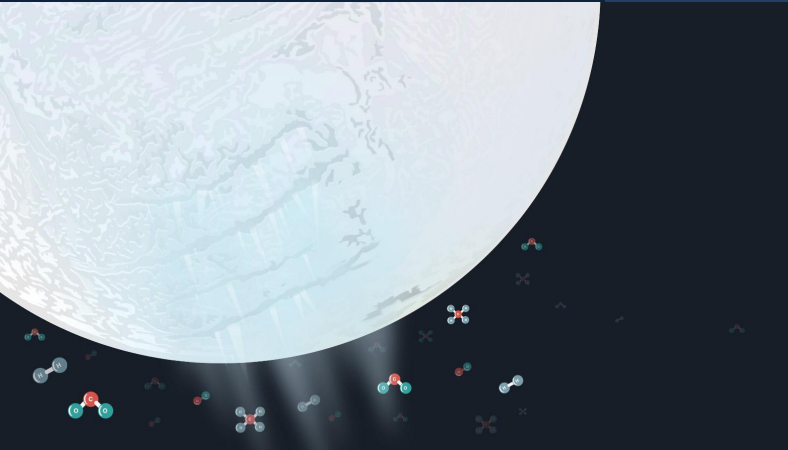


Atmosphere Exchange & Signs of Life

A recent study aimed to answer the question: Could the exchange of chemicals between two exoplanets be mistaken for signs of life when observing one of them?

- The team of researchers modeled exoplanet atmospheres and simulated how they would look when observed with the James Webb Space Telescope (JWST) or next-generation space telescopes.
- Researchers specifically simulated cases where oxygen atoms entered the top of the atmosphere, as this process is observed on Titan and could potentially lead to the accumulation of oxygen and ozone - potential biosignatures - in the atmosphere.
- Results showed that methane could survive this oxygen influx, but that oxygen and ozone could not build up to detectable levels. Thus, if a rocky planet is seeded with water or oxygen from external sources, **it is unlikely that this could be mistaken for signs of life when observing with JWST and next-generation space telescopes.**



Saturn's moon Enceladus with cryovolcano plumes spewing organic compounds out into space. Image credit: NASA/JPL-Caltech

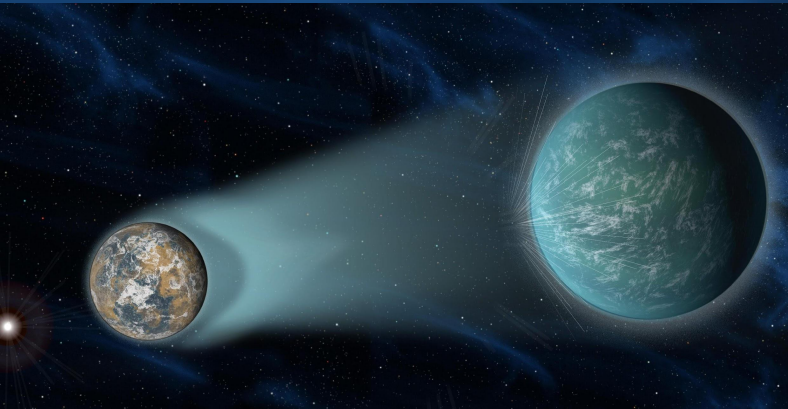


Illustration of TRAPPIST-1 d losing its atmosphere due to stellar activity and raining down onto TRAPPIST-1 e. Image credit: NASA/GSFC Jay Friedlander.