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Interactive comment on "Dynamic processes in the magnetic field and in the ionosphere during the 30 August–2 September, 2019 geospace storm" *by* Yiyang Luo et al.

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Dear Anonymous Referee #1,

Thank you very much for your valuable comments.

Anonymous Referee #1 Comment #1:

The statement in the abstract that "...L.F. Chernogor validated that the concept of geospace storms..." is not modest and is incorrect. The studies of complex processes that occur in the terrestrial environment in disturbed solar conditions have been published much earlier by several authors (for example, H. Rishbeth, G. Prollss and oth-

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ers). I recommend to withdrawn this sentence from the abstract. Authors' response to Anonymous Referee #1 Comment #1:

The authors have corrected the statement concerning the validation of the concept of geospace storms. We have modified the sentence as follows:

The concept that geospace storms are comprised of synergistically coupled magnetic storms, ionospheric storms, atmospheric storms, and storms in the electric field originating in the magnetosphere, the ionosphere and the atmosphere (i.e., electric storms) has been validated a few decades ago.

These changes in the manuscript are marked in red.

As far as we know, H. Rishbeth and G. Prollss consider magnetic storms and ionospheric storms separately, and they do not even mention electric storms.

Anonymous Referee #1 Comment #2:

The term geospace is not commonly used. What is actually described in the paper, is the ionospheric reaction to the particulat magnetic storm. And that is how the situation is described in many studies of that kind. The source of the geomagnetic disturbance is not important in that case.

Authors' response to Anonymous Referee #1 Comment #2:

The term geospace was brought into usage a long time ago, and it is commonly used now. This statement is supported by the following haphazard review of research in the field:

When one visits the MIT Haystack Observatory website https://www.haystack.mit.edu/ today, he or she can see the Geospace Sciences web page https://www.haystack.mit.edu/geospace//

Also, at present, the National Oceanic and Atmospheric Administration (NOAA) Space Weather Prediction Center at (https://www.swpc.noaa.gov/products/geospace-

magnetosphere-movies) provides Geospace Magnetosphere Movies from the University of Michigan Geospace model output.

Back in July 2013, the Journal of Atmospheric and Solar-Terrestrial Physics published a special issue (Volume 99, pages 1–164) Dynamics of the Complex Geospace System Edited by Vania K. Jordanova, Joseph E. Borovsky, Ilia Roussev. https://www.sciencedirect.com/journal/journal-of-atmospheric-and-solar-terrestrial-physics/vol/99/suppl/C

The book Extreme Events in Geospace: Origins, Predictability, and Consequences written by M. Hapgood, N. Gopalswamy, K.D. Leka, G. Barnes, Yu. Yermolaev, P. Riley, S. Sharma, G. Lakhina, B. Tsurutani, C. Ngwira, A. Pulkkinen, J. Love, P. Bedrosian, N. Buzulukova, M. Sitnov, W. Denig, M. Panasyuk, R. Hajra, D. Ferguson, S. Lai, L. Narici, K. Tobiska, G. Gapirov, A. Mannucci, T. Fuller-Rowell, X. Yue, G. Crowley, R. Redmon, V. Airapetian, D. Boteler, M. MacAlester, S. Worman, D. Neudegg, and M. Ishii and edited by Natalia Buzulukova is concerned with Geospace. https://www.elsevier.com/books/extreme-events-in-geospace/buzulukova/978-0-12-812700-1

As is well known, the term geospace include the magnetosphere (geomagnetic field), the ionosphere, and the upper atmosphere. Our paper is concerned with the effects in the magnetic field, the ionosphere, and the effects in the upper atmosphere are only mentioned. Therefore, we think that the term geospace is appropriately used in this paper.

Anonymous Referee #1 Comment #3:

The references to main previous publications is not complete enough. In the aforementioned publications on the 2018 storm, the reference is more complete

Authors' response to Anonymous Referee #1 Comment #3:

Indeed, some key earlier papers are missed. Thank you very much for this comment.

We have added references to the following three publications:

1. Prölss G.W. Magnetic storm associated perturbations of the upper atmosphere / Magnetic storms. Eds. Tsurutani B.T., Gonzalez W.D., Kamide Y., Arballo J.K. // Geoph. Monog. Series. V. 98. Washington, D.C.: AGU. P. 249–290. 1997. https://doi.org/10.1029/GM098p0227

2. Danilov, A. D. and Morozova, L. D., 1985. Ionospheric storms in the F2 region. Morphology and physics (review) (in Russian). Geomagnetism and Aeronomy. Vol. 25, no. 5, pp. 705–721.

3. Danilov, A. D. Reaction of F region to geomagnetic disturbances (Review) (in Russian), Heliogeophysical Research, No. 5, pp. 1–33, 2013. https://www.elibrary.ru/item.asp?id=21273665

These additions in the manuscript are marked in red.

However, the reader would find Paper 2 above difficult to access via the World Wide Web, because it is written in 1985.

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