



Study on the Escaping Ratio of Ions from Mars Atmosphere

J.K.Shi,S.Z.Wu,Y.H.Liu,Z.X.Liu

Center for Space Science and Applied Research, Chinese Academy of Sciences,
Beijing,100080, China (jkshi@center.cssar.ac.cn/0086-10-62534546)

There is a view that the Martian moment is gradually decreasing from ancient to present. So the ions escaping in Martian atmosphere become gradually stronger and stronger since some ancient time. In this study, a model is developed to study the distribution of the ions along the magnetic field line and the ions escaping ratio in the atmosphere of the Mars with different assumed intrinsic moment. Intensity of the magnetic field is calculated by considering the Martian magnetic field consisting of a dipolar intrinsic field which has different moments and a tail-like induced field. The results show that: (1) the ions density and flux along the field line in Martian magnetosphere decreases when Mars-central distance increases; (2) with increasing distance from equatorial plane in the Martian magnetotail, the ions density and flux is decreasing first, and then increasing; (3) the larger the Martian magnetic moment is, the more quickly the ions density and flux decrease with the increasing of Mars central distance; (4) the ion density and flux in Martian magnetotail increases with the decreasing of intrinsic moment, so is the ion escaping ratio. The results are significant for studying the water lost from the Mars.