UTBiome: citizen science and campus community engagement

The University of Texas main campus is located at the heart of the city of Austin. The university campus can be used as “living” laboratory to engage students, faculty, and the public in general, in science. The UTBiome (aka “Mapping the UTBiome”) project, is a cross-disciplinary educational, research and outreach effort to (1) engage the community in the collection and analysis of environmental samples from campus environment, and (2) to create an open access web-based mapping platform to disseminate the environmental and microbiological data obtained. In this project, both indoor and outdoor environments are being interrogated to answer diverse scientific questions. Over 250 citizens from the university community have been involved to date in the collection of biological samples and environment metadata associated with key water quality metrics including temperature, nitrate, phosphate, dissolved oxygen, alkalinity, pH, turbidity and fecal indicator bacteria. A data management system was designed and implemented for both, ‘online’ data input through student’s mobile phones and to facilitate sample tracking. In order to fully engage the students and the UT community, we envisioned an interactive and innovative workflow, involving technology, automation, and social media. The interactive mapping platform we have created allow users within and outside the university to access and download the results and associated environmental data by simply clicking on the interactive map. The comprehensive UTBiome map created in ArcGIS can be found in this website http://crwr-utbiome.austin.utexas.edu/utb_webapp/utbiome.html (or just http://tinyurl.com/UTBiomeMap). The online platform design offers access to the environmental information, providing resources for students, faculty and the general public to learn more about the environment that surrounds us.

UTBiome: Citizen Science and Campus Community Engagement

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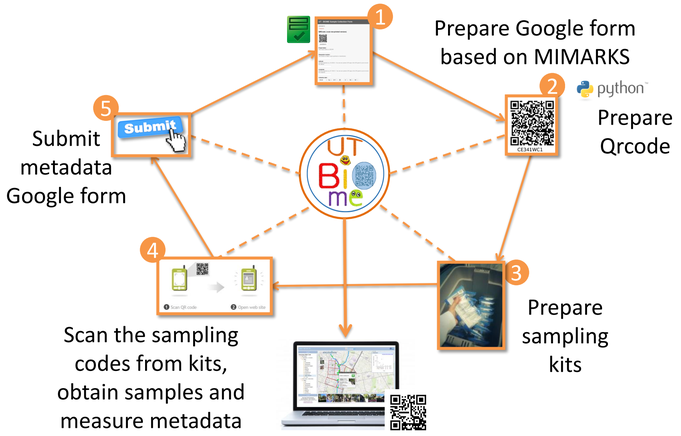
Motivation and Goals

- Engage UT community in collection and analysis of environmental samples: UT -Living laboratory
- Develop an interactive mapping platform and open-data portal for citizens and researchers
- Establish framework to support sustainability and health initiatives at UT and elsewhere

Research Campaigns

- >300 undergraduates involved in field sampling activities integrated into courses, >400 samples collected
- Activities coordinated by faculty, staff, grad students and undergrad students
- Seven projects developed last year covering outdoor natural spaces across campus and indoor spaces.
- Involved faculty and staff from Cockrell School of Engineering, Environmental Science Institute, School of Nursing, Sequencing Center, and Integrative Biology
- Active social media initiatives for community engagement

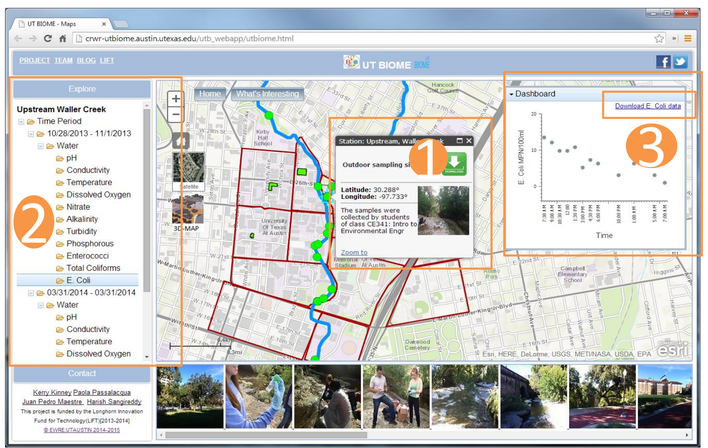
Sample Tracking System



Interactive Mapping Platform

- The mapping platform built using HTML5, CSS3 and JavaScript
- Developed by grad students
- ArcGIS API for JavaScript, dojo toolkit in combination with HTML5 & CSS3

ArcGIS API for JavaScript dojo toolkit Font Awesome 3.2



http://crwr-utbiome.austin.utexas.edu/utb_webapp/utbiome.html

Interactive Platform

- Open Source, reproducible at other institutions
- Open data, can be used by citizens and scientist at other institutions
- 3D mapping under development
- Framework for sustainability and health initiatives

Social Media Engagement

Challenges

- Lag time between data acquisition and data publication online
- Long-term engagement with participants and engagement evaluation
- Visual representations: 3D sample locations, meaningful representations of results

http://crwr-utbiome.austin.utexas.edu/utb_webapp/utbiometeam.html

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