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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Estimates of global terrestrial isoprene emissions using MEGAN (Model of Emissions of Gases and Aerosols from Nature)" *by* A. Guenther et al.

A. Guenther et al.

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We are very thankful that Guenther Seufert has provided this careful and constructive review of our manuscript and will address his comments in our revised manuscript.

General comments: We will include discussion indicating that we are still making considerable use of leaf and branch level observations to determine our above canopy emission factors. This is accomplished by using a canopy environment model to scale up the leaf level emissions.

Specific comments. Plant functional types: our original reason for including fineleaf deciduous trees was simply because the information was available in most landcover

databases and the emission factors were easy to determine because the PFT was dominated by only a few tree species. Our revised approach will provide several options (detailed and less detailed) so that MEGAN can be integrated with most major landcover scheme.

LAI seasonality: we have designed MEGAN so that it can use various LAI and landcover data (i.e. databases that discriminate between deciduous and evergreen plants and those that do not). We will clarify that this is an option in the model.

Shrub and tree definitions: Since we use a variety of different landcover databases, we have no single definition of shrubs vs trees. The shrub and trees are defined by the different databases used for driving variables. Since we also allow the same plant species to have a shrub form and a tree form, this should not have a significant impact on our results. Most of the PFT datasets have similar areas of shrubs and broadleaf trees (there is one outlier dataset that has much higher broadleaf tree fraction).

Regional uncertainty analysis: Figures 5 and 7 provide a regional view of the differences due to LAI and PFT databases. We will extend our discussion of these regional differences in the revised manuscript.

Documentation: we will provide substantially enhanced documentation for the model after the model has passed through this current review process.

MEGAN and MEGAN-EZ: We will follow the recommendation to drop the “MEGAN-EZ” section and will instead focus on describing the potential options and their advantages and disadvantages.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 107, 2006.