346

Estimating the Expected Number of U.S. Lightning Fatalities During A Year, Throughout a Year, and Comparison to Other Storm Phenomena

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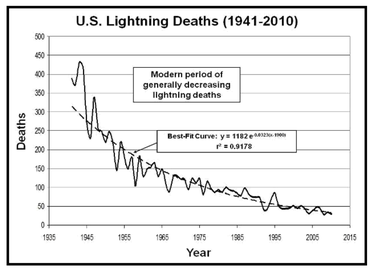
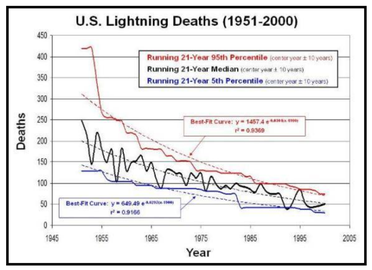
Lightning has become #3 source of storm deaths in U.S.

- **Historically, lightning has been #2 source of U.S. storm deaths, but its fatality rate has been decreasing for decades**



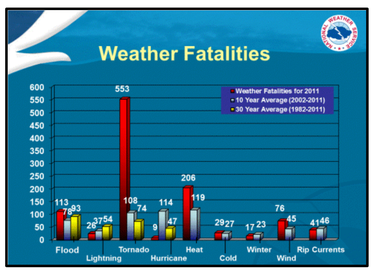


PHENOMENA	PREDICTED 2012 FATALITIES	METHOD

Lightning	• **31.7 deaths predicted for 2012**
	  • 90% Confidence Interval = 23.3 to 48.4
	  • 30-year running mean = 54 deaths, well above curve's 95th percentile (49.9)
	• **28 deaths observed** *(as of 21 Dec 2012)*
	  • Well within the 90% confidence interval
		• **Curve Fitting of Means (1941-2010)***
		• **Curve Fitting of Percentiles (1951-2000)***
		  • 21-year running center-weighted percentiles
		** Roeder, W. P., 2012: A statistical model for the inter-annual and intra-annual fatalities from lightning in the U.S. . . . , 4ILMC, April 2012*

Floods	**93 deaths**	• **30-Year Running Mean (1982-2011)**
		  • No trend, so 30-year running mean acceptable
		  • NWS (2012) *(www.nws.noaa.gov/om/hazstats.stml)*

Tornadoes	**74 deaths** (up from 56 due to disastrous 2011)	
Hurricanes	**47 deaths**	
Wind	**45 deaths**	



<u>Conclusions</u>: 2012 Expected Fatalities: Lightning = 31.7 deaths, 95th percentile = 48.4 deaths
Tornadoes = 74 deaths

- **2012 lightning fatalities less than tornado fatalities and is statistically significant at 95% level**
  - Lightning became #3 source of U.S. storm deaths in 2006, but wasn't recognized due to use of 30-year running mean
- **2012 lightning fatality rate also less than hurricanes and wind, but not yet statistically significant**