

PCBs contamination in bottom sediments from three dam reservoirs: catchment characteristics and pollution sources



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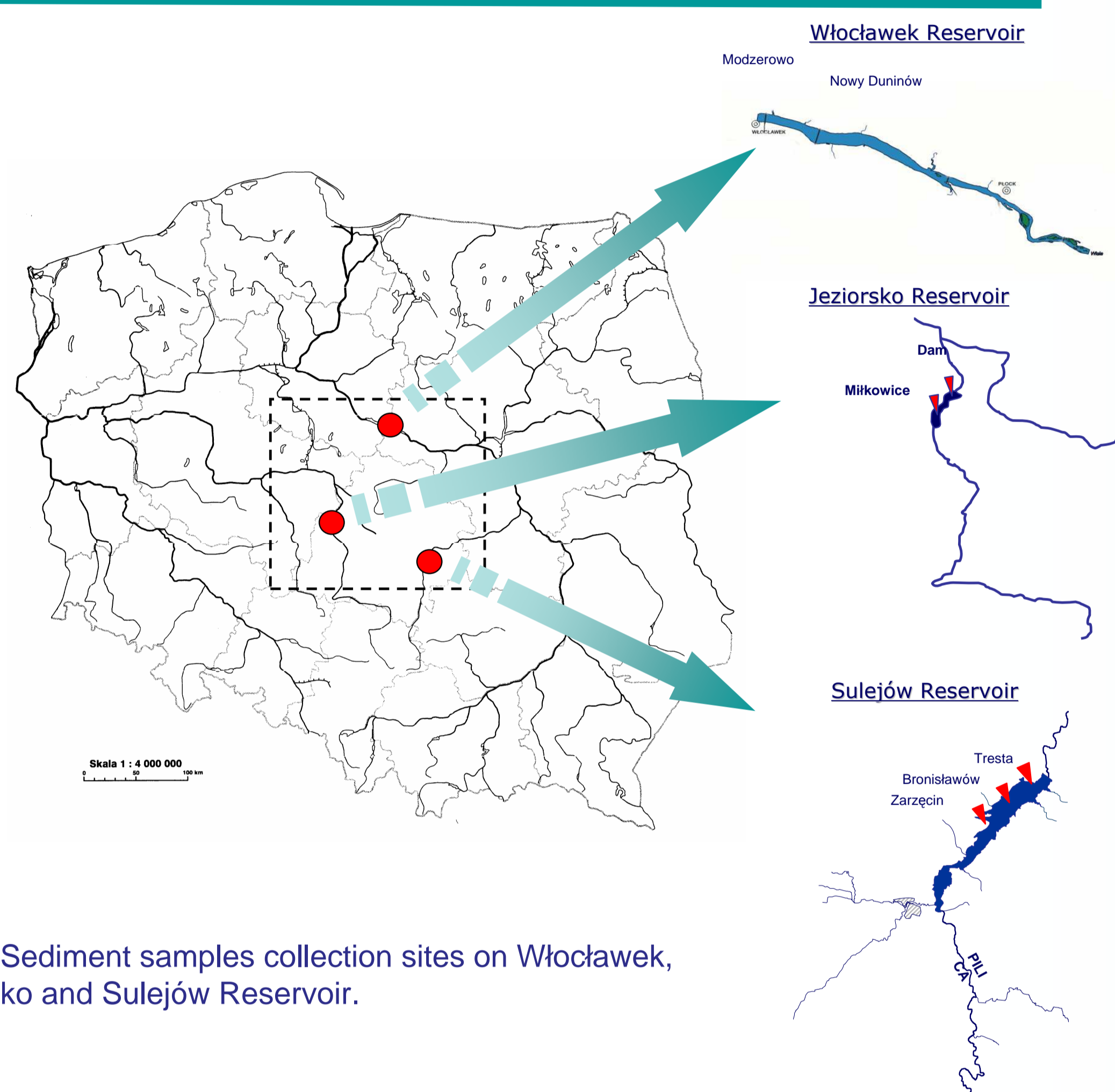


Introduction

Anthropogenic activity has introduced a significant amount of substances exerting the toxicological effects into the aquatic environment. One of them are polychlorinated biphenyls (PCBs) - a man-made chemicals, which have been produced and used since 1929. Because of their high affinities to solid phases they can end up in the sediments and thus affect environmental quality.

This investigation focused on variations in the PCB levels in samples collected from three different types of dam reservoirs: Włocławek Reservoir (WR), Jeziorsko Reservoir (JR) and Sulejów Reservoir (SR) for a possible source of contamination and influence of catchment characteristics.

Study area and Sampling



Methods

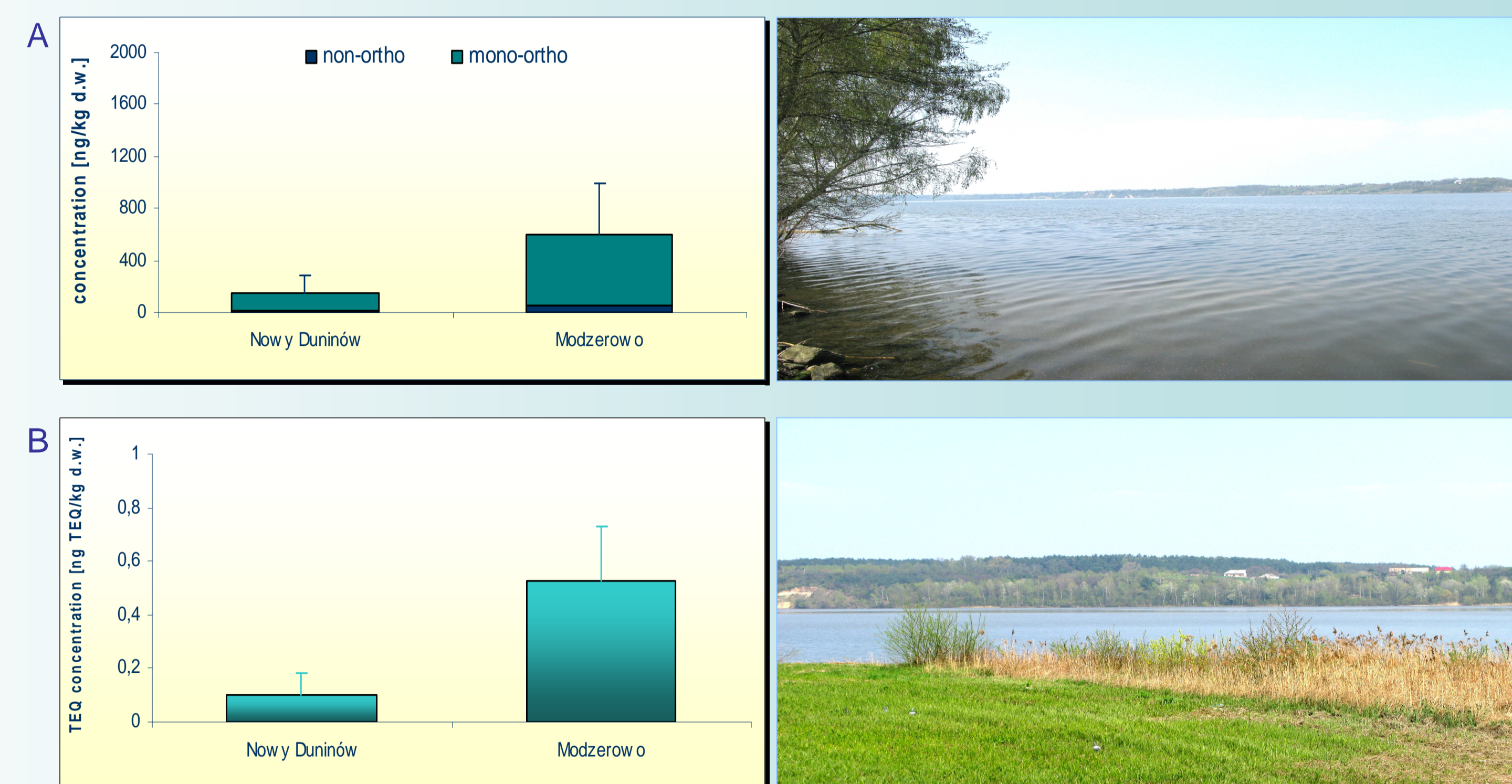


Conclusions

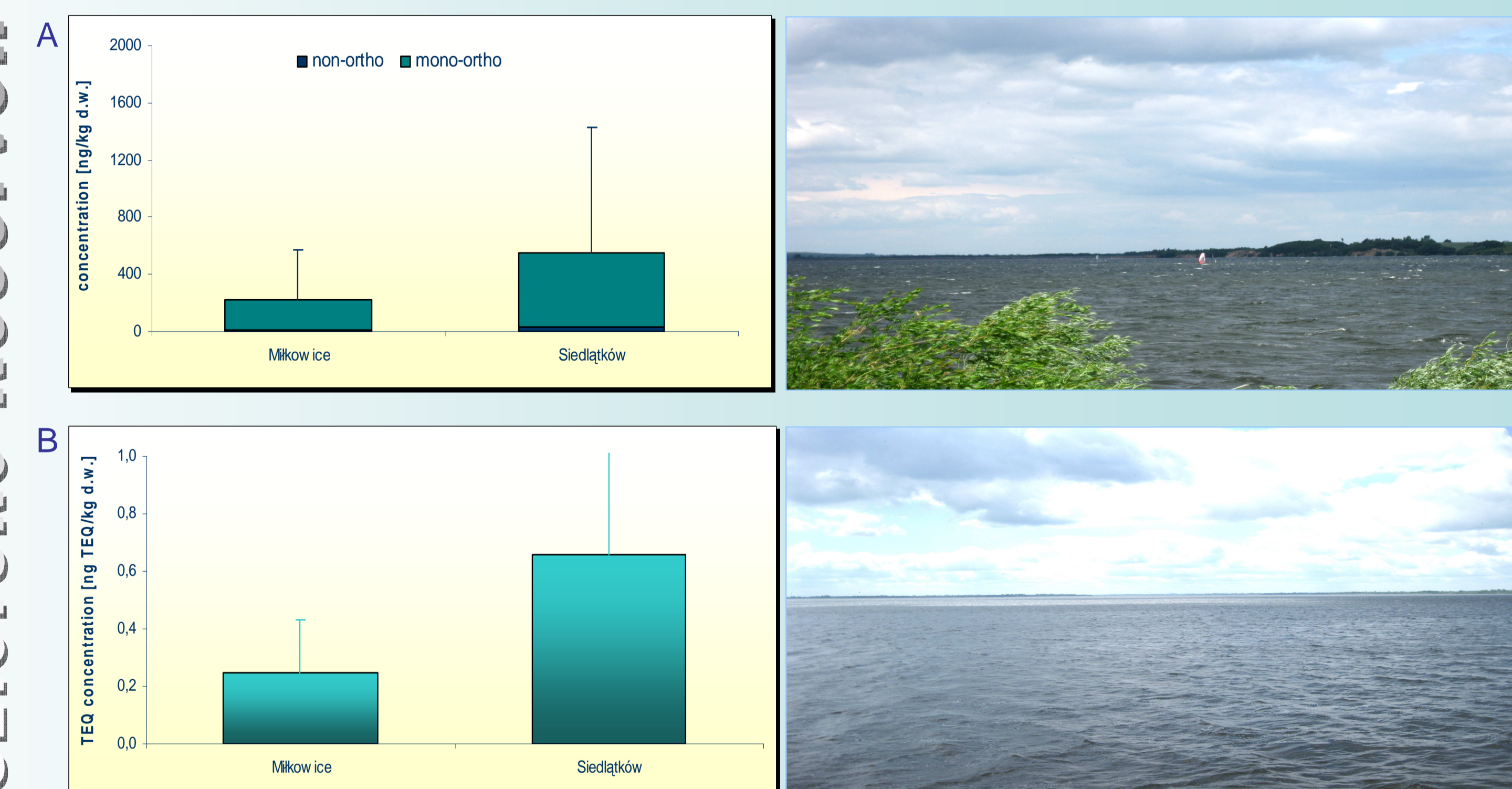
- The highest total average of PCBs concentration occurred in WR (592.28 ng/kg d.w.), lowest in SR (26.17 ng/kg d.w.) and medium value in JR (220.06 ng/kg d.w.).
- The highest TEQ concentration, ranging from 0.25 to 0.66 ng TEQ/kg d.w., was noted in the reservoir of medium PCBs pollution (JR) being influenced by contaminants from the highly contaminated Ner River received pollutants from the Lodz agglomeration; medium TEQ concentration ranged from 0.10 to 0.53 ng TEQ/kg d.w. was noted in the largest reservoir of the highest water flow and no retention time (WR); and the lowest (varied from 0.02 to 0.11 ng TEQ/kg d.w.) in reservoir of highest retention time and low catchment transformation;
- The results showed the concentration of PCBs were higher in the samples from WR and JR – and indicated the effect of urban and industrial land use on the pollutants distribution patterns. Additionally, the physical parameters such as water flow, water retention time and sediment types can be important factors controlling the PCB levels within examined reservoirs.

Results

Włocławek Reservoir



Jeziorsko Reservoir



Sulejów Reservoir

