

Water quality modelling approach for cyanobacterial bloom risk assessment in Lake Vombsjön

Background and objectives

Lake Vombsjön is situated 20 km east of the city of Lund and is part of Kävlingeån River's area. It is one of the two ordinary raw water sources for Sydvatten, which is one of the largest water suppliers in southern Sweden, serving about 900,000 inhabitants from 17 municipalities. It is an important source of drinking water for Malmö since 1948.

Lake water quality has considerably been suffering from the leaching of nutrients and pesticides from the wastewater and agriculture. More than 85% of the external phosphorus and nitrogen load is from agricultural activities (SMHI, 2019b). The accumulation of large amounts of nutrients in the lake sediments has also become a challenge for nutrient management of the lake. The consequence of hypereutrophic condition has led to the frequent events of toxic algal blooms every year during late summer and early autumn (Li, 2018). Monitoring the change of the vertical water quality conditions in the lake has been going on since 2014.

This project aims to help in developing the water quality modelling for algal bloom risk assessment in Lake Vombsjön. To assess cyanotoxin risk in drinking water supply is listed as one of the main national tasks in public inspection by 2022, according to Swedish national control plan for food industry (NKP 2018-2021). Being part of a national initiative of establish a smart platform for managing cyanotoxin in drinking water and beyond named DiCyano (www.dicyano.com), we are dedicated to contributing to a vision of safeguarding future safe drinking water.

Methodology:

Laboratory work of cyanobacteria cell counting and species identification study.

Delft 3D water quality modelling

Further application and collaborative work: This project is part of DiCyano project. The student will also have opportunity to learn other aspects of cyanobacterial management.

Time: May to August 2021

Payment: some allowance of lab work will be discussed.

Supervisors:

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