

Paper rejected

1 message

Alessio Pignalberi via Open Journal Systems per INGV <ann.geophys@ingv.it>

Wed, Sep 9, 2026 at 7:28 PM

Reply-To: Alessio Pignalberi <alessio.pignalberi@ingv.it>

To: Burin Putthong <67036097@kmitl.ac.th>

The following email was sent to Prasert Kenpankho from Annals of Geophysics regarding GNSS Low-cost Robot Accuracy Based on TEC Fluctuation and Geomagnetic Storms at Low Latitude, Thailand.

You are receiving a copy of this notification because you are identified as an author of the submission. Any instructions in the message below are intended for the submitting author, Prasert Kenpankho, and no action is required of you at this time.

Dear Dr. Patiphan Sumniang, Burin Putthong, Prasert Kenpankho,

on the basis of the comments received by the reviewers, I am sorry to communicate that "GNSS Low-cost Robot Accuracy Based on TEC Fluctuation and Geomagnetic Storms at Low Latitude, Thailand" cannot be published in the present form.

The problems arisen by Reviewer 1 are substantial and the issues raised in the first round of revision have not been adequately addressed. Please find below the Reviewers comments for your reference.

I am sorry for this negative decision resulting from the peer review process, and hope that you will consider our journal for any future contributions.

My best regards,
Alessio Pignalberi

Reviewer 1:

Recommendation: Decline Submission

Scientific Quality scores (SQ):

- 3. insufficient quality

Give a brief comment to justify

Unfortunately, the authors were unable to reply to a few relevant questions raised by the reviewer in the first round. Please find the comments below. Also, the authors have not highlighted the changes made in the manuscript, requiring extra efforts to properly identify the changes.

Intro: The introduction is still a bit broken in unconnected pieces. The authors have improved considerably, but there is still room for improvements. For instance, 'Numerous studies have investigated ionospheric modeling and TEC estimation to improve GNSS positioning accuracy. The International Reference Ionosphere (IRI) has become one of the most widely used empirical ionospheric models (Bilitza & Reinisch, 2008). Several studies have proposed methods to improve single-frequency GNSS positioning and TEC estimation using ionospheric correction models'. IRI is not typically used for GNSS positioning. The previous sentence, therefore, is not straightforward to read.

Methods: Aiming to reply to the previous comments, the authors have updated the manuscript, such as including a simplified concept of how the GNSS positioning has been performed and how to compute TEC. However, it was not sufficient to give a proper scientific context on these topics. As a conclusion, the same questions raised in the first letter can be done. What is the accuracy of the reference points? How have the TEC values been computed by the receiver and the SIET stations? How many epochs have been utilized to compute TEC and positioning values? What is the reference frame utilized? Which positioning technique has been utilized? Notice that ECEF is not a geodetic reference frame, but this error is not the most problematic one in the description. Also, notice that the way to compute the DCBs is still not informed. Nothing is mentioned about the GNSS receiver/antenna type.

Results: It is still not clear how the reference coordinates have been computed. Without this, it is impossible to understand the results. In my understanding, IRI-2020 was used just to compare the TEC values. The model has not been used for GNSS positioning. Therefore, what is the reason to show the comparison between IRI and GNSS-

derived TEC?

Line 49: check typo at: 'These effects can become more pronounced during periods of enhanced so and geomagnetic disturbance'

Line 58: The second paragraph says the exact same thing as the first paragraph of the introduction: 'Low-cost GNSS receivers are increasingly used for autonomous robotic navigation because they are inexpensive, compact, and easy to integrate into outdoor applications. However, their positioning accuracy is strongly affected by ionospheric delay caused by variations in TEC. These variations become more significant during periods of enhanced solar and geomagnetic activity, particularly in low-latitude regions such as Thailand, where ionospheric variability is relatively high.'

Line 80: 'The International Reference Ionosphere 2020 (IRI-2020) implementation proposed by Pignalberi et al. (2025)'. IRI-2020 was not implemented by this reference.

TEC as Total electron content is introduced several times. This issue has been raised before, but it has been neglected by the authors.

Line 211: Unconnected paragraph at: 'the most common used method can be roughly grouped methods as follows In this approach, Vertical TEC'

Eq (5): What is the meaning of f ?

Line 543: Based on the results, I could not find an experiment that supports the following 'These findings suggest that the IRI-2020 model is effective in representing the overall temporal behavior of the ionosphere but tends to underestimate the magnitude of TEC variations during disturbed geomagnetic conditions'

Presentation Quality scores (PQ):

- 3. to be rewritten in great part

Give a brief comment to justify

The paper requires extra work in the Introduction, Methods, and Results.

The paper in the opinion of the Reviewer...

- is unacceptable

Additional comments

The authors have not properly addressed the points raised in the first letter.

Reviewer 2:

Recommendation: Revisions Required

Scientific Quality scores (SQ):

- 1. good quality

Give a brief comment to justify

Overall all aspects above have been substantially improved.

Presentation Quality scores (PQ):

- 2. potentially good, if revised

Give a brief comment to justify

I would recommend more clarity in Figures 4-9.

The paper in the opinion of the Reviewer...

- requires minor revisions

Additional comments

Although still I do not consider the paper as a very important contribution its rather unusual character makes it interesting and I have to admit that the revision with respect to the original submission was significantly improved .

Annals of Geophysics <http://www.annalsofgeophysics.eu>

Annals of Geophysics <http://www.annalsofgeophysics.eu>