



Emissions of nitrogen-oxides from forests in Europe

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Green house gas emissions affected climatic conditions and got affected by the climate itself. This interaction plays a crucial role in the development of future climate and need to be investigated for a better understanding of the relevant processes. Therefore, some years ago the project NitroEurope started to investigate the impact of nitrogen compounds and nitrogen fluxes to the environment. As part of this project, our work focused on the simulation of nitrogen fluxes from forests of Europe for the period 1971 – 2030. The objective is to simulate nitrogen fluxes (N₂O and NO) and their spatial distribution. The terrestrial biochemical model DailyDayCent is well suited for these simulations, because the model is complex enough to describe the important processes, but fast enough to simulate the processes for a large temporal and spatial resolution. The model was applied using a newly compiled NitroEurope soil/ climate/land use database by arranging these input data to NitroEurope calculation units (NCU). For the model simulations different species and age classes are considered. Plant parameters are optimized to the biomass data of the EFISCEN data set and the soil parameters are derived by pedotransfer functions of the texture that based on a soil map (US Taxonomy). The simulation results are transferred to the corresponding NCUs and aggregated to get the N₂O and NO emissions over Europe. This represents one of the first presentations of spatial data for nitrogen emissions from semi-natural areas at pan-European scale.