

EGU2020-20786

<https://doi.org/10.5194/egusphere-egu2020-20786>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Infiltration rate in unsaturated glass beads porous media under various gravity made by parabolic flight.

Naoto Sato¹, Yuichi Maruo², Kento Nogawa², Natsumi Naganuma², and Kosuke Noborio³

¹Organization for the Strategic Coordination of Research and Intellectual Property, Meiji University, Japan
(midorinonaoto@yahoo.co.jp)

²Graduate School of Agriculture, Meiji University, Japan

³School of Agriculture, Meiji University, Japan

The Global Exploration Roadmap targets the realization of Mars manned exploration by the 2030s. It is necessary to understand water movement in porous media under microgravity to establish a plant growth system for crop production for astronauts to produce food in outer space. In previous researches, a decrease in infiltration rate was reported for coarse (1.5 mm diameter) glass beads porous media. On the other hand, in the case of fine (0.4 mm diameter) glass beads porous media, the amount of reduction in the infiltration rate was small. We wanted knowledge of water movement under partial gravity conditions. We conducted water infiltration experiments under microgravity, 1/6G, and 1/3G conditions made by parabolic flights. The 0.2, 0.4, and 0.6 mm glass beads were used as porous media. The effects of particle size and partial gravity on water infiltration in porous media will be discussed.