We thank Referee #2 for reviewing our manuscript and for his/her critical and constructive comments. In the following, the comments by the reviewer (in italic blue font) are followed by our detailed responses.

Li et al present experimental findings from branch enclosure measurements of BVOC emissions from Phillyrea latifolia under drought and irrigation conditions. The precise effects of meteorological conditions, under existing drought conditions, on BVOC emissions have not been well studied and this paper makes a timely contribution. The paper is clear, thorough, well-written and within the scope of Biogeosciences. I recommend publication following clarification on the below (minor) points:

Line 132 – 133: is there any data you can cite to support the idea that Phillyrea latifolia is the greatest BVOC-contributing plant species in the park? Or is this based on MEGAN? You mention later that the species does not emit much isoprene, so presumably this is based on MT and SQT emissions?

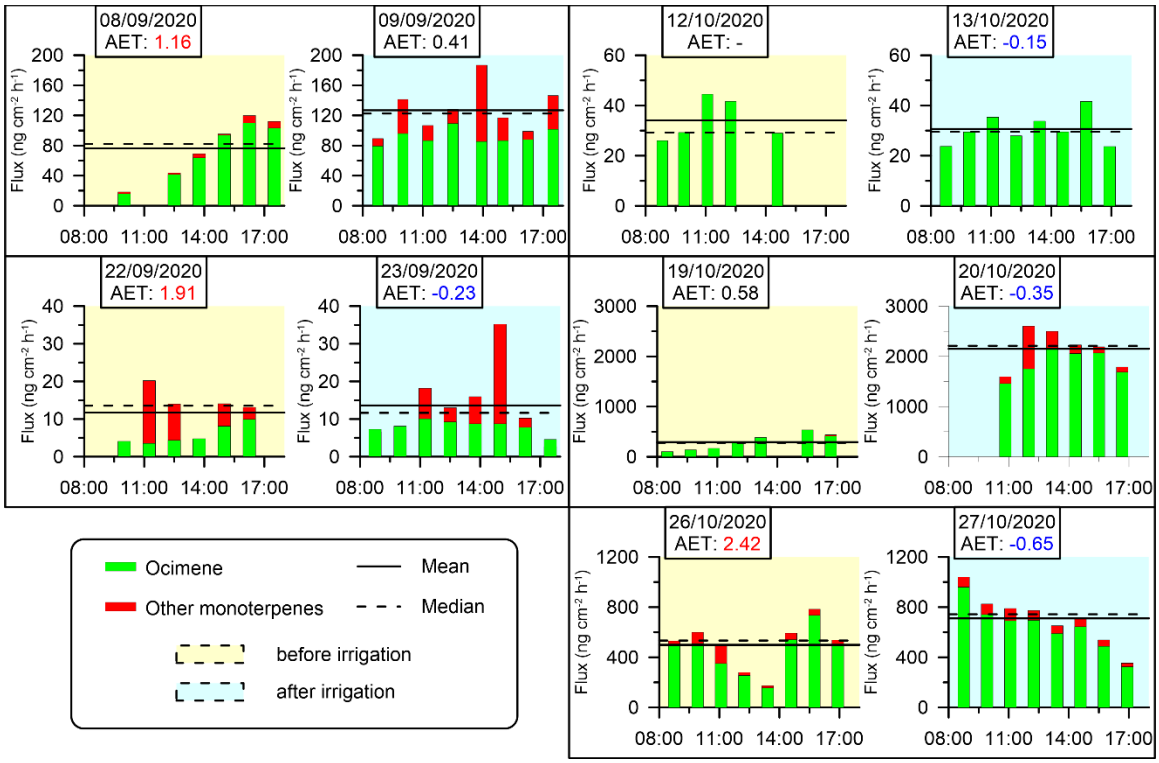
Response: The composition of plants is unique to the specific region, and there are no other studies regarding BVOC-emission for similar shrubberies in the region. Our study focused on Phillyrea latifolia based on MEGAN results for this specific shrubbery (Li et al., 2018). The study by Li et al. (2018) also indicated negligible isoprene emission rates from this shrubbery. In our companion paper (Li et al., 2024) we reported measurement of BVOCs by Proton-transfer-reaction time-of-flight mass spectrometry (PTR-ToF-MS) in a site located 44.4 km northeast of Ramat Handiv, which comprises a similar vegetation composition .We found that in this site, isoprene has a negligible mixing ratio, in agreement with the MEGAN prediction using the specific local species composition. We have added to the revise version the study by Li et al. (2018) as a reference to the revised version.

Line 290 – 291: the soil moisture is described as "around" and "~" but then two ranges of values to 1 decimal place are given. Could this be rephrased as "soil moisture ranged between X and Y % before irrigation, and X and Y % after irrigation".

Response: Thank you for pointing out that. We have amended this in the revised version: "Soil moisture ranged between 12.5% and 14.0% before irrigation and between 14.3% and 26.2% after irrigation."

Figure 4: On Figure 5 it's useful to have the yellow and blue shading explained in the legend, could you add that here too?

Response: Thank you. This was amended as follows:



Section 3.2.2 (Line 356): It is interesting to see from Figure 5 that post-irrigation, as well as an increase the amounts of SQT emitted, there are also some changes to the composition of compounds emitted – could you add some discussion around this?

Response: Thank you for raising this point. It would indeed be important to analyze and discuss this finding, but we feel that we don't have enough data available for such analysis. Accordingly, we mention this finding in the revised version and state that additional study is needed to better understand the connection between irrigation during drought stress and BVOC emission composition as follows: "It is also observed that on some of the sampling days, the composition of MTs tends to become more diverse after irrigation compared to before irrigation, warranting further studies." And "In addition, the SQTs composition, like MTs composition, was observed to be more diverse after irrigation in most cases, warranting further study"

Line 425 – 428: Is this is reason you don't present r values for the whole drought and whole irrigated sets of data that are discussed on Lines 401 – 413? If so, you could move this explanation earlier in the text to justify that.

Response: Due to the large variation in BVOC emissions across different branches, the r values were calculated separately for each branch. On lines 401-413, the reported r values are calculated as the average across r values which calculated individually for each branch, for each measurement day (separately for drought and non-drought conditions) and individually for MTs and SQTs. We have added the following sentence to clarify this point: "Due to the large variation in BVOC emissions across different branches, the r values were calculated separately for each branch and each sampling day."

We have revised the sentence on lines 410-412 as follows: “the BVOC emissions were better correlated with T (averaging r values across all relevant days, r = 0.52)”

Line 442: Please add clarification in the caption for Table 1 that these are the average Pearson coefficients from multiple individual branch values.

Response: Amended: “The values are the average of r values for multiple individual branches.”

References

Li Q., Gabay M., Dayan C., Misztal P., Guenther A., Fredj E., Tas E., 2024. Instantaneous intraday changes in key meteorological parameters as a proxy for the mixing ratio of BVOCs over vegetation under drought conditions. Biogeosciences.

Li Q., Gabay M., Rubin Y., Fredj E., Tas E., 2018. Measurement-based investigation of ozone deposition to vegetation under the effects of coastal and photochemical air pollution in the Eastern Mediterranean. Science of The Total Environment 645,1579–1597. https://doi.org/10.1016/j.scitotenv.2018.07.037.