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Interactive comment on "Evaluation of Possible Corrosion Enhacement Due to Telluric Currents: Case Study for Brazilian Pipeline" *by* Joyrles Fernandes de Moraes et al.

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Dear Dr. Silveira!

We appreciate the comments from the reviewer and we have done our best to address all concerns properly. Our point-by-point reply is as following:

Page 2, Line 1: "Previous works on this topic . . ." Which topic? GICs in general or GICs flowing on pipelines. Its important for the authors to specific exactly which topic the mean because this sets a stage for what follows.

Answer: We agree with the reviewer. There was a problem with the connection be-

tween the second and the third paragraph. These statements were revised.. We appreciate the comment.

Page 3, Figure 1: It would be of great benefit to add the geomagnetic equator and the +/-10 or 15 degrees lines in this map. This will help readers to easily see if the pipeline is within the equatorial electrojet region or not.

Answer: Thank you for the suggestion. We have added the geomagnetic equator line on the map.

Page 3, Figure 1: I was wondering, apart from São José Dos Campos site, is there no other nearby magnetometers? If there is (I know Brazil has its own network of magnetometers or check SuperMAG collection), it would be interesting to see if the results differ or agree using another magnetometer site.

Answer: It is a good comment. Brazil really has an interesting magnetometer network covering the country. However, the data is not always available for all events under study. Moreover, geological data on the site is also required as input to the electric field calculations. Previous studies using the distributed source transmission line (DSTL) were used in comparison the measurements made in pipelines and it showed that the correlation coefficient is close up to 500-700 km. That is the reason why we only chose one site, for now. We expected that there is no significant changes in the geomagnetic variation into this interval.

Page 4, Line 14: Please explain how these values were obtained? Did you use values from previous works, or did you come up with own values?

Answer: Thank you for the suggestion. The technical characteristics of GASBOL were obtained from the company website (http://www.tbg.com.br/) and material of manufacturers for the pipeline industry. We have added it in the text.

Page 5, lines 6-8: Perhaps the authors could elaborate further on how precipitation will cause larger amplitudes of magnetic fields. This will be of benefit to the readers.

Answer: The particle precipitation in the SAMA region is an important fact that enhances GICs amplitudes. I really appreciate your consideration . The paragraph in manuscript was rewritten to make the idea more clear, and more details about the particle precipitation was included. An important reference was also included in the paper.

Page 6, Lines 4-5: A list of the storms and some characteristics like Kp and Dst index would be helpful here.

Answer:Thank you for the suggestion. We added a table with a list of events based on the DST index.

Page 6, Line 10: ". . . to terminate impedances greater than 1 ohm for both cases." It is not very clear how this connects to the first part of the sentence. Please rephrase for better reading and understanding.

Answer: We do appreciate the language correction and rephrased the sentence in the manuscript.

Page 10, Figure 6: I don't see the dashed line in this figure. Also, please make the font of labels inside the plot same size as font on the axes

Answer: The reviewer is right. The dashed line did not appear due to scaling problems. We have removed it from Figure 6. The font of labels inside the plot was also corrected. Thank you.

Page 10, Figure 6: In the text you say the 7 November storm reached greater values than 2x10-5 mm for impedances equal and greater than 1 ohm/km but there is no way of telling which marker represents which storm. Perhaps you should add the labels to indicate the specific storms. Same for Figure 7.

Answer: We appreciate the suggestion. Markers are in figure right now, they were also described in the text.

Please also note the supplement to this comment:
https://www.ann-geophys-discuss.net/angeo-2019-132/angeo-2019-132-AC1-supplement.pdf

Interactive comment on Ann. Geophys. Discuss., https://doi.org/10.5194/angeo-2019-132, 2019.