

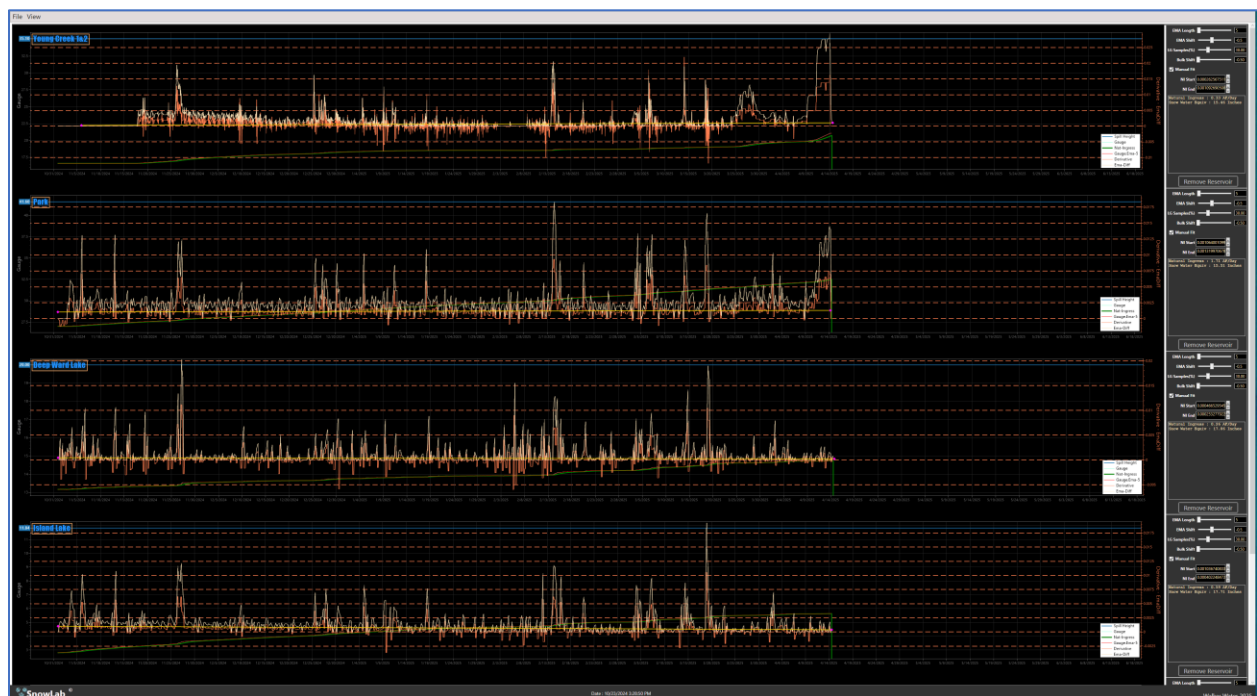
Company Background

Walker Water is a technology services company founded in 2021 by John Walker, and built upon his strong passion for conservation, and knowledge of how the complex irrigation system in the Surface Creek Valley of Western Colorado works. The development of our technologies is based upon what we learned as irrigators and water users ourselves within this valley.

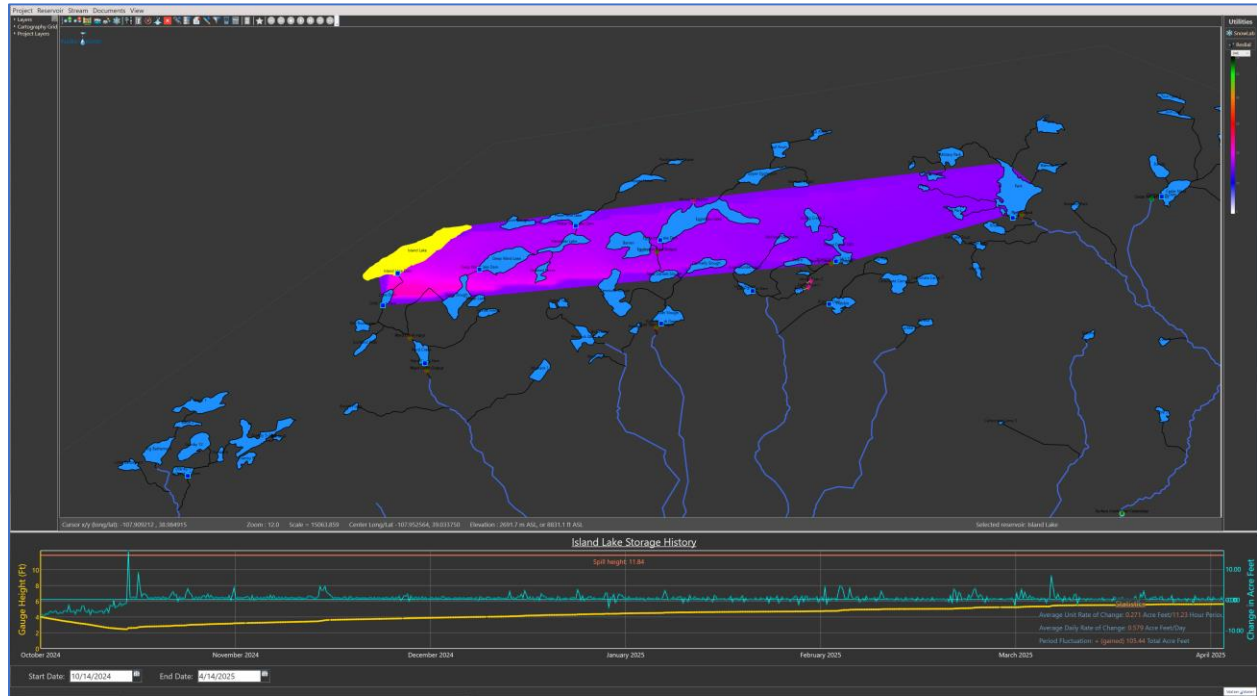
We are a software development and irrigation system consultation services company whose charge is to build administrative tools that help the water administrator to ensure the accurate and timely delivery of their water to the rightful user and allow ditch companies or even individual users to know what water is flowing in their ditch.

Introduction

Walker Water has developed a method for calculating snow water equivalent (SWE) using pressure sensors installed in high mountain reservoirs. SnowLab collects data from multiple sensors, computes SWE and produces a spatial map of the water height. These maps are used by irrigators to determine if reservoirs will fill and spill, and in general to determine how much snow melt will be available for irrigation water. SnowLab produces very accurate results but currently requires user intervention to isolate the natural ingress/egress of the reservoir. Ingress must be subtracted from the water accumulating in the reservoir to isolate the contribution from snow only. Egress is a much more problematic situation and unless the exact amount of egress is known a priori the SWE cannot be calculated reliably. The image below is from SnowLab and the yellow line with end points allows the user to manually define the ingress.



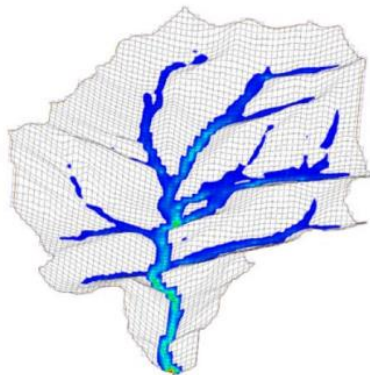
Once the SWE is defined at each reservoir, the user saves the results, spatial distribution is produced and our 2D GIS basemap displays a map of the SWE.



Work Description

The 1st phase of this project is to come up with an algorithm that automatically computes the ingress/SWE thereby removing the need for user intervention. Evaluation and understanding the data is key to coming up with ideas of how we can achieve this. We have spent considerable time thinking about this and perhaps have a solution that needs to be coded and tested. But we would like the students to think about how they might accomplish this goal. Is there an AI component that could be beneficial?

Once this objective is accomplished a 2nd phase is to integrate SnowLab with the work that last Summer's and Fall Field Session students produced into our software. They did some good work on snowmelt simulation taking the map of SWE from SnowLab as input and modeling the snowmelt over time. Their work was standalone, and now is the time to integrate it within our system so that the visualization of the snowmelt is done in our 2D GIS basemap and perhaps even the 3D visualization system.



Student Skill Set

Our 3D software is written in C# in Windows .Net8 and WPF. The 3D environment uses OpenGL. The students will be working directly within the Walker Water system.

Team Size

The team size should be a minimum of 3 but certainly could support 5 or 6 members.

Internship Possibilities

Walker Water would be delighted to offer internships. This would be a function of our financial condition at the time, and we anticipate this may be a possibility.

Work Location

Work can be performed remotely. We deploy a git repository that supports collaboration amongst team members who can be located anywhere. Since we live in Cedaredge, we would not ask nor require anyone to visit our office.

NDA

We will require an NDA for this project. The Walker Water software is proprietary and as such we want to protect our investment.

Intellectual Property

Walker Water will retain ownership of all code developed theretofore.