

Response to Dr.IstvánGrigorszky in relation to the official review of the PhD dissertation of GézaBalázs Selmeczy, entitled „Biodiversity of phytoplankton in Lake Stechlin (Germany)”.

Question:

The candidate mentioned in the first part of the results chapter the simulation of extreme weather events resulted an immediate increase in nutrients content. What kind of nutrients are covered with this statement?

Answer:

The following nutrients were measured: soluble reactive phosphorus (SRP) and all inorganic N fractions (NO_2^- -N, NO_3^- -N and NH_4^+ -N). The nitrogen fractions were added and using as dissolved inorganic nitrogen (DIN).

Question:

Also mentioned in this chapter that summer storms can have a significant effect on the phytoplankton community dynamics that further changes may result from the higher trophic levels towards, thus affecting the rate of sedimentation, as well as the biogeochemical cycles of the lake. Please, detailed it all, how this phenomenon can affect to / change the sedimentation rate and biogeochemical cycles?

Answer:

As our experiment shows, during an extreme weather event with strong wind, significant amount of nutrients can arrive from the hypolimnion to the epilimnion, which can promote the increase of phytoplankton biomass in the upper water layers. After a such event, depending on the given environmental conditions (e.g. light climate, SRSi, temperature, and so on) different groups can become the dominant in the phytoplankton community, such as cyanobacteria, diatoms or cryptophytes. Once the population decreases high amount of cells can reach the sediment, which affect the rate of sedimentation and during decomposition can have a strong effect on the bacterial production and the oxygen concentration. Additionally, as was observed in several years ago in Lake Stechlin, after an extreme meteorological event followed by cyanobacteria bloom, significant calcite precipitation occurred, which can affect the sedimentation as well. These events can affect several processes in the lake such as the oxygen, nutrients or carbon cycles, which are the main processes of the biogeochemical cycle of a lake.

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