Supporting Information for

"Properties and geoeffectiveness of solar wind high-speed streams and stream interaction regions during solar cycles 23 and 24"

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Contents

1 Introduction

The supporting information to this paper consists of the list of the 588 solar wind high-speed stream (HSS) events detected during 1995–2017 using the algorithm described in the paper (as a text file), as well as seven figures illustrating the comparison of the HSS events detected by the algorithm with existing lists.

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2 Figures S1 to S7

2.1 Figure S1: Comparison with Mariș et al. list

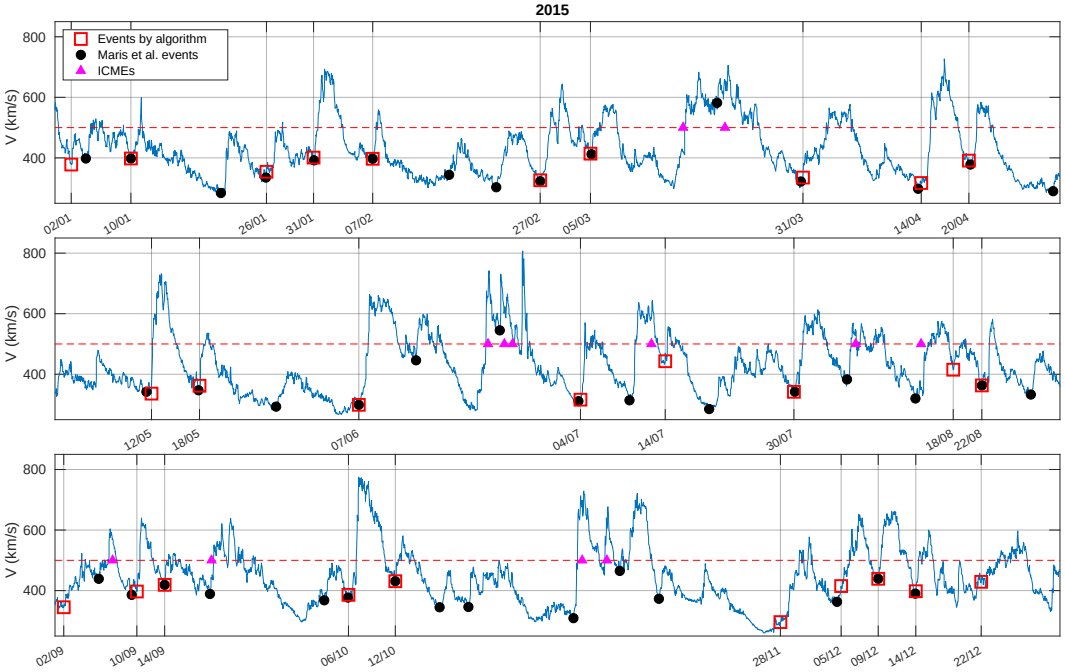

Figure S1. High-speed stream events during 2015: Comparison between the algorithm (orange squares) and the list by Mariș et al. (black circles). The blue line shows the time series of the solar wind velocity, while the red dashed line indicates the threshold of 500 km/s retained in the algorithm. Magenta triangles indicate ICMEs with speed greater than 500 km/s from the Richardson and Cane list, and orange arrows show the four HSS events detected by the algorithm which are not present in the Mariș et al. list.

2.2 Figure S2: Comparison with the *Gupta and Badruddin* (2010) list

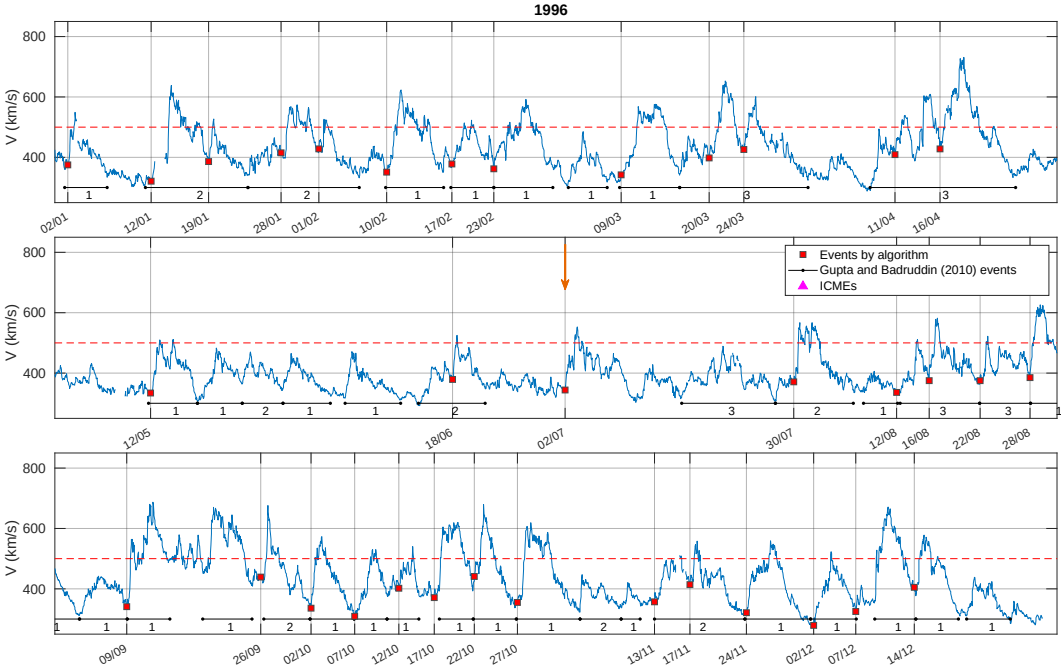

Figure S2. High-speed stream events during 1996: Comparison between the algorithm (orange squares) and the list by *Gupta and Badruddin* (2010) (horizontal black lines indicating the time span of HSSs, below which the number of streams in each time period is given). The blue line shows the time series of the solar wind velocity, while the red dashed line indicates the threshold of 500 km/s retained in the algorithm. There were no ICMEs with speed greater than 500 km/s in 1996, as per the Richardson and Cane list. The orange arrow indicates the HSS event detected by the algorithm which is not present in the *Gupta and Badruddin* (2010) list.

2.3 Figures S3–S7: Comparison with the *Morley et al.* (2010) list

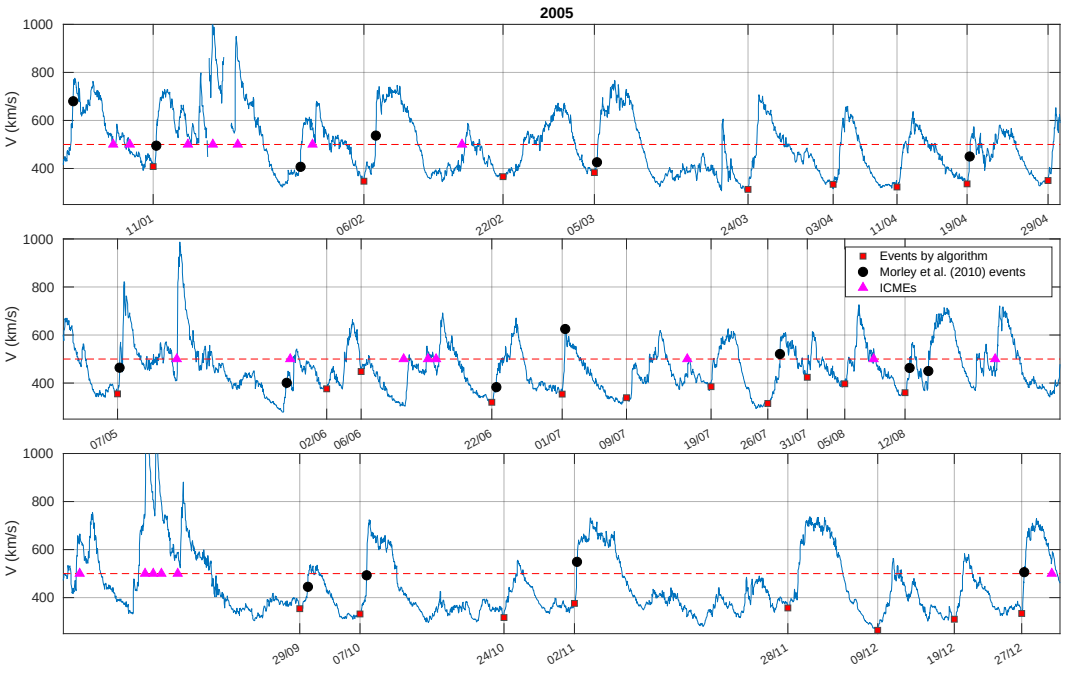

Figure S3. High-speed stream events during 2005: Comparison between the algorithm (orange squares) and the list by *Morley et al.* (2010) (black circles). The blue line shows the time series of the solar wind velocity, while the red dashed line indicates the threshold of 500 km/s retained in the algorithm. Magenta triangles indicate ICMEs with speed greater than 500 km/s from the Richardson and Cane list.

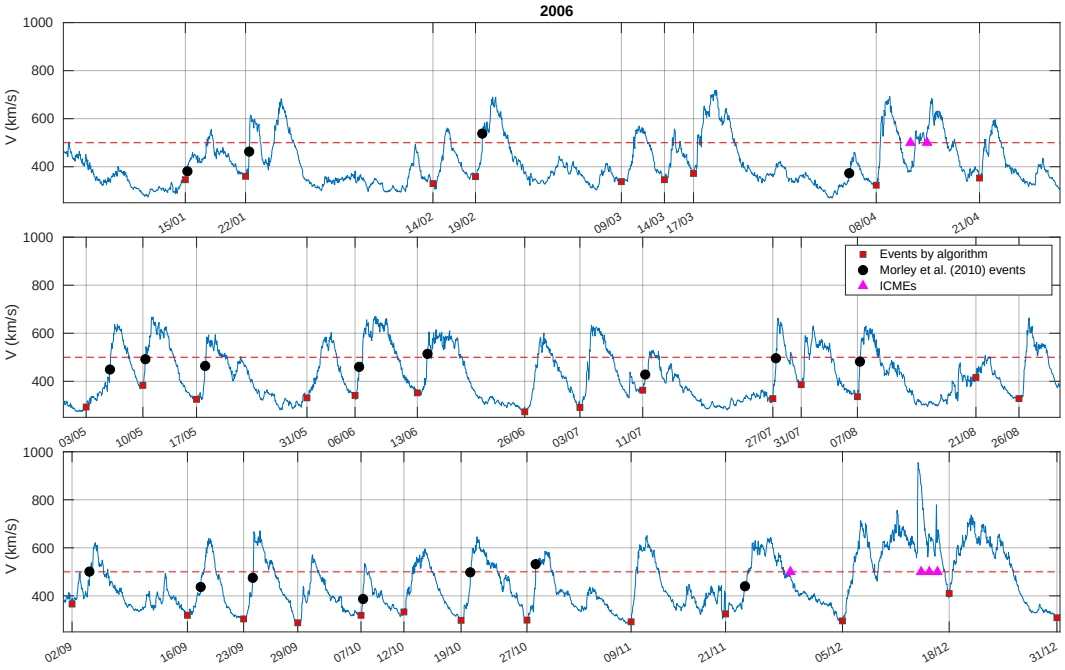

Figure S4. Same as Figure S3 for 2006.

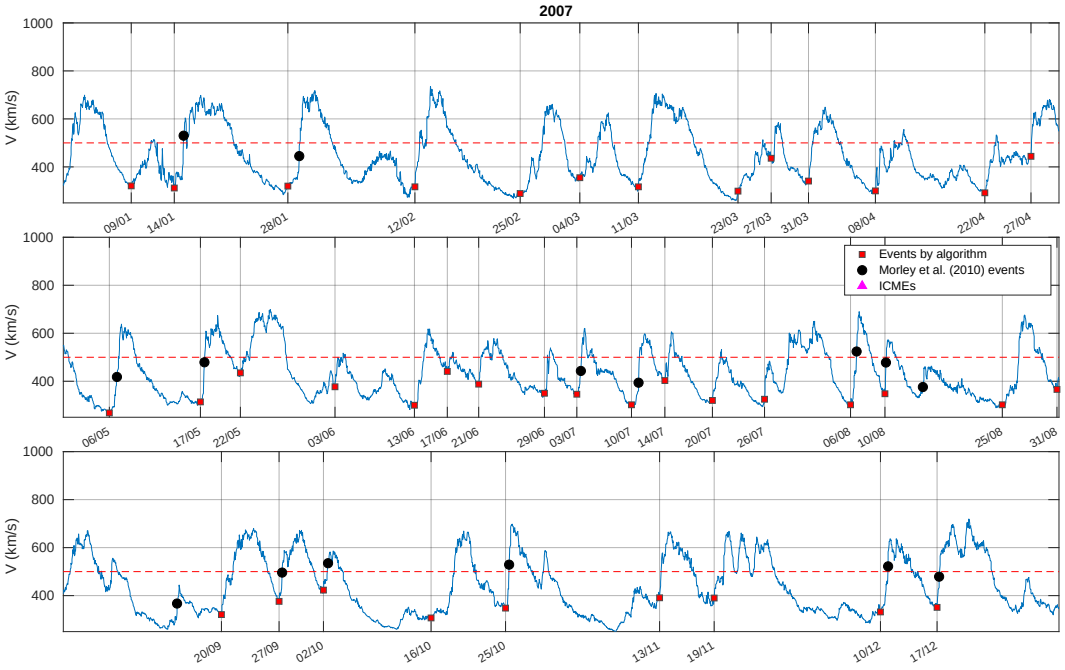

Figure S5. Same as Figure S3 for 2007.

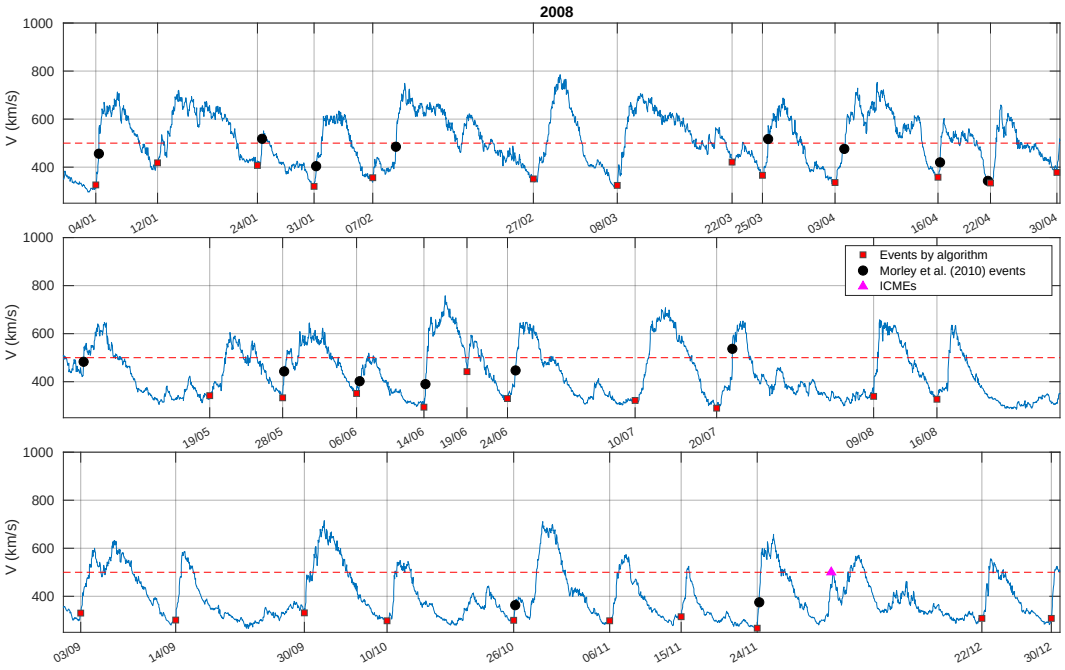

Figure S6. Same as Figure S3 for 2008.

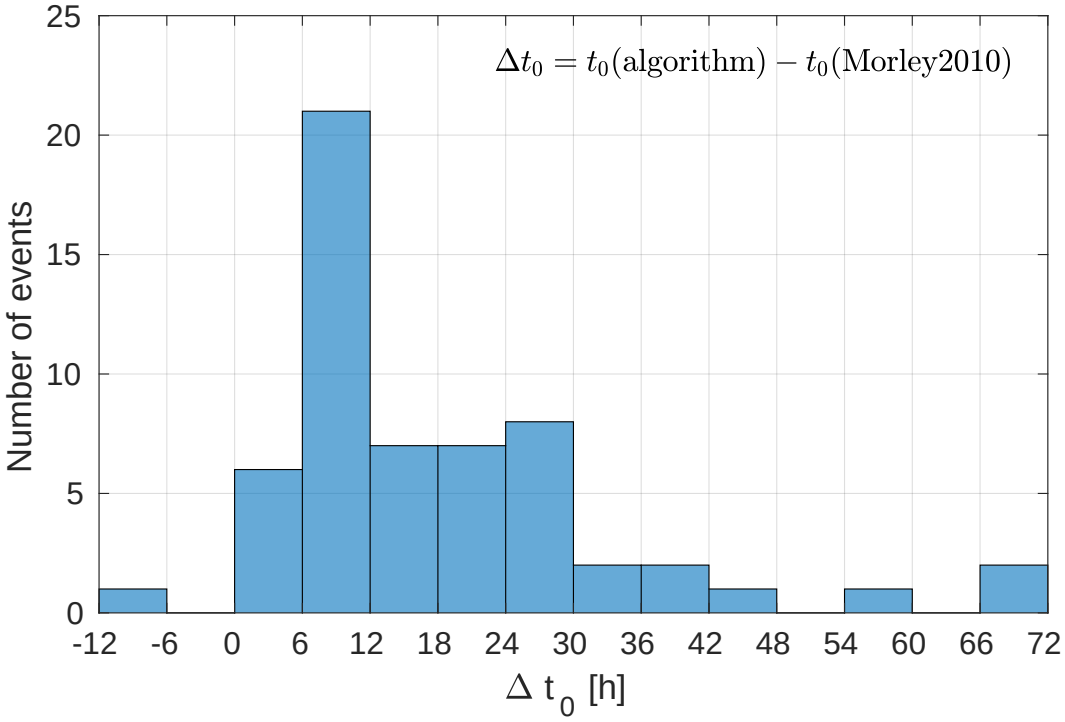

Figure S7. Distribution of the time difference between the beginning of HSS events given by the algorithm and the *Morley et al.* (2010) list, for the events common to both lists. The starting times given by *Morley et al.* (2010) correspond to the stream interfaces, contrary to the algorithm times corresponding to the beginning of the solar wind velocity increase.

3 Additional Supporting Information (Files uploaded separately)

3.1 Data Set S1: List of HSS Events

The list of the 588 HSS events detected by the algorithm during 1995–2017 was uploaded as a text file. It gives, for each event, the date and time of the beginning of the event and associated solar wind velocity, the date and time when the solar wind speed reaches its maximum value, the maximum solar wind speed value, and an end time corresponding to the first occurrence when the solar wind speed drops below 450 km/s after reaching its maximum. The last column indicates whether a slow ICME ($V_{\mathrm{max}} < 500$ km/s) is embedded in the SIR/HSS event (as per the Richardson and Cane list of ICMEs). The content of each column is described in the header of the file. All times are given in UT for solar wind propagated at the terrestrial bow shock as given in OMNI.