

Intro:

In this very brief response, I am going to begin with theology, then move to a brief description of the science behind a supposed catastrophic anthropogenic global warming and briefly highlight some of the work of those who disagree, and conclude again with theology.

## I. Theology

### a. cultural mandate

In Genesis 1:27-28, we read, “*27 So God created man in His own image; in the image of God He created him; male and female He created them. 28 Then God blessed them, and God said to them, “Be fruitful and multiply; fill the earth and subdue it; have dominion over the fish of the sea, over the birds of the air, and over every living thing that moves on the earth.”*” Thus began the so-called cultural mandate, the mandate upon man to pursue and perform these positive commands of God. These commands - and their implications - are extremely important for the topic that is before us today.

### b. implications

#### i. Creator-creature distinction

The first implication is that of the Creator-creature distinction. Consider: when Adam was given the positive commands of God, that he was surrounded by mystery. There was, however, one thing that Adam did know for sure – that God was the Creator and Adam the creature. This, Adam knew from the positive commands already cited and the negative command of Genesis 2.

#### ii. education a divinely-ordained need

The second implication is that in order for Adam to carryout the cultural mandate, education was for him a divinely-ordained need. God didn’t explain to Adam *how* to perform the positive commands. Furthermore, there were no Harvards, Princetons, and Unions for Adam to go to learn about his new environment. Adam was surrounded by mystery and potentiality. He was to turn the mystery into understanding and develop the potentiality.

#### iii. dominion and stewardship

The third implication is that Adam was also in the position of a minister to creation. Thus, dominion and stewardship were both implied in the cultural mandate; indeed, Adam was to exercise dominion over creation and subdue creation *in order to be* a good steward.

You may be asking yourself, “How is this relevant to global warming?”. Its relevance is significant and profound.

## II. Science

Now turning to the science of global warming: In these brief remarks, I will limit the discussion to the 2001 IPCC report and the most significant contribution to this report, namely, the work of Dr. Michael Mann.

### a. Michael Mann 1998, 1999

In two seminal papers in 1998 and 1999 (*Nature*, **1998**, 392, 779 and *Geophysical Research Letters*, **1999**, 26, 759), Dr. Michael Mann and coworkers reconstructed average temperatures going back to the 15<sup>th</sup> century. This work relied on “proxy” data, which are estimates of temperatures from diverse sources such as growth patterns in tree rings and coral reefs, sedimentation studies in lakes, and stalagmite thickness. These proxy data are necessary because thermometers were not invented until the 18<sup>th</sup> century and didn’t become readily used until the mid 19<sup>th</sup> century. Using a principle component analysis of these proxy data, a reconstructed average surface temperature of the Northern Hemisphere showed that the late 20<sup>th</sup> century deviated significantly from historical norms. The all-important error bars in Dr. Mann’s analysis were given and showed that the average temperature in 1998 was higher than historical averages and even higher than these historical averages plus their associated error. These findings led Dr. Mann to conclude, that “the 1990s are likely the warmest decade, and 1998 the warmest year, in at least a millennium”, a conclusion that sent shock-waves throughout our culture. Dr. Mann’s findings of a rapid warming were dubbed the “hockey stick” and this hockey stick has since been ubiquitously used to prove anthropogenic forcing of global warming.

### b. Intergovernmental Panel on Climate Change (IPCC) 2001

The United Nations has been studying climate change for almost 3 decades. In 2001, the IPCC released their report and the then-recent work of Dr. Mann figured prominently in it. The conclusions of the report were the same as Dr. Mann and the report rested the cause of Northern Hemisphere temperature increases in the last 35 to 50 years upon anthropogenic forcing, i.e., human causation. Finally, the self-same model that Dr. Mann used for reconstructing past temperatures was used to predict catastrophic temperature increases that could be as high as 5.5°C by the year 2100.

c. Evangelical Climate Initiative (2/8/2006)

Predicated upon the work of the IPCC and, therefore, upon the work of Dr. Mann, the Evangelical Climate Initiative released their statement in February of this year. The ECI claimed a widespread scientific consensus regarding global warming and called evangelicals to become active. While the goals of the ECI's statement are excellent, I believe the document seriously suffers from not having given serious attention to both the science and the economic impact of global warming.

In fact, there is no such scientific consensus on anthropogenic global warming – catastrophic or otherwise. Using scientific consensus to prove anthropogenic global warming reveals a fundamental misunderstanding of both the nature of the discussion and, indeed, science itself. There is no shortage of equally distinguished and qualified scientists on the anti-position.

d. McKittrick and McIntyre

One of the first published oppositions to the work of Dr. Mann was given by two Canadian Scholars - Drs. McIntyre and McKittrick. Dr. Mann shared his computer codes with Drs. McIntyre and McKittrick and they found a very unusual data transformation that Dr. Mann made on the tree ring data. Dr. Mann did acknowledge the data transformation in a 2004 paper (*Nature*, **2004**, 430, 105), but claimed that the transformation made no difference upon his analysis. Drs. McIntyre and McKittrick disagreed and showed that by making this unusual data transformation on trendless red noise and then performing the principle component analysis applied by Dr. Mann, a hockey stick shape was obtained over 99% of the time. These findings were reported in 2003 and 2005 peer-reviewed

papers (*Energy and Environment*, **2003**, *14*, 751; *Energy and Environment*, **2005**, *16*, 69; *Geophysical Research Letters*, **2005**, *32*, L03710).

e. von Storch

In a 2004 Science article by von Storch, et al. (*Science*, **2004**, *306*, 679) a coupled atmosphere-ocean model was used to generate artificial temperature data going back to 1000 AD. These were not real temperature data, but idealized-data generated by a model at the spatial resolution of Dr. Mann's proxy data. Dr. Mann's model was then applied to these idealized data to see how accurately it could reconstruct global averages and temperature variations. The results were very disappointing for Dr. Mann's methodology since it underestimated temperature variability by a factor of at least 2.

f. Stockholm group

In a 2005 paper published in Nature (*Nature*, **2005**, *433*, 613) a Stockholm climatology group used lake and sediment proxy data combined with tree-ring proxy data to show that the recent temperature increases experienced in the 1990s were not new, but that there was a similar Medieval warming period around 1000 to 1100 AD. Dr. Mann's model did not reconstruct these historical features.

g. Wegman Report

Notwithstanding these and other studies that have not been mentioned, the most thorough investigation of Dr. Mann's work came by a study commissioned by the Committee on Energy and Commerce. A committee of independent scientists, composed of Dr. Edward Wegman (chair of the National Academy of Science's Committee on Applied and Theoretical Statistics), Dr. David Scott (Rice University), and Dr. Yasmin Said (Johns Hopkins University), all experts in statistical analysis agreed to investigate the work of Dr. Mann and the reported hockey stick. The so-called [Wegman Report](http://energycommerce.house.gov/108/home/07142006_Wegman_Report.pdf) ([http://energycommerce.house.gov/108/home/07142006\\_Wegman\\_Report.pdf](http://energycommerce.house.gov/108/home/07142006_Wegman_Report.pdf)) looked not only into the statistical methodology applied by Dr. Mann, but the professional networks of the field of palaeoclimatology. In a word, the 92-page Wegman report was devastating to Dr. Mann's work and the whole idea of a hockey stick.

i. MM model with red noise

The report verified the work of Drs. McKintyre and McKittrick and showed that the principle component analysis employed by Dr. Mann on trendless red noise did, in fact,

give a hockey stick shape over 99% of the time. They reported that Dr. Mann's claims about the 1990s cannot be supported even by his own analysis.

ii. inbred field

In addition, the report investigated the social networks in the palaeoclimatology. They found that the field is inbred and suffers from a lack of independent studies. Many of the investigators in the field are coauthors with one another and are peer reviewers of one another's papers.

h. Empiricism

There is much more that could be said concerning the science of global warming, the IPCC and its reliance upon the work of Dr. Mann. I haven't even mentioned the meaning and usefulness of using an average surface temperature as a metric of determining global warming and the inherent liability of sample bias. I also haven't mentioned the real issue of spatial resolution of palaeoclimatology data and local effects upon these data. Spatial resolution of climatology data and separating local effects from global are current research level topics and the resolution of these must be obtained before one can proceed upon attempting to prove anthropogenic forcing. Much could be said about empiricism in general and the attempt to define causation from a pure empiricism, but time will not allow for these discussions.

III. Theology

a. average T increase

So, now, ending where I began, with theology. In summary, yes, the average temperature of the Northern Hemisphere is increasing, but not by an amount that is outside of historical norms. So, the question is: what are we to do with this information? The IPCC and the media would have us worry and endorse initiatives to curve a supposed anthropogenic global warming. Unfortunately, the ECI has also endorsed this perspective.

b. responsibility of man

Having earlier laid great emphasis on the Creator-creature distinction and the sovereign control of God over all things, what, then, is the responsibility of man given our current warming period? I believe our responsibility to be the continued execution of the cultural mandate. This, as stated earlier, requires education, investigation, and discovery. We

shouldn't be content with the current status of technological development. We should *use* the current level of development, but with an eye to making better uses of the potentiality that God has placed around us. We should be investigating and using nuclear, wind, solar, fuel cells, and other technology to improve our lives and the lives of others. We should be passing on our current technology to those places with lower technology yet and teaching them how to develop their own resources. In other words, we are in the same position as Adam. We are called to dominion and stewardship, exercising dominion over creation *in order that* we may be good steward of the resources God gave for man's use. It is for these theological and scientific considerations that I endorse the perspective of the Interfaith Stewardship Alliance.