WQEye: A Python-based Software Aided by Google Earth Engine for Machine Learning-based Retrieval of Water Quality Parameters from Sentinel-2 and Landsat-8/9 Remote Sensing Data

1. System Requirements and Compatibility

1.1. Minimum Recommended Requirements

- WQEye is developed entirely in Python, making it cross-platform and compatible with major operating systems, including Windows, macOS, and Linux distributions such as Ubuntu.
- WQEye includes six modules. All modules, except RS Sampling, run locally on the user's computer, while RS Sampling relies on Google Earth Engine for processing. Machine learning models implemented in WQEye run on the user's computer CPU by default. This was done to make the software accessible to a broad range of users. However, if a CUDA-capable GPU is available on the system, the software will automatically use it to accelerate processing for ANNs and KANs. So, WQEye is not dependent on hardware-specific features such as GPUs and is designed to function efficiently on both basic and advanced computer configurations.
- An active internet connection is required to access the Google Earth Engine (GEE) in the RS Sampling Module.

Table 1. Minimum Recommended Requirements

Component	Specification
Processor	Dual-core CPU or higher
Memory	At least 4 GB RAM
Operating System	No difference
Python Version	Python 3.12.x
Internet	Required for RS Sampling via GEE

1.2. Tested systems and platforms

The developers successfully installed and tested WQEye multiple platforms, ranging from high-performance workstations to standard consumer laptops. The following table summarizes the system specifications used for testing:

Table 2. System specifications used for testing

Operating System	Processor	Memory (RAM)	Graphics (GPU)
Windows 10 Pro 22H2 (64-bit)	Intel® Core™ i7-6700HQ	16 GB	NVIDIA® GeForce® GTX 960M (8 GB Memory)
macOS Sonoma 14.6 (MacBook Air 2024)	Apple® M3 Chip (8-Core CPU)	24 GB	Apple® M3 Integrated GPU (10-Core GPU)
Ubuntu 22.04.4 LTS	13th Gen Intel® Core™ i9-13900	62 GB	NVIDIA® GeForce® RTX 3050 (Dedicated GPU)