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A Correct Parameter for Climate Change Estimation

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Although the Intergovernmental Panel on Climate Change (IPCC), the United Nations body for assessing the science related to climate change, gives clear quantitative pictures about climate change and increasing the mean Earth's temperature due to increasing greenhouse gas concentration, the general public concern and scientific debate still continue [1]. A clear identification of the antropogenic signal in climate observations reduces the present scientific uncertainties regarding magnitude and form of anticipated climate change and provides a more reliable quantitative basis for development of rational political abatement and adaptation strategy [2]. But as K. Hasselman, Nobel Laureate for physics in 2021, said, the detection problem is often viewed as a task of identifying the most sensitive climate index, from a large set of potentially available indices, for which the anticipated antropogenic climate signal can be most readily distinguished from the natural climate noise. Global or regional mean surface temperature, vertical temperature differences, sea ice extent, sea level change, and integrated deep ocean temperatures are examples of indices.

In this work is shown that, the mean Earth's surface temperature as the key variable for estimation the climate change has actually small significance in estimation of the global change. The reason for that is because of high non-linearity dependences of Earth's cooling on local Earth's temperature and the linear way of calculating the mean Earth's temperature. So, the local temperature to power fourth will be more reliable parameter for climate change estimation.

References

1. IPCC Global Warming of 1.5 °C, Special Report, 2018 <https://www.ipcc.ch/sr15/>
2. Scientific Background on the Nobel Prize in Physics 2021 "FOR GROUNDBREAKING CONTRIBUTIONS TO OUR UNDERSTANDING OF COMPLEX PHYSICAL SYSTEMS" https://www.nobelprize.org/uploads/2021/10/sciback_fy_en_21.pdf

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