10. Summary of main PROWATER results

Most project results were described and discussed in detail in the previous chapters. In the following, a final overview on main POWATER achievements and conclusions will be given. This is the result of intensive discussions at the Ljubljana Meeting, June 2003, and agreement among all project partners.

What did we achieve and deliver to the scientific community and to the stakeholders ?

(1) Developed and implementation of an automatic field measurement station for degraded and restored wetlands.

(2) Sets of field measurement data on important soil physical properties and evaluation protocol.

(3) Inventory of the relevant properties of sites and Histosols according a geographical gradient.

(4) Experimental system for the prediction of P solubilisation in Histosols based on fundamental principles in soil chemistry.

(5) Construction of thematic maps of degree of phosphorus sorption capacity in an altered wetland.

(6) The geochemistry of phosphorus in peat soils of a semiarid altered wetland.

(7) Improved methods for the characterisation of P in Histosols based on ^{31}P NMR and sequential P fractionation.

(8) Scenarios for site-specific P mobilisation based on an adapted model of P leaching.

(9) Decision support tools for the restoration of Droemling fenland and prevention of diffuse P pollution of freshwater systems.

(10) Proposals for best management practices of fenlands.

The main joint conclusions are:

PROWATER was highly relevant for temperate and xeric peat wetlands, and the selected study areas were well suited to investigate the chemistry of P turnover in anthropogenically influenced and re-wetted Histosols.

We confirmed the hypothesis that redox dynamics is an important regulator of the binding/mobilisation of P in Histosols. We also demonstrated the importance of water table fluctuations in the mass transport of P from the re-wetted sites. Therefore, the site-specific management of the water table is of crucial importance for preventing the increased solubilisation and transport of soil P from the site.
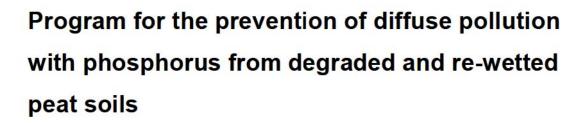
In specific cases, modelling has proved to be well suited to estimate P inputs to surface waters and should be used for scenario calculations as a basis for the development of a Decision Support Systems (DSS).

The following important research needs were identified:

- Development and evaluation of site-specific management regimes in connection with an adapted DSS.

- Process studies about P-transport mechanisms in different scales, especially the phenomenon of lateral flow from the re-wetted area into the surface water.

- Evaluation the impact of climate change on Histosol restoration.

The project publication list in the following indicates who of the partners owns which result, and which results were obtained and published in teamwork. Finally, we emphasise that the process of result delivery to the scientific community through scientific publications as well as to the stakeholders is still going on and proofs the great practical impact of PROWATER.

UFZ Report

Program for the prevention of diffuse pollution with phosphorus from degraded and re-wetted peat soils

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