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Origin and Evolution of Planetary Atmospheres

Implications for Habitability

- ▶ Offers a concise discussion of origin and early evolution of terrestrial planet atmospheres during the active phase of their host stars
- ▶ Provides insights in the conditions under which Earth-like planets could be habitable
- ▶ Compares thermal and nonthermal atmospheric escape processes in solar system planets and exoplanets

Based on the author's own work and results obtained by international teams he coordinated, this SpringerBrief offers a concise discussion of the origin and early evolution of atmospheres of terrestrial planets during the active phase of their host stars, as well as of the environmental conditions which are necessary in order for planets like the Earth to obtain N₂-rich atmospheres. Possible thermal and non-thermal atmospheric escape processes are discussed in a comparative way between the planets in the Solar System and exoplanets. Lastly, a hypothesis for how to test and study the discussed atmosphere evolution theories using future UV transit observations of terrestrial exoplanets within the orbits of dwarf stars is presented.



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