Astrobiology News May 2021: Mars Takes Center Stage

Mars has been in the news a lot this month, and understandably so! On May 7th, NASA's Ingenuity Mars helicopter made its first one-way flight from "Wright Brother Field" to a new landing site,¹ entering a new phase of exploration that will test the utility of using rotorcraft to scout and conduct aerial observations of places that are inaccessible to rovers. These tests will benefit future aerial exploration of Mars as well as other worlds. On May 11th, NASA's Mars Perseverance Rover began its examination of Martian rocks.² Some of these rocks will ultimately be collected with the drill on the rover's arm, stored in special tubes, and deposited in collections on the planet's surface for eventual return to Earth. On May 6th, the Planetary Science Institute issued a press release about Research Scientist David Horvath's study that identified volcanic activity in the Elysium Planitia region on Mars, which might indicate recent habitable conditions, raising the possibility of extant life in this region.³

Horvath's research results are based on data from satellites orbiting Mars. The results are exciting because, until now, there's been no evidence of recent volcanic activity on Mars. Volcanism is thought to have been common on Mars 3 - 4 billion years ago, with smaller eruptions occurring as "recently" as a few million years ago; however, the new results indicate that further eruptions may have taken place within the last 50,000 years. This may sound like a long time, but it's not, geologically speaking that is! Horvath explains, "If we were to compress Mars' geologic history into a single day, this would have occurred in the very last second." The connection to possible extant life on Mars is that interaction between hot magma and subsurface ice could produce conditions favorable for microbial life.

One of the shortcomings of my brief, monthly, columns for the CLP is that I can't convey the science to you with visualizations. If you're not already doing so, I urge you to explore the spectacular images and videos (including 3D) made possible by current Mars missions⁴ - they are truly remarkable! NASA's Astrobiology Program also provides many other resources; for example, if you need to relax, consider downloading NASA's free Astrobiology Coloring Pages.⁵ During the early phases of the pandemic, I discovered how coloring mandalas helped me to de-stress. The Astrobiology Coloring Pages provide an opportunity to apply your creativity to portraying Perseverance's journey on Mars - try this out as a fun family activity!

Finally, as I do every month, I want to close by encouraging you to consider taking an active part in scientific exploration. For example, you can join other citizen scientists who are helping to train robotic rovers to navigate Mars more safely.⁶ If you happen to lead a Christian congregation, you might want to check out my blog, *Serving God and Neighbor through Citizen Science*,⁷ which I recently wrote for Biologos⁸, an organization founded by former Director of the Human Genome Project and current Director of the National Institutes of Health, Francis Collins. Whether you're new to the *Zooniverse* citizen science platform or a frequent user, if you haven't already done so, I humbly ask you to take a few minutes to fill out one of the participation surveys that are linked on

¹ https://mars.nasa.gov/resources/25898/ingenuitys-successful-fifth-flight/

² https://www.nasa.gov/feature/jpl/perseverance-s-robotic-arm-starts-conducting-science

³ https://www.psi.edu/news/recentmarsvulcanism

⁴ https://mars.nasa.gov/

⁵ https://astrobiology.nasa.gov/resources/coloring/

⁶ https://www.zooniverse.org/projects/hiro-ono/ai4mars

⁷ https://biologos.org/articles/serving-god-and-neighbor-through-citizen-science

⁸ https://biologos.org/

the web page that the Dialogue on Science, Ethics, and Religion has dedicated to *Zooniverse*.⁹ Your responses to these surveys will enable us to improve the *Zooniverse* platform and make participating in science a better experience for everyone - thanks in advance! Also, please do contact me if you'd like to discuss possible ways to use *Zooniverse* in any of your programs.

Until next month,

Grace

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⁹ https://sciencereligiondialogue.org/projects/zooniverse/