

Science Fair

Logbook

By: Rishitha Shivamurthy

January 1, 2024

Introduction

I am going to talk about the needs of life, History of Mars, Explorations to Mars, what NASA thinks, Environmental changes, Events on Mars, Human Knowledge and Needs, Conclusion.

Needs of Life

↳ Liquid water - essential for all life

Carbon

Hydrogen

Oxygen

Nitrogen

Phosphorus

Building blocks for energy molecules

Life can exist elsewhere, just not yet determined.

Energy (light/chemical) - fuels metabolic system, reproduce
Suitable Environment - moderate temperature, protective atmosphere, strong magnetic force, and internal source.

January 2, 2024

Did Mars once host life?

↳ It was a habitable planet, but no evidence that there was any living forms there.

↳ "Mars is wobbling between 15 to 35 degrees obliquity, on a time scale of 100,000 years. Every million years or so, it leans over as much as 60 degrees. With these changes in obliquity, come the changes in climate and atmosphere."

What did Mars once have?

↳ Research has proven that there once was a river/ocean that flowed on its surface which dried up because of harsh and dry climate.

Explorations to Mars

Sojourner: Microwave oven size, sent to Ares Vallis, where it proved was a wetter and warmer place.

Spirit: Twin rover of Opportunity (golf cart size), landed in Gusev Crater, where it most likely held water long time ago. Hot springs in past.

Opportunity: Same as Spirit. Landed on Meridiani Planum where rocks such as hematite¹ where it can be found around water on Earth. Rock minerals around possible salt-water areas.

Curiosity: The biggest rover to land on another planet (as big as an SUV). It landed on the Gusev Crater, where there is a big mountain that has many layers that can help define the history of the Red Planet.

Perseverance: Big as a small SUV. Landed on Jezero Crater. Much like Curiosity but has different job and function. Microbial life.

How can this help us?

As each rover has its own job, it gives us information to help conclude if life is possible here.

hematite¹: mineral with iron oxide. Can be used for protection and stability.

January 3, 2024

What does NASA think?

↳ NASA says that Mars does not have plate tectonics like Earth

↳ They say that the atmosphere has changed a lot

↳ Don't expect to find living life, but are looking for past life

↳ Has been guessed that there were many forms of water

Home to one of the biggest volcanoes in the solar system: three times larger than Mt. Everest.

Environmental Changes

↳ Post

↳ Volcanic eruptions, dust storms, impact craters, crustal movements

↳ Recent

↳ Water Ice can be found under the surface. Climate change, dust storms.

Events on Mars

↳ Mostly repeated in previous slides

↳ More results the more rovers send back information.

Human Knowledge & Needs

↳ Oxygen

↳ Costly to transport from planet to planet

↳ Water

↳ Can be found underneath surface

↳ Spacesuits

↳ As dust is common, need to protect self

↳ Shelter

↳ Protection

Pros

- Mars has about 24 hours in a day, like Earth
- Water ice can be found on the surface
- Advances in technology because it will need to help humans get around on the planet
- Can learn to thrive on what we have

Cons

- Long time to get from here to Mars (about eight months)
- Oxygen shortage
- Freezing
- Starving
- Thirst
- Cost being up to 500 million US dollars or more
- Humans have never been to Mars before. New Experience.

January 5th 6, 2024

two weeks and a half

Conclusion

Life on Mars is definitely possible because of water availability. If we tried we can make other needs possible too. More information can lead to higher possibilities. About 10 years for it to actually (maybe) happen.