Project Database of ICP Forests
PROJECT DESCRIPTION

PROJECT INFORMATION

Project title: Study of the factors influencing DOC leaching from terrestrial ecosystems

Project ID: 8

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PROJECT DESCRIPTION

Objective(s) of the project

To develop a database with information on dissolved carbon and nitrogen in order to study the influence of several physical factors that determine dissolved organic carbon (DOC) production and transport processes and to support and validate present and future models of DOC production.

Scientific background of the project

Dissolved organic carbon (DOC) concentration mainly varies by geographical location, soil and vegetation types, topography, season and climate. Therefore, a database on DOC is being developed with the aim of better understanding how those parameters determine DOC variations. This database compiles DOC concentrations and fluxes in soil solution and creeks at site or catchment level for different ecosystems around the world, but with special focus on the Northern Hemisphere. The information included in the database is gathered from published literature and datasets accessible on the internet. The database contains annual, seasonal and monthly data on DOC, dissolved inorganic carbon (DIC), dissolved organic nitrogen (DON) and dissolved inorganic nitrogen (DIN) and also includes other meta-data related to the site, such as soil properties, climate, annual water balance and other soil solution parameters. The inclusion of the ICP Forests dataset involves an important improvement for this database due to the available analyses of Soil, Soil solution, Deposition and Meteorological measurements in many plots around Europe.
Based on this database, we will study the relationships between drivers, such as precipitation, drainage, soil pH, soil texture, and DOC concentration/ DOC fluxes at different levels, ecosystem types, temporal scales (monthly vs. annual or seasonal), and soil depths. The same relations will be analysed for DIC, DON and DIN. Moreover, a meta-analysis will be carried out to link spatial and temporal variation in DOC concentration and fluxes to their respective drivers. The findings from this analysis will have two main important applications: firstly, the relationships achieved from this database will support the development of the DOC production module in the global land surface model ORCHIDEE and secondly, it will be used to test and validate the selected model structures.