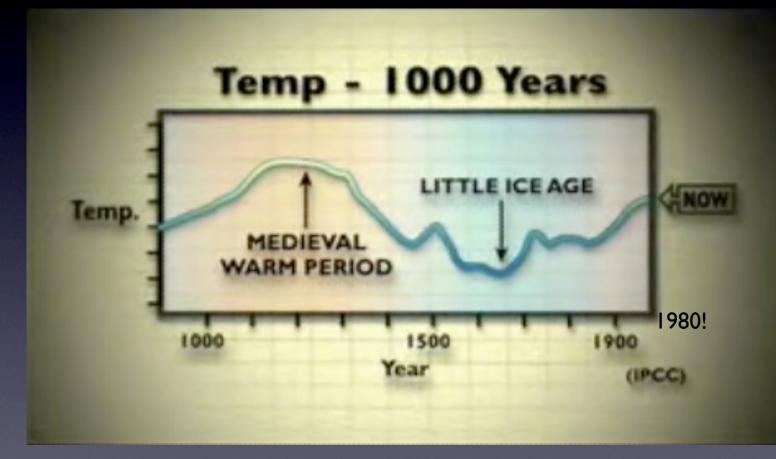
"The Global Warming Swindle" Martin Durkin, Channel 4 Premiere: March 8, 2007

It's a good thing that this program was made:

- Challenges to mainstream belief are good for science.
- "Swindle" contains some nontrivial challenges and inspired a lot of research, which is also good for science.

#### Outdated Data:

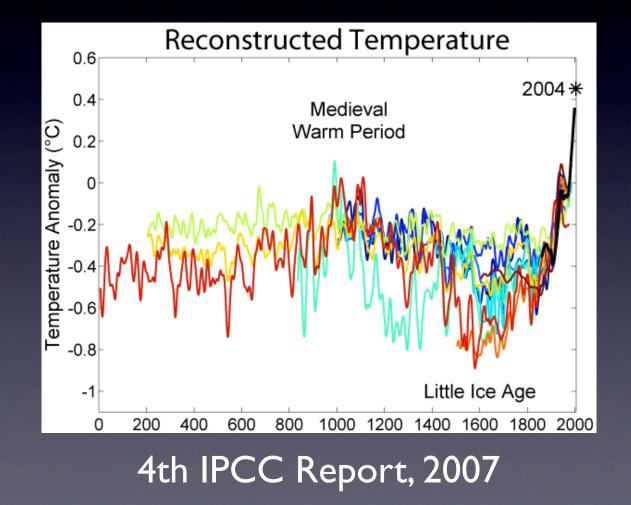
### Medieval Warm Period



Herbert Lamm, 1980

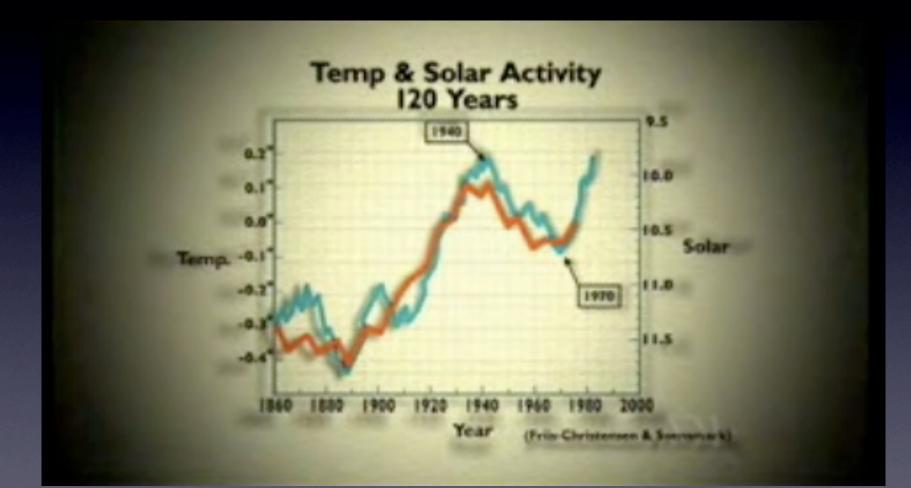
#### Current Data:

### Medieval Warm Period



#### Incomplete Data:

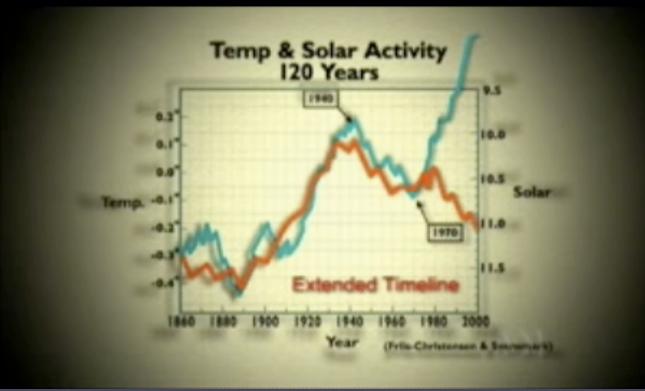
### Solar Forcing



#### Professor Friis-Christensen, Danish Space Agency, 1982

#### Complete Data:

## Solar Forcing



"Our latest studies have explicitly concluded that after 1985 temperature continued to increase while sunspot length flattened out and thus no longer correlated with surface temperature." - Professor Friis-Christensen, 2007

# Cosmic Rays & Clouds

- "Cosmic Rays and Global Warming", T. Sloan, University of Lancaster; A.W. Wolfendale, Durham University
- Cosmic ray ionization does not increase with altitude.
- Rate of ion production is too low generate the number of water droplets required to create clouds.
- Most clouds at the equator, not poles. (Most ions are at the poles Aurora Borealis.)
- http://arxiv.org/PS\_cache/arxiv/pdf/0706/0706.4294v1.pdf

# Cosmic Rays & Clouds

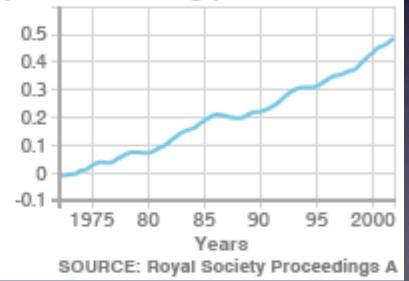
•Mike Lockwood, Rutherford-Appleton Laboratory UK

•Claus Froehlich, World Radiation Center (Switzerland)

"This paper re-enforces the fact that the warming in the last 20 to 40 years can't have been caused by solar activity"

- Dr Piers Forster, IPCC/Leeds University COSMIC CONNECTION? Cosmic ray count (neutrons per hour) 4,100 4,000 3,900 3,800 1975 80 85 90 95 2000 Years

Global mean surface air temperature (cf 1951-1980 average)



#### Criticism:

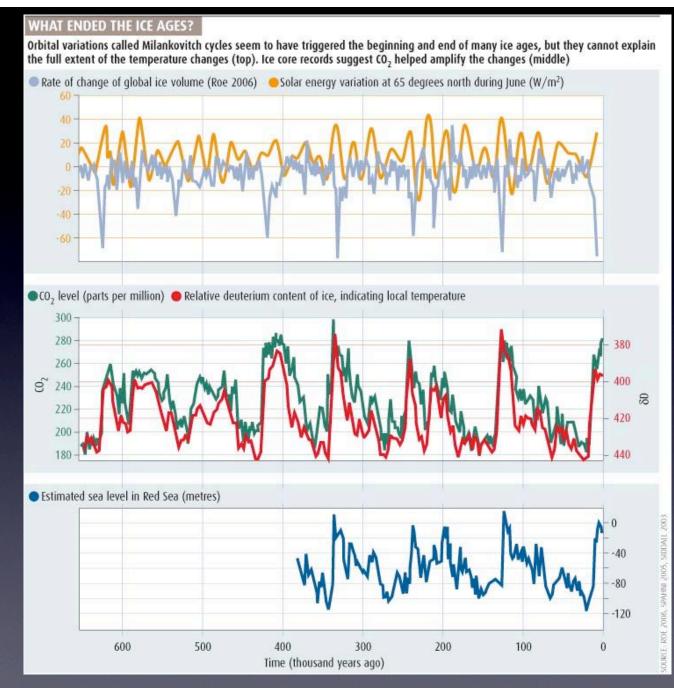
# CO<sub>2</sub> Concentration

"CO<sub>2</sub> makes up a very small part of the earth's atmosphere. ... tens of parts per million ... It's 054%, an incredibly small portion. The human portion is even smaller." - Global Warming Swindle

- CO<sub>2</sub> can force climate change at these concentrations.
  Human contributions change the equilibrium point.
- There's even less ozone than CO<sub>2</sub> but it effects UV more than any of the other gases.

### CO<sub>2</sub> as a Trailing Indicator

- Lags are hard to date. (Air circulates through snow as it is compressed, ice is older than the gas it encloses.)
- Warmings take 5000 years, lag is 800 years. CO<sub>2</sub> could have caused the last 5/6 of the warming, but could not have caused the first 1/6 of the warming.
- CO<sub>2</sub> is the primary but not *only* cause of global warming.
- Historically, CO<sub>2</sub> does not initiate the warmings, but acts as an amplifier once they are underway.
- We are initiating a warming trend with CO<sub>2</sub>. That's never happened before, but it is happening now.



http://environment.newscientist.com/channel/earth/climate-change/dn11659

# Atmospheric Cooling

- If the data says the lower atmosphere cools as the surface warms, there's probably a problem with the data... and there is.
- Satellite orbits slowing, software correction bug used the wrong sign.
- Satellite instruments heated directly by sunlight. Newer balloons do not heat, newer readings appear cooler.
- "For recent decades, all current atmospheric data sets now show global-average warming that is similar to the surface warming." -2006 report by the US Climate Change Science Program
- <u>http://www.climatescience.gov/Library/sap/sap1-1/finalreport/sap1-1-final-execsum.pdf</u>

# Ocean Cooling

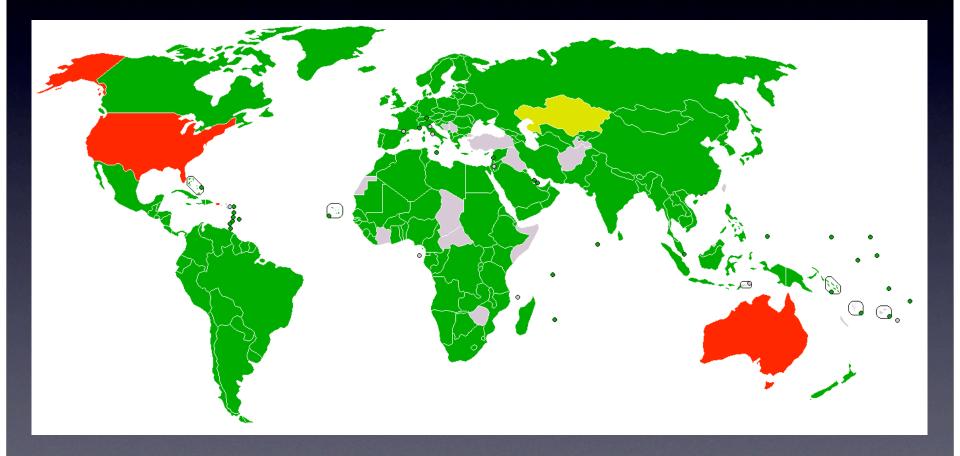
- Sinking ocean probes did not sink as fast as thought.
- "Oceans are warming very much as predicted."
- http://oceans.pmel.noaa.gov/Pdf/heat\_2006.pdf

# Ordovician Period

- "If CO2 truly raises global temperatures, how could an ice age have occurred when a greenhouse effect much greater than today's was in full swing?"
- Ohio State University scientists report that a long-ago ice age occurred 10 million years earlier than once thought. The new date clears up an inconsistency that has dogged climate change research for years.
- The answer: This particular ice age didn't begin when CO2 was at its peak -- it began 10 million years earlier, when CO2 levels were at a low.
- "Our results are consistent with the notion that CO2 concentrations drive climate."
- <u>http://researchnews.osu.edu/archive/earlyice.htm</u>

### Kyoto will punish developing nations

- Developing nations are exempt from the harshest provisions of Kyoto.
- They have signed it, we have not.



### "Swindle" Retractions, Edits, and criticisms:

- 4 different edits with different graphs as the piece has been challenged.
- "They misrepresented me. My views were misrepresented by the context it was presented in. I am the one who was swindled. I would have never agreed to take part in the program if I had know it would argue manmade global warming was not a serious threat." -Carl Wunsch