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Earth System Dynamics
Discussions

Interactive comment on "ESD Ideas: It is not an Anthropocene; it is really the Technocene: names matter in decision making under Planetary Crisis" *by* Oliver López-Corona and Gustavo Magallanes-Guijón

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Dear Prof. Roger Cremades, we are greatly thankful to you for your valuable insightful commentaries that we have taken into account and have responded below.

Comments (»)

»I do not see the need of the equations and the emphasis on the genes, but the authors can perhaps improve the added value of these elements in the paper.

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Discussion paper

It was also the opinion of the editor. We agree and have removed it

»"we called them: Technobionts" do the authors refer to an existing publication of them clarifying these terms? If so please provide the details of the reference.

That is in fact the case: https://www.researchers.one/article/2019-01-1 which is within the reference but was not adequately cited when call technobots in the sentences of the comment, we have cited accordingly now.

»"in terms of Anthropocene, a solution to Planetary Crisis could be preferably searched into technologies such as Geoengineering". Preferably by whom?

We consider it would be preferably by decision makers that are prone to technological solutions.

»Is this about the preference of humans for either distributed renewables or geoengineering?

No, we tried to make the point that by using the concept of Anthropocene, we may be hiding the importance of technology as a source of the crisis, so focusing too much into technological solutions may get us into a never ending circle of problems made by abuse of technology that are tried to be fixed by using more technology that would lead to new problems (maybe even worst problems). We use geoengineering just as an example, we think a good example of technology with systemic (planetary) risks.

»This seems a weak point.

We re-written the paragraph to make this more clear: For example, in terms of Anthropocene that does not explicitly acknowledge the current key role of technology but only its human origin, a solution to Planetary Crisis may be searched into the technology itself in some sort of red queen process, as not identified as an important component of the problem. This would be similar to trying to resolve antibiotic bacteria resistance problems only by looking for better antibiotics (technological focus) without understanding that abuse in the use of antibiotics (technology) is a big part of the prob-

lem. Focusing too much on technological solutions may get us into a never-ending circle of problems made by abuse of technology that is meant to be fixed by using more technology that would lead to new problems (maybe even worst problems). In particular, there has been recent attention to Big Solutions approach in terms of for example geoengineering, which is regarded by advocates as a creative and responsible technological option in the face of a Climate Crisis (Thiele, 2019). Nevertheless, these calls for emergency geoengineering need to be analyzed with extreme care in a full interdisciplinary or even transdisciplinary manner (Blackstock and Low, 2018) because this kind of re-coupling with new unproven technologies could carry out hidden systemic risk, so Precautionary Principle should prevail (Taleb et al, 2014).

»The elaboration about the Rift and Sichuan should be aligned better with the whole argument, the substance seems right for the argument, but it is still unrelated.

We agree, as it is a ESD-ideas paper we tried to be very short, but it might be too short. We have developed the point as follows: Planetary changes have occurred several times on Earth System, modeling not only its dynamics but also life evolution. Consider the profound impact to Earth System dynamics that came from the emergence of the 3,700-mile planetary scare we know as the East African Rift Valley some eons ago, or how about some 4 million years ago, grasslands began to replace thick forests, and a dramatic pattern emerged in which our ancestors adapted to the unstable environment by increasingly inventive use of technology and enhanced social cooperation (Dartnell, 2019). Because normally these changes take very long periods, we tend to ignore them from the human perspective, but when talking about planetary-scale technologies these changes could take only a few years. So, should we be concerned about, for example, the results by Wang and Su (2019) who has showed a suggesting chain of evidence that both ML5.7 and ML5.3 earthquakes from 2018 in Sichuan Province China were induced by nearby Hydraulic Fracking activities? Again, planetary scale technologies should always be considered under the Precautionary Principle.

»The last paragraph needs a grammar check and perhaps re-writing into clearer sen-

tences.

Thank you for pointing this out, we changed the paragraph as follows: Finally, beyond this conclusion around Planetary Crisis and decision making, we consider that Technocene framework highlights the co-evolutionary processes driven by natural selection and niche construction, turning attention to a topic that has not received enough consideration, the great technological acceleration of the past 50 years and how it has become an Earth system dynamics changer.

It also points to some very interesting theoretical possibilities because bottom line, it might be interpreted as a contextual statistical perspective of Earth System dynamics. Statistical contextually was developed mainly by Khrennikov (2009) as a modification of classical Kolmogorovian probability, that works as a formal framework for systems that are so context-dependent (coupled) that they should not be addressed separated but by an indivisible pair (system, context). In this sense, what we are suggesting is that because the potential planetary impacts modern human societies (over coupled with some technologies) have, any Earth System dynamics description is incomplete without the human technological context.

»The topic requires a larger and more complete piece with more organised arguments, flow and examples.

Maybe the references provided and the modifications be sufficient to keep this paper in the ESD-Ideas format which is very short.

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