Corrigendum to Biogeosciences, 15, 4711–4730, 2018
https://doi.org/10.5194/bg-15-4711-2018-corrigendum

Biogeosciences Open Access EGU

Corrigendum to "Seasonal variations of *Quercus pubescens* isoprene emissions from an *in natura* forest under drought stress and sensitivity to future climate change in the Mediterranean area" published in Biogeosciences, 15, 4711–4730, 2018

Anne-Cyrielle Genard-Zielinski[1,2], Christophe Boissard[2,3], Elena Ormeño[1], Juliette Lathière[2], Ilja M. Reiter[4], Henri Wortham[5], Jean-Philippe Orts[1], Brice Temime-Roussel[5], Bertrand Guenet[2], Svenja Bartsch[2], Thierry Gauquelin[1], and Catherine Fernandez[1]

[1]Aix Marseille Université, Avignon Université, CNRS, IRD, IMBE, Institut Méditerranéen de Biodiversité et d'Ecologie marine et continental, Marseille, 13331, France
[2]Laboratoire des Sciences du Climat et de l'Environnement, LSCE/IPSL, CEA-CNRS-UVSQ, Université Paris-Saclay, Gif-sur-Yvette, 91191, France
[3]Université Paris Diderot, Paris 7, Paris, 75013, France
[4]Fédération de Recherche "Ecosystèmes Continentaux et Risques Environnementaux", CNRS FR 3098 ECCOREV, Technopôle de l'environnement Arbois-Méditerranée, Aix-en-Provence, 13545, France
[5]Aix Marseille Université, CNRS, LCE, Laboratoire de Chimie de l'Environnement, Marseille, 13331, France

Correspondence: Christophe Boissard (christophe.boissard@lsce.ipsl.fr)

Published: 27 March 2019

The purpose of this corrigendum is to complete a missing part of the Sect. 2.5 that disappeared during the final technical processing of the above-mentioned paper. The full description of the MEGAN2.1 emission model used in this study is given below. Note that the references to "Eq. (3)" further in original paper should be accordingly updated to "Eq. (5)".

2.5 Branch-scale ER assessment using MEGAN2.1 emission model

Based on the latest version of the MEGAN model (MEGAN2.1, Guenther et al., 2012), *Q. pubescens* ER were assessed for the sampling conditions of our seasonal study using

$$\mathrm{ER}_{\mathrm{MEGAN}} = \varepsilon_{\mathrm{iso,Qp}} \chi_{\mathrm{Qp}} \gamma_{\mathrm{iso}}. \quad (1)$$

- $\varepsilon_{\mathrm{iso,Qp}}$ is the *Q. pubescens* isoprene emission factor calculated under each plot, every month of our study, as the slope of the linear regression between ER and $C_L \times C_L$ (see Sect. 3.2; in $\mu\mathrm{gC\,g_{DM}^{-1}\,h^{-1}}$), where C_L and C_L are the instantaneous response of isoprene emissions to photosynthetic photon flux density (PPFD) and T deviations to standard conditions ($1000\,\mu\mathrm{mol\,m^{-2}\,s^{-1}}$ and 30 °C respectively) (Guenther et al., 1995); $C_L \times C_\mathrm{T}$ was calculated using PAR and T recorded in the enclosure.

- χ_{Qp} is the fractional grid areal coverage taken equal to 1 since only *Q. pubescens* emissions (100 %) were considered.

- γ_{iso} is the isoprene emission activity factor defined as

$$\gamma_{\mathrm{iso}} = \gamma_P \gamma_\mathrm{T} \gamma_\mathrm{A} \gamma_\mathrm{SM} \gamma_\mathrm{C}, \quad (2)$$

where

- γ_P and γ_T are the isoprene empirical responses to light and temperature respectively, using instantaneous, daily, and 10-day PPFD and T values (for details see Guenther et al., 2012);

- γ_A is the age emission activity based on empirical coefficients applied on new (0.05 applied for all April measurements), growing (0.6 for June), mature (1 for July and August) and old (0.6 for September and October) leaves;

- γ_{SM} is the soil moisture dependence of isoprene emissions according to soil moisture value (θ, $m^3\,m^{-3}$) based on the Pegoraro et al. (2004) drought study on *Populus deltoides*:

$$\gamma_{SM} = 1 \text{ for } \theta > \theta_1, \tag{3a}$$

$$\gamma_{SM} = (\theta - \theta_w)/\Delta\theta_1 \text{ for } \theta_w < \theta < \theta_1, \tag{3b}$$

$$\gamma_{SM} = 0 \text{ for } \theta_w < \theta_1, \tag{3c}$$

  where θ_w is the wilting point (the soil moisture below which plants cannot extract water from soil, $m^3\,m^{-3}$); $\Delta\theta_1 = 0.014$ is an empirical parameter; and $\theta_1 = \theta_w + \Delta\theta_1$. θ_w was assessed to be $0.15\,m^3\,m^{-3}$ at the O_3HP, a value very close to the $0.138\,m^3\,m^{-3}$ value given by Chen and Dudhia (2001) for clay and sand soil found at the O_3HP; and

- γ_C is the CO_2 inhibition, set to 1 here as no CO_2 effect was tested in our study.

Nota bene: in order to be comparable with our measurements carried out on top canopy leaves and expressed as net emission rates in the unit of $\mu gC\,g_{DM}^{-1}\,h^{-1}$, no canopy environment coefficient C_{CE} or LAI was considered in the calculation of γ_{iso} and thus in ER_{MEGAN} (for further details see Guenther et al., 2012).