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Stability of Exoplanetary Atmospheres in Contact with Liquid Water HECTOR DELGADO DIAZ, EDWARD REZAYI, California State University, Los Angeles — Kepler, K2, and ground-based telescopes have detected around 3,750 exoplanets with characteristics incomparable to the planets found in our Solar System. However, there are about 10 medium and small exoplanets that sparked interest in continuing to study their atmospheres. The type of planets of interest are rocky planets, which are dependent of the atmospheric conditions in order to be habitable. We will focus in two atmospheric scenarios known to lead to future habitability of the planet: H_2/He dominant atmosphere and secondary atmosphere ranging from N_2 to CO_2. Furthermore, the exoplanet would consist of large bodies of water (i.e. oceans), which played an important role in the evolution of life on Earth. We will determine the stability of nitrogen-containing compounds because it is hypothesized that NH_3, HNO_3, and HNO_4 can be loss due to their solubility in water and thus, depleting the nitrogen from the atmosphere. Molecules such as N_2, NH_3 are important because they are greenhouse gases that maintain the planet's temperature above the freezing point of water. The lifetimes and long-term stability will be determine using an advance atmospheric chemistry and radiative transfer code (Hu et al. 2012) written in C and the graphs will be plotted using MATLAB. No preliminary results have been achieved This research is important because understanding the atmospheric scenarios that can produce a habitable planet are needed to guide and maximize the efficiency of the future space missions of exoplanet surveys.

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