

Impact of floating solar panels on surface water quality for drinking water production

By Emmanuelle Prest, Scientist, PWNT

INTRODUCTION: OPPORTUNITY FOR THE USE OF FLOATING SOLAR PANELS ON WATER RESERVOIRS

Floating solar panels offer an efficient opportunity for electricity production where available land space is limited. The increased efficiency of electricity generation is due to less extremes of temperature from immersion in water and the relative ease of rotating the panels to face the sun, allowing more energy

produced than a similar system inland.

Drinking water utility PWN (the Netherlands) intends to install floating solar panels on an open reservoir for surface water storage before treatment, with a coverage of up to 50% of the total surface of the reservoir. With about 50 ha of reservoir surface, this solution seems very attractive for PWN. However, floating solar panels have side effects which may

impact water quality in the reservoir, such as reducing water mixing by wind, creating local growth of algae or mussels on the underneath surface of the panels, or reducing light input into the water. Light is an essential energy source for algal growth, therefore a reduced light input may have significant impact on algae survival and growth in the reservoir, in turn impacting the organic and inorganic matrix of the water.

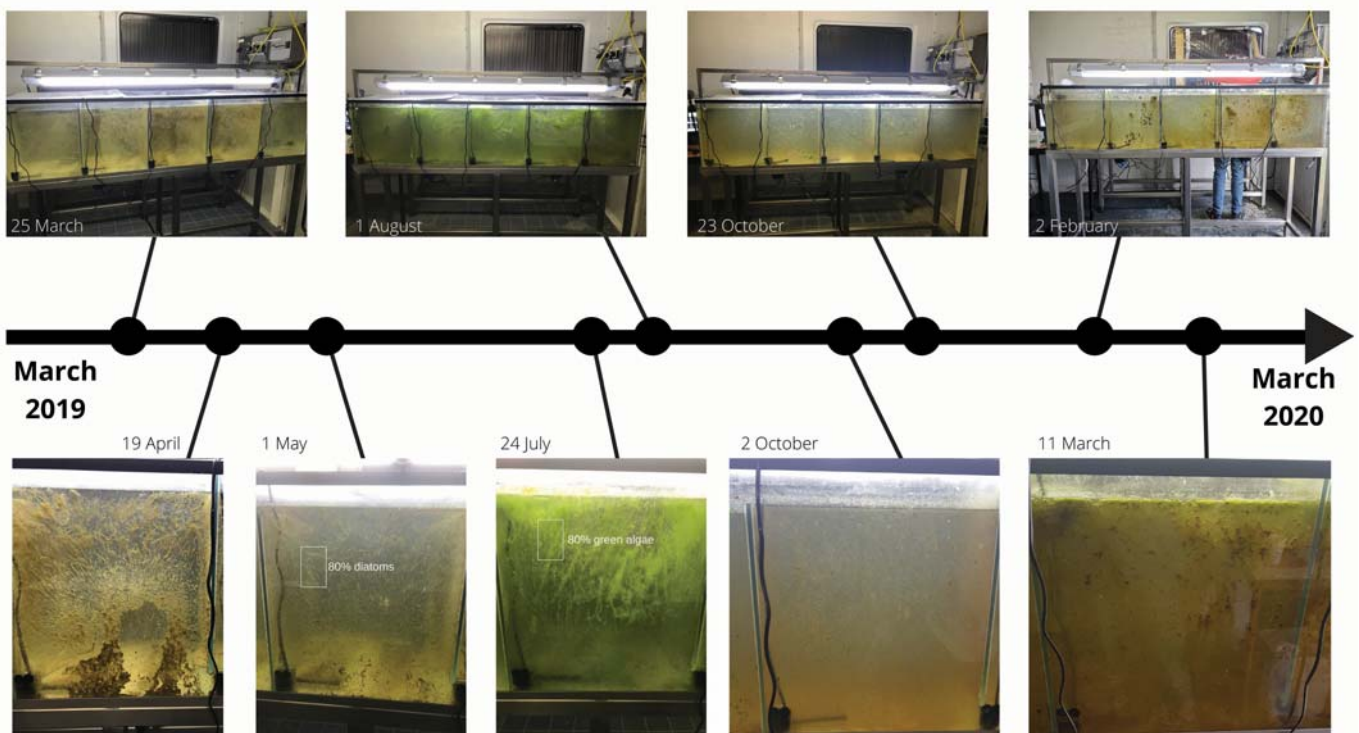


Figure 1: Experimental set-up made of two glass aquaria, one illuminated and one fully kept in the dark; The changes in algal concentration and composition in the illuminated aquarium are illustrated here