

***Interactive comment on “Simulating precipitation decline under a Mediterranean deciduous Oak forest: effects on isoprene seasonal emissions and predictions under climatic scenarios” by Anne-Cyrielle Genard-Zielinski et al.***

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Responses to Referee #1

a. General comments: None

b. Detailed comments:

We do thank Referee #1 for his/her careful review and comments.

Abstract

C1

Line 1: ‘physiology’ has been changed by ‘gas exchange’ (and all along the document as well).

Lin 20-23: the lowest ER values in October and April, 6 and  $<2 \mu\text{g gDW}^{-1} \text{h}^{-1}$  respectively, have been added.

Lin 20: no, the lowest Gw values were observed between July and September ( $<20 \text{ moleH}_2\text{O m}^{-2} \text{ s}^{-1}$ ) not in April (figure 2b).

Line 22: we do not understand this point; emission rates ER (measured values) are different from emission factors Is (=ER normalized to temperature and PAR). Materials and Methods

Pg 5 Lin 10: sampling volumes varied between 0.45 and 0.9 L depending on the season and the hour of the day, thus, on the expected emission intensity. This precision is now given in the revised section 2.2.

Pg 8 Lin 7: a new web site link is now given in the revised section 2.7.

Results

Pg 9 lin 31: no, PAR peaks in June 13 ( $899.3 \mu\text{mole m}^{-2} \text{ s}^{-1}$ ).

Pg 10 Lin 20: further information is now available in the revised sections 3.2 and 4.1 (Electric resistivity tomography measurements have shown the heterogeneity of the karstic substrate organized as soil pockets developed between limestone rocks. Water and nutrient pools and dynamics probably differ greatly between the shallow upper soil layers and the soil pockets developed between limestone rocks. However, the soil trenches carried out in the site have shown that a calcareous slab often developed at a depth of 10-20 cm and that the roots of the oaks were rather distributed in this superficial humiferous horizon, and that only a few large roots cross this slab.)

Pg 10, Lin 26: Senescence of leaves: although senescence had just begun during this sampling period, but we did check that the enclosed branches were not senescent

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during our measurements. This information is now given in the revised section 2.2.

#### Discussion

Point 1: As already mentioned, the water availability from deep roots is now better discussed in the revised discussion, section 4.1.

Point 2: we do consider moderate to more severe drought effects; this is why we mentioned the overall range of drought intensity.

Point 3: we suggest that the frequency over which the different environmental parameters (not only light) should be larger than the one considered so far, and how these frequencies are changing over the year (see new section 4.2 and conclusion).

Pg 13, lin 15: although this section has been completely re-written we made sure to put Q. Pub in italics in the document.

Pg 15, lin 12: this section has been completely re-written.

Pg 16, lin 9-16: this section has been completely re-written.

#### Figure caption

Same colors of the legends in all graphs: we used blue and red colors for ND and AD respectively in all graphs; therefore, we are not quite sure to understand what referee#1 wants.

Pg 23, lin 3: July 2013 was changed to June 2013.

Pg 23, lin 9 & 18: 'June 2013' was added.

Pg 23, lin 18: Since Fig. 3 has been changed a new figure caption is now given.

Fig 1: in Fig. 1 (and other figures as well) the colors do differ from ND (blue) and AD (red) treatment. However, PAR and T values being the same for both plots, this color code was deliberately not used for PAR and T.

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Legend axis was reissued as suggested and a vertical line between 2012 and 2013 was added.

Fig 2: we did not add 'isoprene' as suggested to keep the title short; ER and Is meanings are given in the figure caption and, anyway, all the paper is about isoprene (and not another VOC) emissions.

Fig 3: Former figure 3 was changed by a new one.

Fig 4: Former figure 4 was removed.

Fig 5: Former figure 5 was removed.

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