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

Anonymous Referee #1

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The idea to use simultaneously TEC derived by two different methods is interesting. However, authors are not familiar with the current state-of-the-art, the selected event is not good example for studying seismo-ionospheric effects due to simultaneous presence of solar and geomagnetic activity, the paper does not bring new knowledge in this area, and it suffers with various weaknesses (see below). Therefore I have to recommend reject the paper in its present form.

Major comments:

For your simple approach the Van earthquake is not suitable event for inferring effects of seismic activity, as it happened under not quiet solar and geomagnetic conditions.

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In such situation much more sophisticated analysis has to be applied (e.g. Le et al., 2012). For this reason output of your analysis is inconclusive and it does bring any new knowledge.

When you study hourly values of TEC, you need to use a solar proxy with hourly time step, not F10.7 which provides one value for the day – e.g. satellite observations of EUV or X-rays.

Lines 331-334: The observed effects are rather standard effects of solar and geomagnetic activity.

Section Introduction repeats many well-known facts, which should be removed including Figs. 1 and 2. On the other hand, more references on seismo-ionospheric studies should be present including review paper by Pulinets and Davidenko (2014) and broad statistical study by Liu et al. (2010) and He and Heki (2017). I also recommend include in Introduction the paper by Akhoonzadeh et al. (2018) on multi-precursor analysis. Another interesting paper is that by Kelley et al. (2017).

Section 2.1 IONOLAB-TEC method could also be substantially reduced as all details are available in a well-accessible reference Arikan et al. (2004) in Radio Science.

Minor comments: - Line 56: “collision frequency of the ionosphere” should be “plasma frequency” as on line 58. - Line 64: Direct in situ measurements of electron density in the ionosphere are realized by satellites (e.g. Li and Parrot). - Lines 89-93. Another method of seismo-ionospheric investigations are VLF-LF measurements (e.g. Rozhnoi et al., 2015). - Lines 187-194. At present the official GIM-TEC maps of the International Global Navigation Satellite System Service (IGS) are created as an average from data/maps submitted by JPL, CODE, UPC and ESA, but maps produced by individual centers like CODE may also be used. - You use 1-10 October as calm days but the first days of October are not calm; e.g. 1 October is day of minor-to-moderate geomagnetic storm according to Fig. 4. - Figure 4: What does the scale for Kp mean? Sum Kp or scale should be 2o, 4o etc.? Individual 3-hour Kp values are defined within 1-9. -

Line 324: “ionosphere layer was highly calm” should be “ionosphere was calm”; “highly calm” means Kp less than1.

References: (if you do not have approach to below journals, use doi index or web address to get approach to abstract with e-mail address, and use the latter to ask author for a copy of the paper)

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