Atmospheric escape from Mars: Observations by Mars Express

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Atmospheric escape is one major interest of Mars. While ancient Mars is thought to have possessed a wet atmosphere, present Mars has not. One plausible idea is that the Martian atmosphere has lost its atmosphere over geological time period.

Even though there are several escape mechanisms, plasma outflow caused by solar wind forcing is one major source of the escaping. Understand present outflow flux and its dependence to the external conditions (solar wind parameters, flux of energetic particles, EUV flux, X-rays, and so on) will enable us to establish theoretical and/or numerical models of the plasma outflow. These models are useful to retrograde in the past with geological time scale to estimate total flux of the outflow from Mars.

This talk gives a review of the present knowledge of Martian atmospheric escape based on the latest observations by ASPERA-3 on board Mars Express. We also plan to propose ideas of the observations which should be conducted in the near future.