

Comments on

“Seasonal variations of *Q. pubescens* isoprene emissions from an *in natura* forest under drought stress and sensitivity to future climate change in the Mediterranean area”
by Anne-Cyrielle Genard-Zielinski et al.

This work is a comprehensive study started from site experiment/measurement, evaluated model performance, developed a new model and evaluated future impact on isoprene emissions over Mediterranean region and is a contribution to scientific research in this field. This paper investigated the impact of drought on isoprene emissions of *Q. pubescens*. Although the response of ER to drought is not significant, emission factor increased considerably. Inadequacies of MEGAN2.1 are discovered and a new formulation of γ_{sm} is suggested. ANN trained model G14 showed improved performance under certain conditions as well. Temperature and precipitation changes according to RCP scenarios are found to contribute to ER in the future.

At this stage of revision, the paper is well written, clear and well structured. There are a few comments or questions I would love to have the authors clarify in the paper:

1) In chapter 2.6, 3.3 and appendix 1, G14 algorithm is introduced and shows a significant performance improvement in simulating ER with environmental inputs. Could you explain a bit more on how overtraining issue is tested and avoided in this practice?
Why is July an outlier in this algorithm? Is there an explanation for that, or does it suggest some potential issues with certain measurements over this period?

2) When applying RCP projections as inputs for G14 algorithm, 21% of the data were rejected. What is the rejection criteria, especially variables related to temperature? Do you only use data that are in the range of G14 training dataset for all of the inputs, or majority of them? Please clarify.

3) Figure 6 illustrates the relative contribution of different regressor frequencies, however, regressors at certain frequencies are not picked as predictors in G14, for instance, T-7, ST-1, P-1. How is this relative contribution calculated, when they are not all included in the algorithm?

Minor comments:

P1L21, (+30%, AD), suggest to change to (around 30%, AD) or (AD, 32%).

P2L18, “Brili et al., 2007 Loreto and Fineschi, 2015” missing comma and space.

P8L2, $\varepsilon_{iso,qp}$ is not introduced here or before.

P8L7, PPF is not introduced.

P10L5, N=7 neurons? Or layers of neurons? Please clarify.