

## Letter from the Director

The recent earthquake in Haiti makes us, placed as we are on another of the great faults of the western hemisphere, take pause and think about the fragility of life and the suddenness of disasters like earthquakes. The mapping of earthquakes - their shake strength, fault lines, and past seismicity - and their damage, has changed in recent years. The Haiti quake shows how quickly powerful geospatial tools can be called upon to help respond to these tragic events as several maps and images of the impacted area were quickly and freely available online.

These experiences reinforce the message that geospatial tools as tools alone, are inconsequential. But when we can quickly and accurately map pattern and context, and use that to support decisions, plan for the future, and communicate options, geospatial tools can be the among most powerful available to us.

We at the GIF have been turning our attention internationally, and are focusing on several international projects. As you will see in this newsletter, we are working with colleagues from the Department of Economics to map land cover change in order to study patterns of human conflict in Sierra Leone, and helping train professional health care students from UCSF who will be stationed in African and India in coming years to look for connections between human health and environment. Visit us to find out how you too can use geospatial tools to make a difference.

- Maggi Kelly



Five international sites that will be the focus of Global Health Framework Student projects.

## Training

### UCSF-UCB Global Health Framework Program

UCSF and UCB are working together to provide a new approach to learning among health professional students. Established in September 2008, with funding from the National Institutes of Health/Fogarty International Center, the Global Health Framework Program ([www.globalhealthsciences.ucsf.edu/education/framework](http://www.globalhealthsciences.ucsf.edu/education/framework)) is focused on giving students an

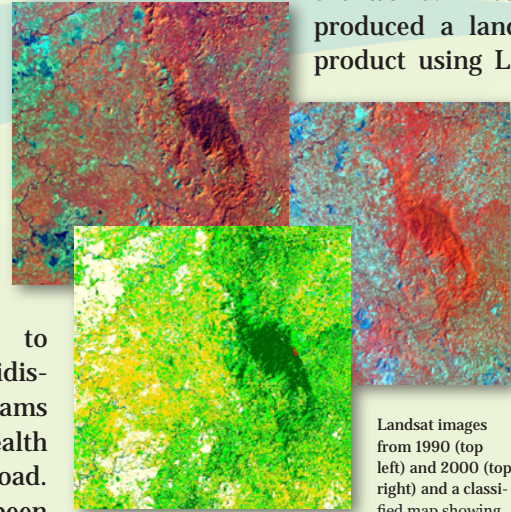
opportunity to work in multidisciplinary teams on global health projects abroad. The GIF has been called on to train the program's students in geospatial techniques that can be used to analyze spatial questions in health.

Using basic GIS, GPS, and remote sensing techniques, students are learning how spatial analysis can be applied to develop a better understand of issues such as, access to health care facilities, and relationships between disease and environment. After gaining an understand of these methods, the students will be heading to five international field sites where they will put their knowledge to the test. They will be asked to both develop a project that will be presented on in the Fall, and to train health care workers basic GIS skills.

## Research

### Mapping land cover change in Sierra Leone

Analyzing Landsat satellite imagery is a staple of the GIF's remote sensing capabilities, and we are always intrigued to view historic landscape changes around the world. Recently, we have produced a land cover change product using Landsat data for



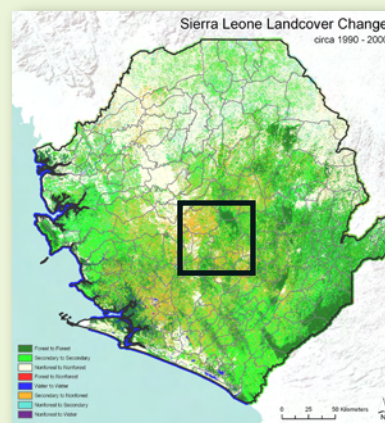
Landsat images from 1990 (top left) and 2000 (top right) and a classified map showing the areas of change between the two dates. (bottom)

Dr. Edward Miguel, professor of Economics here at UC Berkeley, and his research associate, Charlotte Stanton, a graduate student at Stanford. They are interested in finding how conflict in Africa's Sierra Leone may be related to changes in the landscape.

The GIF was able to produce maps and associated area statistics detailing changes in Sierra Leone's landscape by comparing Landsat images from the early 1990's with images acquired in 2000. These statistics may now be analyzed

with the investigators data related to conflict in order to see if there are any correlations.

Sierra Leone is a fascinating country to study, and the images reveal a wide variety of agricultural and natural resource management practices. We are fortunate to have access to such a vast image archive to help answer important research questions.



A classified map displaying land cover change in Sierra Leone between 1990 and 2000.

## Cal Student Research

### Mapping Ventana Ranch

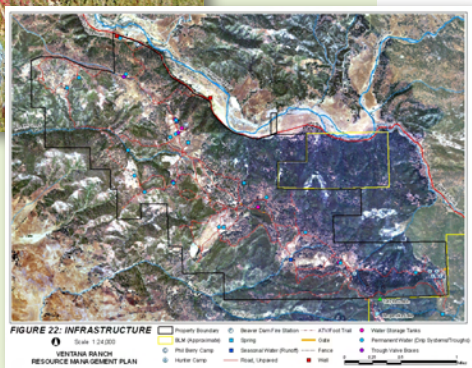
Bryan Voelker, a second year Master's student in the College of Natural Resources' Range Management program, has been hard at work mapping the Ventana Ranch in California's San Benito County. He has used several geospatial tools including GPS, GIS, and Remote Sensing to provide new data and analyses in a resource management plan for the ranch's owner. Working with his advisor, Dr. Reginald Barrett, Bryan is developing a plan that will both increase the potential for game and recreational hunting and improve the conservation status of the land.

At 2,540 acres, the Ventana Ranch is a challenging area to map. Bryan has used a professional grade Trimble GPS receiver to accurately map the property's infrastructure such as roads, water sources, and fence lines, and areas of cultivation and brush clearing. Using a GIS, he has overlaid these newly mapped features with existing data sets including



Bryan uses a Trimble GPS receiver to record the location of habitat features. (left)

A map of Ventana Ranch overlaying the GPS features over a high resolution aerial photograph. (right)

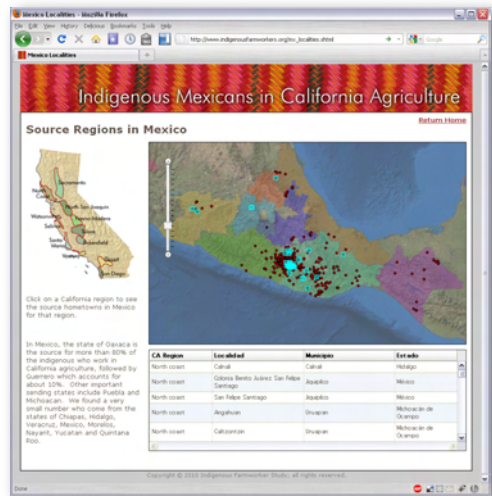


soil type, slope, and aerial photos from the National Agriculture Imagery Program (NAIP) to create print maps of the area. Bryan's project is a great example of how geospatial tools can help to inform landscape management and natural resource planning.

## WebGIS

### Indigenous Mexicans in California Agriculture

The GIF has developed a web map application for the Indigenous Farmworker Study, a partnership between farm labor



researchers and the Indigenous Program of California Rural Legal Assistance ([www.indigenousfarmworkers.org](http://www.indigenousfarmworkers.org)). UCB visiting scholar, Sandra Nichols and her research partner, Rick Mines, have put together a database that includes agricultural regions in California, and links to the source hometowns in Mexico where indigenous farmworkers have come from.

The GIF helped to bring their data to life with an interactive map that highlights the selected hometowns in Mexico when selecting an area in California. Beneath the map, a table listing the localities is updated with each query. This interactive map was built on new ArcGIS Server technology that is improving our ability to create feature rich content with complex data sources.

In addition to the mapping features, the website provides information on language, culture, and history of a group of people living and working in California for which little information is publicly available. A timely resource in advance of the upcoming national census efforts.

## Upcoming Events

### Workshops & Seminars

The Spring 2010 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
- Intro to Open-Source GIS
- Intro to LiDAR
- Intro to Species Distribution Modeling

### GeoLunch

We will be hosting another round of great speakers for this term's GeoLunch seminar series. We will kick off the series on Friday, February 5th. For more information on future presentations, please visit our website at:

<http://gif.berkeley.edu/about/geolunch.html>

### Cal Day

The GIF will be joining in on the Cal Day festivities, once again, with a GPS scavenger hunt! Using GPS units and clues, you can search for hidden prizes around campus. Fun for the whole family - bring your GPS unit, or use one of ours. Cal Day is Saturday, April 17th.

## GIF People



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