

Ann. Geophys. Discuss., referee comment RC1  
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## Comment on angeo-2021-23

Anonymous Referee #1

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Referee comment on "Heavy rainfall, floods, and flash floods influenced by high-speed solar wind coupling to the magnetosphere–ionosphere–atmosphere system" by Paul Prikryl et al., Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2021-23-RC1>, 2021

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The study of P. Prikryl et al. is very interesting. It evaluated a lot of observations and the application of the superposed epoch analysis provided convincing results about a correlation between solar wind perturbations and heavy rainfall. It cannot be expected that the authors can provide a complete physical explanation of this correlation. However, I have two major comments:

1) Please explain why auroral gravity waves with reduced amplitudes at the tropopause (factor 1000-10000, line 512) have an impact on the tropospheric weather. In the troposphere, there are many other perturbations which have larger amplitudes.

2) Please add a discussion about alternative explanation, e.g. variation of the ionospheric conductance by TIDs leading to more thunderstorms.

Minor comments:

Fig 10b caption, please explain the red + marks

line 457 Pioneer spacecraft in 1970s was .... (singular?)