

## HUMAN EXPLORATION OF THE SOLAR SYSTEM SYMPOSIUM (A5)

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NIGHTSIDE MARTIAN IONOSPHERE PRODUCED BY ELECTRON PRECIPITATION UNDER  
DIFFERENT CRUSTAL FIELD CONDITIONS**Abstract**

Based on the Martian magnetic field model established by magnetohydrodynamics simulation, we determine the possible precipitation areas of the solar wind and magnetotail electrons in the nightside Martian atmosphere, and analyze the electron impact ionization to estimate the height of the nightside Martian ionospheric peak and the electron density profile using the energy flux analysis method. The influences of the single electron energy, electron energy density and ionization efficiency on the altitude of the ionospheric peak and the electron density profile are also investigated. When Martian subsolar is corresponding different longitude and latitude, because of its spin with 25.19, we get different distribution of magnetic crustle, which leads to changing the energy of precipitation electrons and precipitation area a lot. It leads to smaller precipitation area, latitude increased, energy of precipitation electron decreased that strong crustle is back to the sun. And vice versa. Martion spin leads to changes over time of nightside ionosphere, the altitude of the ionosphere peak is fluctuate within a range of 150-200km, and the peak electron density is fluctuate within a range of  $1-6 \times 10^3 \text{cm}^{-3}$ .