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Comment

## ***Interactive comment on “Global isoprene emissions estimated using MEGAN, ECMWF analyses and a detailed canopy environment model” by J.-F. Müller et al.***

**Anonymous Referee #2**

Received and published: 27 December 2007

Comments:

This paper applies a new multi-layer canopy model in conjunction with the MEGAN model to calculate global isoprene emissions for a specific year (2003) and investigate their interannual variability in the 11 year period between 1995 and 2006. The authors evaluate the simulated isoprene emissions against site-specific flux measurements and satellite-derived measurements of formaldehyde, a by-product of isoprene. While this approach of estimating global scale isoprene emissions is not new, there are subtle additions in the model setup described here compared with previous studies that add to the existing knowledge base. I recommend the manuscript for publication

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in Atmospheric Chemistry and Physics after the authors have addressed my specific comments below.

#### Specific Comments:

Page 15375, line 11: Change the sentence to “It has also been shown that“

Page 15377, line 16: Replace “a factor adjusted so that“ with “an adjustment factor so that“

Page 15378, line 8: Change the sentence “is taken to eight..“ to “is taken to be eight..“ and “associated to vertical discretization“ to “associated with vertical..“

Page 15378: Are the parameterizations of alpha and Cp based on data? It would be helpful to give a source/reference for equations 5 and 6.

Page 15379: What is Eqn 11 based on? Is the emission response to soil moisture stress based on field measurements? Do all pfts respond to soil moisture stress in the same manner? A reference would be helpful here too.

Page 15383, line 4: It is stated here that inclusion of soil moisture stress reduces emissions by 25% while in the Abstract, reduction in emissions from soil moisture is stated to be 20%. Reconcile the numbers.

Page 15384, section 3.2: Does the use of annual varying MODIS LAI for the period 2000 to 2006 induce any interannual variability in emissions?

Page 15384, line 12: Change “emissions about twice lower in..“ to “emissions about a factor of two lower in..“.

Page 15384, line 25: Which latitude bands are included in the calculation of “annual tropical isoprene emissions“?

Page 15385, lines 3-5: How significant are the correlation coefficients shown in Figure 6?

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Page 15385, lines 18-19: It would be helpful to mention that the authors used for comparison, model results for the year in which observations were conducted.

Section 4.1 and 4.2: What is the uncertainty in measurements? Is the model bias within the level of this uncertainty?

Page 15392, lines 1: Provide the reference after “previous study,..“

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Interactive comment on Atmos. Chem. Phys. Discuss., 7, 15373, 2007.

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