

Response to Referee Comments

We thank the referee for their thorough and constructive comments. We have carefully addressed each point as detailed below:

1. Section 4.1

- a. We have included an analysis of the MCL launch timing. Using an average transit speed of 300 km/s (rather than 600 km/s), we now map the MCL back to June 28, 2007. We acknowledge that the initial launch speed could have been as low as 190-300 km/s, considering the likelihood of subsequent acceleration by the HSS.
- b. We have included calculations for the MCL-SIR interaction timing. Using an estimated MCL launch speed of 250 km/s and the observed HSS speed of 600 km/s, we estimate the interaction began at approximately 0.7 AU, roughly 5 days after the MCL launch.

2. Section 4.2

- a. We appreciate the referee's observation regarding the MCL longitudinal size estimation. We have revised our analysis to include a direct calculation based on observational data. Using the 350 km/s radial speed and 12-hour detection difference, we estimate a minimum major size of 0.33 AU, which is indeed close to the STEREO-A to STEREO-B separation (0.32 AU). We have adjusted our discussion to reflect this more precise observational estimate while still acknowledging the possibility of larger actual dimensions.
- b. While we understand the referee's suggestions for enhancing Figure 8, we have chosen to maintain its current simplicity to ensure clarity of the main concepts. However, we have substantially expanded the discussion in the conclusion section to address the 'aging' process, including recent PSP and SO findings, and added considerations about geoeffectiveness implications. This expanded discussion provides the additional context suggested by the referee while maintaining the figure's accessibility.

Minor Comments

3. We acknowledge the reference formatting issue. This occurs specifically in the latexdiff compiler used to show differences and has been corrected in the final manuscript.
4. Regarding the Parker spirals in Figure 1, we chose to represent them at 600 km/s to illustrate the predominant conditions with the fast solar wind on open magnetic field lines. The MCL's more complex magnetic field geometry cannot be adequately represented by simple spiral lines, hence our choice to maintain the standard representation.

The revised manuscript includes these changes along with corrections in the abstract to better emphasize the temporal evolution of the MCL-CIR interaction and its broader implications for solar wind research.