An In-Situ Sensor Node for Spatial and Temporal Monitoring of Water Quality

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1. Background

- Monitoring water quality is essential for ensuring the ecological health of a body of water
- Currently, water quality is monitored continuously with fixed stations or is monitored by manual sample collection
- Neither capture water quality parameters **continuously** and **spatially**

2. Methodology

- Designed and built a UAV-deployable sensor node for autonomous water quality monitoring
- Conducted field tests to deploy the sensor nodes in a pond
- Collected and processed spatial data to create water quality maps using Kriging analysis.

3. Results

- Efficient and affordable UAV deployable sensor nodes are developed
- Rapid and accurate spatial monitoring was effectively performed

4. Conclusion

- Spatial mapping via Kriging is an efficient and effective means of characterizing the water quality of a water body
- The use of UAV deployable sensor nodes offers a cost-effective solution for environmental monitoring of water bodies

Figure 1: In-situ water quality sensor node

Figure 5: Real water body deployment test

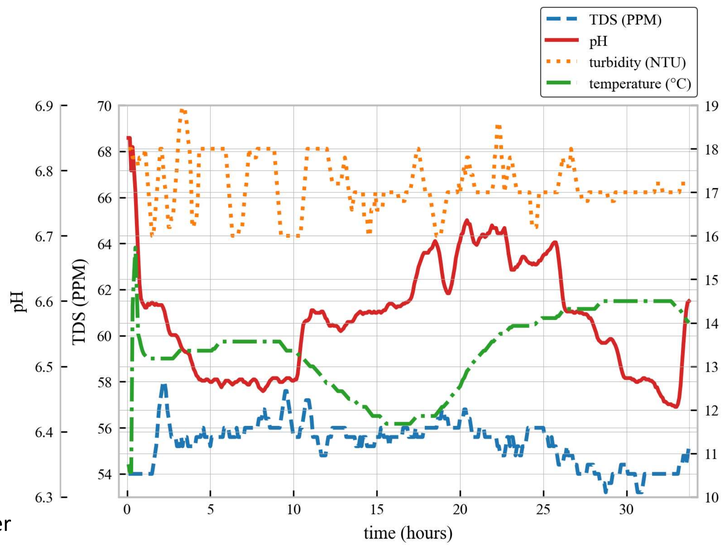

Figure 3: Stationary time series test with In-situ sensor node

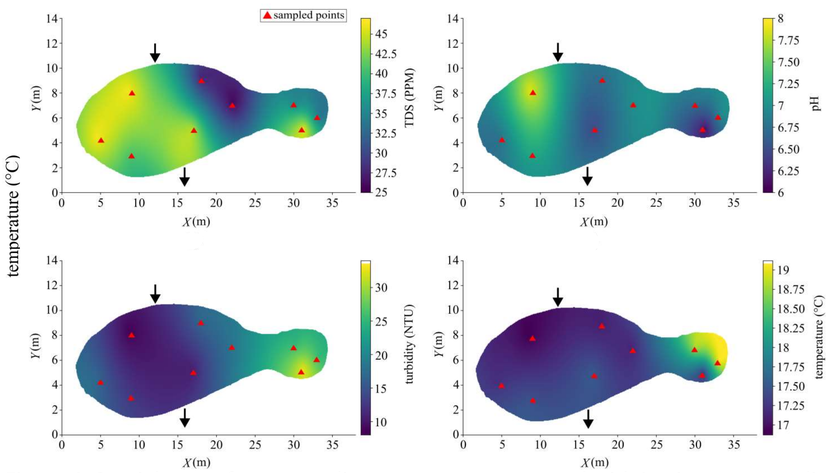

Figure 4: Spatial map of water quality parameters generated with In-situ water quality nodes

Figure 2: UAV deployment of the In-situ water quality sensor node

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