1. "Hurricanes and Global Warming", by Pielke Jr et al (2005).

On page 1572 they state: "Globally there has been no increase in tropical cyclone frequency over at least the past several decades (Webster et al 2005; Lander and Guard 1998; Elsner and Kocher 2000)." I happen to be preparing a publication on hurricane metrics, so I am familiar with data sets from the National Hurricane Center and the Joint Typhoon Warning Center. The figure belows shows all tropical storms that reached hurricane status:

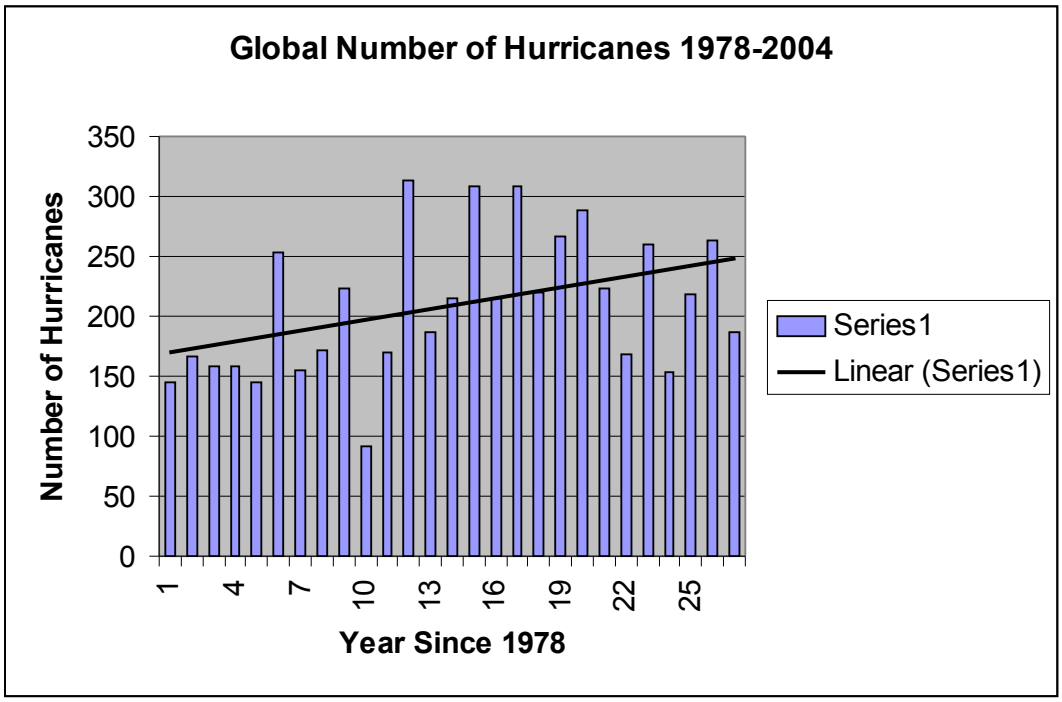

Figure 1.

Note that my analysis includes only hurricanes, not all tropical storms. However, I see a clear trend: the global count increases from about 170 hurricanes per year in 1978 to 250 per year in 2004. (Years before 1978 are much lower, probably due to missing records.) So how can the authors assert that there is no increase in tropical cyclone frequency?

On page 1572 the authors state: "Moreover, in the North Atlantic, much of the recent upward trend in Atlantic storm frequency and intensity can be attributed to large multidecadal fluctuations." How much? And how much is left over? The sentence seems to imply that some portion of the increase canNOT be attributed to multi-decadal fluctuations (they are probably referring to the Atlantic Multidecadal Oscillation). That's the portion that we climatologists are trying to explain.

I have seen an assertion in the media (I think it was attributed to Bill Gray), that the current increase in North Atlantic hurricane activity is a natural cycle of the AMO. What would it take to falsify this hypothesis? What level and timing of hurricane activity would have to occur before we can conclude, "This is definitely not the AMO?" The answer to this question may depend on exactly how the AMO is defined.

Somewhere on the Internet there is an open letter signed by a number of prominent scientists, agreeing whole-heartedly with the first conclusion in this paper; that there is too much new construction along the Gulf coast. Instead of rebuilding places like New Orleans we should seriously consider evacuating them, or at least reducing their footprint.

Reference for my BAMS paper: "Tropical cyclone intensity is defined by the maximum sustained surface wind, which occurs in the eyewall of a tropical cyclone over an area of just a few dozen square kilometers." "Can We Detect Trends in Extreme Tropical Cyclones?" by Christopher W. Landsea, Bruce A. Harper, Karl Hoarau, John A. Knaff; Science, 28 July 2006, Vol 313, page 452.

2. "Can We Detect Trends in Extreme Tropical Cyclones?", by Landsea et al (2006).

The authors state: on page 453: "Indeed, Klotzbach has shown (23) that extreme tropical cyclones and overall tropical cyclone activity have globally been flat from 1986 until 2005, despite a sea surface temperature warming of 0.25 degrees C." The authors don't define "activity" here, but by my kinetic energy index Klotzbach is correct:

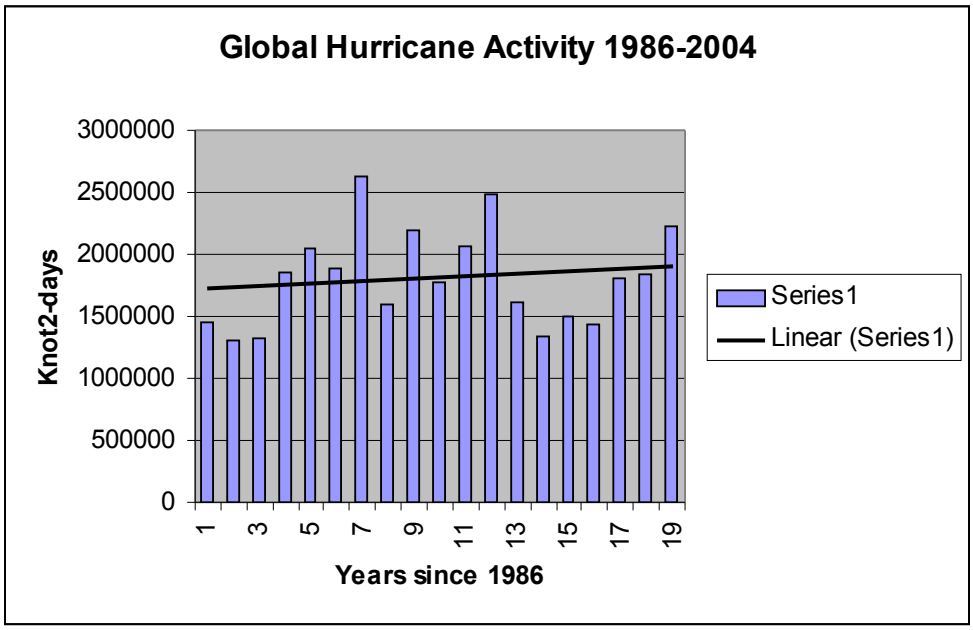

Figure 2.

The global graph is pretty flat. But the trends in ocean temperature and cyclone activity ARE noticeable when separated by ocean basin, as Dr. Pielke has effectively demonstrated in class. On page 453 they state: "Data from the only two basins that have had regular aircraft reconnaissance - the Atlantic and the Northwest Pacific - show that no significant trends exist in tropical cyclone activity when records back to at least 1960 are examined (7, 9)."

That's not the results I get. Here are plots of kinetic energy index (similar to ACE) for the Atlantic and Northwest Pacific:

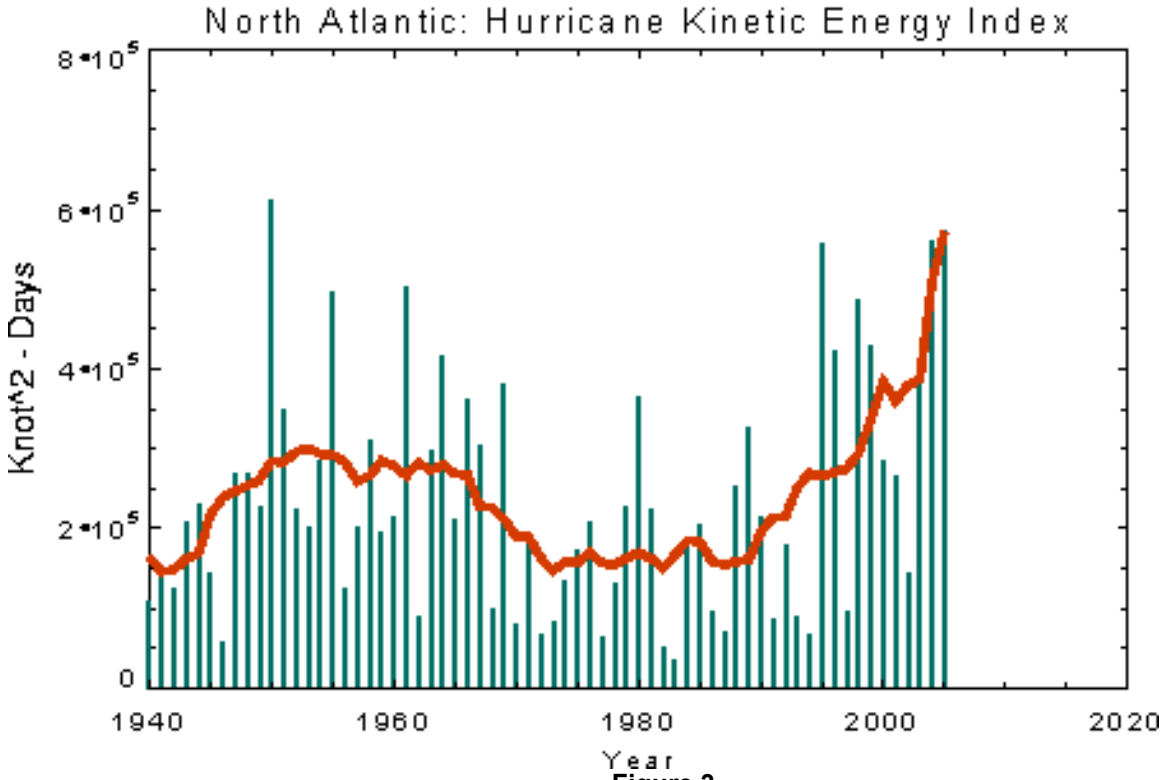

Figure 3.

The red line is an 11-year running average that shortens at the end (I'll color the shortened part green in the next iteration).

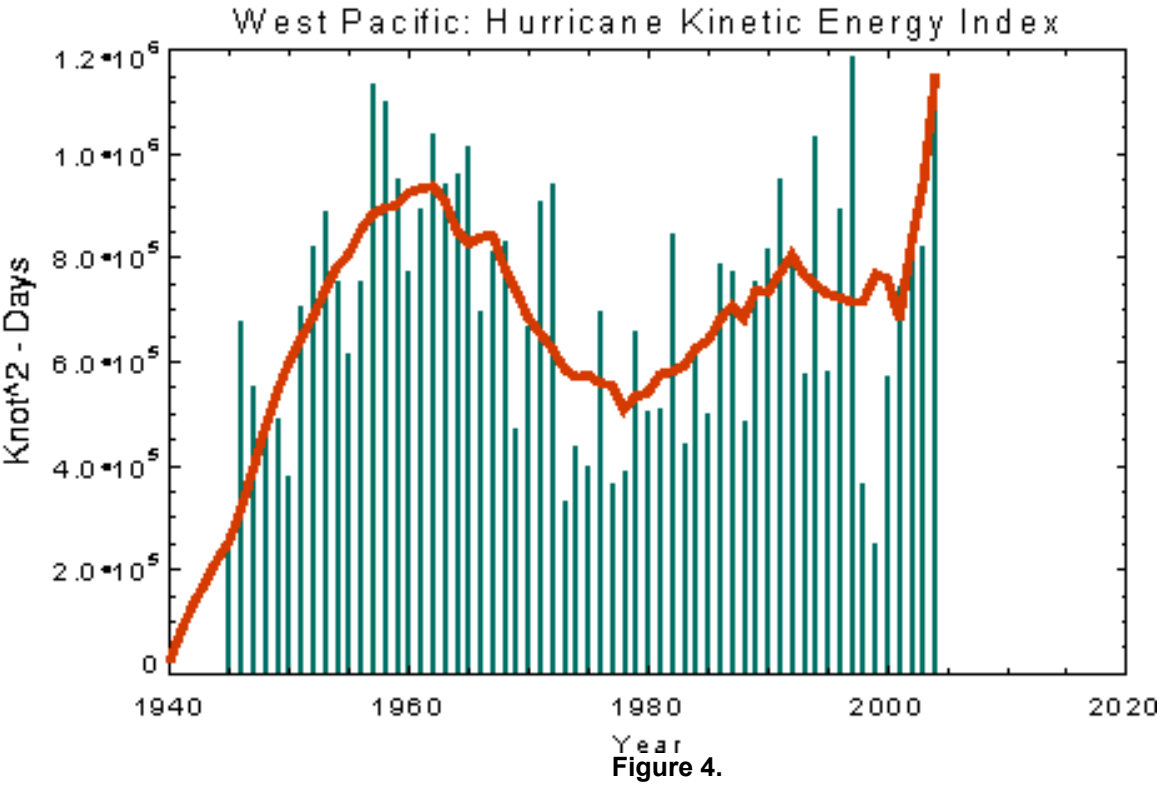

Figure 4.

Obviously we have an artificial ramp-up until 1960. But the following decrease to 1980 cannot be attributed to improving technology and methods. We can indeed detect significant trends.

He mentions Hugo on page 453, and a discrepancy between 59 m/s and 72 m/s on September 15, 1989. Hugo underwent rapid intensification on that day. Here are the "best tracks" records, with maximum wind speed expressed in knots:

```
 NA   8 1989091500   13.8   -50.5 100   962 HUGO
 NA   8 1989091506   14.0   -51.9 110   957 HUGO
 NA   8 1989091512   14.2   -53.3 125   940 HUGO
 NA   8 1989091518   14.6   -54.6 140   918 HUGO
```

I would have to look up his reference (13) to determine what hour he's referrring to.

3. "Tropical Cyclones", BAMS June 2006, page 533. Report: State of the Climate in 2005.

Note the similarity between Fig 4.12 bottom (page 536) and my figure below:

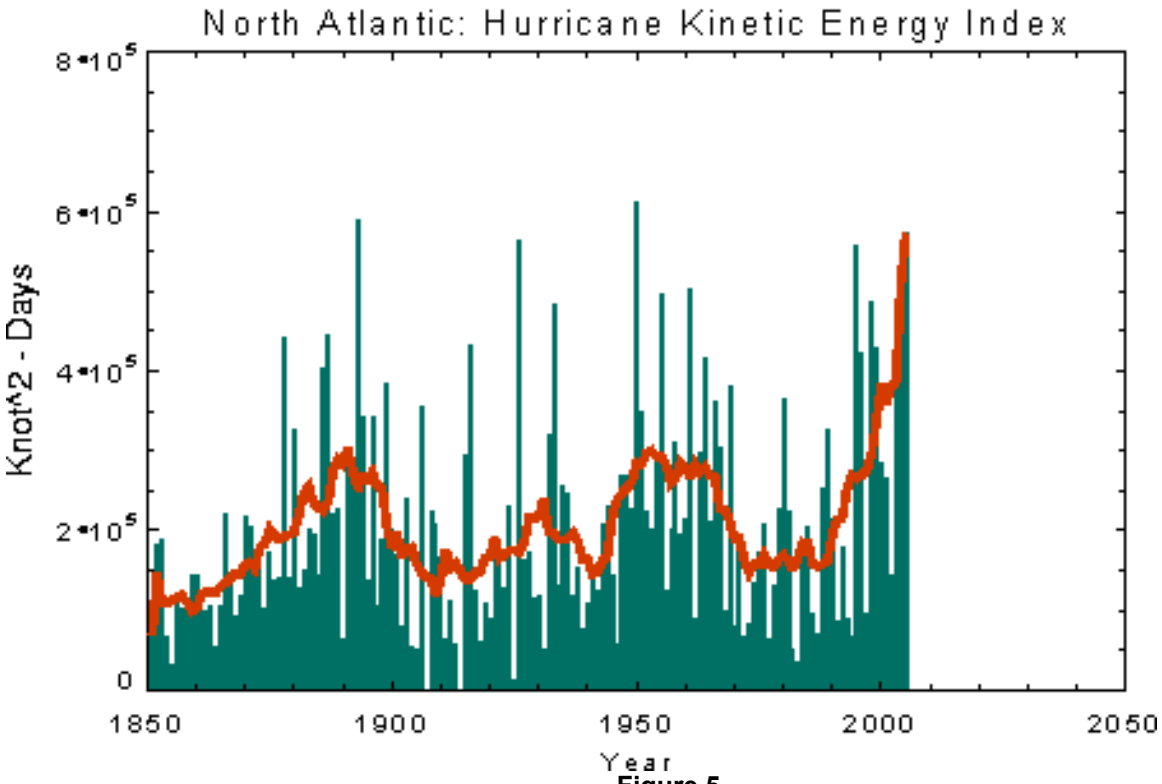

Figure 5.

I see a strong correlation between the Carribean/Gulf SST and the ACE hurricane index.

4. "Hurricanes and Global Warming", by Christopher Landsea, page E11 (2005).

What's the proper way to run a multi-year averaging window up against the last data point? Isn't there some kind of standard procedure? And what should be the standard window length of the running average for climatology?

I don't agree with Landsea's last sentence: "The Atlantic hurricane basin is currently seeing enhanced, rather than "unprecedented", storminess that is comparable to, or even less than, that seen in earlier busy cycles of activity." My last valid 11-year average in 2000 (383,560 knot2-days) is substantially higher than the earlier peaks at 1891 (301,907) and 1950 (284,798). See my Figure 5. above.

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