Testing the Waters: Engineering an Innovative Method of Water Health Analysis

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Although water seems endlessly available, only 2.5% of the Earth's water is fresh, with just 0.26% of that residing on the surface. This water supply is where much of humanity's drinking water comes from. Therefore, clean surface water is essential to the health of humanity and millions of other organisms. As a result of continued human mismanagement of resources, waste, and pollution, one of the most valuable resources on earth is in more danger than ever. It is thus essential to monitor the health of bodies of water around the globe. However, current methods of water health analysis fall short of being effective due to their cost, comprehensiveness, and consistency. This research addressed these problems by designing a new method of sampling water composed of two parts: the use of a drone to collect aerial imagery and the use of a remotely operated watercraft to collect physical samples and electronic data. The researchers successfully completed Part 1 by creating 3D renders of aerial imagery and overlaying them onto real-time maps to provide new insights on a body of water. Part 2, which will allow the gathering of bathymetric information, temperature data, and water samples, is currently in progress. Combining information from both parts, this project will result in a more efficient method of creating a comprehensive set of information on a body of water. More effective and economical water health analysis will allow for better management of the limited freshwater supply, making both the water and surrounding environment healthier.