Dear Dalia Buresova,

The Authors are grateful for the valuable recommendations, which have allowed the Authors to greatly improve the quality of the manuscript.

A list of changes and a rebuttal against each point, which has been raised in your Comments to the Authors.

(1) Comment to the Authors:
Let's start from the title. One of the referees suggested modification of the title and I fully agree with his opinion. In your response to the referee's comments you stated that " The subject of this study is the influence of the ionospheric storm on the characteristics of HF radio waves propagating over the area of the People's Republic of China". The title of the manuscript should therefore reflect the aim and substance of the research carried out.
Authors' reply:
The Authors agree to specify the paper's title as follows: «Influence of 31 August – 1 September, 2019 Ionospheric Storm on HF Radio Wave Propagation».

(2) Comment to the Authors:
You have introduced a large number of values of different solar wind, geomagnetic and ionospheric parameters, nevertheless they are not fully used for interpretation of your findings. So, my suggestion is to change the title of the manuscript and focus on the main goal "influence of ionospheric storm on HF radio wave propagation" instead of widely describing geospace storms.
Authors' reply:
The description of the geomagnetic storm is a must, for the geomagnetic storm is one of the constituents of the geospace storm. This is the essence of the systems approach, the essence of the systems paradigm (see, e.g., [Chernogor, Rozumenko, 2008]).

(3) Comment to the Authors:
On the other hand, the space weather event you are analysing in the paper, is not a CME-related event, but the event of CIR/CH HS origin combined with solar sector boundary crossing event, which could also affect geomagnetic situation. The NOAA informed that " from midday on 30 Aug through 01 Sep, field activity increased to unsettled to G1 (minor) and G2 (moderate) levels as Earth came under the influence of a large, recurrent positive polarity CH HSS. 30 Aug saw a SSBC from a negative to a positive sector in advance of a CIR, all preceding the CH HSS. 31 Aug and 01 Sep observed active to G1 and G2 storm conditions. Wind speeds averaged about 750 km/s during this time frame with a peak of 835 km/s observed early on 01 Sep" (SWPC PRF 2296 02 September 2019). These events have a bit different characteristics and courses compared with those of the CME-origin, e.g. smaller effect on Dst index, not so well expressed single phases of the storm, longer entire duration of the disturbances and, in total, larger energy input into the Earth's upper atmosphere (for more information, please, see Koskinen HEJ, (2011). Physics of space storms. From Solar Surface to the Earth, Springer in association with Praxis Publishing. DOI:10.1007/978-3-642-00319-6.
Authors' reply:
First, the Authors nowhere assert that the storm under consideration has been caused by a coronal mass ejection. Second, to avoid the misunderstanding, at the very beginning of 3 Analysis of the space weather state Section, and 6 lines below, the Authors have added the following two pieces of information (marked in magenta …) kindly suggested by Topical Editor:
The space weather variations under study are the event of CIR/CH HS origin combined with solar sector boundary crossing event, which could affect geomagnetic situation (see ftp://ftp.swpc.noaa.gov/pub/warehouse/2019/WeeklyPDF/prf2296.pdf; Koskinen, 2011).

and

"After 12:00 UT on 30 August 2019 through about 01:00 UT on 1 September 2019, the V_{sw} value exhibited an increase from ~400 km s^{-1} to 750 km s^{-1} with a peak of 835 km/s observed early on 1 September 2019 (see ftp://ftp.swpc.noaa.gov/pub/warehouse/2019/WeeklyPDF/prf2296.pdf).

The reference to the monograph by Koskinen, 2011, has been added to the list of reference as follows:
Koskinen, H.E.J.: Physics of space storms. From Solar Surface to the Earth, Springer in association with Praxis Publishing, DOI:10.1007/978-3-642-00319-6. 2011.

(4) Comment to the Authors:
During ionospheric storms the phases/ionospheric response (positive and negative) are usually alternating. In most cases the CIR storms have positive effect just after storm onset. Storms are usually accompanied by large- or medium-scale travelling ionospheric disturbances formed by GW that propagate from high latitudes toward the equator.
Authors' reply:
4. Taking into account the Topical Editor's recommendation, the Authors have added the following piece of information kindly suggested by Topical Editor (at the end of 7.3.1 Disturbances in ionogram parameters Section):
During ionospheric storms the phases/ionospheric response (positive and negative) are usually alternating. In most cases, the CIR storms have positive effect just after storm onset. Storms are usually accompanied by large- or medium-scale travelling ionospheric disturbances formed by GW that propagate from high latitudes toward the equator.

(5) Comment to the Authors:
My suggestion is to compare the courses of ionospheric parameters with monthly median values or running means (or compare with the courses for quiet days near the even) to see real response to the storm-induced disturbances.
Authors' reply:
The ionosonde data are used to characterize the general state of the ionosphere only, as it has been done in the "5.1 Data from ionosonde in Japan" and "Data from ionosonde at Moscow" Sections. Also, the comparison with monthly median values or running means does not contribute to understanding the problem of the influence of the ionospheric storm on HF radio wave propagation. Therefore, we have decided to remove Figure 5 from the paper.

(6) Comment to the Authors:
Now some minor comments. It seems that the ionospheric data you are using have some gaps, e.g. Fig.5, foF2 and h'(F2) at bout 05-08 am and 11am -15 pm. Please, don't use a solid line to cross the data gaps. Are your ionospheric data manually checked or are coming from automatic scaling?
Authors' reply:
The ionospheric data have been checked manually. The gaps are due to the screening by the E_s layer (not depicted in Figure 5). With the solid lines removed, Figure 5 is shown below at the end of this Authors' reply (it has not been included in the paper). It could be seen that the data for the F_2 layer on 30 August 2019 are especially sparse, the gaps amount to about 30 percent of the time.

(7) Comment to the Authors:
"The manifestations of geospace storms vary over the solar cycle, and depend on season, local time, latitude, longitude, and observational facilities" (between lines 65-70). Are you really sure that manifestation of storms depends on observation facilities?
Authors' reply:
The phrase "manifestation of storms depends on … observation facilities" should be understood in such a way that each technique can determine disturbance in the medium parameter, which the observation facility is designed to determine. To exclude misunderstanding, we have replaced the words "observation facilities" with the words "… and so on".

(8) Comment to the Authors:
"The main feature of this geospace storm is its duration, of up to four days."(between lines 70-75). The duration of storms could be quite different depending on driver (from several hours up to 8-10 days).
Authors' reply:
We have made a more accurate assertion: "One of the interesting features of this geospace storm is its duration, of up to four days."

(9) Comment to the Authors:
"Thus, this magnetic storm had the longest duration observed over the last few years,…" (part 135-140). This statements is also doubtful.
Authors' reply:
We have made a more accurate assertion: "Thus, this magnetic storm was seen to be of quite a long duration over the last few years, …".

(10) Comment to the Authors:
"To assess the ionospheric storm on the global scale, ionosonde data from the City of Moscow (55.47°N, 37.30°E), the Russian Federation, have been used." (between 170-175). I guess that expression "global" usually is used for description of the phenomenon around all the globe and both hemispheres.
Authors' reply:
We have replace the term «global» with "characteristic extent of"(line 106, 180) and with «large-scale» (line 437).

(11) Comment to the Authors:
"…subsequently, a decrease from 15 x106 m–3 to to ? 106 m–3 in the course of the next three days" (between 115-120).
Authors' reply:
We have amended this phrase as follows: subsequently, a decrease from 15×10^6 m^{-3} to 1×10^6 m^{-3} in the course of the next three days

(12) Comment to the Authors:
If you are prepared to undertake the improvements required, please submit the revised manuscript as well as a list of changes or a rebuttal against each point, which is being raised when you submit the revised manuscript.
Authors' reply:
The authors have tried to give answers to all Topical Editor's comments.

Sincerely,
Authors.

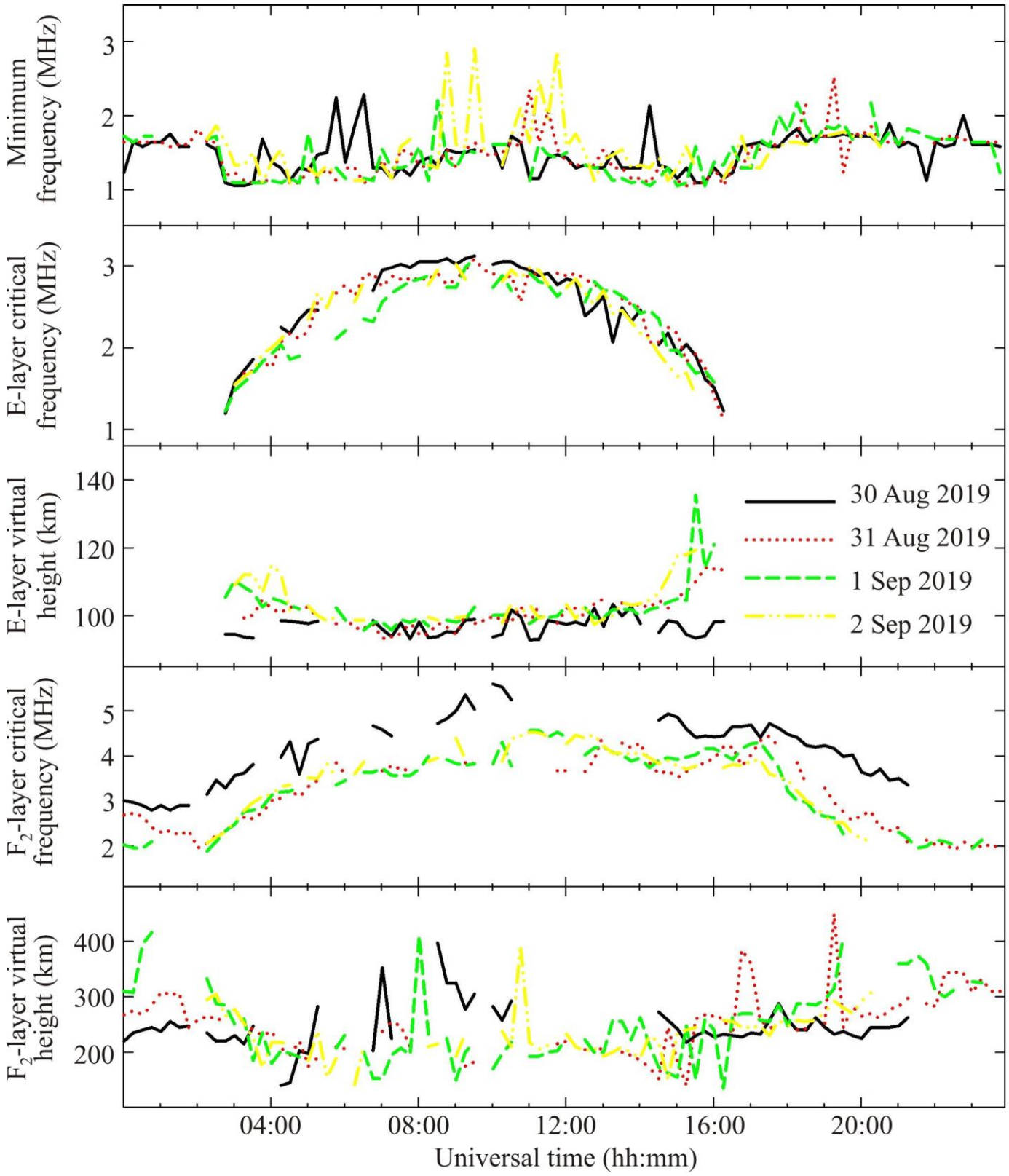

Figure 5 with the solid lines removed. The ionospheric data have been checked manually. The gaps are due to the screening by the E_s layer (not depicted in Figure 5). This figure has not been included in the paper.