

Diatom-based palaeo-ecological reconstruction of the last two centuries evolution of Lake Garda

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The main aim of this contribution is to evaluate the vulnerability of Lake Garda, the largest Italian lake, against specific human stressors (e.g. nutrients, hydroelectrical exploitation) in a climate change scenario and through a palaeolimnological approach. The lake sediments have been studied within the EuLakes project (Reg. Nr. 2CE243P3) and results are being used to determine the lake reference conditions before stronger human impact. The deeper basin (350 m) of the Lake is less impacted by human activities and is suitable for reconstruction of long term environmental variability, including climate change and its effect on lake ecology. In contrast, the shallow basin (81 m) is strongly affected by tourism and intensive agriculture, and thus is more suitable for studies on lake eutrophication. This contribution focuses on changes in sub-fossil diatom assemblages and TP reconstruction of two short sediment cores collected from the deepest point of the two basins. The core collected at 350 m presents two discontinuities. The deepest one is in mid 1940s, shows a decrease in benthic taxa, which may be related with the intensive hydroelectrical exploitation of the catchment area. The second one is in early 1960s and which coincides with an increase in Fragilariaceae respect to centric taxa, as a result of nutrient enrichment and climate change. The core from the shallower basin does not show discontinuities, though the diatom assemblages show a decrease in both mesotrophic Fragilariaceae and *Cyclotella* spp. since the middle 1960s. A preliminary diatom based reconstruction of lake TP concentration over the last 200 years confirms recent limnological data.