Interactive comment on “GAIA 5.0 – A five-dimensional geometry for the 3D visualization of Earth’ climate complexity” by Renate C.-Z.-Quehenberger et al.

Sergio Rubin
sergio.rubin7@gmail.com

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Dear Prof. Clarke,

Thank you very much for your comment and your very provocative question.

Personally I do not see that the 5-dimension, hyper-geometrical dimensionality and even fractals by themselves support a sort of planetary sentience, or sensitivity beyond metaphorical free associations. This is because two sort of arguments:

1- only the realization of self-referential (autopoietic) systems is able to enaction and sense making. The Gaia 5.0 project is not about describing the form of autopoietic systems or to show the causal relations that allowed us to pass from 5D geometry to sense-making.

2- if there is some kind of geometry that must be link to the self-referential systems it should be the one I call the Strong-geometric entropy (a) and the Soft-information geometry (b).


b) the information geometry is related to the formal expression of autopoietic systems and their boundary in dynamical and Makovian terms https://royalsocietypublishing.org/doi/full/10.1098/rsta.2019.0159. This means that any autopoietic system, including the earth system https://royalsocietypublishing.org/doi/10.1098/rsif.2020.0503, equipped with a Markov boundary may have sensory activity and therefore sentience https://www.mdpi.com/1099-4300/22/5/516. The Gaia 5.0 project, in its current version, is not linked to this.

The art-science Gaia 5.0 project rather propose a 5-Dimentional partition of geometrical space of the atmosphere instead of the cubic 4D partition that the current climate models are based on. Therefore, this art-media proposal suggests that 5D partition could allow us to ‘see’ perhaps dynamics of the atmosphere far beyond current climatic models based cubic 4D, and thus a closer approximation to a living –Gaian– system. However, this should be clarified in a further version of the manuscript.