

Response to Associate Editor Comments

Manuscript ID: egosphere-2026-241

Title: Saturation effect of background temperature and aridity on vegetation phenological sensitivity to urban warming

Dear Dr. Vicca,

We sincerely thank you for your careful editorial handling and valuable technical corrections. We are also greatly honored that our manuscript has been selected as a highlight paper by Dr. Paul Stoy. We have fully revised all points you raised line by line. All modifications are marked in the tracked-changes manuscript, and page & line numbers of each revision are listed below for easy checking.

1. **Q:** The manuscript repeatedly refers to "warming benefits" or "benefits of urban warming". For example on l. 703: urban warming benefits are not universally distributed" and l. 712: aridity is a "negative regulator of warming benefits". This is understandable but sounds awkward and is conceptually loaded: earlier SOS/late EOS are not necessarily ecological benefits. I would replace by "warming-induced phenological effects/responses". Other example on l.48: the degree to which warming benefits phenological changes. I suggest to replace by "promotes phenological shifts".

R: We fully agree with your valuable comment, as earlier SOS and later EOS do not inherently represent ecological benefits and the term "warming benefits" brings conceptual load. We have revised the pointed-out sentences following your suggestions, e.g., replacing "the degree to which warming benefits phenological changes" at Line 48 with "the degree to which warming promotes phenological shifts". We also systematically checked the full manuscript and rephrased other similar instances with neutral expressions such as warming-induced phenological effects/responses.

Location of changes: Manuscript full text, e.g., Page 2 Line 49; Page 27 Line 634-642; Page 30 Line 704- 713.

2. **Q:** 201: "For alignment with the phenology information...": I suggest to replace by "To align the temperature data with the phenological data..."

R: We fully agree with your suggestion, which makes the expression more accurate and idiomatic in academic writing. We have revised this sentence exactly as recommended.

Location of changes: Section 2.3 Pre-season temperature and background climates, Page 8, Lines 201-202.

3. **Q:** 212: "The background climates were evaluated utilizing..." would read better as "Background climate was characterized using..."

R: We appreciate this suggestion to improve the readability and precision of the text. We have modified the sentence accordingly.

Location of changes: Section 2.3 Pre-season temperature and background climates, Page 9, Line 213.

4. **Q:** 574: "the physiological capacity of urban vegetation to capitalize on UHI warming is strictly finite": I suggest to replace with "the phenological response of urban vegetation to additional warming is bounded", to be less rethorical.

R: We agree that the revised phrasing is more objective and academically rigorous, avoiding overly rhetorical expression. We have adopted this revision in the manuscript.

Location of changes: Section 4.2 Background temperature related phenological response variance, Page 25, Line 575.

5. **Q:** 722: "drought-resistant vegetation structures": I suggest to replace by "drought-tolerant vegetation" or "drought-tolerant vegetation types".

R: We fully agree with your suggestion. The term "drought-tolerant" is more standard and precise in ecological academic writing to describe vegetation drought adaptability. We have revised the expression at Line 722 exactly as you recommended. To ensure consistent and unified terminology throughout the manuscript, we have also updated the other two occurrences of "drought-resistant" (used to describe plant traits and vegetation structures) to "drought-tolerant".

Location of changes:

1. Section 5 Conclusions, Page 31, Line 726.
2. Section 4.4 Phenological response variation among different vegetation types, Page 29, Lines 682 and 689.