# RESPONSE TO REVIEWER 2: First Report on Co-seismic Ionospheric Disturbances Following the Deep-Focus Earthquake (Mw 6.6) in Tarauacá, Acre, Brazil: Ground Uplift and TEC Analysis

Adebayo et al. (2024)

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We appreciate the reviewer for this invaluable comments and suggestions. The contributions have helped us to improve the quality of the manuscript. We modified the manuscript based on the reviewer's comments and suggestions.

## 1   Introduction:

The background description of ionospheric co-seismic disturbances is well-established, but some of the references are outdated. It is recommended to refine and condense the content, focusing more on recent advancements in this field, such as the characteristics of ionospheric disturbances induced by deep-focus earthquakes.

- We have included additional papers related to deep-focus earthquakes.

## 2   Methodology:

The section focuses on the derivation of STEC and VTEC but does not describe the method for obtaining dTEC. It is suggested to add the formula and explanation for calculating dTEC to better align with the study's focus.

- We have updated the manuscript by including more details on the derivation of dTEC as described below:

$$dTEC = TEC - TEC_{av}$$

where $TEC_{av}$ is the runnuing mean average over 1 hour. Both TEC and dTEC are shown in Figure 2 in the original submission.

# 3    Figures:

The figures in the paper are not very intuitive in terms of spatial representation, with the only one TTD figure (figure 3). Changing the vertical axis unit to "distance to the epicenter" could make figure 3 more intuitive.

- We have updated the figure by changing the vertical axis unit to "Distance to the epicenter" as suggested by the reviewer (see the Figure 1 below).

Additionally, it is recommended to include figures that reflect the spatiotemporal characteristics of the TEC disturbances.

- We believe that is the purpose of Figure 3 as it clearly shows the propagation of the disturbance away from the epicenter in time and space (spatiotemporal characteristics).

The bar chart in figure 7 contains large color blocks. It is suggested to adjust the styling to make it more aesthetically pleasing.

- We have updated the figure by reducing the bar width and using grey color for all the bars since the satellite-receiver combination is shown in the x-axis (see Figure 2 below).

# 4    Format:

Abbreviations should only be used in full the first time they appear, with subsequent uses in abbreviation form.

- We have updated the manuscript accordingly.

The word "Figure" should be bolded.

- We have updated the manuscript accordingly.

# 5    Language:

In Chapter 2, "slight Total Electron Content" should be modified to "slant Total Electron Content."

- We have updated the manuscript accordingly.

In Chapter 3, "Two PRNs" should be changed to "Two satellites" for clarity; the time "21:55 UT" does not match the time shown in Figure 2.

- We have updated the manuscript accordingly.

"The influence of forcing above" is unclear. In context, it may be more appropriate to modify it to "the influence of external forcing factors."

- We have modified the manuscript by substituting "the influence of external forcing factors" for "The influence of forcing above" as suggested by the reviewer.
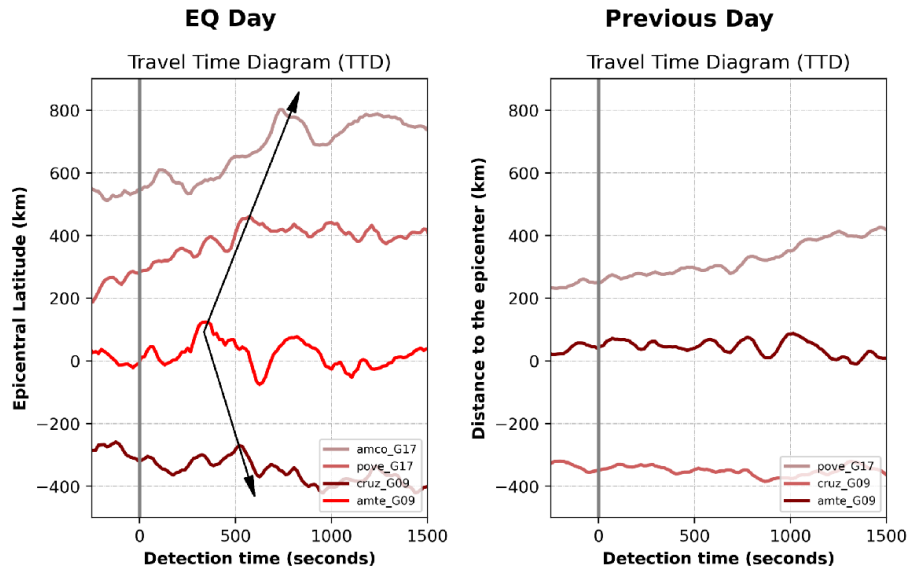
Figure 1: TTD updated
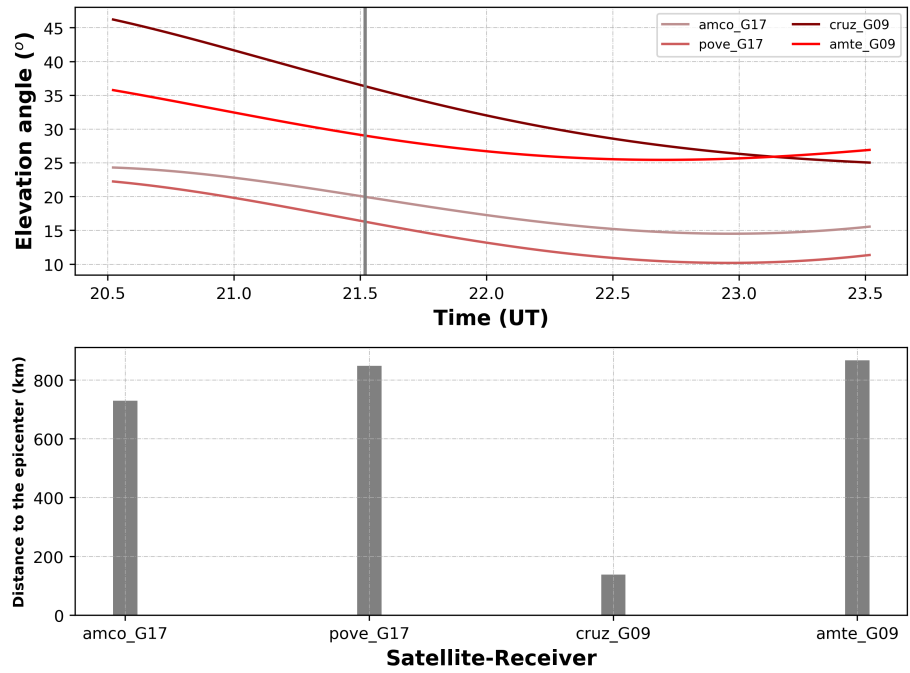
Figure 2: figure 7 updated.

# 6 Reference

Berngardt, O. I., Perevalova, N. P., Podlesnyi, A. V., Kurkin, V. I., Zherebtsov, G. A. (2017). Vertical midscale ionospheric disturbances caused by surface seismic waves based on Irkutsk chirp ionosonde data in 2011–2016. Journal of Geophysical Research: Space Physics, 122(4), 4736-4754.