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# What can we learn from atmospheres of transiting low-mass exoplanets as a stepping-stone towards habitable planets ?

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## Abstract

Transit observations with the Kepler space telescope revealed that planets smaller than Neptune are much more abundant than gas giants beyond our Solar System. The observed mass-radius relationships for such small planets are known to be diverse, which may mean that the amount of the atmospheric gas differs from planet to planet. Also, recent observational characterization of atmospheres of some transiting low-mass exoplanets suggests that the atmospheric composition is also diverse. Thus, understanding the diversity of atmospheres of transiting low-mass planets and their origins must be a key to predicting possible diversity of planets in habitable zones. In this paper, I will overview recent theories of the formation and evolution of planetary atmosphere. I will also discuss what we can learn from on-going and future observations for characterizing transiting planet atmospheres.

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