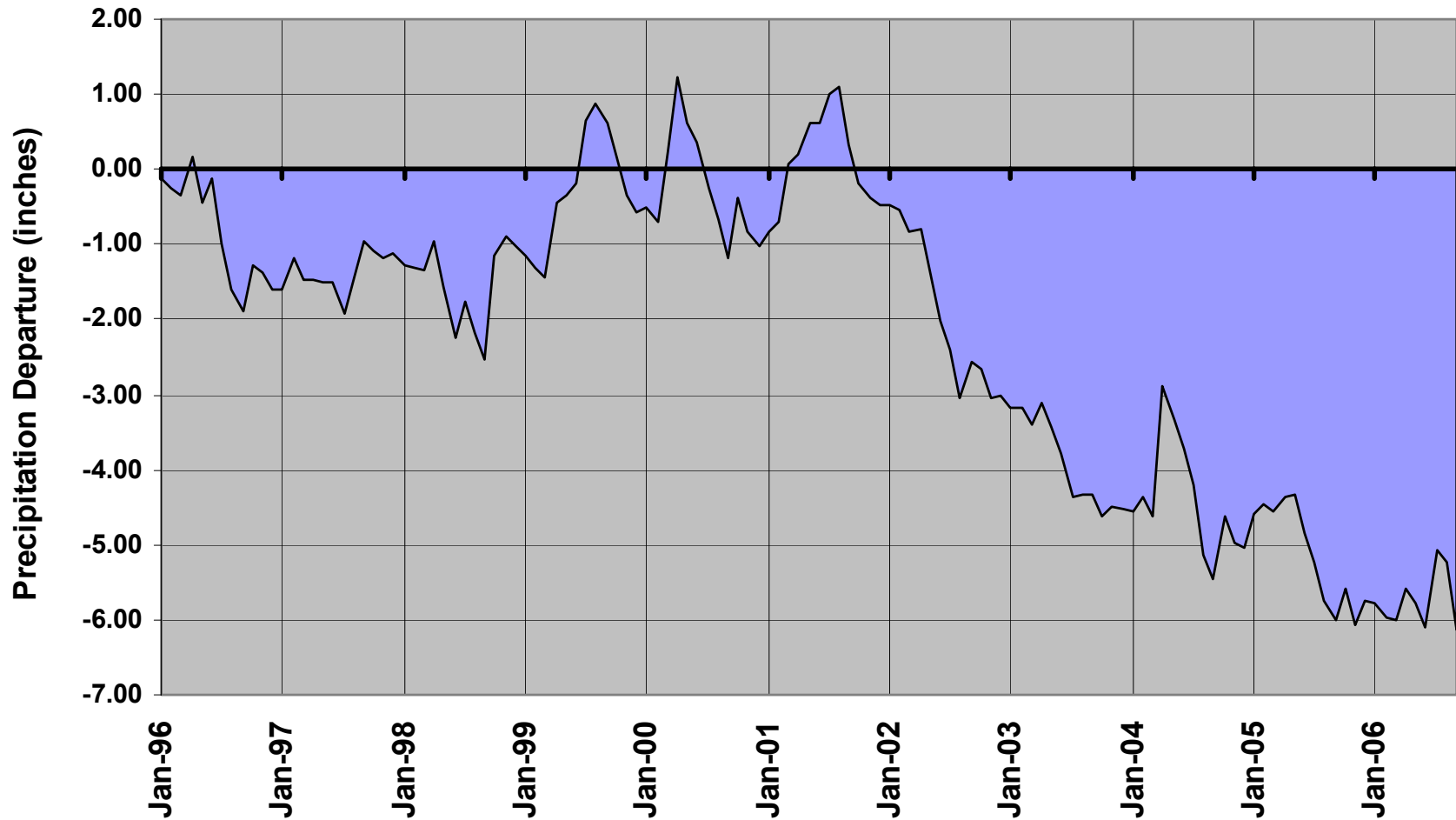


Released Thursday, June 15, 2006

Author: Rich Tinker, Climate Prediction Center, NOAA

# Center Accumulated Precipitation Departures

## Center Accumulated Precipitation Departure from Average



# 2006 Summer (June 15 – September 15) Precipitation Study



Hail Cannon



# Sources of Precipitation Data for 2006

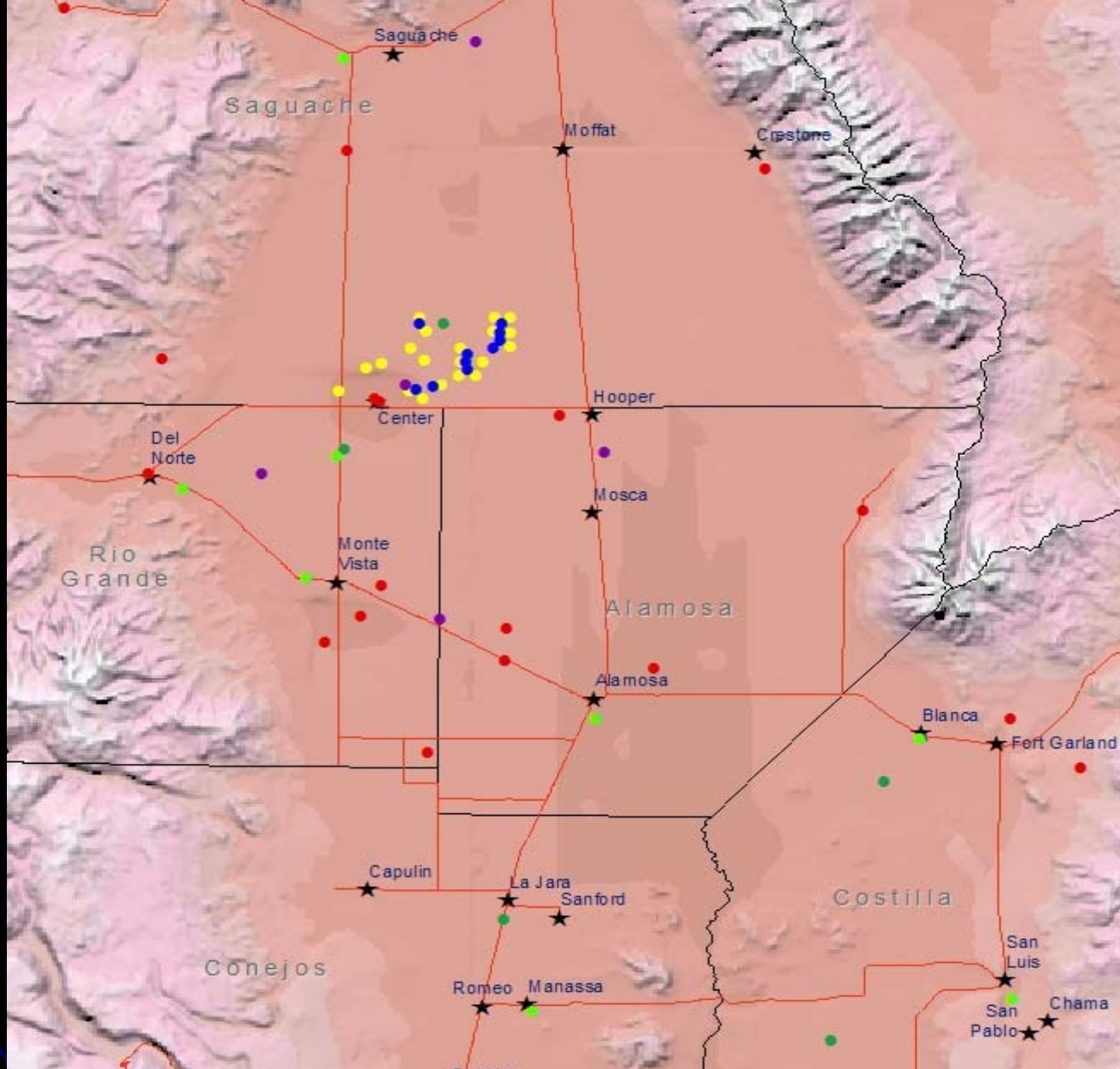
## Summer Rain and Hail Analysis

- Southern Colorado Farms
  - 20 manual precipitation and hail stations
- CoCoRaHS (*Community Collaborative Rain, Hail, and Snow Network*)
  - 20 volunteer manual precipitation and hail stations
- CoAgMet (*Colorado Agricultural Meteorological Network*)
  - 5 automated precipitation stations
- NWS COOP (*Nat'l Weather Service Cooperative Observer Program*)
  - 10 manual precipitation and hail stations
- Agro Engineering
  - 5 automated precipitation stations



# Distribution of Stations in Network

Hail Cannons – Blue Dots



## Rain Gage/Hail Cannons

- AGRO ENGINEERING
- HAIL CANNON
- COAGMET

## COCORAHS

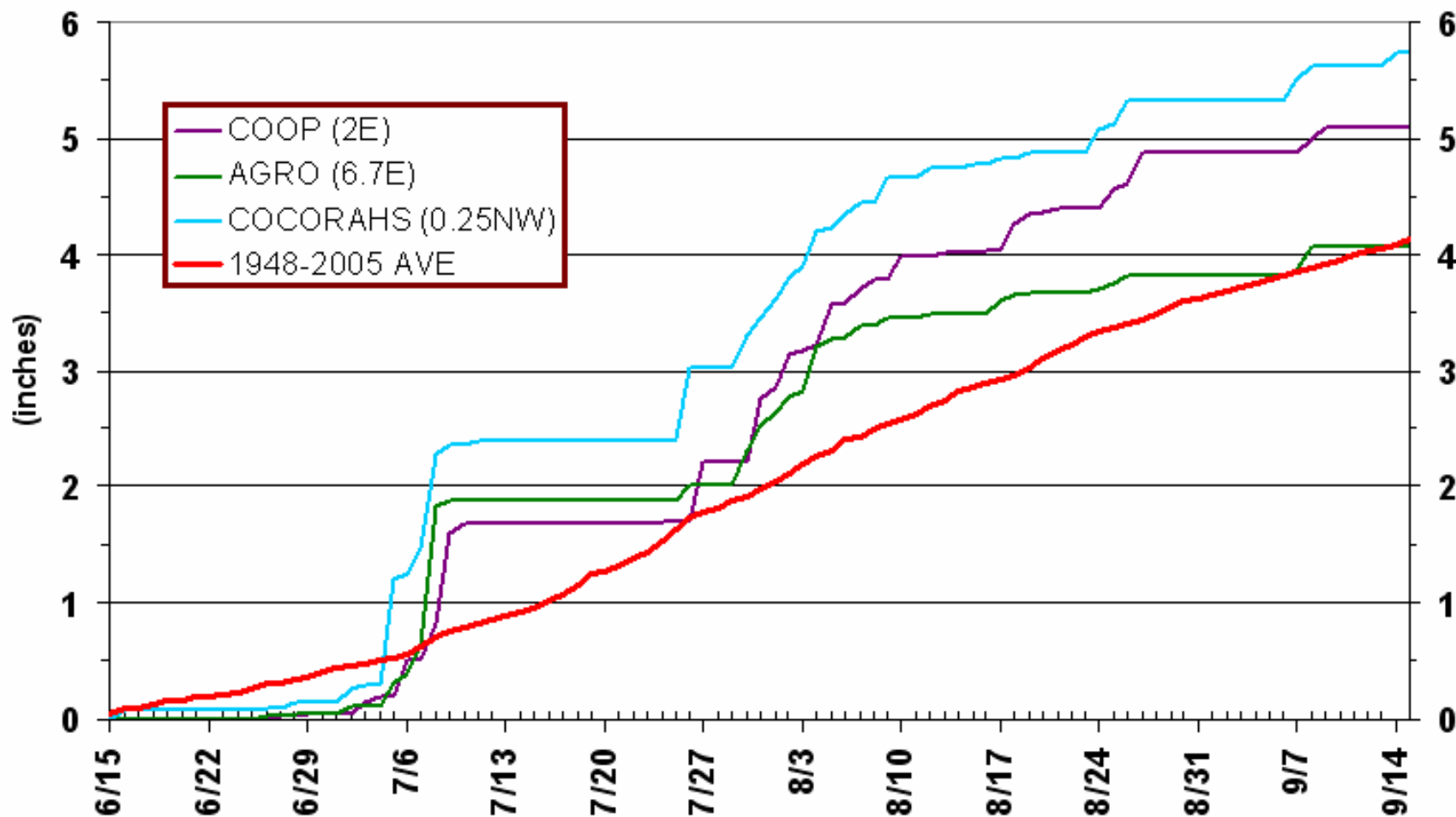
- COOP
- SO.COLORADO FARMS

## Cities/Towns

- ★ Cities/Towns
- Highways
- Counties

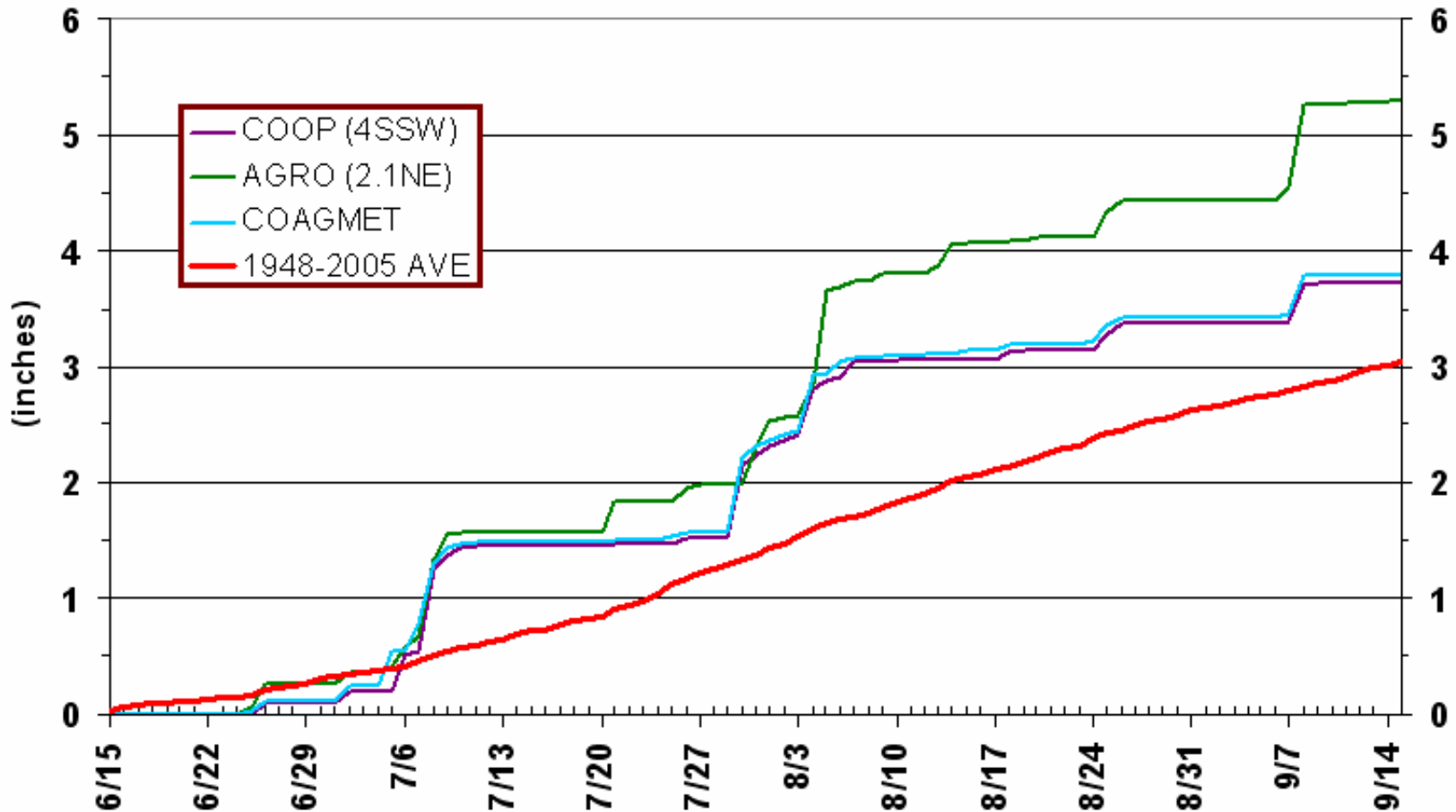
# Daily Rainfall Accumulation, Summer 2006 for Stations near Del Norte

ACCUMULATED PRECIPITATION IN *DEL NORTE, CO*  
June 15 - September 15



# Daily Rainfall Accumulation, Summer 2006 for Station near Center

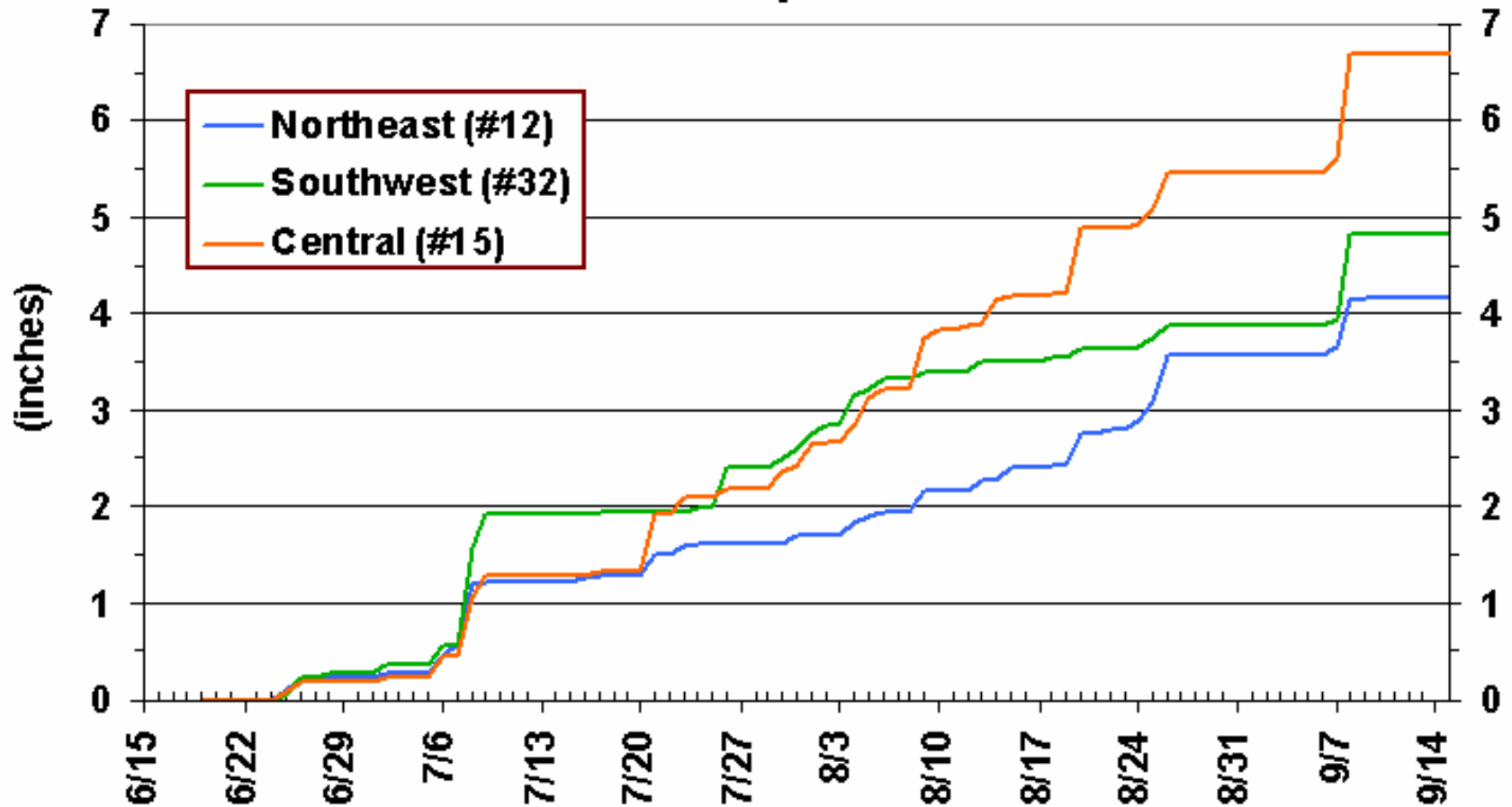
ACCUMULATED PRECIPITATION IN CENTER, CO  
June 15 - September 15



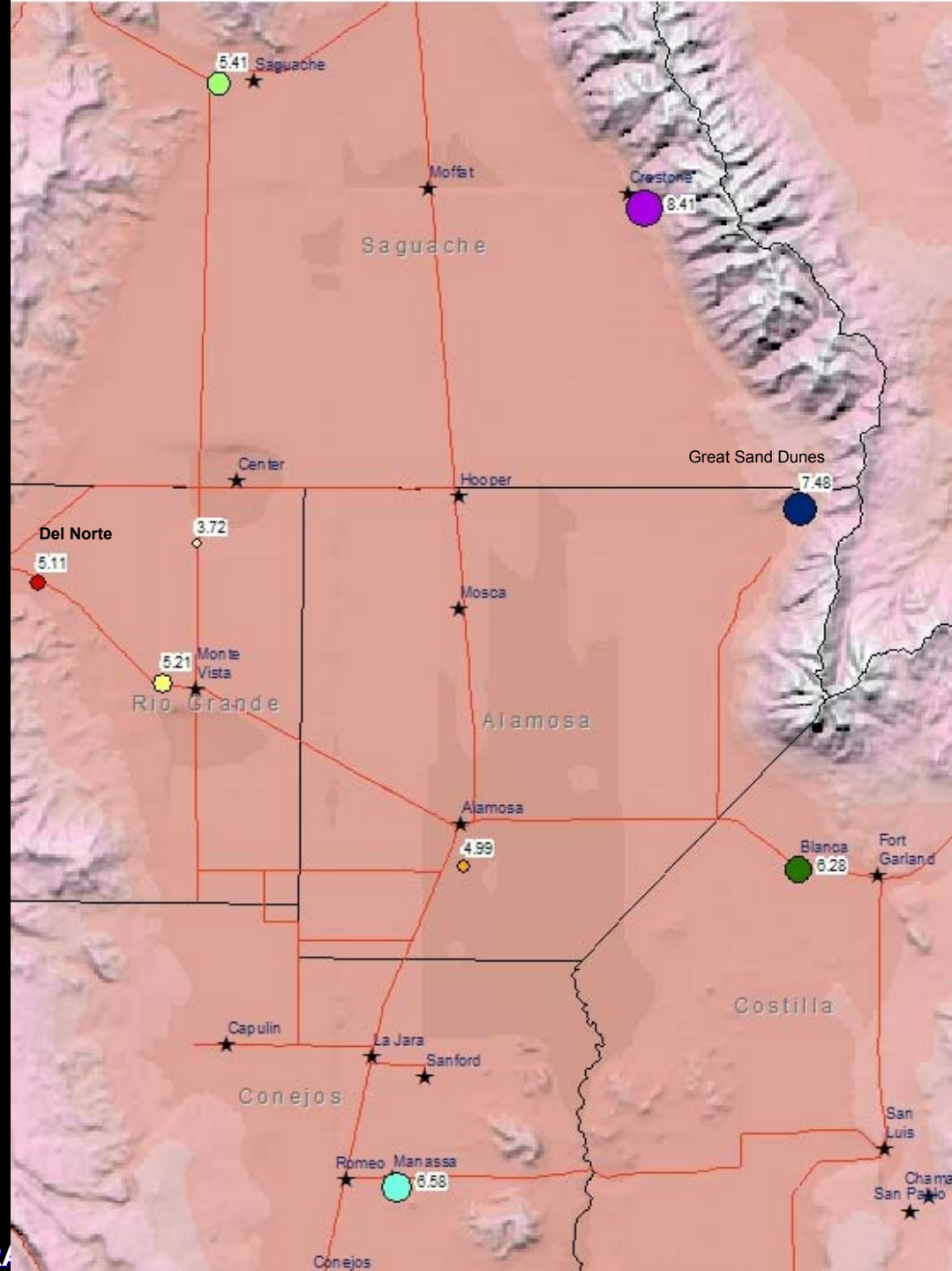


# Daily Rainfall Accumulation, Summer 2006 for Southern Colorado Farms

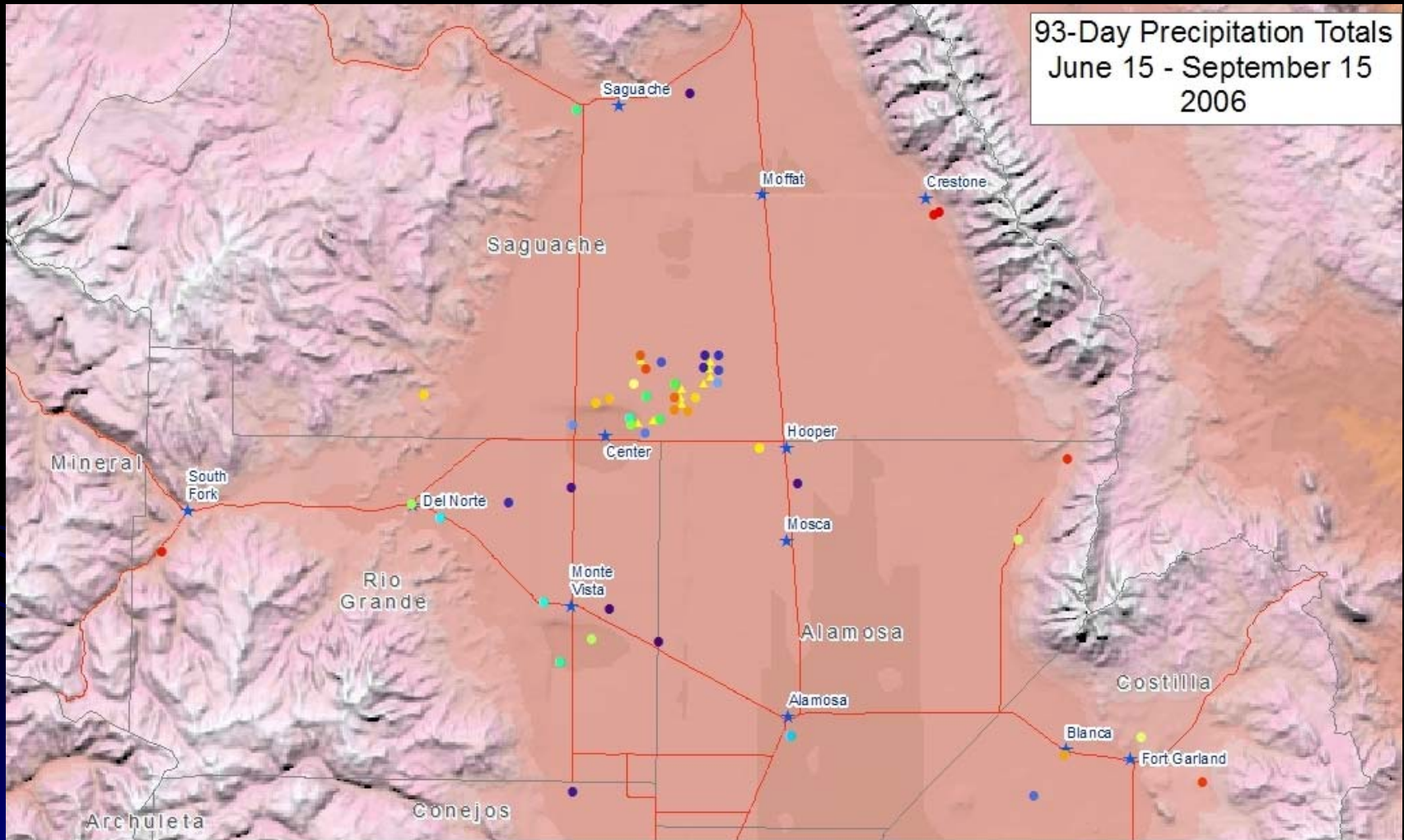
## Accumulated Precip at 3 SCF Fields



# June 15 – Sept 15, 2006 Precipitation for NWS Stations

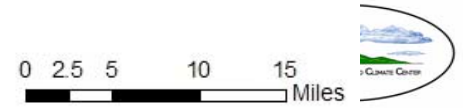


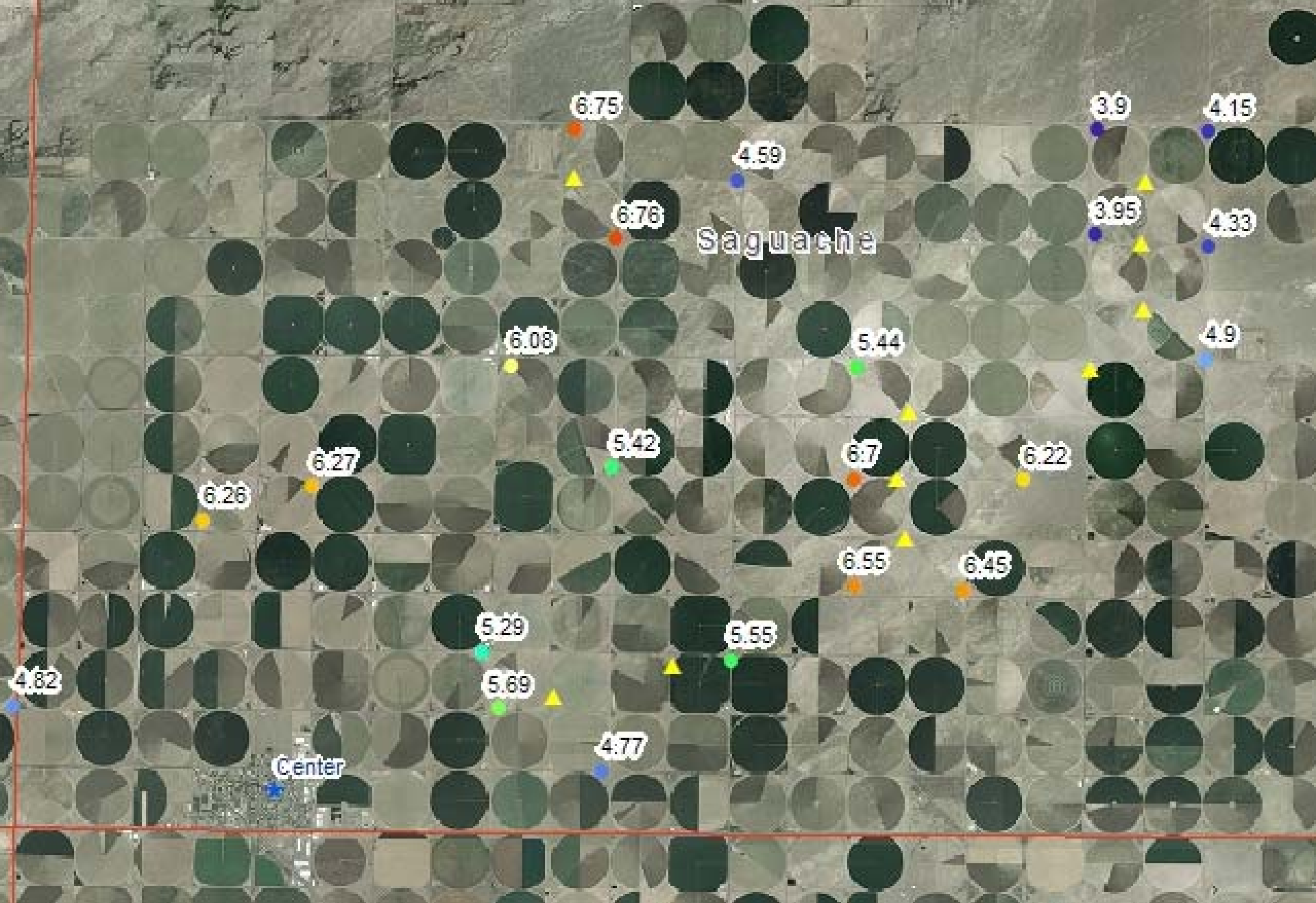
# San Luis Valley Precipitation for all stations/all networks, Jun 15 – Sep 15, 2006




- Hail Cannons
- ★ Cities/Towns
- Highways
- Counties
- Rain Gauges
- 8.41 1.2
- 93-Day Totals (inches)

Hail Cannons -- Yellow Triangles  
Rain Gauges -- Dots





 Counties

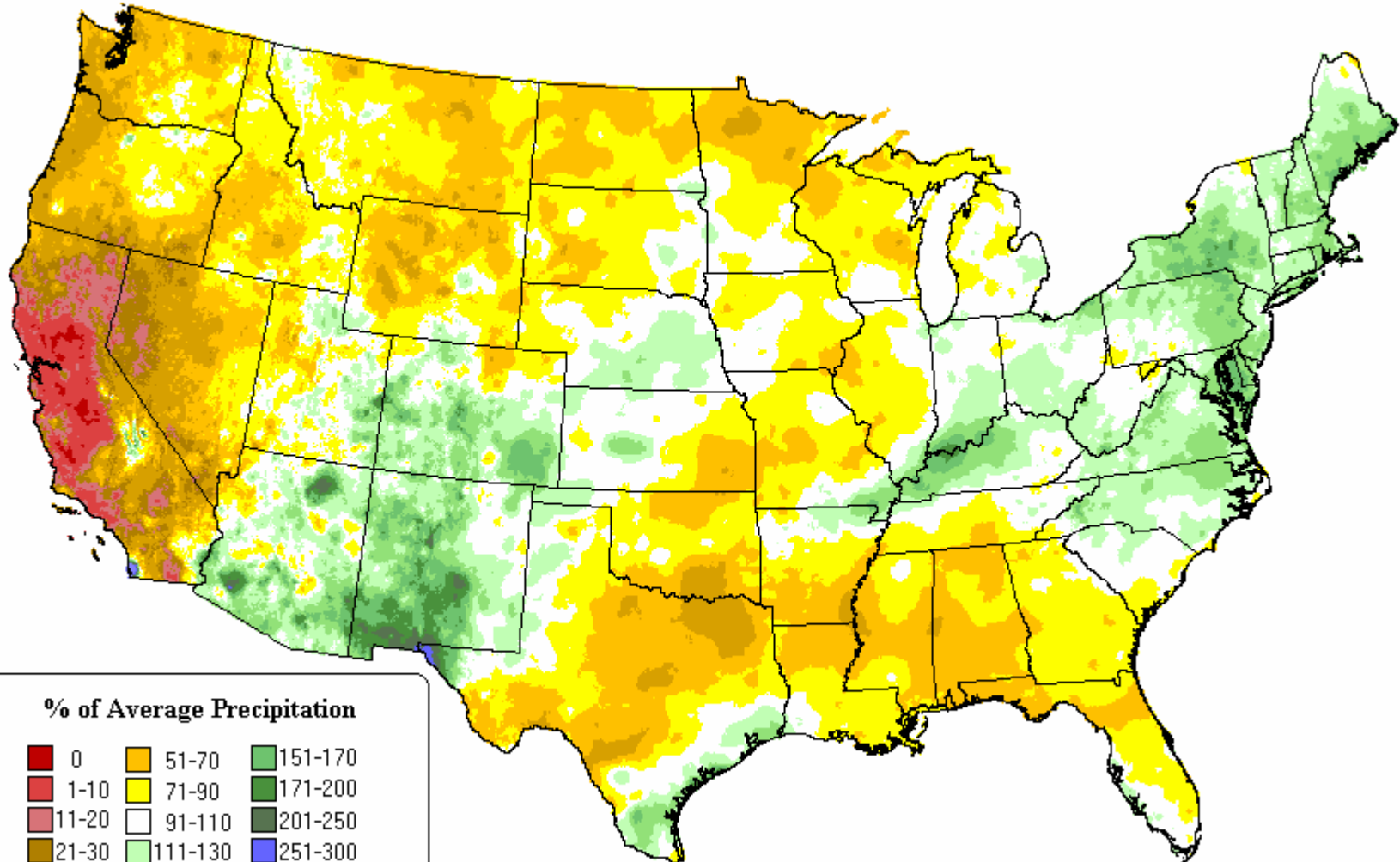
Background - 2005 NAIP Aerial Photography



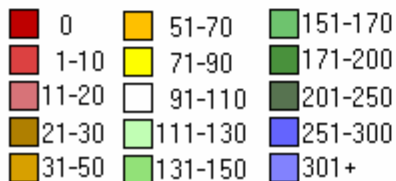


# June – September 2006 Precipitation as Percent of Average (from Prism)

4-month Percent of Average Precipitation: Sep 2006  
Provisional Data



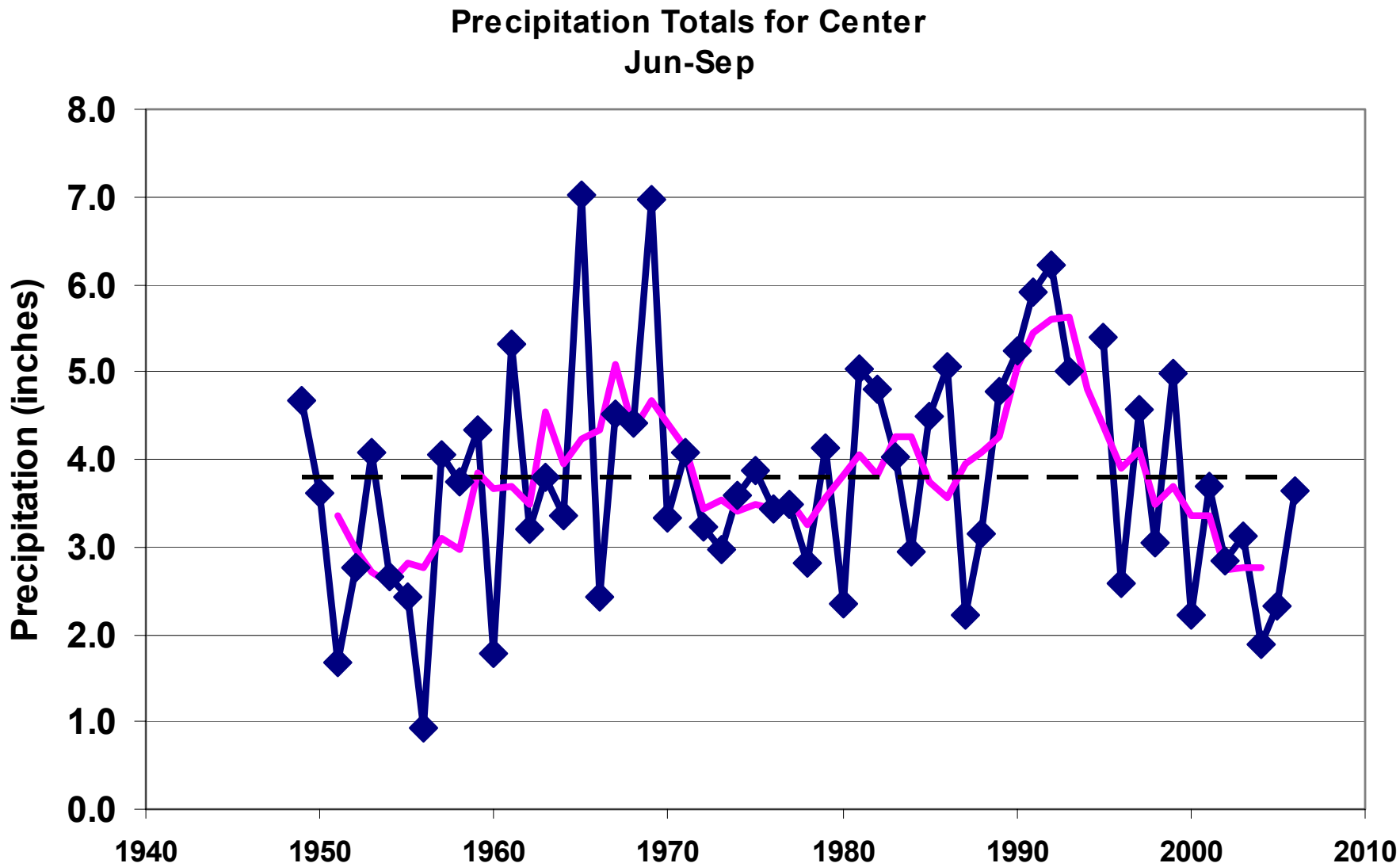
% of Average Precipitation



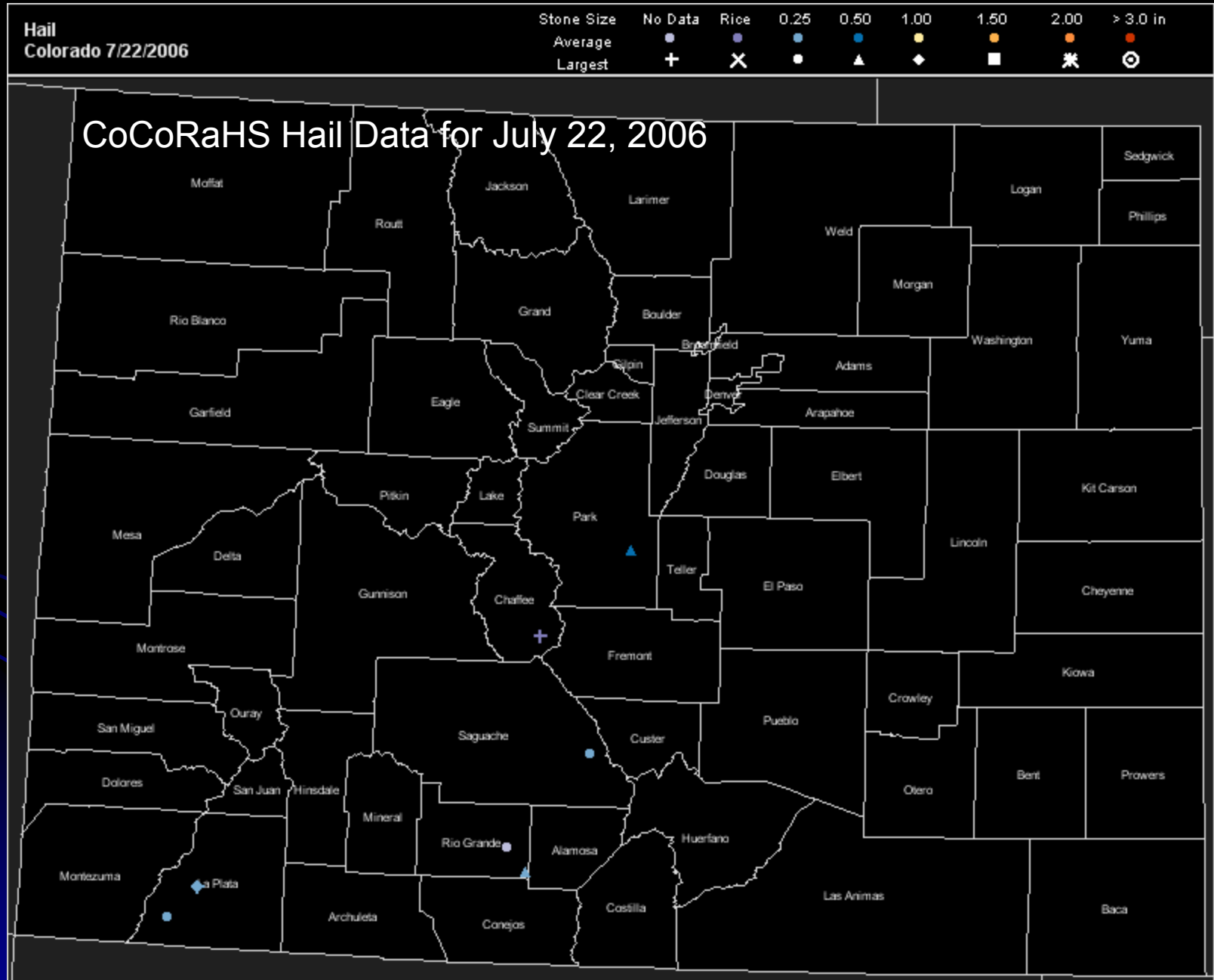
Copyright (c) 2006, PRISM Group, Oregon State University  
<http://www.ocs.oregonstate.edu/prism> - Map created Oct 12 2006



# Jun – Sep Precipitation Totals for Center



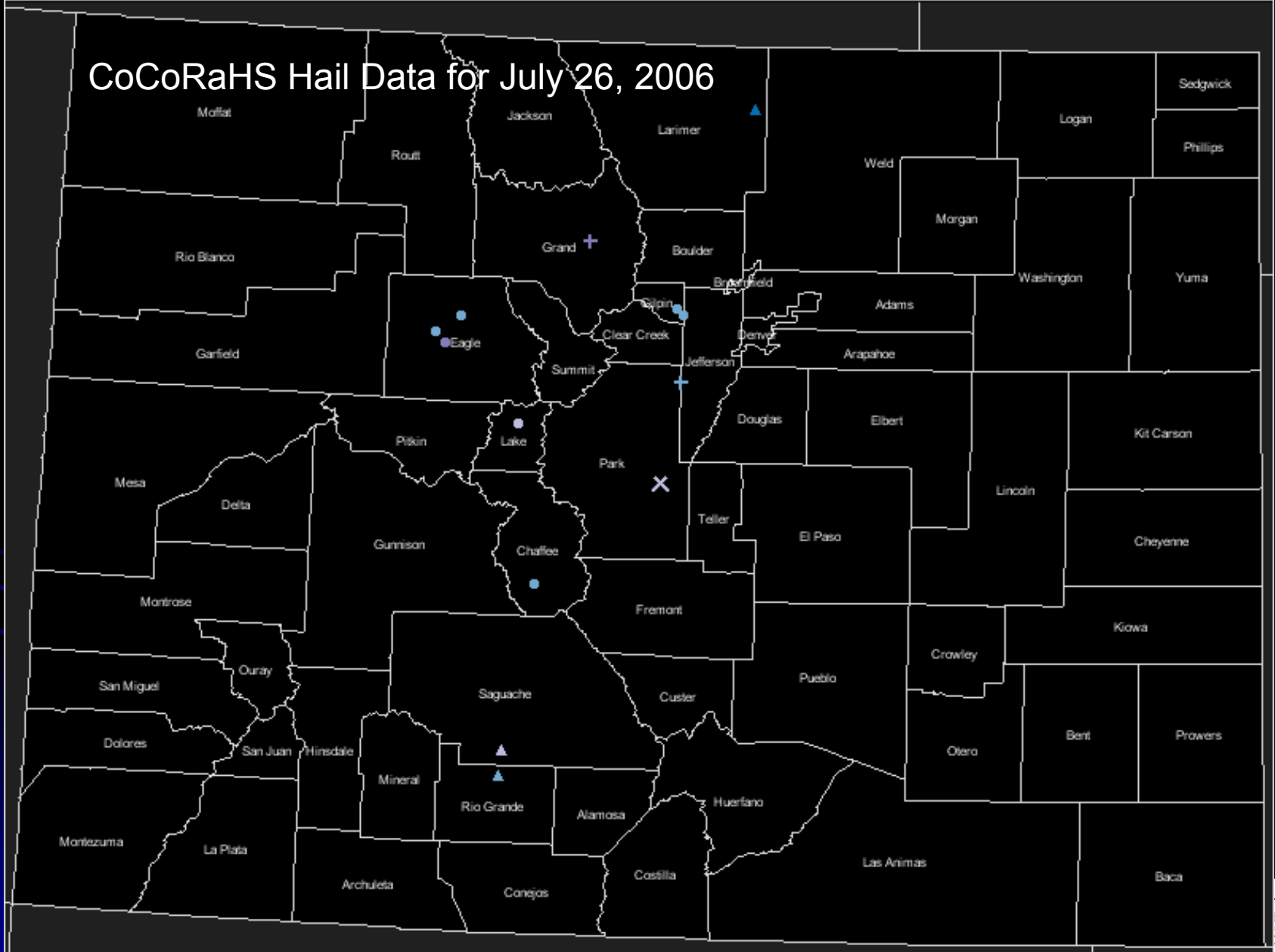
# Hail was documented on 15 of the 93 days of the Study



**Hail**  
**Colorado 7/26/2006**



# CoCoRaHS Hail Data for July 26, 2006





# Conclusions

- Rainfall data collected at nearly 60 sites in the San Luis Valley this summer
- Above average rainfall was widespread for period Jun 15 – Sep 15
- Rain fell on 38 of 89 possible days at two or more stations in the Southern Colorado Farm Network
- Departures from average ranged from 110% to nearly 200% of summer average

# Conclusions

- Hail occurrences were greater this year than in most recent years
- Above average rainfall appeared to be associated with large-scale monsoonal pattern and was not just a local phenomenon
- Large local variations in rainfall and hail were noted
- More rain gauges and hail pads at locations a few miles in all directions from Southern Colorado Farms (SCF) would be very helpful for future analysis



# Acknowledgements

- Carolyn Fritz, CWCB
- Kelley Thompson, Agro Engineering
- Amy Kunugi, Southern Colorado Farms
- Marvin Reynolds, CSU Cooperative Extension

# Radar-derived Daily Totals

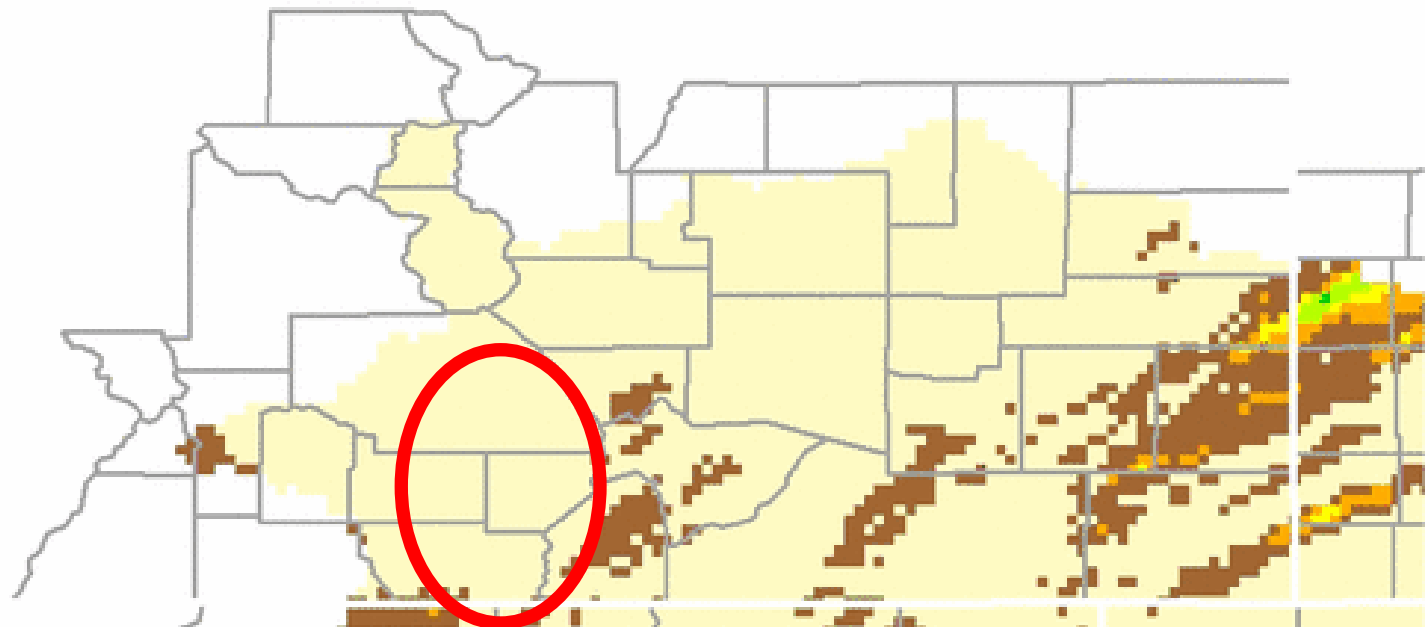


**National Weather Service**

**Colorado**

*24 Hour - Estimated\* Precipitation Ending at 12Z*

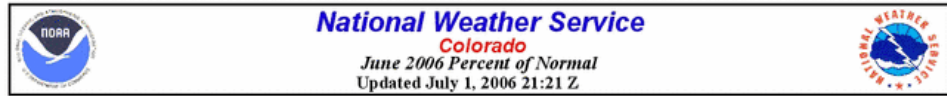
Updated June 15, 2006 21:21 Z



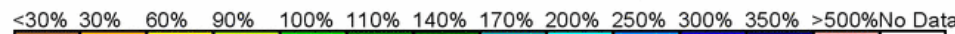
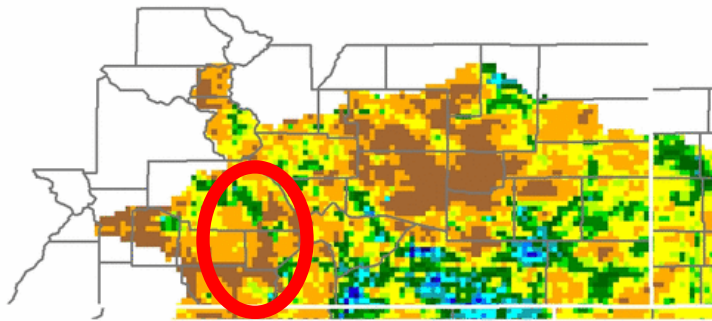
0.00" 0.01" 0.10" 0.25" 0.50" 1.0" 1.5" 2.0" 3.0" 4.0" 5.0" 6.0" 8.0" 10" 12" 15" 18" >21" NoData



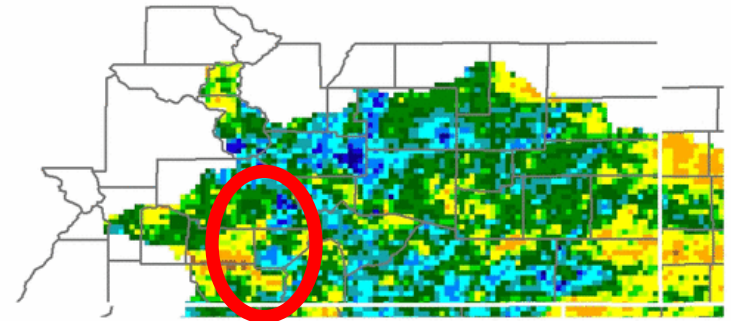
# Radar-derived Monthly Anomalies



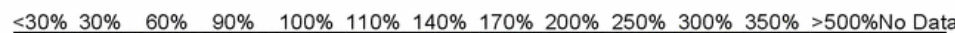
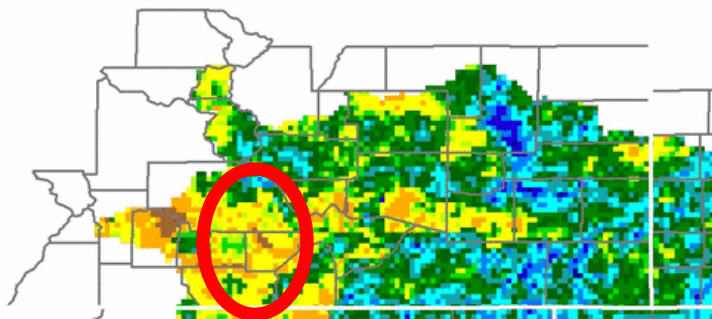
**JUN**



**JUL**



**AUG**



**SEP**

