

Interactive comment on “Magnetosheath jet evolution as a function of lifetime: Global hybrid-Vlasov simulations compared to MMS observations” by Minna Palmroth et al.

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This is an enjoyable paper to read. It has limited objectives, but it fulfills them admirably. The paper first demonstrates that the Vlasior model successfully reproduces those features of magnetosheath jets that can be observed by individual spacecraft. It then goes on to predict those aspects that cannot be observed by individual spacecraft, namely dimensions and evolution of the jets, as well as their occurrence patterns for different solar wind conditions.

I have three scientific requests for the authors and a few editorial comments. But this paper is basically ready for publication as it stands.

My first scientific request is for the authors to add one parameter to their study. They already consider densities, speeds, temperatures, and magnetic fields within the jets, but I request they add another parameter: deflection of flow away from the sun-earth line. I think it would be interesting to know if the jets maintain flow along this line as they approach the magnetopause or are deflected just like the background magnetosheath plasma flow.

My second scientific request is that the authors tell whether or not there is a difference in event occurrence patterns in their simulation results regarding location behind the quasi-parallel and quasi-perpendicular bow shock. I am expecting there would be more events in the dawn than the dusk magnetosheath for the spiral IMF orientations they simulate. Can the authors please add some words about that?

My third scientific request is that the authors tell what the vertical pressure stripes are in the magnetosheath. They are so prominent in Figure 1. What is causing them?

Line 6, page 1. Using a statistics → using statistics Line 21, Page 5. At force → in force The stars in Figure 1 are too small. Lines 5-7 on Page 10. Can the authors state a typical dimension at this point? Line 22 on Page 10. No need for 'RE' Lines 25-26. Page 10. Can the authors state that the jets appear to be disintegrating or dying by diffusion here?

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Discussion paper

