14th European Diatom Meeting

Meise Botanic Garden, Belgium
09-11 May 2023

Book of Abstracts

225 years
Meise
Botanic Garden

University of Antwerp
ECOSPHERE

Palaeoecological changes of glacial lakes from the Late Pleistocene to Early Holocene of the Tatra Mts. (Slovakia)

Marina Vidhya[1], Radovan Pipík[1], Dušan Starek[2] & Rastislav Milovský[1]

vmarina@savbb.sk

[1]Earth Science Institute, Slovak Academy of Sciences, Ďumbierska 1, 97401 Banská Bystrica, Slovak Republic
[2]Earth Science Institute, Slovak Academy of Sciences, Dúbravská cesta 9, 84005 Bratislava, Slovak Republic

The limnic deposits of two glacial lakes of the High Tatra Mts. namely Batizovské pleso (BAT; at 1,884 m a.s.l.) and Nižné Temnosmrečinské pleso (TEM; at 1,677 m a.s.l) of granodioritic bedrock, were examined for fossil diatom assemblages to understand the climatic versus regional influence on these lakes. The cores were acquired with the help of UWITEC hydraulic corer with sediment layers subsampled and used for diatom analysis using standard methods. Few statistical approaches were applied to understand the shift in diatom communities subjected to short climatic oscillations.

The sedimentary log of these lakes composed of facies from varves of Late-Glacial to gyttja correlates to the changing diatom communities. Varve section of both the lakes show poor preservation of diatom frustules with low species diversity. These Late-Glacial facies show dominance of alkaliphilous and eutrophic taxa due to increased nutrient influx and alkalinity propagated by leaching of rocks during the deglaciation (BAT: *Gyrosigma acuminatum*, *Navicula cincta*; TEM: *Lindavia* agg., *Denticula tenuis*, *Amphora copulata*). This varve section terminates in TEM at ~14,500 cal. yr. BP and in BAT at ~13,300 cal. yr BP. Increase in acidophilous-oligotrophic taxa are seen in the short stadial events of Older and Younger Dryas (*Amphora eximia*, *Pinnularia acoricola*, and *Fragilaria tenera*).

With TEM deposits showing a sharp shift to gyttja deposition by mid Younger Dryas (~12,300 cal. yr. BP) was also reflected by sharp decrease in the acidophilous, oligotrophic, littoral diatoms, then replaced by taxa of higher trophic tolerance like *Pseudostaurosira pseudoconstruens*, *P. microstriata*, and *Staurosira construens* var. *venter*. However, gyttja deposition in BAT started by ~8,000 cal. yr. BP, which also consisted of similar dominant taxa as TEM. Although the trend of shifting communities in these two lakes due to the oscillation of interstadial to stadial are similar, TEM diatom communities reflect predominantly alkaline conditions throughout the Late-Glacial to Early Holocene; unlike BAT with diatom communities indicative of climatic influence. A regional to geographical impact in lake TEM could be a plausible factor for the dominance of alkaliphilous taxa and those favouring calcium enriched water.

This study was supported by grants APVV-15-0292 and VEGA 2-0163-21.