

## Climate history on Mars as seen from the polar layered deposits

Kyotaro Akisato<sup>1</sup>, Shoichi Okano<sup>1\*</sup>

<sup>1</sup>Plan. Plas. Atm. Res. Cen., Tohoku Univ.

The layered deposits that consisted of ice and dust in the polar cap of Mars were discovered by Martian exploration in recent years. As for the periodicity of the layer structure, it is pointed out that there are insolation variation and relativity. It is known well that the insolation variation is the most important element that causes the climatic variation. Such relativity is confirmed by the ice core of Greenland and the South Pole in the Earth, and is used as an index of a past climatic variation in paleoclimate study. If similar study can be done in Mars, it becomes possible to examine a past climatic variation of Mars. On the other hand, in the Mars north pole, it was pointed out that there was a strong correlation in the change of a perpendicular direction of the radiance of the layered deposit seen from the image that showed the valley and in a past insolation variation of an Arctic summer solstice in the north polar region [Laskar et al., 2002]. Moreover, a past climatic variation is examined also in the Mars South Pole by a similar technique [Moroi et al., 2008]. However, these examples of analyzing that were not still enough and evaluated only subjective correlation. Then, the present study aimed to improve the positive proof of the relativity of the radiance change of the quantity of insolation variation of Mars and the layered deposit by expanding the analysis example.

The present study used the optical imagery obtained by High Resolution Imaging Science Experiment(HiRISE) of Mars Orbiter Camera(MOC) of Mars Global Surveyor and Mars Reconnaissance Orbiter and the altimeter data obtained by Mars Orbiter Laser Altimeter(MOLA). The optical imagery analyzed mainly the point with geographical features in the cliff etc. where seeing the layer structure in the Mars South Pole, and the altitude difference were large. Moreover, the distribution situation of the resembled layered sediment was examined by comparing the layer structures.

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Keywords: Mars, South pole, layered deposits, climate, polar, insolation