

Interactive comment on “Multisatellite observations of the magnetosphere response to changes in the solar wind and interplanetary magnetic field” by Galina Korotova et al.

Anonymous Referee #2

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The purpose of the paper is to analyze the response of the magnetosphere to interplanetary shocks. First the authors present a case study for the event of February 27th 2014. They highlighted the main effects of this shock and presented interesting results on how this shock impacted the inner magnetosphere by comparing observations from Cluster, GOES and Van Allen Probes spacecraft. Then they performed a multicase study of 30 events observed by Van Allen Probes. Due to the different characteristics of the studied shocks and the observations at different locations, the authors have been able to present a global picture of the response in the magnetosphere to different type of shocks and provide interesting conclusions. However, I have some recommendations to the authors that I would like them to take into account before I

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recommend the paper to publication.

The major one concerns the fact that it is quite difficult to find what is really new in this study. Of course the results are very interesting but they not provide perspectives or insights of what they could offer to inner magnetosphere scientists. First, the authors should highlight the main results in the abstract section. Then, at the end of the introduction section, it is not clear also what is the main purpose of this study and what it is new. Finally in the conclusion section, it is still not evident to find what is new compared to previous studies. The authors should try to improve this.

In this idea, I would like also to recommend the authors to analyze and discuss maybe a little bit more on the implications of their work regarding three directions:

- Using the multi-events analysis and their conclusions, is there a way to deduce from solar wind precursors, what will be the response of the magnetosphere : could we be able to estimate / anticipate the induced electric fields characteristics (directions, amplitudes, periods, ...) that could be of interest regarding space weather (intensity, plasma heating, time lag...)?

- Based on this analysis (both the February 27th 2014 and the multicase study), some interesting perspectives / analysis could be made between the analyzed characteristics of the electric fields induced and the response of the radiation belts during these disturbed time especially regarding: dropouts at low energy induced by convection electric field ($E < 100$ keV) and radial transport through typical radial diffusion for all energies?

- What is the impact of the plasmasphere in the dayside sector and in the nightside sector on induced electric fields at such times as the plasmasphere is no more circular (and conversely)?

As minor concerns :

- In the abstract section, I recommend the authors to mention the satellites used in their study.

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- Line 122 : "data" mention twice
- Line 124 : "4-str" should be corrected to "4Pi-str"
- Line 162 : "the" used twice

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