

## **INTRO TO HARTVIGSEN/BOSCH PIECE:**

The following opinion piece, co-authored by **Gregg Hartvigsen** and **Isidro Bosch**, was recently published in the Rochester *Democrat and Chronicle*. In the piece, Hartvigsen and Bosch argue that, although science will never prove with 100 percent certainty that global warming is caused by humans, the evidence is “very convincing.”

Hartvigsen is an assistant professor of biology and Bosch is an associate professor of biology at the College.

## **ACTUAL PIECE:**

In the Nov. 12 issue of the *Democrat and Chronicle*, meteorologist Kevin Williams warned that we should not be so quick to assume that global warming is the result of human activities.

His column appeared near the beginning of the U.N. conference on climate, held at The Hague in the Netherlands. The meeting, attended by representatives from 175 nations, was aimed at developing specific guidelines or rules for countries to follow under the 1997 Kyoto Protocol.

The protocol called for three dozen industrialized nations, including the United States, to cut their emissions of greenhouse gases (gases produced by human activities that are correlated to global increases in temperature) by the year 2012 to at least five percent of their 1990 emissions.

The meeting ended without resolution due to U.S. insistence on receiving credit for tree growth in exchange for actual decreases in the emission of greenhouse gases.

Our concern is that readers of the *Democrat and Chronicle* appreciate the difference between Mr. Williams’ opinion and the overwhelming scientific evidence linking greenhouse gases with climate change.

Our understanding of how human activities contribute to the greenhouse effect has a strong scientific basis and it is for this reason that nearly all our Earth’s nations attended the recent meeting in the Netherlands.

We certainly recognize the concern people must have when they see headlines such as “Climate trends are clear: We’re all going to adapt to changing weather” from the Nov. 9 issue of *The Christian Science Monitor*. But our concerns and our opinions do little to thwart the fact that current estimates put the range of temperature increase between 1.5 and 6 degrees Celsius by the year 2100, as predicted by the recent U.N. Intergovernmental Panel on Climate Change.

We would like to clarify Mr. Williams’ suggestion that we should avoid putting stock in predictions of climate change because climate is “chaotic.” The term “chaotic” actually has a mathematical definition that is more applicable to weather than climate. The so-called “butterfly effect,” an example of how a chaotic system such as weather behaves, was made popular in the movie Jurassic Park. This effect suggests that the flapping of a butterfly’s wings in Nebraska might significantly change our weather here in upstate New York. Although this seems unlikely, it is even less likely that small, regional changes in weather affect global climate patterns.

Without disrespect to Mr. Williams and the meteorological profession, a prediction of next year’s average temperature is likely to be far more reliable than a meteorologist’s prediction of the weather three days from now. Is Mr. Williams right in stating that we shouldn’t be quick to blame humans for changes in climate? Although it’s a comfortable position to take, the vast majority of evidence does not support his opinion. In fact, the only way existing climate models can account for documented increases in global temperatures over the last 150 years is by including a human-induced greenhouse effect.

Science will never be 100 percent certain (or “prove”) that the release of greenhouse gases through human activities causes climate change, but the evidence is very convincing. The time has come to acknowledge our role in climate change and respond to this impending crisis, or risk waiting until our options have come and gone.

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