



Paleogeography of the Austro-Hungarian Lake Neusiedl - Hanság region in historic times, based on ¹⁴C-dating

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Based on calibrated ¹⁴C-dating of several peat sections intercalating with fine-grained beds in the Hanság southeast of Lake Neusiedl we present a first approach of the paleogeography of the Austro-Hungarian border region during a time span when first settlements already existed and before the first detailed topographic maps of this region were drawn.

About one hundred pits down to one metre were dug out in the Hanság region near Osli in 2003 for studying the recultivation of this regularly flooded area in an environmental geo-information system (GIS). Several sections clearly show an alternation of peat layers intersected by fine-grained fluvio-lacustrine sediments. 15 age determinations of samples from several sections underlying and overlying silty to clayey sediments allow for reconstructing the succession of longer stillwater deposits alternating with peat successions. Comparing the Hanság succession with historic records of the vicinity of Lake Neusiedl allows for a new insight in this unique development of the Lake Neusiedl - Hanság region, at present situated within the Austro-Hungarian National Park. It should be recalled, that Lake Neusiedl is Central Europe's largest step lake and Austria's youngest UNESCO World Cultural Heritage Site.

The paleo-environment of the Lake Neusiedl - Hanság region basically can be designed in four steps by comparing the archaeological findings around Lake Neusiedl with our ¹⁴C-dating of peat layers in the Hanság region:

1) The oldest settlements in the Lake Neusiedl region date about 3600 Before Christ (BC), and 1700 BC respectively. During this periods the lake probably was quite smaller than today. Our ¹⁴C-dating of peat sections in the Hanság region corresponds with these findings, indicating that during a time span of approximately 2000 years until 30 Anno Domini (AD) no bigger lake existed in the Neusiedl- Hanság region. Small pieces of charcoal dating around 2300 BC can have been caused by bush fire and therefore be interpreted both of anthropogenic or natural origin.

2) Late Roman graves, dating 300-400 AD, situated at both edges of the present Lake Neusiedl, namely at Oggau and north of Podersdorf, indicate a lower stage of the lake (approximately comparable to its present size), which corresponds to peat layers dated 250-400 AD in the Hanság profile 11 (sample 245).

3) As this peat layer in profile 11 is overlain by 10 cm of fine-grained sediments, they can be interpreted as distal fan-deposits of a fluvial system, probably of a paleo-Raab/Rabnitz system discharging into the paleo-lake, or of one bigger (and therefore slightly deeper) lake, which covered the Neusiedl - Hanság after 400 AD. The first peat layers above these lake sediments date around 1300 AD, probably indicating a lower water level at that time.

Regularly flooding of the Lake Neusiedl - Hanság region is reported by documents dating back to 1044 when emperor Heinrich III could not pass the swamps due to high water level of the lake and/or flooding of the Raab/Rabnitz rivers.

For this longer lake period between 400 AD and 1000 AD, during which we have no further dating, we assume that the so called “Seedamm” came to exist, a several meter high dam paralleling the eastern edge of present Lake Neusiedl only. As winds from northwest prevail in the Northern Burgenland, we interpret the deposition of the “Seedamm” by former heavy winter storms from this direction, too, piling up ice plates and sediment up to several meters, as e.g. documented from the winter in the 1930ies. The timing of this “Seedamm”-hypothesis is supported by the fact, that fine-grained sediments of this “Seedamm” clearly overlie Late Roman graves. From that time on probably two generations of shallow lakes came to exist in the Seewinkel region.

4) Diving into modern history, we can assume a connected “Neusiedl – Hanság” lake in the early 16th century, when it was mapped by the famous cartographer Wolfgang Lazius. Since the Lazius map was printed in 1561, the following fluctuations of the lake level of Lake Neusiedl are well documented by historic records.