We thank the referee for providing many useful suggestions and questions. Below are our item-by-item responses to the referee’s comments.

In the TEC calculation, the cutoff for the elevation angle was 20 degrees. In the revised manuscript, we are adding this additional information.

The typographical error in Line 192 will be fixed (i.e. “eclipse”) in the revised manuscript.

Regarding the baseline curves in Figures 5–7, we are going to follow the suggestions given by the referee. In the revised manuscript, we will be using the average values from ionosonde observations to form the baseline curves. The performance of IRI model over the Southeast Asian region, more specifically over the Indonesian region, turned out to be less than optimal. More detailed quantification on the IRI model performance over this geographic region may also be investigated further in future research.

Following the suggestion, here (in Line 340) we will skip mentioning the AGW due to limited information on wave parameters.

The main advantage of the Laplacian operator for capturing inhomogeneity in the form of sharp discontinuity in 2-D data is its low computational cost. In addition, the Laplacian operator has the same properties in each direction (i.e. isotropic), which simplifies the interpretation of results. Unfortunately, the edge direction is unavailable, which is its disadvantage. Nevertheless, edge direction is not very important in our situation, and our analysis was not impacted. In the revised manuscript, we are going to include more detailed explanation and foundational references regarding the use of Laplacian technique.

In the revised manuscript, we will be including some additional discussion of the present results in relation to results that had been obtained over the South American sector.

Regarding the “shallow TEC valley” (Line 482 of the manuscript), at this stage we do not know the precise physical mechanism that may have caused the phenomena for certain. What we have done was to eliminate as much as possible various scenarios involving instrumental artefact and geographical distribution of ground-based observing stations, which could conceivably lead to such a “shallow TEC valley”. One scenario under consideration was a systematic/correlated shift in the TEC bias for a group of nearby receiver stations. However, each receiver device is operating independently (even when
their spatial distances are quite close), which makes it unlikely for their hardware biases to be linked electronically. Another scenario under consideration was slant factors that may be quite extreme (due to low elevation angles) for IPPs that are located over ocean region unpopulated by receiver stations. However, it turned out that this latter scenario predicts that the “shallow TEC valley” would instead have happened over the ocean region (opposite to the observed fact that the “shallow TEC valley” actually occurred over land mass region populated with receiver stations). Hence, we can rule out this possibility as well. Therefore, the exact physical mechanism for the occurrence of this “shallow TEC valley” is still an open scientific question for the community. Nevertheless, some possible instrumental effects have been ruled out in our considerations.