



VOC Emissions from Amazonian tree species: Investigation of primary emission at leaf level

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Vegetation is regarded as the major source of volatile organic compounds (VOCs) emitted to the atmosphere. Little information is currently available regarding emissions of VOCs from tropical tree species at leaf level. 14 tree species from the different environments of the Amazon basin, i.e. Terra firme, Várzea and Igapó, were screened for VOCs emission at leaf level with a branch enclosure system. Analysis of volatile organics was performed online by PTR-MS and offline by collection on adsorbent tubes and subsequent GC-FID and GC-MS analysis. Even though standard emission variability between individual of the same species was quite high in a few cases, we observed that six of the screened species emitted methanol, four isoprene, four monoterpenes and one acetone, independently from their original environment. Highest standard emissions, given based on leaf dry weight, were observed for isoprene ($63\text{-}12 \mu\text{g g}^{-1} \text{s}^{-1}$) followed by monoterpenes ($26\text{-}0.5 \mu\text{g g}^{-1} \text{s}^{-1}$), methanol ($9.5\text{-}0.5 \mu\text{g g}^{-1} \text{s}^{-1}$) and acetone ($0.5\text{-}0.3 \mu\text{g g}^{-1} \text{s}^{-1}$). The main monoterpene species emitted was α -pinene followed by limonene, sabinene and β -pinene, with variable emission patterns depending on the tree species. Light dependent VOC emission correlates very well with the Guenther algorithm 1995.