



## Late Glacial and Holocene sedimentary evolution of Czechowskie Lake (Eastern Pomerania, North Central Poland)

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Czechowskie Lake is located in north-central Poland in Tuchola Forest, about 100 kilometers SW away from Gdańsk. In the deepest parts of the lake there are preserved laminated sediments with an excellent Holocene climatic record.

The lake has the area of 76,6 ha. Actual water level is at 109,9 m a.s.l. The average depth is 9,59 m, maximal 32 m. It occupies a large subglacial channel, reproduced within the glaciifluvial sediments of the last glaciation.

The lake has a history reaching back to Pomeranian phase which is proved by analysis of sedimentary successions in the vicinity of present-day waterbody. Primarily it came to existence as an very variable ice dammed lake but after dead ice and permafrost desintegration it changed into a stable lake.

In the terrestrialised part of the lake and in its litoral zone there were carried out numerous boreholes within limnic and slope sediments. They have been analysed in respect to lithology and structure. Some of them were also investigated palynologically which along with radiocarbon datings allowed to reconstruct major phases of the water level fluctuations.

The maximum infilling with the limnic and telmatic sediments reaches over 12 m. In the bottom of the lake there is a marked presence of many overdeepenings with the diameter of dozen or several dozen meters and the depth of up to 10 m with numerous, distinct throughs between them. They favoured the preservation of the lamination in the deepest parts of the lake due to waves hampering and stopping of the density circulation in the lake waterbody. The analysis of limnic sediments revealed considerable spatial and temporal variability mainly in dependance of the area of the water body and water level in time of deposition. In the lake are recorded three distinct phases of lake level decrease. The sedimentary evolution in the isolated minor lake basins showed gradual decrease of mineral and organic deposition in favour for carbonate one although in places separated by transient increase of organic sedimentation. Increased deposition of colluvial deposits took place in Late Glacial and again about 200 years ago due to transient deforestation of the lake vicinity.

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