

Open Letter by

Dr. Arnd Bernaerts, Hamburg, 12th November 2009

Concerning a letter by 18 scientific organizations to the U.S.A Senate, 21st Oct.2009 (see box below)

American Association for the Advancement of Science
American Chemical Society
American Geophysical Union
American Institute of Biological Sciences
American Meteorological Society
American Society of Agronomy
American Society of Plant Biologists
American Statistical Association
Association of Ecosystem Research Centers
Botanical Society of America
Crop Science Society of America
Ecological Society of America
Natural Science Collections Alliance
Organization of Biological Field Stations
Society for Industrial and Applied Mathematics
Society of Systematic Biologists
Soil Science Society of America
University Corporation for Atmospheric Research

October 21, 2009

Dear Senator:

As you consider climate change legislation, we, as leaders of scientific organizations, write to state the consensus scientific view. Observations throughout the world make it clear that climate change is occurring, and rigorous scientific research demonstrates that the greenhouse gases emitted by human activities are the primary driver. These conclusions are based on multiple independent lines of evidence, and contrary assertions are inconsistent with an objective assessment of the vast body of peer-reviewed science. Moreover, there is strong evidence that ongoing climate change will have broad impacts on society, including the global economy and on the environment. For the United States, climate change impacts include sea level rise for coastal states, greater threats of extreme weather events, and increased risk of regional water scarcity, urban heat waves, western wildfires, and the disturbance of biological systems throughout the country. The severity of climate change impacts is expected to increase substantially in the coming decades (1). If we are to avoid the most severe impacts of climate change, emissions of greenhouse gases must be dramatically reduced. In addition, adaptation will be necessary to address those impacts that are already unavoidable. Adaptation efforts include improved infrastructure design, more sustainable management of water and other natural resources, modified agricultural practices, and improved emergency responses to storms, floods, fires and heat waves. We in the scientific community offer our assistance to inform your deliberations as you seek to address the impacts of climate change.

(1) The conclusions in this paragraph reflect the scientific consensus represented by, for example, the Intergovernmental Panel on Climate Change and U.S. Global Change Research Program. Many scientific societies have endorsed these findings in their own statements, including the American Association for the Advancement of Science, American Chemical Society, American Geophysical Union, American Meteorological Society, and American Statistical Association.

At: http://www.agu.org/outreach/science_policy/pdf/Climate_Letter.pdf

The text of the letter as send by surface mail and published online

12th of November 2009

Subject: Letter to Senators concerning climate change legislation – 21.Oct.2009

Dear President or Executive Director,

How could it happen that more than a dozen of the most prestigious scientific associations signed and submitted this letter on 'climate change' without having ensured that the used terminology is sufficiently defined. Good science can and is required to work with reasonable terms and explanations. The science about the behaviour of the atmosphere should be no exception. But WMO¹, IPCC and other institutions simply are using the layman's term of weather and climate not even recognizing that this is very unscientifically. Actually nowadays climate is still defined as average weather, which may be fine for the general public, but nonsense as scientific term. This can be well demonstrated with the most relevant international legal instrument, namely the UN Framework Convention on Climate Change, 1992 (FCCC).

Article 1 of the FCCC providing definitions offers none on the term "climate", and if it had been based on the common explanation on "average weather", the word "weather" would have required a definition as well. That the drafters failed to do so is a clear indication that they either lacked the scientific competence to do so, or they knew it would make no sense, because 'average weather' is statistics, and remain statistics regardless of any name given to the set of statistics. Instead the FCCC defines in

- Para. 2. "Climate change" means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.
- Para. 3. "Climate system" means the totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions.

Both explanations explain nothing. It is nonsense to say: Climate change means the change of climate, while 'climate system' does not say anything more as the interaction of nature. Science is using layman's terms without being able or willing to define them in a scientifically reasonable manner, or not to use them at all. A detailed discussion is available at: <http://www.whatisclimate.com/>.

It is therefore very unfortunate if the reference letter of just 240 words mentions 'climate change' seven times. If your organization believes that "rigorous scientific research demonstrates that the greenhouse gases emitted by human activities" has an impact on air temperatures, then any alert should be restricted to this aspect. But as long as science is not able and willing to define CLIMATE, and subsequently CLIMATE CHANGE it is misleading and wrong to tell the general public and politics, that greenhouse gases are the "prime driver" of climate. That are the oceans as expressed in a letter to NATURE 1992: "Climate is the continuation of the oceans by other means"², or to say it with Leonardo da Vinci (1452-1519): "Water is the driver of nature".

Yours sincerely
Arnd Bernaerts

¹ The WMO site has a theme-section, which include the two terms in question. Concerning weather the section "Weather" offers no explanation but has the opening sentence: "Everyone is interested in the weather", while subsection: What is Climate begins with the sentence: "At the simplest level the weather is what is happening to the atmosphere at any given time." In the same section the Organization offers for climate three options namely:

- in a narrow sense Climate is usually defined as the "average weather,"
- in a more rigorously way, Climate is the statistical description in terms of the mean and variability of relevant quantities over a period of time, and
- in a broader sense, Climate is the status of the climate system which comprises the atmosphere, the hydrosphere, the cryosphere, the surface lithosphere and the biosphere.

² "Letter to the Editor", NATURE 1992, Climate Change, Vol. 360, p. 292; <http://www.whatisclimate.com/1992-nature.html>