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Oral
(Student Speaker)
The MAVEN (Mars Atmosphere and Volatile Evolution) satellite began its orbit around Mars in September 2014 and has since been measuring many atmospheric phenomena. MAVEN is the first mission to study the Martian upper atmosphere, with the central motivation of achieving a greater understanding of both climate change and the factors that govern planetary habitability. The LMD Mars GCM (Laboratoire de Météorologie Dynamique Mars Global Circulation Model) simulates the Martian atmosphere from the surface to the exobase, including the chemistry of the atmosphere and physical processes such as winds, dust storms, and clouds. An intercomparison of LMD Mars GCM simulations and MAVEN observations is integral to understanding the forces driving atmospheric loss from Mars. Comparisons between MAVEN observations and global models are used to validate our understanding of both the dynamics and chemistry that drive diurnal, seasonal, and latitudinal variability in the Martian upper atmosphere. It is important for us to understand the chemistry and dynamics driving the evolution of the Martian atmosphere to better understand the habitability of both planets in our solar system and exoplanets. Studying how both the absolute amounts and relative abundances of various atmospheric species in the Martian upper atmosphere have changed over time provides insight into the processes driving atmospheric loss.
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