

## **MODELLING PAST AND FUTURE IMPACTS OF CHANGES IN CLIMATE, NITROGEN DEPOSITION, OZONE AND CO<sub>2</sub> EXPOSURE ON CARBON SEQUESTRATION IN EUROPEAN FORESTS**

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We modelled the combined effects of past and expected future changes in climate, nitrogen deposition, ozone and CO<sub>2</sub> exposure on carbon sequestration in European forests and forest soils for the period 1900–2050. Forest inventory data around 1980 were used to assess reference forest growth rates, which were then modified for other years by factors accounting for deviations in climate and air quality compared to 1980. The impacts were evaluated using various assumptions with respect to interactions between drivers. Impacts of soil macro-nutrient availability (P, Ca, Mg, K) were also accounted for. Historical meteorological data were taken from a high resolution European data base that contains monthly values of temperature, precipitation and cloudiness for the years 1901–2000. Oxidised and reduced N deposition was calculated with the EMEP model. In addition, the phytotoxic ozone dose (POD) was calculated by the EMEP model, incorporating the DO3SE deposition module, which parameterises ozone uptake as functions of phenology, light, temperature, humidity, and soil moisture. Historic NO<sub>x</sub>, NH<sub>3</sub> and VOC emissions were taken from available sources. For the future (2010-2050) we used two scenarios for deposition (current legislation and maximum technically feasible reductions) and two climate scenarios (no change and SRES A1 scenario). Results of the simulations will be presented during the conference.