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Water trapped at lunar regolith

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We simulated the behavior of water in lunar regolith, and examined if water could be trapped for a long term. The situation for our simulation corresponds to the lunar surface shined by the Sun at noon, whereas the situation at permanently shaded areas is simulated by Schorghofer1 and Taylor (2007). Transportations of heat and water vapor could be expressed by similar-form equations, namely the diffusion equations. We observed condensation of ice at the deep part of the regolith, at latitudes higher than 84o. Our results indicate that water could be trapped at >10 cm depth layer of the lunar regolith. The trapped water could correspond to the ”hidden” water resource at lunar surface, which is not visible by remote-sensing observation.

Keywords: moon, regolith, water, simulation