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The distribution of the ion number density over the crustal magnetic field on Mars

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Mars atmosphere interacts with solar wind directly without the dipole magnetic field. The observation by Mars Global Surveyor (MGS) revealed that the Martian crustal magnetic field is as strong as over 100nT at 400km altitude. In this study, the crustal magnetic field effect on the ion number density distribution is investigated by the statistical analysis.

The ion number density distribution obtained by the ion mass analyzer onboard Mars Express is shown. The available data term is from March 2004 to March 2006. The observed ion number density increase is shown in the magnetosheath as the motional electric field is southward and the dayside crustal magnetic field is strong. To examine this raise of the ion number density, the relation of the oxygen beam events and the crustal magnetic field location is investigated. In the result, we study the effects of the crustal magnetic field on the atmospheric erosion.