

Claim: Global warming is causing snow to disappear

FACT CHECK

This is one claim that has been repeated for decades even as nature showed very much the opposite trend with unprecedented snows even to the big coastal cities. Every time they repeated the claim, it seems nature upped the ante more.

Alarmists have eventually evolved to crediting warming with producing greater snowfall, because of increased moisture but the snow events in recent years have usually occurred in colder winters with high snow water equivalent ratios in frigid arctic air.

The eastern United States as an example had 28 high impact winter snowstorms in the 10 years ending on 2019/20. No prior ten-year period since 1950 had more than 10. Winters in the last decade or so produced snow records and snowcover that lasted well into the spring.

Snowcover in the Northern Hemisphere, North America and Eurasia has been increasing since the 1960s in the fall and winter but declining in the spring. However, as NOAA advised around 2000 might be the case, snowcover measurement methodology changes (automated instead man/machine) at the turn of this century may be responsible for most of the warm season differences.

‘Warming is not causing snow to disappear.

On March 20, 2000, the UK Independent, reported that “Snowfalls are just a thing of the past”. They quoted David Viner of the Climatic Research Unit (CRU) of the University of East Anglia “Global warming was simply making the UK too warm for heavy snowfalls. *Within a few years winter snowfall will become “a very rare and exciting event”.* “Children just aren’t going to know what snow is,” he said.

Similarly, David Parker, at the UK’s Hadley Centre for Climate Prediction and Research, said that eventually British children could have only “virtual” experience of snow via movies and the Internet.

In the winters that followed snows fell in the UK and Europe unlike they had seen since the Dalton Minimum in the early 1800s.

The Union of Concerned Scientists (UCS) said in 2006 Scientists claim winters becoming warmer and less snowy. They published the results of the study on its climatechoices website: *“Across the globe, and here in the Northeast, the climate is changing. Records show that spring is arriving earlier, summers are growing hotter, and winters are becoming warmer and less snowy. These changes are consistent with global warming, an urgent phenomenon driven by heat-trapping emissions from human activities”*

The IPCC and US government reports through 2007 had projected snows would become much less common as the climate warms especially in the cities. The UCS had a media workshop in the late summer of 2007 on Mt. Washington promising a dire future for the winter sports and maple sugar industries. That next winter all-time seasonal snow records were set for snowfall in the northeast from Concord to Caribou (and all through the western US up to Alaska).

The Technical Support Document for the EPA in 2009 (page 29) stated: *“Rising temperatures have generally resulted in rain rather than snow in locations and seasons where climatological average (1961–1990) temperatures were close to 0°C.”*

The latest CSSR NCA had as a key finding: “There has been a trend toward earlier snowmelt and a decrease in snowstorm frequency on the southern margins of climatologically snowy areas (medium confidence). Winter storm tracks have shifted northward since 1950 over the Northern Hemisphere (medium confidence).”

Princeton Environmentalist Michael Oppenheimer and RFK Jr, in 2008 both bemoaned their children in the DC area would never get to enjoy sledding like they did as young in the 1960s. That very next winter, the DC area and the entire Mid-Atlantic had record snowfall in what was called snowmagedon.

2009/10 All-Time Record Snowfall

City	Snowfall (in)	Previous Record (Year)
Baltimore	79.9	62.5" (1995-1996)
Washington (Dulles International Airport)	72.8	61.9" (1995-1996)
Washington (Reagan National Airport)	55.9	54.4" (1898-1899)
Wilmington, Del.	66.7	55.9" (1995-1996)
Philadelphia	71.6	65.5" (1995-1996)
Atlantic City, N.J.	49.9	46.9" (1966-1967)

Figure 1: 2009/10 Mid-Atlantic All-time Seasonal Snow Records

Starting in 2008, the UK and much of Europe and the Northern Hemisphere began receiving snow and cold at levels not seen since the days of Charles Dickens in the 1800s. December 2010 in the snow, was the second coldest December in the Central England Temperature (CET) data back to 1659.

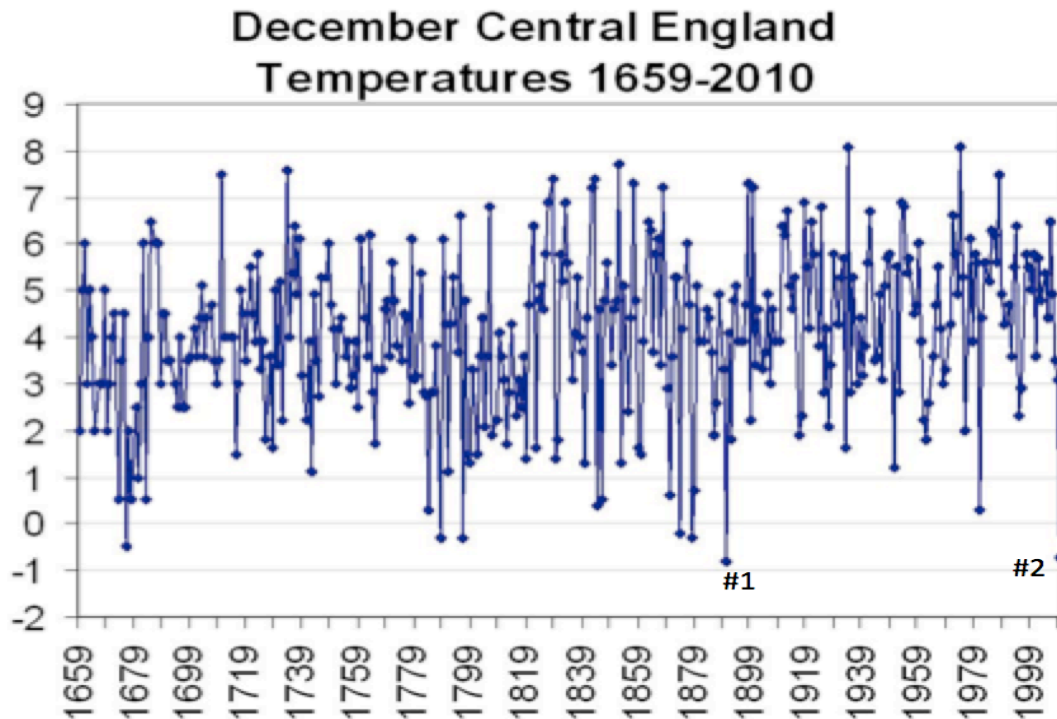


Figure 2: December 2010 2nd Coldest December Central England Temperatures since 1659

In the United States, the winter of 2013/14 was the coldest and snowiest since the 1800s in places in the Great Lakes. 5 major impacts snowstorms occurred in the northeast.

In 2014/15, the U.S. had the coldest January to March in the entire record for the 10 northeastern states and the District of Columbia. Boston broke the all-time seasonal record for snowfall with 110.6 inches of which 100 inches fell in about 5 weeks. February was the coldest month for many places ever. 5 major impact snowstorms occurred again in the northeast.

In 2017/18, the northern states had two brutally cold weeks early with a major snowstorm, then in March four major snows fell. 2017/18 joined 2013/14 and 2014/15 as the only years with 5 such storms in over 6 decades of records.

Along the U.S. east coast there have been record setting snow years and 28 major impact snowstorms for the 10-year period ending 2019/20. No other decade had had more the 10.

Number NESIS Storms /Decade

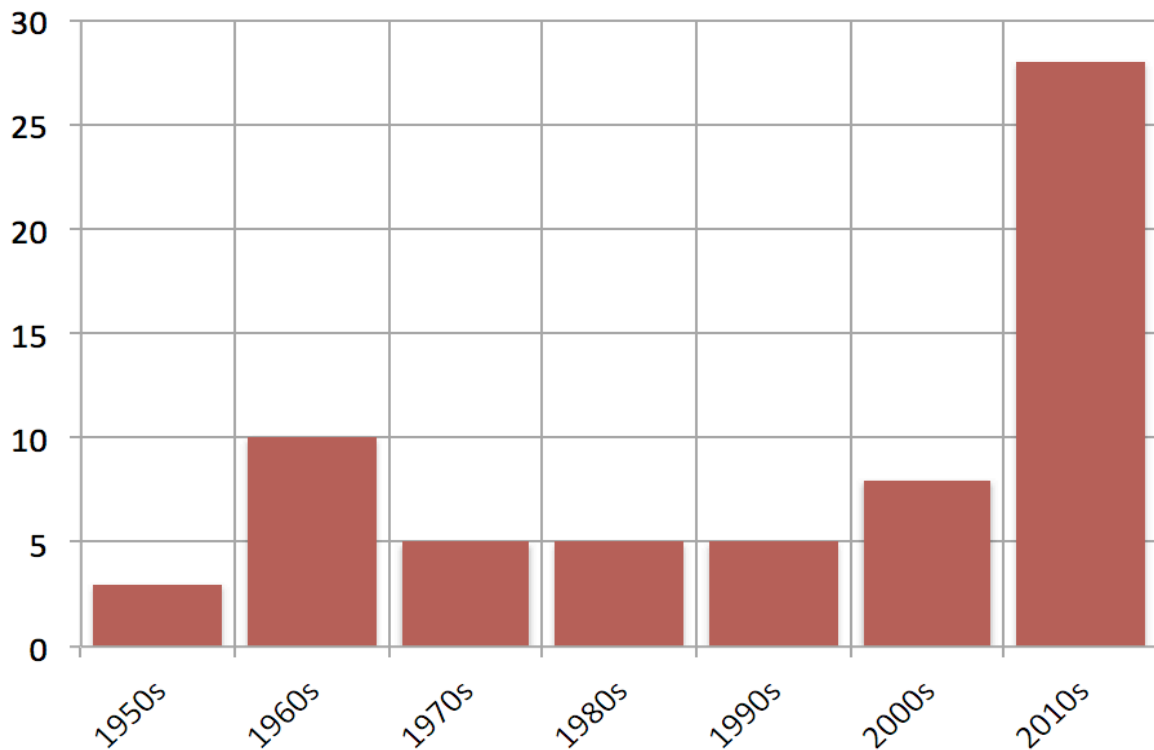


Figure 3: Decadal count of major impact east coast snowstorms since 1950.

A paper, Coleman and Schwartz, 2017 revealed 713 blizzards over the 55 years with 57 federal disaster declarations resulting. Of these 57 declared disasters, more than a half, have occurred since the year 2000. This published scientific study also found that “seasonal blizzard frequencies displayed a distinct upward trend, with a more substantial rise over the past two decades”.

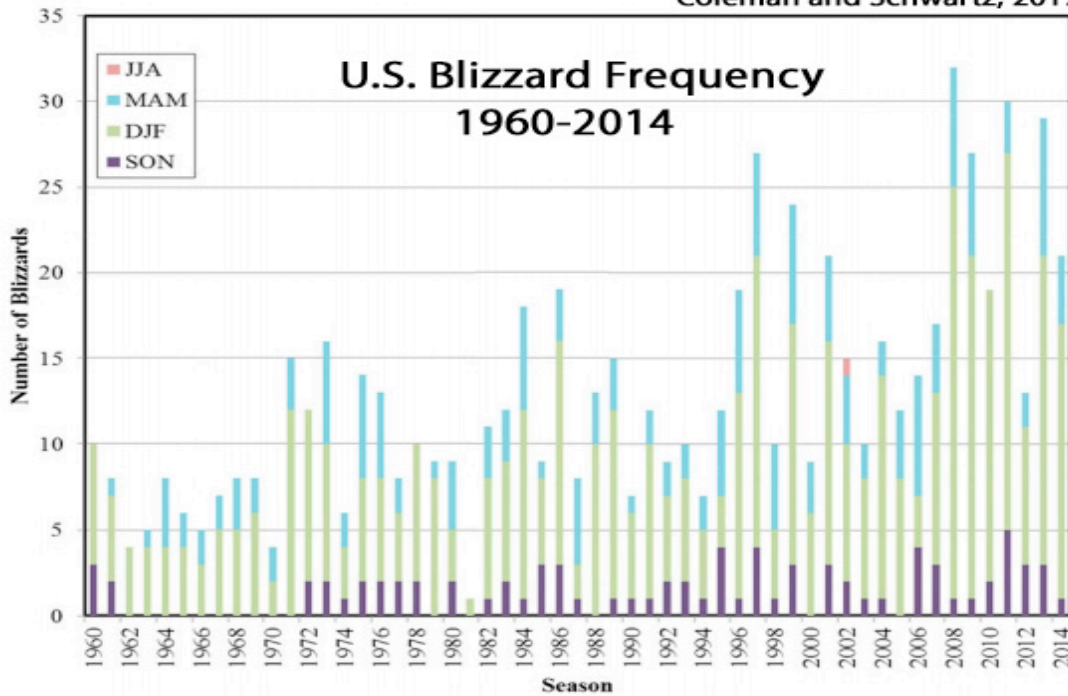


FIG. 1. Annual blizzard frequency for the 1959/60–2013/14 seasons subdivided into 3-month intervals.

Figure 4: US Blizzard Frequency 1960 to 2014 (Coleman and Schwartz, 2017)

In another publication, Changnon, 2017 evaluated heavy 30-day snowfall amounts east of the Rockies in the United States during the period 1900-2016. The comprehensive data assessment identified 507 stations in this long-term climate study.

The author examined the top 30-day heavy snowfall amount and the average of the top five 30-day heavy snowfall amounts. The findings also surprised global warming scientists who warned earlier that snowfall would become less frequent as the globe warmed. The publications abstract reads:

The northern Great Plains, Great Lakes, Midwest, and Northeast experienced more top five periods [more snow] in the second half of the

117-year period [1958-2016], where most of the southern states experienced top five periods throughout the study period.”

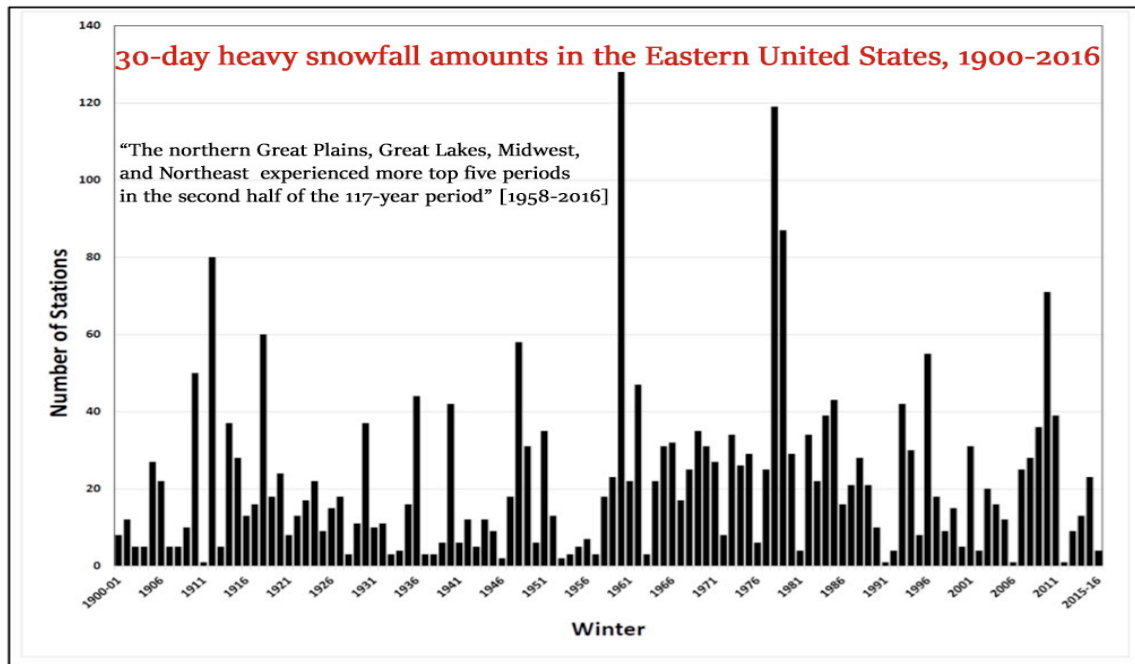


Figure 8. Winter number of stations experiencing one of the top five 30-day heavy snowfall amounts, 1900/01-2015/16. Changnon, 2017

Figure 5: 30 Day heavy snowfall amounts in the eastern US since 1900 (Changnon 2017)

But the media continues to be oblivious to the real data as the hype machine continues to sell its story despite its past failures. The New York Times had an article in February of 2014 titled ‘The end of snow.’ The article documented how snow soon was going to be a distant memory and our kids would never see it except in newsreels.

The Union of Concerned Scientists at the University of New Hampshire in January 2014 after the winter got off a slow snow start repeated their annual warning about the climate change induced death of the ski and maple sugar industries. But then 2014/15 set records for snowfall in Boston (back to 1872) and many other locations in the northeast into southeastern Canada. In 6 weeks over 100 inches of snow fell in the Boston area with a record 110.6 inches for the winter. It was also the coldest January to March period and in much of the northeast, February 2015 was the coldest month in history. In 2015 in Boston after an all-

time record of 110 inches of snow - most of it falling in 5 frigid weeks at the end of winter, snow piles remained into summer.

The recent snowy winters has the 10-year running mean snowfall in Boston at the highest in the entire record back to the 1880s and New York City back to 1869/70.

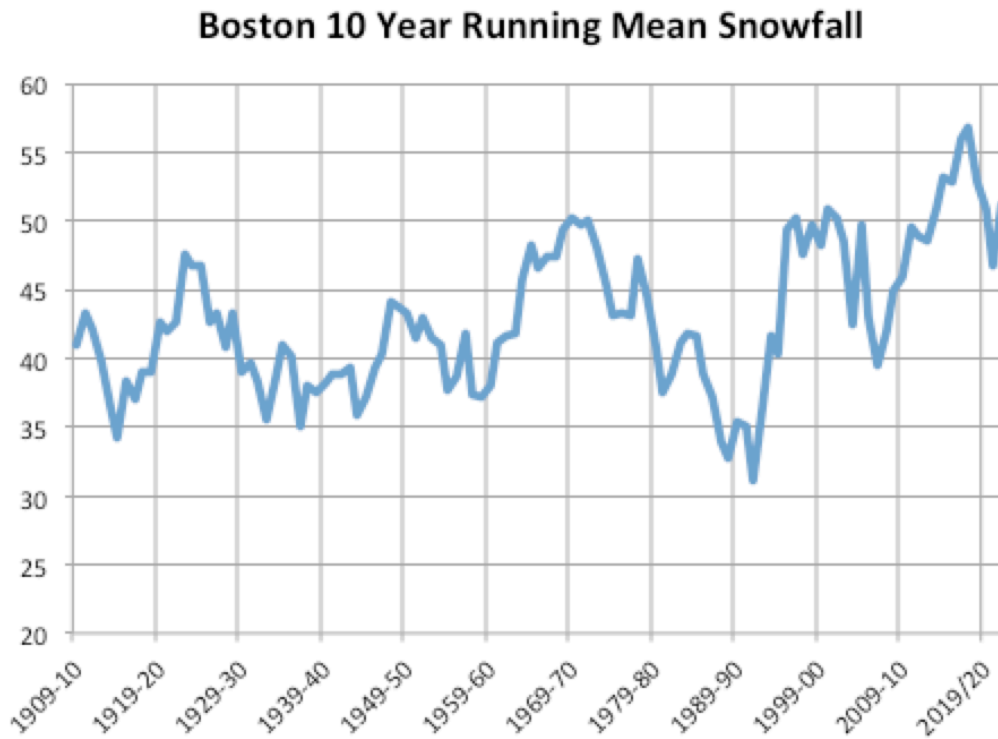


Figure 6: Boston running mean 10 year seasonal snowfall since 1900

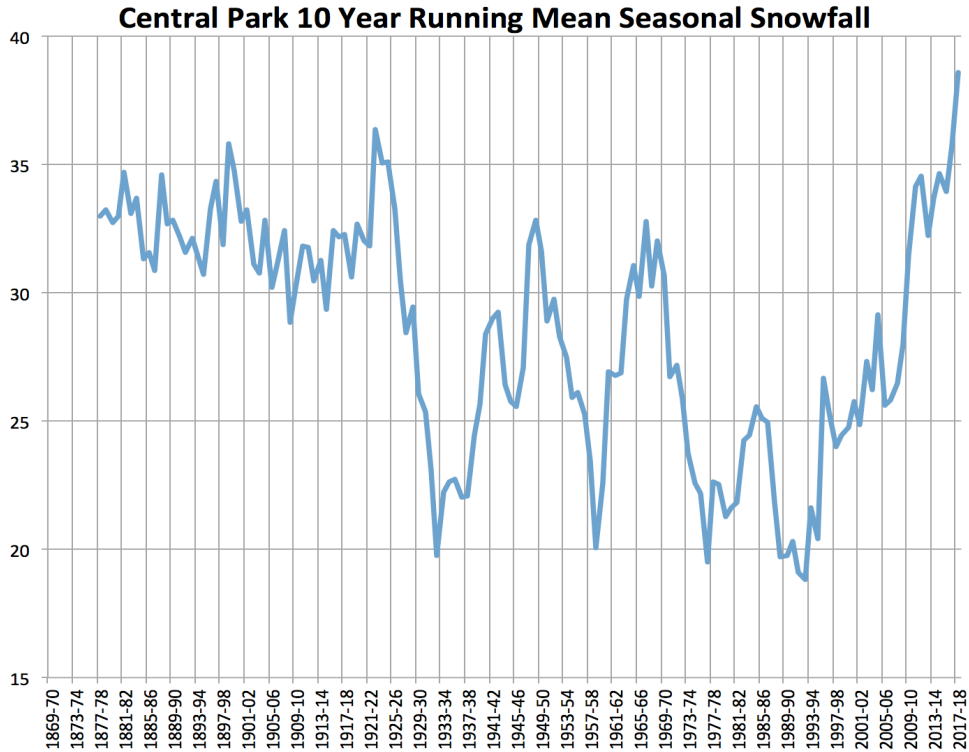


Figure 7: New York City Running mean seasonal snowfall since 1860.

It appears that, for the eastern U.S. areas, the 2014/15 winter's snow blitz may have delivered the most snow since perhaps 1717. That year, the snow was so deep that people could only leave their houses from the second floor, implying actual snow depths of as much as 8 feet or more.



Figure 8: Infamous Snow year of 1717

The driver for the 2014/15 winter was the same as in the frigid winters of 1916/17, 1917/18, 1976/77 and 1977/78, 1993/94 and 2002/03 - a pool of warm water in the northeast Pacific.

See most of the northern tier has more snow the last 3 decades as compiled by Brian Brettschneider from the US GHCN data

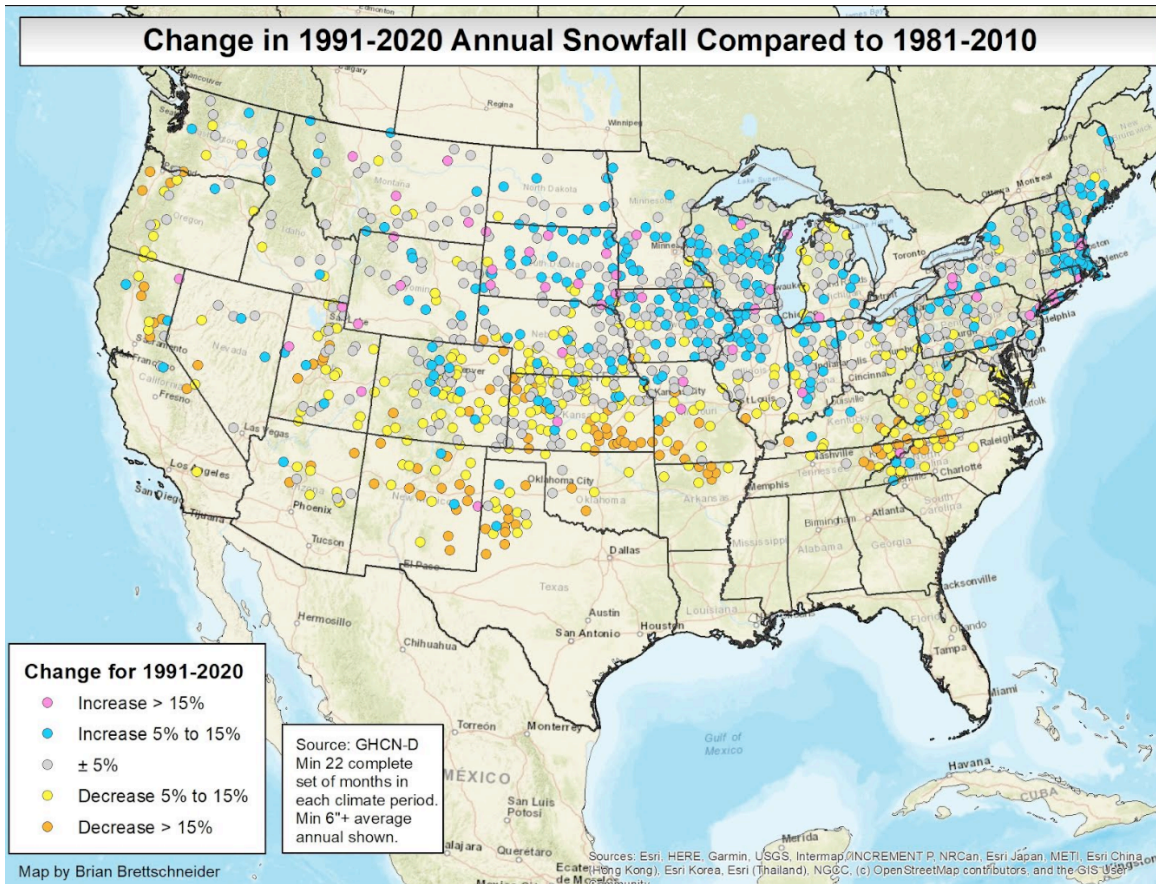


Figure 9: Changes in snowfall since 1991

ALARMISTS CHANGE THEIR TUNE – PROCLAIM WARMING PRODUCES MORE SNOWS

Alarmists claimed increased snow is consistent with global warming because warmer air holds more moisture. In actual fact, only 1 of the 14 years with more than 60 inches of snow in Boston was warmer than normal.

Snow is favored in COLD winters and increases with cooling not warming. In the 39 days in the heart of 2014/15 winter, when Boston had 100.2 inches of snow, the melted precipitation was 5.69 inches, a ratio of 17.6 to 1. The typical snow to melted precipitation ratio is 10 to 12 to 1. The big snows in recent years have come with unusually cold temperatures. Seasonal snow amounts are high in cold winters, low in warmer winters.

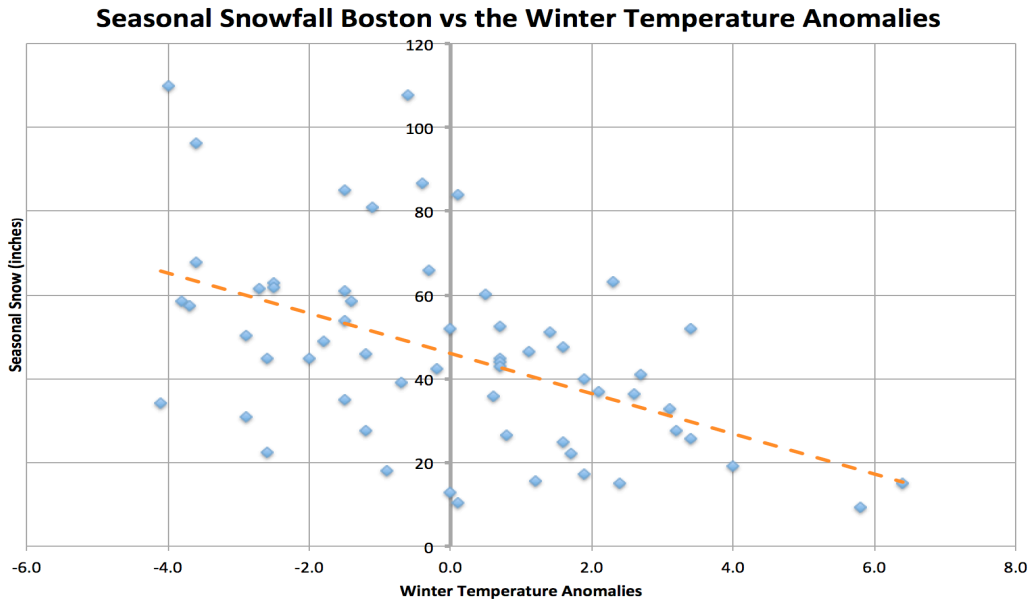


Figure 10: Reality seasonal snowfall for Boston and other cities is inversely correlated with temperatures

SNOW SEASONS ARE GROWING SHORTER

They also claimed that snowcover is shrinking especially in the spring and summer. They neglect to mention the snowcover is increasing in the fall in the hemisphere and North America (most ever in 2018, 2nd most in 2017, 3rd most 2020), and increasing in winter again in the hemisphere and North America (peaking in 2009/10).

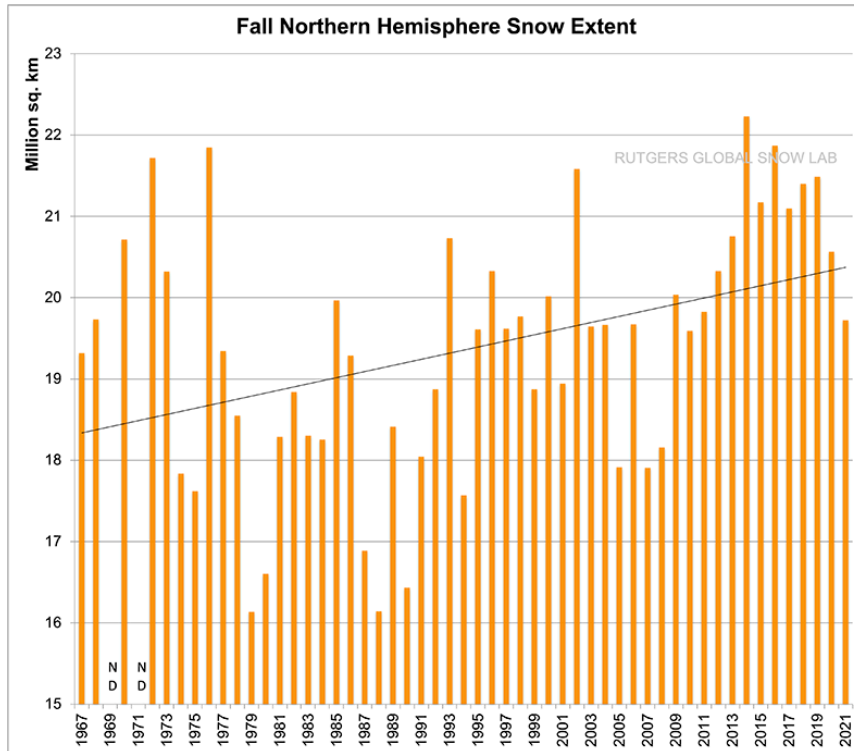


Figure 11: Fall Northern Hemisphere (matches North America) in the fall has trended up since 1860s.

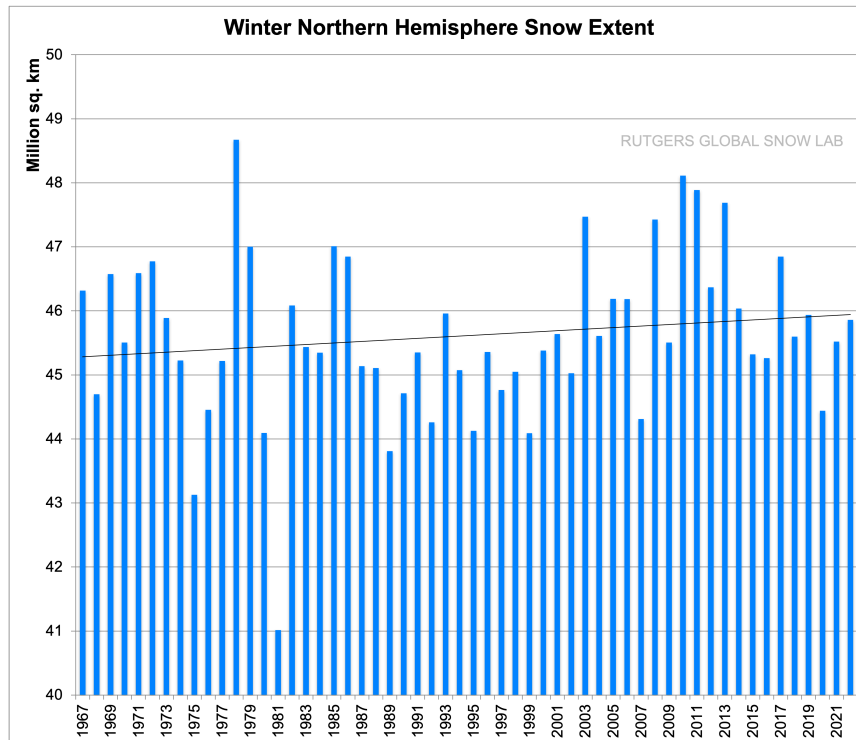


Figure 12: Winter Northern Hemisphere (matches North America) in the winter has trended up since 1960s.

Rutgers/NOAA shows the spring snow is for the 3rd straight year above trendline. The spring snow extent had some lean years after 2000. Note that NOAA advised around 2000 on their web site not to compare spring and summer numbers after 2000 with prior years as their methods changed towards more of an automated - albedo (reflectivity or brightness) based approach. The brightness diminishes as the snow ages, and melts from the canopy of conifers, which disguises the snow beneath. The snowpack beneath conifers or in the open not refreshed with new snow may be missed by an automated approach.

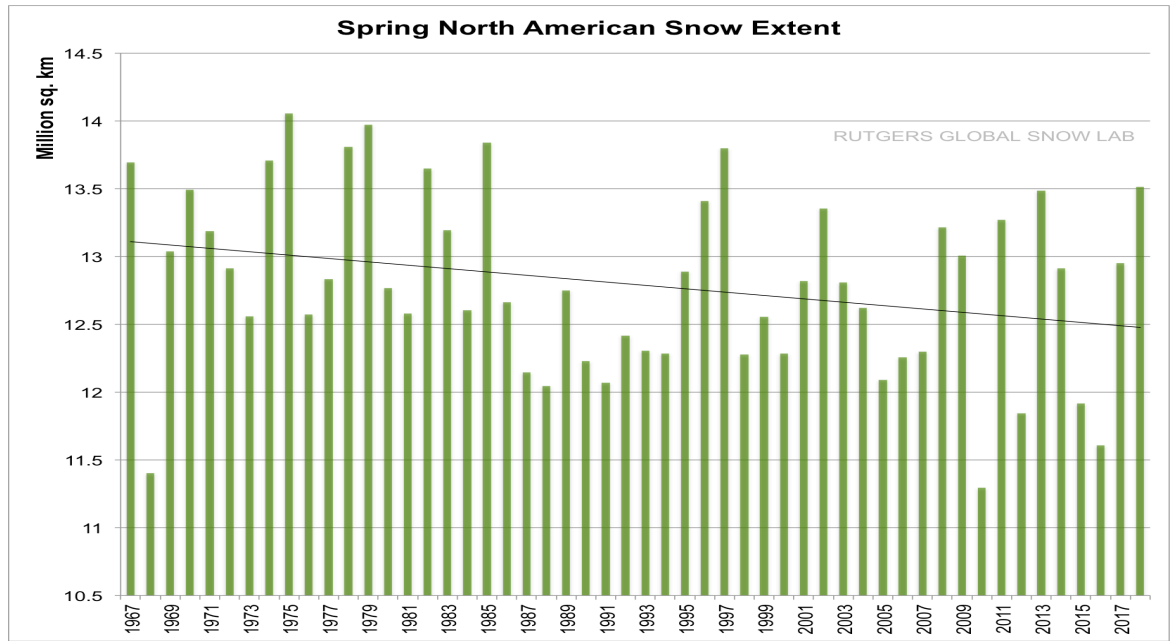


Figure 13: Spring North America Snow Extent in the spring has trended down since 1960s.

Cold air crossing the Great Lakes produces some of the heaviest snows outside of the major mountains in the lower 48 states. The ice builds on the lakes in cold winters. See how 2013/14 averaging second in 46 years of record keeping. The winters of 2017/18 were above normal, then after two below normal years, last year was near normal. Notice the week to week variability characteristic of La Ninas.

GREAT LAKES ICE COVER

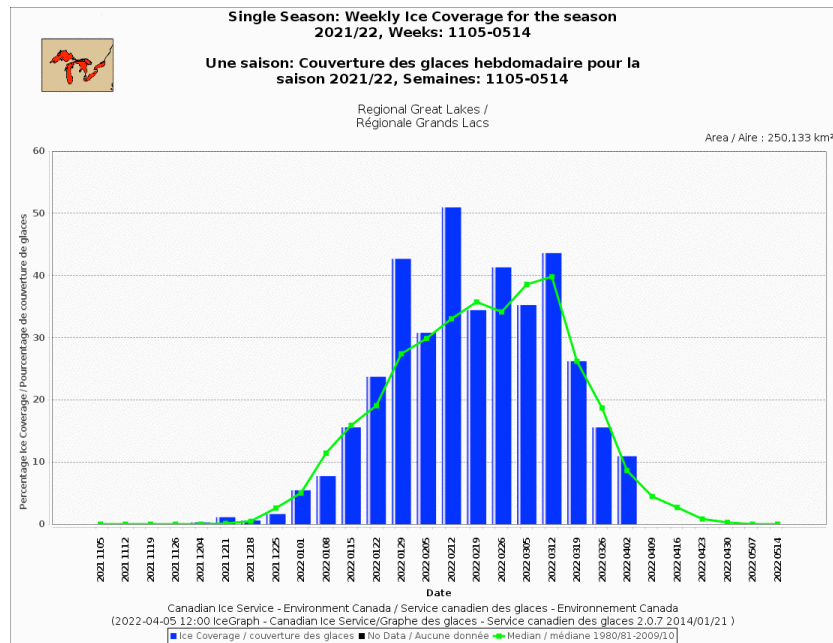
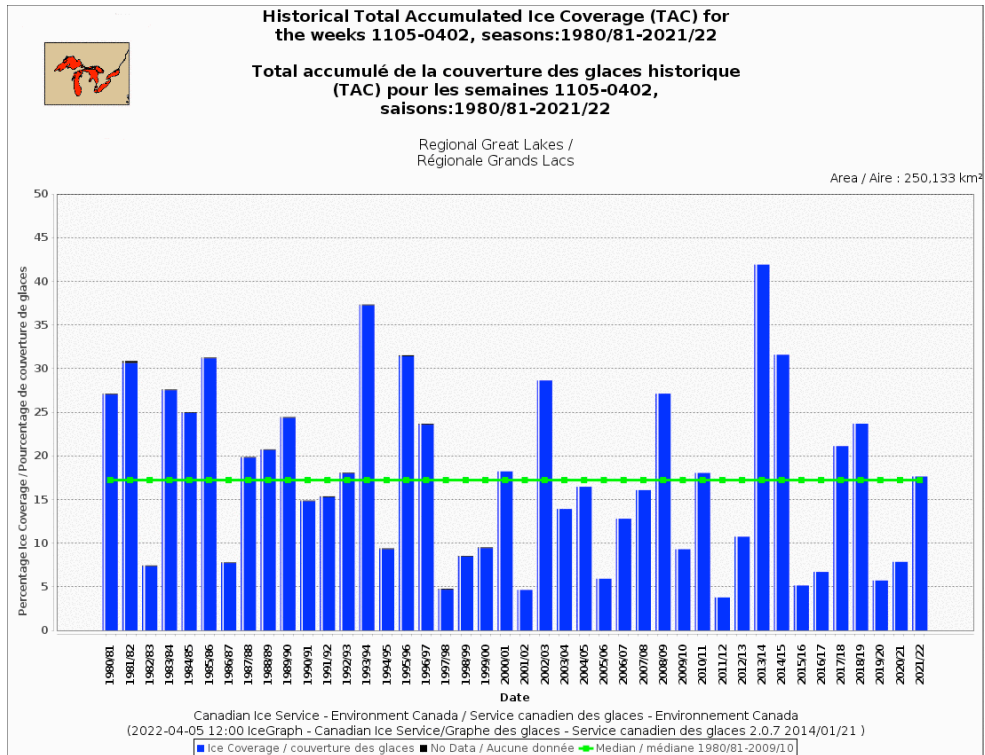


Figure 14: Winter average Great Lakes Ice cover (top) and weekly values for 2021/22 (bottom).

The winters have not warmed in the Great Lakes region the last century. The coldest winters were observed in the late 1910s, the late 1970s and 2013/14, 2014/15.

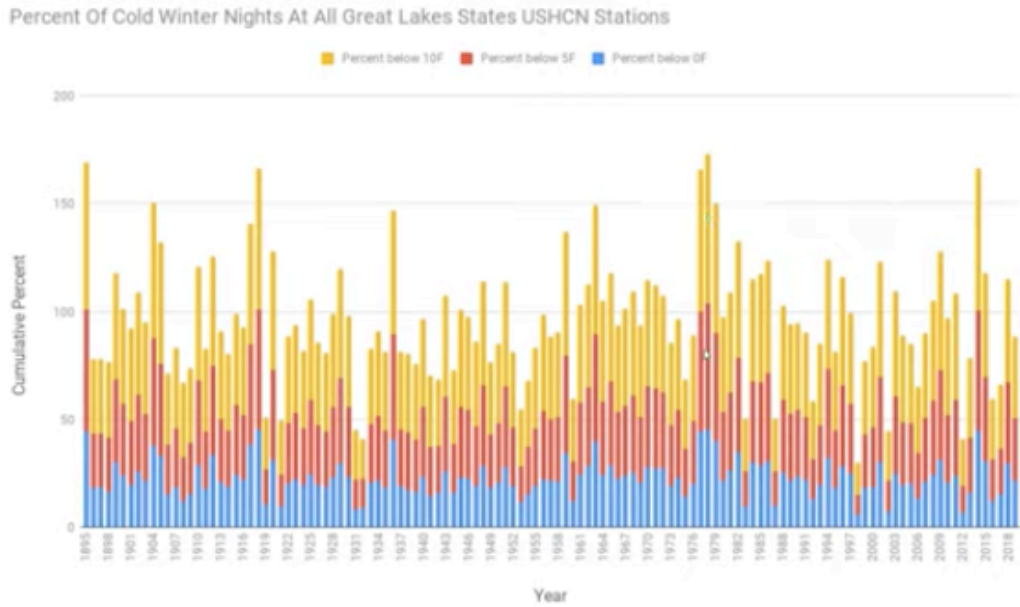


Figure 15: Percent cold winter nights Great Lakes stations

The Wild Winter of 2018/19 in North America

The snowcover in North America ranked first or second in 50+ years from September to November and bounced to 4th in February.

North America						
2019		1981-2010 Normal		Period of Record from 11-1966		
Month	Area	Mean	Departure	Rank	Maximum (Year)	Minimum (Year)
5	8,560	9,296	-736	46/53	11,478 (1974)	7,798 (2010)
4	12,759	13,041	-283	35/53	15,077 (1975)	11,020 (2010)
3	16,582	15,638	944	9/53	17,293 (1969)	14,041 (1968)
2	18,347	17,115	1,232	4/53	19,035 (1978)	15,831 (1992)
1	17,658	17,543	115	27/53	18,816 (1985)	16,067 (1981)
2018		1981-2010 Normal		Period of Record from 11-1966		
Month	Area	Mean	Departure	Rank	Maximum (Year)	Minimum (Year)
12	16,953	16,846	106	21/53	18,273 (2009)	14,559 (1980)
11	15,720	13,485	2,236	1/53	15,720 (2018)	11,483 (1979)
10	9,667	8,047	1,620	2/51	9,763 (2002)	6,364 (1979)
9	5,065	3,709	1,357	1/50	5,065 (2018)	2,892 (1968)
8	2,592	2,422	170	17/50	3,855 (1978)	2,007 (1968)
7	2,801	2,900	-99	29/49	5,073 (1978)	2,184 (2012)
6	5,306	5,809	-503	36/51	7,843 (1978)	3,854 (2012)
5	8,951	9,296	-345	33/53	11,478 (1974)	7,798 (2010)
4	14,803	13,041	1,761	4/53	15,077 (1975)	11,020 (2010)
3	16,784	15,638	1,146	5/53	17,293 (1969)	14,041 (1968)
2	17,475	17,115	360	20/53	19,035 (1978)	15,831 (1992)
1	17,592	17,543	49	31/53	18,816 (1985)	16,067 (1981)

Figure 16: Wild winter of 2018/19

It lingered in the western U.S. through the spring with as much as 478.3% of normal in the central Rockies even as the summer solstice approached.

In the cold central states, snow piles lingered into June in the Wisconsin cities of Eau Claire and Appleton where record snow fell in the 2018/19 winter.

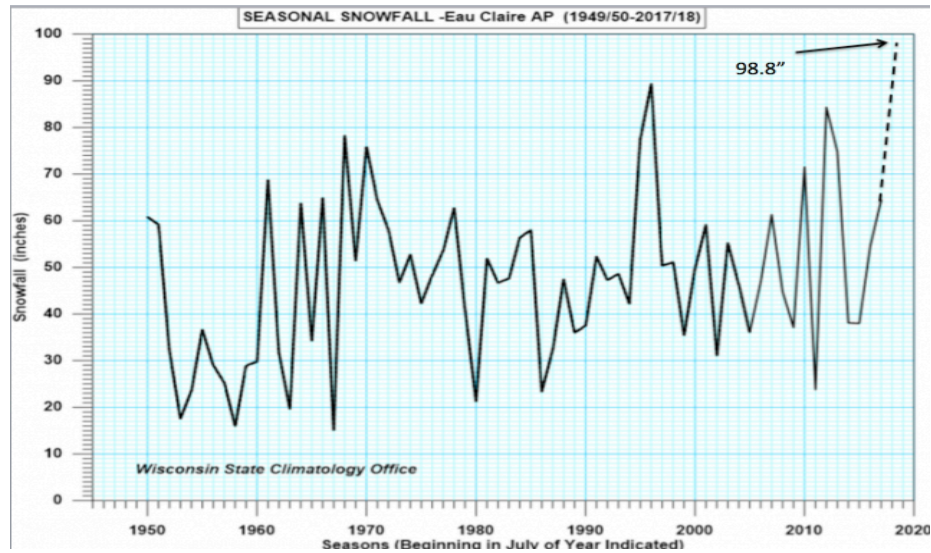
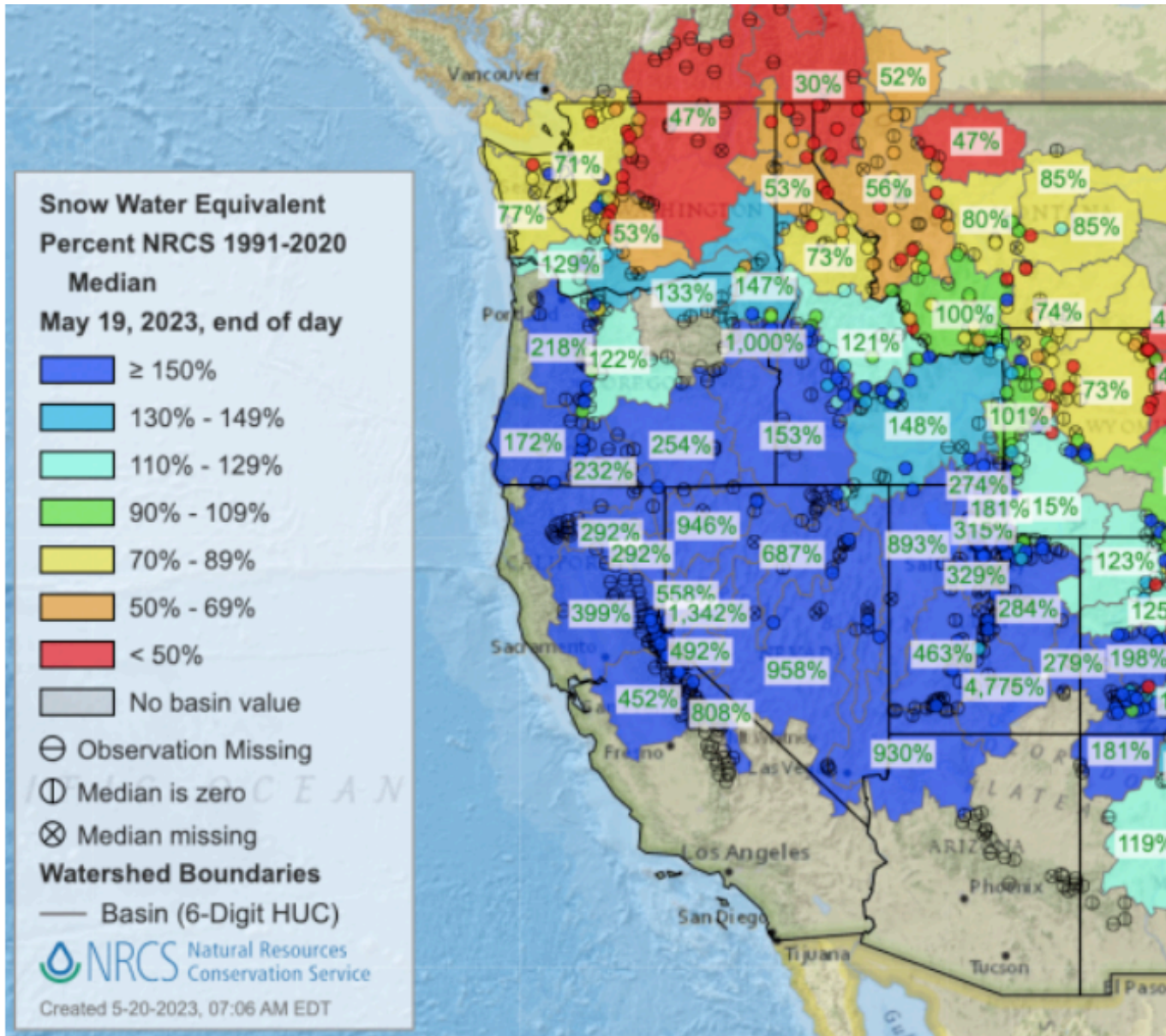


Figure 17: Eau Claire, Wisconsin seasonal snowpack with a new record in 2018/19

In 2015 in Boston after an all-time record of 110 inches of snow - most of it falling in 5 frigid weeks at the end of winter, snow piles remained into summer.

The Amazing Winter of 2022/23 in the west and north

The water year with a steady barrage of storms and snows had as much as an incredible 1,342% (yes one thousand three hundred forty two percent) of normal snow water equivalent.



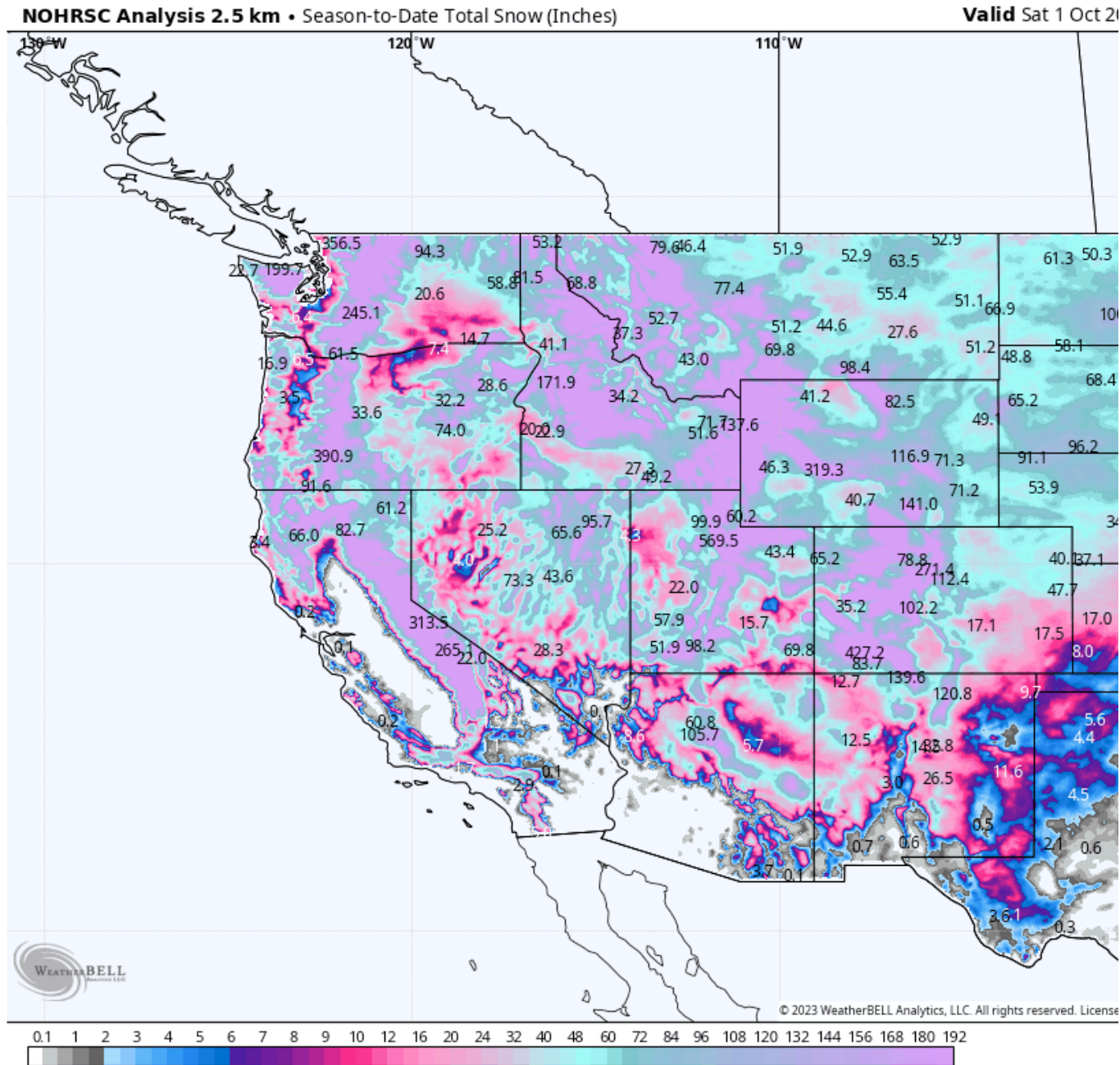
At 11,053 feet, Mammoth Mountain boasts the highest summit of any California resort, making for deeper, better snow, and beautiful vistas. With 3,500 skiable acres, an average of 400 inches of snowfall, 300 days of sunshine per year, and a season that typically stretches Nov–June, Mammoth delivers big smiles on the slopes from first-timers to Olympians.

This Season vs. Last Season

	22/23 SEASON	21/22 SEASON
May	10"	3"
April	3"	34"
March	192"	14"
February	113"	7"
January	220"	0"
December	116"	161"
November	61"	9"
October	0"	32"

The 22/23 winter season is officially our snowiest season on record with over 700" at Main Lodge and close to 900" at the summit. Take a behind the scenes look at some of the depths we recorded across the mountain in this video (<https://www.mammothmountain.com/on-the-mountain/snowfall-history>) taken on April 14, 2023.

This was the case from California to Utah and Wyoming and across the northern states.



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March 2023 snow summary

- Snow-covered area for the western United States was 184 percent of average for March, the highest since the satellite record began in 2001. See the state by state tally for the snowy areas.
- Snow cover days have matched the previous record.
- Snow albedo remains the highest on record with frequent storms continuing in March and refreshing the bright snowpack surface.
- Snow water equivalent (SWE) was average to well above average in March, with the highest SWE values in the Southwest.
- Multiple snowstorms and low snowmelt led to an increase in SWE percent of average in all 12 western states.
- Based on station data, as of the end of March, 2023 ranks as the third highest maximum SWE year over the last three decades and second highest since 2001.

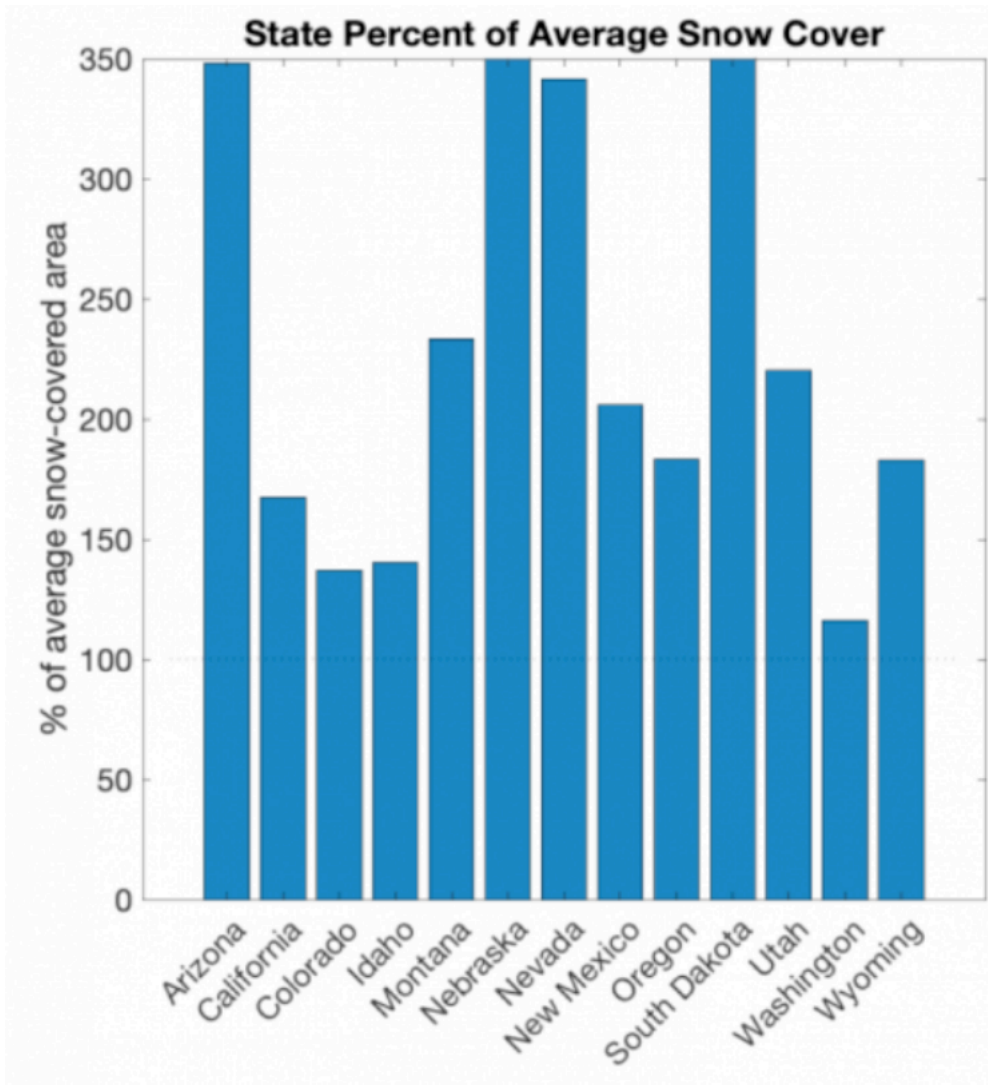


Table 1. March 2023 Snow Cover in the Western United States, relative to the 23-year satellite record

Extensive snow cover in the western United States continued in March 2023, surpassing the 2019 record high by 11 percent and doubling last year's average and the 23-year-satellite record average for snow-covered area for the month (Table 1). Snow-covered area was nearly three and a half times the amount of snow-covered area in 2015, the lowest year.

Snow-covered area was above average in all states in the analysis region (Figure 1). Of the eight large river basins in the study domain, snow-covered area was above average in seven. The only below average basin was the Arkansas-White-Red, which had 98

percent of average snow-covered area. All states and basins gained snow as a percent of average over the month of March. Several states and basins had snow-covered areas that exceeded 350 percent of average including the Lower Colorado River basin, Arizona, Nebraska, and South Dakota. The state of Nevada had 342 percent of average snow cover. Montana, New Mexico, and Utah had over 200 percent of average as did the Great basin and the Missouri River basin. On the other end of the spectrum, Washington had only 116 percent of average snow cover.

Utah has set a state record for snowfall with well over 800 inches in Alta. They also dropped the below -60F in the cold sinks.<https://www.fox13now.com/news/local-news/alta-hits-800-inches-of-snow-this-seaso>

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Herb Stevens

Herb Stevens is a Penn State grad who was one of the original on-camera meteorologists at The Weather Channel. After moving on to become the chief meteorologist at WNYT-TV in Albany, New York, he created and produced weekly on-snow ski reports in addition to his daily on air duties. After 5 years, Stevens worked exclusively as a snow reporter, named the segment "The Skiing Weatherman", and travelled to different resort for taping each week through the winter. Over the following 25 years, Stevens expanded the reach of the reports to 35 television markets and a weekly audience of approximately 20 million

viewers across the eastern half of the U.S., visiting hundreds of different ski areas along the way.

Stevens, about to embark on his 65th year on skis, now forecasts for a number of winter sports resorts, as well as close to 100 golf course superintendents Herb Stevens, has been skiing for 65 years at hundreds of the nation's ski areas. He has served as the skiing weatherman providing ski weather assessments and forecasts in broadcast form for many TV stations. He has worked with the ski area administrators at many resorts. He comments:

"In my 35 years working in the winter sports industry as a television snow reporter, I visited literally hundreds of ski areas in the U.S. I did not personally observe nor did any resort administrator ever express to me concern over any sort of dwindling seasonal snowfall in any region of this country. More importantly, the DATA speaks to the heart of this question...there is simply no support for the notion that any sort of decreasing trend in snowfall during the winter sports season exists. On the contrary, the data proves decisively that such a claim is utterly baseless."