



## XXIV Congresso dell'Associazione Italiana di Oceanologia e Limnologia

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## Toxigenic potential of cyanobacteria populations in the LTER subalpine lakes

Deep Subalpine Lakes (DSL) are experiencing changes that are effecting, among others, also the phytoplankton communities. Alterations of cyanobacteria populations have important consequences on their toxigenic potential. For example, the increasing presence of *Tychonema bourrellyi* in DSL is accompanied by the increasing concentrations of anatoxins in the lakes water. In fact, in Lake Garda anatoxins are already found at levels higher than the other common toxins, microcystins. Anatoxins and microcystins have very different properties: besides the different target organs (the former are neurotoxins, the latter hepatotoxic), anatoxins are low molecular weight alkaloids with specific toxicological properties, specific distribution and excretion/detoxification mechanisms in living organisms, and specific degradation pathways in the environment. In order to assess the effects of the changes going on in the DSL on their toxigenic potential, in 2016 a survey was conducted in lakes Garda, Como and Iseo. To catch the seasonal variations of cyanobacteria diversity and abundance, a monthly sampling scheme was adopted, covering at least the spring-summer-autumn succession. In addition, in one occasion also Lake Lugano was sampled. Sampling and analysis protocols were uniform for all lakes. Analysis showed that, generally, anatoxins levels were always higher than microcystins' in lakes Garda and Como. In Lake Iseo, instead, alternate periods of anatoxins or microcystins dominance were observed. In Lake Lugano, finally, no anatoxins at all were found. In general, the most represented microcystins were a few demethylated variants; but, especially in late summer, minor quantities of standard variants were also found. The microcystins profiles were not homogeneous among lakes, as a result of the different composition of the cyanobacteria populations.

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