Earth Syst. Dynam. Discuss.,
https://doi.org/10.5194/esd-2018-20-RC2, 2018

Earth System Dynamics
Discussions

Interactive comment on "Dynamics of finite causal processes" *by* Kalman Ziha

Anonymous Referee #2

Received and published: 17 July 2018

Even though I am going to write a critical brief report, I strongly sympathize with the research questions that motivated this study, because they are extremely relevant and timely in general physics and in earth system dynamics in particular. The author takes a bold approach to causality that, at first sight, intuitively makes a lot of sense in view of open philosophical discussions that have been going on for a long time. However, those efforts are largely unfounded by physical science.

In my opinion, the fundamental problems are that the theoretical bases are far from being consolidated and the mathematical formulation is far from being fully matured. Moreover, the earth system dynamic applications appear to be speculative and incoherent with physical understanding of the earth system, as had been pointed out also by the other reviewer.

While I do recognize the philosophical and conjectural merits of the study and com-

mend the author for the strong investment in addressing such a tricky fundamental problem, I cannot recommend this manuscript for publication due to fundamental mathematical and physical concerns (which the other reviewer detailed carefully), especially the unproven validity of the theories and unproven physical reasonability of the formulations.

The author's second commend AC2 shows a significant effort to improve the manuscript and further clarify his points. However, to my understanding, while providing some practical added value, it does not overcome the major theoretical concerns of this manuscript.

Overall, when reading the paper I personally liked to read it from an informal conjectural perspective, though scientifically it was deemed unacceptable. Not because I disagree with the conjectures, but because the scientific method in all its thorough due process still needs to be conducted.

In my opinion, this manuscript could be submitted to a journal outside of the physical sciences, i.e. one where the intellectual exercise and theoretical conjectures themselves would be enough to grant publication. Or significantly matured in its mathematical and physical bases.

While conceptual research is always fascinating, here it should definitely be accompanied by a comprehensive in-depth proof of concept and validation at both mathematical and physical levels. A process that would require a mass of work beyond the scope of a major revision.

For this reason, I regret to inform that I am not recommending the manuscript for publication at Earth System Dynamics (ESD).

I appreciate your understanding and send my respects.

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