



Approaches to estimate Isoprene's Reactivity from VOC Measurements in a mixed deciduous Forest – Application of the ECHO data

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During the *ECHO* project (*E*mision and *ch*emical transformation of biogenic volatile *o*rganic compounds) mixing ratios of isoprene and its oxidation products methyl vinyl ketone (MVK) and methacrolein (MACR) were measured for two years at a 36m high tower in a mixed deciduous forest. The forest site is dominated by oak and beech. Therefore, it can be assumed that fresh emissions of isoprene have a strong impact on local photochemical processes.

To evaluate the impact of isoprene on local photochemical processes, its reactivity related to other abundant VOCs at the site was investigated. For this purpose mixing ratios of isoprene and selected VOCs are compared with the total VOC composition. Additionally, the ratio of isoprene's oxidation products MVK/MACR was studied to estimate the processes of isoprenes decomposition on a local scale. The dataset of the ECHO intensive campaign in July 2003 allows simulation of the local ozone production efficiency in observation based model scenarios using the Master Chemical Mechanism. The impact of isoprene emission on local ozone production efficiency is reflected in the ozone production rate, which follows the diurnal variation of measured isoprene mixing ratios. In summary, despite its moderate mixing ratios isoprene dominates photochemical processes at the ECHO forest site.