

Interactive comment on “Global biogenic volatile organic compound emissions in the ORCHIDEE and MEGAN models and sensitivity to key parameters” by P. Messina et al.

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I have a comment on the light dependent fraction (LDF) of monoterpene emission, as included in Equation (2) of the manuscript. The LDFs used in the study are different for different compounds emitted, being 1 for isoprene and 0.6 for monoterpenes. However, these seem to be held constant across all plant functional types. I question the validity of this latter assumption which seems to be copied from predecessor models. According to both the light dependencies of measured monoterpene emissions (Staudt and Seufert 1995; Steinbrecher et al., 1999; Kuhn et al., 2002; Rinne et al 2002; Taipale et al., 2011) and stable isotope labeling experiments (Loreto et al., 1996; Ghirardo et al.,

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2010), the LDF for monoterpenes to vary from 1 for many broadleaf trees to less than 0.5 for many conifers. This issue and its implications should be at least discussed in the paper.

A technical comment: Why is value for beta defined for isoprene emission, when the term where it appears in Equation (2) is zero when LDF is 1?

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