**Letter from the Director**

We have had an active year, with 8 student technicians working on the Duluth Solar Potential Map at one time. We also partnered with five non-profit community organizations to complete GIS work through our GIS Community Grants Program. Our revenues included over $36,000 of internal sales for campus research and services, and $77,000 of external research and contracts.

We are looking forward to furthering our contributions to the student experience and research at UMD through our relationships with the departments and clients who we serve and collaborate with.

Kind regards,

Alex Nelson, BA '17, Student GIS Technician

---

**Recent & Current Projects**

**Solar Energy Potential Map for the City of Duluth**

Funded by the Department of Energy, Solar Pathways Project, $21,000; the City of Duluth, $2,000; The Northeast Minnesota Regional Sustainable Development Partnership, $4,995

GAC is collaborating with Ecolibrium3, the City of Duluth, the Great Plains Institute (GPI) and the UMD Office of Sustainability to create a detailed Solar Energy Potential Map for the City of Duluth. The interactive web map will demonstrate solar potential for the end-user’s selected building, as well as provide a systemic assessment of solar resources for both UMD and Duluth.

---

**Adaptability of Provider Networks in the Health Insurance Marketplace**

Funded by an EVCCA Research and Scholarship Grant, UMD, $3,000

GAC is working with the Economics Department in LSB8 to consider Minnesota’s health insurance provider plans and their network of services with location restrictions with respect to the Affordable Care Act’s requirement of accessibility. In Minnesota this means the lesser of 30 minutes or miles for primary care, mental health and hospital care; and the lesser of 60 minutes or miles for specialty, specialized hospital, and other services. GAC is developing models to analyze and assess the population and areas of MN that are covered for each of these networks.

---

**Duluth Outdoor Recreation Map Update and New Kiosk Maps for Major Parks**

Funded by the City of Duluth

This project consisted of GIS integration, cartography, layout and design of a Duluth area multi-use trail map, as well as large-format kiosk maps for the city’s major parks.

---

**Cumulative Effects Analysis (CEA) and GIS Database for the 1854 Ceded Territory**

Funded by the UMD College of Liberal Arts, $2,000

Jennifer Jones, Associate Professor of Anthropology, received a CLA Faculty GIS Grant for GAC assistance to create a detailed topographic map of al-Lajjun, an ancient site in Jordan. GAC assisted in mapping various subsets of the data collected by Dr. Jones in 2012 as well as creating a basemap to add data to in the future, e.g., photos, artifact densities in certain transects, additional architectural features or data, and plan maps of complete architectural structures.

---

**The National Consumer Survey on the Medication Experience and Pharmacists’ Roles**

Funded by Peters Chair in Pharmacy Practice Innovation, $20,000

Surveys will be distributed throughout the United States to ask consumers about their medication experiences and their views of pharmacists’ roles. An interactive GIS map will visualize significant geographic results and considerations.

---

**Archaeological Mapping of al-Lajjun in Jordan**

Funded by the UMD College of Liberal Arts, $2,000

Jennifer Jones, Associate Professor of Anthropology, received a CLA Faculty GIS Grant for GAC assistance to create a detailed topographic map of al-Lajjun, an ancient site in Jordan. GAC assisted in mapping various subsets of the data collected by Dr. Jones in 2012 as well as creating a basemap to add data to in the future, e.g., photos, artifact densities in certain transects, additional architectural features or data, and plan maps of complete architectural structures.

---

**Impact of Split Incentive on Privately Owned UMD Student Rental Housing with Implications for an Energy Saving Housing Initiative**

Funded through a Carlson Sustainability project, UMN, $2,000

GAC is assisting the UMD Bureau of Business and Economic Research with their study on the Impact of Split Incentive on Privately Owned UMD Student Rental Housing with Implications for an Energy Saving Housing Initiative, through spatial analysis, visualization, and survey site selection for rental housing in Duluth.

---

**Five-Year Review and Update of County Hazard Mitigation Plans**

Funded by Minnesota HSEM, $562,000

Between 2016 and 2018, GAC will be updating the Hazard Mitigation Plans for ten counties, mental health and hospital care, and the lesser of 60 minutes or miles for specialty, specialized hospital, and other services. GAC is developing models to analyze and assess the population and areas of MN that are covered for each of these networks.

---

**GAC Staff & Student Technicians**

**ArcGIS Online Workshops**

GAC regularly hosts workshops aimed at introducing UMD staff and faculty to ArcGIS Online. Attendees have come from fields as diverse as chemical engineering, mathematics, anthropology, writing studies, geology, marketing, facilities management, psychology, philosophy, statistics, social work, and foreign languages & literature.

**UMD Campus Mapping**

GAC has recently taken over from Facilities Management the task of designing and managing UMD campus maps. The new, navigational wall kiosk maps for the city's major parks.

**Interactive Web Mapping in Multidisciplinary Classes Across Campus**

GAC is fostering collaborations with classes across the University, including Writing Studies, Journalism, French Literature, Math, Anthropology, Ecology, and Ethnobiology. Through presentations, demonstrations, and hands-on tutorials, students are learning to harness the power of web mapping using ArcGIS Online. Students with no prior cartographic experience create media rich story maps, analyze and visualize quantitative and qualitative data, and learn about real-world examples of how GIS and web mapping are utilized by professionals in their field.

For more information about campus activities, see www.d.umn.edu/gac
The Geospatial Sciences Student Support Fund is used at the GAC Director’s discretion to support student hourly work on GIS projects requested by not-for-profit regional organizations and other unfunded intra-campus projects.

For more information about the fund, please contact SCSE Development Director Carrie Sutherland at csutherl@d.umn.edu or (218) 726-6984 or www.d.umn.edu/scse/giving

Recent projects completed with this fund:
- Design of new maps for YMCA Camp Miller, to show the whole camp area, their trail system, and the main building area. The camp plans to use these maps in their publications, on their website, and as a resource for their capital campaign.
- Web app development for the Northland Foundation, to help them better understand the other non-profits in the area. The app shows all regional non-profits as points, which are then classified by organization type or total revenue, by impact region.
- Analysis of data from the Duluth Hillside Neighborhood Survey to produce maps showing patterns of perceptions of safety, service needs, and community (for 1Roof Community Housing, Duluth).
- Viewshed analysis in Hartley Park in order to visually and statistically demonstrate the potential impacts of paved trails and new development in the park (for Hartley Nature Center, Duluth).

Thank you for your support!

Geospatial Analysis Center
1303 Ordean Court, Duluth, MN 55812
umdgis@d.umn.edu | www.d.umn.edu/gac

GAC Mission
To promote and facilitate the sustainable integration of geospatial tools and perspectives into UMD teaching, research, service, and operational activities

Congratulations!
Congratulations to Britta Hardel on winning the 2016 UMN Mapping Prize for Best Body of Work, and to Steve Graham for completing his USGIF GEOINT Professional GIS & Analysis Tools certification.