Environmental Watch

Examining Environmental Claims and Their Costs • May 2008

UW Climate Impacts Group and NRDC Set Aside Science in Favor of Misleading Statistic

by Todd Myers

Claim

"Pacific Northwest temperatures are rising faster than the global average."
Snover, A. K., P. W. Mote, L. Whitely Binder, A.F. Hamlet, and N. J. Mantua. 2005. Uncertain Future: Climate Change and its Effects on Puget Sound, http://www.cses.washington.edu/db/pdf/snoveretalpsat461.pdf (Accessed May 24, 2008) p. 6

"The American West has heated up even more than the world as a whole. For the last five years (2003 through 2007), the global climate has averaged 1.0 degree Fahrenheit warmer than its 20th century average. RMCO found that during the 2003 through 2007 period, the 11 western states averaged 1.7 degrees Fahrenheit warmer than the region's 20th century average—which represents 70 percent more warming than for the world as a whole."
Rocky Mountain Climate Organization and the NRDC, "Hotter and Drier: The West's Changed Climate," March 2008, http://www.rockymountainclimate.org/website%20pictures/Hotter%20and%20Drier.pdf (Accessed May 24, 2008), p. iv

Facts

The statistic is meant to sound ominous. Temperatures in the American West and the Pacific Northwest are rising faster than the world as a whole. Readers are led to believe that the impacts of climate change will be worse here than almost anywhere else and that we need to be leaders in efforts to reduce greenhouse gas emissions.

It is a statistic cited by both the University of Washington Climate Impacts Group and now the Rocky Mountain Climate Organization (RCMO) and Natural Resources Defense Council (NRDC) in reports advocating strong political steps to combat climate change.

Both groups should know, however, that the statistic is totally meaningless when assessing the local impacts of climate change. Land warms more quickly than water and since the world is mostly water and the Pacific Northwest and the American West are mostly land, temperatures will always increase more quickly there than the world as a whole. In fact, when world temperatures are decreasing, temperatures over land fall more quickly too.

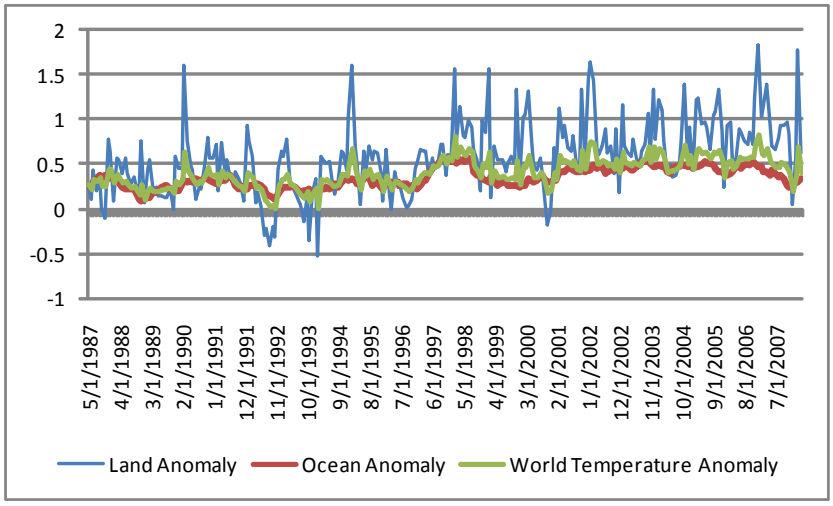
The fact that both groups would use a statistic they know is misleading shows either that they know little about world temperatures and climatology or that they are willing to set aside science for the sake of politics.

Comparing Ocean and Land Temperature Trends
To understand the trends in world temperature, the National Climatic Data Center tracks the average "temperature anomaly" for each month. The temperature in any month is compared to the "Global Mean Monthly Surface Temperature" calculated from the 20th century. Differences between a month's temperature and that average are identified as the "anomaly" to determine whether a month was hotter or colder than the 20th century average.

WASHINGTON POLICY CENTER for the environment

Todd Myers
Director
PO Box 3643
Seattle, WA 98124-3643
(206) 937-9691
tmyers@washingtonpolicy.org
www.washingtonpolicy.org

Calculating this involves combining the data for ocean temperatures and land temperatures. The graph below shows the temperature anomaly for the last twenty years of data.[1] The green line represents the overall world temperature anomaly. That is broken into the ocean anomaly (red line) and the land anomaly (blue line). What stands out immediately is that the variability of land temperature is much greater than the line representing ocean temperature, showing that land temperatures rise and fall more dramatically than ocean temperatures.



Ocean temperatures range from an anomaly of 0.09 degrees to 0.56 degrees Celsius. The standard deviation of ocean temperatures is 0.11.

Land temperatures range from -0.52 degrees up to 1.84 degrees Celsius. The standard deviation of land temperature is 0.41.

This means that during any warming period, land temperatures will always warm more quickly than the world at large because 70 percent of the Earth is water. Thus, saying that any area of land is warming more quickly than the world in general is something that is always true.

In fact, the data from the RCMO and NRDC show this. In their chart showing the temperature increases for various states it becomes clear that the farther from water a state is, the greater the warming.

More Rapid Warming in the West

2003 to 2007 5-Year Average Temperatures Compared to 20th Century Averages

Planet	+1.0°F
Western United States	+1.7°F
Colorado River Basin	+2.2°F
Arizona	+2.2°F
California	+1.1°F
Colorado	+1.9°F
Idaho	+1.8°F
Montana	+2.1°F
Nevada	+1.7°F
New Mexico	+1.3°F
Oregon	+1.4°F
Utah	+2.1°F
Washington	+1.4°F
Wyoming	+2.0°F

State-by-state temperature change
Natural Resources Defense Council

Ignoring Cooling Trends

This also works in the other direction as well. From 1990 through 1993, the world temperature anomaly for the year fell by 0.14 degrees. By comparison, the land temperature anomaly fell by 0.32 degrees Celsius, more than twice the rate of the worldwide temperature decline.

If the UW Climate Impacts Group or the NRDC had chosen that time span, they would have found that temperatures in the Pacific Northwest and the American West were declining faster than the worldwide average. In that case, would they have argued that climate change is less a problem here than elsewhere?

Further, by ending their research in 2007, the NRDC missed some of the largest downward trends in temperature anomaly. For instance, January 2007 had a temperature anomaly of 1.84 degrees Celsius. January 2008, on the other hand, was near zero, at 0.05 degrees.

[1] National Climatic Data Center, "Global Surface Temperature Anomalies," http://www.ncdc.noaa.gov/oa/climate/research/anomalies/anomalies.html (Accessed May 24, 2008)

The NRDC and UW may argue that while land temperatures are more variable, this still means that climate change is a greater threat than worldwide temperature averages make it seem because they would understate the risk on land. First, if that is what they meant, that is what they should have said. It isn't, however.

Second, while climate alarmists note that temperatures over land are increasing faster than the average, they don't mention that ocean temperatures are rising more slowly. In an effort to raise the spectre of sea level rise, they don't want to note that ocean temperatures have increased only slightly. If they are going to claim that risk on land is higher, they are also oblidged to say that the risk to the ocean is smaller. That isn't correct, however, just as the risk on land isn't higher because temperatures there have higher variability.

Finally, both organizations should know the truth behind this statistical manipulation. They understand that it is misleading. Yet, both organizations decided to include the claim, and the NRDC made it the highlight of their report. Their willingness to publicize a political statistic demonstrates that their position on climate change is not based in science.

Costs

Decisionmakers need correct data to design strategies that address environmental challenges without creating unintended consequences and others costs that outweigh the benefits of the strategies. Misleading statistics designed to exaggerate the threat of climate change are intended to over-allocate resources to that problem, by spending too much money and receiving too little benefit. Some scientists and activists, reflecting their own values, manipulate statistics to mask the true costs of the problem.

This has another dangerous consequence: reducing the reliability of scientific judgment. As the science of climate change is increasingly politicized by scientists and activists, the ability to know what data are reliable becomes increasingly difficult. The blurring of fact and opinion increases the unreliability of policies, increasing the risk that they will have high costs and few benefits.

The fact that the same statistical sleight-of-hand is being used by the UW Climate Impacts Group and a highly political activist group like the Natural Resources Defense Council should serve as a warning about how politicized the science of climate change has become. As policymakers become increasingly uncertain about the data they are receiving, it is wise to take a step back and add a measure of additional caution before making costly policy decisions.