

Review report on the Manuscript: “Effects of super-powerful tropospheric Western Pacific phenomenon 2 of September–October 2018 on ionosphere over China: Results from the oblique sounding” Authors: Leonid Chernogor, Kostiantyn Garmash, Qiang Guo, Victor Rozumenko, and Yu Zheng MS No. angeo-2022-24

Comments: The authors have made substantial improvements in the quality of the paper, the suggested modifications are more or less incorporated to make the MS a coherent reading, and the abstract is now well-framed to provide a clear goal of objectives and approaches of the work. Regarding “the periodic components of 20 min to 120 min at the ionospheric heights as reflected in the received signals are the effects of the superpowerful typhoon of September – October 2018” the explanation if made explicit would be better. Figures 6 to 13 have a scope for improvement. The Doppler shifts of October 7 and 8 as displayed in these figures are seen to be somewhat significant and as these are visible in almost all the paths, the authors may at least mention their presence. The paper may be accepted for publication with the final decision from the Editor.

Reply to Anonymous Referee #2

Comment #1.

Regarding “the periodic components of 20 min to 120 min at the ionospheric heights as reflected in the received signals are the effects of the superpowerful typhoon of September – October 2018” the explanation if made explicit would be better.

Dear Anonymous Referee #2, Thank you very much for this comment. Indeed, this phrase sounds vague, and it has been **deleted**. Instead, we retained explicit statements concerning the 20 min to 120 min period components. First, Table 4 has been constructed to prove the adequacy of the assumption that the Doppler shift variations are caused by the action of the typhoon. Second, the periods of wave disturbances observed are summarized in Table 5. Third, explicit statements about the 20 min to 120 min period components are made in both Abstract and Conclusions sections.

Comment #2.

Figures 6 to 13 have a scope for improvement. The Doppler shifts of October 7 and 8 as displayed in these figures are seen to be somewhat significant and as these are visible in almost all the paths, the authors may at least mention their presence.

Dear Anonymous Referee #2, Thank you very much for this comment. Indeed, the Doppler shifts registered on October 7 and 8 are greater than those observed during the rest of the time interval displayed in these figures. The typhoon originated on September 29, 2018, and ceased to exist on October 6, 2018, whereas “on October 7, 2018, a moderate magnetic storm started, with $K_{pmax} = 5.3$, and $D_{smin} \approx -53$ nT” (Section 3 “Analysis of the state of space weather”).

Since the magnetic storm occurred after the typhoon ceased to exist, it has nothing to do with the purpose of the paper, although this observational fact justifies a meticulous examination of space weather made by the Authors.

Nevertheless, on Referee’s advice, in order to not divert the reader’s attention from the purpose of the paper, the Authors have inserted the following sentence at the end of Section 3 “Analysis of the state of space weather”:

The magnetic storm occurred after the typhoon ceased to exist, from October 7 through 9, 2018, when the Doppler shifts exhibited variations greater than those observed under the action of the typhoon, which justifies the need for a thorough analysis of space weather.

Dear Anonymous Referee #2, Thank you very much for your comments. Your suggestions and comments have helped the Authors to significantly improve the manuscript.

Sincerely,
Authors.

List
of the changes made in response to Reviewer # 2 additional minor comments

The changes (marked in green) have been made in the last paragraph of Section 3 “Analysis of the state of space weather” (Line 140–142). The last paragraph of Section 3 now looks as follows:

Thus, solar activity and the state of space weather were conducive to observing the ionospheric effects from typhoon Kong-Rey. Only on 7 October 2018, a moderate magnetic storm started, with $K_{pmax} = 5.3$, and $D_{stmin} \approx -53$ nT. Thus, the days of 26 and 27 September 2018, the first half of 28 and entire 29 September 2018, and partially the days of 1 and 2 October 2018 were weakly disturbed. The magnetic storm occurred after the typhoon ceased to exist, from October 7 through 9, 2018, when the Doppler shifts exhibited variations greater than those observed under the action of the typhoon, which justifies the need for a thorough analysis of space weather. Consequently, 28 September 2018, and 4 October 2018, have been chosen to be quiet time references.