

**EVOLUTIONARY ASPECTS OF THE MARTIAN ATMOSPHERE: ASPERA-3 ON MARS EXPRESS**

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Mars is continuously subject to atmospheric scavenging by the direct impact of solar wind plasma on the topside atmosphere. This scavenging process is known to be significant, depleting the present atmosphere at a rate corresponding to a total depletion in about 108 years. A possible source of replenishment, maintaining the existing atmosphere, may be subsurface deposits of volatiles, deposits that the NASA MGS has proven exists. This also raises the question about the higher abundancy of volatiles that existed in the past. Is the main reason for loss of the martian atmosphere and hydrosphere indeed due to the solar wind interaction? An important science objective of the ESA Mars-Express mission is to study the solar wind interaction with the martian atmosphere using besides plasma measurements also energetic neutral atom (ENA) imaging. These two techniques will make it possible to study the outflow locally (plasma) as well as globally (ENA imaging). The objective is to provide a much improved quantitative measure of the loss from the martian atmosphere.