Habitability of F-Type and M-Type Planets

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Introduction

In my research, based on the data sets provided, I will use spectral types F (P1) and M (P2) as my planets of selection. In this research, I will give a clear definition of the habitable type I will be using for the planet and give illustrations based on the data given for each. I will give many details to support the fact that I have stated the habitability of the planet I have selected. I get other data for the additional information for what is already in the data set to make sure that I have much of the required and sufficient information to support each fact. The methods I will be using in this analysis will be indicated in my paper analysis. The methods that I will be using in the paper to gather the information will reflect the fact that they are currently used or just they will be in use within the next five years or less. I will be giving more information regarding the fact that the planet supports life.

Habitable Type I Am Using

The habitable type I am using is how the planet selected is able to support complex life. In this consideration, I will pay attention to the factors that support my opinion of whether the planet contains the suitable characteristics for such support. In my case, I will focus on the planet and whether it has some chance of supporting extraterrestrial types of organisms (Quanz et al., 2022). The habitat zone, which is the area around the stars, will be given consideration simply because it is the ideal factor for liquor water, which is the essential factor for ingredient life support (Wandel, 2023).

Habitable In Planet F (P1)

In P1, there is much possibility that it supports life based on the fact that there is some evidence seen in the features of the planet that are essential in support of life. The first consideration factor is that the planet has oxygen composition, which takes 17.1 %. This means that there is some volume of oxygen gas in the atmosphere. It is very true that living organisms, especially microbial organisms and plants, need oxygen gas for survival. Planet F has a composition of oxygen gas. There is so much possibility that it supports life. The planet also has two other gases that are essential for the survival of plants. The planet has carbon dioxide gas, which takes 81.3 %, and hydrogen oxide gas, which has a percentage of 1.58 %. Basing my argument on this gas, which is key to life-support, and not considering other facts, I am very much convinced to conclude that the planet has a very high chance of supporting life for living organisms (Wordsworth & Kreidberg, 2022).

The fact that the planet has light years, as given in the data to be 436, is the ideal fact that there is much much possibility that the planet supports since it is very true that for plants and animals to survive in any given environment, there is must be light availability. The rotation hours of the planets are close to that of planet Earth, which is known to be the first-class world. This planet can be defined as a second-class world based on the fact that it has some factors and elements supporting life, just like a seen planet. Despite the fact that the temperatures on this planet are too low, k255 does not mean that the planet cannot support life simply because there are living organisms that can do better in those temperatures based on the fact that the other factors are constant (Quanz et al., 2022).

Habitable In Planet M (P2)

There are fewer chances of P2 supporting living organisms based on the fact that, as seen in P1, there is a need for three compositions of gases in the atmosphere for survival reasons. On this planet, oxygen gas is not included in the atmosphere, which implies that there will be fewer chances for the planet to support life for animal-based living organisms that require it for survival. In another case, this planet has much-composed ions of CO2 gas, taking 68.6%, which is too much composition for survival even for a single microbial organism (Wandel, 2023). Considering the fact that the planet has too many years of darkness, its darkness will not be able to support the life of any given organism. The key other factor that supports the evidence that the planet is not suitable and not able to support the level is the temperature level of the planet. This planet covers 229k, which is -18.15, and therefore, the temperature is too cold for the survival of any living organism (National Aeronautics and Space Administration [NASA], 2024).

Other Additional Information And Information Used

For the planet to be considered life support, it should have some elements and all the relevant components that are essential for supporting it. Focusing on the dataset, I was using the other things that can be done to support the pieces of evidence that the planet supports life or not. Modern technology techniques can be employed in this mechanism to determine the type of living organisms suggested to have their habitat on planet F. The data can be collected by a number of astrometry who can collect the data by direct radial velocity determination and transit connection of the planet (Quanz et al., 2022). Modern techniques, such as the RV method of sampling the type of soil on the planet and its life-supporting chance, more so for microbial organisms, can be used (NASA, 2024). This can be done by using high technology to collect the soil sample directly to the planet and have laboratory tests of any given organism that is found to be living there.

Conclusion

According to the data given about the planets in the data set, I am very convinced to state that there

is life on planet F after the life-supporting pieces of evidence are seen on the planet. In fact, the planet has almost similar life-supporting features, just as seen in supper Earth, which is known for supporting the complexity of living organisms. There are just very minimal chances of the planet not having support in life. From my point of view, planet F may not have complex support for life, but at least there are some organisms that can find the planet that has the right characteristics for survival. Last but not least, I can suggest that the P2 does not support life based on the fact that there is much of the non-availability of the factors that are so ideal and important for life. In my view, it is very much possible that the planet P1 can support life, but the fact is that it will be able to support highly complex living organisms as seen on the planet Earth. The information can be gathered by a number of astronomers who can gather it by coordinating outspread speed assurance and travel association of the planet. Current strategies, such as the RV strategy for testing the kind of dirt in the planets and its life-supporting shot, and all the more so for the microbial life form, can be sued. This should be possible by the high innovation accumulation of dirt examples that are directly on the planet and by having research centers trial any given life form that is found to be living there (Quanz et al., 2022).

References

National Aeronautics and Space Administration. (2024, June 12). *Coming in hot—NASA's Chandra checks habitability of exoplanets*. https://www.nasa.gov/missions/chandra/coming-in-hot-nasas-chandra-checks-habitability-of-exoplanets/

Quanz, S. P., Absil, O., Benz, W., Bonfils, X., Berger, J.-P., Defrère, D., van Dishoeck, E., Ehrenreich, D., Fortney, J., Glauser, A., Grenfell, J. L., Janson, M., Kraus, S., Krause, O., Labadie, L., Lacour, S., Line, M., Linz, H., Loicq, J., Miguel, Y., Pallé, E., Queloz, D., Rauer, H., Ribas, I., Rugheimer, S., Selsis, F., Snellen, I., Sozzetti, A., Stapelfeldt, K. R., Udry, S., & Wyatt, M. (2022). Atmospheric characterization of terrestrial exoplanets in the mid-infrared: Biosignatures, habitability, and diversity. *Experimental Astronomy, 54*, 1197–1221. https://doi.org/10.1007/s10686-021-09791-z

Wandel, A. (2023). Habitability and subglacial liquid water on planets of M-dwarf stars. *Nature Communications, 14*, 2125. https://doi.org/10.1038/s41467-023-37487-9

Wordsworth, R., & Kreidberg, L. (2022). Atmospheres of rocky exoplanets. *Annual Review of Astronomy and Astrophysics, 60*, 159–201. https://doi.org/10.1146/annurev-astro-052920-125632