Replies to the Referee 2

'RC2: 'Comment on angeo-2021-24', Anonymous Referee 2, 19 Jul 2021

——— **General comments: The manuscript Venus's induced magnetosphere during active solar wind conditions at BepiColombo's Venus 1 flyby by Volwerk et al. presents highly interesting and unique measurements from Venus' long magnetotail made by the BepiColombo spacecraft. The figures in the paper show the measured magnetic field, ion and electron measurements in a very clear and informative way. Moreover, the authors interpret the data and put the observation into a wider context by discussing and comparing observations with the previous plasma and field observations from the Venus magnetotail. The paper is logically structured, and text is clearly written. In addition to the presentation of the data, the work is valuable also because it is foreseen that in the future the presented observations will motivate global modelling works. Some more details should, however, be provided before the work is ready for publishing, please see below.**

——— **Individual scientific remarks: * Please describe in more details what can be seen in Figure 11:**

- The authors state that the black arrows show the direction of the magnetic field, but they look rather like directions of the IMF.

Answer: The black arrows show the direction of the solar wind flow in panels a, b and c, NOT the direction of the magnetic field. This is clearly stated on the caption of the Figure.

- Fig. 11d) and 11e): Colour bars are hardly visible. Is the yellow region a constant velocity surface? Does the mostly green colour region show the speed of the solar wind on the ecliptic plane?

Answer: The yellowish blobs toward Venus are the CMEs of this study. The colorbar velocity is only applicatble to the CME. This information is now written in the caption. Also, the colorbar has been improved.

*** A brief piece of information. The analysed flyby is exciting also because the observations may include effects of an ICME. Interestingly, such a situation when an ICME hits Venus has been analysed, and also simulated, already when the VEX observations has been analysed (Dimmock et al., JGR, 2018).**

Answer: Thank you very much for this reference, which indeed it is very related to this work. A paragraph on this paper has been added to section 4.2.

——— **Technical corrections/suggestions: * [Fig. 8] When the authors refer to the time range between purple, green, cyan and red lines show in Fig. 8, they use the term "box" although there are no purple, green, cyan and red boxes but just lines. This terminology could be clearer.**

Answer: The text has been changed to "The coloured lines (purple, green, cyan and red) and the shaded areas (transparent grey, transparent blue)"

*** "ASPERA-4-IMA" is typically written as "ASPERA-4 IMA" and "ASPERA-4-ELS" as "ASPERA-4 ELS".**

Answer: corrected

*** [l. 223] Here "... magnetotail flapping in the near-Venus tail around (1.5,0.1,0.5) RV ..." the x position should probably be "(-1.5,0.1,0.5)" i.e. the X VSO should be negative in order the position would be on the night side.**

*** [l. 247-248] Similarly, this "... VEX near X 1.5RV and BepiColombo near X 15 RV,..." should probably read as "... VEX near X -1.5 RV and BepiColombo near X -15RV,...". Also, in Fig. 9. figure caption this "...near (1.5,0.1,0.5) observed..." should probably read as "...near (-1.5, 0.1, 0.5) observed..."**

Answer: Indeed, of course the minus signs had disappeared

*** [l. 259] The value of F would be good to express in SI units, i.e. as "F = 20 nT".**

Answer: this is corrected in the text: "F= 20nT (in the paper denoted as 20 γ)"

*** [l. 309] "thetime" - "the time"**

Answer: Change done.

*** [Fig. 11 figure caption] "Ocotber" - "October"**

Answer: Change done.

*** [l. 381] "as welll" - "as well"**

Answer: Change done.