Introduction

This paper analyzes the possibility of the existence of an Earth-sized exoplanet that orbits its star within the specific habitable zone, which may point to evidence for support of life due to the existence of earth-like conditions. This research seeks to establish if there exist other Earth-like planets besides earth, that prove similar life-supporting factors are present. Such knowledge can enlighten the scientific community on possibilities of interstellar travel as well as possibilities of other life forms and structures apart from that on Earth, creating stepping stones and new avenues for space colonization (NASA/Jet Propulsion Laboratory (2020). Which can facilitate the overall achievement of long term environmental sustainability on Earth, as humans can utilize space as a resource?

Scientific resources

During this research, I will utilize primary resources such as dissertations, lab reports, and journal articles because such sources provide authentic information. Secondary resources that shall be used here will include article reviews and books that will further clarify information from primary sources (University at Albany, n.d.).

Also, tertiary resources will be important for the ultimate organization and retrieval of both primary and secondary information that would facilitate this research. Such resources will include abstracts or summaries of primary and secondary resources, databases, and indices which will provide actual citations and identify documents with relevant information on authors, books, and article titles as well as publisher information (Woodley, 2020).

Research question

Is it possible for this Earth-sized habitable-zoned planet to be the beginning of space colonization?

Audiences

The main audiences targeted by this research are the scientific community as well as the general public.

Because the scientific community considers sustainability important, there will be expert analysis and opinions on the research issue. If action is not taken regarding sustainability, humans face risks to food and water security, biodiversity among other risks on our limited resources (Vessuri, 2016).

Also, the public should be informed because researchers have understood the role that the general public audience plays toward overall progress in addressing our issues. When a public audience is well informed, governments and authorities, specializing in space study and exploration can be driven toward action by funding, sponsoring, and allocating further studies and resources aimed at investigating earthlike planets. This way, everyone will have a better picture of our current environment sustainability practices concerning chances for interstellar travel and space colonization (Brownell, Price, & Steinman, 2013).

Kepler-1649c

According to The American Astronomical Society, Kepler-1649 c has been identified as a low-mass planet similar to earth, which revolves around the star Kepler-1649. This planet gets from its star, an incident flux similar to Earth's, and has the equilibrium temperature of a circumstellar habitable zone making it closely similar to Earth. Initially, it was classified by the Keppler pipeline as false positive, but upon inspection of Keppler's false positives, it was reported as a possible Earth-sized habitable-zoned planet (The American Astronomical Society, 2020).

Kepler-1649c is approximately 300 light-years away from Earth, and boasts a similar size to Earth, with almost similar temperature and comparable light exposure like Earths. This discovery has sparked hope for a second Earth and the possibility of other forms of life in our galaxy (NASA/Jet Propulsion Laboratory (2020).

Why message can be tailored to the public scientific community

Currently, there is a growing concern on huger, terrorism, diseases, environmental pollution, global warming, weather changes, and general scarcity of resources and clean water. As we understand, space colonization can offer solutions to such problems in terms of technology and sociologically. Solutions from space exploration and colonization especially for earthlike planets will be beneficial to the majority, the world as a whole (Siegfried, 2003).

This means that we can develop our message to ensure that the scientific community can understand the need for space exploration toward possible solutions to current global issues indicated and overpopulation concerns on Earth.

Due to the nature of this research, most individuals in our scientific community will be able to understand terminologies used, research methodologies, and sources of relevant data as collected and analyzed leading to an effective understanding of the message.

In this case, the issue of sustainability is the core, and the overall global concern for environmental sustainability is growing. Worsening conditions pose threats to humanity and general security is at threat. The shift in focus on renewable energy, climate management, water, and biodiversity protection is slowly enabling us to mitigate threats from traditional practices that affect sustainability (Sullivan, 2008).

Such measures should be coupled with alternatives such as space exploration and colonization of Earth-sized habitable-zoned planet. This way, we can achieve long term sustainability in a fast, effective manner.

The following sustainability principles guide the development of this research:

Sustainable development: The theory of sustainable development insinuates the need for undertaking development initiatives while considering sustainability, so we can meet current needs without compromising the abilities for future generations (Tearfund, 2009).

Feasible ways organizations can achieve this is by undertaking initiatives for alternative resources especially through space exploration and initiatives seeking to utilize celestial resources like ones potentially on Kepler-1649c.

Currently, humans have established that there are vast amounts of minerals in space that can be utilized commercially through observations, remote sensing, and space probes making space and celestial bodies a utility for sustainable development (Sachdeva, 2018).

Understanding water resources: Since life on earth needs water, we should consider future implications from the misuse of water and its pollution. As the population grows, water will be more scarce, which may lead to disputes over control of such important resources (Tearfund, 2009). Since Kepler-1649c, an earth-like planet may have water. Future habitation of this planet by humans may minimize the long term impact on our earth's water resources.

Time and space inter-dependencies: organizations must understand how our universe is interconnected and that resources we use can affect places far away while activities in faraway places can affect us. Therefore, sustainability requires developing sustainability standards globally (Sullivan, 2008). If Earth-sized habitable-zoned planets like Kepler-1649c support life, activities there can be used to develop our earth and assist in overall sustainability.

Triple-bottom line: Emphasizes on balanced economic, environmental, and social considerations. As we look toward meeting our financial needs, we must equally

improve our environment and develop our social well-being (Sullivan, 2008). Kepler-1649c can create an avenue for income generation for firms, corporations, and other institutions while promoting Earth's environmental conservation efforts and if by a chance, life exists in Kepler-1649c, humans will have new relations with extraterrestrial life forms bringing a need for an inter galactical government.

Equity: Sustainability requires equitable allocation and distribution of resources, opportunities, life quality, and wealth across countries currently and in the future. It is therefore our responsibility to ourselves, others, and future generations so that our descendants can access both resources and utilities for better life quality (Sullivan, 2008). Space exploration and colonization provides good grounds for equality since current resources, wealth, and opportunities are not distributed equally

Conclusion

The research paper asked the question whether it is possible for Earth-sized habitable-zoned planet can lead to the beginning of space colonization. From the research question we identified a hypothesis, that is, space colonization is possible on Earth-sized habitable-zoned planets. Testing the hypothesis may begin by testing whether the planet can support life by checking factors such as energy sources and its

atmosphere. Understanding whether these habitable-zoned planets support life or not will aid in determining whether they can be explored further and allow colonization. Though it may difficult to ascertain that these Earth-sized habitable-zoned planets support life and can be colonized, scientists should measure the atmosphere of these planets so that they can explore them further to determine their sustainability of human life. According to NASA/Jet Propulsion Laboratory (2020), there are scientists currently trying to find the mass of such planet's so that they can determine whether they are rocky like Earth. This knowledge would add more insight to scientists on whether or not they can sustain life. Space exploration of these Earth-sized habitable-zoned planets would shed more light on this too. Therefore, having this knowledge would help future researchers on whether these Earth-sized habitable-zoned planets are ready for space colonization.

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