Please find below the answers (in italics) to the short reviews prior to publication in ACPD. For technical reasons it has not been possible to integrate such changes in the ACPD manuscript. In agreement with the editorial office, the changes are published as comments and they will be integrated into the manuscript in the next iteration of revisions.

Anonymous Referee #1

Figure 2 is blurred, error bars and asterisks are not well visible.

Figure 4 could be considerably condensed using narrower bars. The line width of the error bars should be increased.

I recommend updating both figures prior to publication in ACPD.

Answer: *We thank the reviwer for the suggestions. Please find below the updated Figure 2 and Figure 4.*

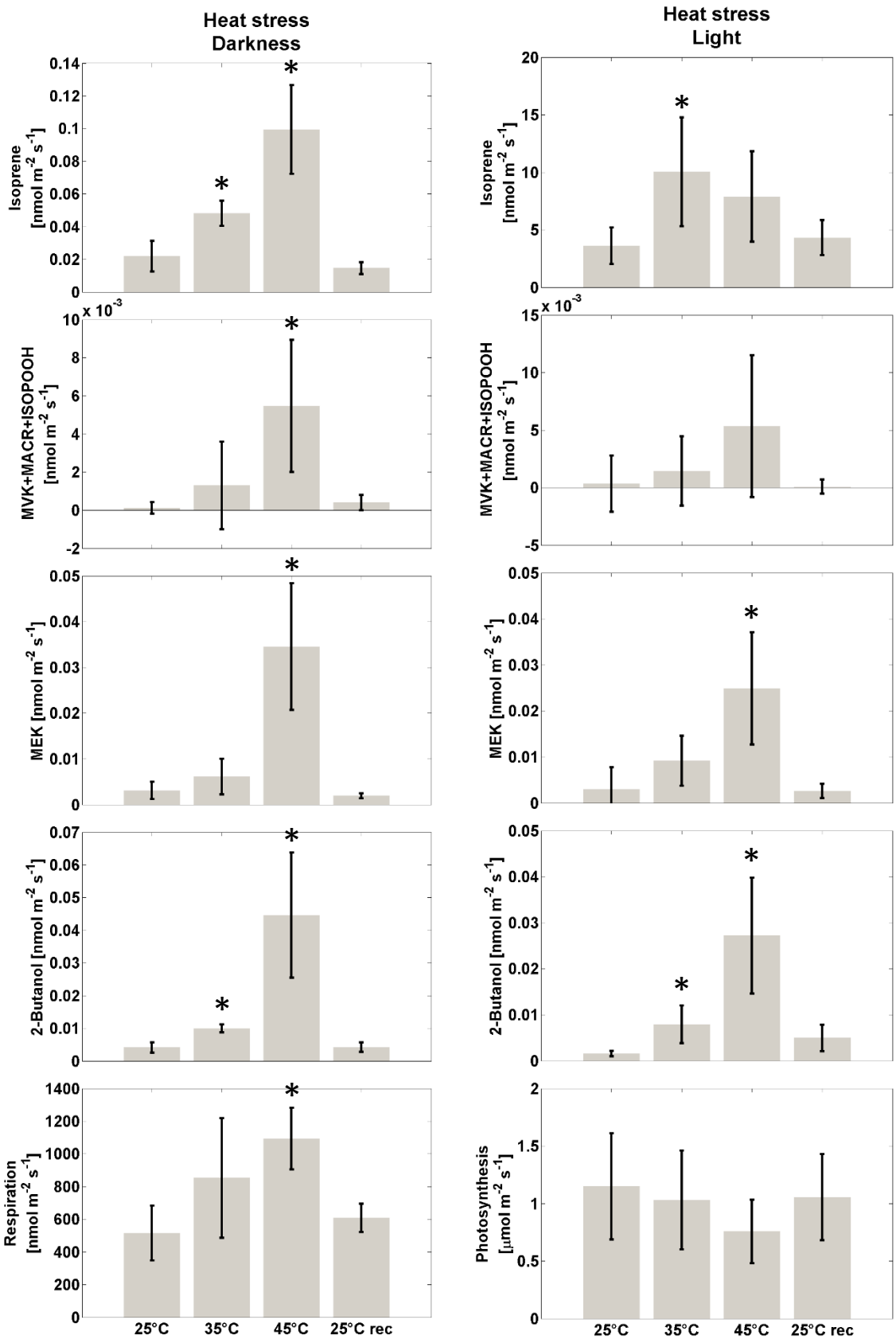

Figure 2. Left: Emission of isoprene (a), MVK+MACR+ISOPOOH (b), products from MVK reduction (MEK (c) and 2-butanol (d)) and respiration (e) upon exposure to moderate (35°C) or severe (45°C) heat stress, and recovery to 25°C by red oak plants in the dark. Asterisks indicate significant differences (Kruskal-Wallis, $p<0.05$) compared to the unstressed

(25°C) case. Right: Emission of isoprene (f), MVK+MACR+ISOPOOH (g), products from MVK reduction (MEK (h) and 2-butanol (i)), and photosynthesis (j) upon exposure to moderate (35°C) or severe (45°C) heat stress, and recovery to 25°C in red oak plants in the light (ca. 90 µmol m^{-2} s^{-1} light intensity). Asterisks indicate significant differences (Kruskal-Wallis, $p<0.05$) compared to the unstressed (25°C) control.

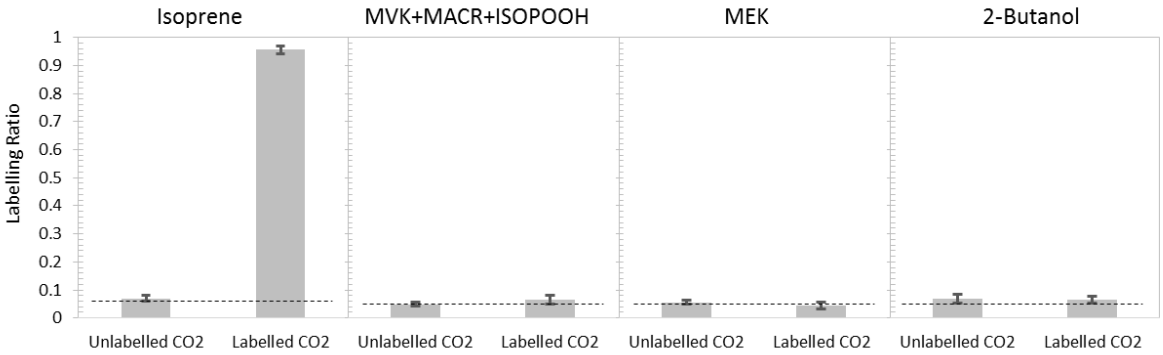

Figure 4. Emission of isoprene (a), MVK+MACR+ISOPOOH (b), MEK (c), and 2-butanol (d) in red oak plants heat stressed at 45°C for two hours in the light, under $^{12}CO_2$ or $^{13}CO_2$ atmosphere. Dashed horizontal lines represent natural abundances of isotopic compounds.

Anonymous Referee #2

The goal of the manuscript was to study the within-plant oxidation of isoprene to carbonyl compounds. Although isoprene emissions and its importance in plant stress reactions have been widely studied, its within-plant transformation to methacrolein, methylvinylketone and other VOCs has still been questionable. The study is well planned, accomplished and the MS is well written. There are no serious flaws, only some small mistakes. For example, I did not understand, how heat stress was applied or how was it possible to maintain a constant temperature? Yet, as the authors have published papers about isoprene emission earlier, I am sure that the description of the technical details is a little bit overlooked. In addition, I would add SD or SE values to the data of Figure 1 to show, that the results are based on several biological replicates.

I think the results are suitable for further revision and discussion.

Answer: *We thank the reviewer for the suggestions. Please find below the modification to the description and the updated Figure 1.*

In section 2.1, page 8, line 14:

Plants were watered every three days and developed fully expanded leaves after five weeks. Four days prior to the experiments, plants were transferred from the growth chamber into a climate cabinet (Climacell 707, BMT Medical Technology, Brno, Czech Republic). The climatic cabinet was employed to maintain constant climatic conditions (fumigation experiments) or to apply heat stress while maintaining all other parameters constant (heat stress experiments). The~~is~~ early transfer allowed plant recovery from accidental mechanical injures and adaptation to the new environment. The climate cabinet was set with the same parameters of the greenhouse, but at a constant temperature of 25°C (except for heat stress experiments), and interfaced with the PTR-ToF-MS via polyetheretherketone (PEEK) capillary tubes (ca. 1.5 m length x 1.01 mm ID, temperature: 110°C, flow: 40 sccm).

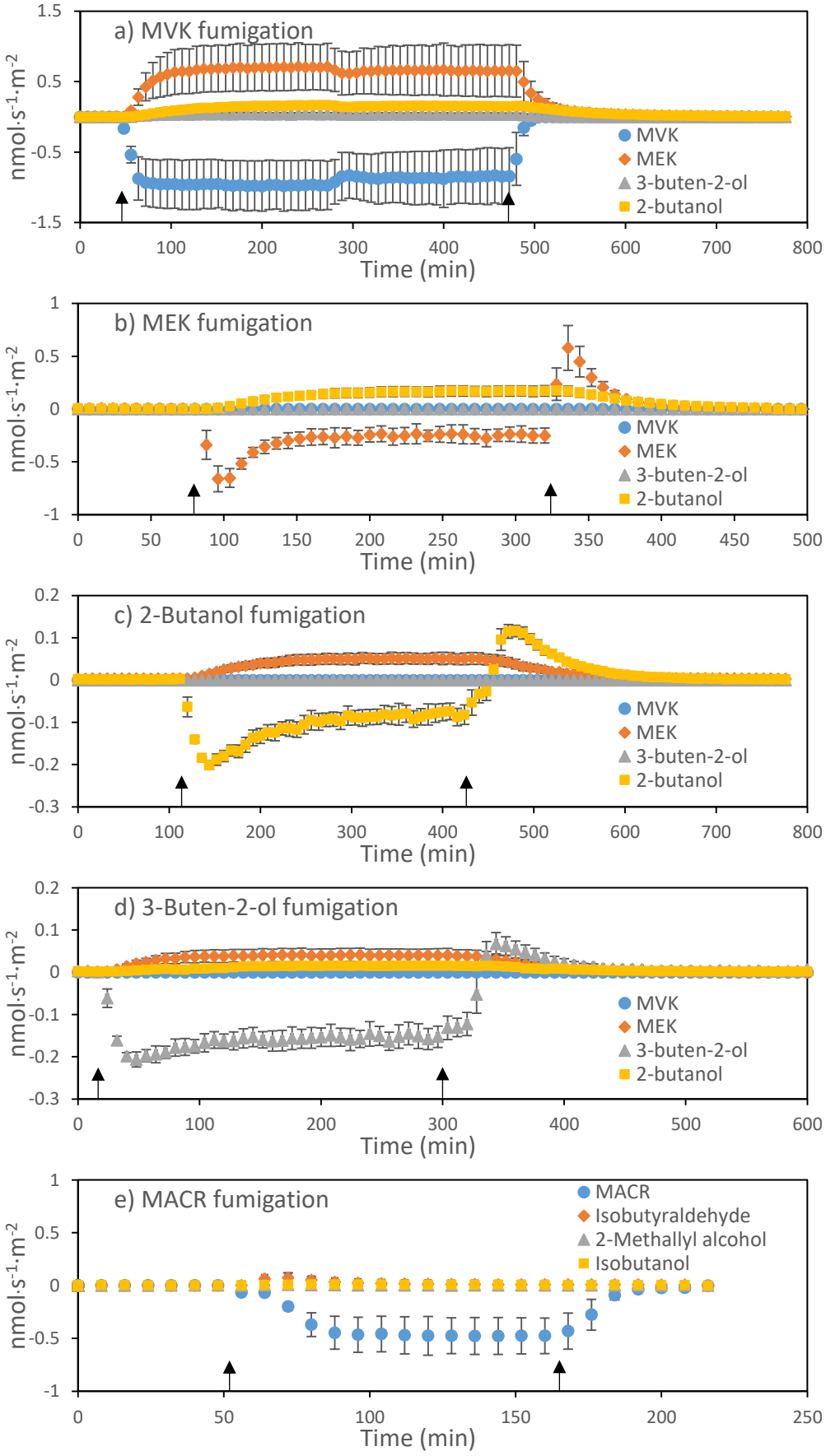

Figure 1. Uptake and transformation of MVK (a) and MACR (e) and of MVK transformation products, MEK (b), 2-butanol (c), 3-buten-e-ol (d) by red oak leaves. Results are reported as mean ± standard deviation (n=3). Negative values

denote uptake, while positive values indicate emission. Black arrows indicate the beginning and the end of the fumigation. In panel (b), the pulses of MEK uptake at the beginning of the fumigation and of MEK release after the end of the fumigation correspond to formation and release, respectively, of a MEK pool dissolved into the leaf water. At equilibrium the uptake of MEK and subsequent release of 2-butanol is constant and indicates a constant rate of MEK transformation within leaves. Analogous considerations can be made for 2-butanol and 3-buten-2-ol in panels (c) and (d), respectively.