Answer letter

Dear editorial team, dear reviewers,

Thank you very much for the feedback. We hereby resubmit the production files with the requested minor changes. Please find individual answers to the comments below. Thank you for the helpful input and constructive feedback.

Fiona Fix-Hewitt on behalf of the authors

Answers to Reviewer 1's minor comments

1. Should the abstract be one paragraph? (Noted in the original comments, but not responded to.)
We did respond to this comment in the first round as:
"In our opinion the abstract should have a sentence **or a short paragraph** for each of: Motivation, Objective+Scope, Methods, Results, Principal conclusions. Also see
Schultz, D. M. . (2009). Eloquent science: a practical guide to becoming a better writer, speaker, and atmospheric scientist. American Meteorological Society."
We therefore like to keep the paragraphs, as we think it increases the readability and one-paragraph abstracts are not required by the journal and become less common in scientific writing.

2. Line 140: "3-hourly resolution" should just be "every 3 hours" (or similar). (Distinction between resolution and data intervals discussed in the original comments.)
Changed to: "It provides dust aerosol optical depth at 550 nm ($AOD_{550\mathrm{nm}}$) every 3 hours and at 0.75° grid spacing. "

3. Line 197: Write out the months for clarity and consistency: 01/2003–04/2024.
Changed to:"Because a climate-change signal can be expected in $T_{2\mathrm{m}}$, the full $T_{2\mathrm{m}}$ time-series (January 1992– April 2024) is linearly detrended prior to anomaly calculation for each cell (using `cdo`, Schulzweida et al, 2023). The dust reanalysis data is only available from 2003 onward, so we use 2003—2021 as reference period. As no significant long-term trend is present in the dust time series (January 2003–April 2024, area-weighted, annually averaged domain means; Theil–Sen trend: -1.32×$10^{-5}$$y^{-1}$, p = 0.96), we do not detrend it and consider the shorter 2003–2021 reference period sufficient."

4. Line 294: "is is".
Repetition removed.

5. Line 295: "confines the heating". Be careful; consider a revision. Heating occurs from the ground to the near-surface air. Convection redistributes that heated air throughout the PBL. "Heating" is not "confined".
Changed to: "The proposed mechanism for enhanced near-surface temperatures during an EML (and thus during an AD) is that a cap of stable stratification limits the vertical growth of the CBL. Convective turbulence distributes the surface sensible heat input through the mixed layer. When that layer remains shallow, the same heat input produces larger temperature increase (Cordeira et al, 2017). " and similar versions in other occurrences in the text.

6. Line 297: Why is 'wet-bulb" in parentheses? Heating changes the air temperature. Sure, it changes the wet-bulb temperature, too. It is less ambiguous if you just drop the parenthetical and refer to changes to the temperature.
We removed the parenthesis, but kept 'wet-bulb' as the cited paper primarily mentions that.