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Interactive comment on "Laboratory and field measurements of enantiomeric monoterpene emissions as a function of chemotype, light and temperature" *by* W. Song et al.

Anonymous Referee #2

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General comments: The authors report laboratory and field measurements of enantiomeric monoterpene concentrations and emissions and investigate their variability within and between races and species and examine variations as a function of light and temperature. The authors have previously published several papers on enantiomeric monoterpene emissions into the atmosphere and this paper provides additional valuable information. Their measurement approach is solid and I recommend publication after addressing the following points:

1) It is suggested that the enantiomeric differences among individuals of the same species is genetic but what about the possibility that the variability is induced by some stress which is difficult to detect.

2) The expectation that there should not be a smooth diel cycle assumes that there is variability in the emissions of the trees within the ambient air sampling footprint, but these trees could all be of the same chemotype. Also, note that in mixed forests that have some trees emitting isoprene and others that do not, there still tends to be a fairly smooth diel cycle due to the relatively large footprint of an ambient concentration sample and the rapid atmospheric mixing

3) Page 16811, line 13-17 brings up the question of the usefulness of measurements of enantiomeric monoterpenes for emission modeling or atmospheric chemistry in general. This is an important point and the authors should make an effort at answering this question based on this work. Although enantiomeric measurements have been shown to be valuable for some biological studies and may be useful for identifying tree populations, this paper seems to show that there is little to be gained for atmospheric studies. Of course, it does not rule out the possibility of different results for other plant species.

Specific edits:

Page 16806, line 12: "found vary" => "found to vary"

Page 16808, line11: not "proportional" but it is a function of those drivers

Page 16809, line11: "may has" => "may have"

Page 16810, line 13: "footprints" => "fingerprints"

Page 16813, line 9: "condition" => "conditions"

Page 16822, line 8: "then" => "to"

Page 16823, line 1 to 5: this should be moved to section 2.2

Page 16823, lines 6-7: this should be in the introduction.

Figure 2 legend: "leaves" => leaf"

Figure 8 legend: “measurements time” => “measurement period”

Figures 3 to 9: difficult to read. Please use a larger font.

Interactive comment on Biogeosciences Discuss., 10, 16805, 2013.