HEAT WAVES

ISSUE SUMMARY

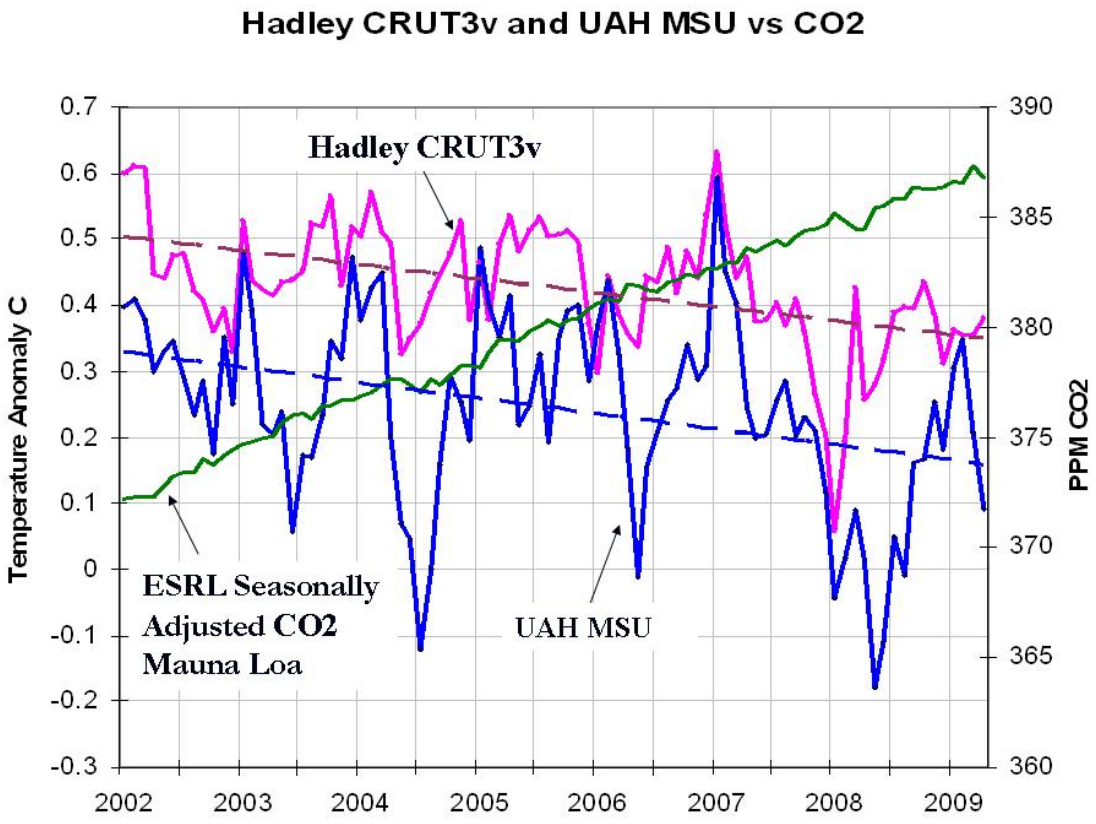
III.C.1. 18898 ***Widespread changes in extreme temperatures have been observed in the last 50 years. Globally, cold days, cold nights, and frost have become less frequent, while hot days, hot nights, and heat waves have become more frequent.***

TSD ES 4 ***Severe heat waves are projected to intensify in magnitude and duration over the portions of the U.S. where these events already occur, with potential increases in mortality and morbidity, especially among the elderly, young and frail.***

COMMENT SUMMARY:

There is no indication that record heat is increasing in frequency, in fact the data shows a precipitous decline in the number of heat records in recent decades. The early 20th century dominates the heat statistics for the United States and the world.

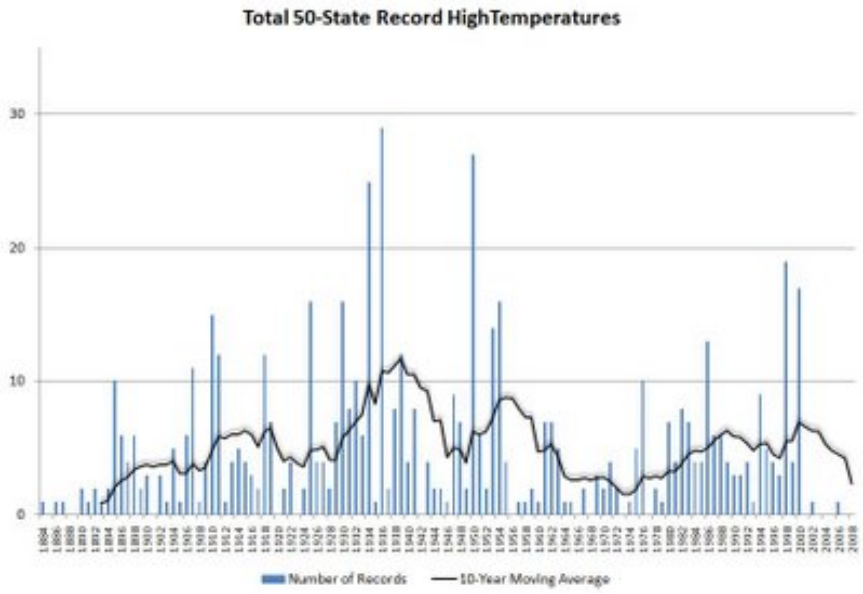
The forecasts are based on GCMs that have failed to catch the cooling this past decade and that even the IPCC Lead Author modelers like Kevin Trenberth agree can't be relied for regional prediction.



The presumption that global heat waves and extremes have increased in frequency is not supported by the official government data. NOAA's NCDC shows that record high temperature by continent have occurred mainly in the 1880s and early 1900s, with only 1 post 1950 (Antarctica in 1974).

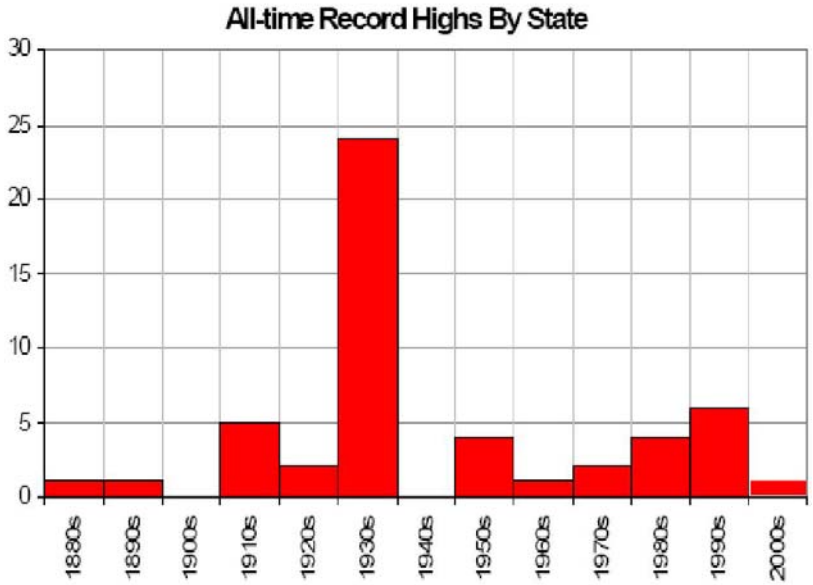
Continent	***All-time High***	***Place***	***Date***
Africa	136	El Azizia, Libya	September 13, 1922
North America	134	Death Valley, CA	July 10, 1913
Asia	129	Tirat Tsvi, Israel	June 22, 1942
Australia	128	Cloncurry, Queensland	January 16, 1889
Europe	122	Seville, Spain	August 4, 1881
South America	120	Rivadavia, Argentina	December 11, 1905
Oceania	108	Tuguegarao, Philippines	April 29, 1912
Antarctica	59	Vanda Station, Scott Coast	January 5, 1974

In the United States, there has been almost a total absence of new *statewide* records. There was no evidence of extreme warming based on temperature extremes. This analysis using NOAA data was compiled by InfoPlease through 2004 and updated with NOAA record page.

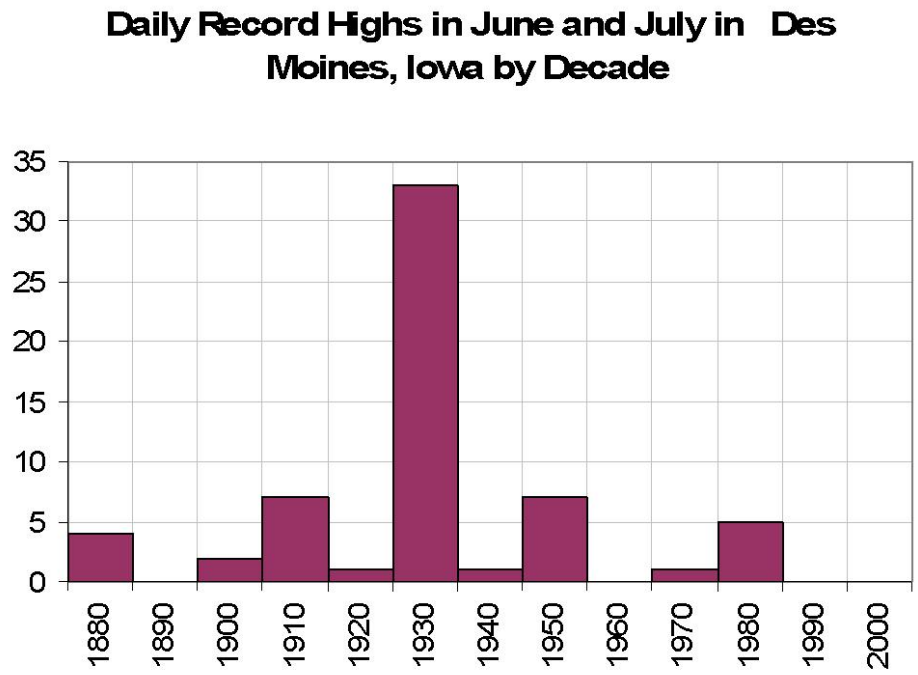


The methodology biases the month/year point of the record to the latest incident of the record temperature. If an old record is tied or surpassed, the record goes to the latest date. Because these records are based on absolute temperatures and tie-goes-to-the-latest methodology, there is no favoring earlier points after a reasonable time has passed and 129 years and 2,354,250 daily observations is more than reasonable. In fact, the methodology actually biases toward the latest occurrences because it is a replacement methodology, not an additive one.

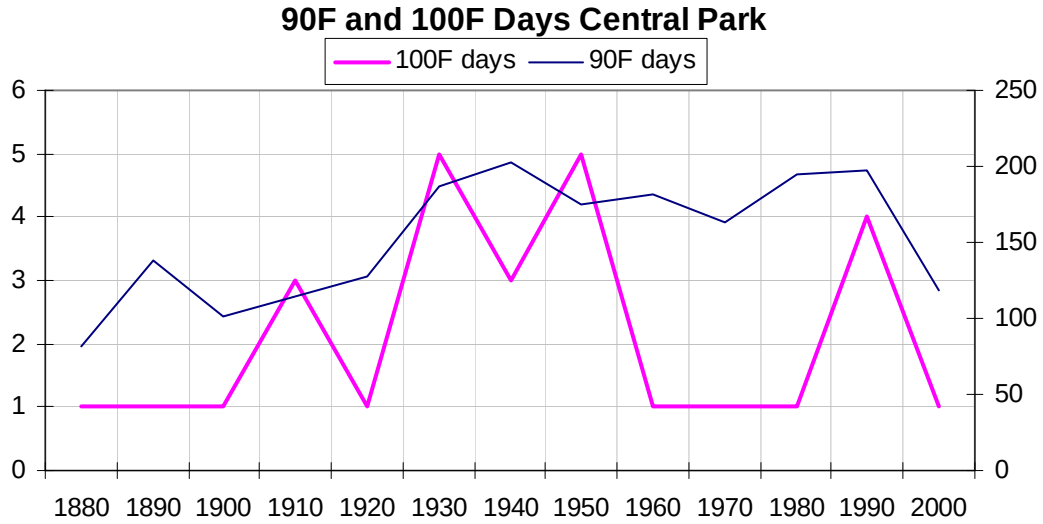
When examined on a state by state basis, the 1930s jumps out as the warmest decade with 24 state records. 37 records occurred before the 1970s.



In Des Moines, Iowa, a continental climate far away from any large scale maritime influence, one would expect to see the effects of global warming extremes most. However that is not the case in the peak heat months of June and July. The last record highs in the months of June and July were in 1988. Here again, the 1930s dominate with 33 of the possible 61 record daily highs.

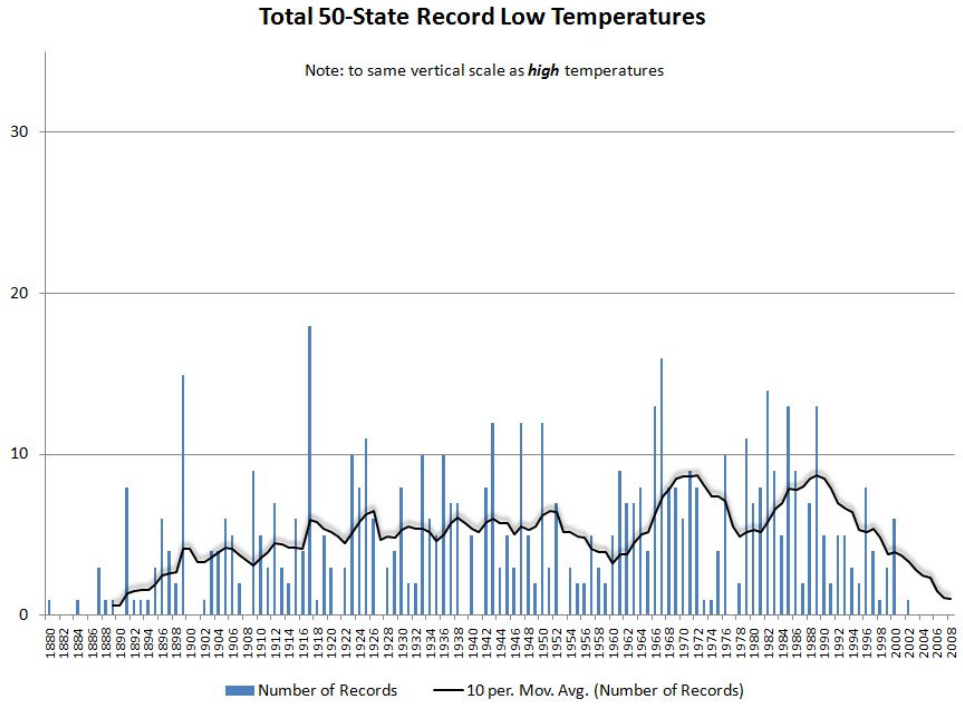


In Central Park, New York, where urbanization warmth is certainly an issue, the peak warmth again occurred early in the period with 100F days peaking in the 1930s and 1950s and 90F degree days the 1940s, a secondary maximum occurred in the 1990s but the number of extreme heat days with one summer to go has declined this decade.



Source NWS Central Park – 90F days, 100F days

The state record lows actually peaked in the 1960s and 1980s but were very low early and late in the record. Combined with the record high, this decade is unusually benign with an absence of extremes, not an increase. Fewer record lows with no corresponding increase of record highs actually is a benefit not a liability as it reduces need for heating (energy).



HEAT WAVE MORBIDITY

The claim that warming increases morbidity rates is a myth. Dr. Robert Mendelsohn, an environmental economist from Yale University. Mendelsohn argues that heat-stress deaths are caused by temperature variability and not warming. Those deaths grow in number not as climates warm but as the variability in climate increases. The deaths are greater in northern climates when sudden heat waves occur and were the populace has not adapted to heat. Excess deaths are greatest in metropolitan areas among the elderly and when the nighttime readings stay high (80F) or greater and the heat lasts more than a few days. After an event like that the populace adapts.

As Nico Stehr and Hans von Storch in an essay in 2005 noted: “Adaptation, by contrast, works. Precautionary and preventative measures are effective in preventing fatalities from heat, for example. While a tragedy occurred in Chicago in mid-July 1995, with more than 700 “heat deaths,” in the same summer the so-called “hot weather health warning watch system” saved the lives of about 300 people in the city of Philadelphia. The occurrence of extremely high temperatures in Philadelphia in 1993 and 1994 prompted the development of an efficient warning system and social networks that benefited the elderly and other persons at risk.

What does this mean? In reality, it was the isolation of elderly people in Chicago who did not know how to help themselves, or the poverty (and thus also: helplessness), which was much worse in this region ten years ago, that led to the high number of fatalities."

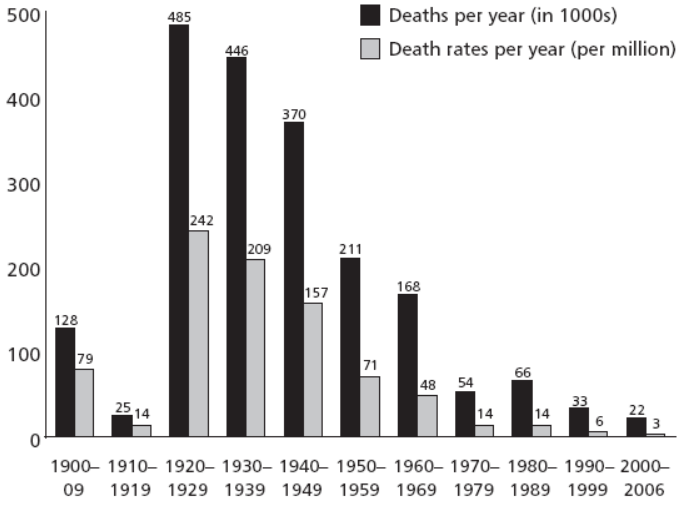
A similar story can be said for the heat waves in Europe in 2003. The timing of the event (summer vacation where most families went to the oceans while mostly the elderly remained in homes without air conditioning) led to excess premature deaths. Subsequent hot days in more recent years have not brought the same results.

Indur Glokany in Death and Death Rates Due to Extreme Weather Events, in 2007 showed deaths from all extremes for 1979-2002. It showed death from extreme cold continues to exceed death from extreme heat.

Table 3 **US deaths due to weather-related events, 1979–2002. Sources: for extreme events, see text; for total all-cause mortality, USCB (2004).**

	Cumulative deaths	*Deaths per year*	*Percent of annual all-cause deaths*
Extreme cold (XC)	16,313	680	0.031%
Extreme heat (XH)	8,589	358	0.016%
Flood (F)	2,395	100	0.005%
Lightning (L)	1,512	63	0.003%
Tornado (T)	1,321	55	0.003%
Hurricane (Hu)	460	19	0.001%
Sum	**30,590**	**1,275**	**0.058%**
Total deaths, all causes, 1979–2002 average		2,189,000	100.000%

Figure 1 **Global death and death rates due to extreme events, 1900–2006**



Note that in figures 1 through 4, data for the last period are averaged over seven years worth of data.
Sources; EM-DAT (2007); McEvedy and Jones (1978); WRI (2005, 2007)

Death Risk may be increased by policies that limit reliable traditional energy sources in favor of renewables such as wind power which increase the likelihood of brownouts and blackouts. It is during the normal heat waves, that energy demand is the greatest. Also during extremes of heat and cold, high pressure dominates, causing winds to be below the threshold for energy generation. This has already been shown in Texas, California and the UK (see link). This policy not the weather puts the population at enhanced risk.

References:

Goklany, I.M.; Straja, S.R. 2000. U.S. death rates due to extreme heat and cold ascribed to weather, 1979–1997. *Technology*, 7S, 165–173.

Ching-Cheng Chang, Robert O. Mendelsohn, Daigee Shaw: 2003, Global warming and the Asian Pacific, Edward Elgar Publishing, ISBN 1843764199, 9781843764199, 307 pages (Chapter 11)

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Trenberth, K. 2007: Predictions of climate. Posted on Climate Feedback, The Climate Change Blog, June 4, 2007.
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