Thanks for the wonderful piece of historical scholarship. It is very important as it demonstrates for all to see the extraordinary folly of the IPCC et al scare that has engulfed our impressionable politicians in so many countries. The comparison between now and then is precise.

At that time in the late 1960s early 1970s the world was cooling. This has been well established. At that time there were sound geophysical explanations in the scientific literature. But the anthropomorphic tendency amongst our colleagues was too strong. They did not exercise the scientific mindset that will invariably lead to the truth as I will explain. Stephen Scheidner and Holdren, now with President Obama, are two perfect examples of this.

We now know that the cooling of the 1970s and the warming of the 1980s to 1990s and the cooling we are now experiencing, whilst multivariable in origin (as with most complex phenomena) all have been induced in part because of the variability in the Earth's decadal rotation.

There is considerable evidence that decadal length variations in the rate of the Earth's rotation result in periods of global cooling or warming.

Lambeck and Cazenave (1976), "Long Term Variations in the Length of Day and Climatic Change" published in 1976 in the *Geophysical Journal of the Royal Astronomical Society* Vol 26 Issue No 3 pps 555 to 573, reported that there is an established relationship between the Earth's decadal variable rotation and climate dynamics.

As LoD shortens, (i.e. the Earth rotates faster) the planet warms; in contrast, as LoD lengthens, the planet cools. There is a time lag of most likely six years between the change in the Earth's rotation and global temperature changes.

Their paper is available here: http://rses.anu.edu.au/people/lambeck_k/pdf/37.pdf

Their paper warrants careful study.

Lambeck and Cazenave (1976) found that:

"*The long-period (greater than about 10 yr) variations in the length-of-day (LoD) observed since 1820 show a marked similarity with variations observed in various climatic indices; periods of acceleration of the Earth corresponding to years of increasing intensity of the zonal circulation and to global-surface warming: periods of deceleration corresponding to years of decreasing zonal-circulation intensity and to a global decrease in surface temperatures. The long-period atmospheric excitation functions for near-surface geostrophic winds, for changes in the atmospheric mass distribution and for eustatic variations in sea level have been evaluated and correlate well with the observed changes in the LoD.*"

Lambeck and Cazenave (1976) argued that the cooling of that the planet experienced in the 1960s arose from a slowing of the Earth's rotation. They wrote:

"*if the hypothesis* [that decadal rotation decrease (increase) results in planetary cooling (warming)] *is accepted then the continuing deceleration of[the rotating Earth] for the last 10*

yr suggests that the present period of decreasing average global temperature will continue for at least another 5-10 yr."

Lambeck and Cazenave (1976) predicted that the cooling would come to an end by the mid 1970s and be followed by a period of global warming because they had discovered that the planet's rate of rotation had begun to accelerate from 1972. They wrote:

"*Perhaps a slight comfort in this gloomy trend is that in 1972 the LoD showed a sharp positive acceleration that has persisted until the present, although it is impossible to say if this trend will continue as it did at the turn of the century or whether it is only a small perturbation in the more general decelerating trend.*"

How this comes about is a matter of continuing debate and research. It does seem reasonably well established that the proximal causes are changes in the behaviour of the Earth's inner cores and the way these cores are coupled dynamically and electromagnetically to the rest of the Earth.

However, there is growing evidence that coupling between various forms of solar activity and the inner cores is one of the determinants of the variable behaviour of the cores. Regardless of this, the relationship established by Lambeck and Cazenave has been corroborated by others and disconfirmed by no one. Keep in mind that Lambeck and Cazenave found the correlation between LoD and average global temperature is a statistically significant 0.91 using time series some 150 years long with good quality data.

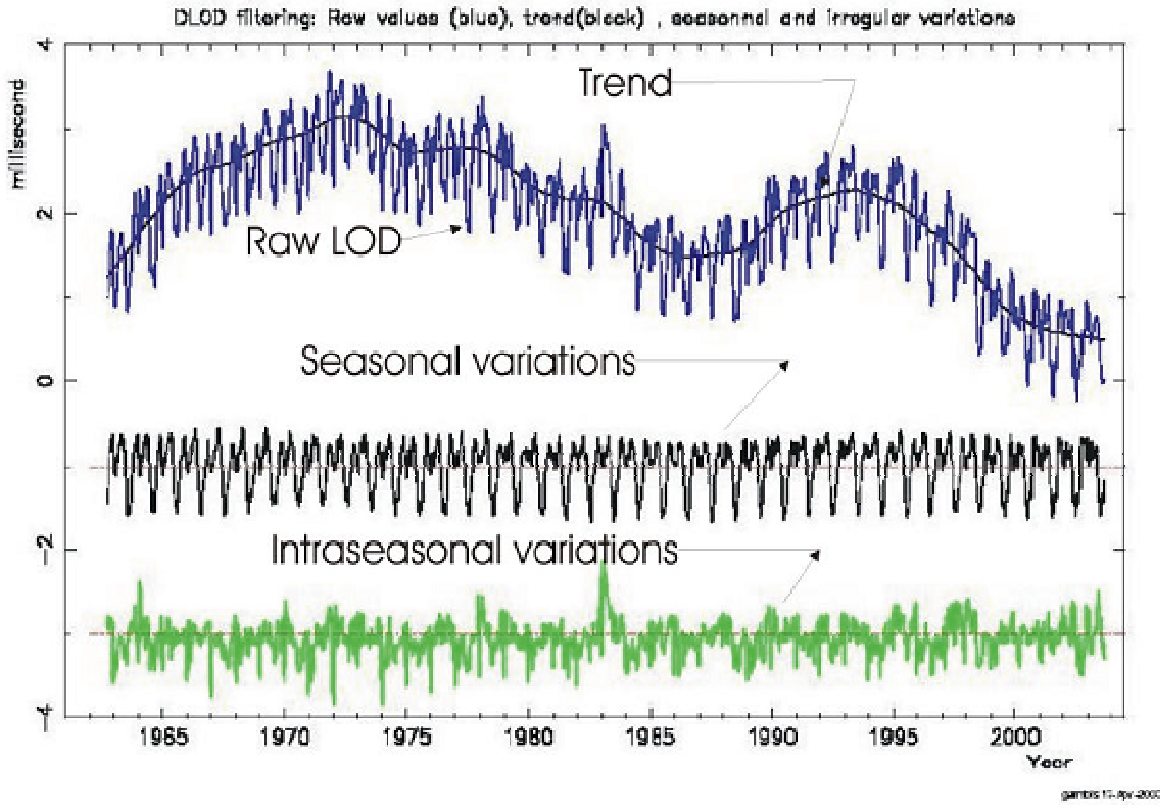
It could be, as Kurt Lambeck argues in his book, *The Earth's Variable Rotation: Geophysical causes and consequences*, Cambridge University Press 1980, pps 279 – 282, that both arise from a third cause (about which he did not speculate). It could be that the same solar activity contributes to the global climate variations in addition to the ways in which rotational change over a decade brings about climate change.

Richard Gross of the JPL at the California Institute of Technology produces a report each year that presents the most recent data about the rotation of the Earth. The title of the report is *Combinations of Earth Orientation Measurements: SPACE2007, COMB2007, and POLE2007*. See here http://trs-new.jpl.nasa.gov/dspace/bitstream/2014/41279/1/09-18.pdf

Fig 4 (d) which is the graph of Length of Day from 1960 to 2007 below with the smaller variations smoothed out.

The graph shows that LoD has been shortening (rotation speeding up) since 1970, except that the planet's rotation slowed just a little between 1988 and 1994. It then began to speed up, de-accelerating again just a little in 2006. There is just a hint of speeding up again in 2007.

The key factor to concentrate on is the decadal rotational changes.



The table below summarises LoD variations over the last fifty years, the predicted climate consequence and the period in which that consequence would occur, given a lag time of five years, other things being equal. As the determinants of climate dynamics are multivariate, non-linear and non-stationary and include elements of randomness, it is not realistic to say that the predicted climate consequence necessarily follows.

Time period of rotation	**LoD**	**Rotation**	**Climate temperature**	**Climate period (5yr lag)**
Pre 1960 - 1972	lengthen	slower	cooling	1960 - 1977
1972 - 1987	shorten	faster	warming	1977 -1992
1987 - 1994	lengthen	slower	cooling	1992 - 1999
1994 - 2002	shorten	faster	warming	1999 - 2007
2002 - present	lengthen	slower	cooling	2007 - ?

L&C noted that the significance in the "lag suggests that the LOD observations can be used as an indicator of future climatic trends, in particular of the surface warmings."

Prediction of the LoD time series is an area of specialized research conducted by a relatively small number of scientists. Gambis and Bizouard (2003) see slide 18 of http://www.ien.it/luc/cesio/itu/gambis.pdf predict that LoD will lengthen during 2000 and 2010 resulting in global cooling from around 2006 to 2016 according to the relationship established by Lambeck and Cazenave.