

Ann. Geophys. Discuss., author comment AC1  
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## Reply on RC1

Song Zhang et al.

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Author comment on "Characteristics of Ionospheric Scintillation in Chengdu, China" by Song Zhang et al., Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2021-13-AC1>, 2021

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Thank you very much for your review. According to your question, I have modified and clarified some of the issues. One of the documents has traces of revision and the other is reply. The specific response is as follows.

- Usually, those abbreviation, for example GPS/BDS/GAL (including but not limited to), need clarification in scientific publication.

Reply: These abbreviations stand for Global Navigation Satellite System(GNSS). I modified the relevant part of the article.

- Some statements should be clarified. What is the difference between the frequency ionospheric scintillation events, the incidence of ionospheric scintillation, the occurrence of ionospheric scintillation, the occurrence rate of ionospheric scintillation events, the scintillation rates and the probability of occurrence of ionospheric scintillation events, which may confuse readers.

Reply: There are indeed some problems in the translation. I have modified all the sentences that may cause confusion.

- In line 90, the two functions are in duplicate? In the S4 formula, what is  $\langle SI^2 \rangle$ ? They share the same dimension? It should be  $\langle SI^2 \rangle$ ?

Reply: The function has been duplicated and has been modified and deleted. In the S4 formula, your guess is correct, and I have also modified it.

- Those abscissas in Figs. 1 and 2 should be consistent with each other (including but not limited to).

Reply: The abscissas in the figure refer to the local time, including the following format, which have been revised and unified.

- 2 is computed by function 2? It may confuse reader.

Reply: Fig.2 is completely calculated by function 2. According to your suggestion, I explained in the article.

- Similar to comment 2, what is the scintillation rates in line 149?

Reply: The description of the scintillation rates here is inaccurate and has been modified in the text.

- In line152-157, the wind field can be measured in Chengdu? If so, the measurement of wind field may significantly support the discussion and improve this paper.

Reply: Unfortunately, because there is no relevant measurement equipment, there is no historical measurement data of the wind field in Chengdu. This part of the research is based on the research results of other scholars. Related references are as follows:

[1] Liu, Libo et al., 2003. Seasonal behavior of equivalent winds over Wuhan derived from ionospheric data in 2000–2001. *Advances in space research*, 32(9), pp.1765–1770.

[2] Luan, X et al., 2004. A climatology of the F-layer equivalent winds derived from ionosonde measurements over two decades along the 120°-150°E sector, *Ann. Geophys.*, 22, 2785–2796, <https://doi.org/10.5194/angeo-22-2785-2004>.

- What is the abscissa of Fig.7? The title of Fig.7 is 2018-5, whereas the abscissa of Fig.7 is month of year? The writing may confuse reader.

Reply: The abscissa refers to the day of the month, the error here has been modified.

- In Fig 8, what parameter does the scale colorbar note? It should be noted.

Reply: The color scale represents the level of S4 value, which is marked in the figure.

- In Abstract section, author writes " a data processing program was developed". Thus, the developed program should be stated in detail, and what is new?

Reply: Developed a batch processing program for processing ionospheric scintillation data. It is a GUI software that can realize data error removal, automatic correction, automatic drawing, batch processing and other functions. This part is supplemented in the text.

- English should be improved, for instance, "Ionospheric amplitude scintillation is the amplitude change caused by the electromagnetic wave signal passing through the

ionosphere." (including but not limited to). Indeed, amplitude scintillation should not be caused by the electromagnetic wave, but by the ionospheric irregularity.

Reply: According to your suggestion, this part of the narrative in the text has been re-expressed.

- In line 113, what is "abnormal occurrences of ionospheric scintillation"? which needs clarifications (including but not limited to).

Reply: The statement is wrong, it should be an ionospheric anomaly or an ionospheric scintillation event, which has been modified.

Thank you again for pointing out the mistakes in the article, so that I can express the research content more accurately.

Please also note the supplement to this comment:

<https://angeo.copernicus.org/preprints/angeo-2021-13/angeo-2021-13-AC1-supplement.zip>