In reference to “Super Typhoons Mangkhut (2018) and Saola (2023) during landfall: comparison and insights for wind engineering practice”:

The authors received the review comments from one anonymous reviewer and the editorial board on Feb 13, 2025. We are grateful to the reviewers and the editorial staff for your valuable comments on this manuscript. We will respond to each of them and the relevant corrections are listed below. The relevant corrections have been highlighted in red in the revised manuscript, and the responses to the detailed comments are provided below.

General comments:

This manuscript offers a comprehensive comparison of the wind field characteristics of two super typhoons, Mangkhut and Hato, aiming to analyze their differences from a wind engineering perspective, including horizontal and vertical wind field structures. It also describes features such as dual eyewalls, gradient winds, and low-level jets for both typhoons. Overall, this is a well-written article, but there are several areas that require modification.

Response:

Thanks for your fair and objective evaluation. We highly value your feedback and acknowledge the areas for improvement in the current manuscript. In response to your comments, we have made improvements to the manuscript as follows:

1 The introduction does not clearly articulate the purpose of this study. Given that the authors are not aiming to develop a more accurate typhoon engineering model, it is suggested that the manuscript's introduction be revised to better reflect the study's objectives.

Response:

We appreciate the reviewer's suggestions. The primary objective of this study is to compare two typhoons with the aim of identifying differences in their wind fields from an engineering perspective. This research seeks to provide valuable references for typhoon-resistant design, particularly focusing on offshore wind turbines. In light of the aforementioned suggestions, we have revised the introduction to better reflect our research objectives as follows:

“However, alongside focusing on extreme wind velocities, gaining a deep understanding of the internal structure and evolution of typhoons is equally important for enhancing the safety of wind turbines. As a complex weather system, typhoons contain a wealth of meteorological elements such as temperature, humidity, pressure fields, and vertical and horizontal wind speed components. These elements interact with each other, collectively determining the intensity and path changes of the typhoon. For instance, the axial-asymmetry of TC pressure field can significantly influence local wind speed distributions, adding complexity to the prediction of typhoon behavior (He et al., 2020). Due to the high variability exhibited by typhoons during their spatiotemporal evolution, accurately assessing their impact on wind turbines poses a significant challenge (Ren et al., 2022). Therefore, evaluating the specific effects of individual typhoons on wind turbines becomes particularly crucial during the operational maintenance phase.” (Line 39)

2 The manuscript mentions work related to artificial intelligence; however, it is unclear how these preliminary studies contribute to the current research.

Response:

We concur with the reviewer's assessment that the role of AI in this study is minimal. Consequently, we have decided to remove the relevant sections from our manuscript. The revised portions of our manuscript are now presented as follows:

“…Instead, the central area before landfall was occupied by an irregular region of loose or patchy cloud which carried some characteristics of TC eye.

To detail the main-circulation (in particular the rain-band) structure of the two typhoons beneath the cloud shield, Figure 4 exhibits the echo-grams from the ground-based weather radar…” (Line 164)

3 Line 241, it is recommended that the discussion of eyewall replacement cycles be supported by additional references.

Response:

We appreciate the reviewer's suggestions. We have completely rewritten this section, incorporating additional information regarding eyewall replacement cycles, and have added several references for further context and support. The revised manuscript is now presented as follows:

“It has been well acknowledged that for intense TCs over deep seawater, an outer eyewall may form outside the initial (or inner) eyewall, and the storm demonstrates a concentric eyewall structure (Houze et al., 2007).” (Line 236)

“Meanwhile, the outer eyewall tends to shrink and gradually replace the inner eyewall. The above process is termed as the eyewall replacement (ER), which has been observed in the evolution of many super typhoons (Wang et al., 2024; Ling et al., 2024).”(Line 240)

4 Line 370, the authors emphasize the role of super-gradient winds in enhancing low-level jets. However, the manuscript lacks a detailed explanation of how super-gradient winds specifically influence the low-level jet characteristics within typhoons. The reviewer suggests further elaboration on this topic.

Response:

We appreciate the reviewer's constructive suggestions. In fact, the characteristics of the low-level jet in the vertical wind profile are not directly caused by supergradient winds. However, supergradient winds do lead to increased momentum transport and enhanced turbulence within the typhoon, thereby further intensifying the strength of the low-level jet. In the revised manuscript, we provide a more detailed explanation as follows:

While the low-level jet within a typhoon is not directly induced by supergradient winds, the latter significantly enhances local momentum transport and increases turbulent mixing within the wind field, leading to a further enhancement of the low-level jet (Line 383)

5 Regarding the impact of super-gradient winds on gradient winds within the typhoon wind field, can the authors locate literature that quantifies this effect?

Response:

We appreciate the reviewer's suggestions. In response to the impact of super-gradient winds on gradient winds, we have reviewed existing research findings. According to Kepert's study, super-gradient winds can influence gradient winds by more than 10%. Based on this conclusion, we have supplemented and elaborated on the relevant sections of our manuscript as follows:

"The investigative outcomes presented by Kepert (2001b) suggest that this disparity might potentially exceed a magnitude of ten percent." (Line 378)

6 There are issues with some figures, such as Fig. 7(a), where the parameter represented by the y-axis is not labeled; the same issue appears in Fig. 14.

Response:

We appreciate the reviewer's meticulous examination. If we understand correctly, the reviewer points out that the axes in these figures have not been adequately explained in the manuscript. In response to this issue concerning the two figures, we have made the following revisions:

For Fig. 7(a)， We have modified the picture to ensure that the label of the picture conforms to the relevant description in the manuscript:

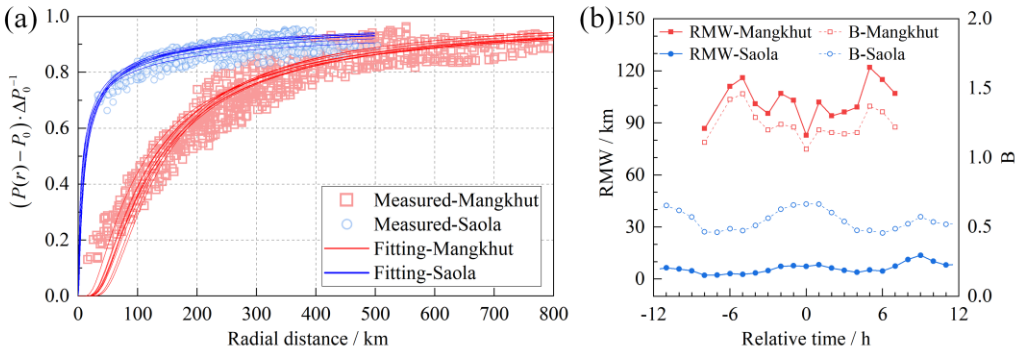

Figure 6: Calculated results of TC pressure field for *Mangkhut* and *Saola*: (a) normalized radial profiles, (b) RMW and B (0-h marks the time when the storm just got landfall)

For Fig. 14, we have provided additional explanations in the paper as follows:

as shown in Figure 13(a), Where, U_{max} represents the measured maximum wind speed, which denotes the gradient wind speed. The measured gradient winds are also compared with their counterparts obtained via the standardization method developed by He et al. (2014), as shown in

Figure 13(b), Where U_{stand} represents the normalized gradient wind speed and U_{DRWP} denotes the measured results.

7 The manuscript contains typographical errors (e.g., Line 252 should refer to Typhoon Mangkhut rather than Typhoon Saola) and inconsistencies in font size, such as Lines 215-220 and 365-368.

Response:

We are grateful for the reviewer's meticulous examination. We have corrected the typos identified in the manuscript as follows:

"**…** and (b) after the first landfall, *Mangkhut* moved to the South China Sea and approached to the southeast coastline of China where the ambient conditions became unfavorable for its further development" (Line 252)