

Interactive comment on “Ionospheric Pc1 waves during a storm recovery phase observed by CSES” by Xiaochen Gou et al.

Anonymous Referee #2

Received and published: 4 April 2020

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

C1

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.

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

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.

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.

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

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

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. . .”

C2

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

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.

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.

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).

Interactive comment on Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2020-10>, 2020.