

This manuscript presents parallel BVOC emission factor measurements for *Eucalyptus urophylla* using leaf cuvettes and dynamic branch chambers, comparing 2-month-old seedlings (laboratory campaign) with 2-year-old field saplings (plantation campaign). The dataset seems valuable and aims to address two important uncertainties for emission factor databases and model parameterizations: (i) method comparability and (ii) potential size/young-plant effects. I agree with the points raised by Reviewers #1 and #2, and I summarize my additional detailed concerns below, based on the authors' responses and the manuscript.

1) Provide more detail on field measurement conditions and within-chamber microclimate

Seedlings were measured in a laboratory campaign, while saplings were measured in situ at a plantation. Even if emissions are standardized to reference conditions (30 °C, 1000 PPF), long-term growth environment (light history, temperature history, VPD), as well as unmeasured stressors (soil moisture/nutrients), can influence emission capacities and enzyme expression. Referees #1 and #2 already flagged this as a critical issue.

Given that field measurements were performed in summer and largely under sunny conditions (per your response to Referee #1), potential heat and water stress may also influence emissions and speciation. Therefore, I strongly recommend adding more quantitative information, including:

- How many trees were selected and how selection was randomized (or otherwise controlled).
- Distribution of measurement times (e.g., as you mentioned period '09:00–17:00'): what fraction of observations were collected during 12:00–15:00 vs morning/late afternoon?
- Within-chamber air temperature and RH during measurements (especially midday), and their distributions.
- Variability of observed emissions by time-of-day bins (morning / midday / afternoon) as Supplement.

The above points will strengthen interpretation and help the reader evaluate whether stress conditions contributed to the observed differences.

2) Genotype/chemotype control: Your response indicates seedlings and saplings came from the same clonal line, reducing genotype/chemotype variability. This addresses a key concern raised by Referee #2. The authors did explained in their previous reply, but statement is not good enough to your audiences. Could you add one sentence describing how this was verified (nursery documentation and/or plantation records)? And if possible, report terpene composition variability within each cohort (e.g., dominant compounds and variability ranges) to demonstrate chemotype consistency.

3) Standardization and “leaf temperature” should be unambiguous

The standardization approach is consistent with established EF protocols. However, the manuscript should clearly state whether “temperature” in branch chambers refers to leaf temperature or chamber air temperature, and how PAR at the leaf surface was assessed.

So, please consider:

- Specify whether leaf temperature was directly measured (e.g., thermocouple on leaf) or inferred from air temperature.

- If leaf temperature was not directly measured, report chamber air temperature during measurements (especially midday for field saplings) and discuss implications for standardization uncertainty.
- For lab seedlings, briefly describe any pre-treatment/conditioning (e.g., watering schedule, light acclimation, duration before measurements), since this can influence emission capacity.

4) Terpene speciation (β -ocimene dominance) requires stronger QA/QC reporting

The finding that saplings emit higher total monoterpenes dominated by β -ocimenes is interesting, but ocimene isomer identification can be challenging and potentially sensitive to analytical artifacts. Also, beta-ocimene can be a stress compounds, especially from wound tree, e.g. Yuan et al., 2025 (<https://doi.org/10.3390/plants14050821>), Fäldt et al., 2003 (DOI: 10.1007/s00425-002-0924-0).

I would like to know more details from the authors:

- Provide compound-class LOD/LOQ (or at minimum detection frequency and blank levels).
- Clarify identification approach for ocimenes: standards used? qualifier ions? retention criteria?

5) The “age effect” is coupled with growth environment; conclusions should be softened or supported with additional constraints

The manuscript states: *“Roughly one-third of the global BVOC Es entries now feeding chemistry-climate models originated from greenhouse seedlings.”*

Please provide one or more references that support this quantitative statement (including how “seedlings” are defined if not same like your measurement stated, and which EF database/model compilation is being referred to).

The manuscript further concludes that current models may *“overestimate canopy-scale isoprene fluxes and under-represent atmospheric reactivity ... from mature canopies.”*

This statement is too strong as written for two main reasons: 1) BVOC emission patterns are highly species-specific, and many tree species are monoterpene emitters with negligible isoprene (e.g., *Pinus pinea*, *Pinus sylvestris*). Therefore, the present measurements primarily constrain the tested species (*E. urophylla*) and should not be generalized broadly without careful qualification. 2) The two age classes studied (2 months and 2 years) are both relatively young; therefore, statements about “mature canopies” should be avoided unless supported by external evidence for older age classes of the same species or closely related taxa.

Others:

1) Nice modify on the exact sampling timeline (dates and gaps) clearly visible in Methods (as requested by Referee #1). And state clear how many seedlings and how many saplings were measured, and the selection criteria.

2) Use consistent terminology: **seedlings** and **saplings/young trees**, and avoid “mature trees/canopies” unless you provide supporting data/literature.