



## **Holocene palaeohydrological history of the Tăul Muced peat bog (Northern Carpathians, Romania) based on testate amoebae (Protozoa) and plant macrofossils**

Andrei Cosmin Diaconu (1), Angelica Feurdean (1,2), Mariusz Lamentowicz (3,4), Mariusz Gałka (3), and Ioan Tanțău (1)

(1) Babes-Bolyai, Biology and Geology, Geology, Suceava, Romania (andreicosmind@yahoo.com), (2) Senckenberg Biodiversity and Climate Research Centre Senckenberganlage 25, D-60325 Frankfurt am Main, Germany, (3) Laboratory of Wetland Ecology and Monitoring, Faculty of Geographical and Geological Sciences, Adam Mickiewicz University, Dzięgielowa 27, PL-61 680 Poznań, Poland, (4) Adam Mickiewicz University Poznan, Biogeography and Palaeoecology Department, PL-61680 Poznan, Poland

Knowledge of past local vs. regional hydro-climate variability is a priority in climate research. This is because ecosystems and human depend on local climatic conditions and the magnitude of these climate changes is more variable at local and regional rather than at global scales. Ombrotrophic bogs are highly suitable for hydro-climate reconstructions as they are entirely dependent on the water from precipitation. We used stratigraphy, radiocarbon dating, testate amoebae (TA) and plant macrofossils on a peat profile from an ombrotrophic bog (Tăul Muced) located in the Biosphere Reserve of the Rodna National Park Romania. We performed quantitative reconstruction of the depth to water table (DWT) and pH over the last 8000 years in a continental area of CE Europe. We identified six main stages in the development of the bog based on changes in TA assemblages in time. Wet conditions and pH between 2 and 4.5 were recorded between 4600-2750 and 1300-400 cal. yr BP, by the occurrence of *Archerella flavum*, *Amphitrema wrightianum* and *Hyalosphenia papilio*. This was associated to a local vegetation primarily composed of *Sphagnum magellanicum* and *S. angustifolium*. Dry stages and pH of 2.5 to 5 were inferred between 7550-4600, 2750-1300 and -50 cal. yr BP, by the dominance of *Nebela militaris*, *Diffugia pulex* and *Phryganella acropodia*. These overall dry conditions were also connected with increased abundance of *Eriophorum vaginatum*. The period between 400 and -50 cal. yr BP was characterized by a rapid shift from dry to wet conditions on the surface of the bog. Vegetation shifted from *Sphagnum magellanicum* to *Sphagnum russowii* dominated community.

Our reconstruction remains in relatively good agreement with other palaeohydrological records from Central Eastern Europe. However, it shows contrasting conditions to others particularly with records from NW Europe. The valuable information regarding bog hydrology offered by our record puts an accent on the need of more regional TA based reconstruction studies, to get a compressive picture of larger spatial scales of hydro-climate variability in Europe.