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Applying the scientific method to climate science

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Some climate skeptics argue that the assumption of radiant-heat trapping by a free convective atmosphere suggested by Joseph Fourier, which is central to the radiative Greenhouse theory of climate, has not been demonstrated experimentally. In fact, Prof. Svante Arrhenius in his 1896 paper after detailing what Fourier and others think, states "such experiments have not been made as yet, and, as they would require very expensive apparatus beyond that at my disposal, I have not been in a position to execute them". Today, 131 years later, the proposed long-wave radiation trapping mechanism still awaits an empirical validation. Yet the international science community has spent billions of dollars to develop and analyze climate computer models that codify the 19th century theoretical conjecture of Fourier, Tyndall and Arrhenius about the atmosphere's ability to retain radiant heat. We report on the use of actual observations to address Arrhenius' desired experiment. We apply the scientific method by going through the following steps: ask a question: Is earth's climate a special case?; state a hypothesis: the earth's climate is part of a physical continuum spanning a broad range of planetary environments in the solar system; Procedure: apply dimensional analysis to measured planetary data in search of a physically meaningful relationship between planetary temperatures and environmental parameters. Conduct the experiment: gather and vet terrestrial and extra-terrestrial NASA data collected over the past 3 decades; determine dimensional parameters (Table 1) and create dimensionless products; extract meaningful relationships from the dimensionless products; analyze the results to determine if they support the original hypothesis. Draw logical conclusion and formula to a new theory based on them. The above scientific method produced new findings and a therefore macro-level thermodynamic relationship with unexpected but fundamental implications for the climate theory.

Biography

Karl Zeller has completed his PhD in Boundary Layer Fluid Mechanics from Colorado State University. Prior to 2008, he spent more than 40 years working in the fields of Meteorology and Air Pollution for the US Environmental Protection Agency, the US National Oceanic and Atmospheric Administration, The DOI Bureau of Land Management, the USDA Forest Service and for private consulting firms. He has also been an Air Force Reserve (part-time military) Weather Forecaster for 26 years. He is currently a Science Consultant conducting independent climate research. He is a Certified Consulting Meteorologist to the American Meteorological Society.

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