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Estimating regional biogenic isoprenoid fluxes using LAI maps based on remote sensing techniques

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During the last years the use of remote sensing techniques to supply regional scale data on emission fluxes from terrestrial ecosystems and land cover changes has grown. Based on Landsat ETM+ images, covering the Järveselja Experimental Forestry site in Estonia, leaf area index (LAI) maps have been generated by applying a two layer forest reflectance model. LAI maps, gridded with a resolution of a 30x30 m area, for the tree and understorey canopy layer are available.

In connection with a forest inventory database, supplying stand data on a species basis for each grid cell, we used these LAI maps to estimate isoprenoid emission fluxes on a regional scale. In the current setup, only one understorey and one tree layer are used, but the forest inventory database allows the extraction of tree compostition data for several canopy layers. Depending on the choosen species setup, emission maps for isoprene and monoterpene fluxes or a combination of both can be obtained. Taking all species into account allows emission estimates of the regional ecosystem scale.