Regional

Local mapping lab serves many interests

Aldemaro Romero Jr.
College Talk

Maps are familiar tools. We've all used them, whether the old-fashioned paper kind that always seemed impossible to refold, or today's digital versions that accompany us everywhere via our smart devices. But the reality of producing a map is much more complicated than many people think, involving new technologies and teams of individuals in their production. One such team works in the Laboratory for Applied Spatial Analysis at Southern Illinois University Edwardsville. Randy Pearson is the lab's director.

"There are a thousand answers to that one question," Pearson said, regarding the role that technology plays in the making of maps. "If you think about it, everything we do in this world is really spatial. Maps are ever changing, so being able to map things and see things spatially is not only relevant today, but was relevant hundreds of years ago and will be even more relevant as we go into the future." He said that now that just about everyone has a global positioning system, or GPS, in her or his smart phone, maps are becoming more part of us.

"We are not supposed to drive with our cell phone, but we all have that GPS that shows us where we are," he said. "So everything that we do in today's society has some spatial component to it and being able to map that and understand it is changing virtually every industry and every individual on this planet."

Pearson established LASA in 1996. Their first project was to map the local school boundaries.

"They put a new high school in, which brought some issues with the intermediate school boundaries," Pearson explained. "So we began looking at bus routes and bus stops and began looking at boundaries." The following year the group began a project for Monsanto regarding agriculture, and later developed a great deal of work figuring out all the mining areas in the state of Illinois.

"There are literally hundreds of projects that we have been involved in from generating a GIS (Geographic Information System) database for the state library system to looking at things such as voting precincts in East St. Louis," Pearson said. "So we are involved in a vast array of things that are all geography related."

Photo courtesty of Michael Nathe

From left are Zachary Schleicher, Randy Pearson, Aldemaro Romero Jr., and Ben Woolf.

One of the graduate students working in LASA is Ben Woolf, who is working on a fairly new agricultural concept known as cover crops. "What cover crops are used for is to protect soil nutrients and structure during the winter months when there isn't any vegetation to hold these in place," he explained. "One of the questions we have to ask is what is required as far as growing temperatures or energy delivered to the surface of the earth in order for these crops to grow and hold these nutrients in place?" To answer this question, he said, requires a temperature map with a little bit different concept known as growing degree-days.

"Each growing degree-day is one heat unit delivered to the surface of the earth. This colorful map here is essentially a bunch of zones that we have drawn up showing how much time is left in a particular growing season for crops. This has allowed us to essentially help farmers determine when to harvest and plant these cover crops to help protect their soil during the winter," said Woolf, pointing to a color-coded map.

Zachary Schleicher, a staff member at LASA, is working on mapping abandoned mines, which are quite common in this part of southern Illinois. One of the mines he is mapping is an abandoned coalmine in Sesser, about an hour and a half to the southeast of Edwardsville.

"What we do is map these abandoned mine locations to see where they are and who they could possibly effect," said Schleicher. "And they can range from very small to very large. Using our technology we can easily move around the map and see how things are located and what's under the mines. Based on the information we have we are able to match that railroad to see if it is lining up. It all lends us the ability to map these as best we can so that we now know the location of mines." Pearson made clear the benefits of a project like this.

"We want to understand these mine maps to ultimately generate models for subsidence protection," he said. "With this information we can spatially locate that mine map and begin to understand where are the areas where potential subsidence is going to occur at the surface. That is a big deal." Pearson not only teaches college students about these technologies, but also takes his message to high school students taking advanced placement courses.

"We teach them the technology, teach them how to think spatially, teach them how to work in groups and to utilize the technology of GIS and GPS for problem solving," he said. "So there is a really nice connection between SIUE and the local area schools with regard to the technology. It has worked really quite well"

Aldemaro Romero Jr. is the Dean of the College of Arts and Sciences at Southern Illinois University Edwardsville. His show, "Segue," can be heard every Sunday morning at 9 a.m. on WSIE, 88.7 FM. He can be reached at College_Arts_Sciences@siue.edu.