

Interactive comment on “Thermodynamic origin of life” by K. Michaelian

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I thank A. M. Makarieva and V. Gorshkov for their comment on the manuscript. Their emphasis on the importance of solar photon dissipation by life is shared by the author and is the underlying foundation upon which the hypothesis of the manuscript rests. Although RNA and DNA do not appear today to play an important direct role in solar photon dissipation, but instead carry the information for producing molecules responsible for dissipating visible and near UV light, this may not have been the case at the very beginnings of life when Earth’s surface was illuminated by intense UV light between 200 and 300 nm. In fact, RNA and DNA, some of the amino acids (tyrosine, tryptophan, phenylalanine), and some proteins such as bacteriorhodopsin, seem to have been designed specifically for dissipating UV light in this spectral region.

Interactive comment on Earth Syst. Dynam. Discuss., 1, 1, 2010.

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