An Addition to the Volume Principle of Life Formation in Stellar Metamorphosis, Plus Last Universal Common Ancestor

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August 25, 2019

Abstract: Some calculations are done to hypothesize what the minimum volume of a star is needed to begin the formation of life. This paper builds on the previous volume principle of life formation. To form life, vast volumes of material is needed to increase the statistical likelihood of molecules mixing in ways that resemble complex proteins, sugars, and long chain hydrocarbons which branch such as phospholipids. This is of course far before any feedback and self-regulating mechanisms spring up, this is just to address the simple act of mixing elements and combining/recombining them in large scales. There is to date no other theory that connects young stars directly to the formation of life, this paper's goal is to help alleviate this vacuum, and places reasoning to the last universal common ancestor issue raised by academics and researchers.

According to the volume principle of life formation in stellar metamorphosis, life begins in objects which have very large volumes.[1] Unfortunately a number was not attached to this. Now that the theory has been developed, we can go back and attach some numbers to the volumes. The youngest stars, such as WR 124 (a Wolf-Rayet star of about 8 million years old) has thirteen magnitudes the total combined volume of Earth's dynamic atmosphere and oceans. Since it cannot form molecules in large scales which remain in the atmosphere as CO gas or O2 gas, then this star is much too young, therefore its great volume is not needed. Scaling down from there is more reasonable.

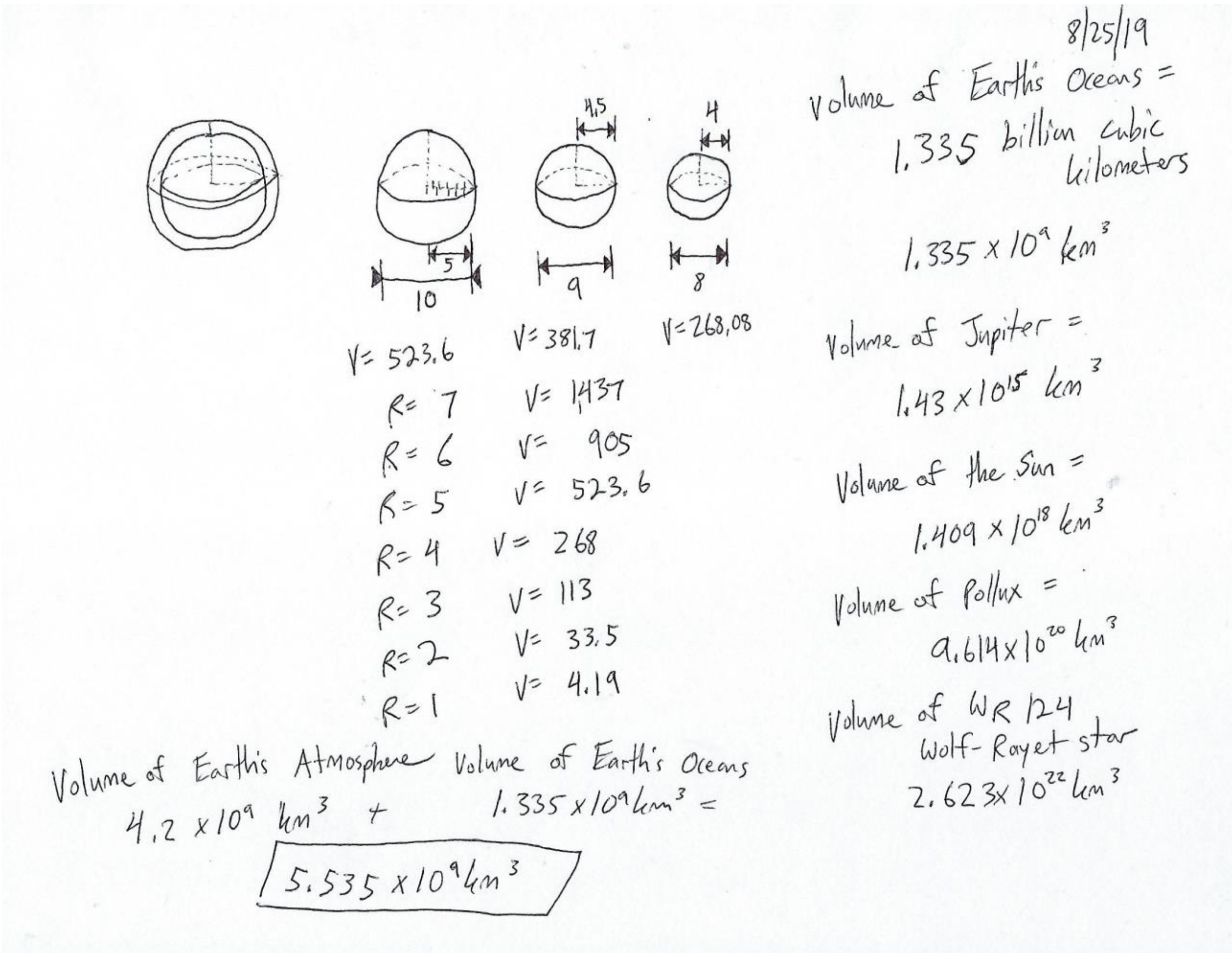
At the volume of red dwarfs is much more reasonable, as titanium oxide has been observed to have formed inside them due to their spectrums relaying that information, we could use an average red dwarf total volume as the starting point for the bare minimum volume required to mix up enough elements to form complex molecules. The volume can arbitrarily be set at around $2 * 10^{15}$ cubic kilometers. What this means is that the stars in the sky that have at least the volume of 2 quadrillion cubic kilometers have the potential to form life on them far into their evolutionary history. This is also neat because red dwarfs are also the stage in evolution where the material is also cold enough (below 2,000 Kelvin in many cases) for high bond energy material to form.

What this means ladies and gentlemen, is that essentially every star you see in the night sky, with a visible, self-produced spectrum, has the potential for formation of life (and is in fact forming the beginning molecular combinations such as O2 gas and H_2O). This is not 20th century astrochemistry where only stars could heat up other objects outside of their atmospheres. This is 21st century astrochemistry combined with astrobiology, geology and astrophysics in that the star itself is the object directly responsible for the formation of life, in its own atmosphere as it cools and collapses.

This understanding is also very important, because it constrains the hypothesis that the Earth formed life with its current size, which is clearly impossible. The old hypothesis goes that Earth's total volume of atmosphere and oceans at ~$5.535 * 10^9$ cubic kilometers was enough to mix up molecules to form life, which is quite strange. The sterility of water ice clouds in our current atmosphere should be enough to throw the more reasonable researcher into questioning those assumptions. Not only that, but that life is most abundant on the surface, which is doubly strange. How could such as small surface area move enough chemicals around and rearrange them even after 4.5 billion years, to create such vastly complex organic material? The answer is that it did not. Earth's total volume of movable material in either liquid or gaseous state was at least 2 quadrillion cubic kilometers.

Since the only objects we have observed in the galaxy that are greater than 2 quadrillion cubic kilometers in size are red dwarfs and larger, then it stands to reason. Earth was at least a red dwarf star at one point, simply because life exists on it and couldn't have formed if it did not have enough volume to mix the chemical precursors with, in such vast scales. The fact that the chemical precursors had so much more room to mix and mingle allows for Darwinian type evolutionary theorists to work with the most simple of molecules and elements, far before they even formed things such as simple carbohydrates. If the Darwinian evolutionary theorists, or any evolutionary theorists for that matter want to study the beginnings of life, study stars that have at least 2 quadrillion cubic kilometers of volume. Those are the objects Earth resembled ~4.3 billion years ago. Evolutionary theorists can go even further back in they want, but I think red dwarfs are the key to understanding early Earth. The stars that are even younger just operate far too alien of an existence to resemble what we have on Earth, they are too energetic and hot, evolutionary sterile. They can heat up the surfaces of other stars like the Earth, but they are far too alien.

And another thought to wrap up this paper. For each star that contains a volume of at least 2 quadrillion cubic kilometers, it most certainly when and if it forms life, will have done so completely independently of another star. This meaning the evolutionary branches that the star will form are all independent and new/unique and have never formed anywhere else in the galaxy. This being said, the rules of evolutionary processes will apply though, only with a star that will eventually have a stronger/weaker gravitational field when it becomes life hosting, higher/lower abundances of oxygen, nitrogen, methane, etc. The star as it cools, evolves and forms life will become its own LUCA, or last universal common ancestor. All the life that forms on the star, is directly made out of that star itself, and is because of the energy dissipation of that star itself. This meaning Earth's LUCA is Earth itself. All organisms on the Earth descended from the Earth itself. All stars are their own LUCA, or progenotes.



References:

[1] http://vixra.org/pdf/1608.0115v1.pdf