

1035-86-601

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98195. *Some Simple Mathematics Used in Support of Climate Change Studies*. Preliminary report.

A main current controversy in climate change studies is whether the greenhouse gas increase or the sun is to blame for the observed warming. The Intergovernment Panel on Climate Change has decided that the warming during the recent years is most likely caused by the anthropogenic increase of greenhouse gases. One of the reasons for the remaining skepticism is the fact that IPCC's conclusion relied very heavily on models. These comprehensive General Circulation Models incorporate the latest in our understanding of the physics of the atmosphere and oceans but nevertheless still depend on parameterizations of the subgrid processes they cannot resolve. Confidence in these models is gained by comparing and constraining their output against independent observations. There are now several comprehensive and easy to use observational datasets for the atmosphere openly available on the web, which makes the entry of mathematicians into the field much easier.

Mathematics of signal processing and statistical analyses to prove that the extracted climate signal is real are useful in supporting climate change studies. I will discuss some of the techniques we have used and the broader implication of the results on the climate change controversy. (Received September 11, 2007)