Hackathon NASA Space Apps Challenge 2023

TEC DE MONTERREY SONORA NORTE

Zoi: Beyond The Unreal

Challenge

Habitable Exoplanets: Creating Worlds Beyond Our Own

Team Name

UltraNova

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Living in Zoi

Exoplanet Zoi circles on the habitable range of a star named Asteria, a type K orange dwarf star. It leans towards the outer edge of this zone, making it receive less energy from its sun as compared to Earth. The planet is, on average, colder than Earth, with the temperatures of its poles plunging as low as -90ºC, so to realistically live on this planet one would have to inhabit the planet in a latitude closer to the equator. The planet has a thick and dense atmosphere, which creates a potent greenhouse effect. This atmospheric blanket serves as a stabilizer for the temperature of the planet and has allowed the liquid water to remain within the planet. Zoi also has vast and bountiful oceans; they however, are not calm, with waters constantly in motion, a lot of high waves and movement are created because of the gravitational pull of Zoi's moon, Filiá. Filiá is a natural satellite slightly bigger than the Earth's moon, its rings of nitrogen and ice are a captivating sight that can be seen by the naked eye from Zoi's surface. Because of a combination of factors including the composition of Zoi's atmosphere and the type of star it orbits, the planet's sky is a light violet hue, and the sea, reflecting the sunlight from the sky, is an indigo color.

For a group of planetary settlers, this planet can provide a lot of resources to start a civilization. The planet has plentiful trees, whose wood can be used to construct houses and burned for warmth and energy, as well as having its fruits consumed as food. The ocean has plenty of natural resources too, its sand can be used as construction materials and its inhabitants cooked to feed the settlers. The planet has frequent geothermal activity, which gives it a lot of very valuable resources. The geothermal activity of the planet would make it a perfect candidate for geothermal energy production, and the volcanic soil would work as a rich in minerals, fertile land for agriculture. The minerals in the soil means plants will have evolved to absorb high quantities of nickel and iron, letting the plants have thick stems and leaves, a reduced growth, and tolerance to drought and contamination. Unfortunately, along with these enticing prospects providing great opportunity for the planetary settlers some of the planet's resources come with really big risks. The frequent geothermal activity can be a big risk to the planet's inhabitants, which means the population must settle a safe distance away from active volcanoes and tectonic fault lines, as well as being careful when settling near large bodies of water because of its dangerously large waves and their constant eroding of the land near the shore. Settling on planet Zoi is a challenge that would be equally rewarding as it will be difficult. Its unique characteristics and geological features make it a compelling destination for those looking for an habitable exoplanet with lots of natural resources. For those willing to take the risk, Zoi promises a beautiful home with plenty of opportunity.