Ann. Geophys. Discuss.,
https://doi.org/10.5194/angeo-2020-82-AC2, 2021

Annales Geophysicae Discussions
Open Access
EGU

Interactive comment on "Climatology of ionosphere over Nepal based on GPS TEC data from 2008 to 2018" *by* Drabindra Pandit et al.

Drabindra Pandit et al.

drabindrapandit087@gmail.com

Received and published: 4 March 2021

We thank the reviewer for his comments and take into account all the comments on

Climatology of ionosphere over Nepal based on GPS TEC data from 2 2008 to 2018

MS No.: angeo-2020-82

Authors present a solar cycle-long climatological study of the VTEC performance above Nepal region. Authors present different scale variabilities – from the diurnal patterns through seasonal and annual to the solar cycle ones. Authors also make references to the physical mechanisms beyond the different patterns. I would recommend publication after adressing few minor/moderate issues:

Printer-friendly version

Discussion paper

Authors summarise the general objective of the work as climatology over Nepal, that has never done before, on the other hand they point out that similar studies for the Asian region has been done before. Authors address those studies in discussion, but it would be worth to precise what is the Nepalese climatology research area in this field during the manuscript objective formulation. Ans: The precise area of research is to study very first time the Ionosphere above Nepal using data of a solar cycle 24.

p. 5, l. 4 – Authors' statement about GIMs resolution (only 1 or 2 hours available) is inaccurate – there are 15-minute GIMs available in the IGS repository (e.g. UQRG). Ans: In 1998 and under IGS, the first maps of the TEC were with a few analysis centers and at 2 hour intervals (odd hours) due to a limited number of measurement in the network. The best global coverage has made it possible to increase the temporal rate of the maps with the calculation on even hours ensuring daily continuity at midnight. The current situation is as follows with the 8 independent analysis centers (on CDDIS website) Analysis center Number of maps per day Time interval between maps CASG 49 30 min CODG 25 1h ESAG 25 1h EMRG 25 1h JPLG 13 2h UPCG 13 2h UQRG 97 15 min WHUG 13 2h IGSG 13 2h

The interval varying between centers depends on the analysis software. The tendency is to provide 25 maps at 1 hour intervals even if the IGSG synthesis remains at 2 hours. Some centers offer a lower time period. Indeed, UQRG offers a prototype service at 15 minute intervals. In this article, our goal was not to study the different solutions offered. We have chosen to retain the experienced CODG analysis center, which has the longest annual series, and to take the IGSG maps which provide a summary of some different TEC results.

p. 6, l. 7-8 and figure 3b – Authors distinguish diurnal patterns of VTEC variability into parabolic and wave-like ones, however the separation of years 2016 and 2017 is questionable – in Figure 3b the profiles for 2016 and 2017 look pretty similar. Ans: The superimposed plot of year 2016 and 2017 show parabolic type of variation in VTEC during both years (Figure is attached below). It is corrected in the text.

p. 6, l. 14 – Authors discuss minimum during solstices, but address only January solstice. Ans: It is observed from the plot that TEC is minimum in both solstices (January and June)

The results of monthly and seasonal variability analyzes seem to lead to convergent conclusions. It should be checked and properly addressed, if there are any differences revealed between monthly and seasonal patterns. Ans: The difference between monthly and seasonal variation is not observed.

The very last conclusion of the manuscript about Nepal-specific behavior of certain seasonal variabilities seems a bit exaggerated, as the manuscript does not provide or address any exact results for the other regions for a clear Nepal-specification distinction. Ans: This line written below is omitted from the text. It is probably a characteristic of Nepal

In the equation 3 and its description the elvation angle symbol looks like logical set membership operator rather than Greek epsilon. Ans: It is corrected

Please also note the supplement to this comment:
https://angeo.copernicus.org/preprints/angeo-2020-82/angeo-2020-82-AC2-supplement.pdf

---

Interactive comment on Ann. Geophys. Discuss., https://doi.org/10.5194/angeo-2020-82, 2020.

Printer-friendly version

Discussion paper

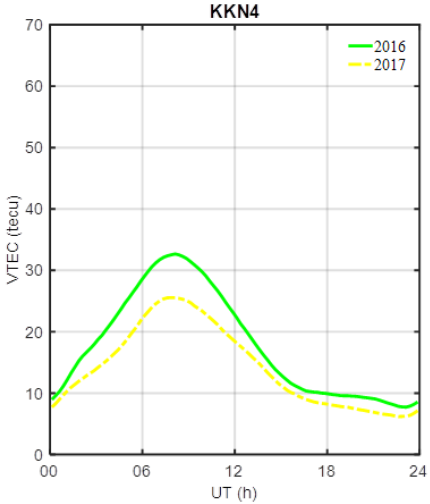

Fig. 1. showing similarity between plot of 2016 and 2017

Printer-friendly version

Discussion paper

Analysis center	Number of maps per day	Time interval between maps
CASG	49	30 min
CODG	25	1h
ESAG	25	1h
EMRG	25	1h
JPLG	13	2h
UPCG	13	2h
UQRG	97	15 min
WHUG	13	2h
IGSG	13	2h

Fig. 2. showing different analysis centre has different time interval