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Oral
(Invited Speaker)
A complete theoretical understanding of exoplanetary atmospheres is critical for predicting the nature of their climates and for interpreting spectra observed from current and future instruments. While specialized models can allow for detailed simulations of a single process at a time, 3D climate system models allow for a "good-enough" simulation of many interconnected physical processes simultaneously, allowing for a self-consistent coupled model of the atmosphere, ocean, land, and surface ice. In this talk I will discuss recent applications of 3D climate system models towards understanding terrestrial exoplanets, their potential for habitability, and their prospects for observation. At present numerous groups are using open-source community supported climate models to approach these problems with incredible realism. Evidence is mounting, both from theory and observation, that the road to exoplanet characterization goes through clouds and aerosols. Understanding exoplanet clouds, hazes, and their relationship to transmission and emission spectra will be a critical field of research over the next decade, and one where 3D climate models are poised to make useful contributions.
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