

Review: *Terrestrial exospheric dayside H-density profile at 3-15 Re from UVIS/HDAC and TWINS Lyman- α data combined*

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Referee: J. D. Perez

General Comments: This paper describes original analysis of interesting data and should be published. The challenge of obtaining quantitative information regarding the exospheric dayside H-density profile is illustrated. Nevertheless as noted in the next section of this Review, a more complete description of the models and the theoretical explanations of the differences would more effectively communicate the significance of the results..

Scientific Questions/Issues:

Line 18-21 and Line 263-265: Authors suggest that the faster radial H-density decrease found at distance above $8 R_E$ may be due to a higher rate of H ionization in the vicinity of the magnetopause because of increasing charge exchange interactions outside the magnetosphere. It would be interesting if they could offer a plausible explanation for this increase.

Line 145-149: A more extensive explanation of the heritage and differences of the 2 models used for the data analysis would add to the significance of the reported results.

Line 218-220: An explanation, perhaps brief, of the theory would enhance the paper.

Line 244-245: This statement would be more meaningful if there were some “description” of the Chamberlain model.

Technical Corrections:

line 57: increase -> increases

Line 224-225: A reference to the 20% number would be appropriate.

Line 230: The “other studies” might be referenced or at least described.

Figure 4 has a description that refers to a “black line”. There are black squares but no black line.

Throughout the manuscript, separating introductory clauses from the main sentence by a comma would make reading the manuscript much easier, e.g., line 115, 120, etc.