

**28 June 2021 (Monday)**

**7.00pm-8.30pm (SGT) (GMT +8)**

**Session 5.4 – Water Resources in Catchments/ Reservoirs**

**Session Chair(s): Fiona Waller, Affinity Water (UK)**

**River Basin Management Integrating Water Quality and Human Health – How Food Systems Can Help [Presentation Title is subjected to changes]**

M. Smith. International Water Management Institute (IWMI) (Sri Lanka)

*Presenter is an invited speaker. No executive summary is available*

**Rapid Monitoring Of Algal Bloom Dynamics With Flow Cytometry**

ZY. Sim, F. Mao, Y. He, K. Gin. National University of Singapore (Singapore)

Cyanobacterial blooms are currently a global threat. However, little is known about the composition and variation of the microorganism community during algal blooms. This study was conducted to monitor phytoplankton dynamics during a bloom event. Flow cytometry analysis of phytoplankton indicated the presence of eight phytoplankton groups assigned to nano-eukaryotes (nano-EU), pico/nano-eukaryotes (Pico/Nano-EU), cryptophyte-like cells (CRPTO); Microcystis-like cells (MIC); pico-eukaryotes (pico-EU), Synechococcus-like cells high in phycoerythrin (SYN-PE1); Synechococcus-like cells low in phycoerythrin (SYN-PE2), Synechococcus-like cells high in phycocyanin (SYN-PC). Regarding median percentage, the phytoplankton community was dominated by SYN-PC, followed by SYN-PE2 and Pico-EU. Redundancy analysis (RDA) was applied to study the correlations between abiotic (i.e., light, temperature and nutrient) and biotic (i.e., phytoplankton abundance) factors.

**Impact Of Floating Solar Panels On Surface Water Reservoirs For Drinking Water Production**

B. Martijn, E. Prest, A. Waagenvoort. PWNT (Netherlands)

Drinking water utilities in the Netherlands intend to install floating solar panels on open reservoirs for surface water storage before treatment. However, floating solar panels may impact the quality of water used for drinking water production. Here we studied the impact of reduced light input into the water on water quality. The study was performed using an aquarium set-up under controlled conditions. The absence of light significantly reduced phytoplankton growth in the water. As a result, the low biopolymers production by phytoplankton caused a lower dissolved organic carbon concentration. In contrast, the inorganic matter concentrations (nitrate, phosphate, silicate, bicarbonate) were higher in the absence of light, as nutrients are not utilized by phytoplankton activity. This preliminary study shows that floating solar panels can have both a positive and negative impact on water quality used for drinking water production. Careful monitoring before and after installation of solar panels is required.

## **A 'Risk Index' Approach To Catchment-Scale Microbial Modelling**

L. Cetin, P. Pedruco, S. Easton. Jacobs (Australia)

Catchment runoff is a significant conveyor of microbial loads in anthropogenically altered catchments; transported to stormwater systems by leakage or wet-weather overflows, faecal deposition from pets, livestock and waterfowl, and via wash-off through increased runoff from expanding impervious areas. Population growth, urban intensification, and agricultural expansion in drinking water catchments will exacerbate these source loads in the coming decades. Risk-based assessment frameworks are employed to develop waterway management strategies and policies that minimise risks to human health from pathogenic sources. As part of a risk assessment framework, 'Risk index' modelling frameworks provide a powerful tool to investigate catchment management strategies for mitigating these pollution sources. This paper discusses an integrated catchment-river modelling framework that predicts microbial levels by differentiating the major sources of pathogens from the catchment delivered to receiving waters via different hydrological pathways. The modelling framework provides a quantitative risk assessment for compliance with regulatory water quality objectives.