Moisture movement in sand during evaporation under reduced pressure

*Masaru Mizoguchi[1]

1. Graduate school of Agricultural and Life Sciences, The University of Tokyo

In order to investigate the mechanism of moisture transfer in the basement of Mars, experiments were conducted to measure the moisture, temperature, and salt distribution in the sand column during the vacuum evaporation process. As a result, it was found that the sample freezes at low salt concentration while it does not freeze at high concentration. In addition, we found that the salt moves to the surface layer with liquid water movement, and that the higher the salt concentration, the higher the evaporation amount. These results may relate to phenomena such as drying accompanied by evaporation under reduced pressure, freezing due to latent heat loss, crust formation due to salt concentration and freezing point depression.

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