

## **Response to CC2**

This manuscript introduces the CNPS-Met dataset, a daily, 25-km gridded product (1980–2016) specifically tailored for China’s new-type power systems. By integrating ground observations from over 2,000 stations with the ERA5 reanalysis using a spatially adaptive Optimal Interpolation (OI) scheme, the authors provide essential meteorological variables alongside 11 high-impact weather events categorized by power system vulnerabilities. The dataset addresses a critical gap in energy-meteorology by aligning atmospheric data with operational needs (generation, grid, and demand). To further enhance the manuscript's clarity and formalize the presentation for readers, the following minor refinements are suggested:

**Re:** Thank you very much for your constructive comments on this study. We have revised the manuscript carefully according to your suggestions. Below are our point-by-point responses.

1. Lines 48–49: Suggest changing "exceed" to "exceeding" for grammatical consistency, and "observations" to "observation stations" for better clarity.

**Re:** Revised, please see Line 49 in the revised manuscript.

2. Lines 50–51 & 53: Please consider replacing "ground-based observations" with "ground-based observation stations." This change clarifies that the scarcity refers to the physical distribution of the monitoring network rather than the data points themselves.

**Re:** Revised throughout the manuscript.

3. Line 58: Consider adding “the” before “increasing frequency” for grammatical correctness.

**Re:** Revised, please see Line 58 in the revised manuscript.

4. Line 61: “high-quality” should be hyphenated when used as a compound modifier before “gridded dataset.”

**Re:** Revised, please see Line 61 in the revised manuscript.

5. Line 62: To enhance readability, you might rephrase "power system-relevant high-impact weather events" to "high-impact weather events relevant to power systems."

**Re:** Revised, please see Lines 62–63 in the revised manuscript.

6. Lines 69–75: Suggest changing "over China region" to "across the China region" or "covering the Chinese mainland" for a more idiomatic academic expression. Please correct the grammatical errors in these lines. "It has at spatial resolution" should be changed to "It has a spatial resolution," and the comma after "2020" should be replaced

with a period to separate the two independent sentences. For consistency and technical accuracy, please replace "observations" with "observation stations" (e.g., "...approximately 2,400 ground-based observation stations"). This clarifies that the number refers to the monitoring locations, not observation records.

**Re:** Revised, please see Lines 70-72 in the revised manuscript.

7. Line 78: Please ensure there are spaces between the numbers and units (e.g., "4 km × 4 km") and consider adding a comma after "2020" for better readability.

**Re:** Revised, please see Line 79 in the revised manuscript.

8. Line 89: Please change "high-impact weather event" to " high-impact weather events" to ensure plural agreement with "datasets."

**Re:** Revised, please see Line 90 in the revised manuscript.

9. Line 121: "...uniformly distributed, In cases of uneven...". The comma should be replaced with a period to separate the two independent sentences.

**Re:** Revised, please see Line 123 in the revised manuscript.

10. Line 141: The list of variables contains redundant conjunctions ("and... and..."). Please rephrase to: "...relative humidity at 2 m, surface pressure, and precipitation."

**Re:** Revised, please see Lines 139-141 in the revised manuscript.

11. Line 143: Please provide a brief mention of the specific quality control methods used (e.g., spatial consistency or range checks), which would greatly benefit the readers.

**Re:** Before the assimilation, all observations undergo unit conversion and format unification, and outliers are removed using the "3-σ criterion". Please see Lines 159-163 in the revised manuscript.

12. Line 145: Please ensure consistent formatting for figure citations throughout the manuscript. You have used both "Figure 1a" (Line 139) and "Fig. 1a" (Line 145).

**Re:** The rule for citing figures in this study is: use a form similar to Figure for the first citation, and use Fig. for other times.

13. Line 155: "...at horizontal resolution of 1° × 1°..." should be "...at a horizontal resolution of 1° × 1°...".

**Re:** Revised, please see Line 155 in the revised manuscript.