Experiences from the GIS Center at the UM-Flint

Troy Rosencrants
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GIS Center (GISC)

• The GISC’s mission is to leverage interdisciplinary collaborations in the use of geospatial technology for research, education, and community service.

• The GISC conducts and disseminates GIS education and research to meet the needs of local businesses, non-profit organizations, and government offices that will increase your organization's capacity to use GIS tools efficiently and effectively.

• The Center provides faculty and students with the resources and expertise needed to enhance their spatial education and facilitate the incorporation of GIS technology into their disciplines.
GIS Center People

• **Dr. Greg Rybarczyk** manages the GIS program at UM-Flint and has used GIS for the past 10 years in the private, public, and government sectors. Currently, he utilizes GIS and spatial analysis techniques for solving alternative transportation problems, historical preservation assessments, neighborhood planning, and crime modeling.

• **Troy Rosencrants** is the GIS Center Manager and is in charge of managing projects and the students working on those projects within the Center. His experience includes implementing GIS in meteorology/climatology, severe weather hazards research, and spatiotemporal analysis of long-term macro-scale and micro-scale population dynamics.

• **Dr. Marty Kaufman** has over 30 years of experience in GIS. He participated in the initial development of advanced geocoding software during the 1980s, led successful large-scale GIS implementations in industry and government, and has over 20 years teaching GIS at the University of Michigan in Ann Arbor and Flint.

• **Dr. Randall Repic** has over 25 years of experience in teaching and research in satellite and aerial remote sensing for the analysis and presentation of environmental data. He has used remote sensing and spatial analysis applications to identify and investigate problems in ecosystem science, ecology, water resource management, pollution control, and land use/land cover dynamics.
GIS Center Projects

• Washtenaw County Road Commission GIS Needs Assessment
• Crim Fitness Foundation Mapping
• Building Neighborhood Capacity Program Mapping
• Dr. Greg Rybarczyk USDA Food Access in Michigan grant
• Flint Township/Grand Blanc Fire-flow Assessment
• Grand Blanc hazardous materials research
• Department of Justice Byrne Program grant
• Future potential research
Washtenaw County Road Commission GIS Needs Assessment

• The GISC performed a GIS Needs Assessment at the Washtenaw County Road Commission

• The assessment determined the current state of GIS within the agency, while providing recommendations for how to improve GIS within the agency
Crim Fitness Foundation Mapping Project

• Created three maps of student addresses for three area schools for grant proposals to the Safe Routes to School program

• Created network and standard buffers of 2 miles around the school to visualize how many students were within a walkable distance to school
Building Neighborhood Capacity Program Mapping

• Created map of Ward 1 and Ward 3 in northern Flint for the Building Neighborhood Capacity Program Revitalization report.
Food Access in Michigan USDA Grant

• Dr. Greg Rybarczyk is a Co-PI on a large USDA grant entitled: “Examining Disparities in Food Access and Enhancing the Food Security of Underserved Populations in Michigan.”

• Research assistants are currently using GIS software and robust spatial analysis techniques to understand the geography of food in Michigan.

• The cartographic and spatial statistical outputs will help produce a comprehensive assessment that will help in understanding what tangible and intangible barriers exist in obtaining healthy food.
Fire-Flow Capacity in Flint Township and Grant Blanc

• Through a Office of Research grant the GISC investigated fire flow capacity within Flint Township and Grand Blanc
• Based on a 3-year fire history, hydrant flow capacity was determined within a 500 ft search radius of historic fires.
• Each location was determined to have potential deficiencies, exceedances, or were sufficient.
Hazardous Materials in Flint Township and Grand Blanc

- Investigated potential issues with hazardous materials in storm-sewer water
- Related MSDS locations to storm sewersheds based on LiDAR data
- Sampled water and tested for hazardous materials to determine potential contamination from MSDS locations
- Dye tested to determine accuracy of sewersheds
Department of Justice Byrne Criminal Justice Innovation Program

• Investigating crime in the University Avenue Corridor
• $1 million Dept. of Justice grant through Kettering University
• The GISC, in addition to Public Health & Health Services, is in charge of investigation spatial relationships of causes of crime within the Corridor.
Workshops

• **International GIS Day – 11/20/2013**
  - Two workshops which comprised of an Introduction to Mapping workshop (led by Troy) and an Introduction to Network Analysis (led by Greg) to students and other GIS professionals.

• **4th Grade City School, Grand Blanc – 2/14/2014**
  - Troy taught approximately 30 students geospatial technology with Google Earth Tour Builder

• **Super Science Friday – 5/2/2014**
  - Troy taught 7th/8th grade students from Davison and Carmen-Ainsworth school districts geospatial technology with Google Earth
GISC Services

• **GIS Instruction**
  - Fundamentals of GIS; Transportation Analysis; Remote Sensing; Marketing Analysis; Web mapping; Urban Planning; Natural Resource Management

• **Consultation**
  - Spatial data conversion and migration; Customized spatial datasets; Cartographic map production; Spatial Analytics; Web mapping; Data Creation and Management; Geo-visualization; Agent Based Modeling

• **GIS Data**
  - UM-Flint’s Thompson Library contains an extensive collection of local, regional, and nationwide spatial data upon request
GISC Future Projects

• Clean Michigan Initiative

• Spatial Health Risk Assessment in Flint

• NSF Proposal with Davison and Carmen Ainsworth Public School Districts

• NIH grant examining spatial uncertainty within health data

• Flint Farmers’ Market Study

• County-wide Fire-flow Capacity Study
Questions?