GIIF NEWS

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Letter from the Director

Happy New Year! 2008 looks like an exciting one for the GIIF and the geospatial community on campus. We continue to grow in terms of users, workshops, software options, and exciting research and outreach projects. You will find many highlights in this newsletter.

The GIIF welcomed several new students and their projects, and are forging some new collaborations with other researchers across campus and around the bay. With support from one of our External Advisory Board member Larry Pettinger and the College, we're launching our first undergraduate research opportunity this year: GEO-SPUR (Sponsored Projects for Undergraduate Research). We are looking for an undergrad who wants to complete a geospatial project in the GIIF (with pay!), so check out the website for more information. Also, a new project with epidemiologists and researchers at the UCSF and Kaiser Permanente (Our Space: A Neighborhood Database project) will be coming to the GIIF. We will be helping UCSF researchers map neighborhood access to fresh food and other environmental amenities as a precursor to understand rates of diabetes and obesity. We are also embarking on collaborations with Lawrence Berkeley Labs and the Berkeley Water Center to map the potential for biofuel crops globally using MODIS remotely sensed imagery. This is critical if we are to accurately understand potential tradeoffs between biofuel growth, natural vegetation, and food crops. We will be hiring new staff in the new year to help with the demand, so stay tuned to our website!

Finally, we welcome Jeremy Freund to our staff. Jeremy comes from UCSB, and has a wealth of experience in remote sensing, multispectral image analysis, and geospatial IT support. He will likely be adding to our workshop schedule soon with some new topics, and we are very lucky to have him here.

Thanks for all your support, and drop in when you get a chance: 111 Mulford Hall.

- Maggi Kelly

Cal Student Research Highlights

Mapping Invasive Species in Moorea
Elisabeth Long, a Conservation Resource Science Senior, participated in ESPM C107 during the Fall semester, and traveled with her classmates to Moorea, French Polynesia for nine weeks. For her individual semester project, Liz mapped the distribution of the Albizia tree (*Paraserianthes falcataria*), by both recording tree stand locations in Moorea using Global Positioning Systems (GPS) and by delineating polygons around the trees in Google Earth, which was recently updated to include very detailed imagery for Moorea (Figure 1).

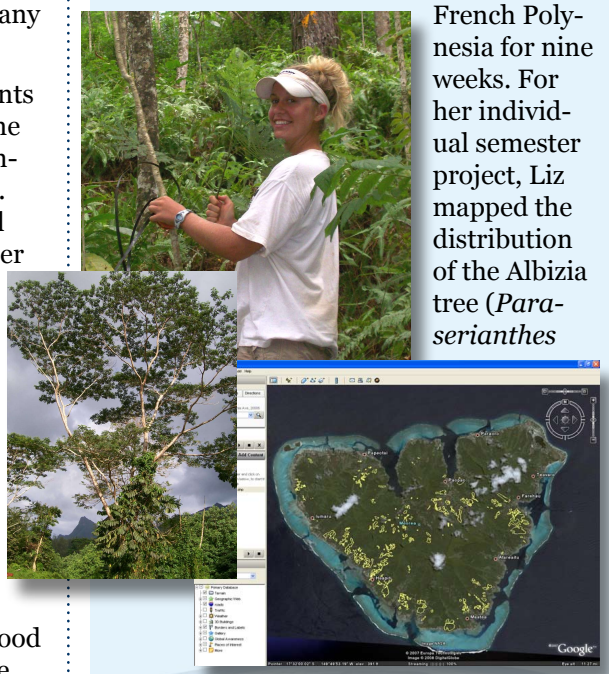

Figure 1. Clock-wise from top: Elisabeth collects data in the field; polygons of Albizia tree stands as digitized in Google Earth; and a characteristic Albizia tree.

The Albizia tree is an important invasive species on Moorea, and it is the tallest emergent tree with a characteristic flat top that is very easy to identify on imagery. "It was fantastic to be able to use Google Earth on this project," said Elisabeth, "because it helped show distribution very clearly and illustrated some of the invasive characteristics of the tree. It also helped me characterize the areas around Albizia stands."

Cal Student Research Highlights

Correlating Road Kill to Stream Density
Teresa Ippolito, a Masters student the Department of Environmental Sciences, Policy, and Management (ESPM) recently completed a GIS project aiming to reduce automobile/animal collisions on the busy Valley Ford Road/Highway 1 which connects Petaluma and Bodega Bay in Sonoma County, CA. She hypothesized that higher stream density resulted in more animal presence, and hence a higher occurrence of road kill. Using road kill data collected in 0.1-mile segments along the span of the highway, Using ESRI ArcGIS, Teresa correlated stream density at each 0.1-mile segment with road kill, to identify road-kill "hotspots" (Figure 1) and make recommendations for appropriate implementation of warning signage, small mammal culvert crossing shelves, and locations for directional planning.

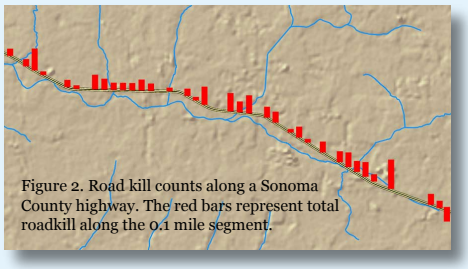

Figure 2. Road kill counts along a Sonoma County highway. The red bars represent total roadkill along the 0.1 mile segment.

Monitoring Land Change in Panama
Elizabeth Dow, a senior in Environmental Sciences, is studying land use

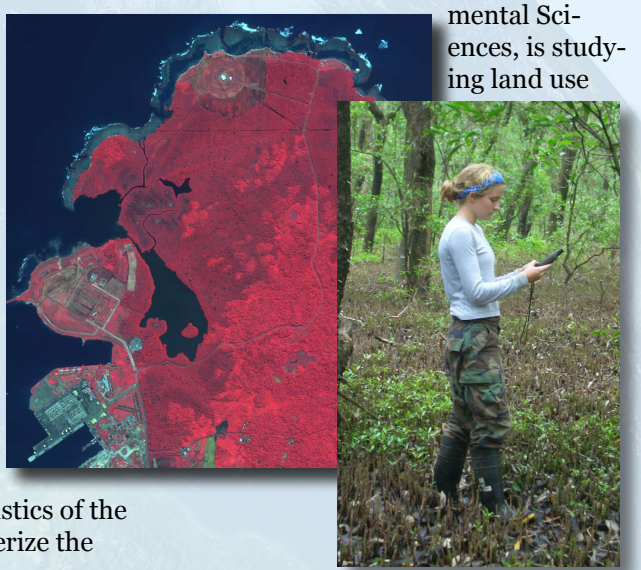

Figure 3. Quickbird satellite imagery of Elizabeth's study site in Panama. The image is display in false color, with live vegetation appearing as red.

Cal Student Research Highlights

change in Panama for her Senior Thesis. She is using the detailed satellite imagery Quickbird (Figure 3) to map the extent of mangrove loss between 1990 and 2007 along the northeastern coast at the northern end of the Panama Canal near Colon, due to increased economic and urban development. Elizabeth spent time in January 2008 collecting field points for her image analysis and classification. She will use ESRI ArcGIS and the object-based image analysis software Definiens Professional ("eCognition"). She plans to recommend environmentally responsible economic development that will benefit local citizens.

Two Students Learn to Map Vegetation
In October, the GIIF workspace hosted a California Native Plant Society (CNPS) Vegetation Mapping Workshop. Attendees participated in a three-day in-depth workshop that included both field visits to Mount Tamalpais in Marin County and hands-on computer exercises held at the GIIF. Two students, **Danielle Svehla** and **Chuck Striplen**, were awarded the first annual GIIF-CNPS Vegetation Mapping Workshop Scholarship. Danielle, a masters student in the Energy and Resources Group, broadened her skill set so that she could collect vegetation distribution data specific to her research, in which she is studying how the spatial heterogeneity of microclimates (i.e. local temperature and precipitation) influences the distribution of plant individuals and species. Chuck, a PhD student in the ESPM, was interested in the workshop because it connected him with some of the latest tools, approaches, and intellects working in the field currently. It will help his own research, which includes combining aerial imagery, early Spanish and American maps (land grants, GLO, USGS, etc.), testimonial evidence, and primary archaeobotanical data to reconstruct the vegetation of part of the southwestern San Mateo County Coast.

Figure 4. Geogirls participants on campus using GPS (bottom), and in the GIIF using Google Earth (top).

Recent Events

K-12 Outreach

In August, several ESPM students, including Tim De Chant, Josh Dimon, and Esther Zeledon, hosted 120 high school students from Oakland, as part of Team Oakland, a job training program for disadvantaged high school students. Once a week, the participants attended workshops at the GIIF in UC Berkeley and field trips in Oakland. "A lot of them had heard of Google Maps and Earth, but none had heard of GIS," said Tim, "so we integrated them all into a workshop focused on environmental justice."

In October, the GIIF partnered with Dyuti Sengupta, a PhD student in the Geography Department, to host *GeoGirls!*, a workshop series for elementary and junior high school girls from underserved communities in the Bay Area. We invited 60 girls from the Bay Area Technology School in Oakland to join us for lunch, GPS activities including campus tree location data collection, and Google Earth science exploration (Figure 4) The workshops were funded by the American Association of University Women (AAUW).

In December, the GIIF partnered with lab groups in the ESPM Department, including the Stephens Fire Science Lab and the Kremen Conservation Biology and Entomology Lab, to host about 60 students from the East Palo Alto Charter School. Organized by ESPM PhD student Kevin Krasnow, the event highlighted various fields of environmental science that are potential fields of college study. At the GIIF, we highlighted GPS, GIS, webGIS, and 3D visualization, allowing students to get hands-on experience with some of the latest geospatial software programs and data that environmental science students regularly use today.

OBIA Symposium

In June, we hosted an Object-Based Image Analysis Symposium, which featured nine presentations on OBIA methods and application from leading researchers, three in-depth hands-on workshops created by students and staff in the College of Natural Resources, detailed discussion about problems and solutions dealing with OBIA, and a keynote by Thomas Blaschke from the University of Salzburg, Austria.

GIS Day 2007

This past November, the GIIF once again co-hosted GIS Day events with the Bay Area Automated Mapping Association (BAAMA). The event included presentations by ESRI, Google, and other key GIS players in the Bay Area; hands-on GIS self tour and demonstrations, poster sessions, and a job fair and university/higher-education open house featuring employers and schools from the Bay Area. The keynote presenter was Google's Paul Rademacher, who invented the "mashup" when he first "mashed" together Google Maps and Craigslist.org housing finder to produce HousingMaps.com, allowing viewers to find housing via a map interface (Figure 5).

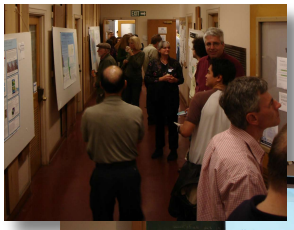

Figure 5. At GIS Day, attendees viewed posters, networked, and attended presentations.

People at the GIIF

Karin Tuxen-Bettman is the GIIF Manager, and is available for geospatial support and training.

Jeremy Freund is the newest member of the GIIF team. He is a Geospatial/IT Specialist, and is responsible for maintaining all hardware and software in the GIIF, and the CNR Teaching Lab in 124 Mulford Hall. He is also available for remote sensing/GIS support and project work.