

Ionospheric characterisation of the South Atlantic Magnetic Anomaly using a mobile ship-based dual-frequency GPS Ionospheric Scintillation and Total Electron Content Monitor

by Annelie Vermeulen, Pierre J Cilliers, Peter Martinez

Revision of SAIP 2016 proceedings paper, ID: 363 (Track classification : Track D2 - Space Science)

1. Reviewer comments about Abstract:

The authors are requested to provide a relevant reference when stating that the SAMA region is characterized by a magnetic field intensity that is 60% less than at similar latitudes before being accepted for publication. The abstract should be improved by mentioning the important findings of the study.

Replies to the Editor:

The preliminary results of the research are now mentioned in the abstract. The statement regarding the 60% weaker field intensity has been properly cited and moved to the Introduction.

2. Reviewer comments about methodology

a) I may have missed it, but how do the authors account for the motion of the vessel in their research?

b) I also think that elevation angle of 10 degrees is very low to avoid multi-paths related errors. I suggest elevation angle of 20-30 degrees.

Replies to the Editor:

An entire section regarding the motion of the vessel has been added to the paper in part 3 to justify the use of 10 degree elevation angle.

3. Reviewer comments about Scintillation Thresholds

In determining the level of scintillation threshold that may be significant, I suggest that the authors make it clear what value is significant and perhaps provide the necessary reference. There are a number of scintillation studies and some benchmark value for both amplitude and phase scintillation should have been determined

Replies to the editor

The section on identification of scintillation events was expanded to include benchmarks (with references) for scintillation thresholds and their dependence on receiver technology.

4. Reviewer comments about references

I also think that the referencing should be improved. Figure 1 should be referenced.

At this point, let me state that I found appropriate referencing with regard to scintillation studies wanting. I suggest that the authors reference published material (peer-reviewed papers).

Replies to the editor

Five additional references to peer reviewed papers on scintillation studies have been added to the paper. All figures drawn from other sources have been referenced. All theory references have been properly cited and the reference list is now properly formatted and standardised.

5. Reviewer comments about Ionospheric Tomography

It is not clear how Computerized Ionospheric Tomography is used in this paper. The authors should make this clear in their paper and if space is a problem, Figures 3 and 5 (even Figure 7) can be deleted for this purpose.

Replies to the editor

The section on ionospheric tomography was removed since this method was not used in the work presented.

6. Reviewer comments about Results

Figure 6 seems to be the only results figure, but it is not referred to at all in the paper. This should be fixed in the revision including its discussion and why it is included.

Replies to the editor

A results section has been added to properly discuss the results presented in Figure 6. An additional graph has been added to compare the scintillation results recorded on the ship with a land-based receiver, over the same period.

7. Reviewer comments about Conclusions

The paper does not have a conclusion section which the authors should consider.

Replies to the editor

A conclusion section has been added to the paper. This includes the amended future work that was previously in Section 6.