



*Journal of Geophysical Research - Space Physics*

Supporting Information for

**5-species MHD Study of Martian Proton Loss and Source**

Wenyi Sun<sup>1</sup>, Yingjuan Ma<sup>1</sup>, Christopher T. Russell<sup>1</sup>, Janet Luhmann<sup>2</sup>, Andrew Nagy<sup>3</sup>, and David Brain<sup>4</sup>

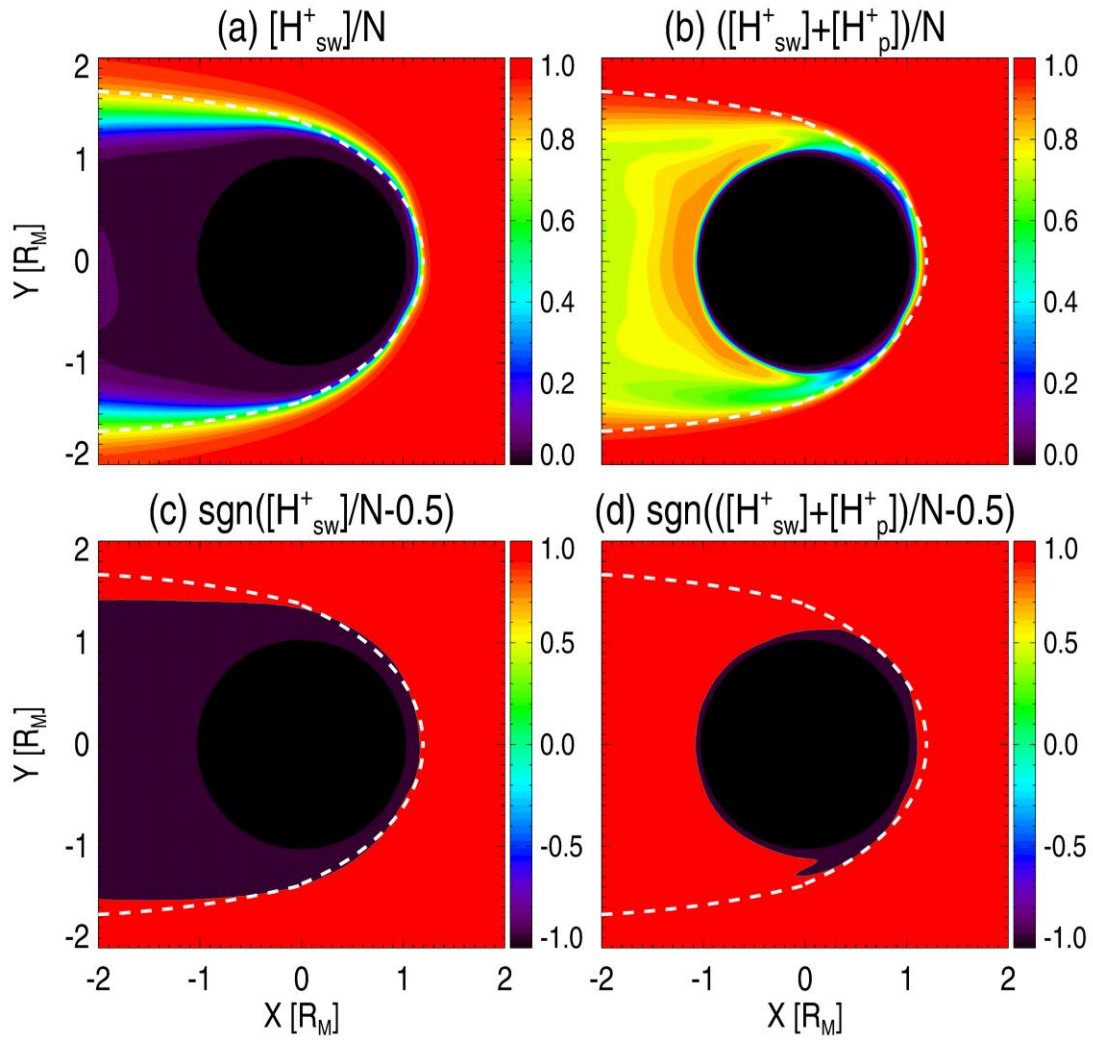
1 University of California, Los Angeles. 2 University of California, Berkeley. 3 University of Michigan, Ann Arbor. 4 University of Colorado, Boulder

**Contents of this file**

Figures S1

**Introduction**

This supporting information provides a figure showing the comparison of the ion composition boundary locations between the model and observations.



**Figure S1.** Density ratios in the X-Y plane at solar min (case 5). (a) the ratio of solar wind density over total ion density. (b) the ratio of proton density over total ion density. (c)(d) the sign of the above ratios minus 0.5. Red indicates the plasma is dominated by (c) solar wind or (d) protons; Black indicates that the plasma is dominated by (c) planetary ions or (d) heavy ions. The white dashed lines are the nominal ICB location derived from MAVEN observations (Halekas et al., 2018), mainly during solar minimum.