

A COMPARISON OF TWO COLORADO WINTERS 1980-81 AND 1981-82

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The Colorado winters of 1980-81 and 1981-82 present an interesting contrast in terms of the development of the mountain snowpack and consequent avalanche activity. The 1980-81 winter was characterized by above average temperatures and below normal precipitation. Berthoud Pass received only 63% of its normal snowfall, the driest since 1926. Maximum Snow depth reached only 139.7 cm, and total water equivalent was 27 cm for the winter, with similar values found at other Colorado sites. The snowpack that developed was shallow and weak, consisting of temperature-gradient snow and ice lenses. During most precipitation periods throughout the winter, light to moderate snowfall accompanied by strong winds produced extensive deep-slab avalanche activity due to the weak substratum. Deepslab activity in sub-freezing snow continued into April. Avalanche warnings were issued on 43 days, 5 more than average.

In contrast, the 1981-82 winter was characterized by slightly above average snowfall and temperatures. A shallow, temperature-gradient snowpack developed in early winter and mid-December brought intense winter storms and resultant deep-slab avalanches, lasting into mid-January. February was one of the driest months on record, with Berthoud Pass receiving only 3.81 cm of water, representative of other mountain sites. During this dry but warm period, settlement transformed the snow layers which fell earlier in the winter into a strong mid-pack layer. Heavy March snowfall (5.58 cm to 30.48 cm of water) produced only limited avalanche activity, mostly shallow slabs in the new snow. The few deep slabs reported at this time occurred primarily in starting zones which had already released as deep slabs in December-January, thus removing the thick snow layers which later developed as the mid pack strong layer in adjacent paths. Avalanche warnings were issued on only 26 days, 12 less than average.

In summary, although 1980-81 was considered a drought winter, 1434 avalanches were observed, compared to 1580 in 1981-82. Thus, a lack of snow does not necessarily mean fewer avalanches, and visa versa. The strength of the underlying snowpack is an equally critical factor in avalanche release.