

EPSC Abstracts

Vol. 18, EPSC-DPS2025-1372, 2025, updated on 14 Jun 2026

<https://doi.org/10.5194/epsc-dps2025-1372>

EPSC-DPS Joint Meeting 2025

© Author(s) 2026. This work is distributed under the Creative Commons Attribution 4.0 License.



Sulfur Dioxide Outgassing and Its Atmospheric Impacts Across Habitable Zone Exoplanets

Robert Washington

Howard University, Atmospheric Science, United States of America (rWASHINGTON398@gmail.com)

With the growing diversity of detected terrestrial exoplanets, understanding their evolutionary pathways is essential for characterizing and categorizing these worlds. Sulfur dioxide (SO_2), a gas commonly produced by volcanic and biological activity on Earth, has significant implications for the atmospheric and surface conditions of terrestrial exoplanets. In this study, we present three vertical mixing ratio grids for SO_2 , each representing different planetary scenarios within the middle and outer habitable zones. For each case, we explore the relationship between atmospheric SO_2 abundance and water liquid or vapor content. We further vary the SO_2 outgassing rate to examine its dependence on water availability and stellar type, providing insight into potential observables for upcoming missions such as JWST and HWO. Finally, we discuss how these grids can inform sensitivity requirements for future UV spectroscopy instruments aimed at characterizing exoplanetary atmospheres.