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## Drought effects on soil solution chemistry at Bavarian Level II plots

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## Abstract

Drought in ecosystems reduces seepage, transpiration and plant uptake while mineralization continues. Experimental droughts in forest ecosystems indicate changes in soil solution chemistry, e.g. nitrate fluxes increasing after rewetting (see roof experiments in EU EXMAN-Project).

22 Bavarian Level II plots provide 6 to 12 year time series of monthly element concentrations in the solution of humus and 3 to 5 soil layers. Recent modelling of the soil water budget with LWF-BROOK90-Modell allows estimations of element fluxes.

The year preceding 2003 drought was wettest since beginning the measurements. Long time series and two consecutive extreme years (wet and very dry) permit detailed description of changes in soil water chemistry related to soil water budget.

First analysis of 2003 data reveal altered concentrations and correlations of ammonium, nitrate, DOC, potassium, etc. during and after drought mainly in humus layer. Single plots already show a remarkable increase of nitrate concentrations in upper soil layers in the late 2003. Generally upper soil layers lack sample numbers sufficient to describe changes in 2003, due to frequently failing suction cups. Ongoing incorporation of 2004 data will clarify possible flushes of nitrate and other elements.

Yearly nitrate losses of the forest ecosystems were low in 2003, especially when compared to the wet year 2002.

Analysis of drought effects on soil chemistry until summer 2004 will be presented.