Wednesday, June 9, 2021

Virtual Meeting via Zoom
7:00–9:00 p.m.
HGS Members $10 Non-Members $25 Students $5
https://www.hgs.org/civicrm/event/info?id=2253
Registered Attendees: A confirmation email will be sent upon registration with meeting links.
Event contact: Matthew Cowan – mrcowan1@hal-pc.org

****Non-Members can submit an application and pay their dues before registering to get the member price. Please call the HGS office at 713-463-9476 to be registered only AFTER your application and dues are submitted.****

Jessica Sheldon
Rice University

Drone Technology in the Houston Area

Drone technology and the high resolution datasets it enables stand to revolutionize our understanding of the Earth's surface. This research is Houston specific, and studies how drones can be used to systematically collect photogrammic data to detect environmental changes, and how that data is valuable for flood planning purposes.

This data is the culmination of three years of research. Prior to this year, the focus has been learning to fly the drone, learning the image processing Pix4D and ArcMap 10.5, and creating a workflow for accurate image collection processing. This study has collected three separate datasets of the study area at Buffalo Bayou using a DJI Phantom 4 Pro drone. This data was then processed and modeled in Pix4D to create digital elevation models (DEMs). The DEMs were calibrated and analyzed in GIS, and compared to the publicly available 2018 LIDAR data. Our research catalogues high resolution change over time of our study area, and documents the process of how drones can be used to systematically observe change over time. This data presents three scenarios with corresponding case studies for how drone photogrammetry can be used to aid flood risk assessment. ■

Biographical Sketch

Jessica Sheldon graduated in May from Rice University with a degree Environmental Science with an Earth Science concentration. As a Houston native, she is passionate about water management issues and flood mitigation. Her research with Dr. Kirsten Siebach works to gain a better understanding of change over time on Buffalo Bayou and how drones can be used to monitor this change and aid in flood risk assesment. This summer, she is interning with WSP in Austin, TX as a Hydrogeologist and will begin a Master's of Environmental Management in August at Duke University.