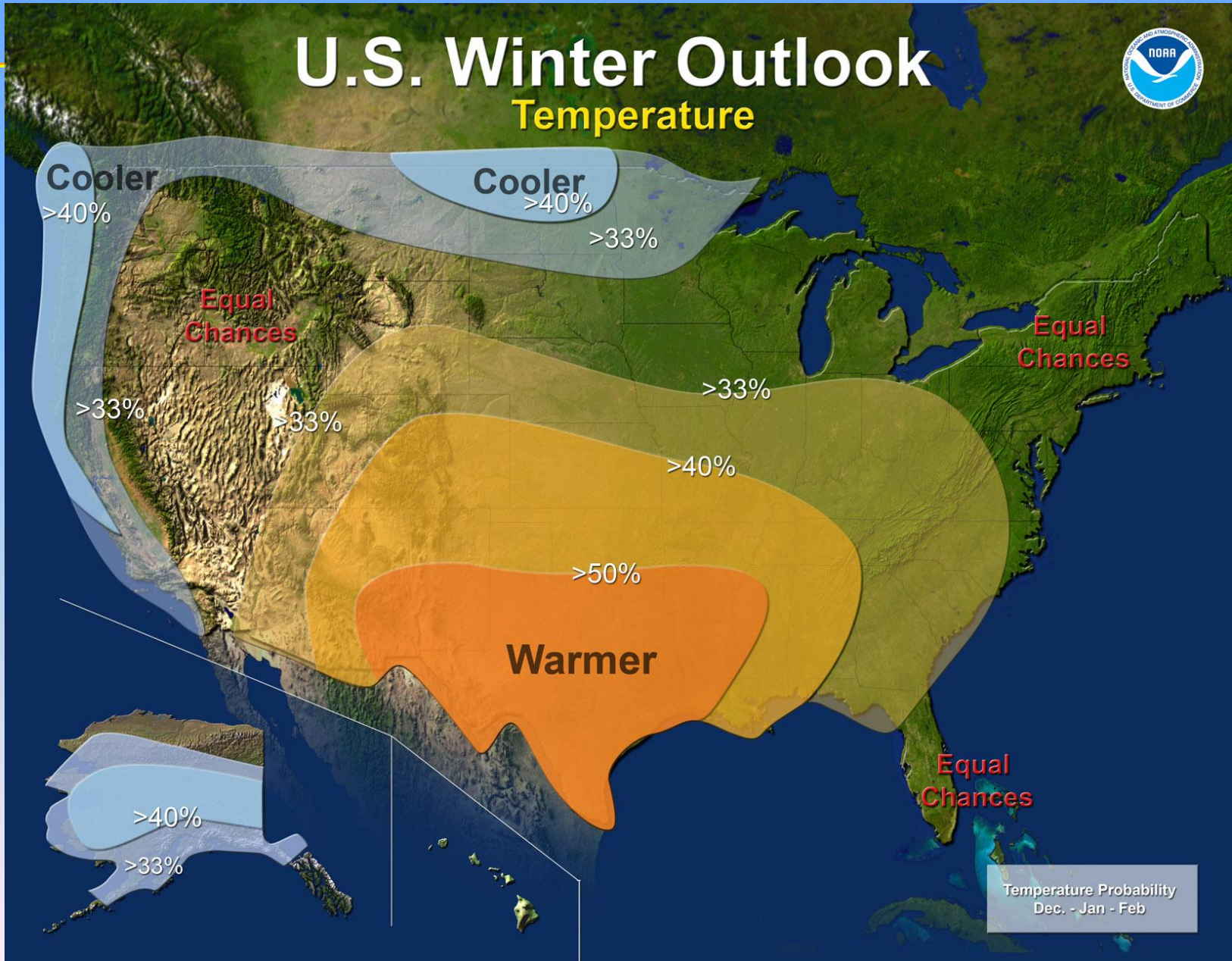


NOAA's Winter Outlook

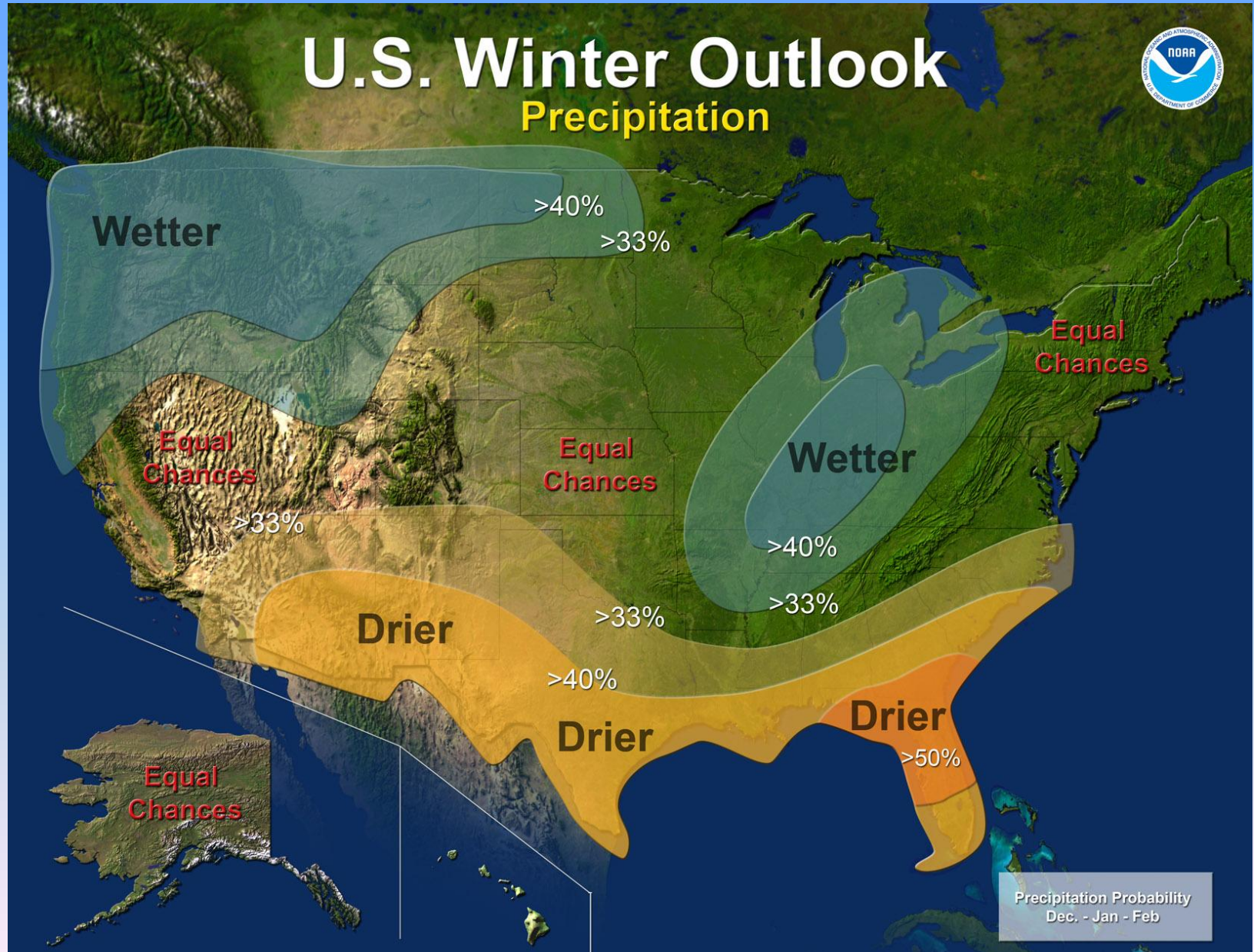
U.S. Winter Outlook Temperature



NOAA's Winter Outlook



U.S. Winter Outlook Precipitation



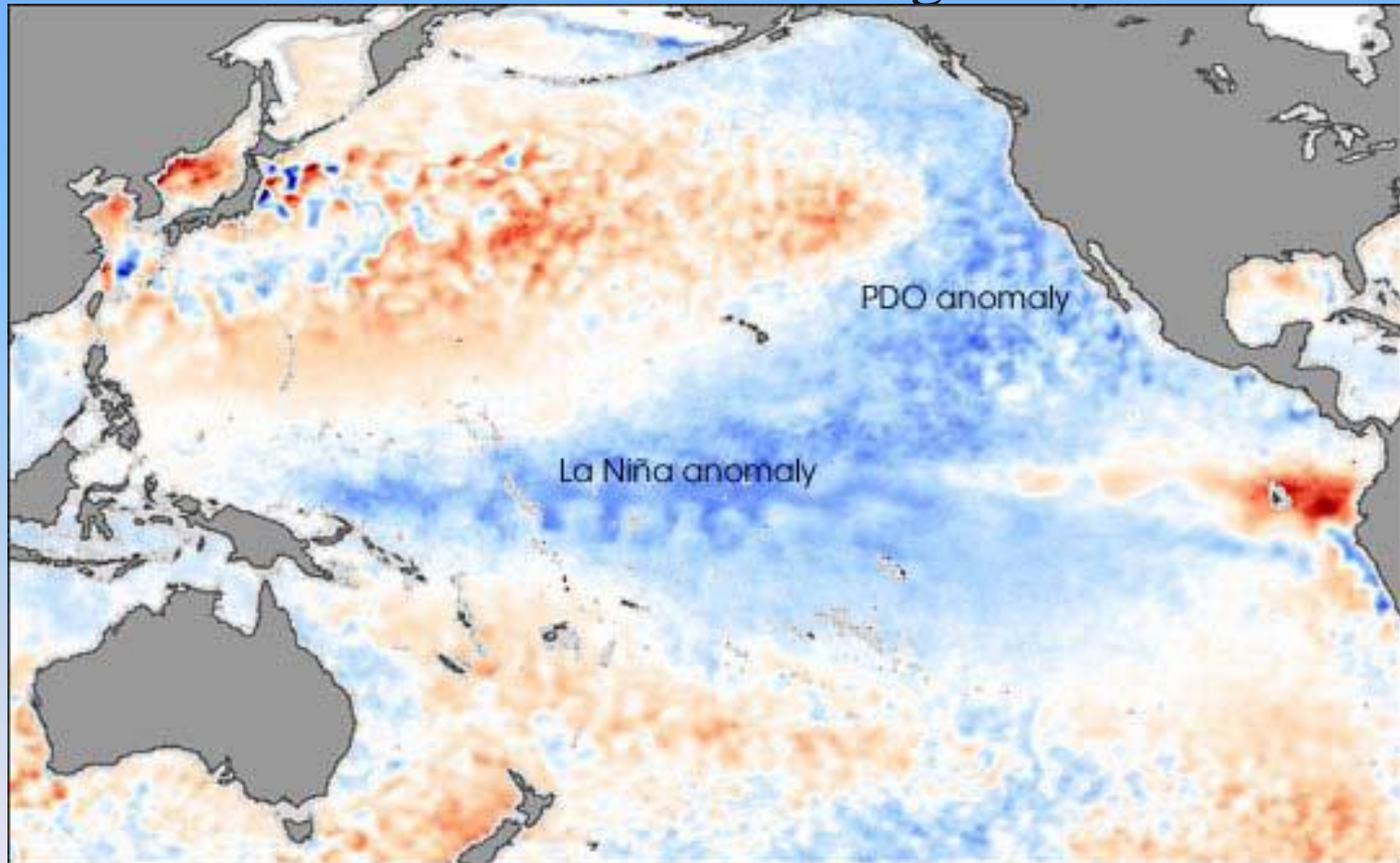
Precipitation Probability
Dec. - Jan - Feb

CPC Seasonal Forecast Tools

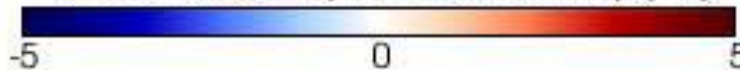
- 1. El Niño-Southern Oscillation (ENSO)**
- 2. Long-Term Trends**
- 3. Other Statistical Models: Canonical Correlation Analysis (CCA), Screened Multiple Linear Regression (SMLR), Constructed Analysis (CAS)**
- 4. Dynamical Models: Coupled GCM, Ensembles**
- 5. Tool Consolidation (OCN, CCA, SMLR, CFS, ECCA)**

Part 3: The Forecast For This Winter?

Current Conditions: Strong La Niña

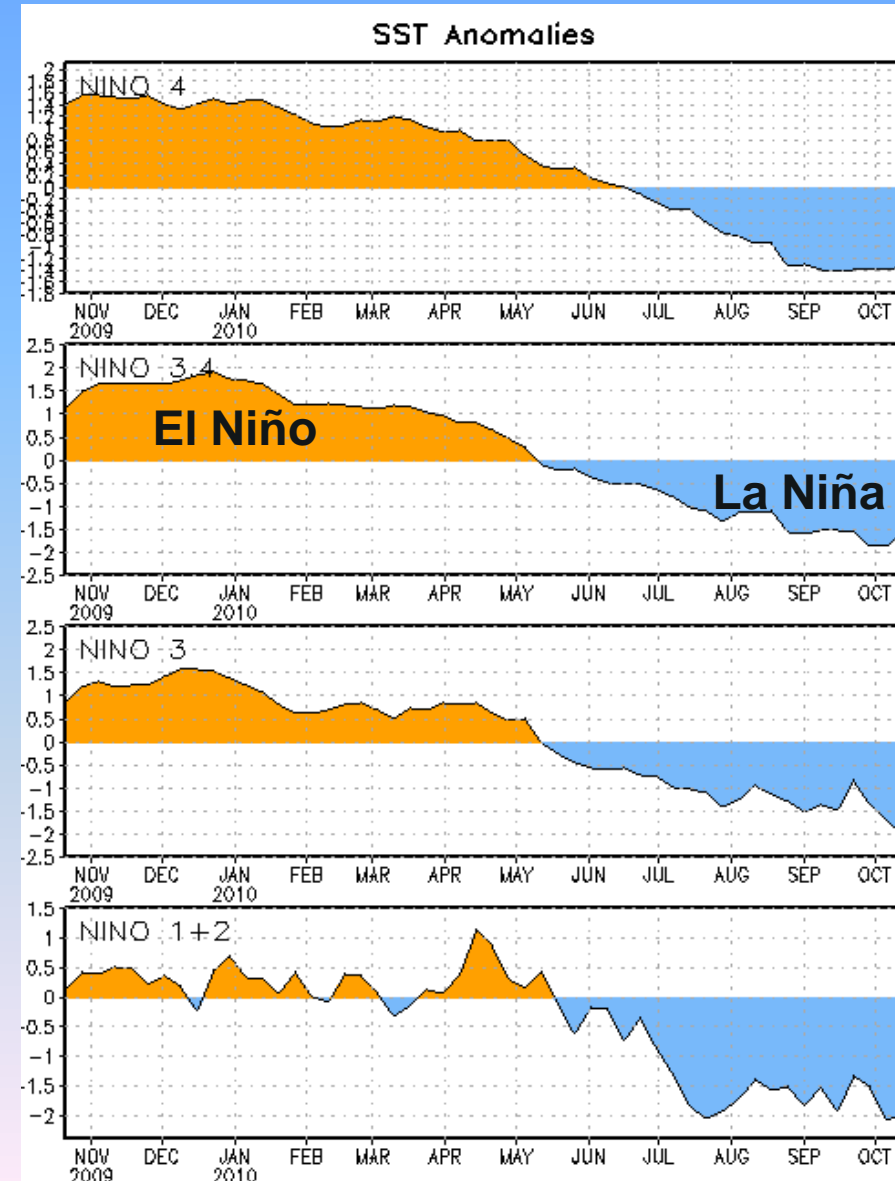
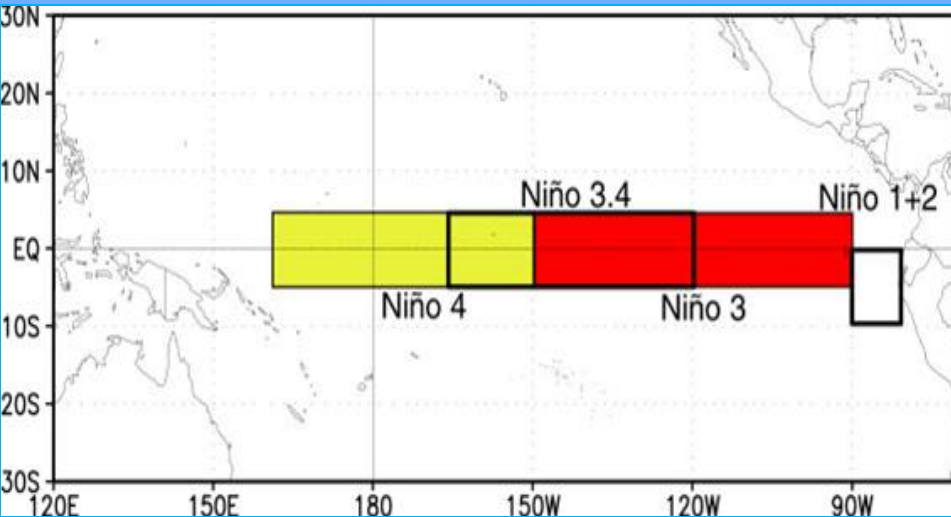


Sea Surface Temperature Anomaly ($^{\circ}\text{C}$)



Niño Region SST Departures (°C)

15 November 2010



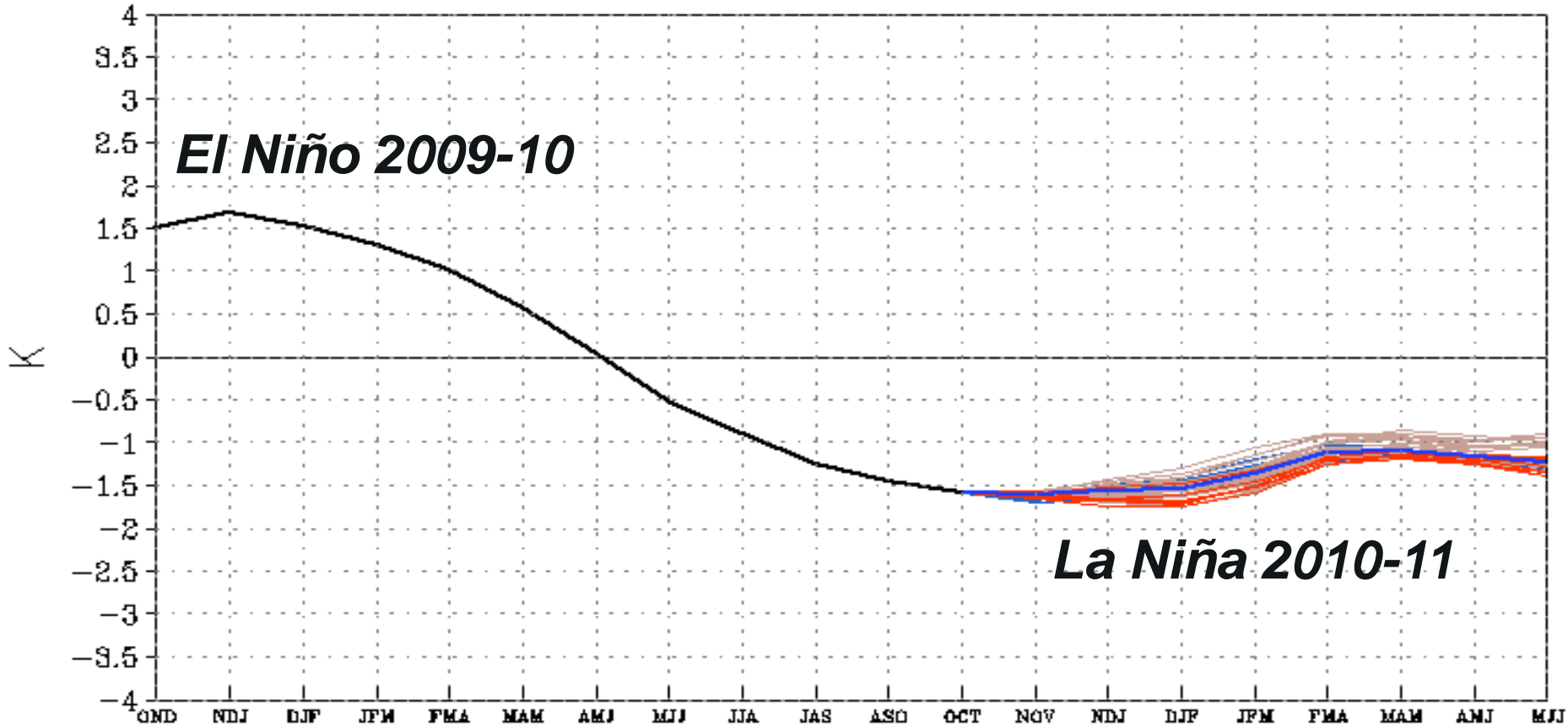
The latest weekly SST departures are:

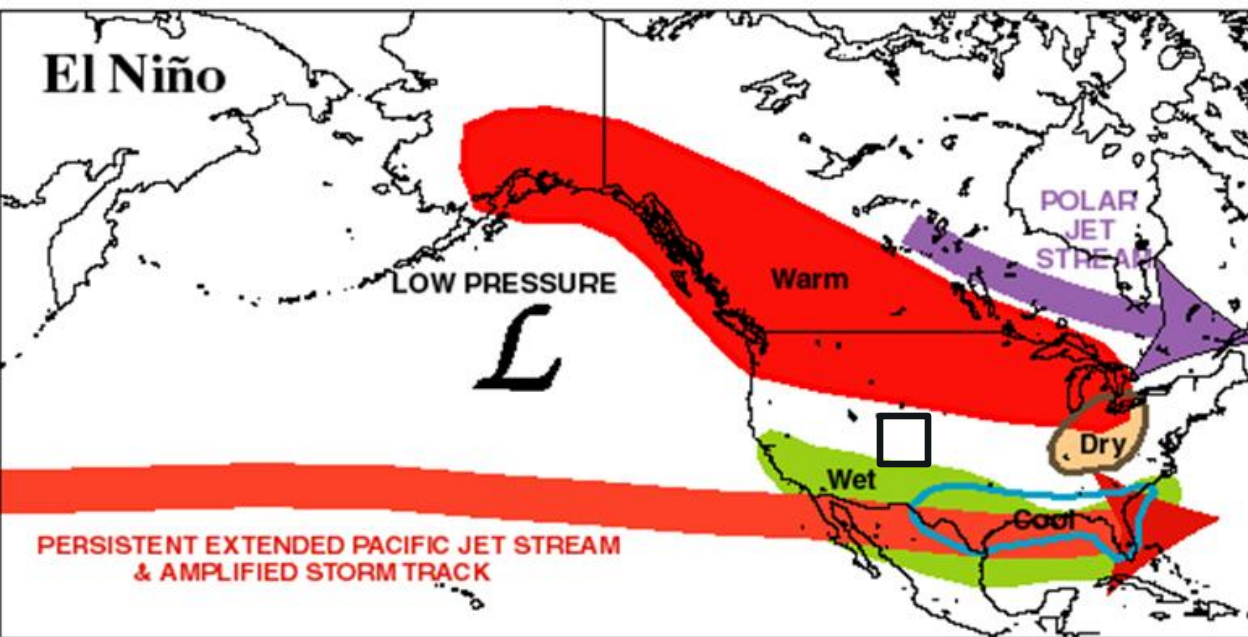
- Niño 4 -1.2°C
- Niño 3.4 -1.3°C
- Niño 3 -1.5°C
- Niño 1+2 -2.0°C

Pacific Niño 3.4 Region SST Outlook

The CFS ensemble mean (heavy blue line) predicts La Niña conditions into Northern Hemisphere summer 2011.

PDF correction: Forecast Niño3.4 SST anomalies from CFS

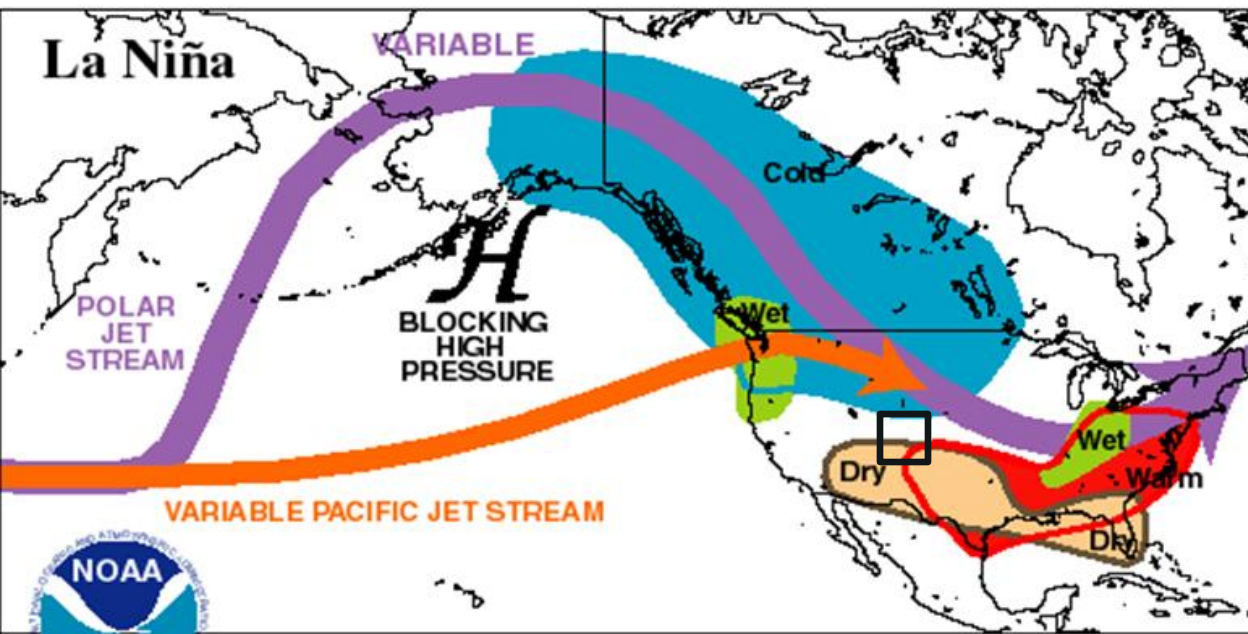




- **El Niño**

Dry and Warm
North of Colorado

Wet and Cool
South of Colorado



- **La Niña**

Wet and Cold
North of Colorado

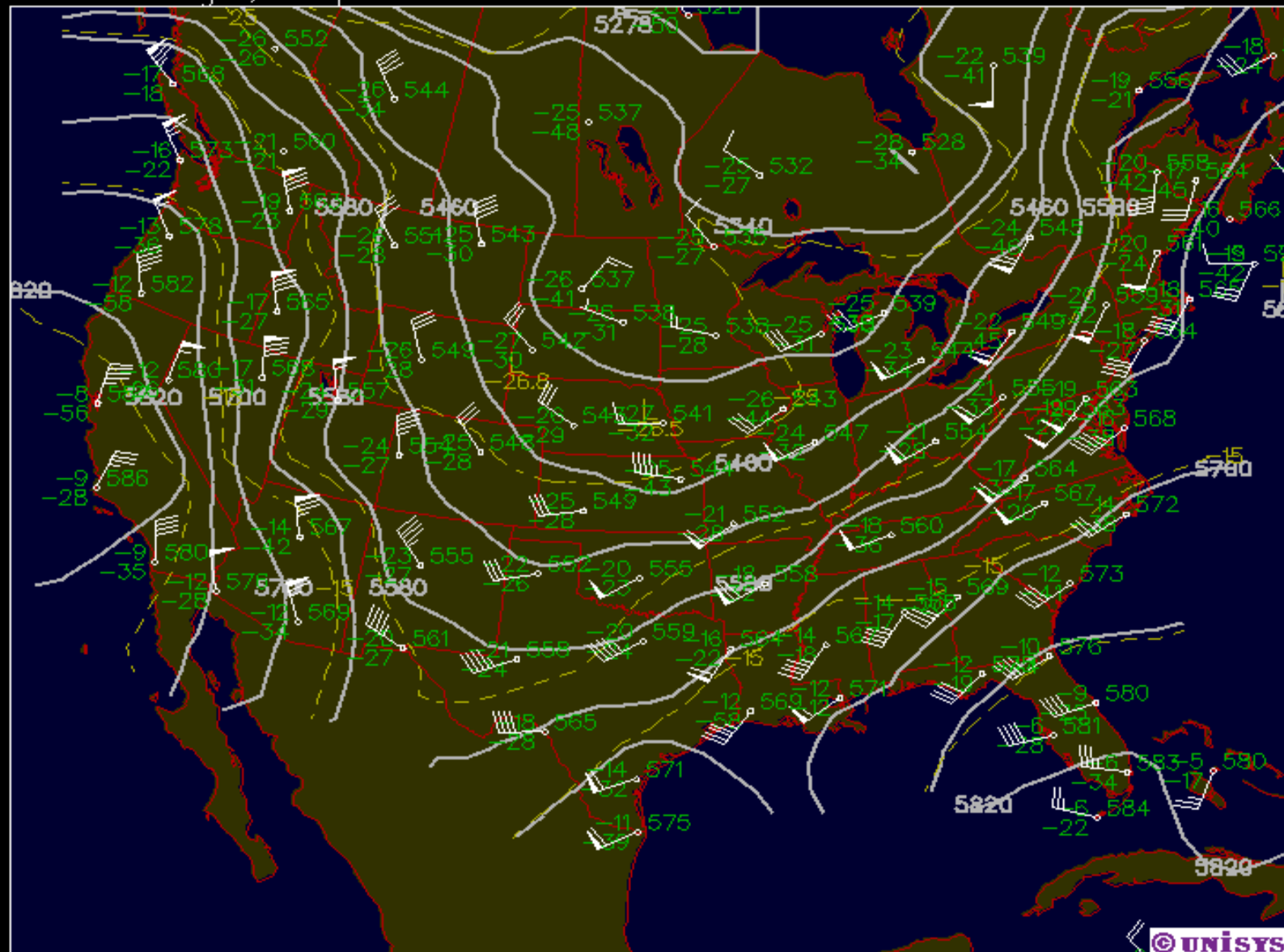
Dry and Warm
South of Colorado



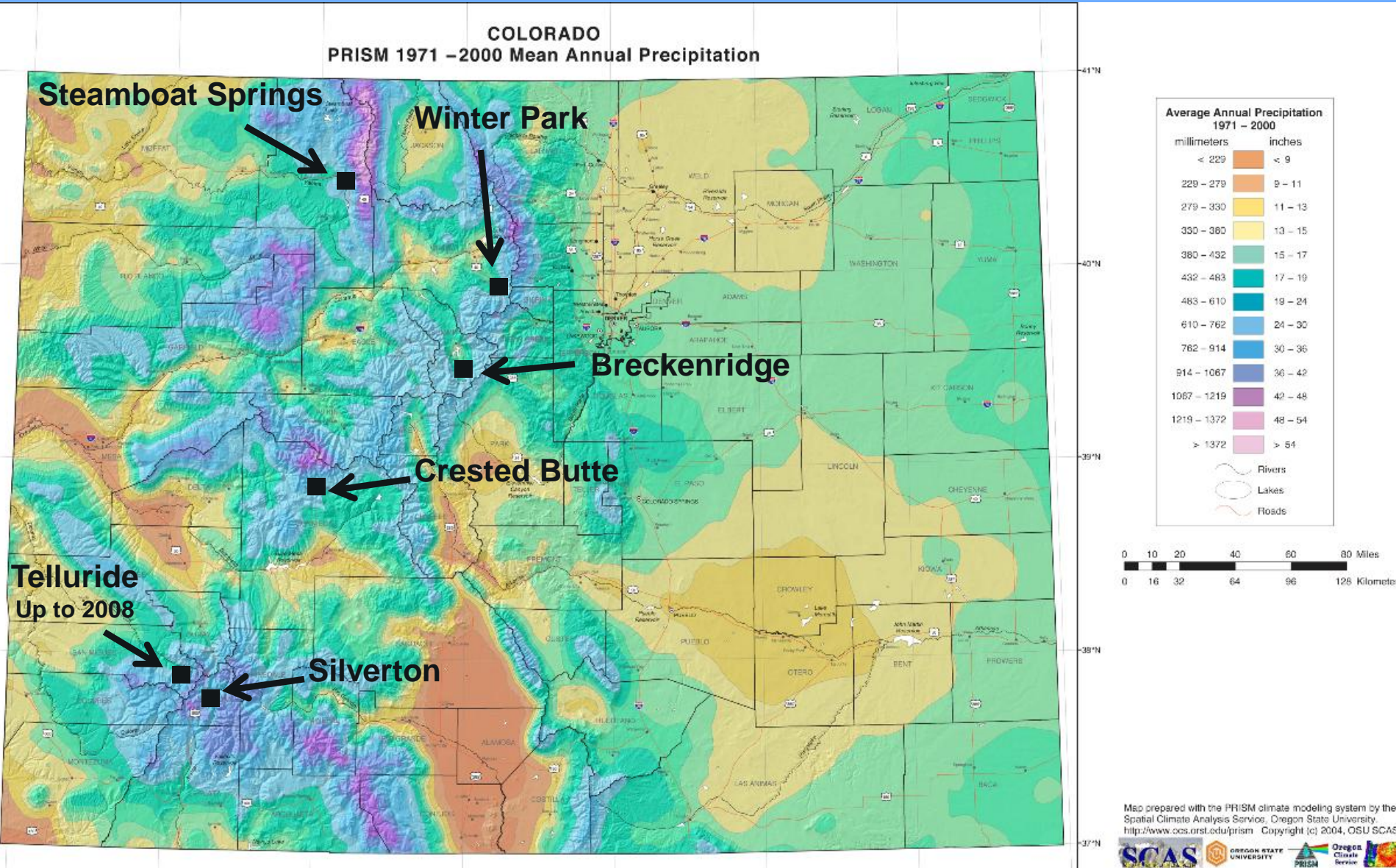
Upper Air Chart, Today 0500 MST

500mb height/temp

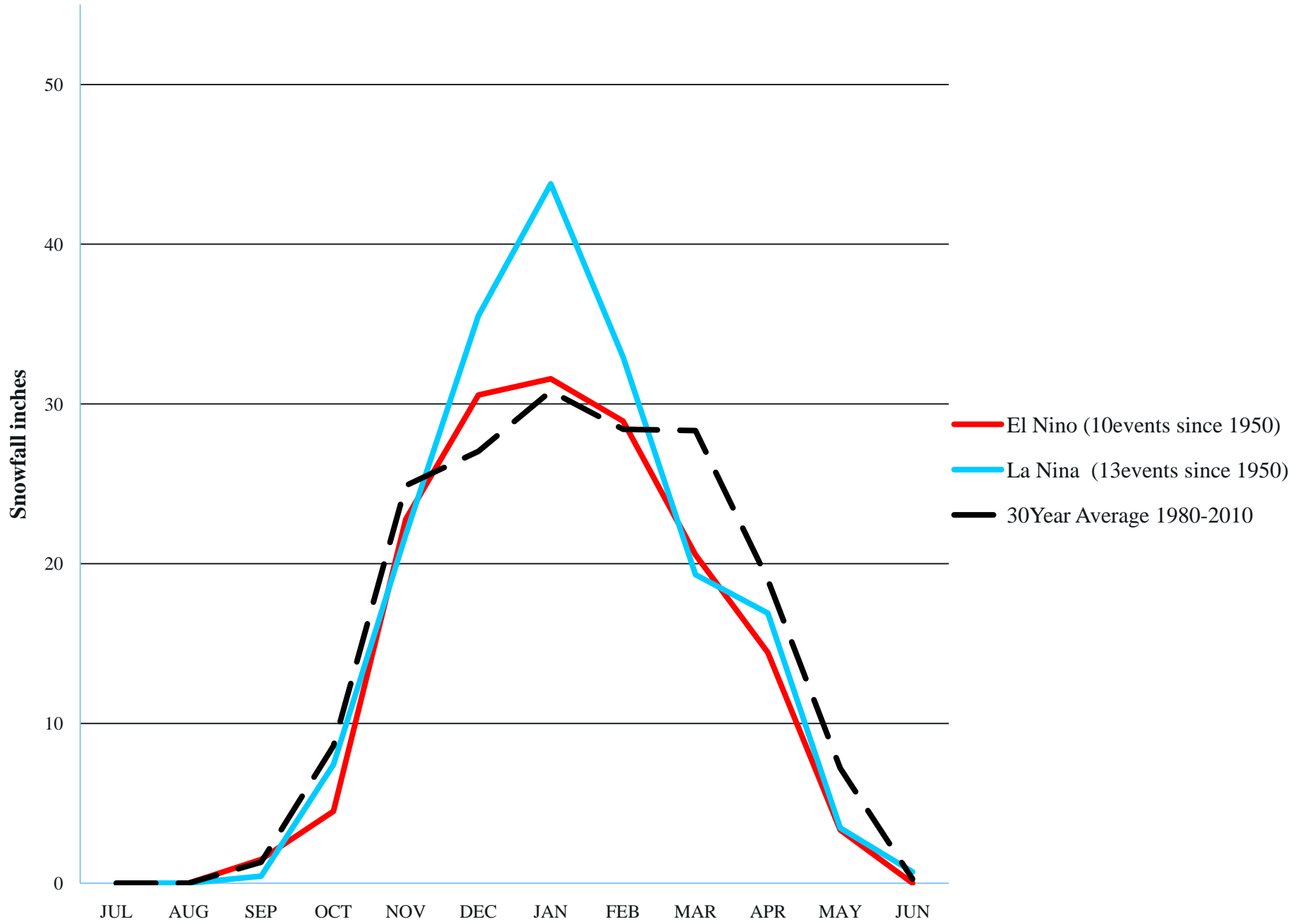
12Z 15 NOV 10



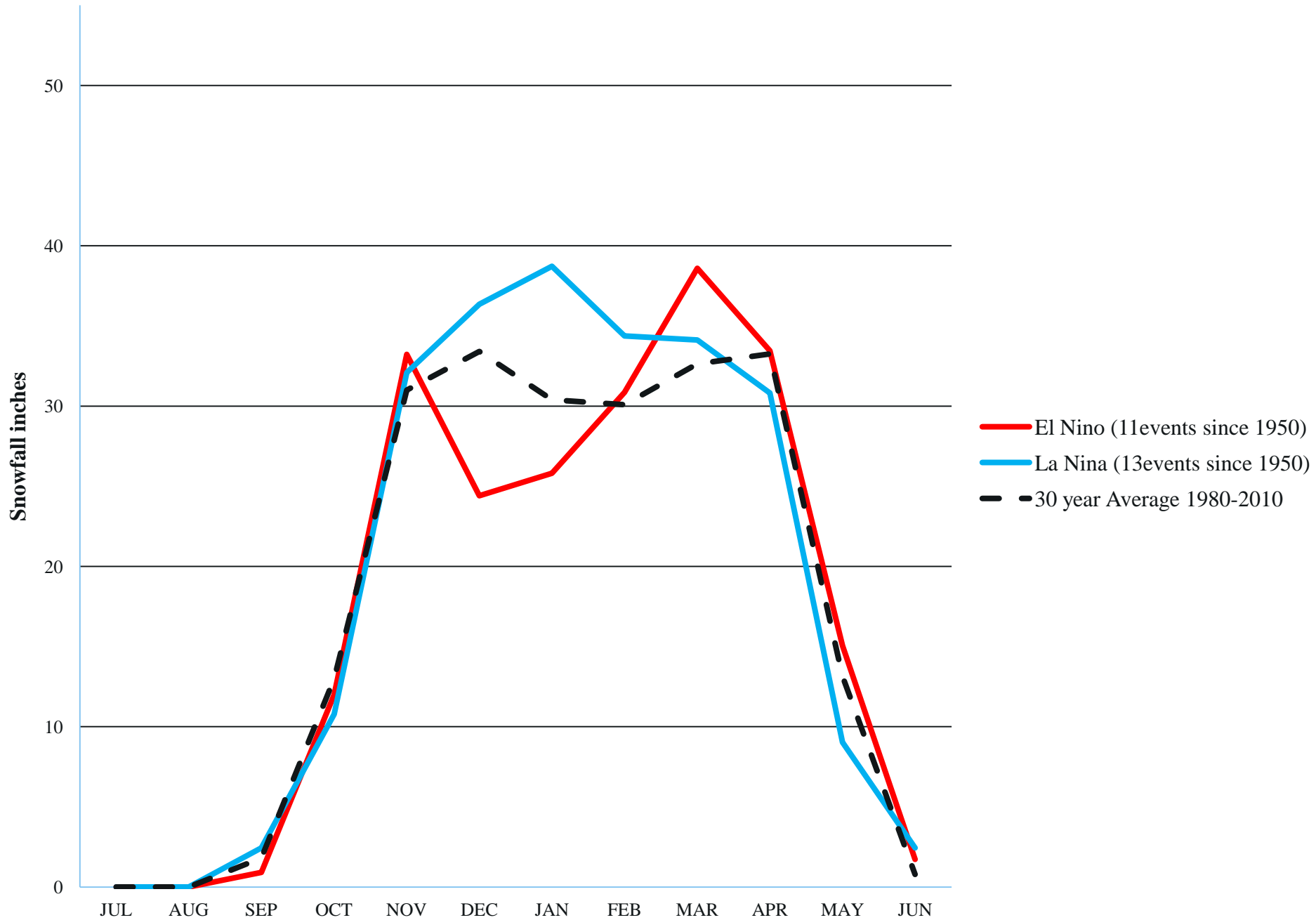
Colorado Precipitation Patterns and Six Study Sites



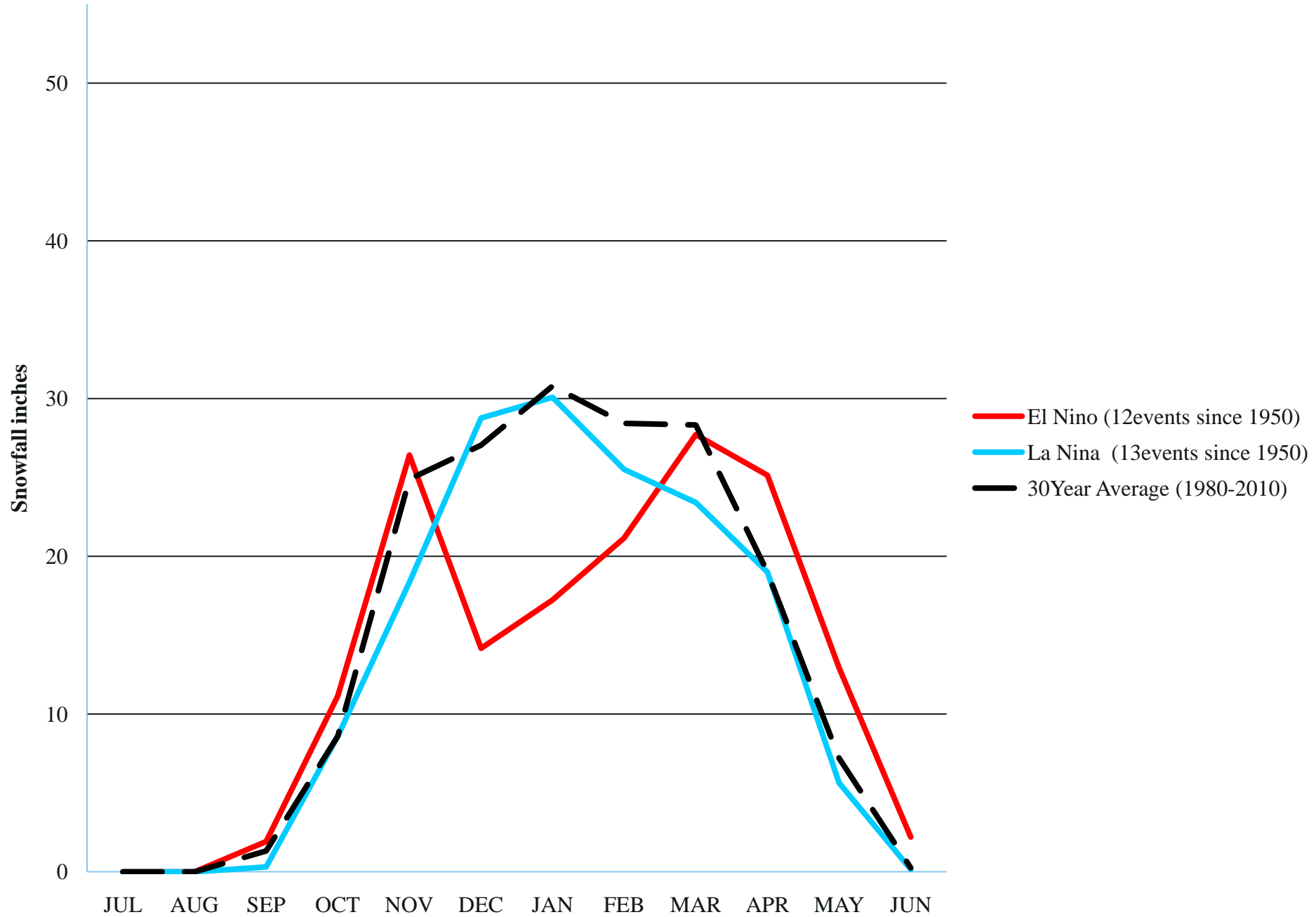
Steamboat Springs



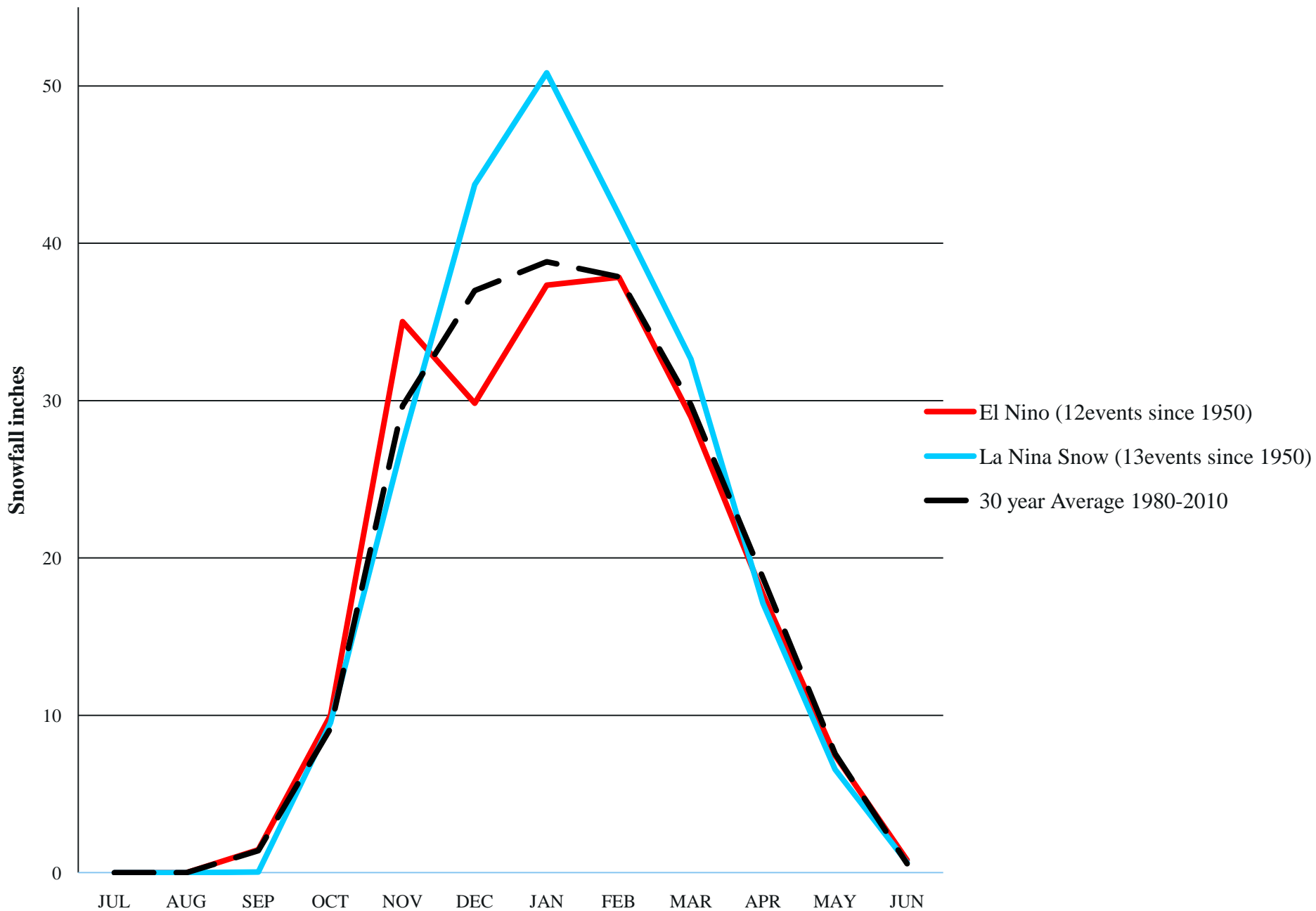
Winter Park



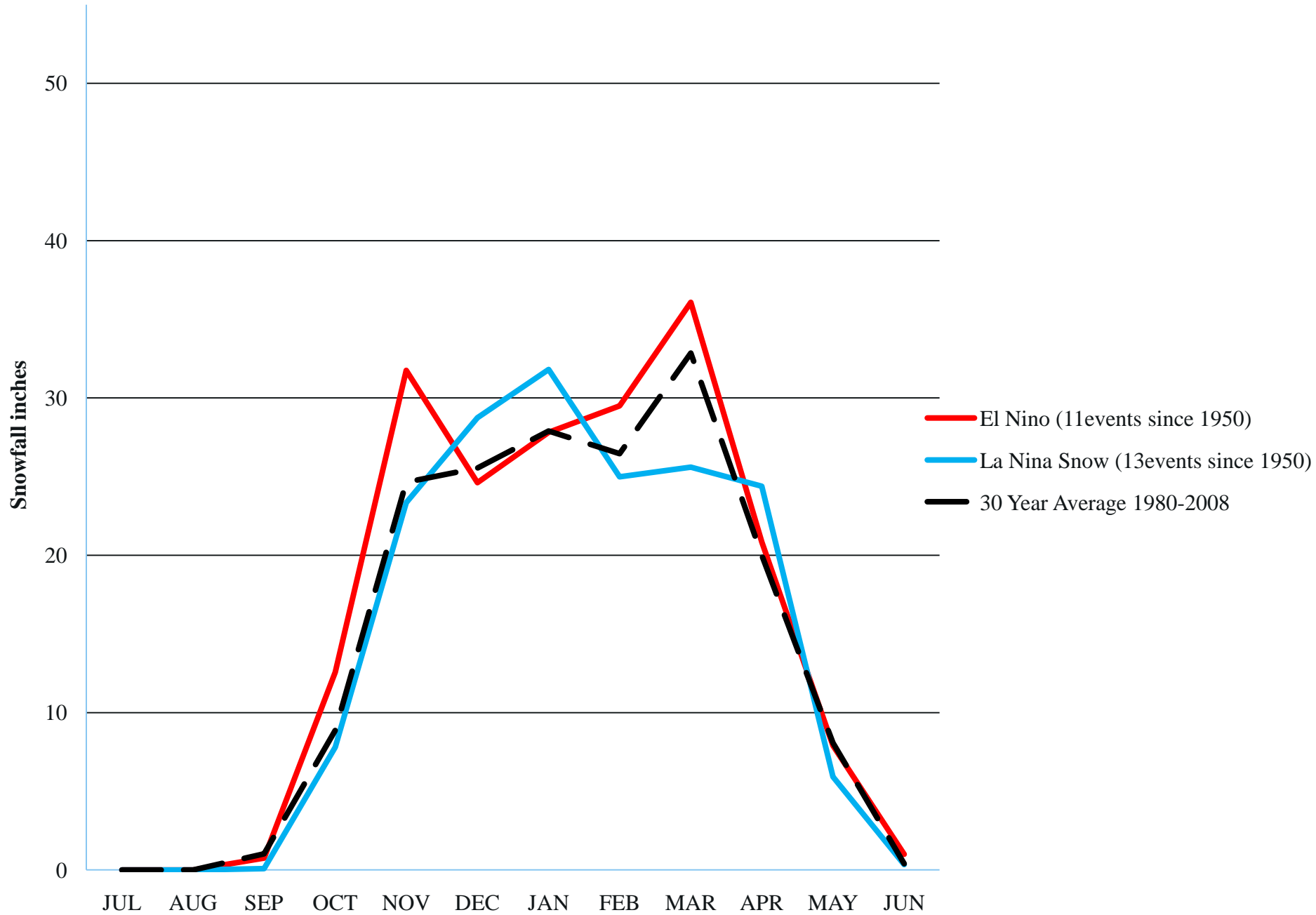
Breckenridge



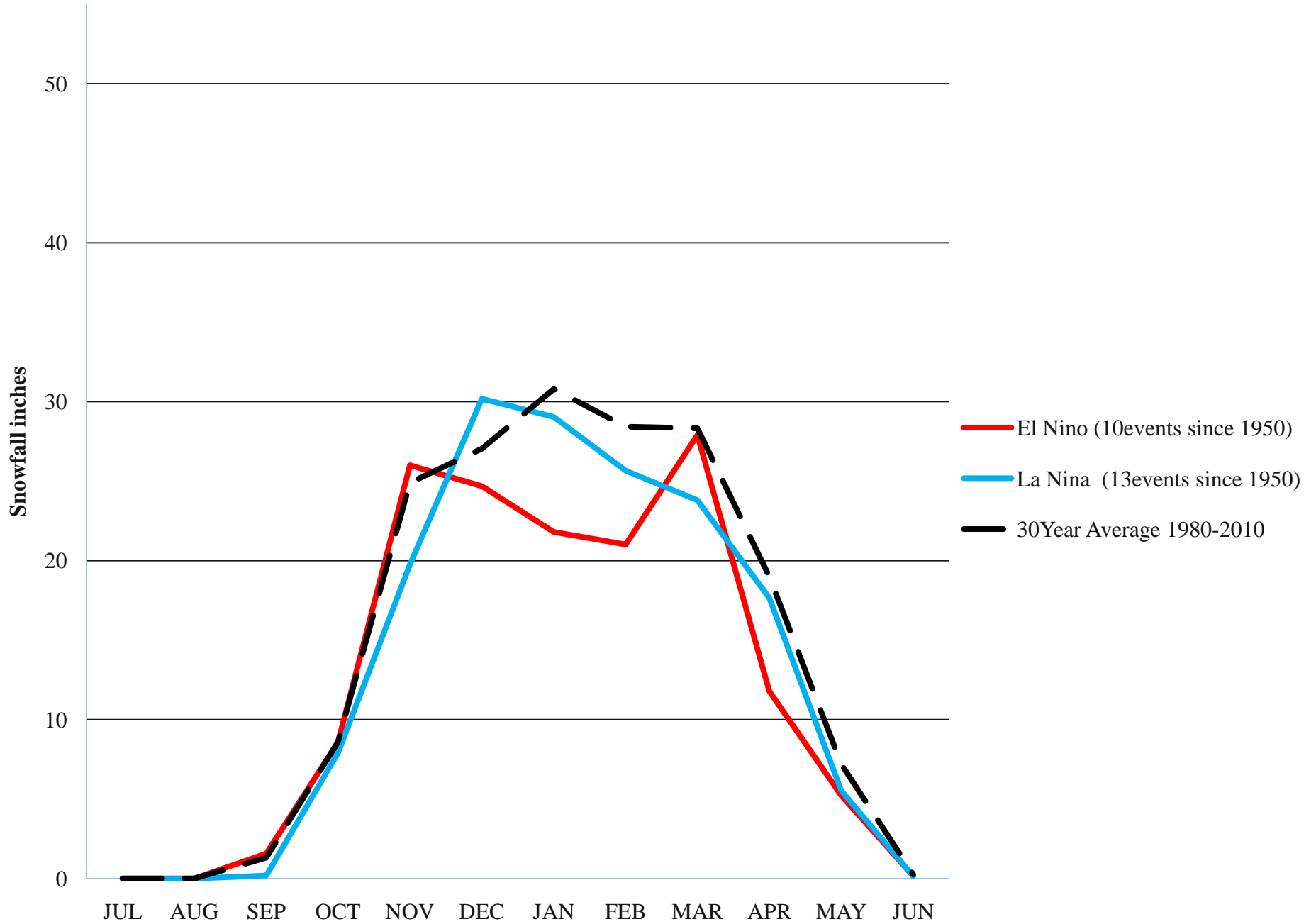
Crested Butte



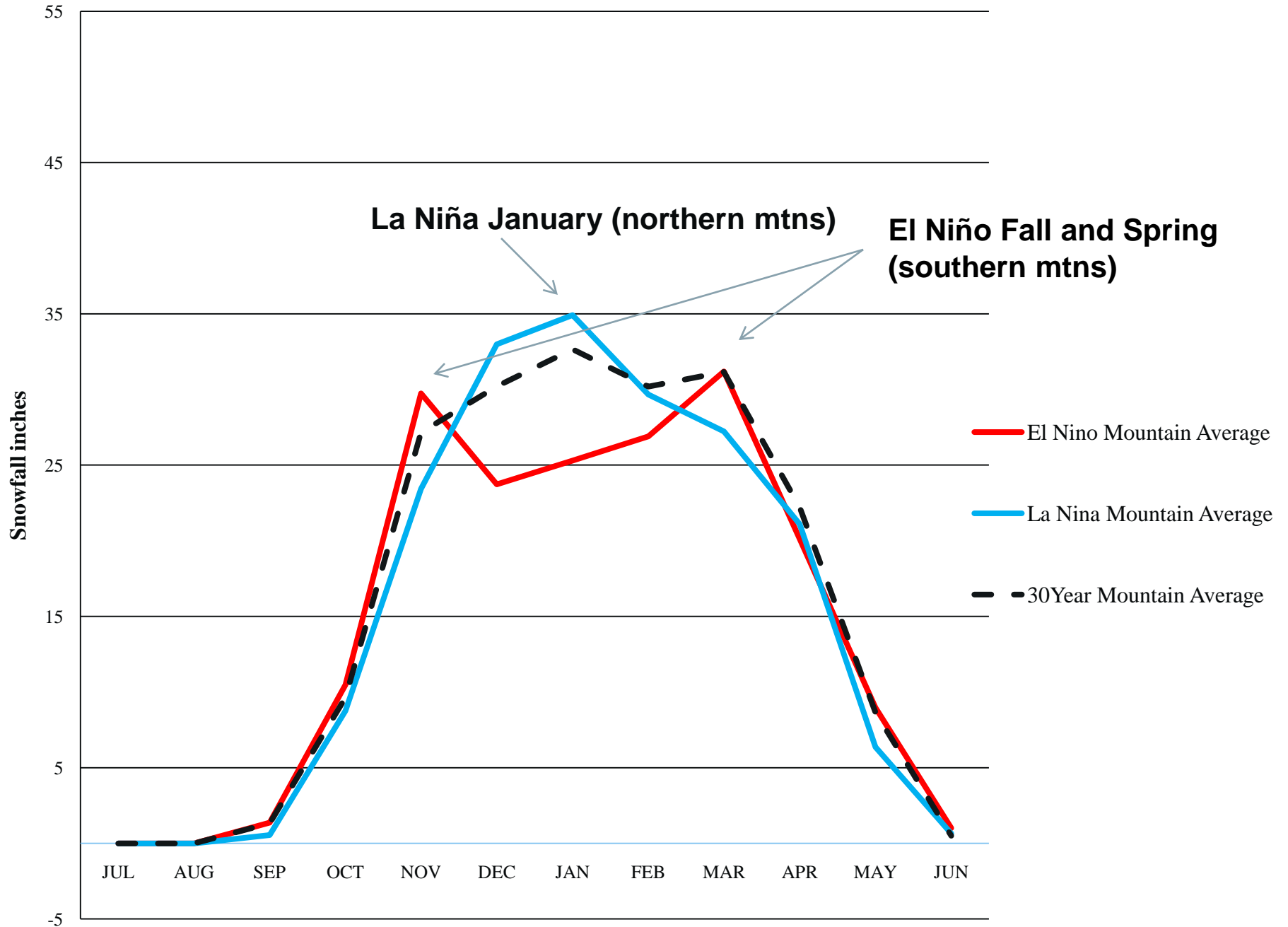
Telluride



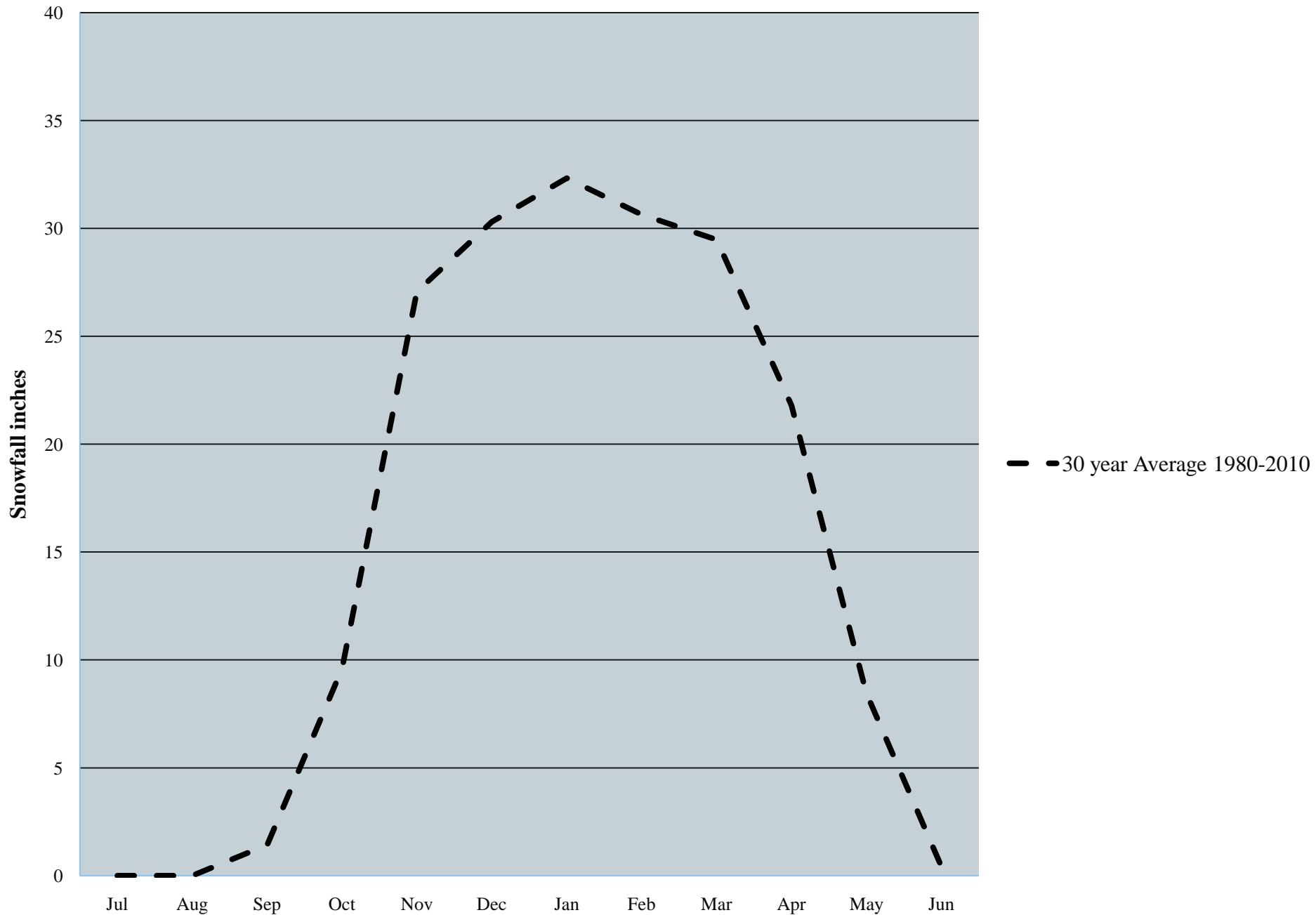
Silverton



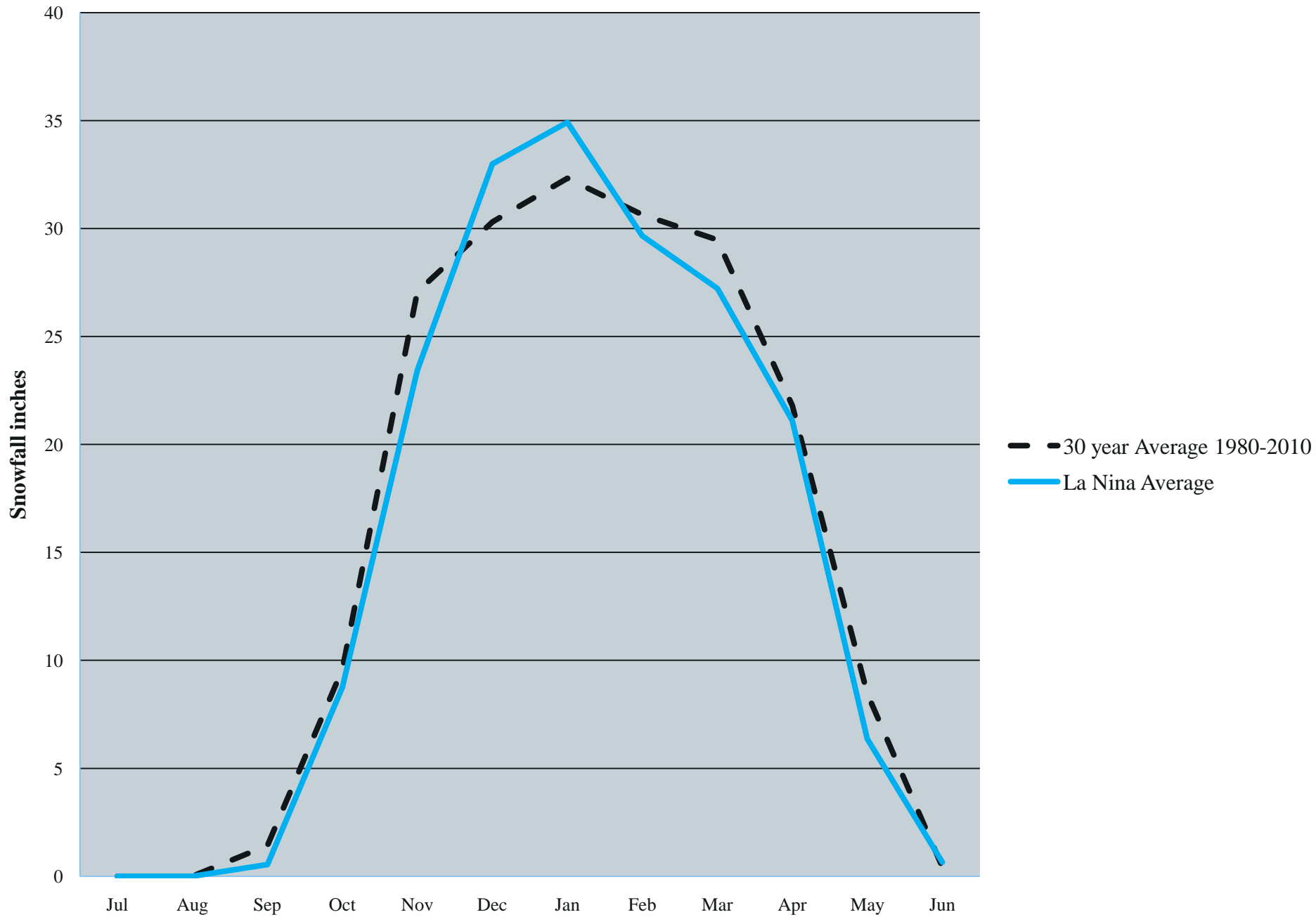
Snowfall for Six Colorado Mountain Sites



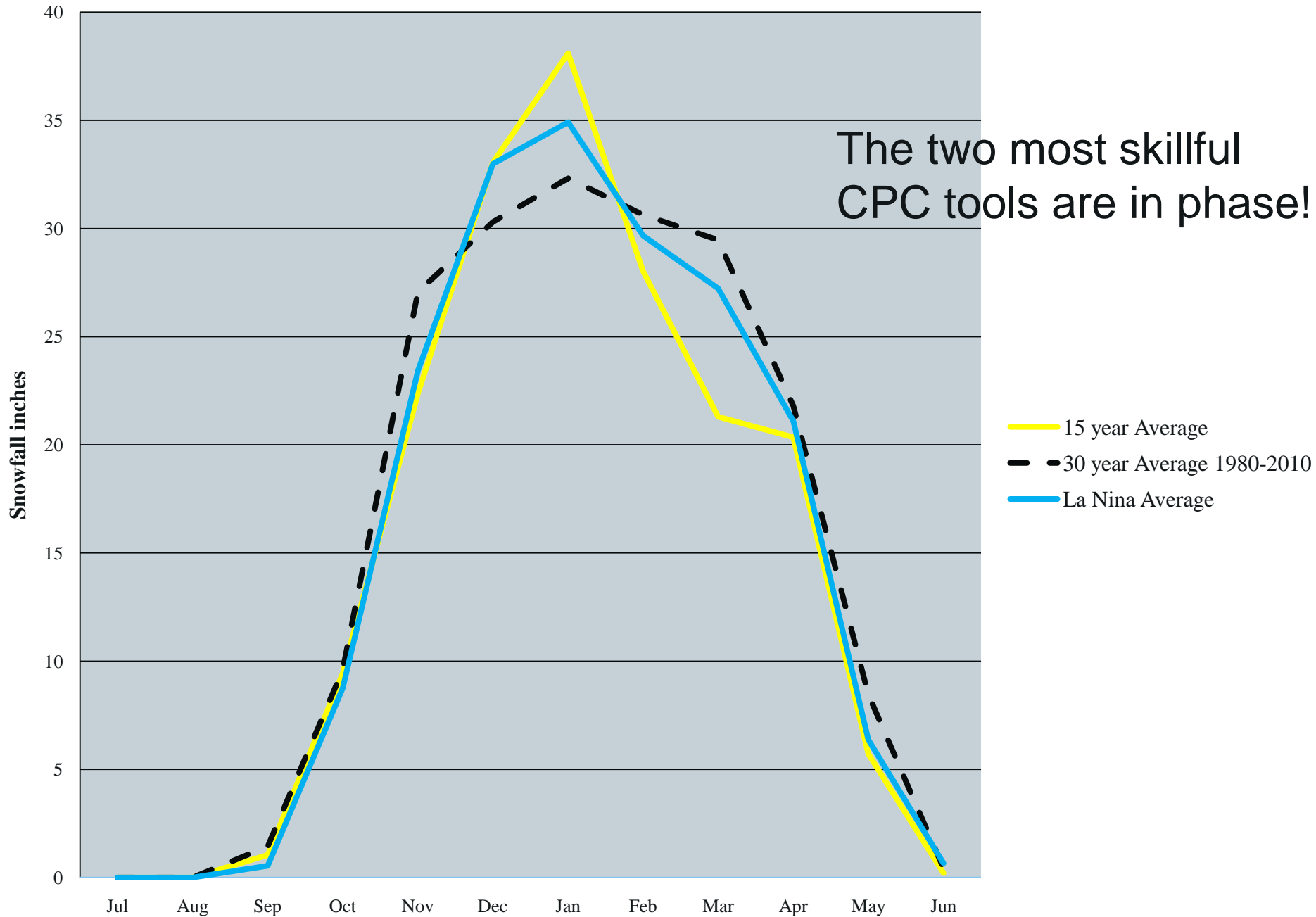
Snowfall for All Six Colorado Mountain Sites



Snowfall for All Six Colorado Mountain Sites



Snowfall for All Six Colorado Mountain Sites



The Forecast for This Winter

What seasons in the last 15 years were moderate to strong La Niñas (combining ENSO+Trends)?

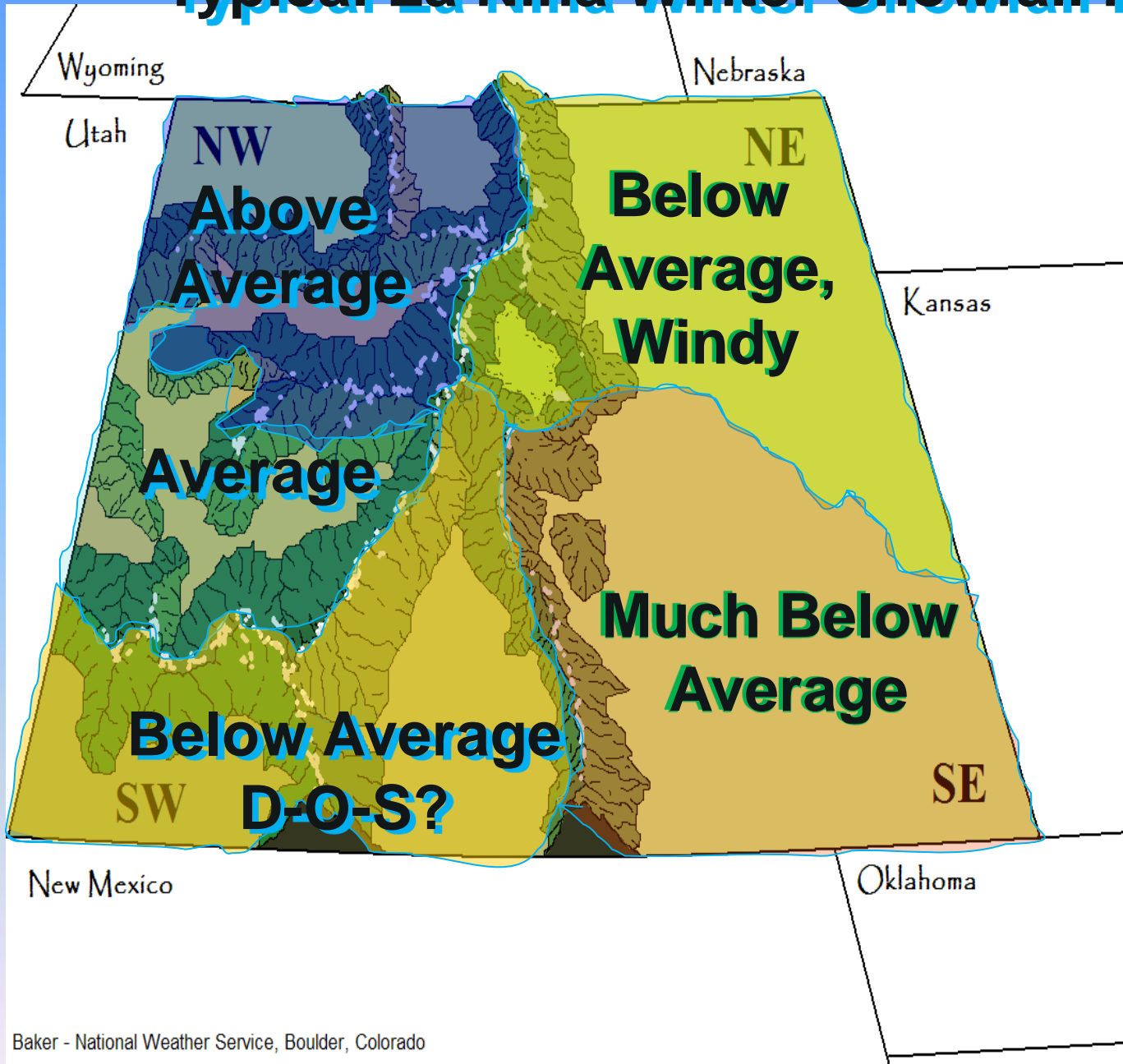
- 1998-1999: Stormy January, Dry Overall
- 1999-2000: Stormy Dec-Jan-Feb, Dry Overall
- 2007-2008: Stormy Oct + D-J-F-M-A-M
(MJO influence), the wettest La Niña ever!

Number of Occurrences of La Niña Seasons in Top 10/Bottom 10 Snow Years

<u>Site</u>	<u>Top 10 Occur</u>	<u>Bottom 10 Occur</u>
Steamboat Springs	5	2
Winter Park	5	1
Breckenridge	3	1
Crested Butte	3	2
Telluride	1	2
Silverton	3	2

- Tendency towards extreme snowy winters north,
- No tendency south

Typical La Niña Winter Snowfall Patterns

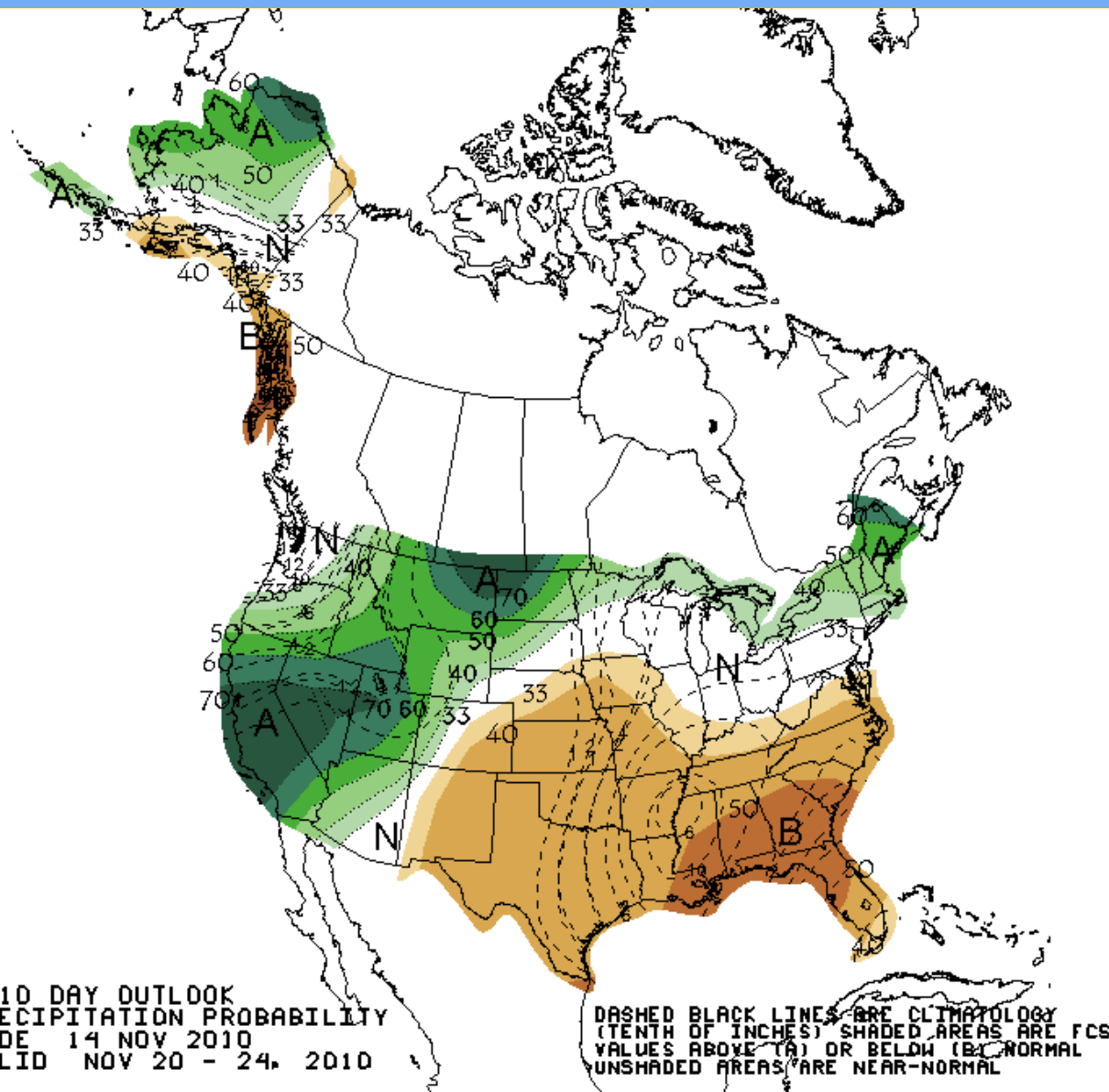


FARMERS' ALMANAC WINTER OUTLOOK FOR 2011



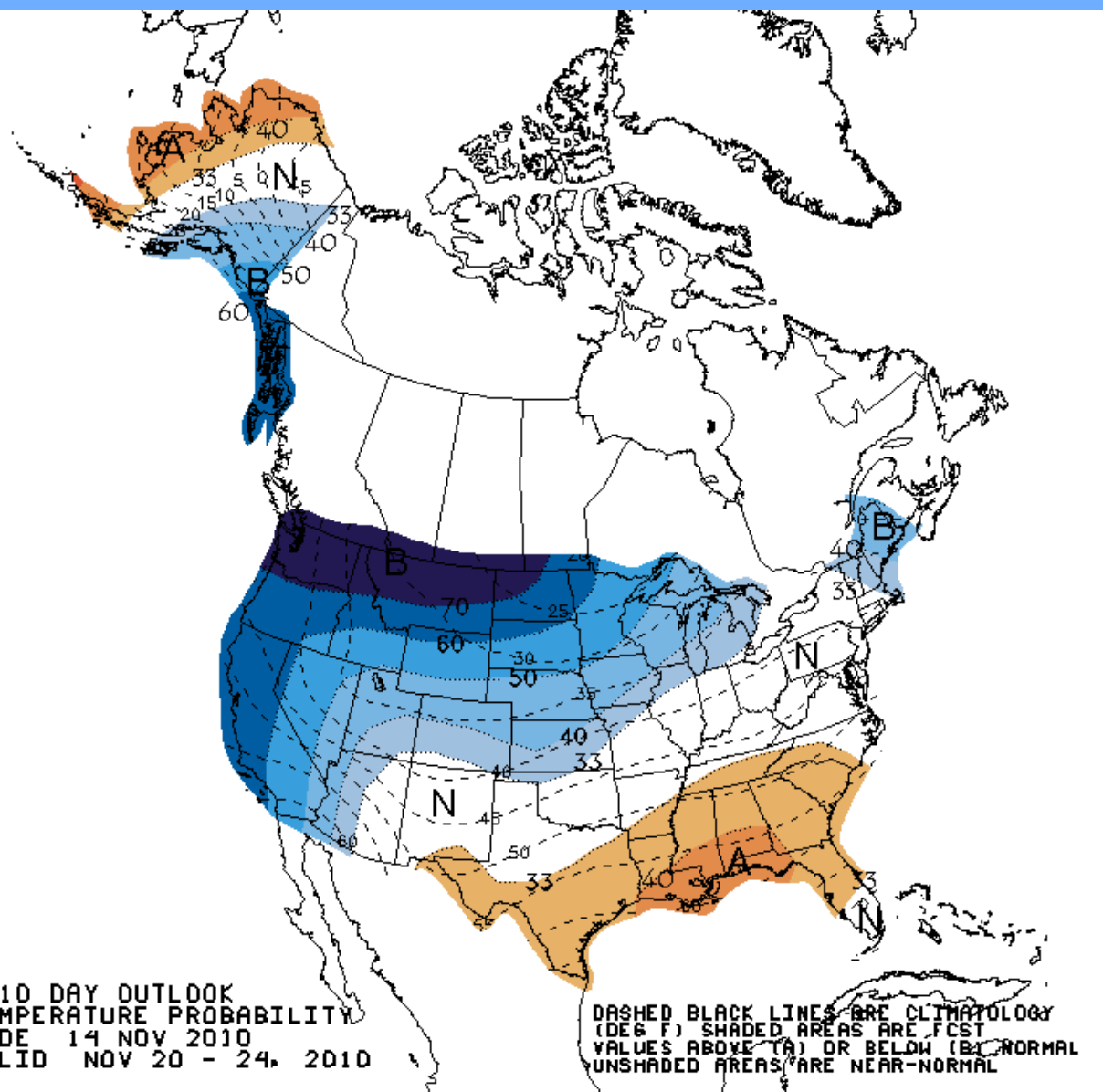
FarmersAlmanac.com

6-10 Day Precipitation Outlook, 20-24 Nov



Storms:
16-17 Nov
(Tue-Wed)
21-23 Nov
(Sun-Tue)

6-10 Day Temperature Outlook, 20-24 Nov



Storms:
16-17 Nov
21-23 Nov

joe.ramey@noaa.gov

Questions?

