Finnish Environment Institute and Kuva Space partner to enhance Finland’s inland and coastal water quality monitoring

Friday 4 July, 2025

Related Sectors:

Business & Finance ::
Environment & Nature ::

Scan Me:

The public-private pilot aims to improve the detection and identification of harmful algae blooms and support water safety across Finland using cutting-edge Finnish hyperspectral satellite data and AI-powered analytics.

Helsinki, Finland (July 3rd, 2025) Finnish hyperspectral satellite and AI-powered insights company Kuva Space is launching a pilot with the Finnish Environment Institute (Syke) to test the use of hyperspectral satellite data and AI-driven insights in improving the monitoring and identification of algae blooms in Finland’s lakes and coastal waters. This collaboration builds on Syke’s existing use of public satellite data and manual field testing, adding more detailed spectral information to help target environmental measures and recovery actions where they are needed most.

The vast network of lakes, rivers, and coastal waters presents a major monitoring challenge for Finland. During the summer, cyanobacteria observations are gathered from nearly 400 sites. Cyanobacteria, commonly known as blue-green algae, can emerge suddenly, spread widely, and produce harmful toxins that pose risks to both humans and animals, making timely detection critical. However, not all algae blooms are harmful. For example, phytoplankton blooms that often appear in spring can turn the water brown and cause slime on fishing nets, but don't pose a health risk.

Syke aims to monitor the entire country’s inland and coastal waters to detect harmful algae blooms and their associated species more quickly and accurately. Unfortunately, most current satellite missions lack the spatial resolution and data latency needed to accurately measure algal bloom concentrations, identify toxic species, and deliver faster warnings at scale.

To address this, Syke and Kuva Space are collaborating to develop advanced machine learning and AI models that leverage hyperspectral data, sample measurements, and insights from biochemical and genetic research. Syke’s extensive water sample data will enhance model training and reliability, advancing Earth observation into a validated and scalable tool for monitoring cyanobacteria and understanding the environmental drivers behind their occurrence and distribution.

“We’re very excited about this pilot with Kuva Space because rather than just detecting the presence of algae, we can use Kuva’s hyperspectral technology and AI to explore the spectral range and take a step further in identifying which algae species are present and assessing their biomass. In the long run, we can also follow how restoration efforts are impacting water quality across Finland’s many small lakes and complex coastal areas,” says **Jenni Attila**, Leading Researcher & Group Manager at the Finnish Environment Institute.

Continuous, high-spectral resolution data improve the modelling of water quality trends and help predict when and where harmful blooms are likely to occur. By filling gaps left by traditional sampling, hyperspectral monitoring strengthens regulatory reporting, supports ecosystem management, and guides smarter policy decisions.

“This public-private collaboration is a notable advancement in environmental monitoring capabilities, particularly for inland water quality, where large-scale, high-frequency coverage remains scarce,” says **Jarkko Antila**, CEO of Kuva Space. *“By 2027, Kuva Space's hyperspectral monitoring with daily revisit rates will provide commercial and public sector stakeholders in aquaculture and water resource management with continuous, actionable insights, enhancing operational planning, regulatory compliance, and sustainability outcomes at an unprecedented scale,”* he continues.

Finland is at the forefront of integrating satellite data into national environmental monitoring efforts. Satellite observations are used, for instance, in the assessment and classification of the ecological status of surface waters. This has helped increase assessment coverage and confidence in 4,000 lakes and almost all coastal areas under reporting obligations.

Syke is also exploring how this type of insight can contribute to broader regulatory and restoration efforts. Finland reports under multiple EU directives and regulations, including the Water Framework Directive and the Marine Strategy Framework Directive, as well as the upcoming EU Nature Restoration Regulation. Better data and more observations can enhance the accuracy of status assessments and

help target measures in a cost-efficient manner.

Kuva Space successfully launched its Hyperfield-1A satellite in August 2024, marking the initial stage of Kuva Space's large hyperspectral constellation, which aims to provide daily observation by 2027 and gapless subdaily global monitoring with 100 satellites by 2030. Its second hyperspectral satellite, Hyperfield-1B, developed under the ESA InCubed program, was successfully deployed on June 24th, 2025, to support data collection for this pilot and other new and ongoing activities.

###

For additional information:

Jarkko Antila, CEO
Kuva Space
+358 50 529 8876
jarkko.antila@kuvaspace.com

Jenni Attila, Leading researcher, group manager, PhD
Finnish Environment Institute (Syke)
+358 40 721 0575
jenni.attila@syke.fi

Company Contact:

_

Pressat Wire

E. support[@]pressat.co.uk

View Online

Newsroom: Visit our Newsroom for all the latest stories:
https://www.wire.pressat.co.uk