

## I. Background Information

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### ***Heat Waves and Heat Wave Morbidity***

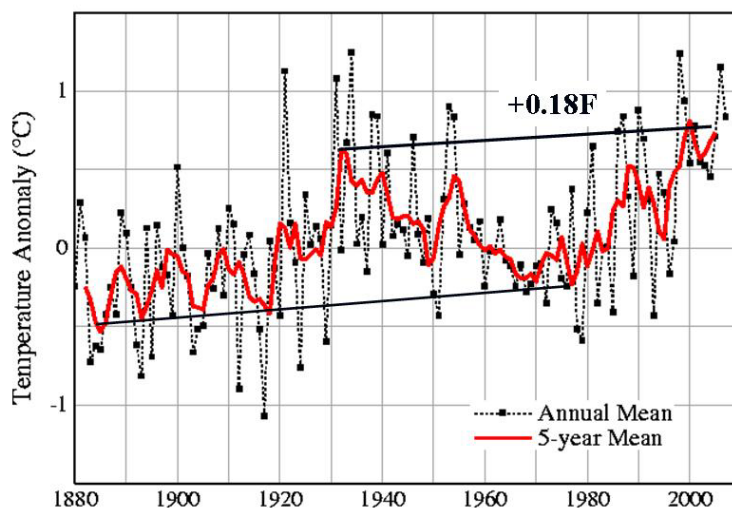
#### 1) *Heat Waves*

This comment involves both an inconsistency and a factual error. On page 6, in “Key Findings”, **Finding #4** states that “The United States has experienced an increase in heat waves...” while on **page 39**, it is said “Extreme heat waves that are now considered rare will occur more frequently in the future.”

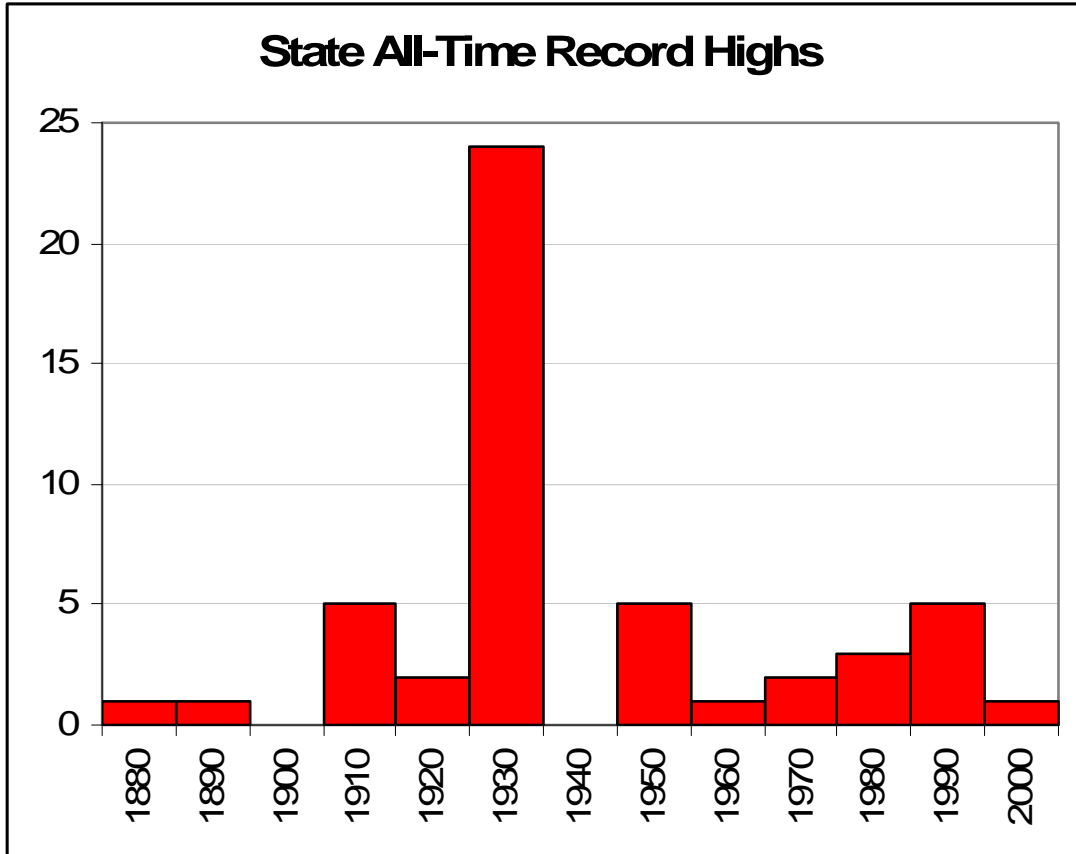
First, if the former is true in any meaningful sense then the latter cannot be.

Further, neither is true for either the United States or globally. The heat records are still dominated by the early 20<sup>th</sup> century events in all locations.

In the United States, the USHCN data below (graphic was generated by NASA from NCDC USHCN) shows a cyclical pattern with little change maximum to maximum and minimum in the 5 year mean temperature since 1940 (a statistically insignificant 0.18F peak to peak). It does establish the warmest periods as the 1930s and again near 2000.

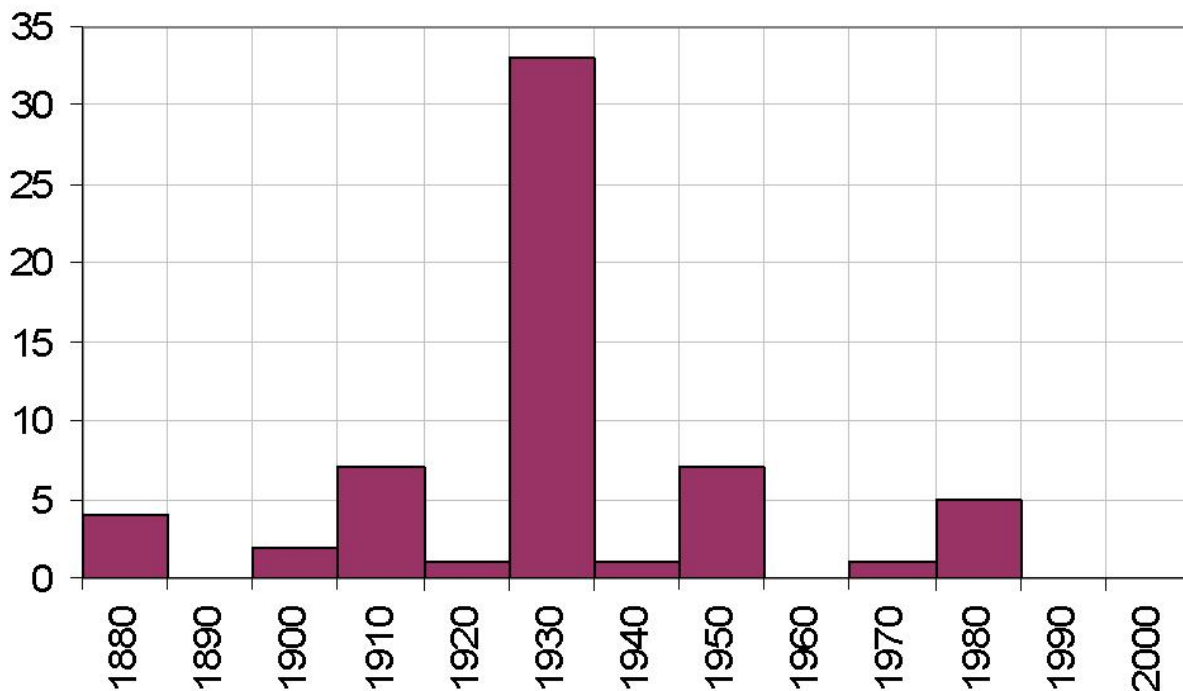


However, heat records and extreme heat in the second peak failed to even approach those in the first one in the 1930s. Extreme heat events are not becoming more frequent as a graph of NCDC's list of All-Time State High Temperature Records clearly shows. 38 of the 50 states set their new records in the decades prior to 1960 with a dominance of the heat in the 1930s.



Des Moines, Iowa is in the center of the nation's land mass, has a distinct continental climate and would be expected to show the greatest extremes of both cold and warm. The record daily highs in June and July in Des Moines show the dominance of the early 20<sup>th</sup> century with 55 of the 61 records prior to 1960.

## Daily Record Highs in June and July in Des Moines, Iowa by Decade



### GLOBAL EXTREMES

Even the global continental extremes show no heat records in recent decades (Source NOAA NCDC: (<http://www.ncdc.noaa.gov/oa/climate/globalextremes.html>)). All the heat records were set before 1974, all but one before 1950.

### *WORLD EXTREME HEAT RECORDS (°F)*

<i>Continent</i>	<i>All-time High</i>	<i>Place</i>	<i>Date</i>
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
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## 2) HEAT WAVE MORBIDITY

On **page 8** it is noted that “*Significant increases in illness and death related to extreme heat are projected, along with small decreases in cold-related impacts.*”

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.”

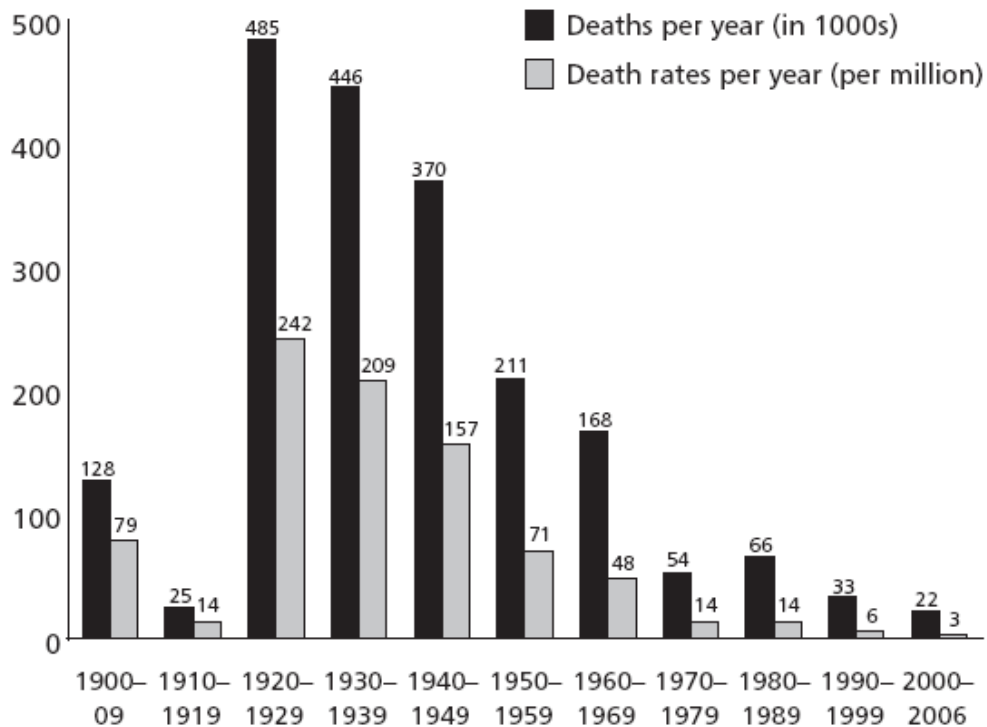
Indur Gokany in [Death and Death Rates Due to Extreme Weather Events](#), in 2007 showed deaths from all extremes for 1979-2002. It showed death from extreme cold continues to exceed death from extreme heat.

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%
<b>Sum</b>	<b>30,590</b>	<b>1,275</b>	<b>0.058%</b>
Total deaths, all causes, 1979–2002 average		2,189,000	100.000%

Furthermore he has shown globally death and death rates due to extreme weather have declined in the last century (referenced sources listed in the [document](#)).

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)

## CHANGES REQUESTED

For the above reasons we therefore request the authors make the following corrections in the document so as to satisfy applicable IQA statutory requirements:

### CHANGES:

- (1) Removal of “heat waves” from the statement in key finding #4
- (2) There is no basis for the second statement on page 39 and it should be likewise removed. It is pure supposition. If there are less extreme heat events near the latest cyclical peak in the late 1990s than the first in the 1930s, there is no reason to believe that will reverse in the future. Pure extrapolation would point to less extreme events.

- (3) Removal of statement on page 8. There is no historical precedence for this statement since no net increases in extreme heat have occurred since 1930, and the global deaths from extremes have declined.