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Indications of plasma instabilities near Mars

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It has been suggested in the literature that the Kelvin-Helmholtz instability can be responsible for significant ion loss at Mars through the detachment of ionospheric plasma clouds.

Clouds of detached ionospheric plasma were observed at Venus by the Pioneer Venus orbiter. The conditions at Mars differ somewhat from those at Venus. The ratio between the ion gyro radius and the radius of the planet is larger at Mars than at Venus, since Mars is a smaller planet and the solar wind magnetic field is weaker at Mars than at Venus. It is therefore interesting to study instabilities at Mars and to compare the results from Mars with those from Venus.

We search the ASPERA-3 data for signatures of instabilities at Mars, in particular looking at the magnetosheath and the induced magnetosphere boundary.