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Interactive comment on “Transient behavior in the Lorenz model” by S. Kravtsov et al.

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First off, we never meant to discount any part of your review: All of your comments and opinions are certainly valuable and important!

However, in plotting Fig. R1 in our reply to your previous comments, we did use the classical definition of a finite-time Lyapunov exponent (for quick online reference see <http://chaosbook.org/chapters/stability.pdf>, eq. 4.10 and <http://chaosbook.org/chapters/Lyapunov.pdf>, eq. 6.9, as well as surrounding details). These (classical) finite-time Lyapunov exponents (for initial conditions on the sphere defined in the paper) were averaged over the transient period to characterize the Lorenz-model (transient) trajectories. The meaning of the latter averaging (as well as that of the averaging based on the local Lyapunov exponents in the original paper) is clear and unambiguous, in our opinion - the averaging tags phase-space transient

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paths whose vicinity is characterized by divergent trajectories. We have also used direct numerical integration to confirm that both of our Lyapunov-exponent-based criteria indeed identify the most interesting transient trajectories.

Furthermore, we still think that our introductory discussion in the paper may be usefully popularizing, while our new “ghost attractor” arguments may present a nontrivial complementary perspective of the transient behavior in the Lorenz model, despite the persistence region where this dynamics applies is apparently dictated by the (previously studied) topology of the Lorenz manifold.

Interactive comment on Nonlin. Processes Geophys. Discuss., 1, 1905, 2014.

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