Reply to Anonymous Referee #2 (Comments in *italic*):
We thank the reviewer for the helpful comments and suggestions. The comments by the reviewers are *in italics*, and our responses are in Times New Roman. Corresponding changes are highlighted in the revised manuscript.

I. General Comments

This paper presents new results from the CSES satellite of Pc1 observations in two hemispheres during the late stage of a geomagnetic storm. Magnetic and electric field data are presented, allowing a complete characterization of the waves in space. Comparison is made to magnetic results from the Swarm-A satellite and from Scandinavian ground stations near the satellite path. The source region of the waves, inferred to be EMIC waves, is inferred to be near the magnetic equator on a low L shell (near the plasmapause), with propagation from there toward both ground hemispheres determined from the Poynting vector. Ducting into the ionosphere is also discussed based on the ground data.

My major overall concern with the manuscript is that data from external to the mission is used in a manner that should have resulted in co-authorships for other teams. The Swarm and ground data are used in a substantial way, so this would have seemed appropriate. Figure 6 indeed has copyright marks on it, suggesting it was taken from a website and that the data owners did not intend publication in this way. As such, I also make a comment that insufficient information is given about these data sources and their treatment. This being said, I feel it is an excellent article and worthy of publication. I have only minor comments on small errors: the writing is generally good and within what I would expect the copy editor to help with. These minor comments are listed only at the page level.

Reply:

Thank you for your valuable comments. We have tried to invite the observer of SGO as a co-author for the appropriate use of SGO data in the manuscript. Additionally, the FGM data from Swarm satellites is accessible to everyone via ftp at: ftp://swarm-diss.eo.esa.int/ according to the data policy of Swarm. We thanked the Swarm team and provided the web addresses for each of the data sources in the revised manuscript.

II. Specific Comments

p.2 MAGAT seems to mean Magsat (maybe also called MagSat) which is not an acronym and does not need all capital letters.

Reply:

It has been corrected as Magsat (see line: 67).

p.3 Similarly I am pretty sure Swarm is not an acronym. More importantly, References should be given for the instrumentation, much as for CSES' instruments. Then such details as bandwidth of the instruments etc. that may be needed for more detailed comparison of data could be had. Data treatment should also be mentioned. This applies also for ground data. As mentioned above, I feel that data from these sources was used to an extent that co-authorship should have been offered.

Reply:

It has been revised as suggested (see lines: 99-107).

p.4 The rather long sentence about location ending in “Figure 2” (line 120) maybe should refer to Figure 3 since at the end the data is discussed. Anyway the sentence is long and unclear.

Reply:

The purpose of figure 2 is to describe the time and position of Pc1 fluctuations observed by satellites. We have modified this sentence (see lines: 123-126).

p.5 LPH should be LHP but maybe it should be stated somewhere that this means “left hand polarized”

Reply:

It has been revised as suggested (see lines: 162).

p.6 line 200 should not start with “And”. Also please give a reference for the analysis techniques.

Reply:

We have added the reference for Minimum and Maximum Variance Analysis technique (see lines: 208-211).

References: several are out of order, of which I noted Hayashi, Iyemori. The Russell and Thorne reference should not be capitalized and was in Cosmic Electrodynamics, 1, 67-89 (in fact the title began with “On the structure…”

Reply:

The list of references has been updated.

Figure 2: I found the symbols used for ground stations hard to see, maybe simply color code them.

Reply:

We replot the Figure 2 and enlarge part of the picture (see line: 463).

Figure 6: as noted above this appears to show copyrighted data or maybe the presentation format is copyrighted, anyway there is a problem. Also the color scale should not be shown three times as it is common to all plots.

Reply:

Thanks for your comments. We have invited the observer of SGO as a co-author to review the correct use of SGO data in the manuscript. And the latest image is exhibited in the revised manuscript (shown as Figure 6).

Figure 7. This comment applies to other plots as well. Larger indications of what each subpanel shows would be helpful. Please put label boxes on the plots, there is lots of space in most of them to do so without obscuring meaningful data. It is hard to crank around to look at a tiny label on a color bar to know what one is looking at.

Reply:

It has been revised as suggested (shown as Figure 7-9).

Figure 10. I am not sure what I am looking at in the lower panel. Presumably it is a projection of the plasmapause at the given time. Not sure why there are two dots at many local times (assuming it is local time, it is not labelled).

Reply:

Firstly, Figure 10 was produced by the CCMC web. The dots correspond to the position of the plasmapause. Particularly, from 11 to 21 MLT there is a plume rotating with the plasmasphere in the eastward direction.

Secondly, the plasmapause at any chosen time is determined by the interchange mechanism and by the history of geomagnetic activity during the previous 24 h. The simulation cycle of dynamic plasmasphere model from CCMC always start at 02 MLT because the plasmas are unstable at post-midnight since the convection electric field has the largest value. Additionally, the simulation does not stop after one full cycle at 02 MLT but continues farther up to 05 MLT which means that each simulation covers 27 MLTs. That's why it has two plasmapause branches between 02 MLT and 05 MLT. And the gaps are caused by the loss of some of the plasma elements at large Kp jumps [Verbanac et al., 2018; Bandic at al., 2020] (see lines: 227-237).

Thirdly, the magnetic local times are labeled in Figure 10 as suggested (see line: 507).