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An inventory of tree species in Europe – An important driver input for biospheric emission estimates and air pollution modelling

C. Geels, C. A. Skjøth, M. Hvidberg, O. Hertel, J. Brandt, L. M. Frohn, K. M. Hansen, G. B. Hedegaard, and J. H. Christensen

National Environmental Research Institute, University of Aarhus, Roskilde, Denmark (cag@dmu.dk)

Aerosols and reactive gasses produced by terrestrial ecosystems have important impacts on the atmospheric composition and hence on air quality. In order to simulate and predict the past, present and future composition of the atmosphere, applied atmospheric transport models hence needs to include biogenic emissions such as Volatile Organic Compounds (VOCs) and pollen. Since the VOC and pollen emission is very species dependent a detailed tree species inventory is an important requirement for emission estimates. We present here a detailed tree species inventory covering Europe, parts of Africa and parts of Asia.

Forest inventories have been obtained for each European country, parts of Asia and parts of Africa. The national inventories vary with respect to number of species as well as the number of sub-regions. The inventories have therefore been harmonized within a GIS, and re- gridded to a 50 km x 50 km grid definition. The inventory is designed to be used with any kind of existing land-use data, which separates forest cover into broad leaved, mixed and conifer forests.

The final inventory includes 16 conifer species and 23 broadleaved species, that all are important for biogenic VOCs or pollen emission calculations. 799 regions with forest inventories are included, mainly on sub-national level. Some species are found only locally others are spread across Europe. The latter includes VOC and allergy relevant species such as Quercus (oak), Alnus (alder) and Betula (birch).

The inventory is gridded to the model grid defined by EMEP, which is also the basis for many emissions inventories throughout Europe. The inventory is therefore prepared for easy implementation into atmospheric transport models, by providing an extension to already applied land use data such as the Corine Land Cover (CLC2000) or Global Land Cover (GLC2000). Possible applications of the inventory include emissions of VOCs and pollen, CO2 fluxes and dry deposition – in general calculations which are tree specie dependent.

Data download: http://www.dmu.dk/International/Air/Models/Background/Trees/

References:

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