



Project acronym: CYANACTALP

Project title: Cyanobacteria response to climate change in Arctic and Alpine lakes

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Discipline: Earth Sciences & Environment: Ecosystems & Biodiversity

Station(s): CNR Arctic Station “Dirigibile Italia” (Svalbard/Italy)

Climate change promotes the dominance of cyanobacteria in aquatic environments, however the effect on benthic species is poorly known, especially in the Arctic and in the Alps. Here, lakes are very responsive to nutrient and temperature increase and cyanobacteria-dominating communities have been already observed. Toxic species may be favored, with consequences for ecosystem and water use. In this project, we want to study the benthic cyanobacteria community in Arctic lakes (Svalbard), with a focus on toxic species. Moreover, we want to explore the effect of climate warming on the ecosystem dynamics. With this aim, mat community will be sampled in 3 clear water lakes in Spitsbergen, and 1 reservoir used as water supply. The cyanobacteria population will be characterized at the microscope and by metagenomic, and toxic production will be quantified by LC-MS. Environmental parameters will be measured in the same lakes to understand the drivers that trigger cyanobacteria dominance in the framework of climate change. The dataset will be analysed in the context of previous studies carried out in the Svalbard and compared to high-alpine lakes, to investigate similar responses in cyanobacterial communities. The project will provide new evidence on the effect of climate warming on benthic cyanobacteria distribution. Moreover, the results will support the foreseeing of the consequences of toxic cyanobacteria dominance in these aquatic sensitive ecosystems, to contain the risk for animal health and water uses.