# Impact of Clouds and Hazes on Characterization of Exoplanets

Understanding the impacts clouds or hazes have on the ability to characterize the atmospheres of exoplanets will help our ability to understand their habitability.

- Simulations of the behavior of exoplanet atmospheres in the TRAPPIST-1 system show that clouds and hazes strongly absorb and scatter near infrared light (see figure).

- Since infrared light transmission spectroscopy is one of the most important tools scientists have for determining the composition of an exoplanet's atmosphere, the reduced sensitivity of this technique in the presence of clouds and hazes means that planets orbiting M class dwarf stars may be difficult to characterize with future observatories.
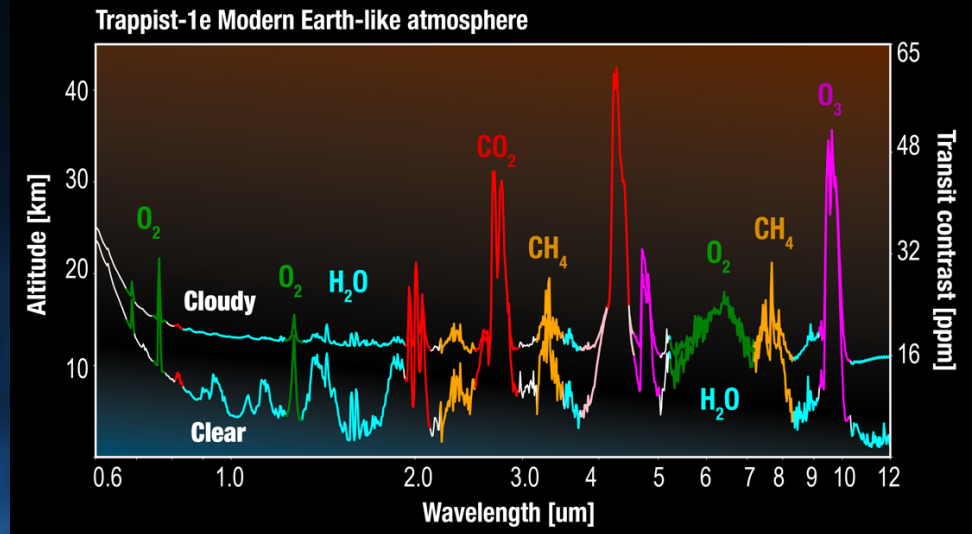
Simulated infrared transmission spectra of the TRAPPIST-1e exoplanet atmosphere as seen by the James Webb Space Telescope. Note that the spectral peaks are much smaller for the cloudy atmosphere (top) than in a clear atmosphere (bottom).

- The study of the composition of an exoplanet's atmosphere provides crucial clues about whether the exoplanet could support life as we understand it. Determinations of the effectiveness of measurement techniques will contribute to the search for life elsewhere.

Fauchez et al. (2019) The Astrophysical Journal