

# **The spatial and time distribution of Martian Cryptic Region from Mars Orbiter Camera**

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The distribution of the Martian south polar cap is not symmetric during the springtime retreat. On the opposite side of the residual cap a so-called cryptic region is found between latitudes 750 and 850 and longitude 1500 W and 3100 W. A major puzzle about the cryptic region is that the albedo appears almost as dark as the bare ground but the surface temperature still remains cold. The area occupies the same area from year to year. There are several special surface features in the cryptic region, for example, spider ravins, fans, and Dalmatian spots according to the MOC observations. It is also unique in the thermophysical properties compare with the rest of cap from the TES and IRTM data. It is darker and slightly warmer than the rest of polar cap. Use 15-micron atmosphere band of the TES shows that the cryptic region has less spectral contrast than the rest of polar cap. The formation of these surface features might be controlled by the seasonal evolution of the surface ice layer. For example, one possible explanation of the formation of cryptic region is that dust grains embedded in the condensed CO<sub>2</sub> slab would sink to the bottom under heating by solar radiation. For transparent ice slab the surface temperature will be kept low while the bottom layer of accumulated dust will lead to a low albedo. It means that the cryptic region may be composed of ice mainly according to this model.