

Sublimation of Snow Daily Weather Blog

Discussion of observations from the site, Gothic, and synoptic events weather around the region for Winter 2022-2023

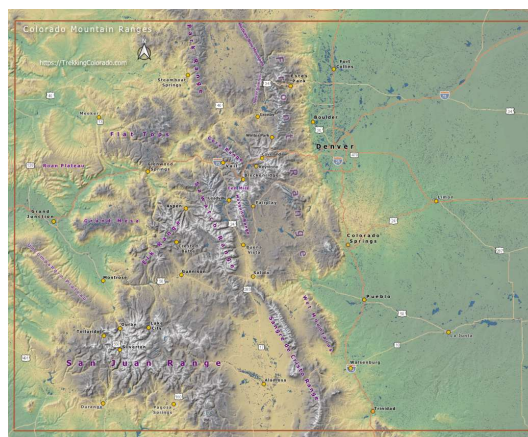
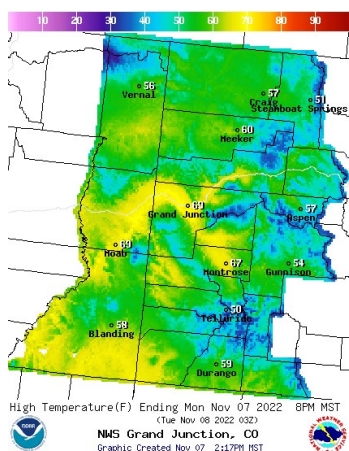
Week 1: October 22 - October 30, 2022

Resource Links

- [Surface Analysis Maps](#)
- [Windy.com for Forecast](#)
- [Tropical Tidbits Forecast](#)
- [billy barr site](#)
- [Grand Junction Area Forecast Discussion](#)
- [SOS Field Project - EOL/ISFS Home](#)

Mountain Ranges of CO

County Warning Area



October 22, 2022

Daily Weather Discussion

From billy barr: clouds move in during the night keeping it warm and the weather change begins. Steady clearing after sunrise as wind picks up with strong gusts, then clouds start to build back midafternoon.

Synoptic Overview

From NWS Grand Junction: Mid-level trough approaching. Cirrus can be seen moving east. Arrival in front should be met with strong winds. Possibility for snow squalls with steep lapse rates, moderate shear and CAPE. Rapid drop in temperature after front arrival. Strong winds mean blowing snow predicted

Equipment Notes

Pressure temperature at 1 meter on C tower seems low.
Min temperatures at night, light winds

Figures

N/A

October 23, 2022

Daily Weather Discussion

From billy barr: cloudy and warm overnight with just a few flakes of snow until starting up just after 3 a.m. and picking up towards sunrise with steady moderate wind and strong gusting. Light snow after sunrise as wind dies down (die wind, die!) then variable snowfall and wind into the afternoon with a little clearing at sunset as the temperature drops, then cloudy as snow resumes.

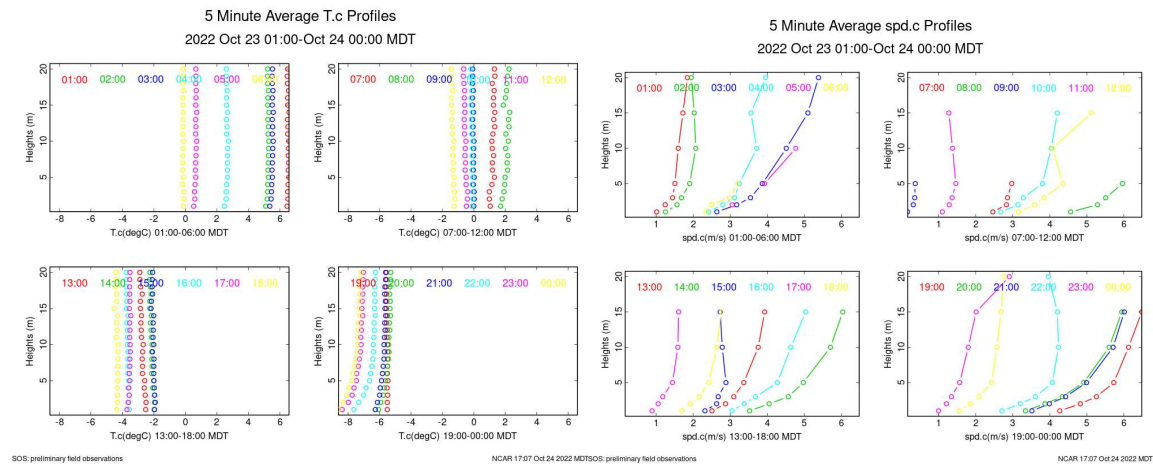
Synoptic Overview

Front hit Durango around midday with gusty winds for the afternoon (hit CB earlier). Positive tilt in the cold front axis means this hit the CB area earlier in the day. More efficient snow growth as temperatures move into the dendritic growth zone. Post-frontal may bring in hard freeze. Positively tilting ridge moves over the area after a storm. High temperatures expected to be low tomorrow (-10 to -20 below normal)

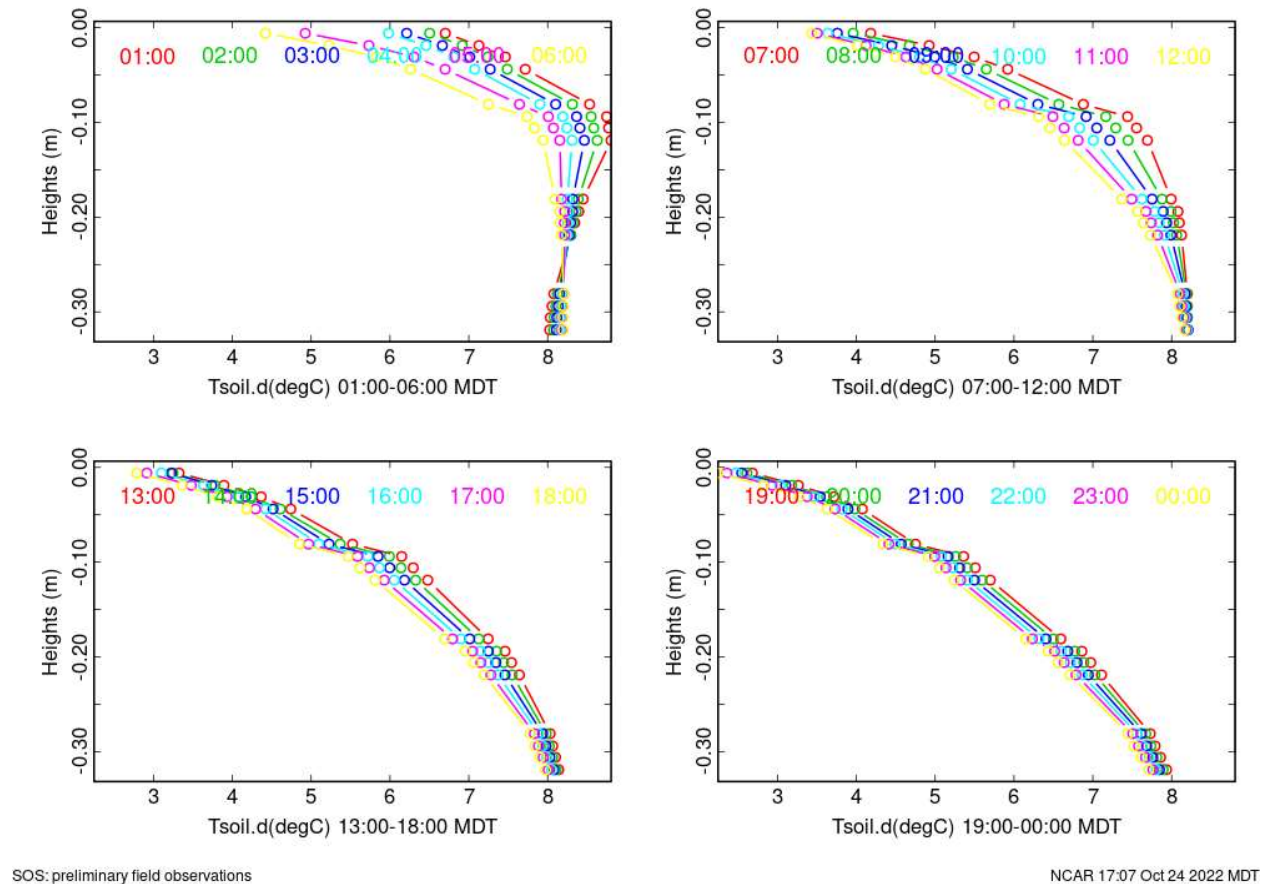
Equipment Notes

- Pressure at central tower at 1 meter still off
- Front seems to move through between 0600 and 1200, RH rises with front, temps drop and winds increase
- Wind speed dropped out at all levels initially with higher wind speeds, especially at the 20m location. This affected all sonic measurements, must be from blowing snow conditions
- Load cells for snow pillows not showing good values
- Snow temperatures drop sharply

Figures



5 Minute Average Tsoil.d Profiles 2022 Oct 23 01:00-Oct 24 00:00 MDT



Cold front arrival and snow arrival stabilized soil temperatures quite quickly!

October 24, 2022

Daily Weather Discussion

From billy barr: cloudy with snow after dark, then clearing and colder overnight. Some clouds move back and wind starts up and it stays on the cool side with variable afternoon cloud cover and steady moderate wind.

Synoptic Overview

Cold air advection (look for backing winds in CCW direction in radiosonde). Convective elements present with this CAA and old moisture. Very cold temps in growing areas. Another closed system up north may come in for winter weather. AR moisture from PNW may come to fruition as some light snow in the afternoon Tuesday (small snowfall expected).

Equipment Notes

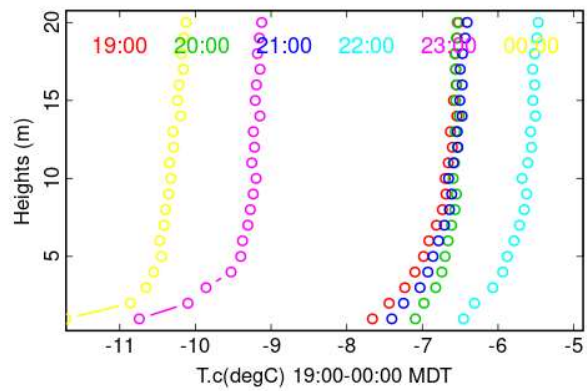
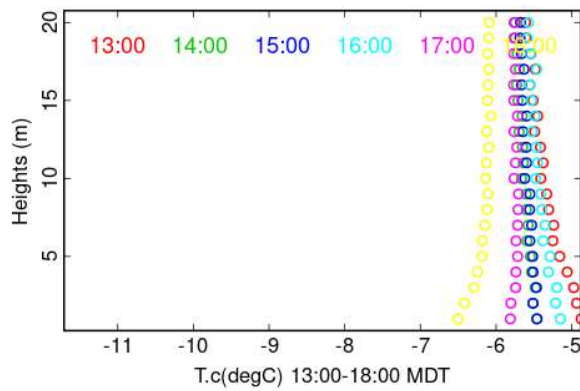
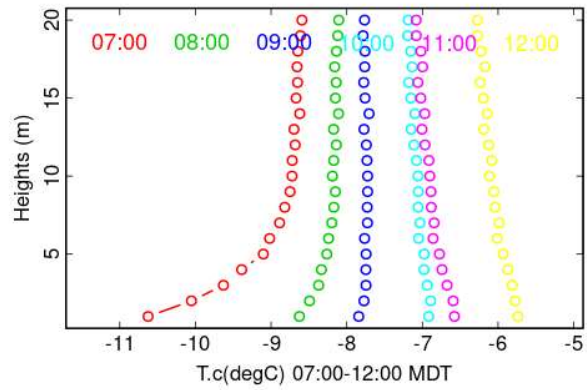
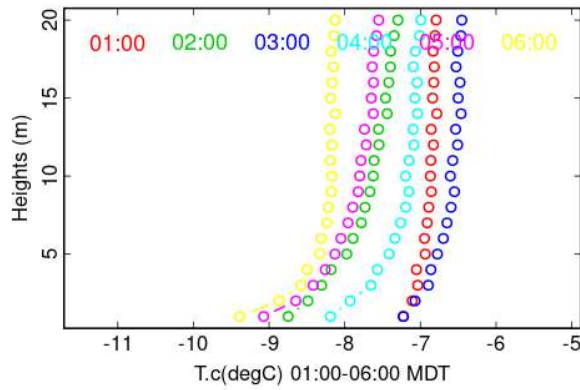
- Sonics back on track with some decent wind speeds above 1 meter (>5 m/s) all the way up
- RH is lower with temperatures well below 0
- Soil temperatures insulated by snow
- Gsoil is strongly negative (heating up snow above from heat in the ground)
- Still want Vpile temperatures so we can get observed surface temperatures from Apogee sensors
- Looks like P at 1 meter on the central tower looks better, but still a bit off.

Figures

Cold temps near surface generally, until it gets warmer

5 Minute Average T.c Profiles

2022 Oct 24 01:00-Oct 25 00:00 MDT

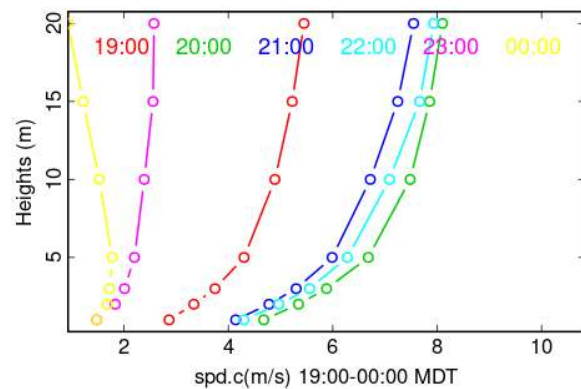
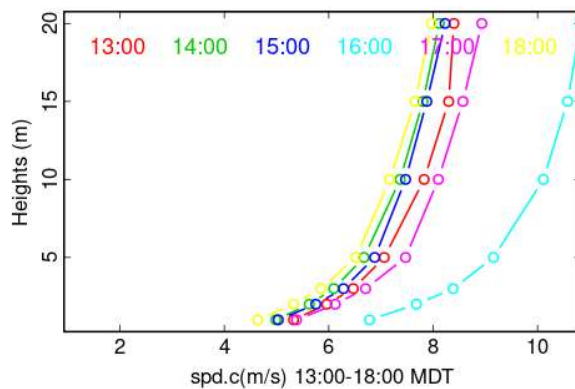
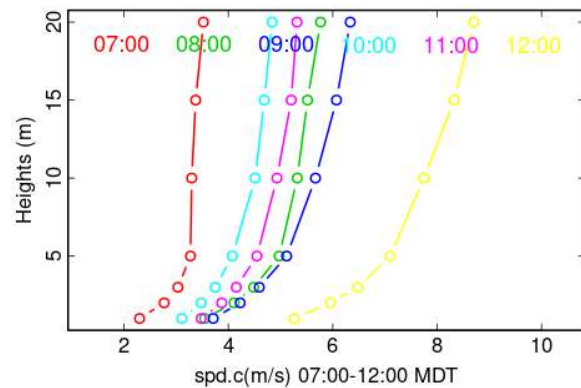
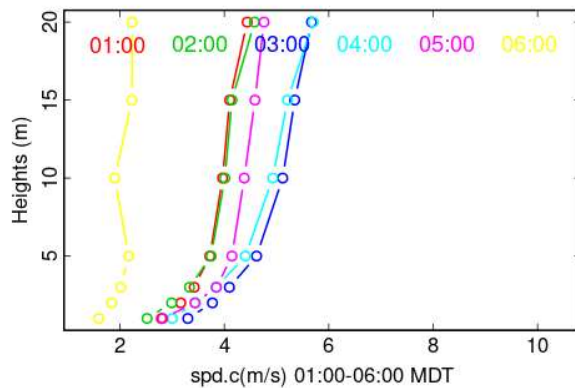


SOS: preliminary field observations

NCAR 17:07 Oct 25 2022 MDT

Strong winds too

5 Minute Average spd.c Profiles 2022 Oct 24 01:00-Oct 25 00:00 MDT



SOS: preliminary field observations

NCAR 17:07 Oct 25 2022 MDT

October 25, 2022

Daily Weather Discussion

From billy barr: clear and easily the coldest day of this winter. Steady warming until clouds move in before noon and temperature drops, then wind in the afternoon with scattered, very light snowfall.

Synoptic Overview

Transient mid-level short wave ridge with low-amplitude trough upstream over PNW. Flow shifts to the SW ahead of the trough from PNW. Light scattered showers continue over the region tonight. Small accumulations of a few inches possible. Unsettled weather in the region without WAA will result in cold temperatures throughout the day (-10 below normal), but clouds will buffer overnight lows.

Equipment Notes

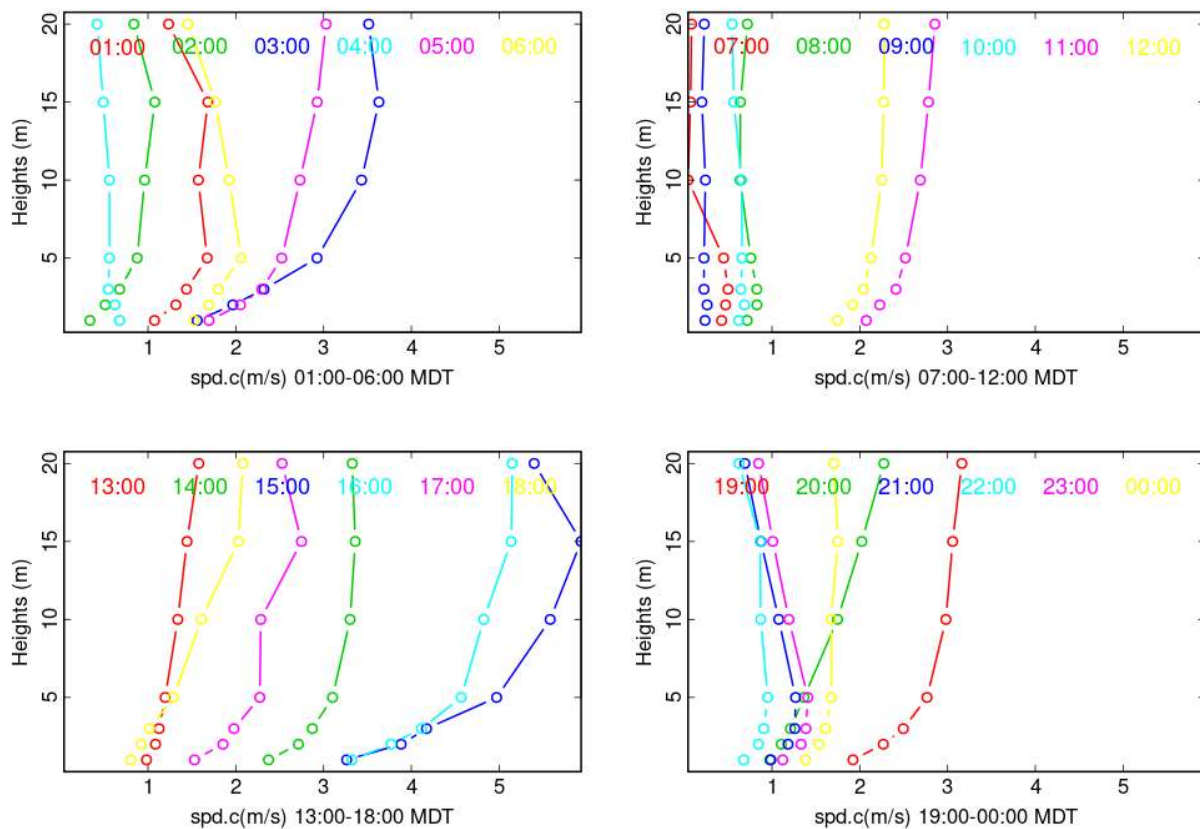
- Ground heat flux still showing energy into snow
- Tsoil moving near 0 at the surface
- P at 1 meter on central tower now looks too high
- Cold temps last night and warming to around freezing during the day. Pretty well mixed in 20 meters with temps and RH looking similar
- Wind speeds also consistent throughout the profile

Figures

Generally well mixed conditions with weak winds:

5 Minute Average spd.c Profiles

2022 Oct 25 01:00-Oct 26 00:00 MDT

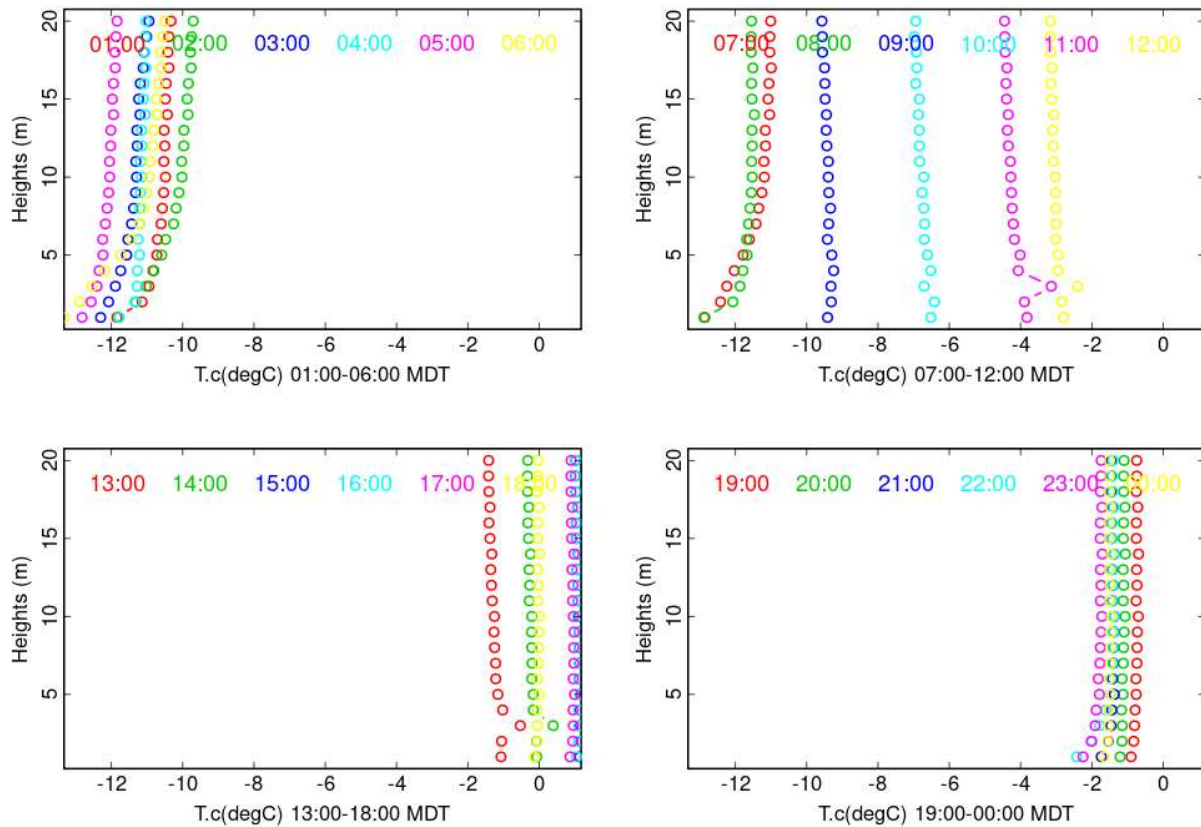


SOS: preliminary field observations

NCAR 17:07 Oct 26 2022 MDT

Same well mixed conditions with temps

5 Minute Average T.c Profiles 2022 Oct 25 01:00-Oct 26 00:00 MDT



SOS: preliminary field observations

NCAR 17:07 Oct 26 2022 MDT

October 26, 2022

Daily Weather Discussion

From billy barr: cloudy and mild with snow starting around 4 a.m., picking up an hour before sunrise. Steady snow through the morning letting up mid-day with no temperature movement. Cloudy with only little afternoon snow.

Synoptic Overview

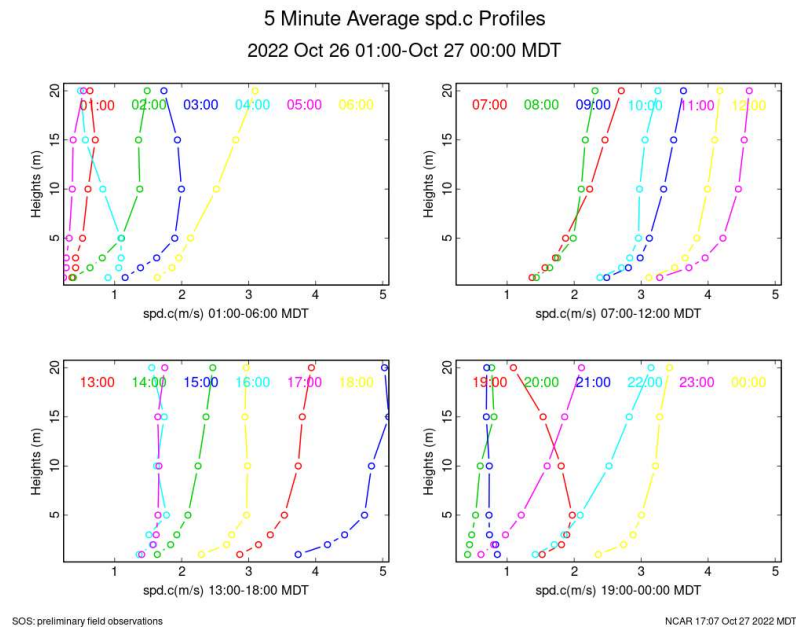
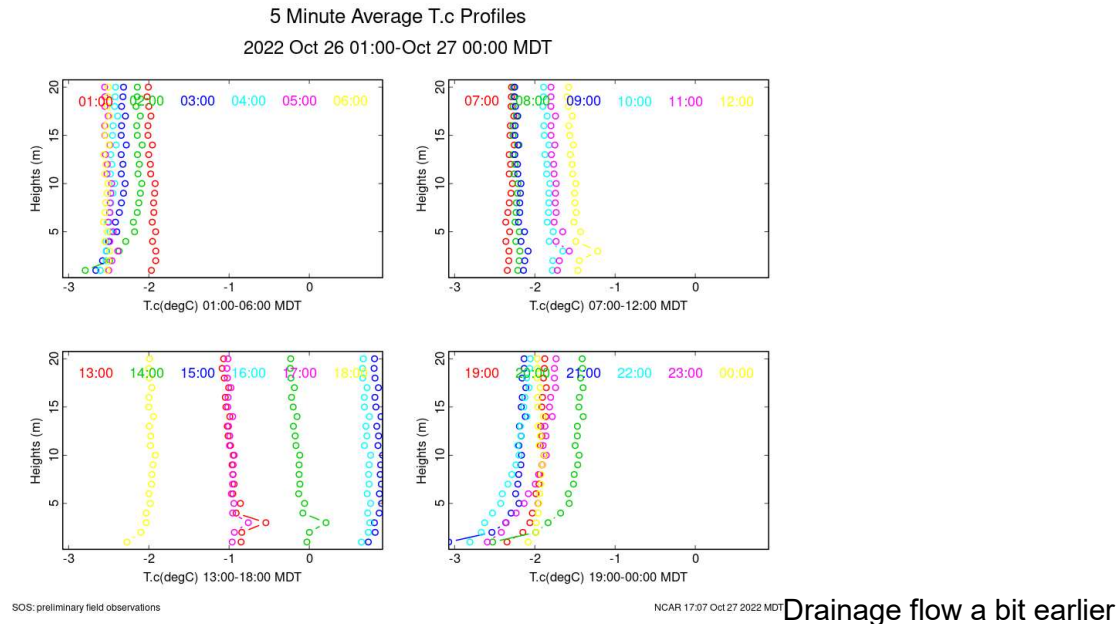
Cold front stalled around I-70 corridor in the wake of yesterday's low-level trough. Overrunning of this stationary front from the trough coming down from the PNW causing broad showers in the area. As this system closes in on the area, the overrunning will also be augmented by mid-level forcing in the negative divergence of the Q-vector (leading to rising air?) and divergence at upper levels, also leading to rising air. All this should enhance precip signals. Snow levels to rise higher to around 8500 ft during the day. Southeast driven surface front will enter the region

earlier tomorrow and snow levels should lower. Winds shift back to northwest on the rear flank of the system. Generally warmer temps over the day with tomorrow cooler

Equipment Notes

- T_{snow} at 0.4 not showing up
- All snow pillows are out
- With snow throughout the day, gas analyzer data went out for much of the day, but sonics were okay
- Winds weak and consistent through the profile
- Signal for snow in morning and cloudy in PM
- Consistent temperature throughout the day near -2
- Ground heat flux still negative but weaker

Figures



October 27, 2022

Daily Weather Discussion

From billy barr: cloudy and mild with scattered light snow through the night, picking up a couple hours before sunrise before stopping. Clouds thin with a little bit of clearing starting late morning to become partly cloudy.

Synoptic Overview

Cold front slowly moving across the area with snow rates around 1-in an hour found. More efficient snowfall at higher elevations with colder temperatures at 700 mb. Weak transitory ridge comes in overnight and should stay in place Friday. Cold temperatures below normal in response to colder temperatures aloft. Cold temperatures especially at night

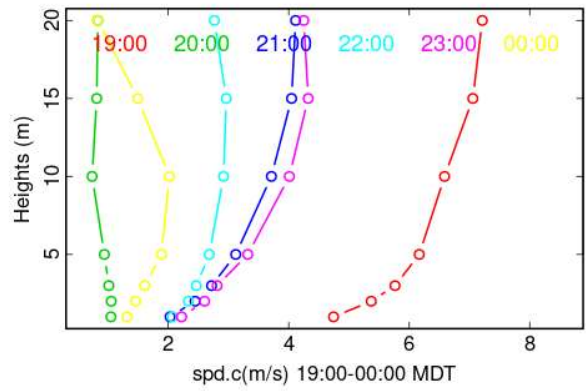
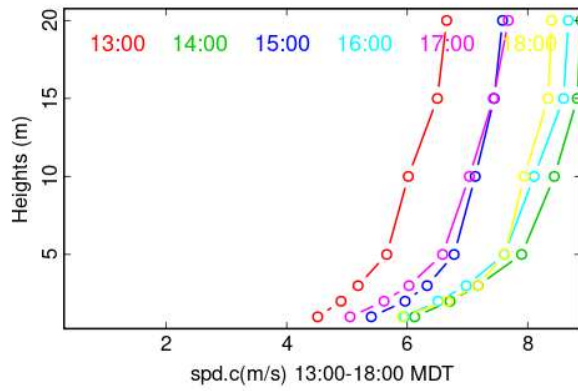
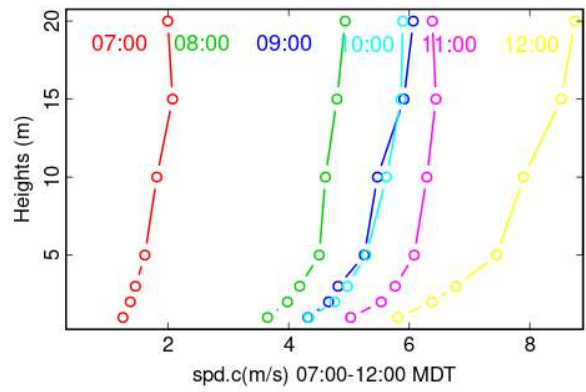
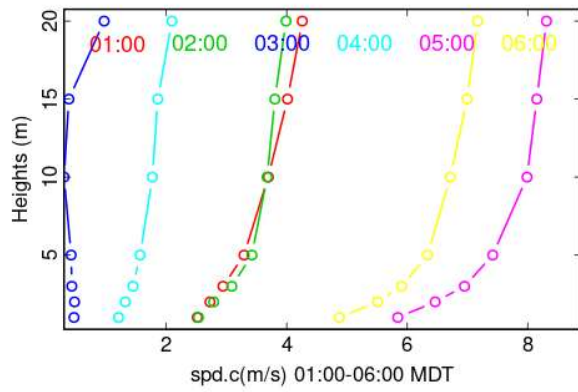
Equipment Notes

- Gsoil still consistently negative around -8 to -10
- Temps consistent but cool into the night with more stability here after 6 PM MDT and a 2 degree gradient in temps from 1 to 20m
- Vapor gradient moving up as well
- Signals for stability with winds too, some shear developing
- Gas analyzer went out a bit early on
- Tsnow showing nice gradient up to 1 meter of around 2 degrees

Figures

Stability increases into evening hours

5 Minute Average spd.c Profiles 2022 Oct 27 01:00-Oct 28 00:00 MDT



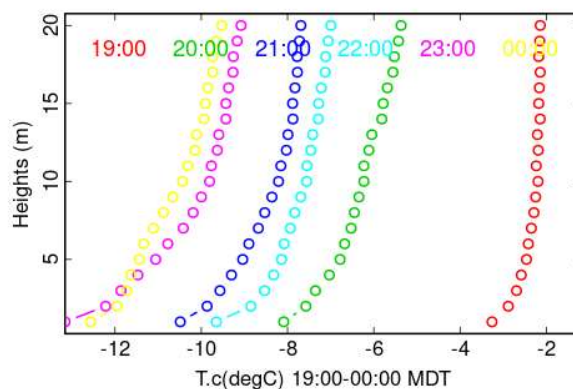
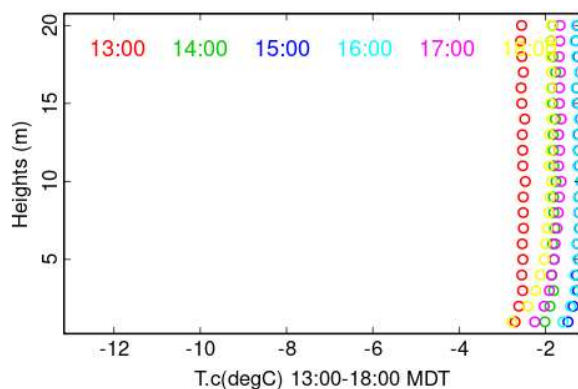
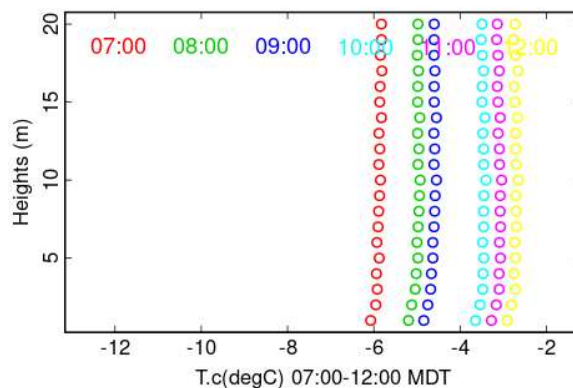
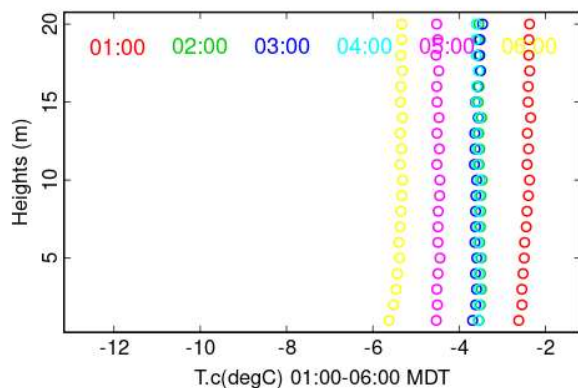
SOS: preliminary field observations

NCAR 17:07 Oct 28 2022 MDT

Consistent temps throughout the day with cooling into the night

5 Minute Average T.c Profiles

2022 Oct 27 01:00-Oct 28 00:00 MDT



SOS: preliminary field observations

NCAR 17:07 Oct 28 2022 MDT

October 28, 2022

Daily Weather Discussion

From billy barr: clear and the coldest morning of the year. A steady but slow warming through the morning, then picking up in the afternoon on a cloudless and calm day.

Synoptic Overview

Clear skies across the region this afternoon. Moisture, radiational cooling from the surface and light winds allowed low stratus to develop in upper Gunnison valley. Some moisture and weak shortwave will create a partly cloudy day for Saturday. Near normal temperatures expected tomorrow, with below normal

Equipment Notes

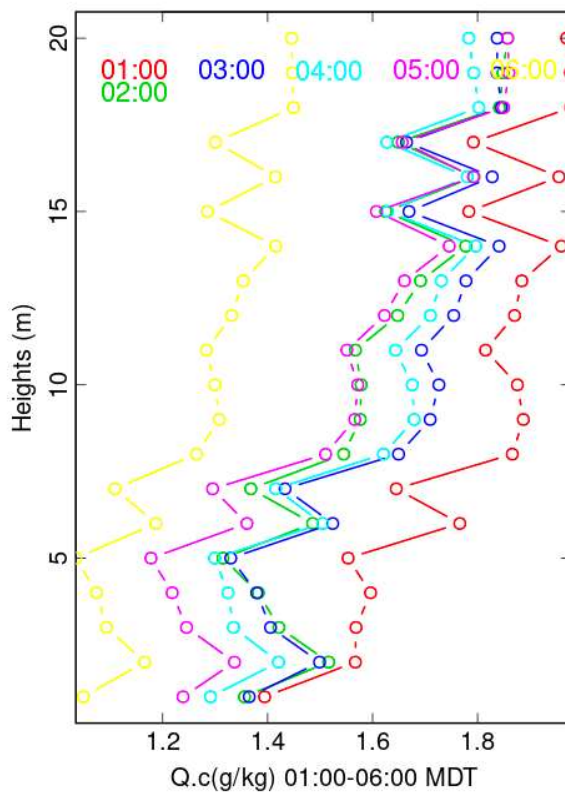
- Gsoil consistent
- Tsoil little lower at surface
- Well mixed during the day with quick warming for afternoon, around 0 degrees
- Still air mostly (light winds)
- Looks like T_{snow.04.uw} has got warm, it may be against the pole or something

Figures

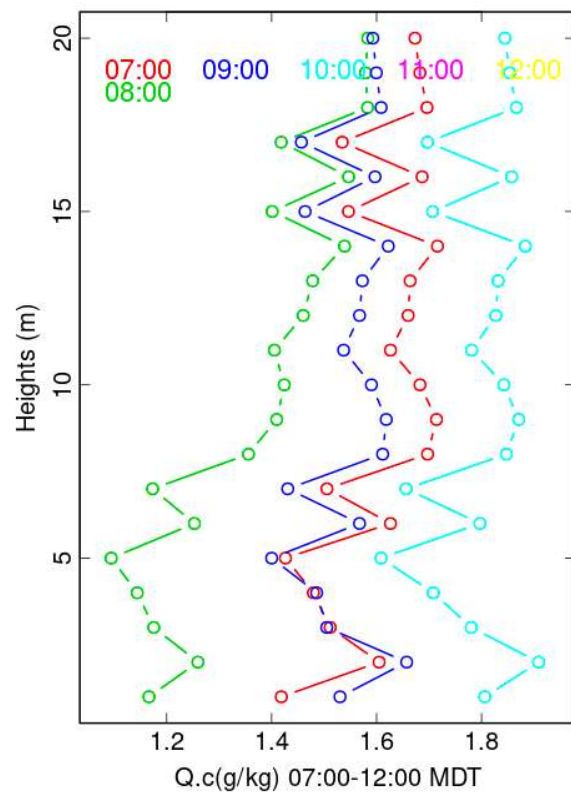
Gently winds in the night with increasing stability Gradient in water vapor

5 Minute Average Q.c Profiles

2022 Oct 28 01:00-Oct 28 12:00 MDT



SOS: preliminary field observations

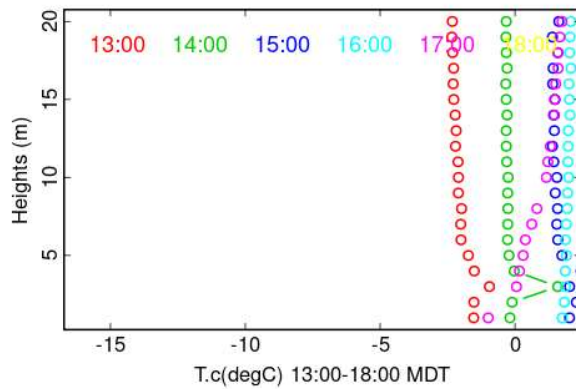
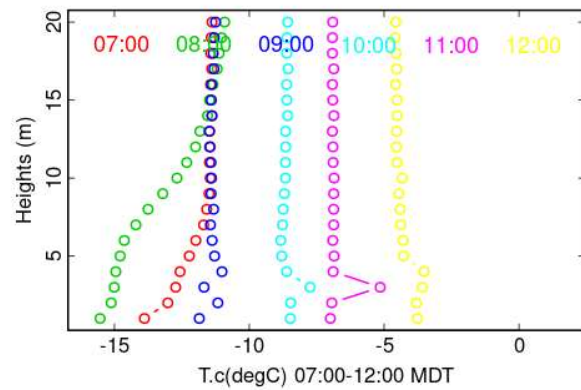
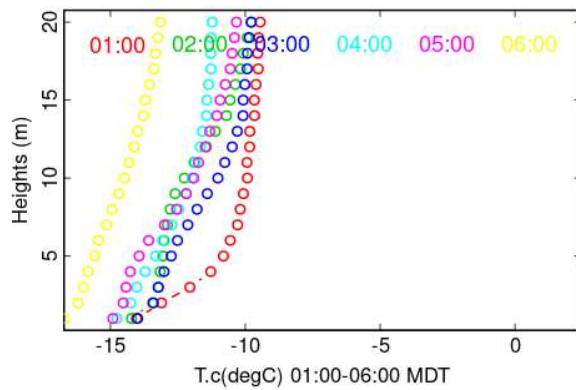


NCAR 10:07 Oct 28 2022 MDT

Nice temp gradient at night and coldest temperatures so far

5 Minute Average T.c Profiles

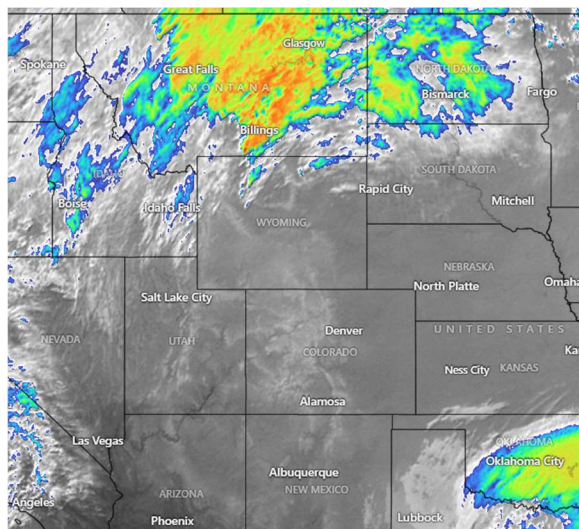
2022 Oct 28 01:00-Oct 28 18:00 MDT



SOS: preliminary field observations

NCAR 17:07 Oct 28 2022 MDT

IR Screenshot from WINDY: clear skies



October 29, 2022

Daily Weather Discussion

From billy barr: clear and cool with just some scattered clouds

Synoptic Overview

Weak shortwave trough, possible presence of high clouds but precip not expected. Highs to remain below normal with lows near normal

Equipment Notes

- Apogee on uw tower is quite wonky, very extreme values

October 30, 2022

Daily Weather Discussion

From billy barr: clear and cool overnight with variable cloud cover through the day before clearing out late day.

Synoptic Overview

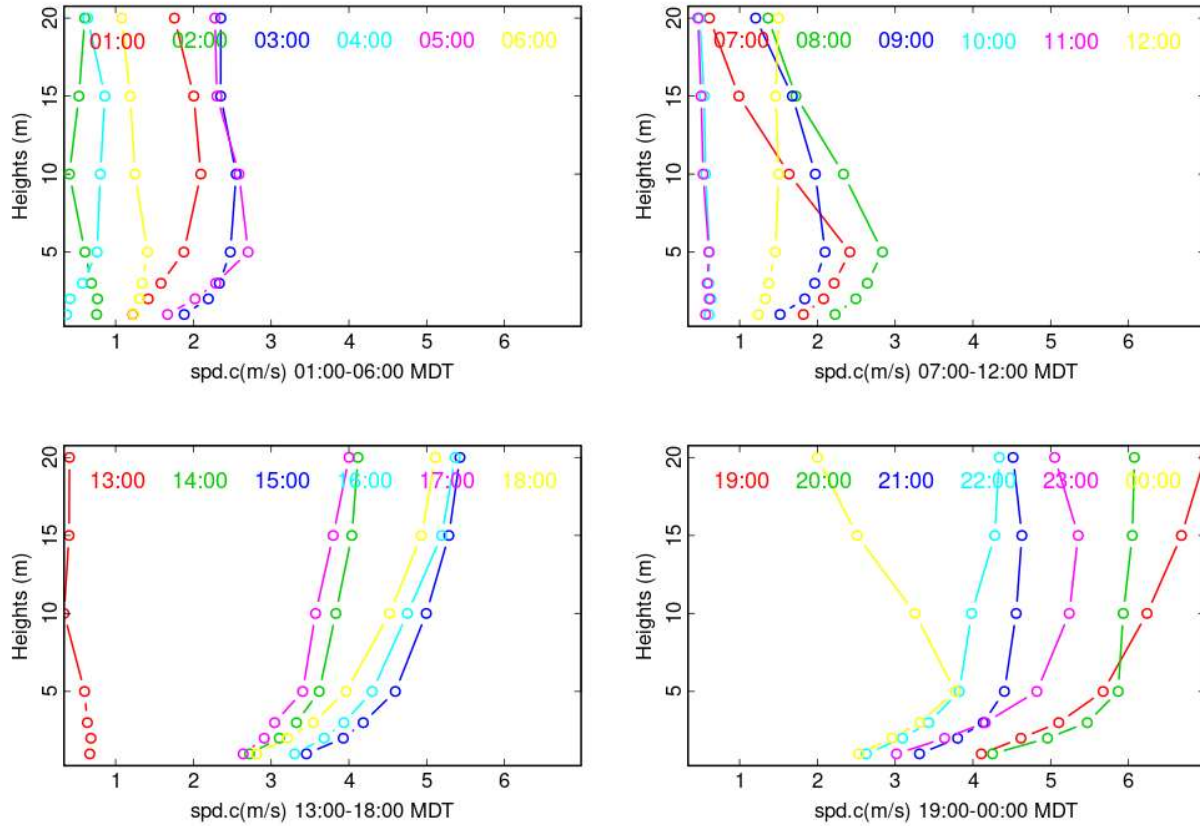
Shallow ridge fills in on Monday afternoon after arrival in the morning. Some clouds are still present with mild conditions. Clouds get pushed out allowing temperatures to drop as the shortwave leaves the region.

Equipment Notes

- Tsoil cooling deep down, now around 3.5 degrees
- Dry air today and melting conditions
- Light winds near surface
- Near surface gradient in H₂O, might be interesting here
- Snow pillows are still out

Figures

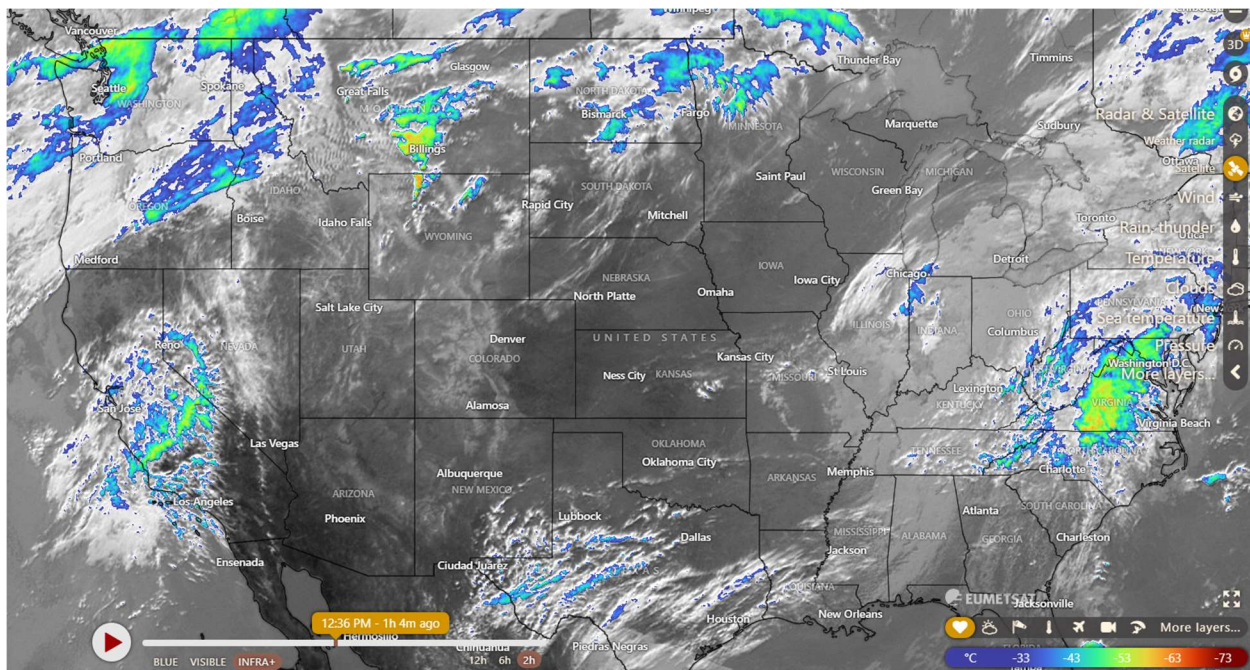
5 Minute Average spd.c Profiles
2022 Oct 30 01:00-Oct 31 00:00 MDT



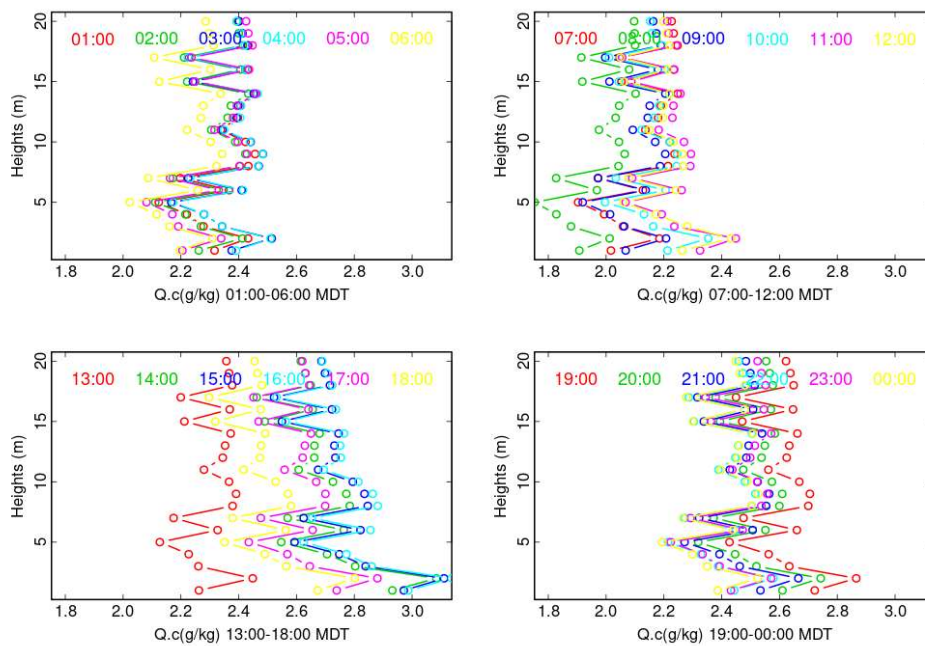
SOS: preliminary field observations

NCAR 14:07 Oct 31 2022 MDT

Looks like 2 Drainage Flow today, in the morning and the evening.



5 Minute Average Q.c Profiles
2022 Oct 30 01:00-Oct 31 00:00 MDT



SOS: preliminary field observations

NCAR 14:07 Oct 31 2022 MDT

Stronger profile of Q in the afternoon with warm conditions