

Interactive comment on “Pattern dynamics, pattern hierarchies, and forecasting in complex multi-scale earth systems” by J. B. Rundle et al.

Anonymous Referee #4

Received and published: 18 July 2006

The paper treats the issue of predicting the behaviour of complex systems based on observable pattern dynamics. A method of analysis of the patterns based on the eigenvectors and eigenvalues of the correlation matrix is described. General considerations on the pattern dynamics are also presented. In my opinion, the paper could be published after addressing the following comments.

1. I think the authors should be careful in referring to hidden Newtonian dynamics. Even description of such a simple object as ideal gas is not reduced to Newtonian dynamics. In solids, there are a number of energy dissipaters that cannot be treated as in the frame of classical mechanics. If we go further down in the process of reduction we will end up with quantum mechanics. It looks like the

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- reference to Newtonian dynamics is a matter of speech in this paper, so it would be better then to find more accurate wording.
2. The section on the El-Nino putters looks a bit out of the tune. I think this section should be considerably shortened by removing the equations as they do not seem to be used in the following sections. Alternatively, more explanations and equations need to be added as to what is the relation.
 3. The paper would greatly benefit from an appendix explaining the techniques used, especially the physical meaning of the eigenvectors and eigenvalues in this case.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 3, 1045, 2006.

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