Earth Syst. Dynam. Discuss., author comment AC7
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Reply on RC3

Oliver López-Corona et al.

Author comment on "ESD Ideas: planetary antifragility: a new dimension in the definition of the safe operating space for humanity" by Oliver López-Corona et al., Earth Syst. Dynam. Discuss., https://doi.org/10.5194/esd-2021-26-AC7, 2021

Dear reviewer,

thank you for your deep and thoughtful comments.

Novel work is always problematic and risky because it faces both genuine questions for which there may be no clear and consensus answers; but also faces cultural and field biases especially in interdisciplinary problems.

This is why we think your observation about what is the main result of the work is key. We are not by no means providing the ultimate, complete and undisputable data analysis. We are presenting a **new Idea** and some supporting preliminary analysis for showing it is scientifically sound and more important, to point the path that could be followed to subsequent development.

So it is important to remark for the community that ESD Ideas article type "presents innovative and well-founded scientific ideas in a concise way that have not been comprehensively explored. We are convinced that under these definitions our work does comply".

Also, an anecdote from Professor Enrique Hernández Lemus may help. Some years ago Prof. Lemus asked Professor Leopoldo García-Colín about publication types and how to know when an idea is ready to be published. García-Colín told him that When formal scientific publication began, with scientific societies such as the Royal Society and others like it, there were two kinds of "scientific articles": the 'proceedings' or 'transactions' and the 'letters'. Both were very relevant, he continues, but they served different purposes: "proceedings" were published every year or perhaps every two years (that is why the volumes that contained them were sometimes called "Annals", that is, they were yearbooks) to report the status of the research one was doing on a given topic or project. They were work reports, progress reports, and state-of-the-art updates. After a time, generally indefinite, one ended up discovering or finding something very relevant that should be made known to the scientific community. To communicate this discovery, one wrote a letter, usually brief (since the details of the daily work were already published in the previous proceedings).

The problem is that the modern academy has somehow lost this tradition, that we consider code what in modern terms we recognize as the optimal search strategy in a

complex environment (in this case the space of scientific ideas). As we know from ecological research, Lévy flights have been recognized as the optimal searching strategy to find scarce, randomly distributed resources (Viswanathan et al. 1999; Bartumeus et al. 2005, Boyer et.al. 2006). Levy flights consist of a regular random walk (local search) and from time to time very big displacements (the flights) that allow the agent to search in new regions of the resource space. Of course in the scientific context, most of the times papers need and naturally fall into this local exploration of scientific ideas. But if we take nature and its evolutionary processes as a role model for search resource space, we also need to accept "IDEAS" papers that put a new set of lenses on a particular field. After a flight, there is a clear necessity for local exploration and much work has to be done.