GEOSPATIAL INNOVATION FACILITY NEWS

Cutting-Edge Mapping Technology at UC Berkeley

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Letter from the Manager

Welcome back to a new and exciting semester! It has been a busy summer here at the GIF, and we are thrilled to have our students and faculty back on campus. As you read throughout this newsletter, you'll note that we've developed new workshops, helped facilitate research projects, and developed new web-GIS capabilities.

We spend a lot of time here at the GIF keeping up with the latest trends in spatial software and methodologies so that we can help our users stay on the cutting-edge. It is in this light that we are trying to create more opportunities for researchers who study subjects outside of natural resource sciences. In particular, social science and public policy research have a tremendous array of data and mapping techniques that can take advantage of geospatial technology.

Though we already host several bright young scientists in these fields, we hope that a new emphasis on social science GIS, agent-based modeling, and open-source GIS will inspire even greater participation. These tools enable users to spatially join their subject data (home or business addresses, gps locations, etc.) to a wide range of publicly available data on health, economics, and population characteristics.

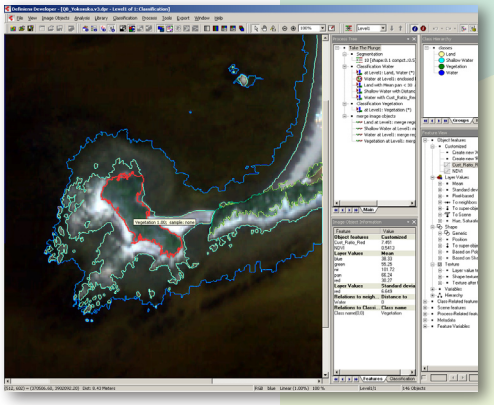
We look forward to another great year. Be sure to stop in to view a geolunch presentation, attend a workshop, or become a lab user!

- Kevin Koy

Recent Events

Definiens Training

We were very fortunate to have Definiens Technology Specialist, Juan Jose Caliz, on hand at the GIF for a week this summer. Definiens, formerly known as eCognition, is a popular image processing software that specifically focuses on object-based image analysis (OBIA). Though it can be complex, it is amazing to see the analysis capabilities that are possible when using this application.



Segmentation and classification as seen in Definiens Developer

Based on the concept of segmentation, breaking a pixel-based image into polygons, Definiens Developer software allows image analysts to easily utilize a feature's contextual information such as shape and texture. And now, with the development of process trees, different segmentation and classification settings can be quickly tested and applied to similar images, increasing workflow.

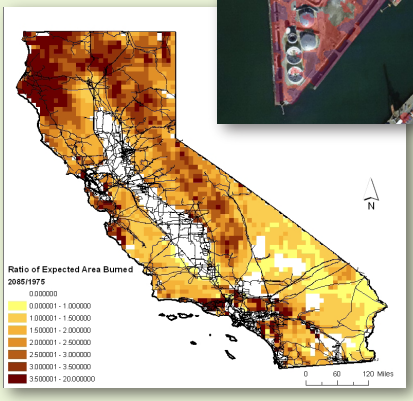
Among Definiens latest developments is a community web portal that makes sharing scripts and rule sets easier (http://earth.definiens.com/community). The GIF is one of seven Definiens Centers of Excellence, and we are proud to offer our users acces to the latest versions of Definiens Developer and eCognition Server. We will be holding two workshops this semester using Definiens software; visit our website to find out more!

GIF Research

The effects of climate change on California's energy infrastructure

GIF staff have been tasked to aid scientists at the Lawrence Berkeley National Laboratory (LBNL) in researching the effects that future changes in California's climate may have on the state's energy infrastructure. In specific, LBNL's researchers want to know how increasing temperatures, rising sea level, and a predicted increase in wildfire may effect our power plants and transmission lines.

After identifying valuable environmental data sources from the Scripps California Climate Change Center (temperature), Pacific Institute (sea level), and the Westerling Climate Applications Lab (fire), the GIF has utilized GIS to link these layers with locational power plant and transmission line data, obtained from the California Energy Commission, within a spatial framework.



Predicted flood risk for a coastal power plant based on a rise in sea level (top).

Future assessment of expected area susceptible to wildfire crossed with transmission lines (bottom)

These linkages have provided initial results detailing the predicted climate conditions for each site, and are now being used by LBNL's researchers for further analysis. The final results of this project will help to direct future investments in California's energy infrastructure so that we are prepared for any changes that may effect our ability to distribute energy.

Cal Student Research

Mapping Berkeley's Trees

The UC Berkeley campus is home to an amazing variety of ornamental trees. These trees are diverse in species, age, size, purpose of planting, and abundance. Utilizing GPS technology, Environmental Leadership Pathway's intern Camice Revier spent her summer collecting point

ELP intern, Camice Revier collects tree location date using a Trimble GPS receiver (left).
Initial map showing tree location points around Mulford Hall (top).

locations of these trees, including ancillary data (common name, dbh, condition, etc.) so that they could be represented in a GIS environment. Camice is attempting to create a living map of the UC Berkeley campus tree population, and her initial research has revealed that over 300 species are found here! She has compiled a detailed data dictionary, and has begun the time consuming process of collecting data in the field. An initial set of points along the western end of campus has been mapped, and methods are now in place to capture the entire area.

Camice would like to expand this project in the near future to include a teen outreach component. The students will have an opportunity to learn about GPS and GIS while gaining more exposure to UC Berkeley's campus. She also would like to create a webGIS interface to share her findings with the Berkeley community.

Upcoming Events

GeoLunch

We will be hosting another round of great speakers for this term's GeoLunch seminar series. We are thrilled to welcome the Sate of California's first Geographic Information Officer (GIO), Michael Byrne, who will be kicking off the series on Friday, September 11. For more information on future presentations, please visit our website at: http://gif.berkeley.edu/about/geolunch.html

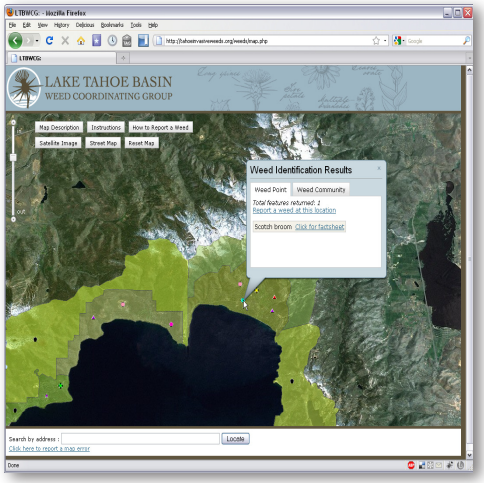
GIS Day

The GIF will be hosting a GIS Day event on Wednesday, November 18! Co-hosted with the Bay Area Automated Mapping Association (BAAMA) and the Northern California Region of the American Society for Photogrammetry and Remote Sensing (ASPRS), the event will include a variety of presentations, posters, and networking opportunities. Keep an eye on our website for upcoming details.

GIF WebGIS

Tahoe Invasive Weed Map

Visit http://tahoeinvasiveweeds.org/ to see the latest GIF webGIS in action.



Jeremy Freund, GIF's geospatial IT specialist, has developed the site for the Lake Tahoe Basin Invasive Weed Coordinating Group (LTBWCG). Based on ArcGIS server technology, the site is designed to inform residents of the Lake Tahoe Basin about the invasive weeds species that can be found near their homes, and provides a platform for visitors to report new infestations to the group.

Workshops & Seminars

The Fall 2009 workshop agenda is now available at: http://gif.berkeley.edu. Be sure to check out all of the different geospatial courses being offered in:

- Intro to GIS
- Intro to GPS
- Intro to Remote Sensing
- Land cover change analysis
- Object-based image analysis
- Creating a WebGIS with Google Maps
- Intro to Species Distribution Modeling

In addition to our established series of workshops, we will be offering 4 new workshops this term:

- *Intro to GIS: Social Science Focus*
  We will be offering a new introductory GIS class that focuses on techniques applicable to the social science research.
- *Intro to Open-Source GIS: Working with Quantum GIS (QGIS)*
  This new workshop will introduce participants to QGIS, a powerful open-source GIS application.
- *Intro to Agent-Based Modeling with NetLogo*
  We will explore the field of agent based modeling, and tools available to connect GIS data to the NetLogo application.
- *Intro to LIDAR applications in Remote Sensing*
  We will introduce LIDAR data and software including some of the ways to process the data.

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