To the modern ear, it sounds like a song about climate change:

> I’m dreaming of a white Christmas
> Just like the ones I used to know
>
> Where the treetops glisten
> And children listen
> To hear sleigh bells in the snow

The song actually isn’t about climate change — the lead-in, which is much less familiar, tells us that the singer is now living in Beverly Hills , where Christmas means palm trees rather than snow. But the song could turn out to be prophetic.

As it turns out, about two-thirds of the U.S. has a lower chance of a white Christmas compared to the 1981-2010 average, but a third of the country has an increased chance of Christmas snow cover because earlier snows are more likely to be heavy and last longer on the ground.

If we look at overall snow trends, rather than late December in particular, there is also a trend in most of the U.S. and Europe to less snow cover. A July 2023 study based on satellite data found that annual snow cover decreased about 5% globally, not including Antarctica or Greenland. “At the annual level,” researchers reported, “areas experiencing major declines in SCE are broadly across northern Canada, a scattering through Alaska, the central United States (especially in Kansas), and broadly in the US southwest and in the northeast (especially New York and New England).” However, the percentage decline of snow cover in North America was lower than some other parts of the world. Modeling indicates that the trend toward lower snow cover will continue, though with regional and year-to-year variations.

Looking at ground-level data, EPA reports that 57% of U.S. weather stations have shown declines in total snowfall over the past ninety years, with an average across all stations of 2% per decade (which means 18% overall). EPA also reported that :

“Snowfall trends vary by region. The Pacific Northwest has seen a decline in both total snowfall and the proportion of precipitation falling as snow. Parts of the Midwest have also experienced a decrease, particularly in terms of the snow-to-precipitation ratio. A few regions have seen modest increases, including some areas near the Great Lakes that now receive more snow than in the past.”

Of course, each winter is different. But the long term trends seem clear. For much of the country, white Christmases will become more and more rare, like the “sleigh bells” in the song.

Welcome to the future.

Berkeley’s Center for Law, Energy, and the Environment seeks pragmatic solutions to urgent environmental problems like climate change. You can support our efforts here.