

# **SNOTEL**

# Hourly Data Collected at Each SNOTEL site.... SNE - quality - good

Record length: 20-30 yr

+/-0.2 inda

Precipitation: hourly data are poor, daily data are fair to good. Typically +/- 0.1 to 0.2 inch Record Length: 20-30 yrs

## Temperature: Historical can be very poor (caveat emptor - 1 deg C warm bias old sensor to current). Current to past 10/15 years is good to excellent. Typically at 17 feet above ground. +/- 0.2 F Record length: use only the last 10 to 15 yrs.

http://www.ut.nrcs.usda.gov/snow/siteinfo/data\_bias/The\_SNOTEL\_Temperature\_Data\_Set-2.pdf



# Snow Depth – mostly good except during storm events. +/- 1 inch. Record Length: 10-20 years.





Soil Moisture/Temperature at 2, 8 and 20 inch depths – Excellent data quality. +/- 0.1 degree. Record Length: 5-10 yrs

### Parrish Creek Snowpack, Soil Moisture and Centerville Creek Streamflow

SWE - - - AVG-SM -----Flow





Colorado: 112 Sites, 33 sites with enhanced sensors: soil moisture/temperature and snow depth



# 26 SNOTELs, 7 with SM/ST - depth



### Arizona – 21 SNOTELs 4 with SM/ST and depth



**Colorado DCO currently has 112 SNOTELS in Colorado and are installing 3 this year:** 

- 1. Medicine Bow, WY
- 2. Black Mesa on the Dolores
- 3. Bar-M in Arizona



And then 4 more next year and that's it folks... after that – no more unless they get more staff or different management...

- 1. New Mexico on the Rio Brazos
- 2. Sawtooth on the south Platte
- 3. Elkhead Divide near Steamboat Springs
- 4. High Lonesome near Granby





At the end of this and next years field season Utah will have about 125 SNOTEL sites...

All sites have SM/ST and depth.



# **Utah Snotel sites installed this year...**



Upper Joes, Wrigley Creek





### Yankee Reservoir, Rees Flat





GBRC HQ, GBRC Meadows





Thistle Flat, Mt Baldy





LaSal Mt Lower, Bevans Cabin





Huntington Horseshoe, Buckboard Flat





Left to install this year: Hobble Creek Redden Mine



Buck Pasture... Half done already...

SNOTEL sites to install next year...



Corral, Sunflower Flat





#### Panguitch Lake and one at Ibapah

As well as 4+ in Nevada...





At the end of next year – Utah will have 7 NRCS snow courses that do not have co-located SNOTELs in Utah 6 non NRCS snow courses...



**New Technology** 

### **Aerial Marker automation**

Iridium satellite modems combined with a depth sensor, temp sensor, SM/ST sensors and potentially a small 8 inch rain gage to bring back daily or sub daily data

Small footprint may allow more data from more areas, especially sensitive areas...

# Henrys Fork, High Uintahs Wilderness area...

### **Future directions**

We expect budget cuts. All government does.

We are strategizing all areas of our program to obtain greater efficiency and reduce costs. Depending on future reductions we may have to make hard choices on what data and products are most important with regard to our mission of Water Supply Forecasting.



### The program has already had budget cuts.

These have so-far been offset by NHQ discretionary funds such that there have been no impacts and in fact – we have had an increase that has allowed the installation of some new sites. There are about 65 FTE's in the Snow Survey Program Total...

In a program this small – budget cuts of 10%-20% will have severe impacts on our ability to operate and maintain data and products.

Cumulative effects of annual cuts will be analyzed each year and appropriate steps taken to maintain highest priority data.