Geophysical Research Abstracts,
Vol. 11, EGU2009-2992, 2009
EGU General Assembly 2009

Effective porosity of the upper peat layer forms a mayor factor of the resilience of bog mires.

W. Bleuten

Utrecht University, Physical Geography, Utrecht, Netherlands (w.bleuten@geo.uu.nl)

It is generally accepted that bog mires (pristine peatland ecosystems) are highly vulnerable to changes in water supply and drainage condition. Mires are sinks for atmospheric carbon and therefore feedback climate change. By climate change accompanied with lower precipitation mire ecosystems become a mayor source of carbon dioxide. The same effect follows after artificial draining of mires, aimed at advancement of agriculture or forestry. The sensibility of bog mires to these changes depends on effective porosity of the upper peat layers.
This paper deals with the effective porosity of the acrotelm of a bog mire complex in the central part of West Siberia at the Mukhrino Field Station (60,9oN, 68,7oE). The effective porosity was evaluated with 1-D modelling of the water balance of 6 bog sites. Hereto, during the summer of 2008, water level dynamics were recorded per hour. Evapotranspiration and interception losses were calculated from simultaneously gathered data of 2 lysimeters, and of precipitation and temperature.
Effective porosity decreased exponentially with depth, which means that bog mires stabilize the water level. The top of precipitation during intensive rainstorms was discharged fast. During dry periods the water level decreased relative slowly.
In the higher, raised part of the bog, the effective porosity was about half the value of the lower mires (‘hollow’ mires). In a patterned mire bog complexes the water level will be stabilized mostly by the present of raised parts.