

***WIND AND MOUNTAIN CLIMATOLOGY IN
SEVERE ENVIRONMENTS:***

**Periodic Semi-Permanent Snow Bed Variability at
Alpine Visitors Center and Lava Cliffs,
Rocky Mountain National Park**

Selected Seasons and Years

Updated September 2020

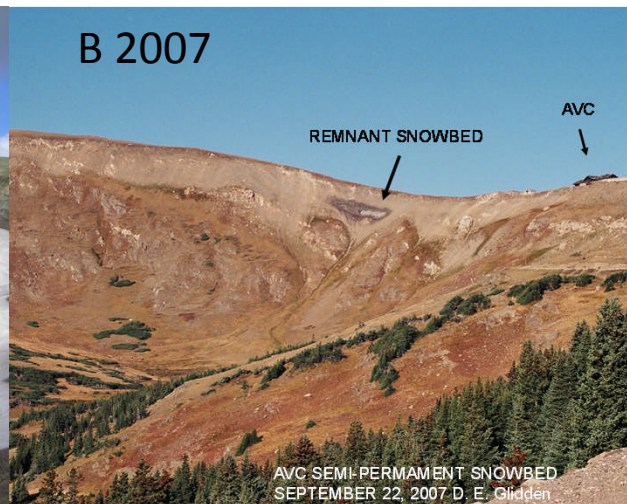
D. E. Glidden

In addition to glacier aerial and satellite surveys, permafrost studies, and attempts at measuring spring snow depths along Trail Ridge Road, photo-comparisons of a specific topographic site (at time of Fall minima, for example) are always interesting and informative for comparative inter-annual climatology.

2007 and 2018 appear to reflect similarities in reduced Fall minima, although 2018 may indicate even less segmented, visible ice extent. On a subsynoptic scale, it may suggest that even apparent extremely low snow years (as well as the effects of prevailing wind speed and direction, higher or lower average alpine temperature regimes, frequency and persistency of summer air mass exchanges, and variability of topographically-induced total percent of cloud cover) may yet be followed by more restorative snow deposits in a presumably overall warming mountain environment.

Contrast the Fall of 2018 with that of 2019. 2018 reflected a minimal remnant snowbed (similar to 2007.) However, 2019 indicated a return perhaps to a thicker and more expansive field following a spring of heavy snowfall. For 2020, although the image was taken early on August 19, we observe a respectable (but apparently somewhat reduced) snow bed. Note that a significant snowfall occurred on the alpine around September 7, which may have contributed to an even larger snow field (if the normal mid-September image were taken.)





ALPINE VISITORS CENTER, RMNP
SELECTED SNOWBED COMPARISON
 FOR AUGUST 1, 2006, SEPTEMBER 22, 2007,
 SEPTEMBER 16, 2011, SEPTEMBER 11, 2014 ,
 SEPTEMBER 12, 2018, SEPTEMBER 9, 2019,
 AUGUST 19, 2020
D. E. GLIDDEN



PERIODIC SUMMER SNOW BED COMPARISON AT LAVA CLIFFS 2005, 2019, 2020

Glidden, D. E., 2019, *Periodic Semi-Permanent Snowbed Comparisons Alpine Visitors Center and Lava Cliffs, Rocky Mountain National Park*
<http://npshistory.com/publications/romo/wind-research/avc-lc-snowbed-comparison-aug-2019.pdf>

It is remarkable how microtopography sculpts consistent and often predictable multi-decadal-long (and greater) wind patterns in many areas of the alpine.

Although perspective and distance of shot are important, 2019 at Lava Cliffs (following a spring of heavy snow) appears quite similar to 2005, although there may be a suggestion that the ice thickness (where the sign is located) is somewhat greater in 2005.

2020, on the other hand, appears to suggest a reduced volume over the prior years.

LAVA CLIFFS SNOWBEDS, RMNP, JULY 20, 2005



D. E. GLIDDEN

LAVA CLIFFS SNOWBEDS, RMNP, JULY 24, 2019



BRIAN VERHULST

LAVA CLIFFS SNOWBEDS, RMNP, JULY 20, 2020



BRIAN VERHULST



**AVC SEMI-PERMANENT SNOW BED
COMPARISON FOR SELECTED
SPRING YEARS
RMNP WIND RESEARCH PROGRAM
D. E. GLIDDEN**

**2020, 2019, 2015, 1980
A,B,C,D**

