

# **Validation and performance comparison of in situ fluorescence probes for real-time cyanobacteria monitoring**

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## **Abstract**

Cyanobacteria management remains a challenging issue due to climate change and increased nutrient runoff activity in drinking water sources. One of the main issues that water authorities face is the lack of real-time cyanobacteria detection tools which can aid operators in responding to fluctuations in cyanobacterial blooms. In situ fluorescence probes have been heralded as a potentially viable option for detecting cyanobacteria in real-time. However, there are limited studies on comparing the performance of different probes under the same operating conditions. Hence, the aim of this study was to compare the performance of various probes in a series of laboratory based scenarios.

The probe readings showed a correlation between cyanobacteria biovolume and the raw cyanobacteria measurements. However, all the probes were impacted by the presence of interference sources. In particular, high concentrations of green algae triggered an over-estimation of cyanobacteria. Overall, this study demonstrated that in situ fluorescence probes have the potential to monitor cyanobacteria but may exhibit poorer performance in the presence of green algae.