

# **<sup>AV</sup> Satellite Evidence against Global Warming Being Caused by Increasing CO<sub>2</sub>\***

Roy W. Spencer<sup>1</sup>

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## **Abstract**

Eight years of the latest NASA satellite measurements of variations in both the Earth's radiative budget, and in lower atmospheric temperature, suggest two important conclusions related to the global warming issue. The first is that the sensitivity of the climate system is much lower than the IPCC climate models suggest; that is, the climate system is dominated by negative feedbacks. A model analysis of the signals present in the satellite data reveals that previous satellite estimates of sensitivity were both too high, and too variable, because the contaminating effects of internal radiative forcing by clouds were not removed from the satellite data before diagnosing feedbacks. The claim that internal radiative forcing by clouds is large is demonstrated not only from its unique signature in the satellite data, but also from all 18 IPCC climate models that we analyzed, all of which show clear evidence of such cloud fluctuations. Since short-term feedbacks from satellite data are not necessarily the same as the long-term feedbacks associated with global warming, it is shown that the short-term feedbacks in several of the IPCC model also match their long-term feedbacks in response to greenhouse gas forcing. This is evidence that the satellite results apply to the global warming issue. If climate sensitivity is indeed low, then increasing carbon dioxide concentrations are insufficient to cause the observed warming in the last 100 years. An alternative explanation for the warming is provided in the form of satellite measurement of the modulation of global oceanic low cloud cover by the Pacific Decadal Oscillation. The sign and magnitude of the observed cloud modulation by the PDO is exactly what our Monte Carlo experiments predicted would provide the best match to variations in global average temperatures since 1900. Taken together, these results suggest that the IPCC's claim that global warming is mostly man-made is, at best, premature.

## **Selected References**

Forster, P.M.deF. and K.E. Taylor, 2006, Climate forcing and climate sensitivities diagnosed from coupled climate model integrations: *Journal of Climate*, v. 19/23, p. 6181-6194. DOI:10.1175/JCLI3974.1.

Loehle, C., 2007, A 2,000 year global temperature reconstruction on non-treering proxy data. *Energy & Environment*, v. 18, p. 1049-1058.

Spencer, R.W. and W.D. Braswell, 2008, Potential Biases in Feedback Diagnosis from Observational Data: A Simple Model Demonstration: *Journal of Climate*, v. 21/21, p. 5624-5628. DOI:0.1175/2008JCLI2253.1.

Spencer, R.W., W.D. Braswell, J.R. Christy, and J. Hnilo, 2007, Cloud and radiation budget changes associated with tropical intraseasonal oscillations: *Geophysical Research Letters*, v. 34, L15707.  
DOI: 10.1029/2007GL029698.

A satellite with gold-colored insulation and various instruments is shown in orbit above the Earth. The Earth's surface is visible, showing the continent of Africa and parts of Europe and Asia. The satellite is positioned in the upper left quadrant of the frame.

# **Satellite Evidence Against Global Warming Being Caused by Increasing CO<sub>2</sub>**

**Dr. Roy W. Spencer  
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The University of Alabama in Huntsville  
9 June, 2009**

**If Feedback in the Climate System  
is POSITIVE (as the IPCC Claims)...**

***...then Increasing CO<sub>2</sub>  
is Sufficient to Explain Global Warming***

**...but are Feedbacks Positive?**

# OVERVIEW

Positive Feedback (and therefore CO<sub>2</sub> as the Climate Driver) has been MISTAKENLY INFERRED

...because the effects of

NATURAL CLOUD FLUCTUATIONS

HAVE BEEN IGNORED

1. Neglect of Short-Term Cloud Variations

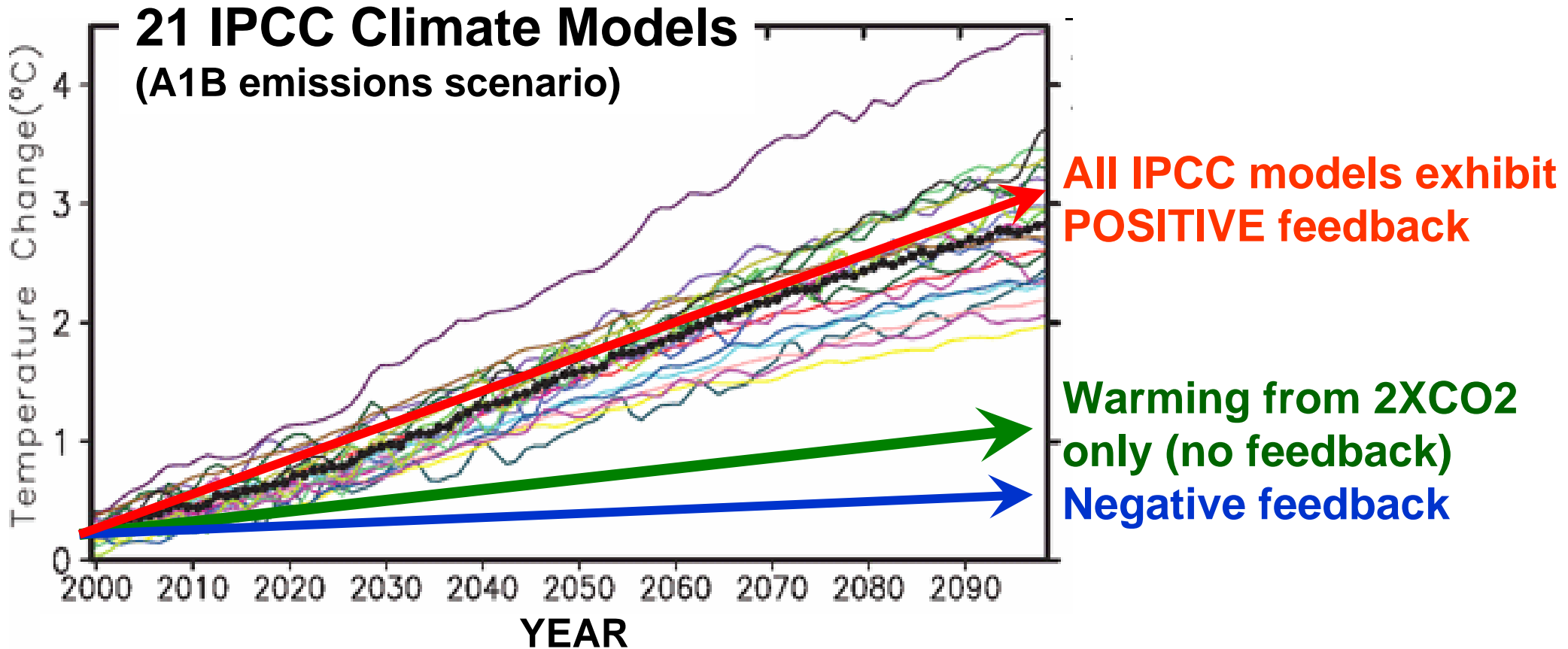
⇒ *Illusion of positive feedback* (true FB is neg.)

⇒ CO<sub>2</sub> *insufficient* to cause observed warming

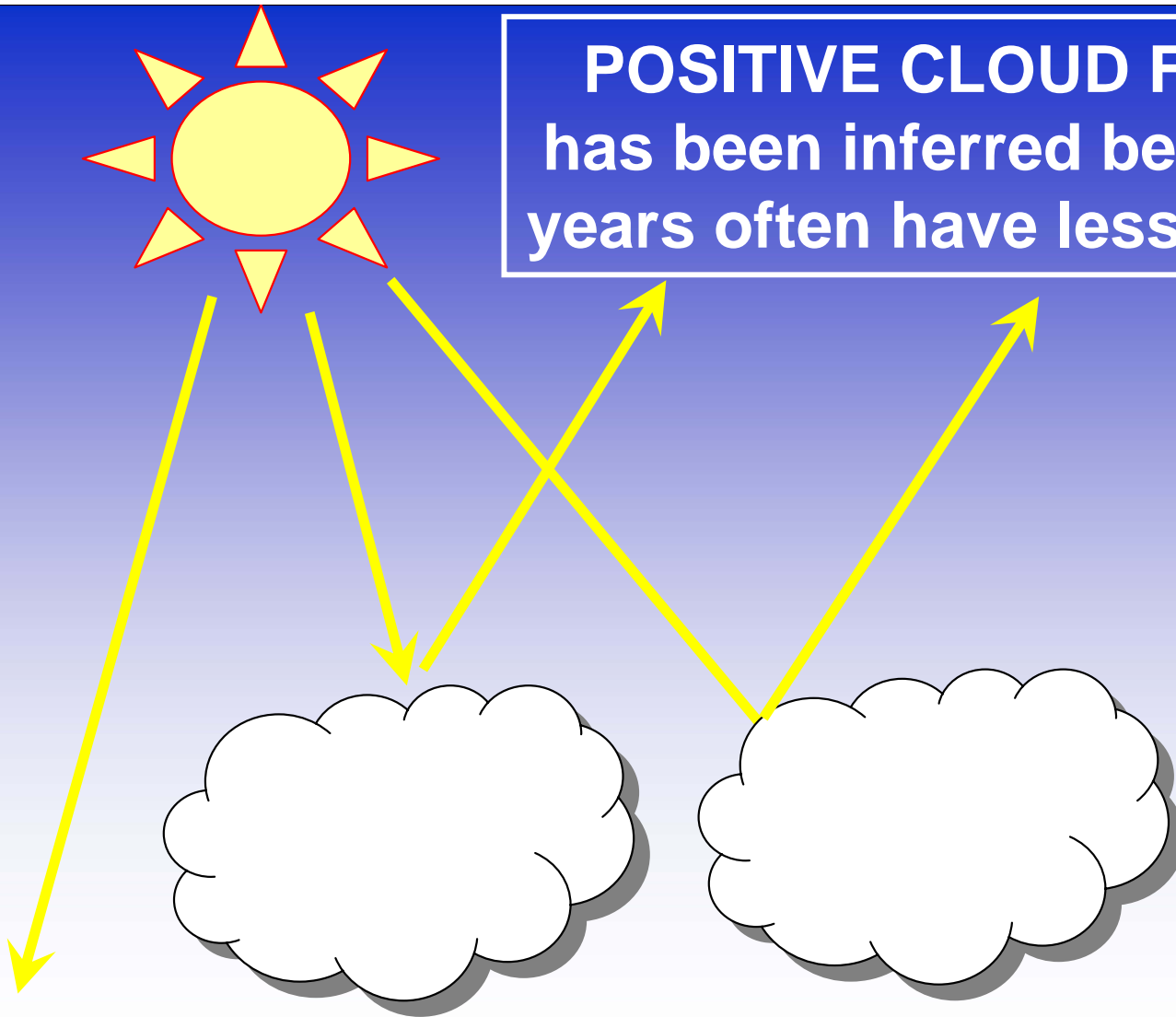
2. Neglect of Long-Term Cloud Variations

⇒ Internal, chaotic forcing of climate change

**Without POSITIVE FEEDBACK, manmade global warming becomes a NON-ISSUE.**

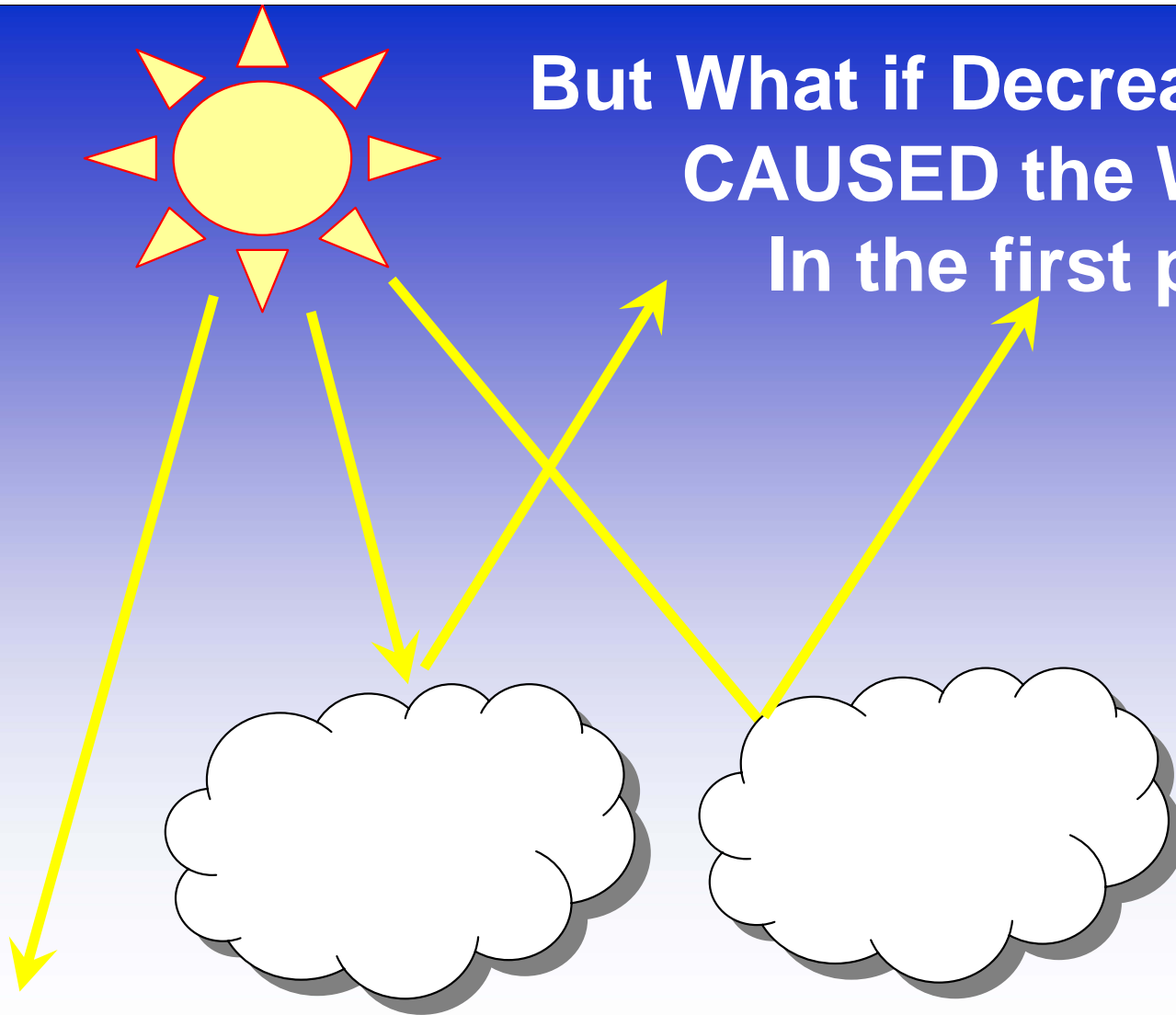


**POSITIVE CLOUD FEEDBACK**  
has been inferred because warm  
years often have less cloud cover



**WARMING**

But What if Decreasing Clouds  
**CAUSED** the Warming  
In the first place?



**WARMING**



# A Mix-Up Between Cause and Effect Had Not Occurred to the Experts

- **Model Demonstration that Satellite-diagnosed feedbacks have been *Biased Positive*:**
  - Spencer & Braswell, 2008: **Potential Biases in Feedback Diagnosis from Observational Data: A Simple Model Demonstration**, *Journal of Climate*, November 1.
  - Reviewed by 2 IPCC model experts.

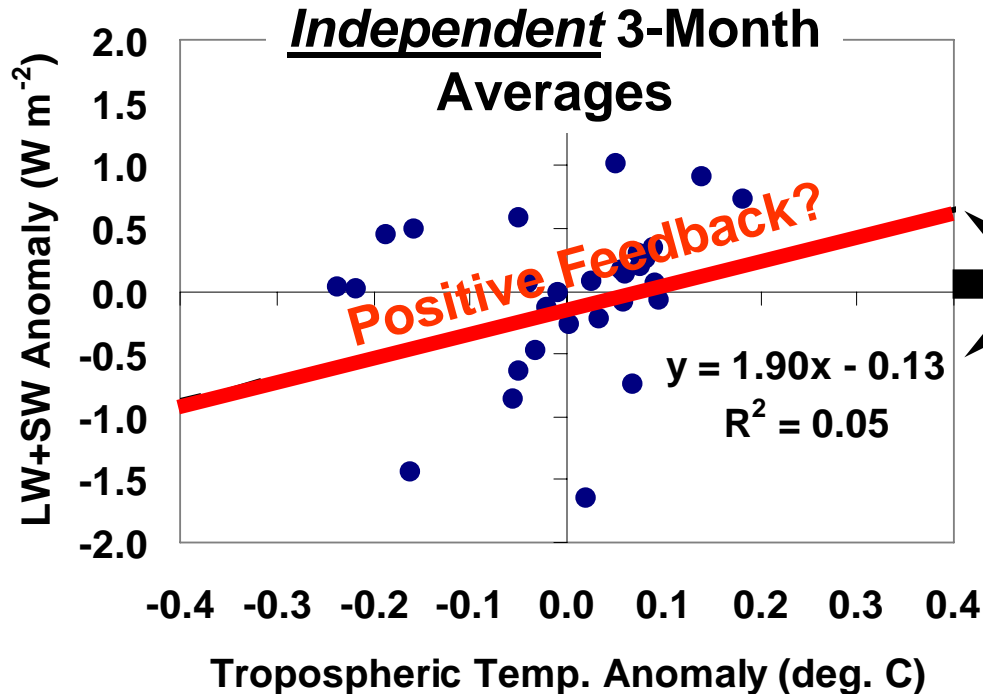
# Recent Work Suggests *the Problem is Serious*

- **Article submitted for publication with extensive evidence from latest NASA satellite data AND from IPCC climate models**
  - Spencer & Braswell, 2009: **Phase Space Analysis of Climate Forcing and Feedback in Model Simulations and Satellite Observations**, *Journal of Geophysical Research*, in review.
- **Supports our Previously published Satellite Evidence for NEGATIVE Feedback in the tropics:**
  - Spencer, Braswell, Christy, & Hnilo, 2007: **Cloud and Radiation Budget Changes Associated with Tropical Intraseasonal Oscillations**, *Geophysical Research Letters*, August 9,

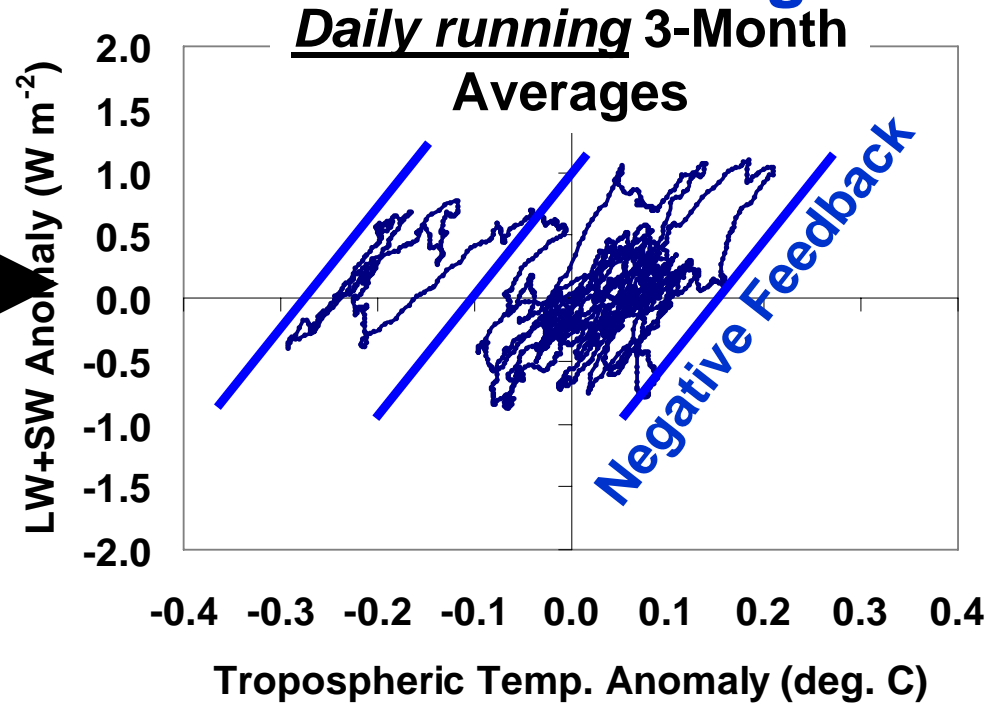
# Climate Researchers have been “fooled” by Mother Nature

## Global Satellite Measurements of Top-of-Atmos. Radiative Flux vs. Temperature, 2000-2007

**Positive Feedback is an Illusion**



**True Feedback is Negative**



# “RADIATIVE FORCING SPIRALS” are seen in EVERY IPCC climate model

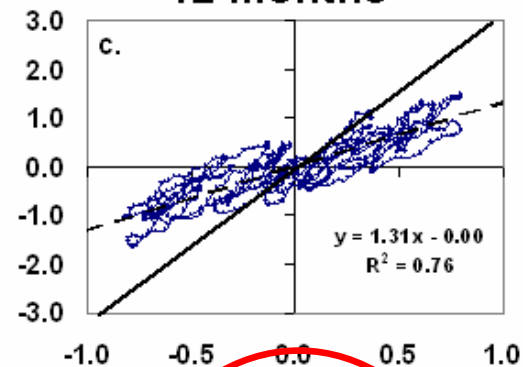
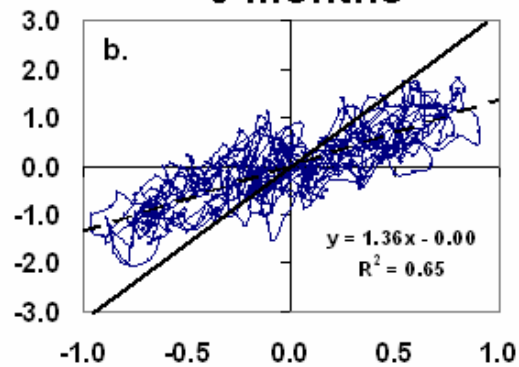
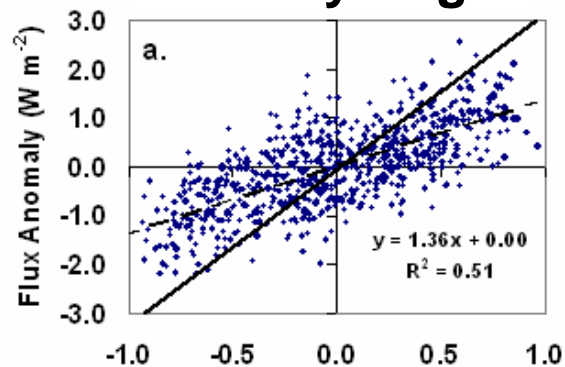
## CNRM-CM3 Model

### Monthly Avgs.

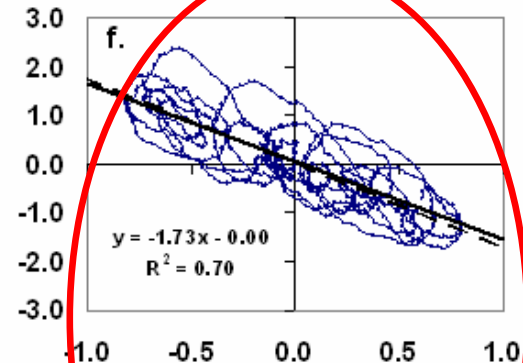
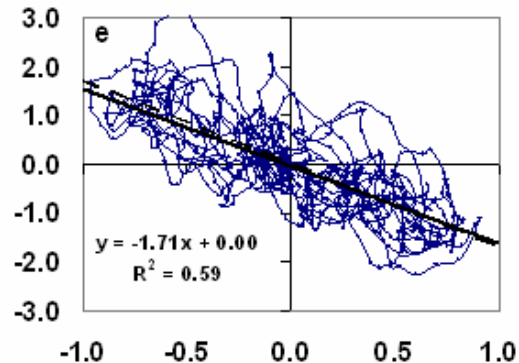
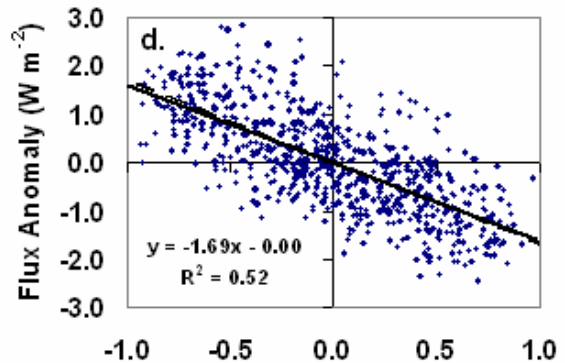
### Averaging Time 3 months

### 12 months

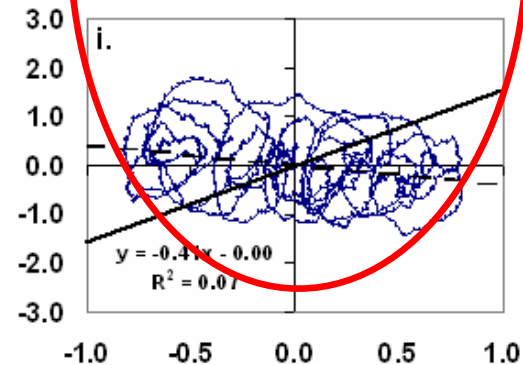
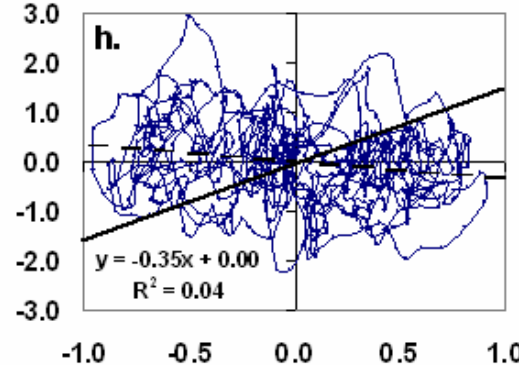
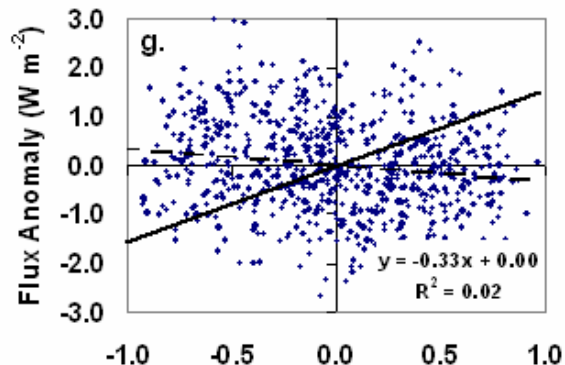
Infrared



Solar



IR+Solar



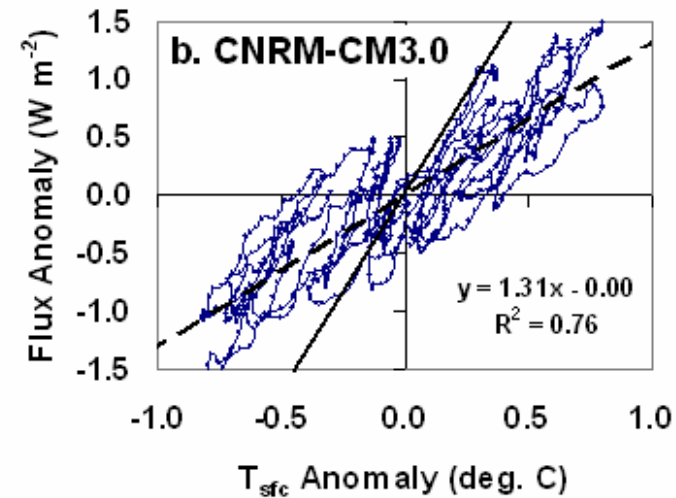
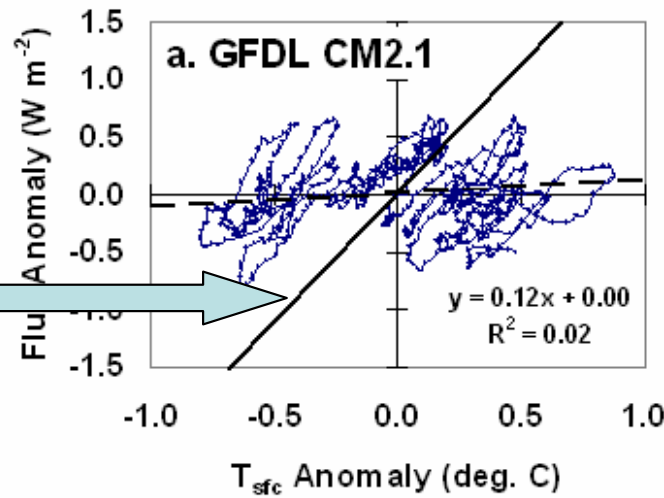
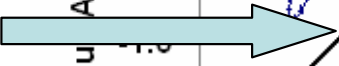
“Radiative  
Forcing  
Spirals”

Sfc. Temp. ( $^{\circ}C$ )

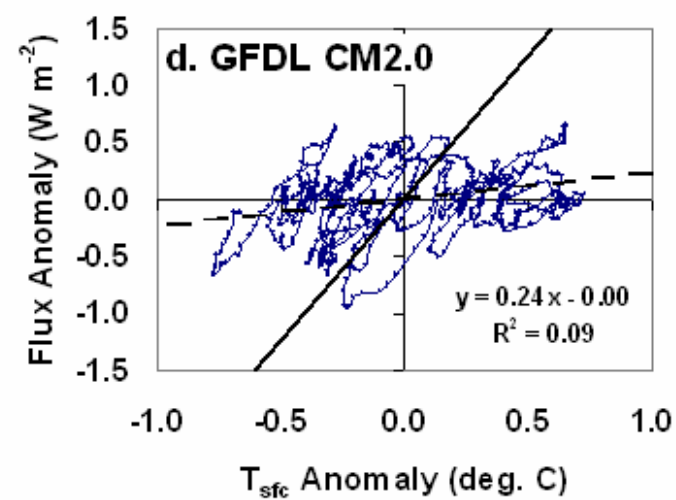
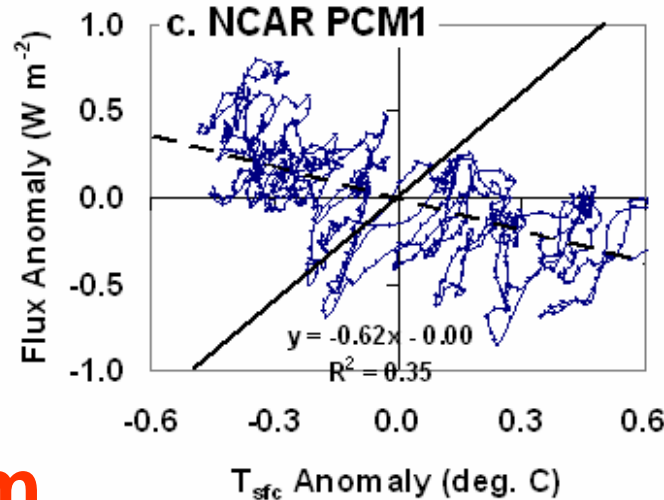
Sfc. Temp. ( $^{\circ}C$ )

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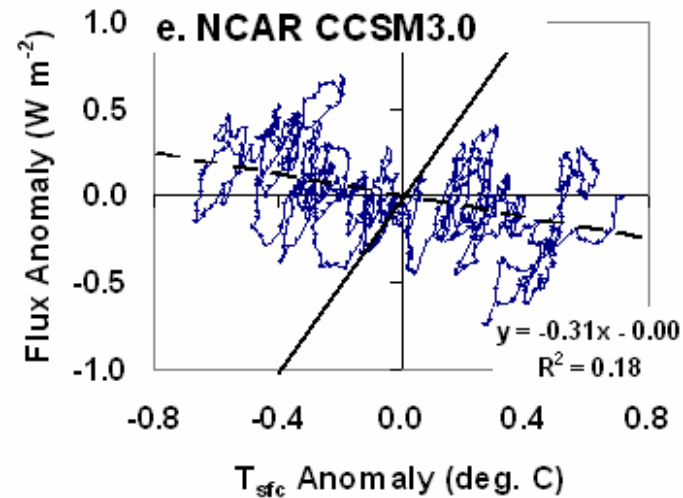
Forster & Taylor (2006) diagnosed long-term feedbacks (line slopes)



**“Feedback Stripes”**  
in IPCC  
Models



reveal short-term feedbacks same as long-term feedbacks from CO2 forcing



# **Lesson Learned for Estimating Feedbacks**

- **Internal Radiative Forcing by Clouds has obscured the true signature of negative feedback**

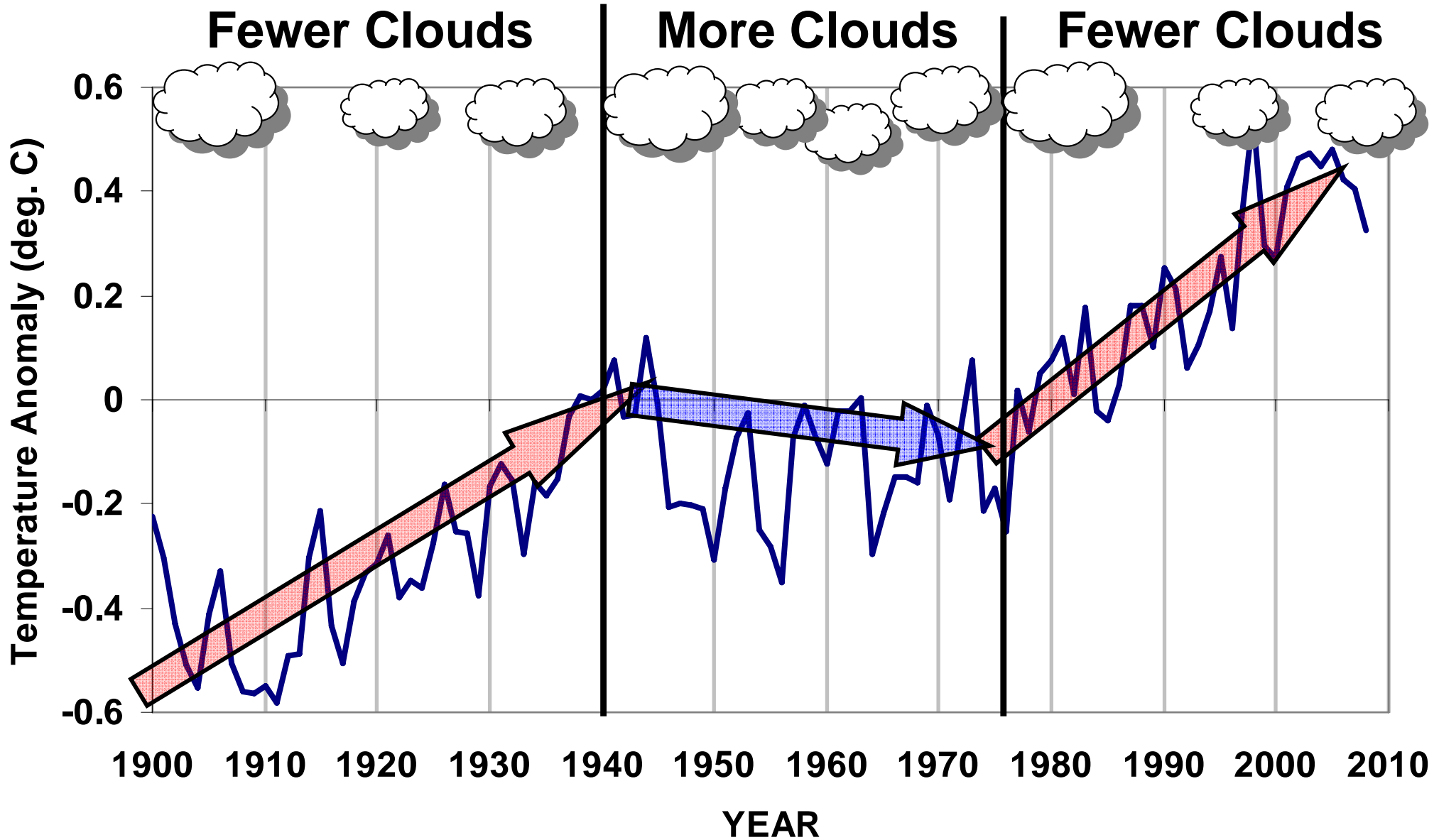
# What Are the Implications of Negative Feedback??

1. Manmade global warming could be a false alarm (~0.6 deg C by ~2100 instead of ~3 deg. C)

2. Increasing CO<sub>2</sub> in the atmosphere is **INSUFFICIENT** to cause the observed warming over the *last 50 to 100 years...*

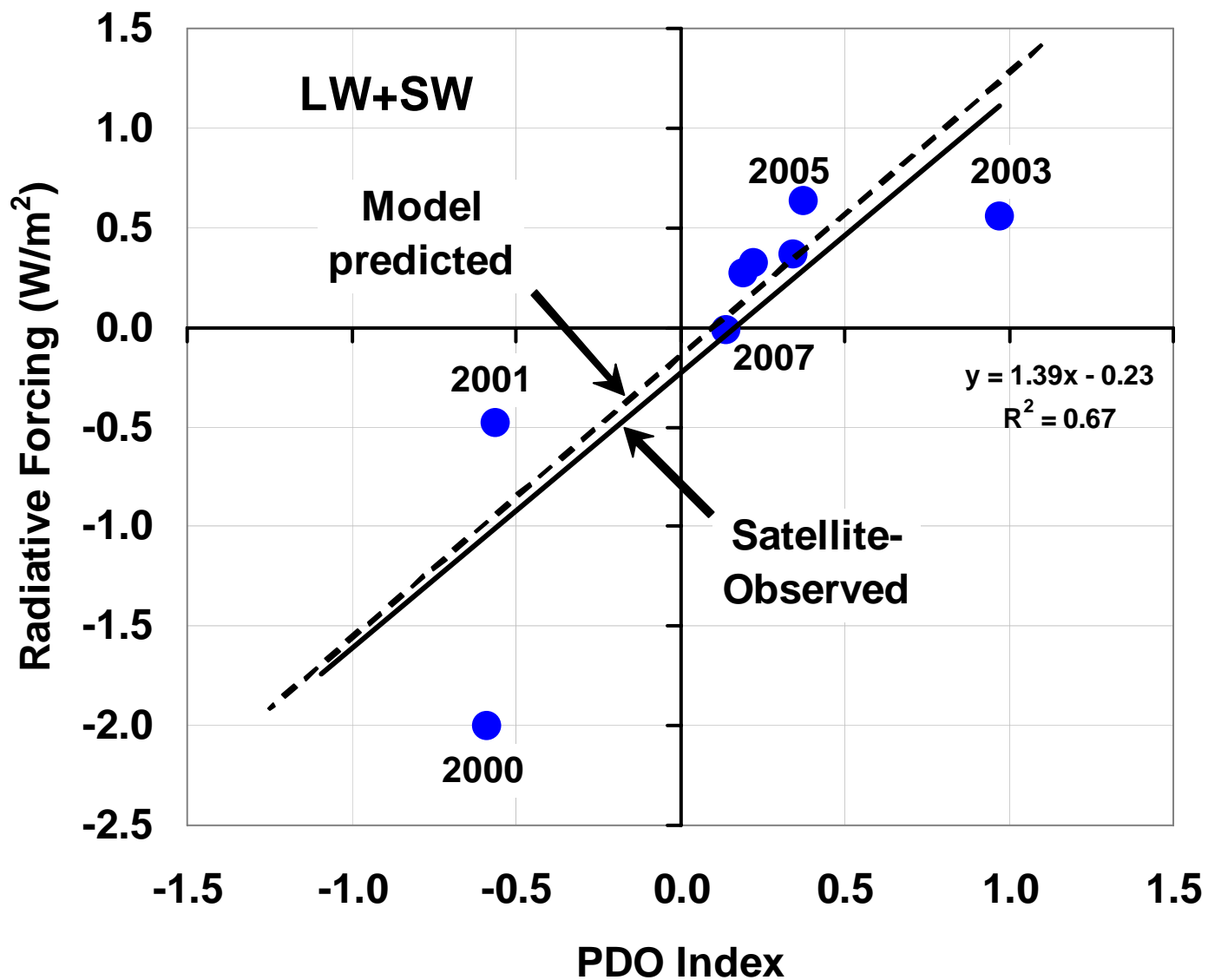
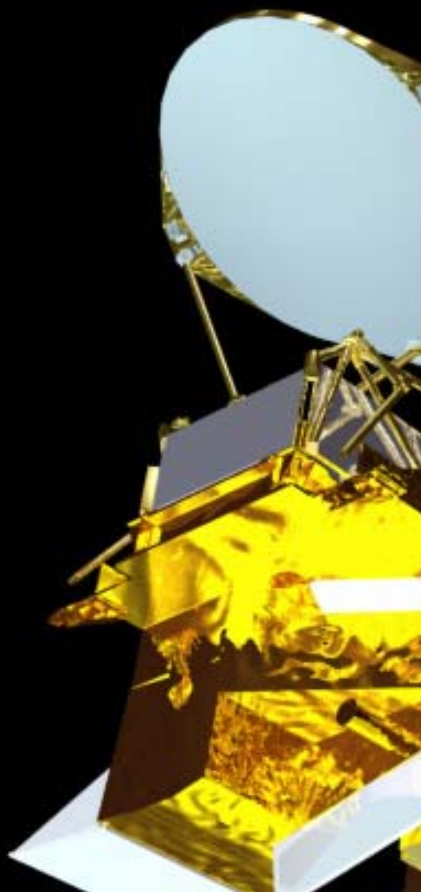
**So, if not CO<sub>2</sub>, *What* Has Caused “Global Warming”?...**

# Might Circulation-Induced Cloud Variations be Causing "Climate Change"?

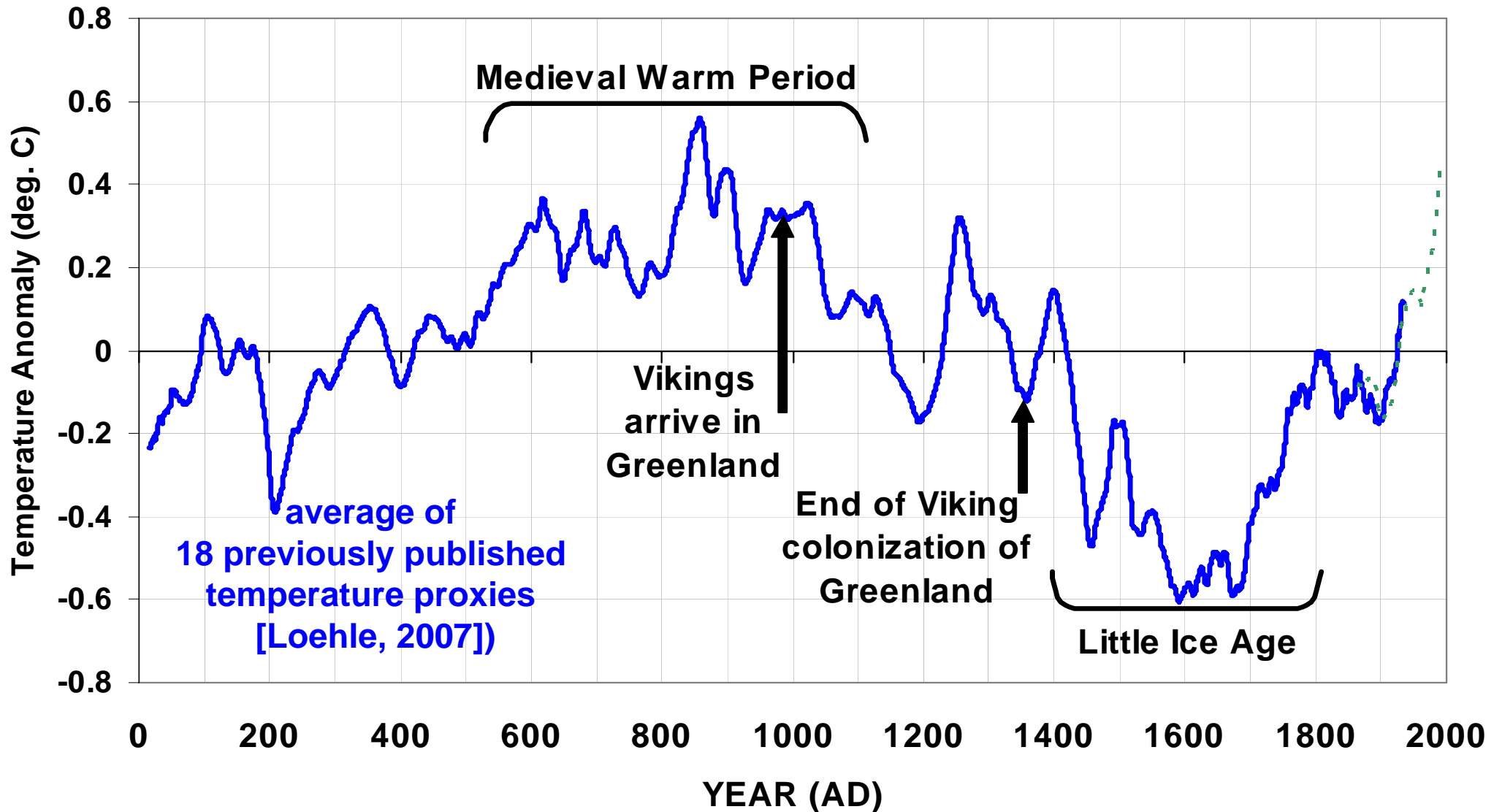




# Compared NASA's Aqua & Terra Satellite Data to the PDO Index



**...it would take only 1 or 2% changes in cloudiness to explain all of the global warming and cooling episodes over the last 2,000 years.**



# Recommendations

**1. Cloud Parameterizations in Climate Models need to be adjusted to better match satellite data**

**=>previous comparisons were NOT sufficient to validate feedback**

**2. Natural modes of climate variability (chaos) need to be investigated as potential INTERNAL forcing mechanisms of climate change.**

**The End**  
**(thank you)**