

Mars activities investigation by the MELOS mission

Seiji Sugita[1]; Hideaki Miyamoto[2]; Shogo Tachibana[3]; Kiyoshi Kuramoto[4]; Eiichi Tajika[5]; Yutaka Abe[6]

[1] Dept. of Complexity Sci. & Eng., Univ. of Tokyo; [2] The University Museum, Univ. Tokyo; [3] Earth and Planet. Sci., Univ. of Tokyo; [4] Cosmosci., Hokkaido Univ.; [5] Dept. Earth Planet. Sci., Univ. of Tokyo; [6] Earth Planetary Sci., Univ. Tokyo

Ancient Mars may have possessed a warm and wet surface environment, closest to the current Earth among our solar system. The emergence and disappearance of such surface environment are among the most important unsolved issues in planetary science. Although many spacecrafts have been sent to Mars to answer this question about its surface environment, it has not been fully answered. This is probably the largest reason why we need to send more space probes to Mars. In this talk, we review the current understanding of Mars surface environmental history focused on circulation of volatiles among the atmosphere, crust, and mantle via volcanic activities, chemical alteration, sedimentation, and meteoritic impacts. The review will cover both key observational facts and prevailing hypotheses, and discuss what are the most effective observational quantities in order to resolve this question.