

Astrobiology News April 2022: Celebrating Citizen Scientists and 5,000 Strange New Worlds

This April marks many festivals and celebrations, including Easter, Passover, and Ramadan. Folks of all religious persuasions are also taking part in Earth Day¹ activities that promote caring for our planet, and collaboratively working with professional scientists to tackle diverse research challenges during Citizen Science Month² events.

Of course, caring for the Earth and participating in people-powered research aren't activities that are (or should be) restricted to a specific month! Earlier this year, *Astronomy* magazine published its list of top 10 space stories of 2021.³ *Citizen scientists aid major discoveries* made #5 on the list, which included several research papers; among them, a paper my colleagues and I published on young star-forming regions known as “yellowballs,” which were discovered by volunteers who worked on the *Milky Way Project*,⁴ and papers reporting new discoveries of exoplanets. In fact, many people around the world actively contribute to searches for planets outside of our Solar System.⁵

The first exoplanets were discovered orbiting a star no one expected to harbor planets. In 1992, astronomers Alexander Wolszczan and Dale Frail reported the detection of two or more planet-sized worlds orbiting a pulsar⁶ - the “dead” remnant of a supernova. Just last month, the tally of exoplanets exceeded 5,000.⁷ The diversity of these worlds rivals the diversity of worlds envisioned by the most creative science fiction writers, and brings to mind quotes attributed to Sir Arthur Eddington, J. B. S. Haldane, Werner Heisenberg, and others, that the Universe truly is stranger than we can imagine.

Exoplanets are diverse in size, temperature, and distances from their stars. Of the *currently known* worlds, only about 4% are considered to be small rocky worlds similar in size to the Earth, and smaller. The remaining 96% include gas giants (30 % Saturn-sized and larger), ice giants (35% Uranus- and Neptune-sized), and so called “super-Earths” (31%), which have no counterparts in our Solar System. Present and future observatories hold great promise for elucidating dramatic differences in the compositions of all of these mysterious worlds. Check out NASA’s beautiful sonification⁸ of exoplanet data over the past three decades!

Finally, many of you responded to Michael’s call last June to fill out one of the surveys we used to evaluate my project to engage faith-based communities in citizen science through *Zooniverse*.⁹ I hope you’ll read my article summarizing the results of this project, which was

¹ <https://www.earthday.org/earth-day-2022/>

² <https://scistarter.org/citizensciencemonth>

³ <https://astronomy.com/magazine/news/2022/02/top-10-space-stories-of-2021>

⁴ <https://www.zooniverse.org/projects/povich/milky-way-project>

⁵ <https://exoplanets.nasa.gov/citizen-science/>

⁶ <https://www.nature.com/articles/355145a0>

⁷ <https://exoplanets.nasa.gov/news/1702/cosmic-milestone-nasa-confirms-5000-exoplanets/>

⁸ <https://exoplanets.nasa.gov/resources/2321/5000-exoplanets-listen-to-the-sounds-of-discovery-360-video/>

⁹ <https://scienceligiondialogue.org/projects/zooniverse/>

published by the AAAS Dialogue on Science, Ethics, and Religion late last month!¹⁰ Some of you may also be interested in an activity that my colleagues and I are currently beta testing, which is designed to give introductory astronomy students a research experience using the *Milky Way Project* “yellowball” data. We’re hoping to make this activity widely available to undergraduate, and perhaps high-school, astronomy classrooms next year, so stay tuned.

Until next month,

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¹⁰ <https://scienceregiondialogue.org/resources/engaging-communities-through-zooniverse-summary/>