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STATEMENT OF PURPOSE:

As opposed to conceptual science, applied science and its corresponding data tends to lack the potential of being presented creatively. Based on my and my team's summer research experience, we want to prove otherwise. The personal, hands-on work we did regarding urban planning and environmental stewardship lead us to a much deeper understanding of how greener systems can be customized and integrated into a city. While we can now better articulate on the issue of grey infrastructure, flooding, water pollution, etc. and why green infrastructure is a possible and exciting solution, we can all agree that it's difficult to fully comprehend the point of it without seeing the infrastructures in action. That's why we strive to present not only strong numbers but also visuals of how our vegetation lives and participates in the community. Otherwise, policy-makers--and even the common public--have no effective way of realizing the practical use and justification for green infrastructure. We like to think that this presentation is only the beginning--I am working towards an animated model of the vertical layers of our bioswale and the mechanisms of which water flows through the porous medium and interacts with root systems and partakes in chemical reactions. The team has also invested in a drone and plan to record the bioswale and our other sites from a bird's-eye view. Hopefully, our ideas can come to life this fall and be added to our intricate and compelling story.

DESCRIPTION OF DATA SETS:

The primary reasoning and goal for our data is to monitor recently implemented green infrastructure (GI) and analyze its viability, growth, and function on an urban college campus. Slides 1-6 and 9 are time-lapse videos (taken with PhenoCameras) of our 4 testing sites throughout the growing season: The rain garden, garden bed, green-roof, and bioswale. The vegetation that composes any GI is an essential component (hence the "green" in GI) for providing a multitude of ecosystem services, but especially since the vegetation plays a vital role in purifying and decelerating water from precipitation and surface runoff during intensive storm events. We want to relate the health/peak of vegetation to water quantity and quality. Slides 7-8, 10-12 highlight the region of interest for measuring daily greenness (MATLAB calculates green vs. blue vs. red pixels in the region). We compare the daily greenness to precipitation levels and water content of the site. Slides 14-18 show further investigation of the quantity and quality of water interacting with our GI. We collect four undisturbed soil cores (slide 14, A1-A4) and test each with different compositions of runoff (slide 15) to see how water is slowing and filtering through the medium and how our vegetation is affected by certain contaminants/scenarios. Slides 15-16 portray collection and preparation of the cores, and slide 8 presents the hydraulic conductivity (represents ability of water to infiltrate) of soil core A1. This value denotes a lot about the soil characteristics and root structure of the vegetation. (refer to my abstract)