



Chemical processing of biogenic hydrocarbons within and above forests

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This presentation will report on research findings related to abundances and chemical processing of plant-emitted hydrocarbons in forested landscapes along a latitudinal transect ranging from deciduous temperate to boreal forests in eastern North America. Nitrate radicals, ozone and hydroxyl radicals destroy substantial amounts of the locally emitted hydrocarbons within forests. Therefore, one objective of the present study is to quantify the net hydrocarbon emissions from forests into the wider airshed after hydrocarbons react within canopies. In addition, this research seeks to determine the yields of hydroxyl and hydroperoxyl radicals formed from hydrocarbon photooxidation for selected forests under the influence of different nitrogen oxide levels. Results indicate that forest canopies, located near anthropogenic sources of nitrogen oxides, experience considerable destruction rates of hydrocarbons before the compounds are transported to the free atmosphere. One conclusion derived from the present study is that regional-scale air quality models need to include chemical preprocessing of biogenic hydrocarbons before they are emitted to the full regional modeling grid.