

Interactive comment on “Monitoring potential ionosphere changes caused by Van earthquake (Mw 7.2) using GNSS measurements” by Selcuk Peker et al.

Anonymous Referee #2

Received and published: 26 March 2018

General Review:

This manuscript presents ionospheric total electron content (TEC) derived from two different methods (Ionolab-TEC and CODE GIM-TEC) for GPS stations near the Van earthquake (Mw 7.2) in Turkey. Unfortunately, I cannot recommend publication of this manuscript in Ann. Geophys. because the paper fails to present any new results of TEC changes related to earthquakes.

Major Comments:

The authors make no attempt to sort out possible geomagnetic, solar, and earthquake effects. Their conclusion is very weak: “As the ionospheric conditions in the analyzed

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days were highly vibrant, it was thought that the anomalies were caused by geomagnetic effects, solar activity and the earthquake.” Moreover, the manuscript presents a large amount of data with little analysis.

In order for publication, the authors would have to show that the Ionolab-TEC method is better at identifying possible earthquake related signals than other methods. This paper just shows that their method is about the same as the CODE GIM-TEC method. And both methods fail to identify any interesting signals possibly related to the earthquake. I don't see any results that justify publication.

The authors also need to reference and discuss studies that both support and fail to support TEC earthquake precursory signals. The field is extremely controversial. For example,

Heki, K. and Enomoto, Y.: Mw dependence of the preseismic ionospheric electron enhancements, *J. Geophys. Res.-Space*, 120, 7006–7020, <https://doi.org/10.1002/2015JA021353>, 2015.

Kamogawa, M. and Kakinami, Y.: Is an ionospheric electron enhancement preceding the 2011 Tohoku-Oki earthquake a precursor?, *J. Geophys. Res.-Space*, 118, 1751–1754, <https://doi.org/10.1002/jgra.50118>, 2013.

Thomas, J. N., Huard, J., and Masci, F.: A statistical study of global ionospheric map total electron content changes prior to occurrences of $M \geq 6.0$ earthquakes during 2000–2014, *J. Geophys. Res.-Space*, 122, 2151–2161, <https://doi.org/10.1002/2016JA023652>, 2017.

Masci, F., Thomas, J. N., Villani, F., Secan, J. A., and Rivera, N.: On the onset of ionospheric precursors 40 min before strong earthquakes, *J. Geophys. Res.-Space*, 120, 1383–1393, <https://doi.org/10.1002/2014JA020822>, 2015.

Minor Comments:

Figures 1 and 2 are not needed. Referencing the papers these figures came from is

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sufficient.

The Ionolab-TEC method is described in fine detail. This is not needed. Referencing the papers that describe this method is sufficient.

More concise figures are needed to summarize their results. Showing all the data is good, but can be in an appendix or supplemental materials section.

Interactive comment on Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2018-11>, 2018.

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