

Coal Creek Canyon, Colorado, weather summary for another chilly month

By Richard Keen, Ph.D., Coal Creek Canyon, Colorado

At 19.4 degrees, February 2010 was the second coldest February of record here (since 1983), missing February 1989's 18.2 by just over one degree.

- There were three less-than-impressive daily record lows in the 0 to -3 range. But there were other more impressive records:
- 17 consecutive days with daily max temperatures at or below 32F tied a record set in December 1983.
- 22 days with daily max temperatures at or below 32F tied the January 1988 record (and exceeds it if you consider that February is a short month).
- The monthly maximum of 40F tied December 1983 for the lowest monthly max on record.

And the biggie record....

- The three-month winter average (December-February) of 20.2F is, by almost one degree, the coldest winter on record here (28 winters).

History of the past five winters:

2005-06 - coldest winter since 1997-98.

2006-07 - coldest winter since 1992-93; last snow drift melted July 6.

2007-08 - coldest winter on record, beat 83-84 by 0.7 degrees.

2008-09 - near normal.

2009-10 - coldest winter, beat 07-08 by 0.9 degrees.

For comparison here's my ten coldest months:

Dec-09 16.5

Dec-83 17.2

Feb-89 18.2

Dec-90 18.5

Jan-85 18.7

Jan-07 18.8

Jan-88 19.1

Dec-07 19.4

Feb-10 19.4

Jan-08 19.7

Note that five of the cold months occurred during 1983-1990 (8 years),

None during 1991-2005 (15 years),

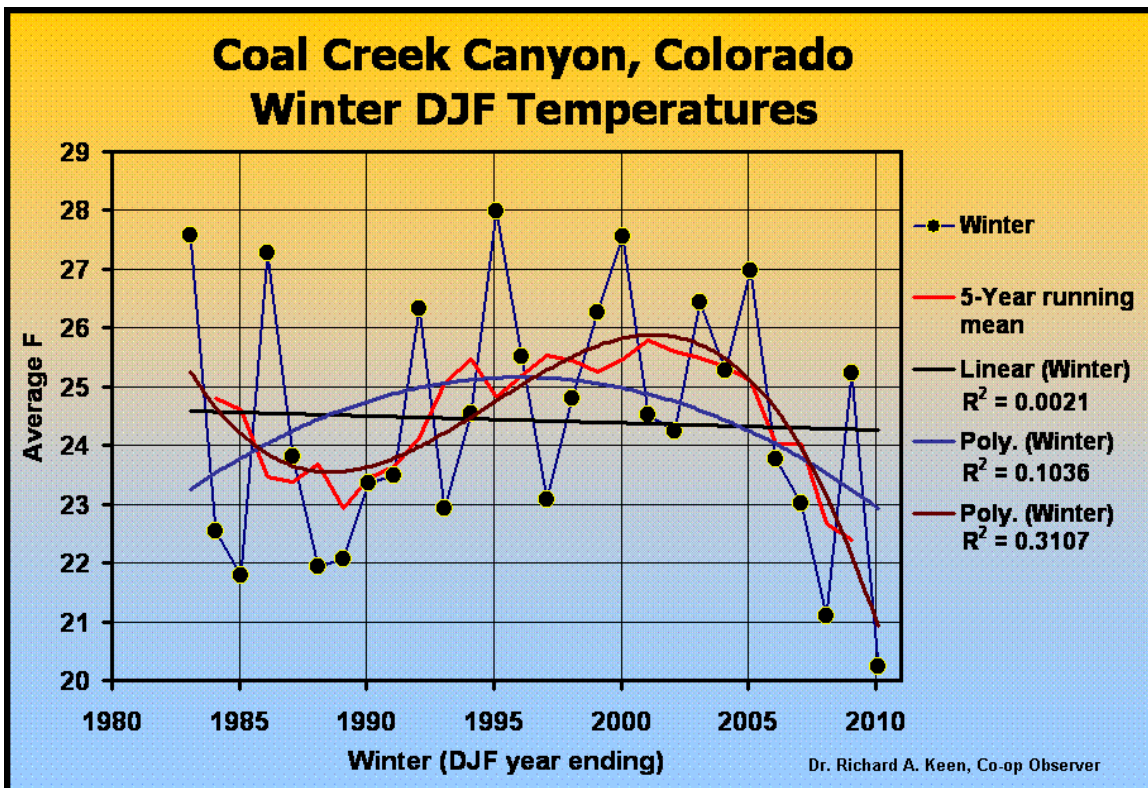
And five during 2007-2010 (4 years).

The season's snow stands at 140.5 inches, the fourth greatest end-of-February total

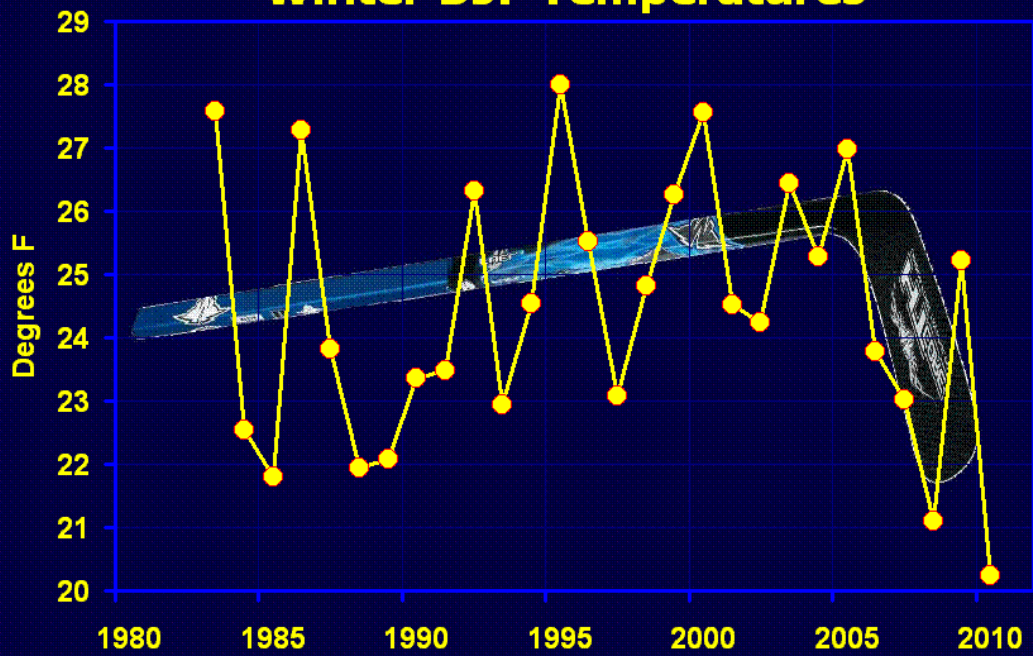
(after 2007, 1987, and 1998). February 28th is the normal mid-point of our snow season, with, on average, 100 inches by February and another 100 inches in March and the other "spring" months (including June).

A series of cold winters at one location may not seem too important, but the story is the same across much of the country (and both hemispheres of the planet). On an annual basis, Coal Creek correlates with the entire state of Colorado With a correlation $R = 0.95$. The IPCC projects Colorado, the Rocky Mountains, and the Intermountain West to have the greatest warming in the "lower 48" states - about 4C, or 7F, over this century (see IPCC fig-11-8-3). According to the IPCC models, greenhouse gas warming should be greatest over continental interiors and in the middle troposphere, so Coal Creek Canyon is an ideal "global warming" monitoring site. Annual and winter temperatures here in the Rockies show that the new century's projected warming is off to a shaky start.

Here is a graph of winter temperatures since 1983 with various trend lines and curves fit to the data. The linear trend has winter temperatures cooling by 1.1F per century, but with a R-squared of 0.0021 this trend line is hardly significant. The 2nd- and 3rd-order trend line fits have higher correlations and more impressive downturns in recent years, and the five-year running mean also shows a recent decline. However, the best fit is with my favorite non-linear trend line shown in the second graph.

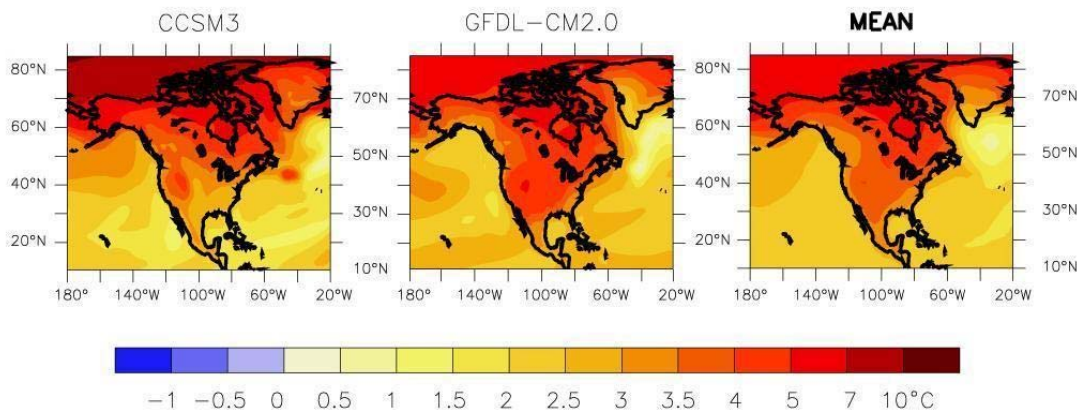


Coal Creek Canyon, Colorado Winter DJF Temperatures



Dr. Richard A. Keen, Co-op Observer

Annual Mean Surface Air Temp Response (°C)



<http://www.ipcc.ch/graphics/ar4-wg1/jpg/fig-11-8-sm.jpg>