Earth System
Dynamics
Discussions

Interactive comment on "Do GCM's predict the climate... or macroweather?" *by* S. Lovejoy et al.

Anonymous Referee #2

Received and published: 8 April 2013

This paper presents empirical scaling functions of temperature fluctuations – S(dt) as a form of diagnostics to analyze variability in datasets with varying temporal resolution, such as paleoclimate proxies, reanalysis and GCM runs. By focusing on associated scaling exponents (H) and transition scales (tau_c), it argues for existence of three distinct regimes, "weather", "macro weather" and "climate". The main conclusion of the paper is that GCM runs (either control or forced ones) have difficulty to reproduce low-frequency "climate" regime with the growing fluctuations (H>0).

While not questioning importance of these results and authors clearly did a lot of useful work, my main problem with this manuscript that it is written more like internal technical report then article for outside readers, and better technical explanation of methodology is clearly needed before it can be published. In particular, section 2 should be significantly improved to make it accessible for someone to reproduce these results if necessary, see below. Figures 3-8 are clearly overcrowded, but it is hard to suggest

what to do about it.

Main Comments:

p. 1262, Lines 7-15: I suggest here for authors to write explicit formulas, i.e. say given discrete temperature measurements T_i (i=1,. . .,N), what exactly do they do? It should clarify the business of t+dt/2, "poor mans" and "Harr" wavelets etc. . . The reference to Haar in particular is not clear.

Interactive comment on Earth Syst. Dynam. Discuss., 3, 1259, 2012.