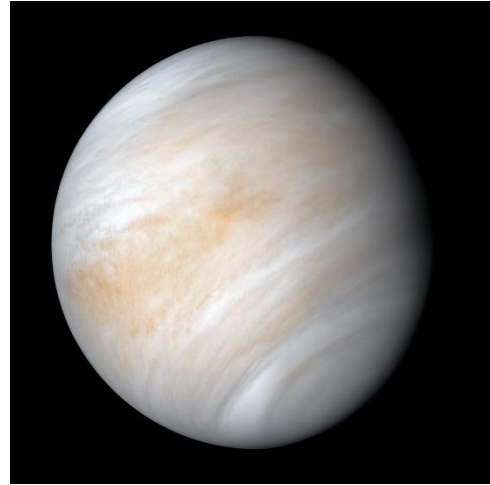


Venus: More than Meets the Eye

Though scientists have long theorized that life may have existed under Europa's frozen waters, or even on ancient Mars, it was always considered very unlikely that life may be found on Venus. This assumption is not unfounded, as the high density, heat, and runaway greenhouse effect, has made it difficult to even send probes to the surface of that world.

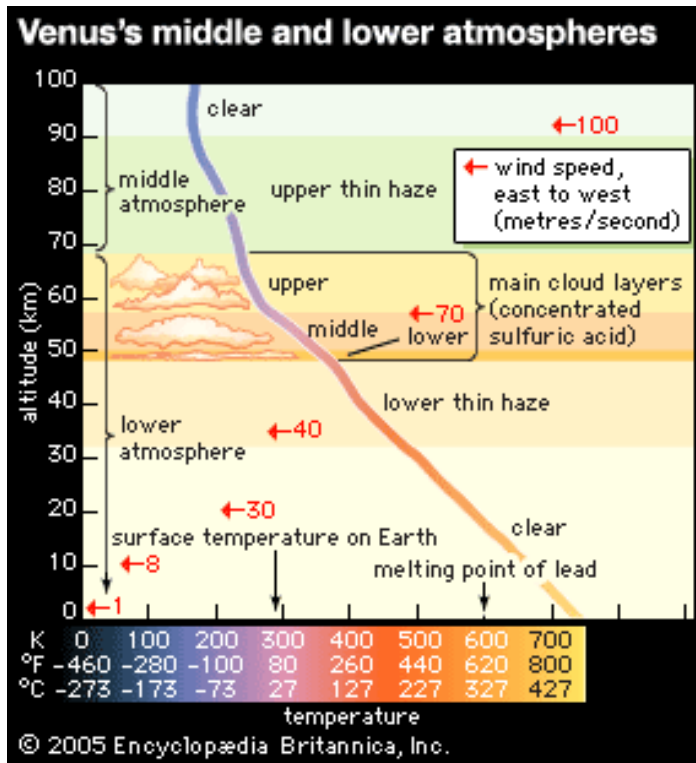


Photograph of Venus

Venus' surface temperatures can reach up to 880°F (471°C) and the surface density is thought to be 95 times the density found on Earth. This high density is the result of the large amounts of Carbon Dioxide (CO₂) found in the atmosphere. The magnetic sphere that surrounds the planet is also noticeably weaker than Earth's, which means Venus is more susceptible to cosmic rays.

However, despite the inhospitable environment found on our neighboring planet, it seems life may have found a way. On September 14, 2020 Jane S. Greaves and her team detected phosphine gas (PH₃) in Venus' atmosphere. While this gas can be created by volcanoes or as of yet other unknown abiotic sources, the high amount of it ~20 parts per billion (ppb) seems to optimistically point to alien life. This is because some microorganisms on Earth produce phosphine gas, and it is also produced by some industrial processes.

Layers of Venus' atmospheres



This is not the first time that scientists have speculated that life may exist on Venus. In the early 2000s some scientists speculated that specialized extremophiles could live in Venus' clouds and a 2018 article from "Astrobiology" suggested that the active volcanoes on Venus could serve as a fuel source for any life found on the planet.

With that in mind, the alien life that might be found in Venus' atmosphere

would most likely be microbial in nature. It is not that unusual to find microbes living in inhospitable environments. Nature is more resilient than one might originally think, as can be seen with Tardigrades (water bears) who can live 30 years without food or water, or even in the unforgiving environment of space; and extremophiles that can make their home in some of Earth's most extreme habitats like near active volcanoes or in the freezing depths of the ocean.

More research is needed to confirm whether Venus contains alien life; but regardless this is a very exciting time for many studies including astrobiology, astronomy, chemistry, physics, etc. The increased implications of life on Venus could further justify colonizing it. NASA already has some plans on how to create colonies on Venus- instead of landing on the deadly surface, floating "cloud cities" (more formally known as HAVOC, High Altitude Venus Operational Concept) could be the answer. These platforms would float in the habitable part of Venus' atmosphere where temperatures are at 158°F (70°C) which, with advanced heat resistant technology, is slightly more bearable for humans to live

in. HAVOC as pictured below will come equipped with solar panels, fins, atmospheric habitat, propulsion and ascent vehicles.



Concept of HAVOC ships

Having a stable colony on the planet could help further studies of the possible microbes in the alien atmosphere and help us reach a greater understanding of humanity's place in the universe.