

Climatic variation on Mars as seen from the polar region layered deposits

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In the study of paleoclimatology on the Earth, relationship between time variations of various measure obtained from the ice core from the Antarctic and those of insolation due to change of Earth's rotation orbit and/or rotational axis is usually employed. In case of Mars, it has also been pointed out that there is a strong correlation between variations of the insolation in the north polar region on Mars at the summer solstice in the past and altitude changes of the brightness of layered deposits imaged in the north polar region [Laskar et al., 2002]. Similar method was applied to the south polar region on Mars [Moroi et al., 2008]. However, there were still few examples of this kind study, and only subjective evaluation was made in the correlation analysis. In the present study, we aim to improve the correlation by increasing the number of examples.

In this study, optical image data of Mars Orbiter Camera (MOC) on board Mars Global Surveyor, as well as those of High Resolution Imaging Science Experiment (HiRISE) and altitude data on Mars Reconnaissance were employed. Optical image data in the south polar region that show bright and dark structures in vertical direction were analyzed and distribution of those structures were examined. In the presentation, correlation among the variation of brightness of the layered deposits of different locations on the south polar region on Mars will be discussed.

Keywords: Mars, layered deposits, ice sheet, insolation, south polar, MRO