

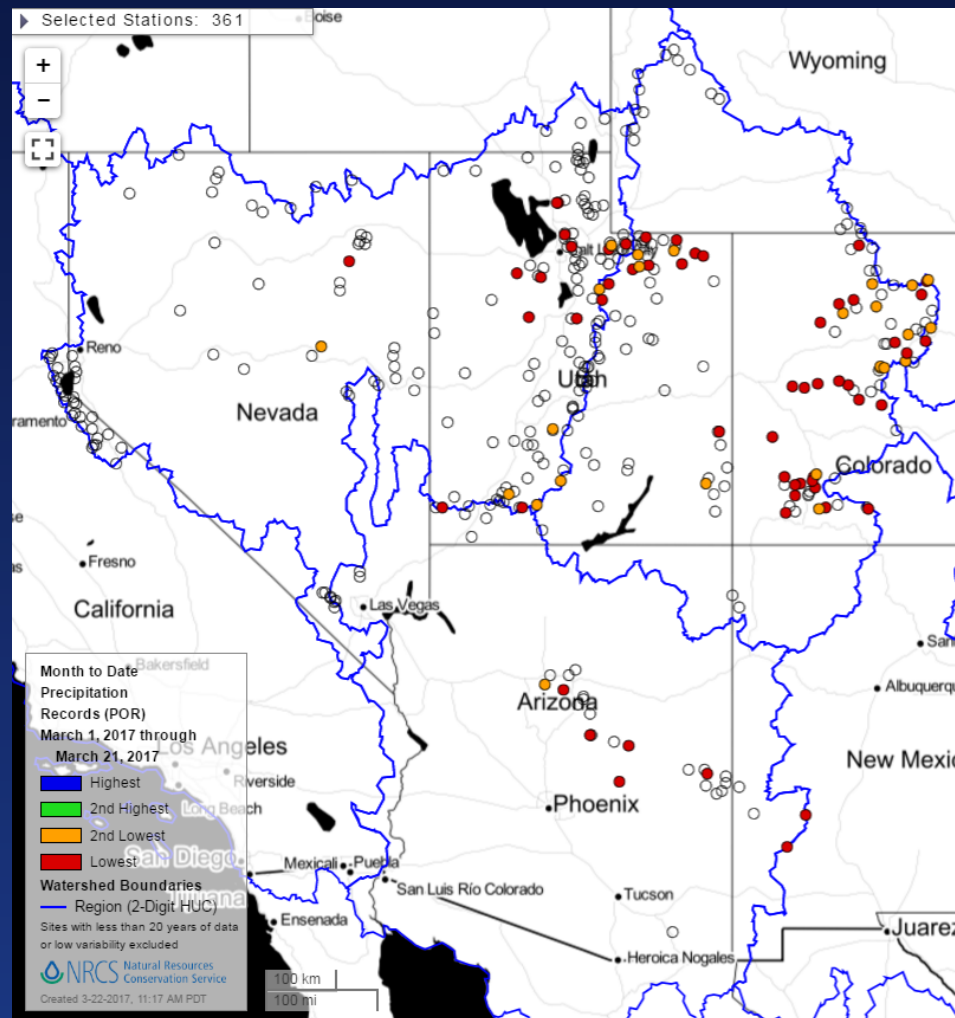
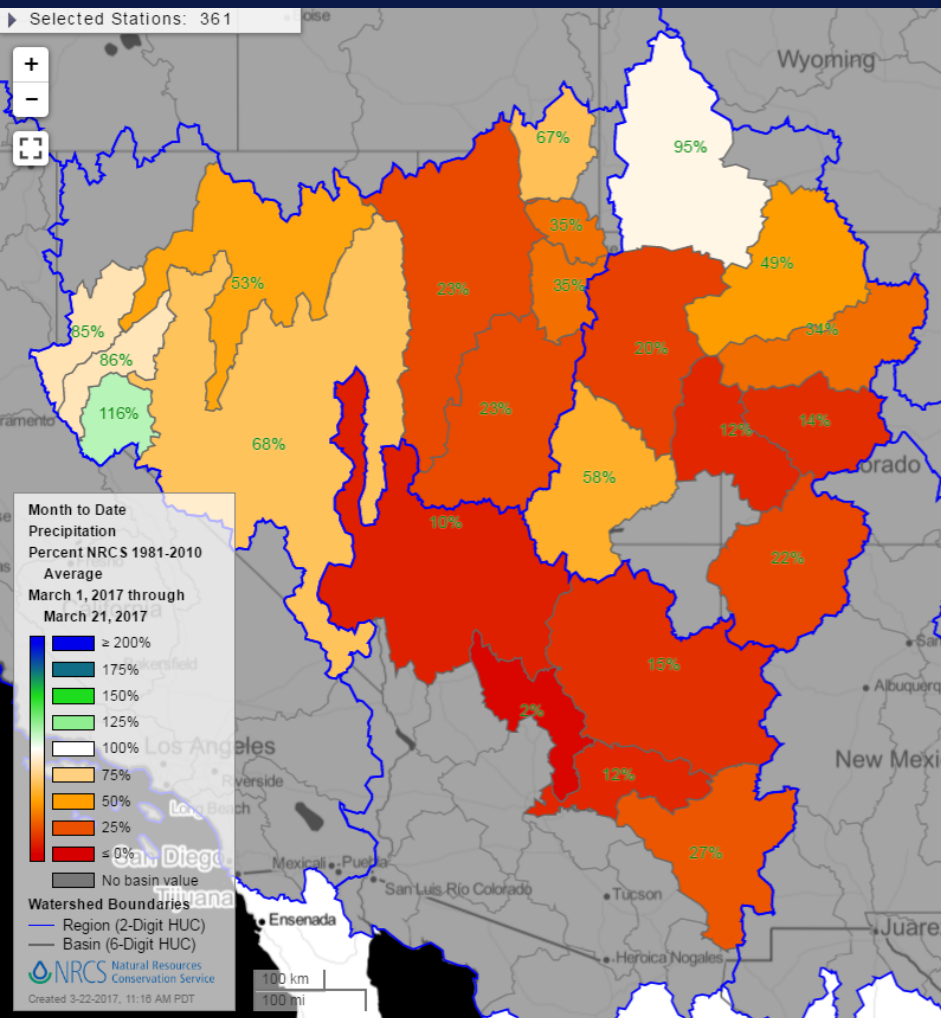
# Snowpack Conditions, Station Information and Data Acquisition/ Analysis

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United States Department of Agriculture  
Natural Resources Conservation Service  
National Water and Climate Center  
Portland, Oregon

Presented at  
Colorado River Forecast Service Meeting  
Salt Lake City, UT  
23 March 2017

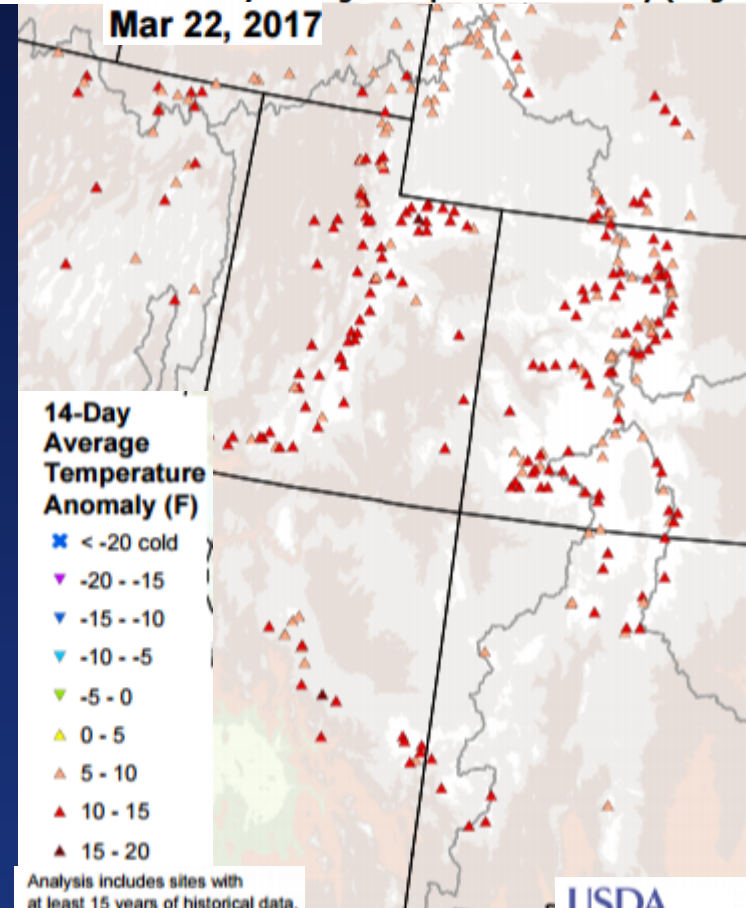
# Mountain Precipitation, March 2017



# March Air Temperature Anomaly

**SNOTEL 14-Day Average Temperature Anomaly (Degrees F)**

**Mar 22, 2017**



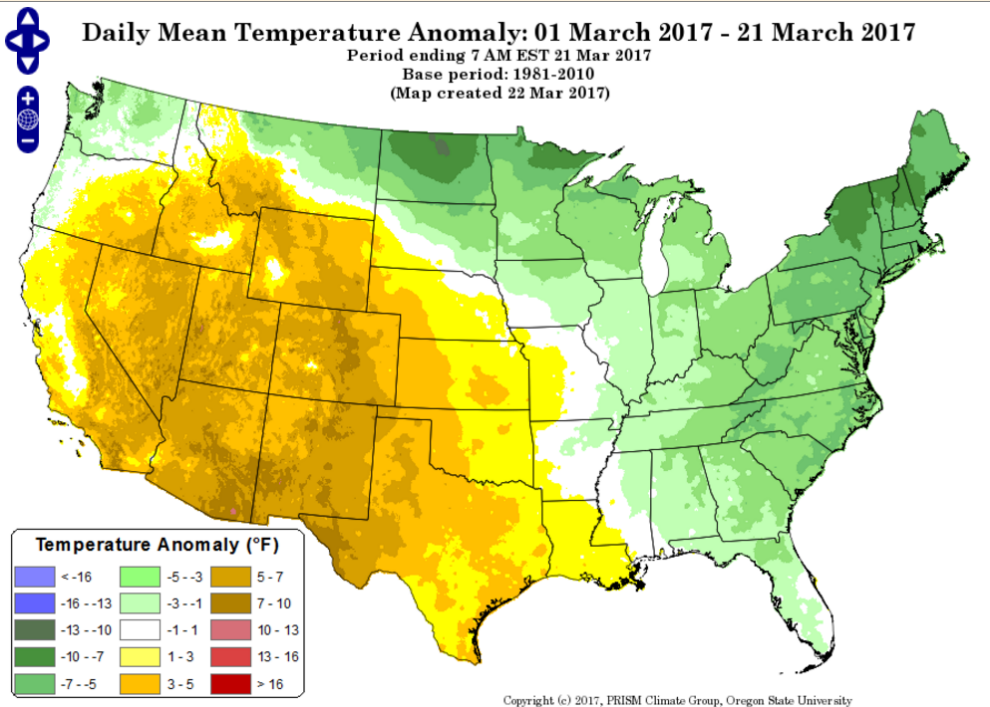
**14-Day Average Temperature Anomaly (F)**

- ✘ < -20 cold
- ▼ -20 - -15
- ▼ -15 - -10
- ▼ -10 - -5
- ▼ -5 - 0
- ▲ 0 - 5
- ▲ 5 - 10
- ▲ 10 - 15
- ▲ 15 - 20

Analysis includes sites with at least 15 years of historical data. Anomalies are departures from the 14-day average of the period of record median. Temperature is measured from midnight to midnight.

**Daily Mean Temperature Anomaly: 01 March 2017 - 21 March 2017**

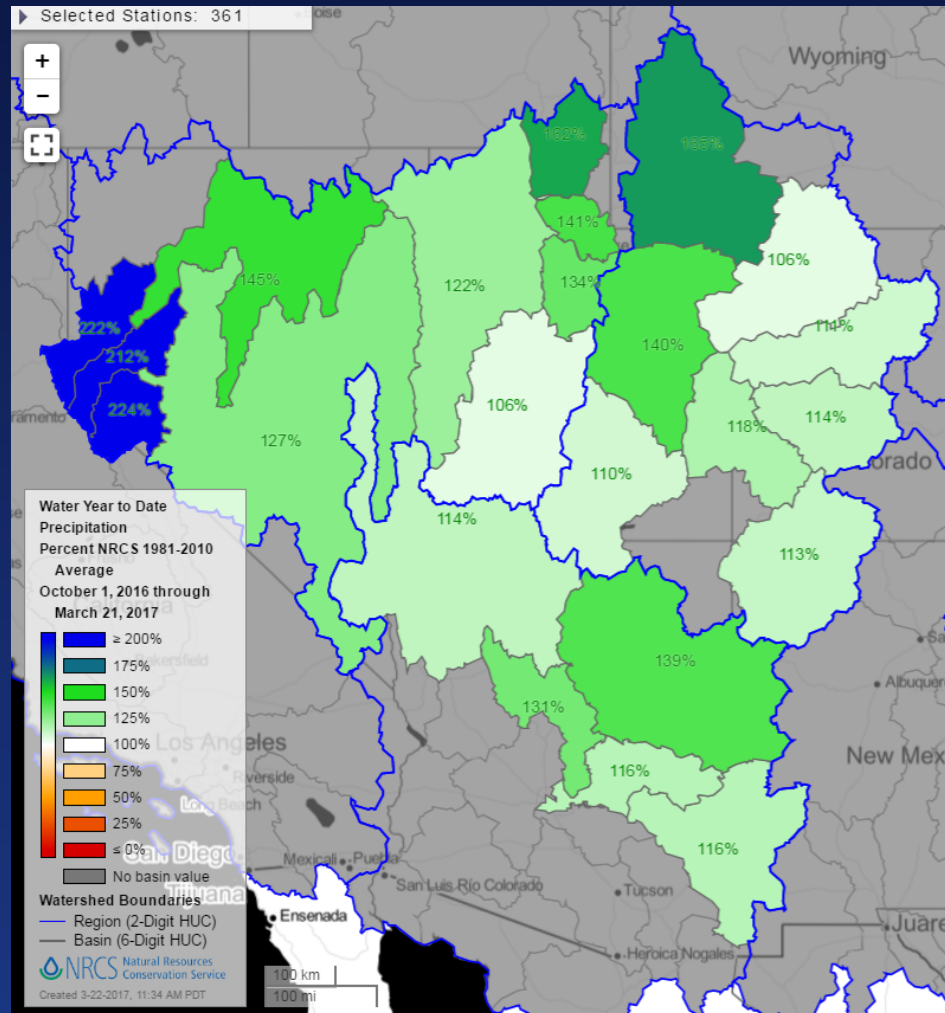
Period ending 7 AM EST 21 Mar 2017  
Base period: 1981-2010  
(Map created 22 Mar 2017)



- Temperature Anomaly (°F)**
- |           |         |         |
|-----------|---------|---------|
| < -16     | -5 - -3 | 5 - 7   |
| -16 - -13 | -3 - -1 | 7 - 10  |
| -13 - -10 | -1 - 1  | 10 - 13 |
| -10 - -7  | 1 - 3   | 13 - 16 |
| -7 - -5   | 3 - 5   | > 16    |

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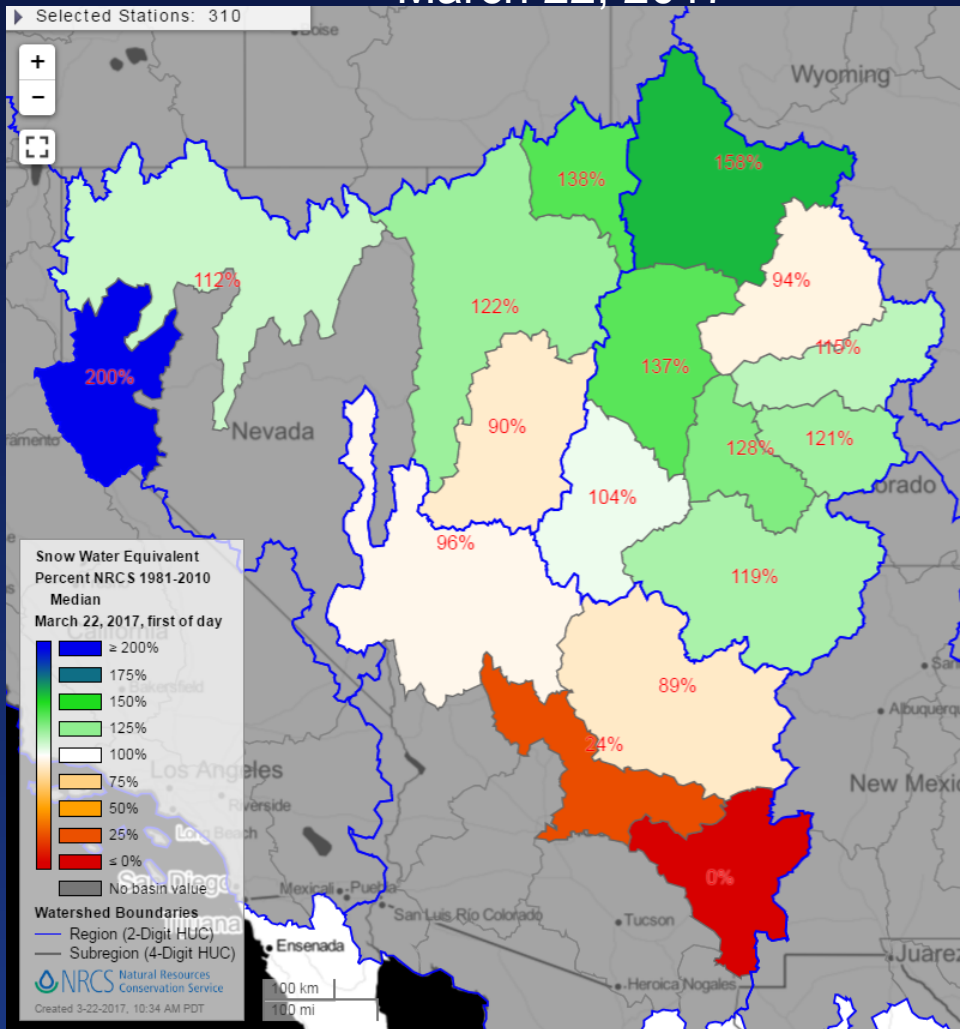
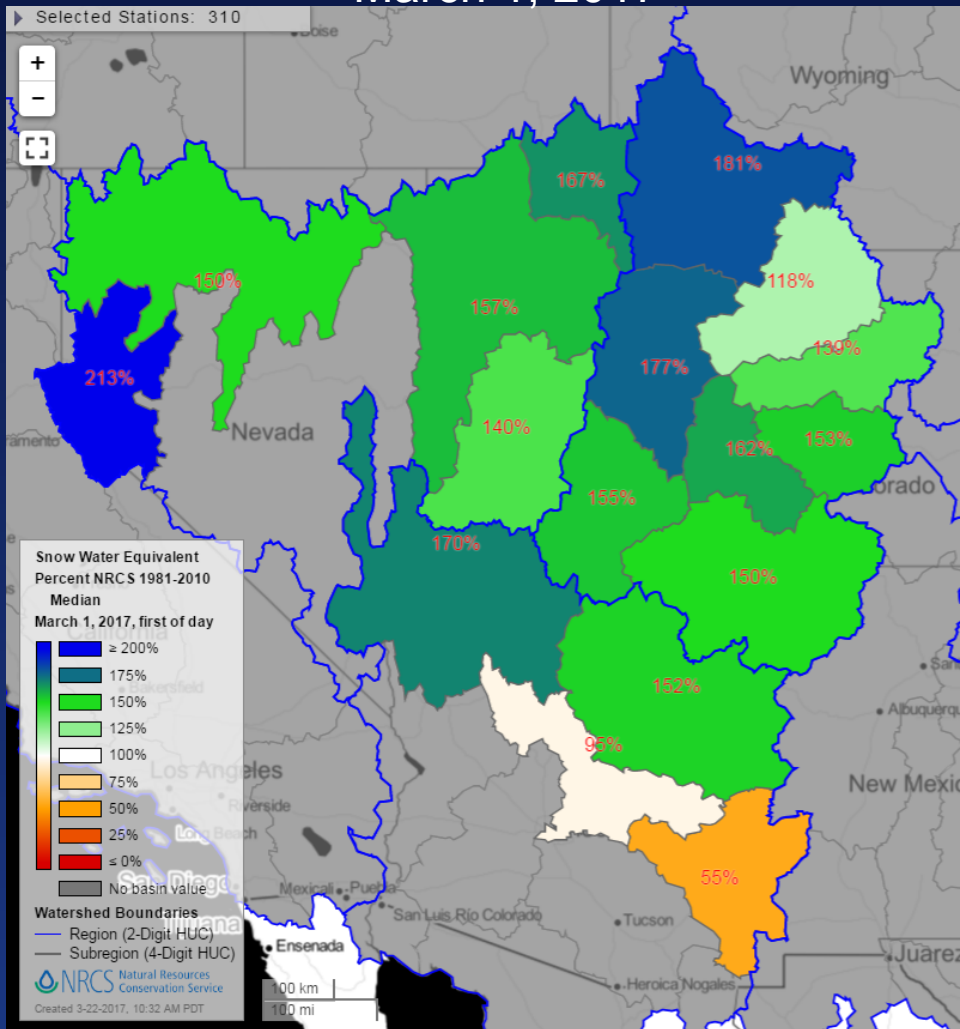
# Water Year Mountain Precipitation through March 21, 2017



# Mountain Snowpack Conditions (% Median)

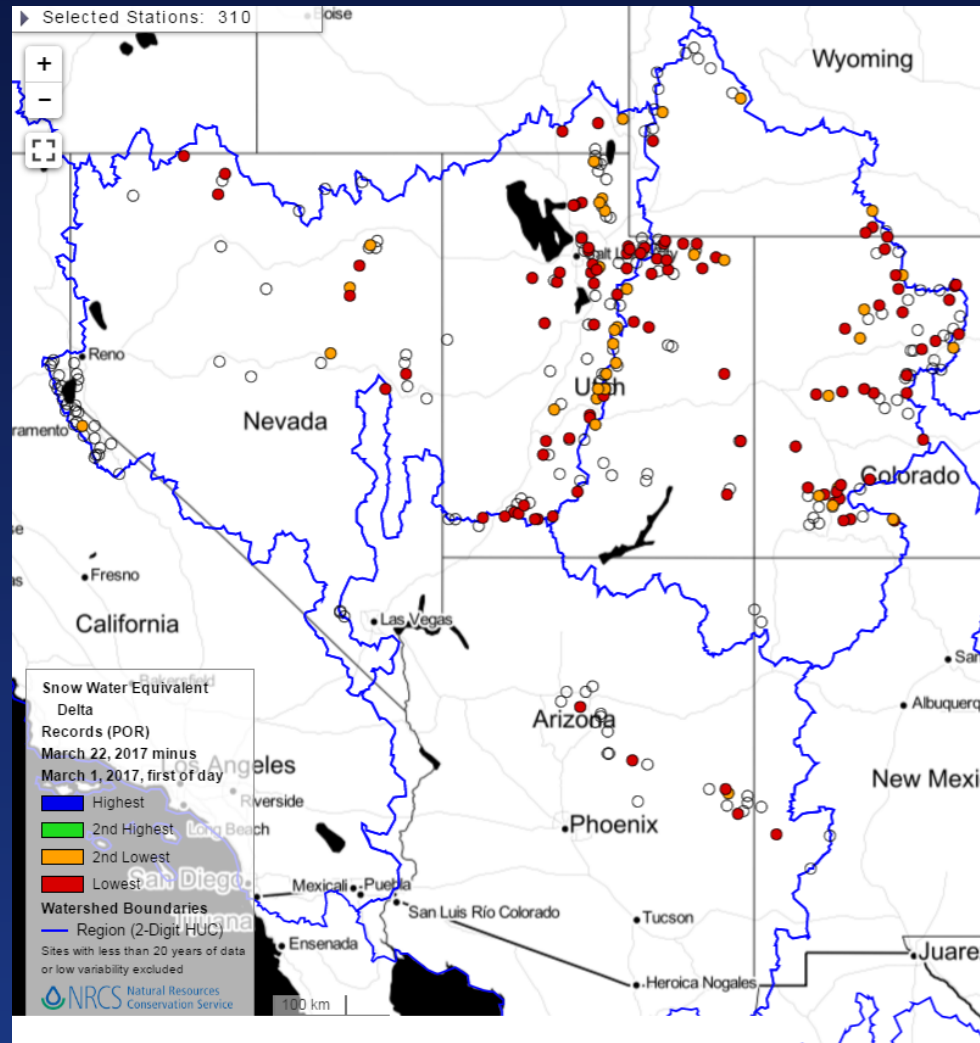
March 1, 2017

March 22, 2017

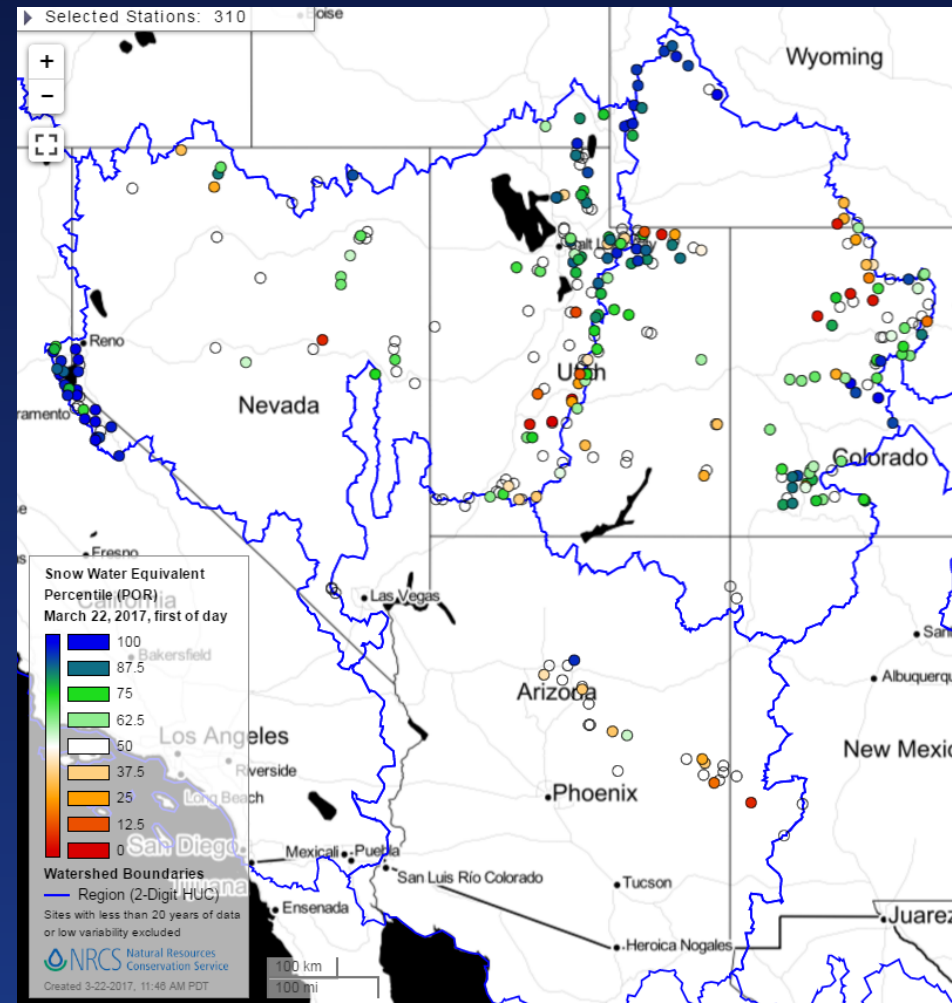
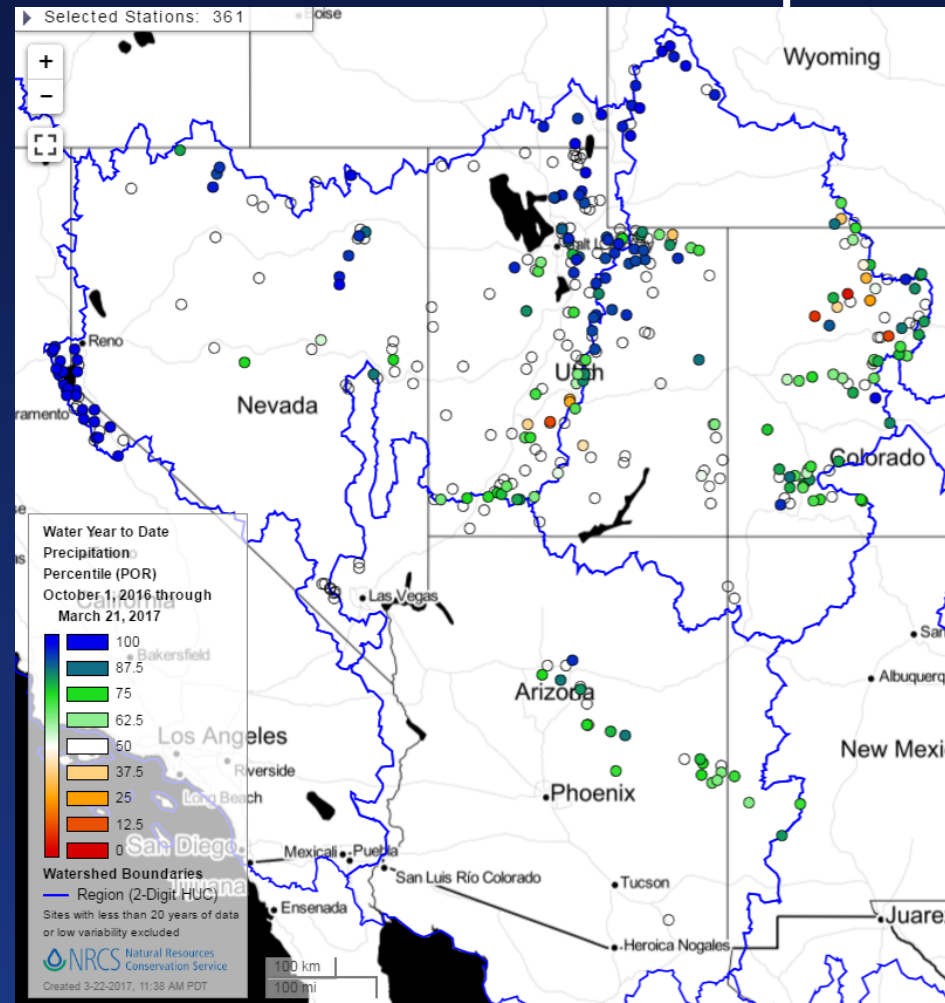




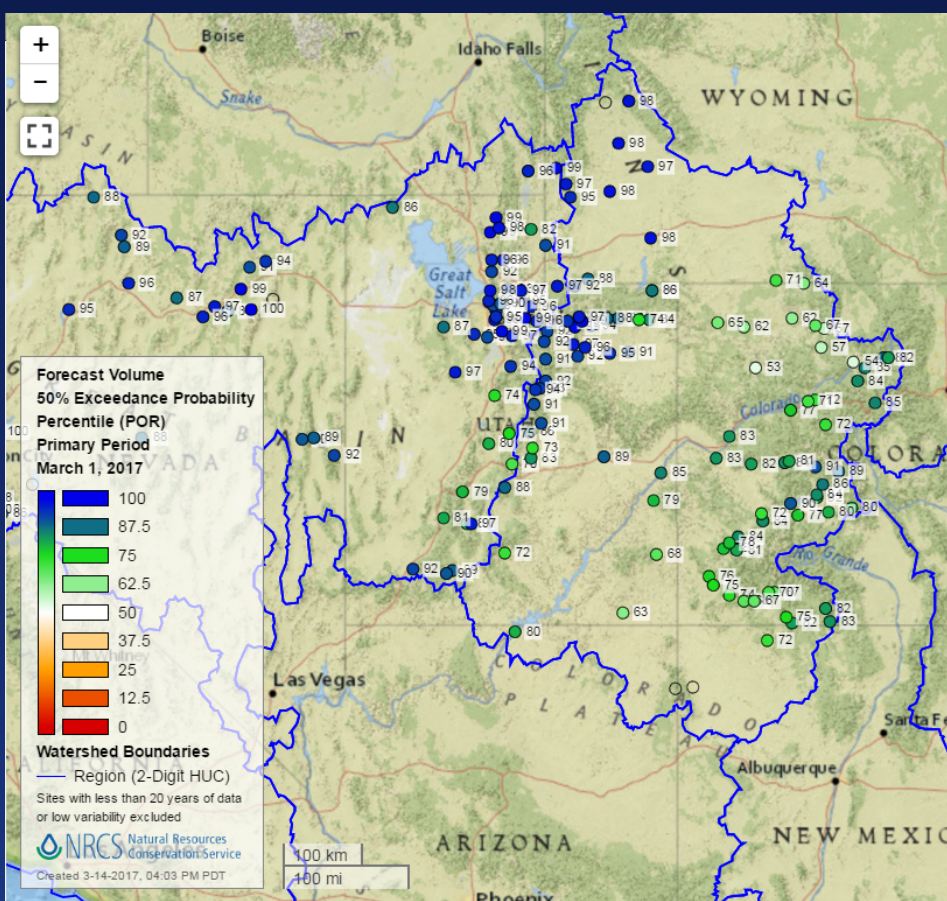
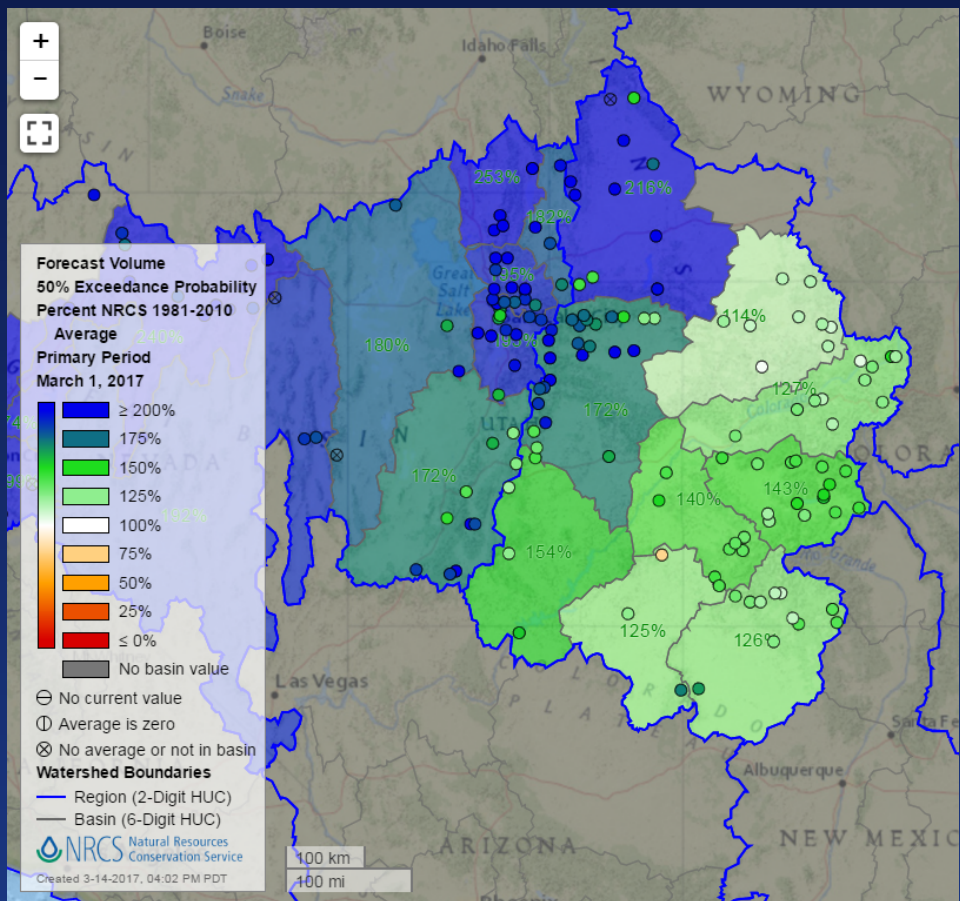
# March Snow Water Equivalent Delta Records



# Mountain Water Year Precipitation and Snow Water Equivalent Percentiles



# March 1, 2017 Forecasts

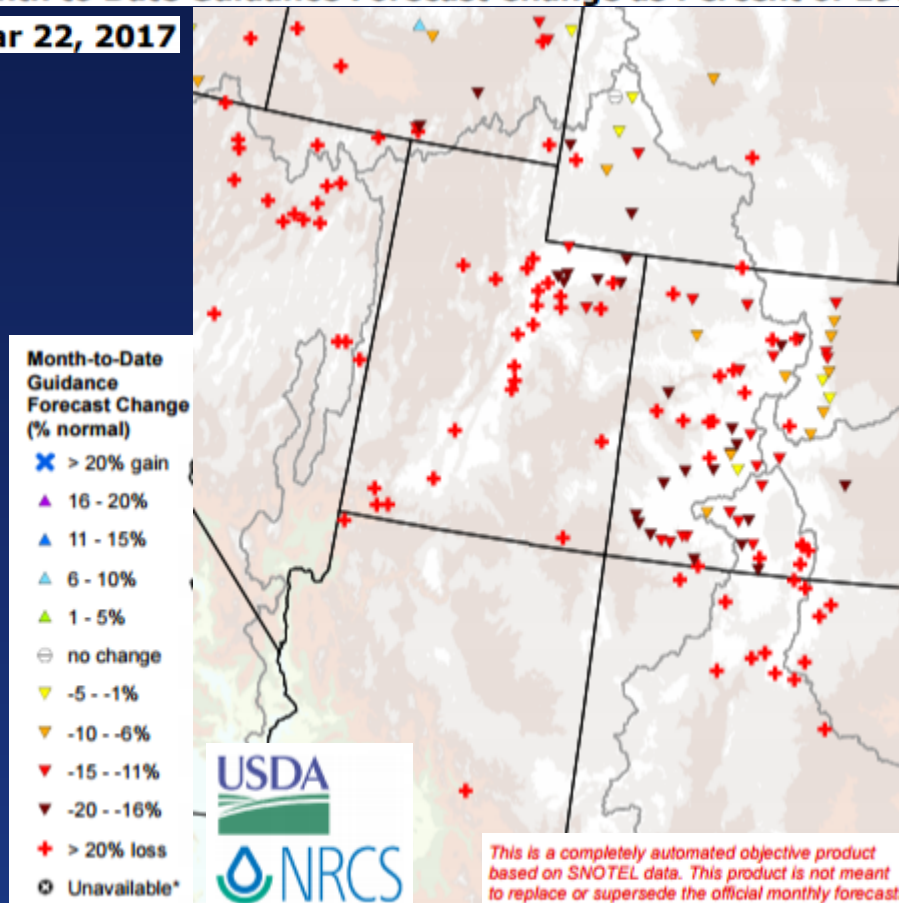




# Month to Date Change in Forecast Guidance

## Month to Date Guidance Forecast Change as Percent of 1981-2010 Normal

Mar 22, 2017



# Large Winter Storm Cycles – Adverse effects on SNOTEL Precipitation Data Collection

- WY 2017 has seen extensive capping and plugging of SNOTEL storage gages throughout the Green River Basin and eastern Great Basin
- Storage gage capping and plugging results in invalid precipitation data
- NRCS SNOTEL Data Editors use data from other sensors and nearby sites to estimate precipitation (usually collocated snow pillow data)
- The longer the plug or cap persists, the less confident the precipitation estimate becomes

## Capped Storage Gages

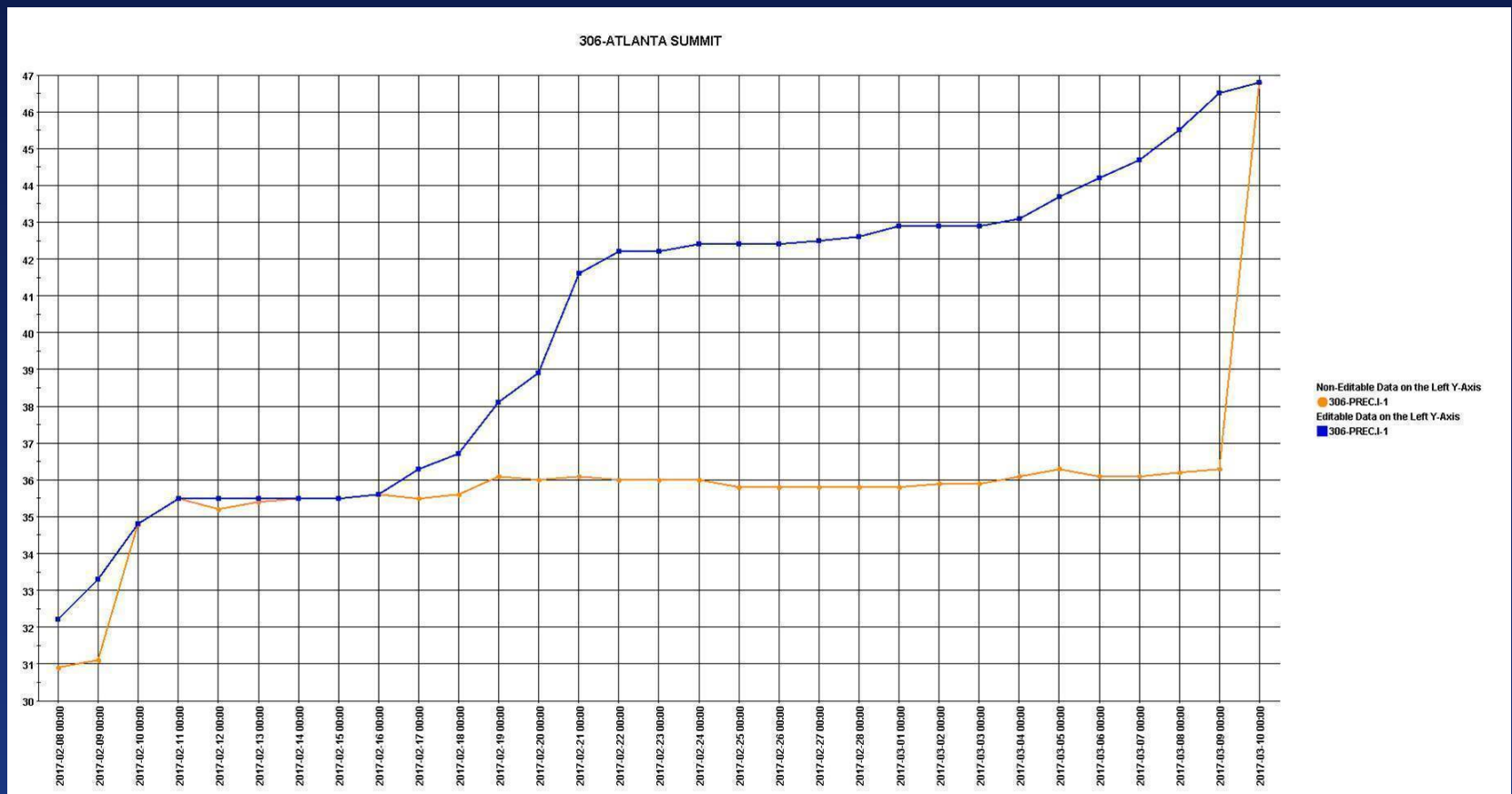


# Plugged Storage Gages



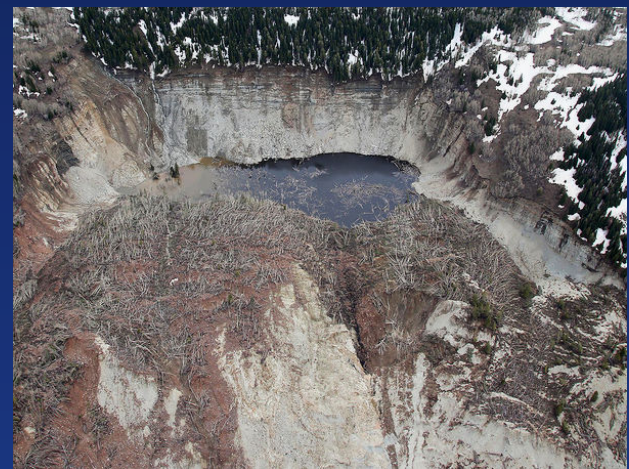


# Example Data from Plugged Storage Gage



## SNOTEL Installation Schedule, 2017 Colorado Basin and Great Basin

- 1 New site scheduled for installation in 2017 – West Salt Creek on north side of Grand Mesa. Tributary to Plateau Creek. Related to continued flood and landslide concerns at the site of the West Salt Creek landslide of May 25, 2014.



# Trapper Lake Snotel Wildfire Impact (2002)

Pre-Disturbance



Post-Disturbance





# Trapper Lake Snotel, Winter 2017





## Red Mountain Pass Snotel – Land Ownership Issue

- Site is on private land and landowner wants it removed
- Red Mountain Pass Snotel is a long term, high elevation site
- Critical for water supply forecasting in the Dolores, Gunnison and San Juan River Basins
- **Option to purchase land**
- Option to move site
- Option to discontinue site
- Outcome actively being negotiated

## SNOTEL and AWDB Data Access

- Report Generator

<http://wcc.sc.egov.usda.gov/reportGenerator/>

- AWDB Web Service:

[http://www.wcc.nrcs.usda.gov/web\\_service/  
awdb\\_web\\_service\\_landing.htm](http://www.wcc.nrcs.usda.gov/web_service/awdb_web_service_landing.htm)

## Data Analysis and Mapping

- Interactive Map:  
[http://www.wcc.nrcs.usda.gov/snow/snow\\_map.html](http://www.wcc.nrcs.usda.gov/snow/snow_map.html)
- Snotel Update Report:  
<http://wcc.sc.egov.usda.gov/reports/SelectUpdateReport.html>
- NRCS State Snow Survey Reports and Products  
[https://www.wcc.nrcs.usda.gov/partnerships/links\\_wsfs.html](https://www.wcc.nrcs.usda.gov/partnerships/links_wsfs.html)

## Contact NRCS Snow Survey and Water Supply Forecasting Program

- <http://www.wcc.nrcs.usda.gov/contact/index.html>
- The Contact Help Center offers comprehensive contact choices based on subject matter
- And of course, you can always contact me directly:  
[angus.goodbody@por.usda.gov](mailto:angus.goodbody@por.usda.gov)