Review on
GCMs, macroweather and the climate
By S. Lovejoy, D. Schertzer and D. Varon

The authors suggest to define a frequency range of climate variability between weather and climate fluctuations and call it macroweather. In this range they find a flat spectrum in data. GCM in control runs are able to produce this. On the other hand long term variability beyond macroweather found in proxy and observational data is too weak in coupled climate models with external forcings.

The authors conclude that coupled climate models need to be improved to reproduce long term variability. They suggest (on page 13) that deep ocean currents and land ice could be ‚promising candidates'. One might add further ideas like biological or chemical oceanic processes.

The introduction of a macro weather scale, which is more or less successfully simulated is ok, why not. That models need more and better compartments, or better couplings is certainly correct. This short paper is useful because it points to a deficiency of climate models simply by based on a (relatively) simple variability analysis.

The style of the paper is characteristic for the colleagues; one needs some experience to comprehend the underlying methods. But on the other hand, readers may profit from the paper even if they do not understand the mathematics. We should not forget that we are reading papers every day which report on complex models which we do not understand either.