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First-ever WaterViz program at SCCB's Summer Teen

Evan Gimmaka never thought that the water cycle was exciting, but during SCCB's Summer Teen program, he experienced a new way of learning.

Participants use music and sounds to illustrate their observations of data about the water cycle in WaterViz, a first-of-its-kind program offered in SCCB's Summer Teen program.

"We're like scientists," he says, smiling, as he works with a team of participants who are creating a tactile chart about the components of the water cycle.

WaterViz is a new, innovative program that helps participants learn about the water cycle. They study precipitation, transpiration, evaporation, stream flow, temperature, and soil water levels from decades of data gathered at the Hubbard Brook Forest in New Hampshire. Based on their observations, they create tactile models that represent scientific trends within the data. They also learn about climate patterns and how the climate impacts the environment.

Founder and project lead Dr. Lindsey Rustad says that WaterViz began when technology advances allowed researchers at the Hubbard Brook Forest to collect data without physically taking water samples. However, the digital sensors used provided more data than expected and that led Rustad, who is one of the one hundred twenty most influential women in science, and the director of the United States Department of Agriculture Northeast Climate Hub, to think outside the box about how the data could be used.

"I felt that we needed another way of looking at this data and telling a better story," she says. "We wanted to engage with the reasoning, the visual, and the auditory parts of the brain all at once."

Rustad's approach was to combine art and music. WaterViz uses colors and artistic designs to represent the soil, streams, rocks, and trees within the Hubbard Brook Forest. Shapes, such as bubbles, rain droplets, and fireworks, illustrate stream flow, evaporation, and precipitation. A bass guitar and tuba represent streamflow, while cymbal clashes simulate precipitation levels. The intensity of the sound indicates the quantity of streamflow and precipitation.

Using shapes, sounds, and music to represent the various components of the water cycle not only helps make the data accessible to people with visual impairments, it offers a unique way to interpret the data and understand the water cycle.

"I didn't know we could hear music to learn about the water cycle," says Sophie Chapman, Summer Teen participant, who initially thought the water cycle could only be learned through textbooks.

Sophie says that WaterViz's use of music provided her a new way to experience science, a field that didn't interest her before attending Summer Teen.

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According to Rustad, adaptive sounds and musical instruments allow people to hear the different tones of the water cycle and alert individuals to changes in climate and natural storms. This helped Summer Teen participants realize how complicated the water cycle is and how interconnected the pieces are.

Mary Robbins, a teacher of the Visually Impaired at South Carolina School for the Deaf and Blind, and Dr. Tina Herzberg, professor and coordinator of Visual Impaired Education at USC Upstate, partnered with WaterViz to provide this program to Summer Teen participants.

Herzberg and Robbins recognized WaterViz's ability to introduce students who are blind and visually impaired to possible careers in science, technology, engineering, and mathematics (STEM).

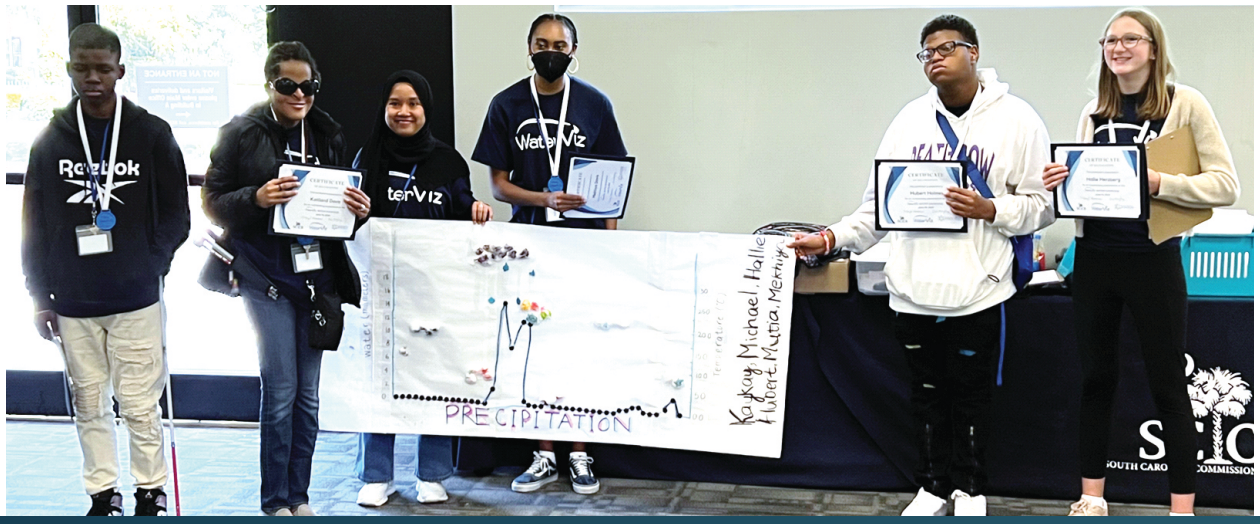
"This program is helping them learn data analysis skills, how to work as a team, managing time, and how to solve disagreements," Herzberg says. "These skills are needed to be successful later in life."

Joshua Cross, a Summer Teen participant, enjoyed the team activities in which participants brainstormed ideas and used different types of materials to create tactile graphs of water cycle data. He says the various ways of presenting data accessibly, instead of using traditional charts and graphs, is something he will try to continue to use in the future.

Herzberg says that WaterViz's potential to impact participants goes beyond science.

"We are building their capacity to be ready for what comes after school," she says. "Building confidence in themselves and that they are capable of doing anything they put their mind to is what WaterViz provides."

Below: Summer Teen participants display a tactile chart they created which illustrates precipitation trends. One of the participants also created a rap song to describe the components of the water cyccle.



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