REMOTE WATER SAMPLING

SYSTEM DESCRIPTION

REMOTE WATER SAMPLING

Despite the rapid progress with different sensors allowing to analyze water contamination, turbidity, etc. *in-situ*, water sampling for subsequent analysis in the laboratory will stay widespread in the foreseeable future.

Traditional methods require direct access to the water body and samples are gathered from the shore, pier, bridge, or boat. Acquiring samples at some distance from the bank without a boat or ship is impossible.

A remote sampling system based on UAV solves that problem, allowing water sampling at long distances from the shore.

SYSTEM DESCRIPTION

The system combines well known and proven components:

- DJI m300 RTK or DJI m600 Pro drone,

- UgCS SkyHub onboard computer to control water sampling process in a fully automatic mode,

- Radar altimeter for real-time altitude measurement during the flight to the sampling location where it is necessary to take a sample, and also to control the descent to the required altitude to take a sample from a set depth.

- Ruttner water sampler with volume 1L (for DJI m300 RTK drone) or up to 5L for DJI m600 Pro drone,

- UgCS ground control software to plan and control water sampling missions.

The only component developed for that system is the messenger release device.

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SYSTEM BENEFITS

The main benefit of the system is the possibility to take 1L water samples at far distances from brinks or water access points (piers, bridges, etc.) when there is no boat or ship to sail to the location where it is necessary to take samples.

Additional benefits:

- Fully automatic process of taking samples: the drone flies in automatic mode to a set location, descends to the required altitude, and releases the messenger to fill the sampler. After that drone ascends and delivers the sample to a set location,

- Water sample will be acquired exactly at a specified point,

- Practical distance -a few hundred meters; the technical limit - a few kilometers from the take-off position as the drone flies and takes a sample in a fully automatic mode,

- Possibility to take samples from the required depth by specifying the altitude to which the drone will descend before the messenger release,

- Possibility to take samples from dangerous/contaminated waters, and if no access available to the water body