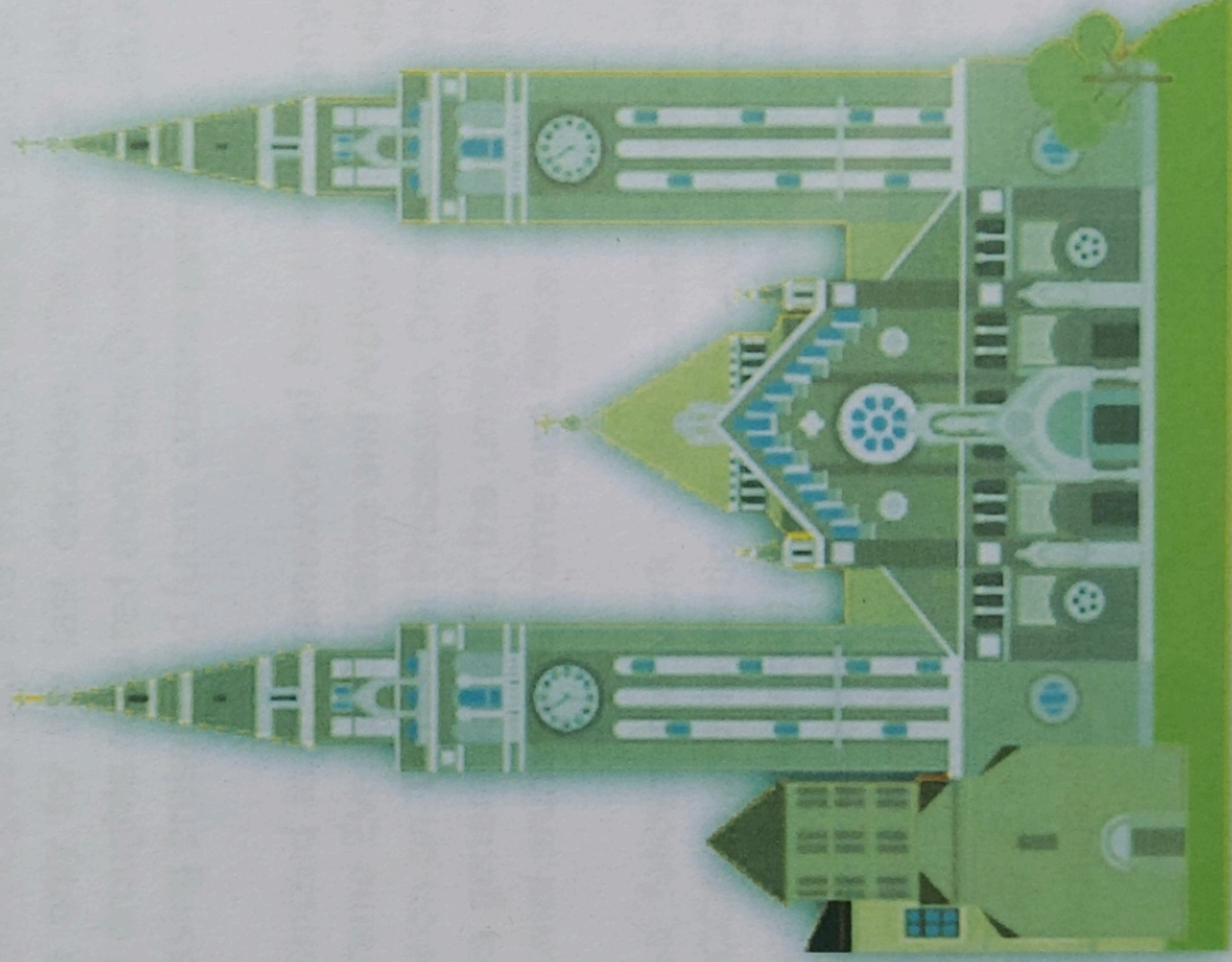




EXAQUA 2018

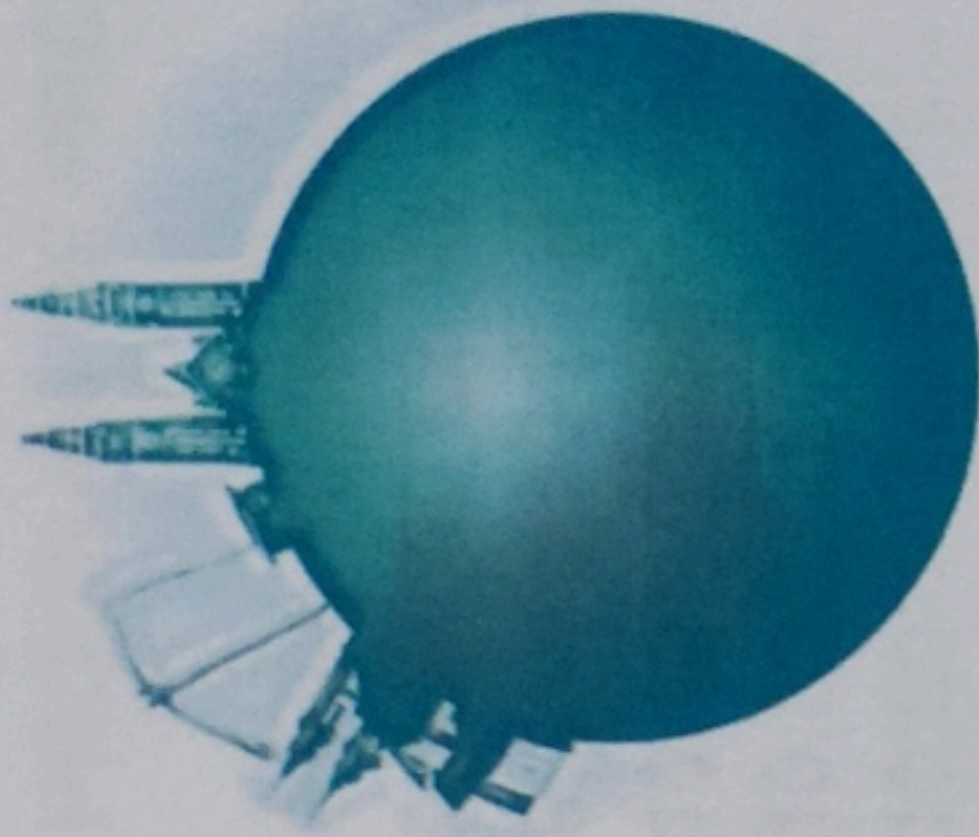
PALEOHYDROLOGICAL EXTREME EVENTS: EVIDENCE AND ARCHIVES



6-9th September 2018, Szeged, HUNGARY

ABSTRACTS

2018



PROGRAM AT A GLANCE

Thursday 6th September

Meeting at the Hotel Korona from 18:00 and at 19:00 we will go to a near place for and an ice-breaker dinner.

Friday 7th September – Scientific Workshop (Department of Geology and Paleontology)

Saturday 8th September – Field trip

We will visit some key sites from Szeged to Baja for understanding the palaeohydrologic evolution of the area between Tisza and Danube rivers during the Quaternary with an outlook of hydrological problems and threats in the light of climate and environmental changes. Departure will be at 8:30 from Hotel Korona and the return is planned around 19:00.

Sunday 9th September – Scientific Workshop (Conference room of the Hotel Korona)

10:00-13:00, Scientific session and business meeting for the EX-AQUA project with discussion of the future actions.

The workshop will end with a farewell meal in the city and a short guided tour of the highlights to help digestion, soon after the scientific session.

Venue:

UNIVERSITY OF SZEGED

Department of Geology and Paleontology
H-6722 Szeged, Egyetem u.2-6

KORONA HOTEL

Petőfi Sándor sugárút 4
6722 Szeged

PARTICIPANTS

Albertini Lorenzo (Italy) - Oral presentation
Agatova Anna (Russia) - Oral presentation
Beg Zafar (India) - Oral presentation
Fontana Alessandro (Italy) - Oral presentation
Ghasemifar Elham (Iran) - Oral presentation
Gitanjali Waman Bramhankar (India) - Oral presentation
Gulyas Sandor (Hungary) - Oral presentation
Herget Juergen (Germany) - Oral presentation
Hire Pramodkumar S. (India) - Oral presentation
Matlahkova Ekaterina (Russia) - Oral presentation
Nepop Roman (Russia) - Oral presentation
Patil Archana Dilip (India) - Oral presentation
Popova Lilia (Ukraine) - Oral presentation
Rossato Sandro (Italy) - Oral presentation
Sparelli Zambon Ilaria (Italy) - Poster presentation
Tapody Réka Orsolya (Hungary) - Poster
Toonen Willem (Belgium) - Oral presentation
Torma Andrea (Hungary) - Poster
Törőcsik Tünde (Hungary) - Poster
Tugya Beáta (Hungary) - Poster
Vári Tamás Zsolt (Hungary) - Oral presentation

RADIOCARBON-DATED PEAT DEVELOPMENT: ANTHROPOGENIC AND CLIMATIC SIGNALS IN LATE-GLACIAL AND HOLOCENE PEAT SEQUENCE FROM THE WESTERN PART OF THE CARPATHIAN BASIN

Törőcsik Tünde^{1,2}, Sümegi P.^{1,2}, Sümegi P.^{1,2}, Gulyás, S.¹, Náfrádi, K.¹, Vári T. Zs.¹, Ilon G.¹,
Torma A.¹

¹ University of Szeged Department of Geology and Paleontology, H-6722 Szeged P.O.B.: 658

² Institute of Archaeology, Research Centre for the Humanities, Hungarian Academy of Sciences H-1097 Budapest
Tóth Kálmán street 4.

corresponding author: Törőcsik Tünde <t.torocsik@geo.u-szeged.hu>

This work focuses on the palaeoenvironmental, geoarchaeological and bioarcheological analyses of the undisturbed core sequence extracted from the one-time peatland at Mezőlak–Szélmező in the Marcali Basin lying in the southern part of the Little Hungarian Plain and the interpretation of these analyses regarding human settlement and paleoenvironmental – paleoclimatological valuation. We sought an answer to the question of whether traces of human activity could be noted in the area's Holocene vegetation and environment and if so, to determine the nature of this activity and date it within the Holocene. The analyses of the Mezőlak core revealed an infilling oxbow, reflecting the transition from the fluvial phase to the reed-bed cover. The succession, however, could not be regarded as a typical example of a „classical” infilling succession because micro-climatic and local hydrologic factors greatly influenced it. The area had a fluvial stage at the end of the Pleistocene during the Late Glacial phase. Paludification began during the Late Glacial/Postglacial transition: a common club-rush sedge marshland evolved first, which was later replaced by reedbeds with stands of tufted sedge. As a result of a warmer and drier climate, the reed-beds became homogenous and the peat decomposed. Lack of a pedogenic level points to the influence of an increasingly continental climate or the shift of the paleochannel. This zone coincides with the period ranging from the appearance of oak to the appearance of beech (11.6-9.2 ka cal. BP). As a result of climate improvement and growing precipitation a floating mat marshland emerged. Societal upheaval around the peatland strongly changed the microenvironment and vegetation of the peatland surface from the Bronze Age onwards resulting in increasing erosion rates and decreasing arboreal vegetation. Erosion peaked near the Late Migration Age within Hungarian conquest, after which much of the peatland was transformed into sedge peat. According to environmental historical and climatic data, we aimed to reconstruct the expected environmental changes of forested areas in the Western part of the Carpathian Basin.

Keywords: environmental history, paleoclimate, paleohydrology, human impact, peat sequence, NW Hungary

RADIOCARBON-DATED PEAT DEVELOPMENT: ANTHROPOGENIC AND CLIMATIC SIGNALS IN A HOLOCENE RAISED BOG AND LAKE PROFILE FROM THE CENTRAL PART OF THE TRANSYLVANIAN BASIN

Vári Tamás Zsolt¹, Molnár D.¹, Sümegi P.^{1,2}

¹ University of Szeged Department of Geology and Paleontology, Szeged, Hungary

² Institute of Archaeology, Research Centre for the Humanities, Hungarian Academy of Sciences Budapest, Hungary

Corresponding author: Vári Tamás Zsolt <varitamaszolt@gmail.com>

This work focuses on the paleoenvironmental and paleoclimatological analyses of the undisturbed core sequence of 8.6 m extracted from the Lake Feneketlen (Tăul fără fund) sphagnum peat bog located in Magyarbágó (Băgău), Romania, which covers the last 8600 years based on radiocarbon dating. Based on these analyses and with the help of the radiocarbon dating it was possible to reconstruct the climatic factors and anthropogenic impacts on the local environment. The sedimentation rate correlates with the development of the peat bog, and the peat accumulation correlates with the local climatic factors, especially with the humidity. The undisturbed core sequence has above 90% organic matter content all along excluding the erosion horizons. Human interventions (building, woodcutting, pasturage, husbandry, farming) and changes in the local climate, vegetation, and environment increase the rate of the erosion and decrease the rate of the accumulation. The carbonate content highly correlates with the non-organic matter content. The formation of the valley started with occlusion and non-organic sediment accumulation, and it slowly evolved into a peat bog during a dry and cold climate. The first sign of anthropogenic effect came during Neolithic by the Transylvanian Körös culture, the second by the Linear Pottery culture. During the Copper Age, the peat accumulation stopped so drastically, that clayey and silty bedrock sediments with high carbonate content formed. At the end of the Copper Age (Cucuteni-Trypillia culture), a lesser erosion horizon formed than before. Not that much after a more significant and longer erosion horizon appeared in the Bronze Age when the Coțofeni-Weitenberg cultures were present. After this erosion horizon between ca. 4200-3700 cal BP years the overall temperature got cooler, because of this the vegetation period cooled down, and it decreased the evapotranspiration, and as a result of the cool and wet climatic conditions the water table of the peat bog increased. Therefore the central lake system extended in the analyzed peat bog and a water layer formed (450-405 cm) in the peat layer sequence. The peat accumulation commenced by developing a new floating mat on the lake surface. Hence a thick peat layer got deposited with over 91% organic matter content, a maximum of 8% non-organic matter content, and a maximum of 1% carbonate content from the end of the Bronze Age to the end of the Iron Age (Le Téne, Hallstatt, Dacian cultures). A double erosion horizon appeared during a dry and mild climate at the time of the Roman Empire and at the time of the Migration Period. The peat bog regenerated and kept accumulating peat till the climate changed into cool and wet when another water layer formed (100-90 cm) like during the Bronze Age. The lake inside the valley developed into a peat bog once again, and its accumulation got disturbed by the washed in bedrock sediments and the human erosion factors. By our data there were no human settlements in the immediate vicinity of the bog, written sources from the Middle Age confirm this.

Keywords: paleohydrology, paleoclimate, 14C dated peat sequence, Transylvania