

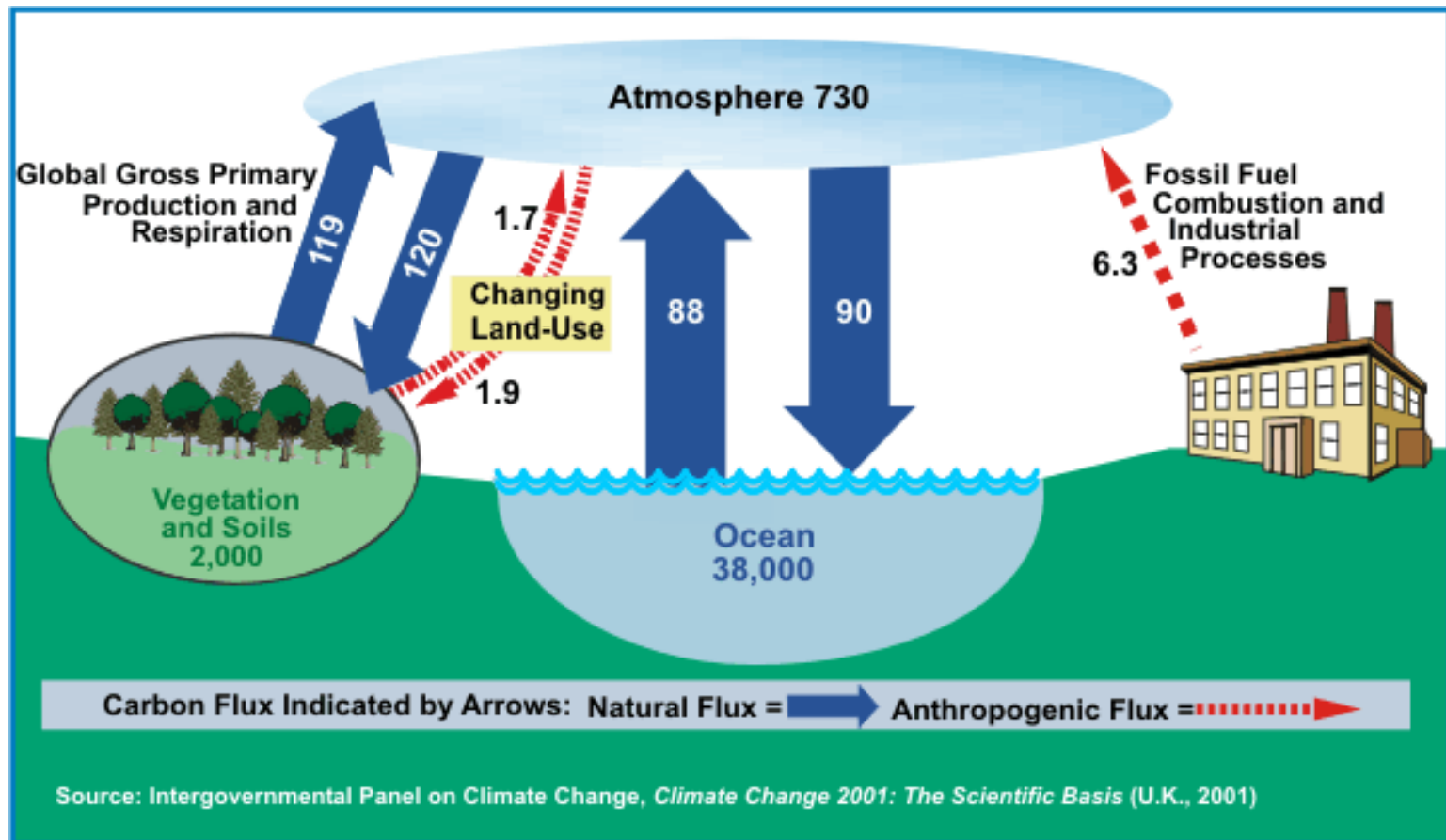
# **Global Warming: Manmade Mess or Nature's Norm?**

**Dr. Roy W. Spencer  
Principal Research Scientist  
The University of Alabama in Huntsville**



# CO<sub>2</sub> Is Necessary for Life on Earth

- 1) Only 29 of every 100,000 molecules of air are CO<sub>2</sub>
- 2) Mankind's CO<sub>2</sub> emissions are only ~ 5% of Natural Flows of CO<sub>2</sub>
- 3) NATURE CONSUMES ~50% OF OUR YEARLY CO<sub>2</sub> EMISSIONS

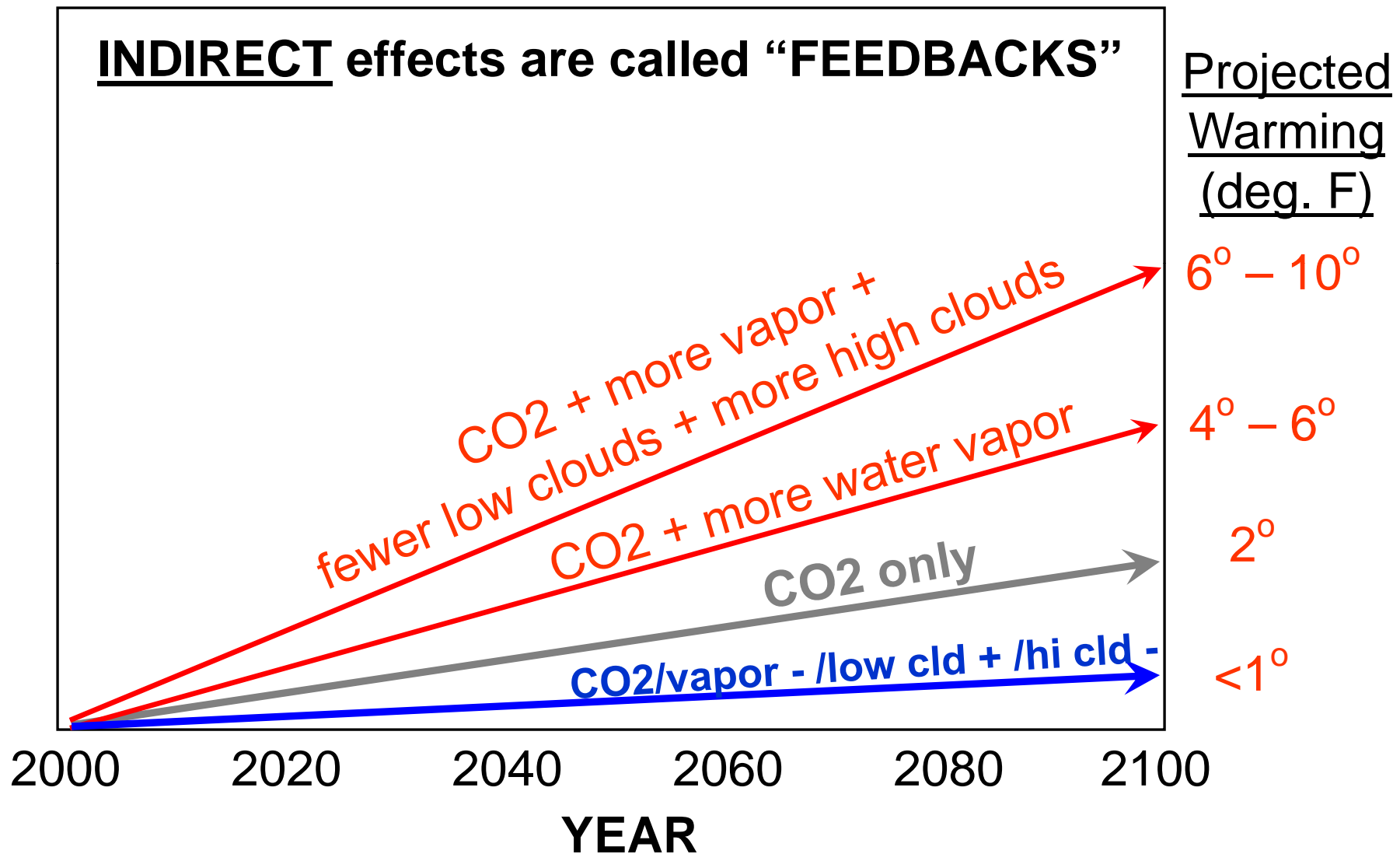


## The Greenhouse Effect of CO<sub>2</sub> is SMALL

- 90-95% {
1. Water Vapor
  2. Clouds
  3. Carbon dioxide
  4. Methane...

**The Greenhouse Effect is a “radiative blanket”:  
it traps heat in the lower atmosphere**  
**Examples: Humid night warmer than dry,  
Cloudy night warmer than clear.**

# The DIRECT Warming effect of More CO<sub>2</sub> from burning Fossil Fuels is small



⇒ **All Climate Models Have**  
**Positive Feedbacks**

**Increasing CO2 causes weak warming at first,  
Warming is then AMPLIFIED by clouds, vapor**

**But What Evidence Supports  
Positive Feedback in Climate Models?**

# Observed Behavior of the Ancient Climate System Al Gore's Stage Prop: The Vostok Ice Core Data

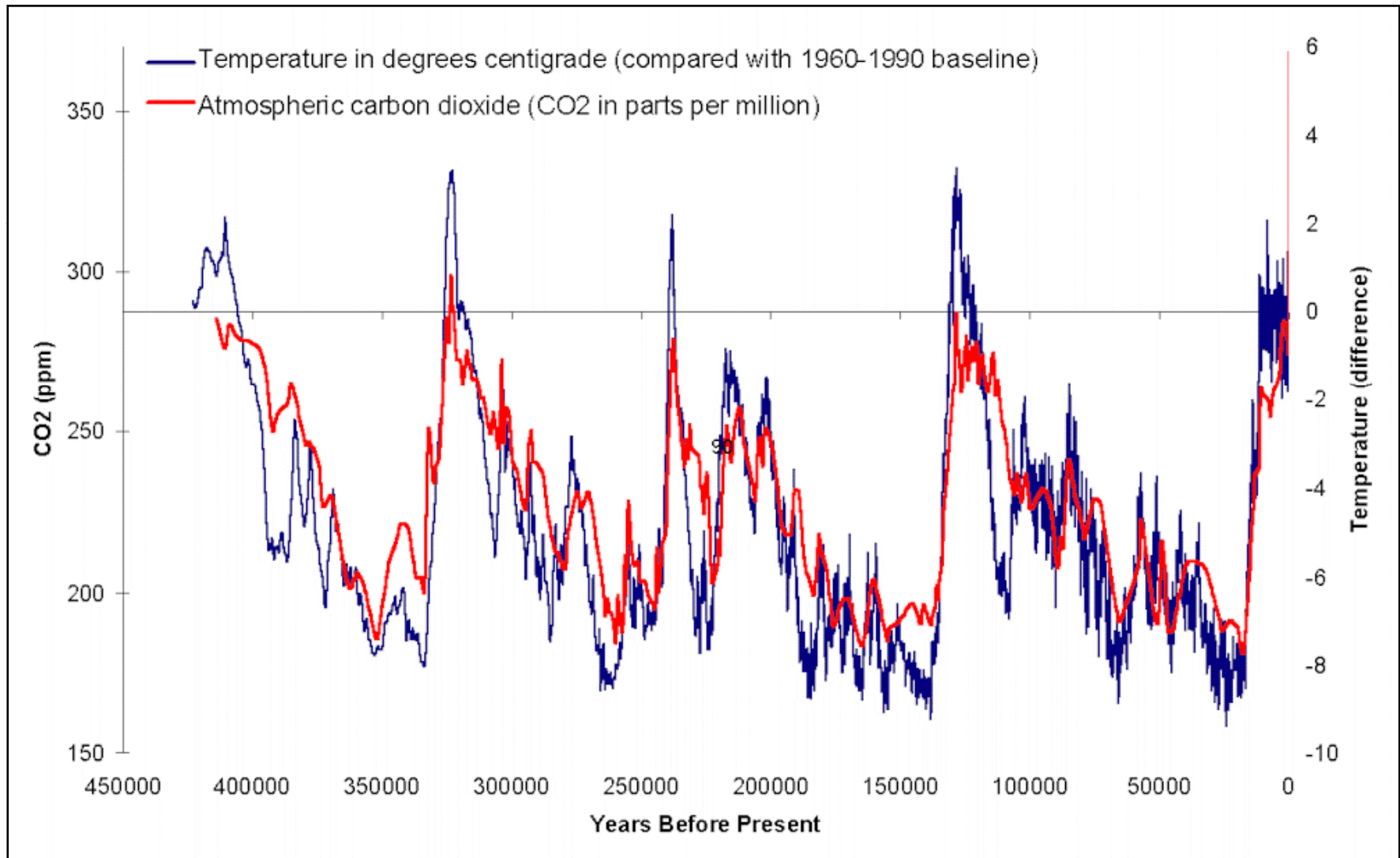
## Ice Core Data

### "Suggests" Positive Feedback....but....





**...temperature LEADS CO<sub>2</sub> by ~ 800 years in Ice Cores...  
(so Ice Core data are largely irrelevant to global warming)**



***What if something else has caused warming?  
(science should always look for  
alternative hypotheses)***

**We Use SATELLITES to figure out how TODAY's  
Climate System works, and compare it to  
climate models.**



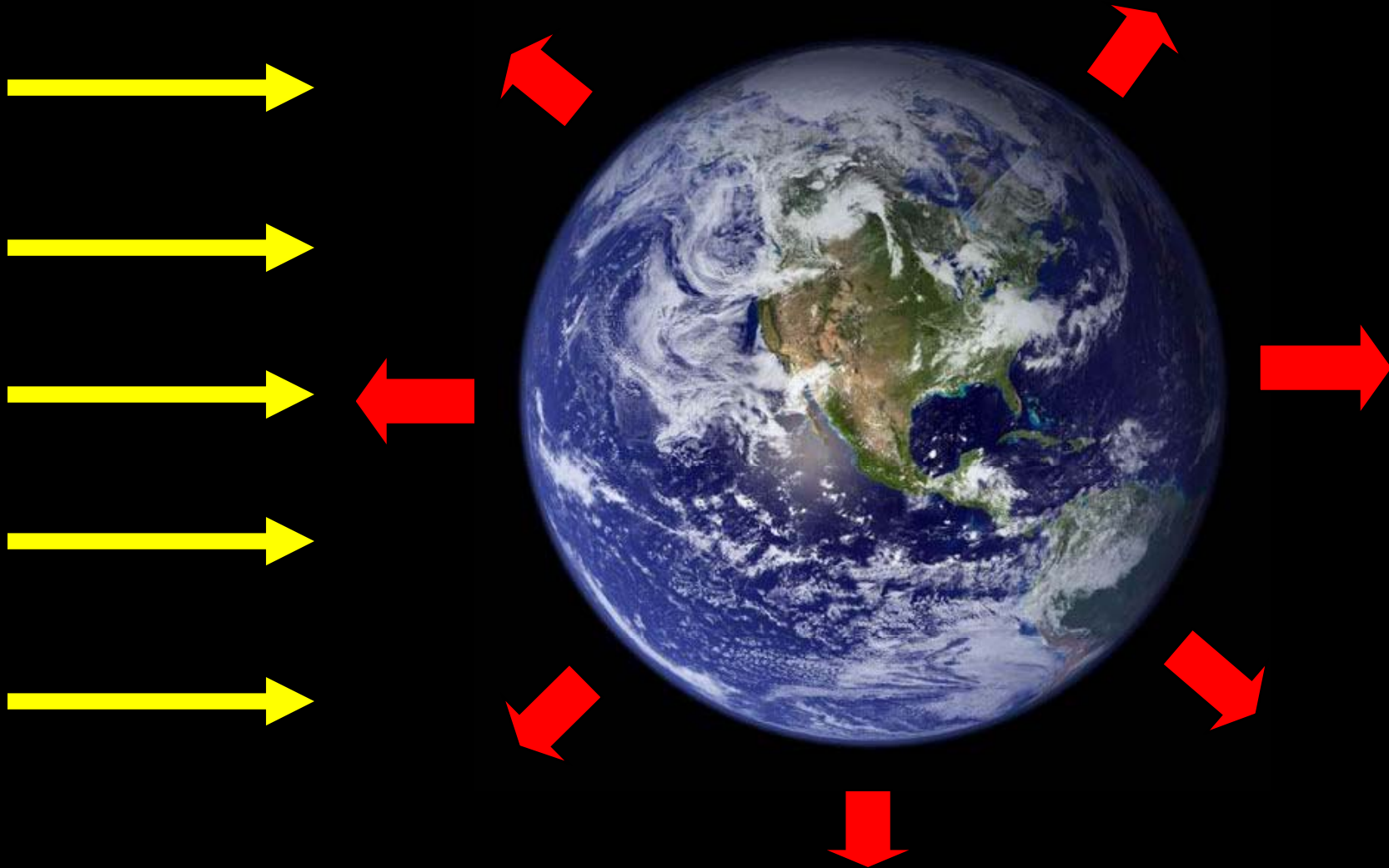
# Observed Behavior of Today's Climate System: Satellite Comparisons of Clouds vs. Temperatures

NASA's  
Aqua Satellite



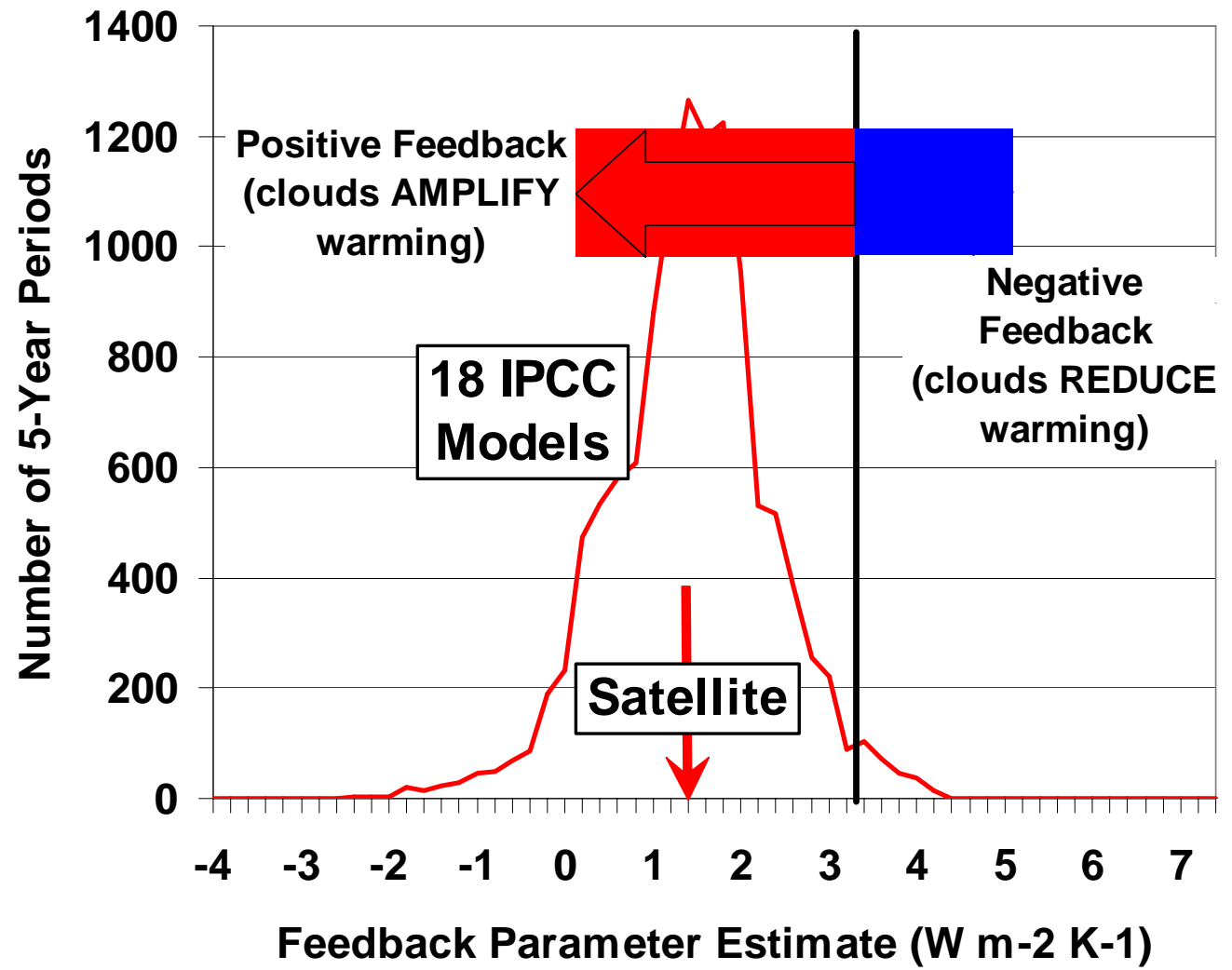
There are TWO WAYS to Cause Global Warming

- 1) INCREASE **solar radiation** being absorbed, or
- 2) DECREASE **infrared radiation** being lost to space.



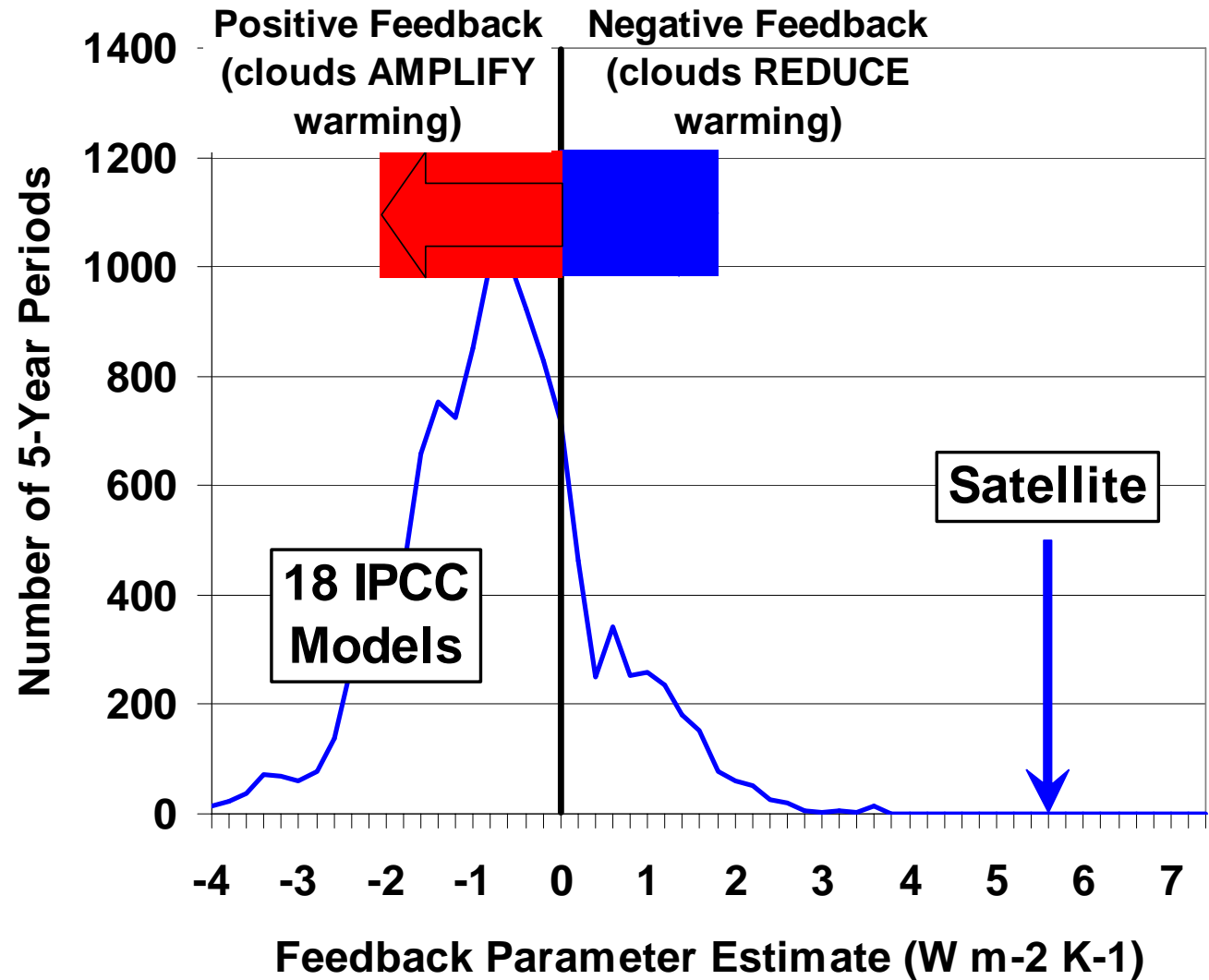
# 1<sup>st</sup> SATELLITE TEST OF THE CLIMATE MODELS (how they gain and lose INFRARED energy)

**GOOD  
AGREEMENT  
for **EMITTED  
INFRARED****



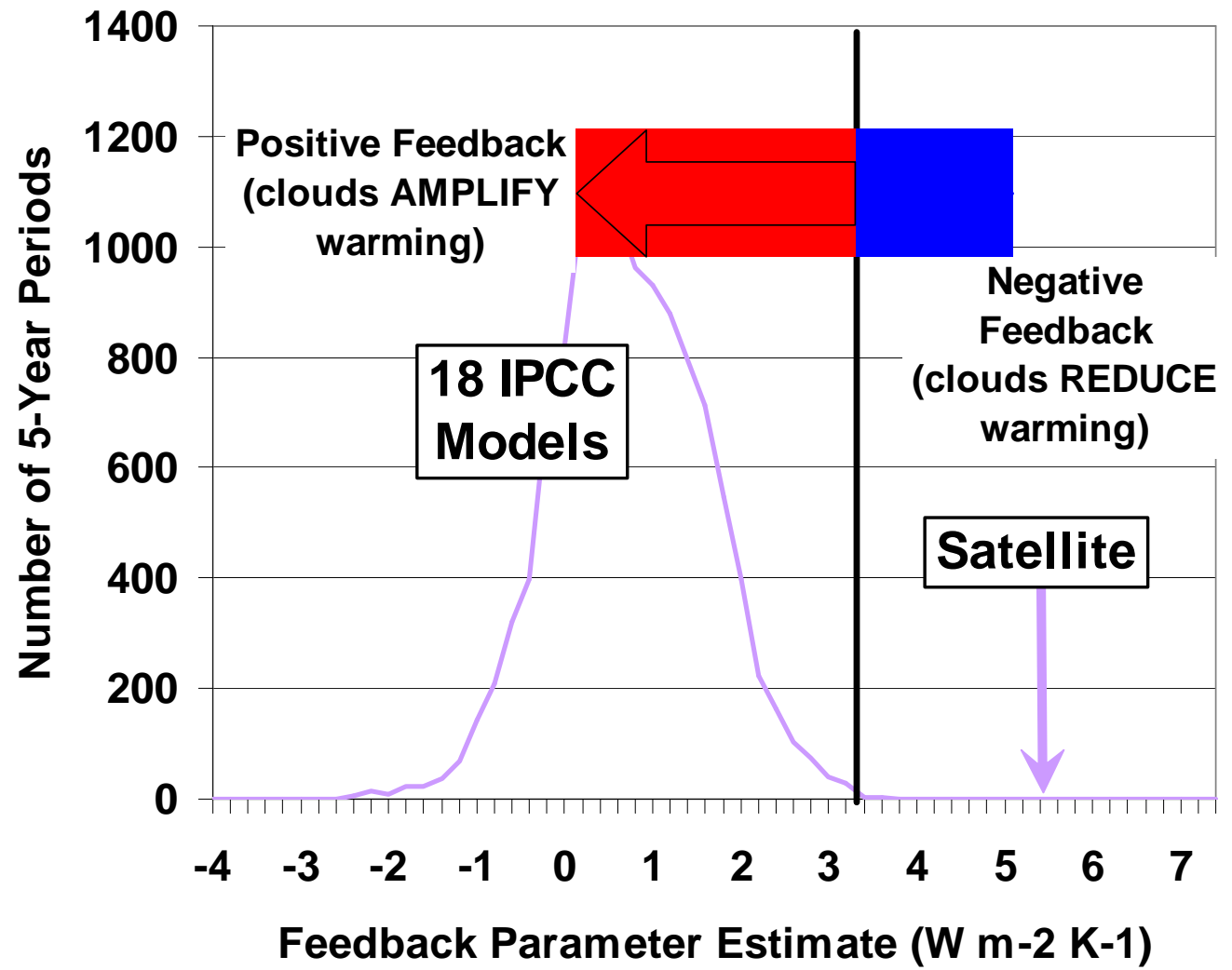
# 2<sup>nd</sup> SATELLITE TEST OF THE CLIMATE MODELS (how they gain and lose SOLAR energy)

**TERRIBLE  
AGREEMENT  
for REFLECTED  
SUNLIGHT**



# TOTAL SATELLITE TEST OF THE CLIMATE MODELS (how they gain and lose SOLAR+INFRARED energy)

**TERRIBLE  
AGREEMENT  
for REFLECTED  
SUNLIGHT+  
EMITTED  
INFRARED**



**Why Would Models  
Cause Clouds to AMPLIFY Warming?**  
(positive feedback => high sensitivity)

**Again (as in CO<sub>2</sub> ⇔ temperature relationship):  
Cause versus Effect**

***When researches examine satellite data,  
they assume temperature changes  
cause cloud changes  
(but not vice versa)  
...and so climate models are built  
upon faulty assumptions.***

**IPCC Claim: Climate “Skeptics” Do Not  
Publish Their Results**

**(we publish, but don't publish anything  
the mainstream media likes)**

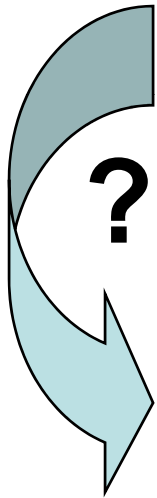
- **New Finding:** Satellite observed tropical climate variability exhibits low sensitivity:
  - Spencer, Braswell, Christy, & Hnilo, 2007: **Cloud and Radiation Budget Changes Associated with Tropical Intraseasonal Oscillations**, *Geophysical Research Letters*, August 9.
- **New Finding:** A simple climate model used to demonstrate natural cloud variability biases climate sensitivity estimates to the high side:
  - Spencer & Braswell, 2008: **Potential Biases in Feedback Diagnosis from Observational Data: A Simple Model Demonstration**, *J. Climate* (in press).
  - Reviewed by 2 IPCC model experts.
- **New Finding:** Satellite observed global oceans shows low sensitivity, outside the range of ALL 18 IPCC climate models:
  - Spencer & Braswell, 2008: **Satellites Reveal a Climate System Less Sensitive than in Models**, *Geophysical Research Letters*, submitt..



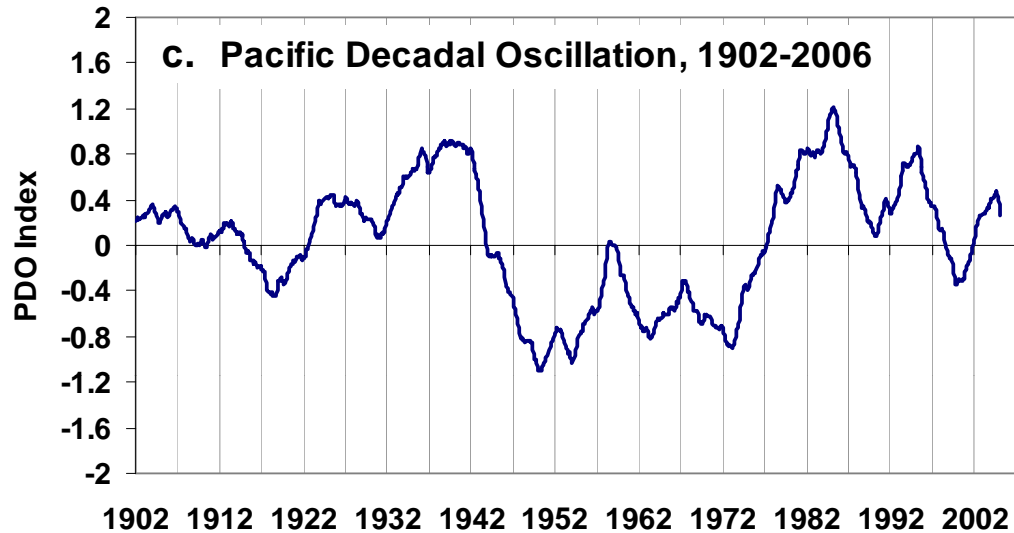
IF Manmade CO<sub>2</sub> hasn't Caused Global Warming  
over the last 100 years..then *what has?*

## HOW ABOUT MOTHER NATURE?

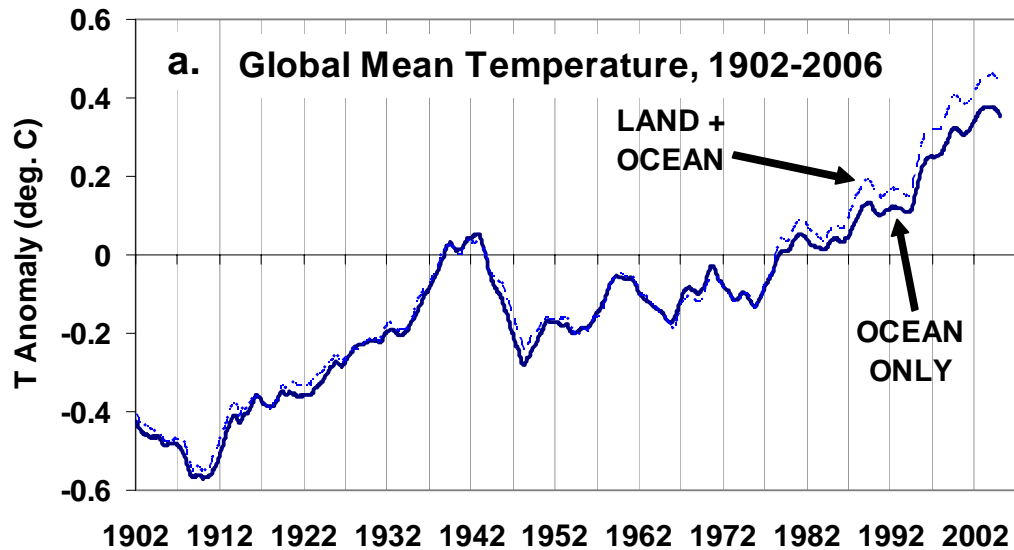
Natural  
Cloud  
Variations



Natural  
Temperature  
Variations

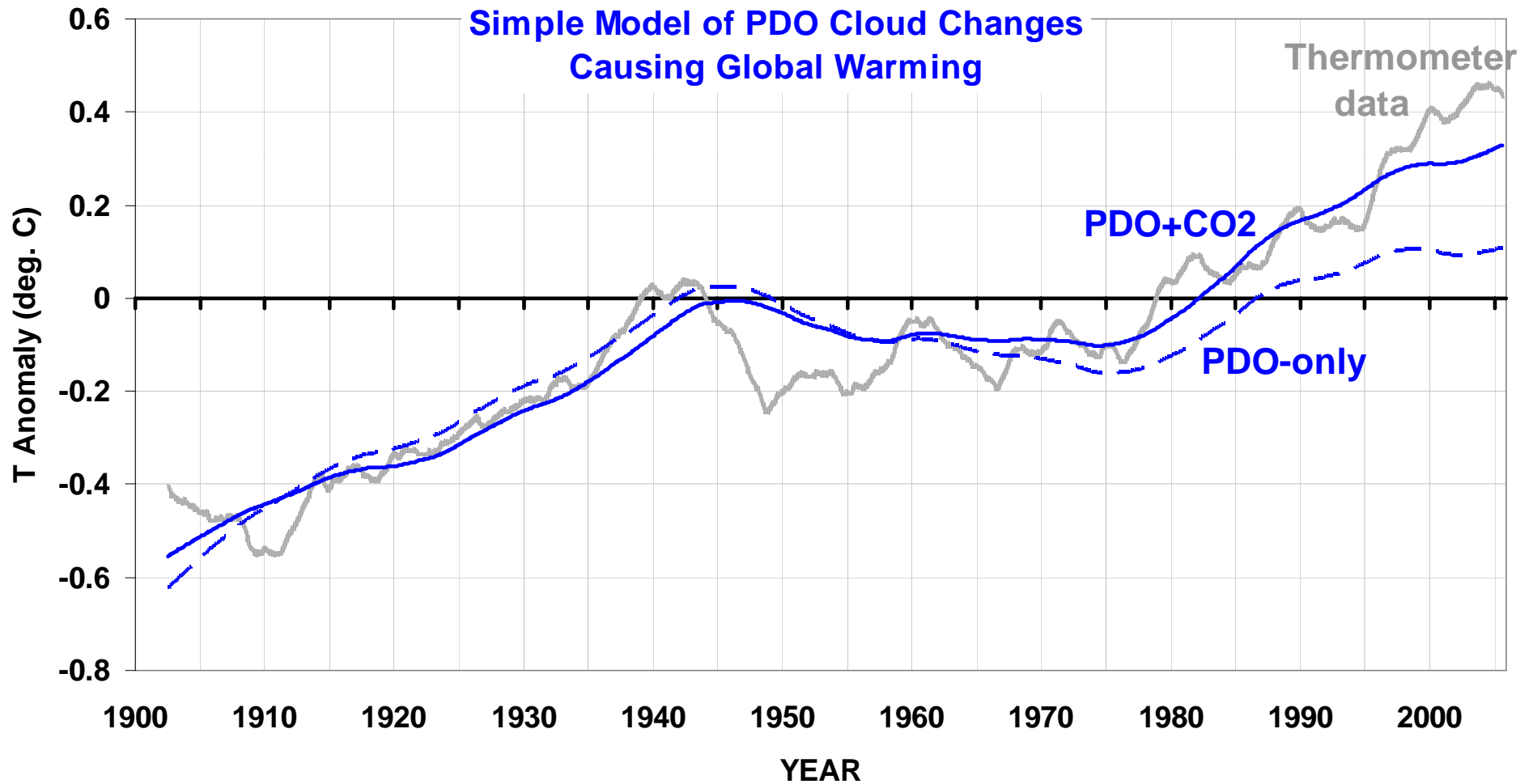


Pacific  
Decadal  
Oscillation



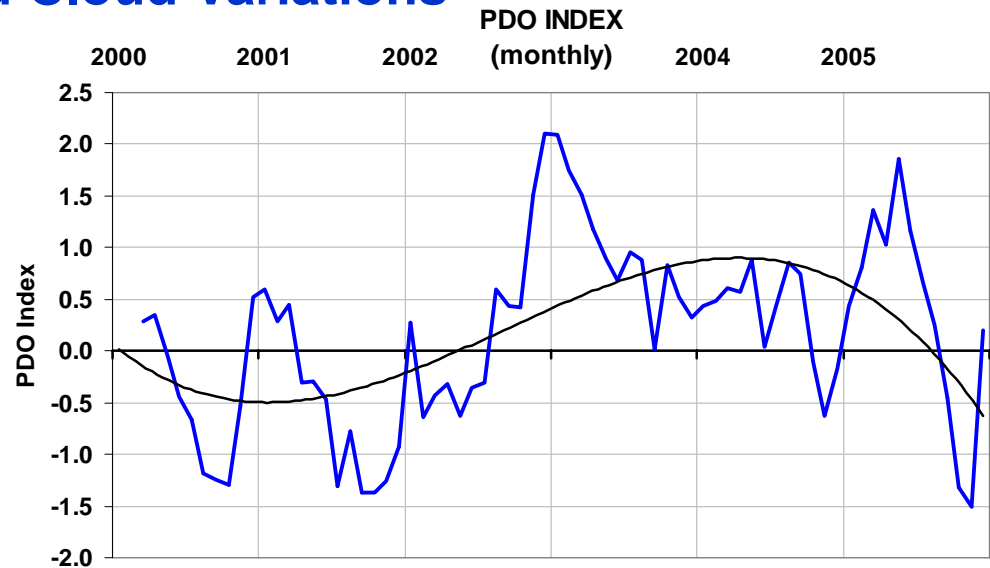
Global  
Surface  
Temperature

**A Simple Model Forced by Cloud Changes  
Assumed Associated with the  
Pacific Decadal Oscillation:  
*PDO Can explain 2/3 of 20<sup>th</sup> Century Warming***

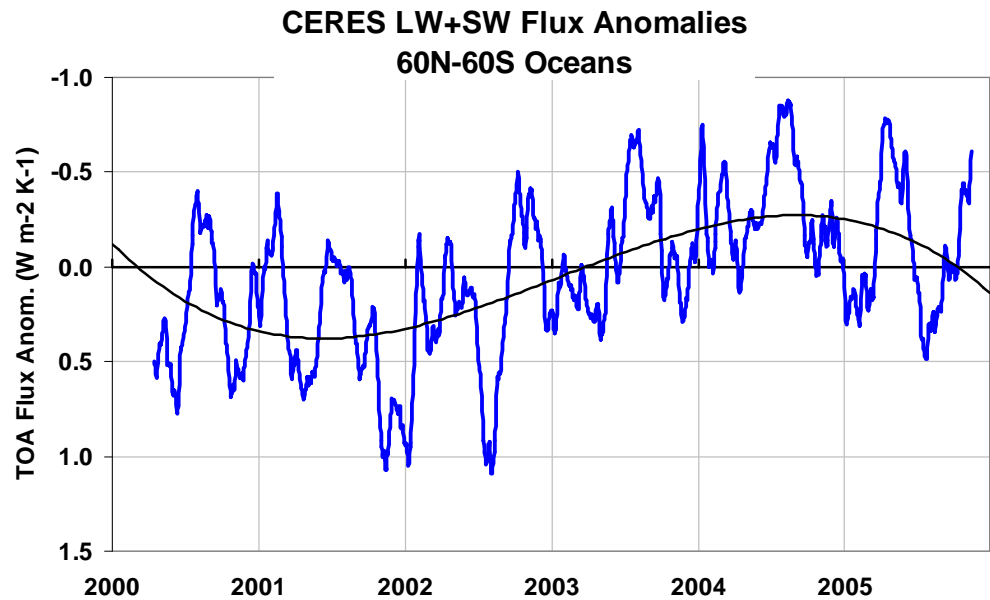


...and Recent Satellite Data Suggests that there indeed IS a Connection between the PDO and Cloud Variations

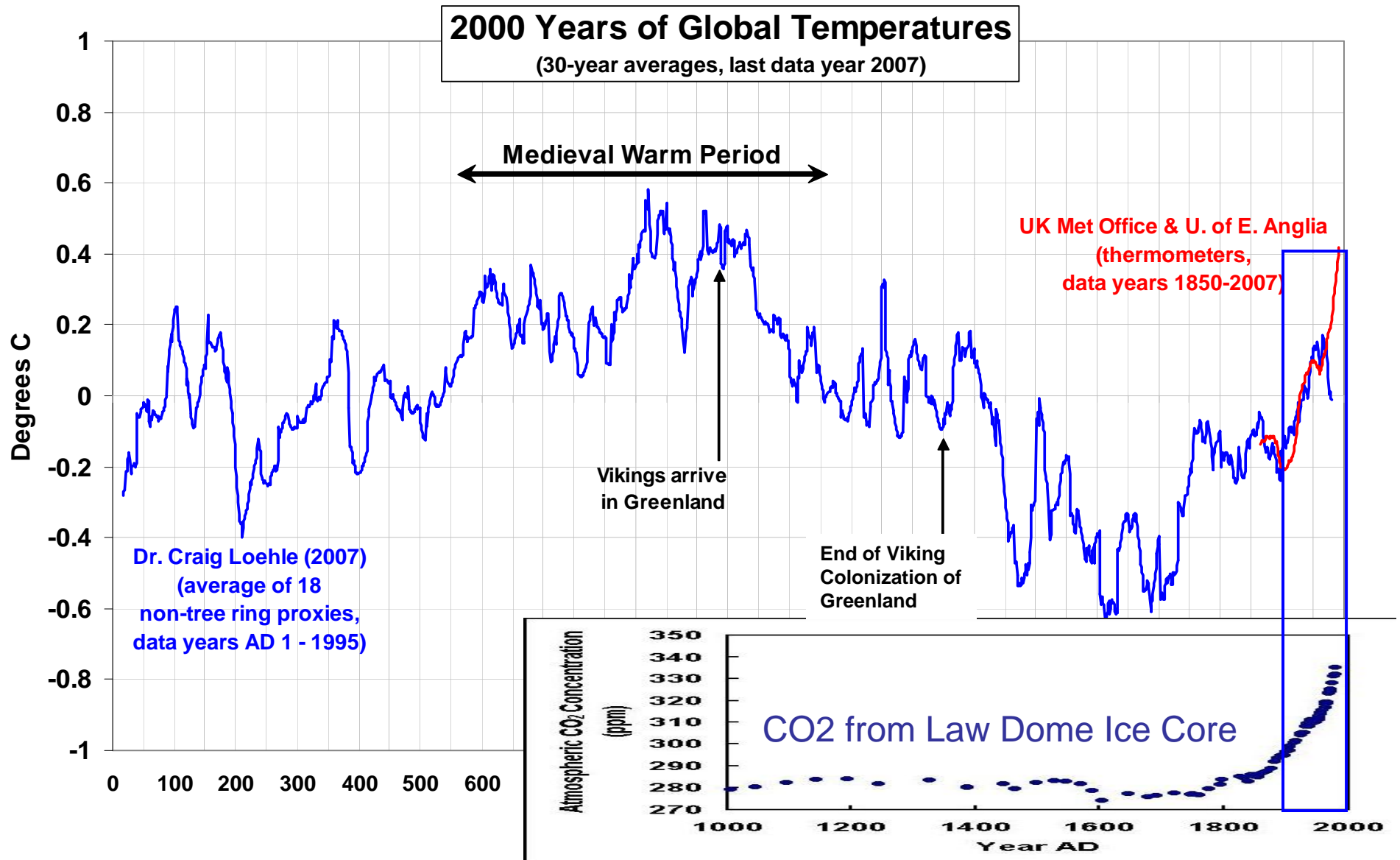
**PDO Index  
2000-2005**



**Aqua Satellite  
Observed Cloud  
Changes  
2000-2005**



# ..so...Maybe Mother Nature Caused Climate Variability over the Last 2,000 Years



# Science Conclusions

- 1. Satellite data + simple model suggest the climate system is driven more by *natural cloud changes* than by CO<sub>2</sub>.**
- 2. IPCC “Scientific Consensus” of CO<sub>2</sub> driving climate is due to a mix-up between CAUSE and EFFECT when observing natural cloud fluctuations.**
- 3. If clouds drive climate change more than CO<sub>2</sub>, then CO<sub>2</sub> increases are not very important.**

**...but if there is *any* risk...  
shouldn't humanity avoid producing CO<sub>2</sub>?**

**1. Maybe not....**

- ⇒ No large-scale replacements for fossil fuels**
- ⇒ More CO<sub>2</sub> increases agricultural productivity**
- ⇒ A little warming is, on whole, beneficial.**

**2. Why have most countries signed the Kyoto Protocol?**

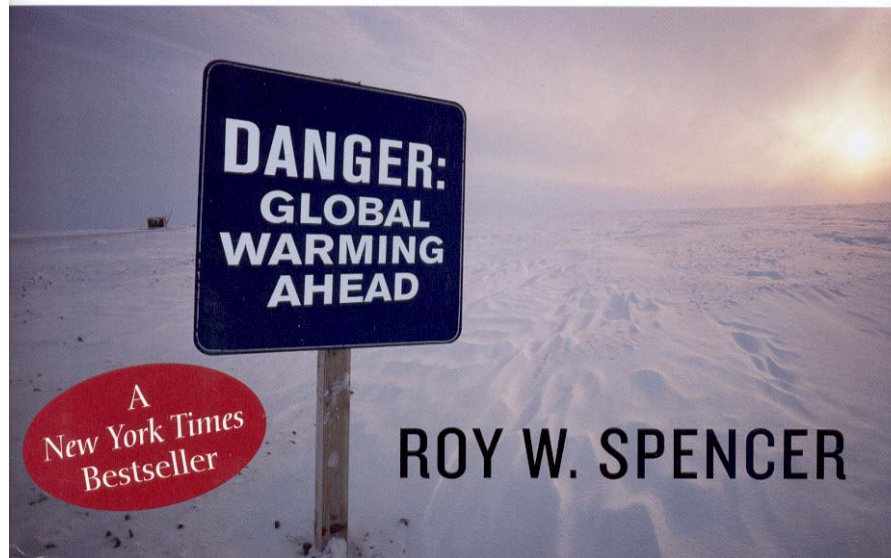
- ⇒ Political power (follow the \$\$\$)**
- ⇒ Transfer of wealth to poor countries**

**3. Eventually, we'll need replacements for fossil fuels**

- ⇒ This will require wealth for R&D**
- ⇒ Wealth generation requires free markets...not gov't regulation.**

# CLIMATE CONFUSION

HOW GLOBAL WARMING HYSTERIA LEADS TO  
BAD SCIENCE, PANDERING POLITICIANS AND  
MISGUIDED POLICIES THAT HURT THE POOR



A  
New York Times  
Bestseller

ROY W. SPENCER



# UAH Globally Averaged Satellite-Based Temperature of the Lower Atmosphere\* (Jan. 1979 - September 2008)

