Christmas Snow Job

by

World Climate Report

December 23, 2008
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It’s the most wonderful time of the year... well, it’s Christmas and all those wonderful holiday-season movies are back on the airwaves. One common feature is snow—we get the impression that every American lives in a place that guarantees a white Christmas. Truth be known, Americans experiencing a white Christmas are on a decline due entirely to migration patterns to the Sun Belt, not global warming. However, if you conduct a web search for “global warming and snow,” an incredible 4.8 million sites are found. You will find everything from global warming causes more snow to global warming causes less snow to global warming is a snow job! Who can ever forget the January 22, 1996 *Newsweek* cover (below) screaming that blizzards should be blamed on global warming? Get granddad and grandmom reminiscing about Christmas days in the past and you might get the impression something has happened to the climate system.

*Figure 1. Cover of Newsweek, January 22, 1996.*

Here’s a Christmas present for all greenhouse skeptics ... three scientists from the meteorology program at Northern Illinois University collected data on the 241 largest snowstorms in the eastern two-thirds of the United States over the period 1950-2000. As seen in Figure 2, there is considerable variability in the number of large storms, but no trend whatsoever. Changnon et al. describe their results:

The average was 4.8; however, there was great year-to-year variability (i.e., standard deviation of 2.2) with the numbers ranging from 1 large snowstorm per winter (1973/74, 1980/81, and 1991/92) to 10 storms (1993/94). The winter values did not exhibit any long-term up or down trend during the 50-yr period. A 5-yr running mean also had no trend. The winter counts for each decade showed that the frequency peaked in the 1950s with a minimum occurring in the 1970s and 1980s. None of these decadal mean values were significantly different than the average for the rest of the period when using the Student’s t test.

Granddad and grandmom may not believe it, but there is absolutely no trend whatsoever in the data. Apparently global warming causes neither a decrease nor an increase in big snowstorms in the U.S.
Many might argue that the United States is only 1.54% of the planet, and since Changnon et al. examined the eastern two-thirds of the country, they were studying only one percent of the Earth. If we really want to talk snow and ice on a grand scale, we need to look to Antarctica. If we do a web search on “Global Warming and Antarctica,” we are treated to 1.5 million sites, with many arguing that the snowpack and sea ice are melting away (despite the fact that the UN IPCC says the ice is thickening).

An article entitled “Antarctic sea ice variability and trends, 1979-2006” appeared recently in the *Journal of Geophysical Research*, and one sentence in the abstract caught our eye stating “The total Antarctic sea ice extent trend increased slightly, from 0.96 ± 0.61% decade-1 to 1.0 ± 0.4% decade-1, from the 20- to 28-year period, reflecting contrasting changes in the sector trends.” It seems from the outset of this article that sea ice around Antarctica is expanding and the expansion has increased in the most recent eight years ... our kind of results at *World Climate Report*.

The work was conducted by two scientists with the NASA Goddard Space Flight Center in Greenbelt, Maryland and financial support for the research was provided by NASA’s Cryospheric Sciences Program and by NASA’s Earth Observing System. Cavalieri and Parkinson begin by correctly noting that “A great deal of attention has been paid recently to the decline of the Arctic sea ice cover as observed by satellites over the past several decades. In contrast to the Arctic, the total Antarctic sea ice cover has been gradually increasing from the mid-1970s through 2002.” We would add that while a great deal of attention has been paid recently to the Arctic (where the trend seems to broadly fit the global warming script), very little attention has been paid to the Antarctic where the trend in sea ice seems at odds with expectations for a warming world. We are sure there is no media bias here, just a convenient oversight on journalists around the world.
The scientists use passive microwave data to accurately map the extent of sea ice in the Southern Hemisphere, and their results are shown below (Figure 3). They explain:

The yearly and seasonally averaged extents all show positive trends. The yearly trend in sea ice extents is $11,500 \pm 4,600$ km$^2$ a$^{-1}$ [per year]. This trend is somewhat greater than the value $11,000 \pm 7,000$ km$^2$ a$^{-1}$ reported previously for the 20-year period 1978–1998 and is statistically significant at the 95% level. On a seasonal basis autumn shows the largest positive km$^2$ a$^{-1}$ trend followed by the winter trend. The spring and summer trends are about half those for autumn.

Sure enough, the sea ice is expanding, the expansion is increasing in the most recent period, and the trends are statistically significant.

*Figure 3. Time series of (a) monthly averages of sea ice extent for the Southern Hemisphere from November 1978 through December 2006. The inset shows the annual cycle computed from the 28 years of data, (b) monthly deviations of sea ice extent fitted with a linear least squares best fit trend line, (c) yearly and seasonal averages of sea ice extents with linear least squares best fit trend line. Summer averages (Su) are for January–March, autumn averages (A) are for April–June, winter averages (W) are for July–September, and spring averages (Sp) are for October–December (from Cavalieri and Parkinson, 2008).*

While the greenhouse crusade is all too quick to blame the retreat of sea ice in the Northern Hemisphere on global warming, blaming this statistically significant expansion of sea ice on global warming would be a stretch, to say the least—but
don’t think folks aren’t working on it! Cavalieri and Parkinson conclude that in Antarctica “the question of what is driving the observed changes remains unanswered, and the physical mechanisms explaining these changes remain to be determined.”

Enjoy the holiday season, with or without snow—but just don’t blame global warming for whatever you get!

References:

