GEOSPATIAL INNOVATION FACILITY

Cutting-Edge Mapping Technology at UC Berkeley

NEWS

Letter from the Director

Mapping for a Changing World. In this newsletter, you will read about our recent growth in numbers and projects. GIF staff have been successful at targeting and garnering research and development support from a range of internal and external funding sources: e.g. CEC, Nature Conservancy, Oxfam America. There are important benefits from this growth that accrue to everyone associated with the GIF. First, we have expanded not just in personnel, but also in skillsets. For example, Sarah Van Wart and Brian Galey bring terrific strengths in webGIS, visualization and information management; Miriam's experience in quantitative ecology enhances her understanding of the remote sensing project she is working on; and Sarah Lewis combines her skill in cartography and GIS modeling to give the LBNL project (detailed in the last newsletter) more depth and professional outputs.
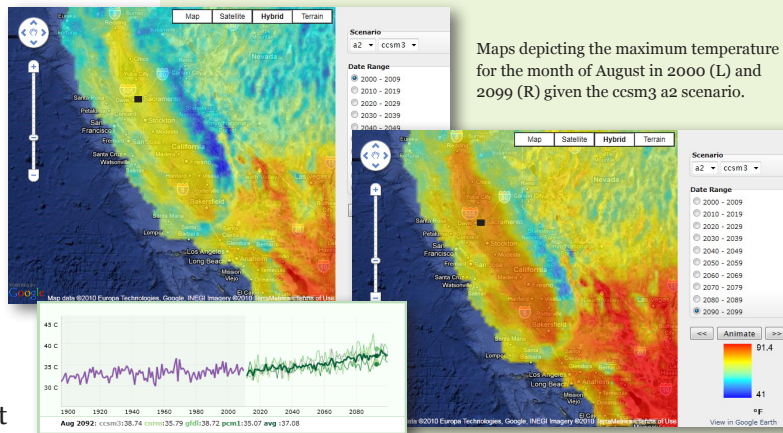
This broad collection of skills brings me to the second benefit of the recent GIF growth. Geospatial tools, such as GIS, Remote sensing, and webGIS are all interrelated, but each of these disciplines requites expertise in its own right. As it becomes increasingly challenging to be an expert in all these areas, one must instead be part of a larger community of experts that collaborate, share, and are dedicated to learning and outreach. GIF's new staff and students make our geospatial community on campus stronger, more forward looking, and more effective. I think the GIF exemplifies a model of distributed yet interrelated excellence in geospatial technology that can be actively applied for the benefit of our community.

- Maggi Kelly

Research Applications

CalAdapt: Visualizing Climate Change in California

We have embarked on an exciting new project this summer to help give Californians a resource where they can view, and interact with, the latest scientific data related to climate change. This resource will present a variety of information including projected temperature and precipitation, sea level rise, fire risk, and species range shifts, all garnered directly from the researchers currently investigating these issues. Due to launch in November, CalAdapt will enable its visitors to view these analyses at a local level and throughout the state.

Maps depicting the maximum temperature for the month of August in 2000 (L) and 2099 (R) given the ccsm3 a2 scenario.

The maximum August tempertures for Sacramento 1895-2010 (measured historic) and 2011-2099 (model projected) are shown on the chart above.

Funded by the California Energy Commission's Public Interest Energy Research (PIER) Program and with support from Google.org, CalAdapt will provide tools for researchers, decision makers, and the general public, to better understand the risks posed by climate change. The localized analyses available within this site may help to better inform effective climate change adaptation decisions and policies. Utilizing the latest webGIS technology, we are developing tools that will make these resources available as data feeds and downloads so that users may analyze the data both on and off line.

New staff

The GIF is growing, and we have two new staff joining us this year to help make CalAdapt the great resource we know it will be.

Brian Galey, GIS/Remote Sensing Specialist, joins us from Garcia & Associates, a consulting firm in San Francisco that specializes in natural and cultural resources. Brian brings great skills in all things geospatial, and he is working hard to translate and summarize the tremendous amounts of climate change data being produced within the state into meaningful, locally relevant information. Utilizing python scripting and spatially enabled databases, Brian is finding new ways to automate tasks that would typically require much more time given traditional GIS tools.

Sarah Van Wart, GeoWeb Developer, joins us from Cal's very own School of Information where she recently received her Master's degree. Sarah has been working in a variety of agencies for more than ten years, helping to bridge the gap between geographic analysis and online visualization. Sarah is in a critical position in developing CalAdapt so that it is compelling, informative, and easy to use. She uses tools including databases, django, python, PHP, and a variety of api's to develop spatially enabled visualizations.

In addition to our new staff, we welcome Graduate Student Researchers, Sarah Lewis and Miriam Tsalyuk. Sarah and Miriam are both working on targeted GIS and Remote Sensing projects.

We are thrilled to welcome our new staff and researchers, and are excited about the new skill sets that they bring.
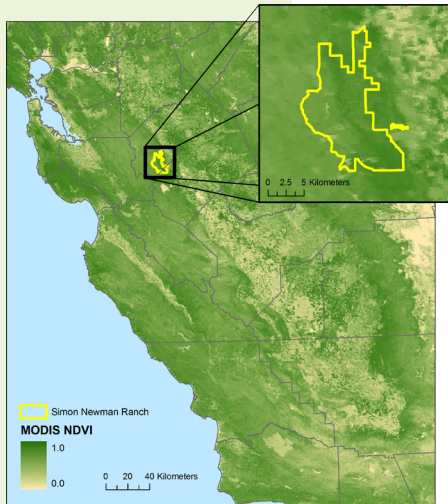
Cal Student Research

Monitoring Residual Dry Matter in California Grasslands

Miriam Tsalyuk, ESPM PhD Candidate, is working with the GIF this term on a project sponsored by the Nature Conservancy to evaluate correlations between spectral indices collected from MODIS satellite image data with residual dry matter (RDM) in a California Grassland.

RDM is a standard used by land management agencies for assessing the level of grazing use on annual rangelands and associated savannas and woodlands. It is the old plant material left standing or on the ground at the beginning of a new growing season. RDM is the best method currently available to regularly measure rangeland status, and it requires regular measurements in the field.

Simon Newman Ranch
MODIS NDVI
1.0
0.0
0   20   40 Kilometers

An example of MODIS NDVI data collected in February 2010.

It is our hope that a significant enough correlation may be found between the MODIS data and previous ground based data collections so that future RDM analyses may benefit from this inexpensive (MODIS data is free to download) and timely method.

Miriam is conducting this research in the GIF in order to utilize both the GIS (ArcGIS) and Remote Sensing (ENVI & Erdas) applications that are available. She will use these tools to summarize and analyze the zonal statistics for different areas within the Simon Newman Ranch. Should this pilot study prove to be successful, we will expand the study to additional grasslands within the state.

WebGIS

Investigating Climate Change in Ethiopia

Last Spring, GIF's Kevin Koy traveled with George Scharffenberger, UC Berkeley's Special Assistant for International Development Policy and Practice, to Ethiopia. Sponsored by Oxfam America, we were tasked to investigate the current use of spatial data related to climate change in governmental and non-governmental organizations. Ethiopia is Africa's third most populous country, and it is largely dependent on rain-fed agriculture. Climate change, and in particular, any changes to the rainfall regime will have consequences on crop production and food security.

In part of fulfilling this investigation, we have established a simple online mapping environment using ArcGIS server, and arcgis.com to display data related to extreme temperatures and annual rainfall. These data were collected and formatted from the WorldClim dataset (www.worldclim.org) which provides futures projected climate data from 3 different models for the entire globe.
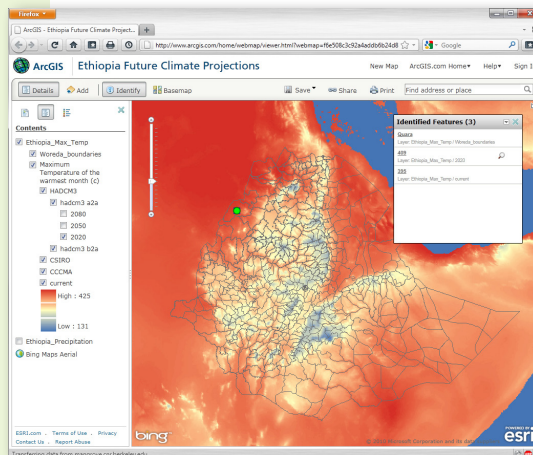
The maximum tempertures of the warmest month, as seen via ArcGIS.

Visit http://gif.berkeley.edu/ethiopia/ to view the data and instructions on use of the site.

Upcoming Events

Workshops & Seminars

The Fall 2010 workshop agenda is now available at: http://gif.berkeley.edu. Be sure to check out all of the different geospatial courses being offered.

GeoLunch
Thursday's 1:10 - 2PM
Mulford 103

We will be hosting another round of great speakers for this term's GeoLunch seminar series. We have a new room and time this year, so come join us in Mulford 103 on Thursday's 1:10-2pm. Presentation details are available here: http://gif.berkeley.edu/about/geolunch.html

GIF People

Maggi Kelly
Faculty Director
maggi@berkeley.edu

Kevin Koy
Manager
kkoy@berkeley.edu
Office Hours: Mon., 3-4pm

Mark O'Connor
Geospatial IT Specialist
markoc@berkeley.edu
Office Hours: Wed. 3-4pm

Brian Galey
GIS/RS Speciailist
bgaley@berkeley.edu
Office Hours: Tues., 3-4pm

Sarah Van Wart
GeoWeb Developer
vanwars@berkeley.edu
Office Hours: Thurs., 3-4pm

Sarah Lewis
Graduate Student Researcher
slewis@berkeley.edu

Miriam Tsalyuk
Graduate Student Researcher
miriamts@berkeley.edu