

BAY AREA AUTOMATED MAPPING ASSOCIATION

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A MESSAGE FROM THE PRESIDENT



I had the privilege recently of seeing what I consider to be one of the world's most impressive maps. It's a chart of the Middle East dating from the 6th century AD, and can be found in the Greek Orthodox Church of St. George in the town of Madaba, Jordan.

The Madaba Map, originally 51 feet long by 20 feet wide, forms the floor of the church and depicts the geography of the Levant entirely in mosaic. It's a phenomenal work of art and a surprisingly accurate bit of cartography.

As a GIS practitioner, I couldn't help but marvel at the scale and scope of the ancients' mapping efforts. Indeed, viewing the Madaba Map made me think of the tremendous effort that people have expended over the centuries to locate themselves relative to other places and things.

Then, as today, a map was an essential document for understanding the challenges and resources that a trip away from home might require. In the 6th century, a traveler would necessarily consult a map to determine the best route and landscape to follow for safe passage to a destination.

Today, we no longer have to worry quite so much about how to find our way through unfamiliar terrain. Our modern transportation networks, Global Positioning Systems, web mapping sites, and high quality printed maps make it much easier to leave home knowing that we'll arrive at our intended destinations.

With the advent of GIS and easy-to-use mapping interfaces, maps have evolved beyond mere logistics tools used to plot a course between our homes and a faraway destination. Today, maps help us visualize the "landscape" of information, processes, and social networks. Much more than a traditional map, GIS now enables us to understand and orchestrate the efforts of people across many organizations and disciplines.

And the timing couldn't be any better.

We're living at a time of amazing opportunity, and simultaneously one of incredible responsibility. Our shared goals and challenges include responding to global climate change, providing access to affordable health care, educating all our children, defining a sustainable economic future, and ensuring the safety and security of our citizens during emergencies. Responding to each of these challenges will demand the orchestration of funds, human ingenuity, and hard work across every stratum of our society.

For me, addressing these challenges begins with understanding the scope of the problem and then starting the hard work of coordinating our resources and activities to respond to the challenge.

Perhaps GIS has a role to play. Now, more than ever before, is the time for GIS savvy professionals to demonstrate our ability to help connect and coordinate the people, knowledge, and resources we need to improve upon the status quo. And perhaps that thought explains best why BAAMA's mission is to connect those who need GIS with those who know it.

Cheers,

Dennis Wuthrich
2007-08 BAAMA President

A NOTE FROM THE EDITOR

We are pleased to present to you our third issue of the BAAMA Journal. We are already looking forward to the next issue, due out at GIS Day in November! If you would like to interview someone, write an article, or edit an article written by another author, please contact us at Editor@BAAMA.org.

Also this Spring, the BAAMA Board is trying something new at the board meetings. Our monthly board meetings are the first Tuesday of every month (6:30 PM – 8:30 PM), but starting this Spring, every other month, we will be having our board meetings at a restaurant or other local gathering spot to allow for more networking among members. Join us at the next one on Tuesday, June 3rd, 2008. See www.BAAMA.org for details. We hope to see you there!

Karin Tuxen-Bettman
Content Editor
Editor@BAAMA.org

BAAMA

CONNECTING PEOPLE WHO NEED GIS
WITH THOSE WHO KNOW GIS

BAAMA is the vital organization of GIS professionals in the San Francisco Bay Region that promotes partnerships and teamwork with users of GIS technology to improve our environment and community. BAAMA is a chapter of the Urban and Regional Information Systems Association (URISA).

The mission of BAAMA is to be the primary forum of the San Francisco Bay Region geospatial community that provides education for professional development, networking opportunities, leadership, coordination, and representation - and have fun doing it!

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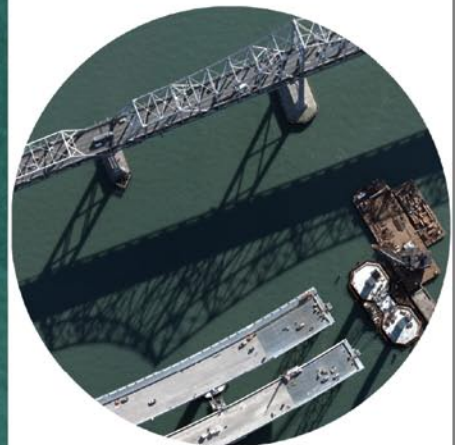
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IS GIS A DEAD-END FIELD? HOW A BAY AREA CEMETERY IS AT THE FOREFRONT OF THE GREEN BURIAL MOVEMENT

BY STELLA WOTHERSPOON AND KARIN TUXEN-BETTMAN

Tucked into the rolling hills above the Tamalpais Valley and overlooking Richardson Bay in Marin County quietly sits Forever Fernwood, one of the nation's first green burial funeral homes and cemeteries. As you approach the site from Tennessee Valley Road, a concrete-clad 1960's Skidmore, Owings, and Merrill administration building and funeral home gives you a sense that this is a contemporary remaking of a very traditional business.

Green burial is a movement that gained popularity in England in the 1990s. In green burial, the body is interred in the ground without embalming or a non-biodegradable casket. The objective is to leave as small an imprint on the earth as possible and this extends to the lack of headstones or monuments. At Fernwood, this created a business problem that geospatial technologies were made to solve: how to locate a grave site in an undisturbed, unmarked field.

The use of geospatial technologies at Fernwood extends far beyond back-office administrative land and plot management, all the way to the visitor experience. The recent history of Fernwood and its parent, Forever Enterprises, provides the context for some of these truly innovative and forward-thinking uses of Global Positioning Systems (GPS) and Geographic Information Systems (GIS) at the site.

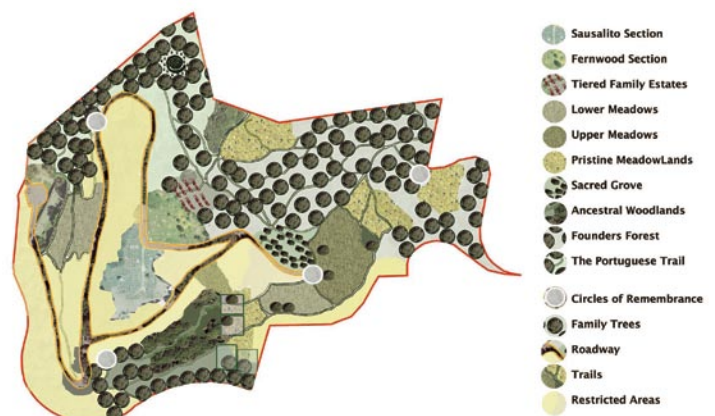
Forever Enterprises was created in the mid-1990s by Tyler Cassity, a Generation X member of a family that operates funeral homes and cemeteries in the Mid-West, and his brother. After finding an audio tape of his grandmother who had passed away several years previously, Tyler Cassity came upon the then-revolutionary idea of creating audio-visual memorials as a new offering within the traditional funeral market.

Cassity teamed up with a friend, Jay Boileau, a music video director and 3D animator, to create the first of these memorials. Initially, the videos were produced as documentaries for the families of the deceased. When a prominent doctor's family wanted to show the video during the service at a funeral home, there was initial resistance, but then the funeral director acquiesced and the screening



was a huge success.

This spurred Forever Enterprises to create a technology company and market their services directly to funeral homes as part of pre-need arrangements. They developed a concept called the Hall of Memories which "harnessed the power of the digital format to perpetuate a person's memories forever" and built a kiosk prototype that could be installed at a cemetery, which allowed visitors to view memorials during their visit. However, it was challenging to show the return on investment for these novel memorials and the staid funeral industry continued to be resistant.



A GIS map of the cemetery and surrounding areas, used for management of burial plots and landscape.

Undaunted, the company continued to search for ways to market their idea and in 1998 found an opportunity to purchase the bankrupt Hollywood Memorial Park, a resting place for many stars of the golden era of film. There, they saw great potential in restoring the historic cemetery to a now-active cemetery and cultural and historical cornerstone in the center of Hollywood, and using it to showcase their multimedia memorials to a more receptive audience. Jay Boileau recalls, "We went to check out the property and were so excited about the potential that we stayed up all night drawing up plans."

With the Hollywood Memorial Park successfully transformed into Hollywood Forever, the company looked for additional acquisition prospects. In 2005, the green burial movement in England attracted their attention and the 108-year-old Fernwood Cemetery in Mill Valley was on the market. Once again, an established cemetery provided an opportunity to prototype a new concept for the American funeral industry: this time, green burial. And it was with this new venture that geospatial technology joined up with multimedia technology.

The entrepreneurial, technologically-savvy nature of Forever Enterprises quickly led to the exploration of GIS as a system to manage the administrative functions of the new site. It was realized that without markers or headstones, staff needed assistance in site planning, locating available plots for new customers, and in directing guests to occupied plots. GPS location identification technologies were explored and their technical qualities ultimately influenced the way open space at Fernwood was allocated. Because GPS-derived locations have circular accuracy buffers, a 12 foot hexagonal honeycomb plot arrangement was chosen.

ESRI ArcGIS is used for managing feature classes containing up-to-date plot, vegetation, and utility data. Boileau has also acquired a laser range finder, which will help him more easily update GIS data of surrounding landscape features, as he can collect location and elevation of numerous objects like trees, shrubs, and fences in a short amount of time. Boileau uses these data to create maps of the various burial areas of Fernwood, which are displayed

in the guest meeting rooms. Guests can then hike around the open cemetery, and choose an area for their loved one's burial site. Since after several months, a green burial site is almost completely back to its natural vegetated state, it is difficult to tell if the grave site is available. Therefore, Fernwood Family Service Counselors use ArcPad on Pocket PC devices

with a Trimble Recon with a ProXH and a Zephyr antenna to identify available sites for clients or to lead guests to an existing burial site of a loved one. Since accuracy is a primary concern, the use of such precision equipment is of utmost importance to Forever Fernwood.

Since an enhanced visitor experience has been a differentiating offering of Forever Enterprises, it naturally followed that the multimedia memorials would integrate with GIS technologies at Fernwood. Work began last year on a GPS-enabled multimedia Flash application that runs within an Internet Explorer shell and which uses ESRI MapObjects to render and control a map frame. Known as the "Soul Compass," users have the option of viewing pictures of the deceased by clicking on a plot on the map. Additionally, a personal profile and video content can be accessed.

While the functionality of the application was well received by the Family Service Counselors and guests, the hardware proved to be less than ideal. The Xplorer tablet device was too heavy, others did not run the Tablet PC operating system, and most of the LCD screens were not bright enough for use on a sunny hillside without a hood. Pocket PC devices were rejected because their screen size was too small. Currently, Fernwood is using an HP ruggedized Tablet PC, but is looking forward to the release of Windows Ultra Mobile PC devices as an alternative to explore. Eventually, it is expected that guests will bring their own devices such as an iPhone with a built-in GPS network that can tap into Fernwood's WiMAX network link and run the application.

Forever Fernwood is also a leader in green building and landscaping. When Fernwood cemetery was acquired, Forever Enterprises committed to habitat restoration, removal of invasive plants, and planting of native species. The company recently extensively remodeled the administration building using sustainable and green building



Differential GPS equipment is used to achieve high precision and accuracy.



The "Soul Compass" is a GPS-enabled multimedia Flash application which uses MapObjects to render a map.



Over time, green burial cemeteries are restored to their natural vegetated state.



THE CALIFORNIA ENVIRONMENTAL HEALTH TRACKING PROGRAM: NEW ONLINE GIS TOOLS FOR INVESTIGATING DISEASES AND THE ENVIRONMENT

BY SVETLANA SMORODINSKY, ERIC ROBERTS, CRAIG WOLFF, MICHELLE WONG, MAKINDE FALADE, LIANG GUO, GALATEA KING, AND PAUL ENGLISH

Did you know that over 250,000 cars and trucks pass by Downtown Oakland each day? Did you know that in some parts of Alameda County, twice the expected number of children visit the emergency room for asthma each year, and that the risk is associated with increased levels of nitrogen dioxide (NO₂), a compound found in traffic exhaust?

Diseases, such as asthma, are related to environmental risk factors, which have a large spatial component. Therefore, the use of GIS has become an integral part of public health research and practice. Recent advancements in GIS, geostatistics, and access to address-level health data have made it possible to analyze and visualize diseases (e.g. asthma) and their risk factors (e.g. traffic-related air pollution) with more versatility than ever before. GIS allows us to geocode illness occurrences; link health outcomes and their risk factors by examining their spatial and temporal patterns; visualize results on a map; and finally disseminate and communicate the results to other scientists, policy makers, and community stakeholders.

As part of its work, the California Environmental Health Tracking Program (CEHTP), housed at the Environmental Health Investigations Branch (EHIB) of the California Department of Public Health (CDPH), has been investigating asthma in a pilot project in Alameda County. This study explored more accurate ways to map health outcome data. Instead of lumping information on asthma cases by zip codes or county boundaries as is often done in choropleth maps, the CEHTP created smoothed surface maps that allow a better understanding of how rates of emergency room visits for asthma vary across space. The maps identify hidden asthma “hot spots” that provide health workers, policy makers, and community members with useful information. To make this information available to its stakeholders, CEHTP partnered with a community-based organization, InfoAlamedaCounty, which is a data warehouse and mapping service. InfoAlamedaCounty strives to promote equity and empowerment of residents and organizations in low-income neighborhoods and communities in the Bay Area through increased access to good data, assistance in gathering and analyzing data, and collaboration in using data as a tool for positive social change.

WHAT IS ENVIRONMENTAL HEALTH TRACKING?

The National Environmental Public Health Tracking (EPHT) Program is an initiative of the federal Centers for Disease Control and Prevention (CDC). The Program’s primary goal is to provide information from a nationwide network of integrated health and environmental data to help drive actions to improve the health of communities. California is among 16 states funded by the CDC to develop a statewide EPHT program to be linked into the national system.

Until recently, there was no system at the state or national level to track and analyze data on many of the health effects that may be related to environmental hazards. CEHTP is currently implementing a comprehensive plan for a standardized, coordinated, and integrated system that would facilitate public health interventions through the monitoring, reporting, linking, and communication of data on environmental hazards/exposures and environmentally-related diseases. The CEHTP has three main goals:

1. Advancing of technology infrastructure that is consistent with CDC’s standards and architecture;
2. Improving the availability and utility of existing data, and facilitating the creation of new data; and
3. Informing policies, practices, and other actions to prevent or reduce illnesses, injury and death related to environmental risk factors.

GIS ROLE IN CALIFORNIA’S ENVIRONMENTAL HEALTH TRACKING PROGRAM

GIS plays a crucial role in all aspects of the CEHTP. As part of its infrastructure, the program has developed (or is in the process of developing) the following tools and services: a geocoding service, a geographic feature editing service, a spatio-temporal linkage service, and a visualization/internet mapping service.

GEOCODING

The CEHTP’s Centralized Geocoding Tool enables users to geocode addresses both individually in real-time or in batches. It first standardizes and verifies addresses so that they can be



Dyuti Sengupta introduces the girls to the day's activities.

K-12 GEO EDUCATION TAKES AN ECO-TOUR TURN IN BERKELEY

BY DYUTI SENGUPTA AND
KARIN TUXEN-BETTMAN

Although significant progress has been made in the number of women in science, engineering and technology careers in the last two decades, much work remains in terms of helping expose under-served populations of young women to existing and emerging geospatial technologies. A common drawback to teaching technology to young women may lie in a lack of interest in the technology itself. By creating an interdisciplinary approach, it is far more likely that students will be able to make a connection between technology and some other more tangible topic. This was the case when we introduced middle school girls from a school in an underserved area of Oakland to the topics of botany, natural resources, and geospatial technology to help students make a connection between the natural world and GIS.

TECHNOLOGY AND YOUNG WOMEN

According to a 2006 report by the National Science Foundation, the percentage of women earning advanced degrees in science and engineering-related disciplines has increased sharply in the ten years between 1996 and 2006. However, many students in under-served communities in the Bay Area are being left behind or overlooked when it comes to pursuing careers in technology or sciences. This is due to limited access to the technologies, in part caused by decreased access to learning-based workshops and events. In addition, there are few role models for women interested in technology

careers, leading to young women feeling that technology is not a viable career option, even though they may recognize it as an important component of their lives.

LINKING THE NATURAL ENVIRONMENT AND GEOSPATIAL TECHNOLOGY

Geography, especially in the primary and early secondary years, is commonly thought of as a school subject simply focused on knowing state and national capitals. However, the subject of geography is wide-reaching and focuses largely on the interaction of humans with the environment, an aspect often overlooked in school curricula. Geography is often lumped into the social sciences without regard for the important relationships that human activities have with the environment. The relationship between humans and the environment is now emerging as a key issue, if not the most important science and policy issue, of the 21st century with the growing concern of climate change and its effects on the Earth's natural systems. For the future, a strong understanding of the interactions of humans and their environment is needed among younger generations.

A key technological development in the geographic sciences over the past 15 years has been Geographic Information System (GIS). GIS technology has undergone an explosion particularly over the past 5 years especially in terms of its relationship to Internet technologies, and presents a tremendous educational opportunity to young women, who can take on a more participatory role when it comes to understanding the process of mapping the Earth through observation and field work.

IMPLEMENTING THE GEOGIRLS EVENTS

As part of a project funded by the American Association of University Women (AAUW) Community Action Grant, two groups of approximately 30 female students each, aged 11 to 14 from the Bay Area Technology School in Oakland, California were gathered at an event entitled *GeoGirls* held on the University of California, Berkeley campus in October 2007. The event was organized by Project Leader Dyuti Sengupta, a PhD student in the Department of Geography at UC Berkeley. Sengupta was assisted and supported by personnel at the Geospatial Imaging & Informatics Facility (GIIF) in the College of Natural Resources at UC Berkeley. The events were held at the GIIF computer lab in Mulford Hall.

The goals of this event were (1) to introduce students to the UC Berkeley campus and (2) to give an introduction to geospatial technologies through several activities. The activities consisted of a tree mapping exercise in which several small groups were each given a Global Positioning Systems (GPS)



The girls completed a virtual scavenger hunt using Google Earth.

unit, a list of several tree species, and a simplified taxonomic key to help guide them around campus. These lists were part of an existing UC Berkeley Forest Science Tree Trail. Once a group located the species, they entered its location using the GPS unit, and recorded information about the tree including tree health, condition, and use of surrounding grounds. This information may be used as part of a larger project, in which the GILF would partner with UC Berkeley campus landscapers to monitor the condition of trees on campus.

After finding several trees and collecting all necessary information, the students returned to the lab, where they imported their GPS points into Google Earth and were able to view all the points collected. After students were familiar with the use of Google Earth, another activity was introduced to further explore the software. Sengupta created a two-page Google Earth Scavenger Hunt, which took them to the far corners of the world – virtually. Using Google Earth, students traversed the globe and learned how to navigate to, and locate, well-known landmarks and natural wonders of the world; some of the locations included Mount Fuji, the Taj Mahal, and Niagara Falls. Sengupta chose to use Google Earth as the GIS technology for the *GeoGirls* workshops because of the low learning curve, ease-of-use, and simplified layer list. However, other software and technologies were demonstrated during the workshops to expose the girls to other options for geospatial technologies.

THE OUTCOME

While a one-day activity may not have the impact of curriculum routines found in a classroom, it does expose students to a University atmosphere to which they otherwise may not have access. While *GeoGirls* was a first-time event and not formally evaluated, we did receive positive feedback from our liaison at the participating school. After the workshop, she stated, “As a result of the trip [to UC Berkeley], nine families have requested information about access to free computers and the Internet. The 6th grade students have wowed their

social studies teacher with their Google Earth knowledge, and most of the young ladies wish to have another opportunity to visit the lab. Two of the 7th graders who participated in the *GeoGirls* workshop are very interested in starting an after-school GPS club next year. Our students are still talking about your great program!” These comments are encouraging and suggest that in fact, GIS and geography have a place in the world of educational outreach. It is simply a matter of implementation.

ABOUT THE AUTHORS

Dyuti Sengupta is a PhD student in the Department of Geography at UC Berkeley. She is also an avid teacher and instructor, and has taught cartography at Foothill College in addition to introducing K-12 students to Geography and GIS. In her spare time, she spends time with her husband and brand-new daughter. Karin Tuxen-Bettman is currently a GIS Specialist with Google Earth Outreach in Mountain View. ✨

GIS: A DEAD-END FIELD? CONCLUDED

methods, and currently has a seasonal plan for maintaining removal of invasives like Eucalyptus trees and Scotch Broom, and the planting of native grasses to control soil erosion. Visitors will see many stairways, benches, and other landscaping features made with salvaged Eucalyptus wood – even caskets have been made out of the salvaged wood! Being buried in a Eucalyptus casket may be the best way to “give back to the earth everything you’ve taken from it, such as minerals and elements,” remarks Boileau, “you are reintegrated into the biomass, and reincarnated as a tree.”

The concept of green burial coupled with high technology may seem incongruous, but the San Francisco Bay Area is probably the best place to launch and test such novel ideas. Since Forever Enterprises purchased the 108-year-old Fernwood cemetery three years ago, green burial has become so popular that there is a waiting list. This trend might be due to the Bay Area’s sustainability and environmental mindset, and awareness that, as Boileau puts it, “green burial might be your last act in life for land preservation,” since cemeteries will never be paved over. As green burial becomes more popular, it will benefit from geospatial technologies for the management and navigation of its natural landscape. GIS will be the logical solution. “GIS was an answer to a problem,” said Boileau. “How do you keep track of grave sites without headstones? The answer is GIS.”

ABOUT THE AUTHORS

Stella Wotherspoon is GIS Planner at the Metropolitan Transportation Commission (MTC), a member of the BAAMA Board, and sits on the BAAMA Journal Editorial Board. Karin Tuxen-Bettman is a GIS Specialist with Google Earth Outreach in Mountain View, a member of the BAAMA Board, and sits on the BAAMA Journal Editorial Board. ✨



CONGRATULATIONS TO THE WINNERS OF THE 2008 BAAMA EDUCATIONAL SCHOLARSHIP

This fall, the BAAMA Educational Scholarship returned for the second year, and attracted applications that demonstrated the outstanding and diverse work using GIS, remote sensing, and other geospatial technologies, that can be found in student projects across Bay Area colleges and universities. We are proud to announce our winners!

Arielle Simmons, a graduate student in the Department of Landscape Architecture and Environmental Planning at UC Berkeley, was awarded the First Place prize for her poster entry entitled "Invasive Plant Management: Tracking the Spread and Managing *Arundo Donax* in the San Joaquin River." Arielle's poster described her work with her graduate project, which maps the spread of the riparian invasive species, *Arundo donax*, in the San Francisco Bay-Delta Estuary. *Arundo donax* has the ability to increase levee failure, degrade species habitat, and compromise restoration goals throughout the Bay Area. She used Google Earth software to identify 239 suspect *Arundo donax* outbreak sites on the San Joaquin River. Applications of this study could reduce mapping costs and improve efficiency for tracking, managing, and understanding *Arundo donax* spread in the San Joaquin and the entire San Francisco Bay-Delta Estuary. With this project, Arielle is working to increase the efficiency of weed management by identifying and modeling the spread of invasive plant species in riparian corridors.

Harvey Wilson, a student from Diablo Valley College, was awarded the Second Place prize for his poster entry, "Ground survey and mapping of Cooper's Hawk nest sites in Alameda, CA." Harvey used GIS to help locate Cooper's Hawk nests in Alameda, California. He used a Global Positioning Systems (GPS) unit to identify nest

locations, and then converted the waypoints to a shapefile using the DNR Garmin application. In ESRI ArcGIS, he buffered an estimated nesting territory around each waypoint, which allowed him to target certain areas for further monitoring. For each nest he located, Harvey took a picture of the nest and the tree containing the nest. This provides visual information on the types of trees Cooper's Hawks use, where they situate their nests in trees, and what the nests look like. This project can help Alameda Public Works engineers improve identification of Cooper's Hawks nests, and Crown Beach interpretive staff to educate the public.

Ashley Holt, a graduate student in the Department of Environmental Sciences, Policy & Management at UC Berkeley, was awarded the Third Place prize for her maps mash-up, LocalFoodWeb (LocalFoodWeb.org), which combines Google Maps and Bay Area farmers'

market and other food locales. Ashley started the project to learn more about farmers' markets and local food geography in the Bay Area, and to teach herself the Google Maps API. In addition to learning about building a mashup, she found that the project helped her learn more about local food availability in the Bay Area. Ashley describes this site as an on-going effort to help people locate farmers' markets and locally-grown foods near their homes and communities in the Bay Area and beyond.

First-, second-, and third-place prizes included awards of \$2500, \$1500, and \$1000, respectively. Some award recipients will attend CalGIS and make a presentation at the conference about their work. In addition, all three awards included Individual Membership in BAAMA for the 2008-09 fiscal year.

Look out for the next scholarship in Fall 2009! ✨



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Download an application form from www.BAAMA.org/application.pdf

INTERESTED IN VOLUNTEERING?

Are you already a BAAMA member who'd like to get a little more involved? BAAMA welcomes members to take volunteer roles in the organization's activities!

There are many reasons to be a BAAMA volunteer. First, you can **learn something new**. Second, volunteering for BAAMA will **increase your professional toolbox and enhance your resume**. Add something to your repertoire that you might not normally do at your job! Third, you will get to **better know your fellow BAAMA members** and board members. Who knows? Your next business partnership, project,

or job might be the result of BAAMA networking!

There are several different BAAMA tasks that need volunteers, including our bimonthly educational sessions, our semi-annual journal, and our communication and outreach via email and the web.

Volunteer for an educational session! We are always looking for people to give a presentation, or help to find presenters for a bi-monthly educational session. See page 13 for a list of upcoming educational sessions!

The BAAMA Journal, our semi-annual publication, needs writers, editors, and designers for the next issue! Write an article, or interview someone for an article. Add something to your repertoire that you might not normally do at your job! Edit an article someone else has written. Or help find advertisers for the Journal.

Assist with our BAAMA communications! Currently, our wonderful and talented volunteers include Michael Loconte as our email manager, Pascal Akl as our webmaster, Justin Anderson as our database administrator, and Christine Bush as our podcaster. These folks need back-ups for those busier times!

All BAAMA members are welcome to attend board meetings. After consistently attending several board meetings and volunteering some time (e.g. helping with an educational session, writing a Journal article, etc.), you can become a full Board Member, if you wish! As a Board Member, you can influence the directions and initiatives of BAAMA, easily network with numerous BAAMA members, and have a lot of fun doing it. If you would like to get involved, please contact BAAMA's Volunteer Coordinator, Bruce Joffe, GISConsultants@joffes.com. ✨



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GIS EDUCATION AROUND THE BAY AREA: CITY COLLEGE OF SAN FRANCISCO

BY SUZANNE KOREY

The GIS Education Center at City College of San Francisco is a hub of learning and collaboration that offers a wide variety of short-term, fee-based workshops in geospatial technologies, such as ESRI and Google software, and cartography. The Center's focus is topics that have a broad appeal and will be useful for individuals who intend to use GIS in the workplace. Recent workshops at the Center have included Introduction to GIS, Urban Planning and GIS, Google Maps for Non-Profits, and an advanced course on GIS concepts and applications.

Earlier this year, we added an exciting speaker series to its list of offerings in an effort to foster GIS knowledge across the curriculum. For example, we sponsored talks on effective cartographic techniques, "GIS and Public Health," and "Mapping the Vote." We were inspired to create the speaker series through our attendance at BAAMA meetings, where professionals from numerous backgrounds discuss how they have incorporated GIS into their work. For lay-people with a curiosity in GIS or a basic understanding of the technology, these educational events provide inspirational and eye-opening dialogue and demonstrate the power of GIS to "illuminate" quantitative information.

Our vision for expansion of the GIS Education Center includes working with government agencies and non-profit organizations to help produce maps for policy development and planning; making presentations in local high schools to excite students about careers in geospatial technology; organizing GPS-based scavenger hunt events for middle school students; and promoting the strengths of GIS as a tool to assist with collaborative, project-based activities. Another method by which we will expand the Center's visibility

— and simplify the class registration process — is to publicize our offerings through the Continuing Education program at City College of San Francisco. The URL for this program is www.ccsf.edu/continEd.

Although our Center is based in San Francisco, its origins can be traced to New Orleans. A pre-Katrina workforce conference in that city brought together faculty from community colleges

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WINNER OF LAST ISSUE'S WHERE IN THE BAY AREA? CONTEST

Congratulations to Debbie Linton, who is the winner of the Where in the Bay Area? contest from our last issue. Debbie was randomly chosen from the pool of correct entries. "This one's easy," she wrote, "it's part of the new Eastshore State Park, on a spit of land within Albany city limits."

Known as the Albany Bulb, it is located just west of the junction of I-80 and I-580 in the East Bay. There are breathtaking views from here of the Bay Area, including the Bay and Golden Gate bridges and Mount Tamalpais. The area was originally a landfill created with construction debris, but now is covered with vegetation including many native plant species. In the northwest part of the park, on which this image focuses, you'll also find an outside guerrilla art gallery with sculptures and other installations (some of which you can make out in the image) made out of construction debris from the former dump and other objects washed in from the Bay's waters.

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CEHTP: NEW ONLINE GIS TOOLS CONCLUDED

pesticides is an example of cutting-edge research into environmental hazards that may be related to human disease.

The group evaluated the hypothesis that maternal residence near agricultural pesticide applications in the Central Valley during pregnancy could be associated with Autism Spectrum Disorders among the children. Maternal residence addresses at time of birth were standardized and geocoded using CEHTP's geocoding tool and the pesticides linkage service was used to estimate exposure. After a sophisticated statistical analysis, the researchers found that there is a possible connection between mothers' residential proximity to organochlorine pesticides and autism in their children. This first study of autism risk association with residential exposure to pesticides at drift concentrations was possible due to the GIS developments by CEHTP.

PRETERM BIRTH PROTOTYPE MAPS

CEHTP also developed a prototype system which models the risk of preterm (premature) birth using a continuous loess function along with web-based mapping and integration with Google Maps. The result is a continuous local rate map of preterm birth for the State of California (Figure 3).

Instead of showing the preterm birth by geographic unit (such as a ZIP code or a county), this function shows a continuous surface of disease rates. This gives a more realistic representation of what preterm birth risk looks

like in the state, while providing several advantages over traditional choropleth maps. Continuous rate mapping utilizing point data preserves the confidentiality of the individuals whose information was used to create the map; allows for the calculation of stable disease rates in sparsely populated areas; and takes into account the fact that disease risk does not necessarily change when crossing administrative boundaries. In other words, risk for premature birth doesn't really change just because one crosses a zip code boundary. Given adequate data, we are able to identify local "hot spots" of disease with high resolution regardless of political boundaries.

To visualize risks assigned to discrete grid points, CEHTP generated raster surfaces using the Spatial Analyst extension of ESRI ArcGIS and they presented the smoothed preterm birth surfaces as a WMS mash-up with Google Maps. The resulting client/server application provides users local and regional contextual orientation as well as a fluid experience for panning and zooming around California.

In conclusion, by using the state-of-the-art GIS techniques to integrate, analyze, and display disease patterns and pollution, we can offer more useful data and guidance on how to protect public health to a wide range of agencies and audiences. The CEHTP's work has made an invaluable contribution to this effort.

For more information, please refer to the websites below:

- CDC National Environmental Public Health Tracking Program, www.cdc.gov/nceh/tracking
- Environmental Health Investigations Branch, California Department of Public Health, www.ehib.org
- California Environmental Health Tracking Program, www.catracking.com
- CEHTP tools described in this article, www.ehib.org/toollist.jsp

- Autism study, www.ehponline.org/members/2007/10168/10168.html
- Preterm birth prototype system, www.ehib.org/preterm.jsp
- InfoAlamedaCounty, www.InfoAlamedaCounty.org

ABOUT THE AUTHORS

Svetlana Smorodinsky is a research scientist with the Environmental Health Investigations Branch of the California Department of Public Health, working on various projects, including the California Environmental Health Tracking Program. Eric Roberts, Craig Wolff, Michelle Wong, Makinde Falade, Liang Guo, Galatea King, under the leadership of Paul English (principal investigator), are with CEHTP. ✨

UPCOMING BAAMA EVENTS

See www.BAAMA.org for up-to-date details.

MAY 22, 2008

Educational Session:
Using the Web to Improve Access to GIS Data
Location: MTC, Oakland, CA

JUNE 3, 2008

Board Meeting and Member Networking Event
Location: TBD, San Jose, CA

JULY 24, 2008

Educational Session:
Integrating GIS Workflows Into Your Enterprise
Location: MTC, Oakland, CA

SEPTEMBER 25, 2008

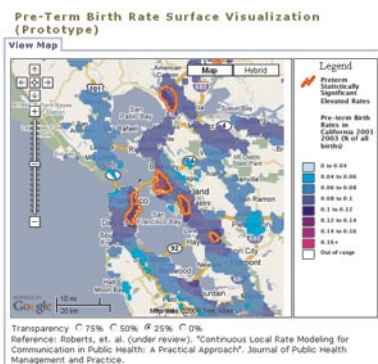
Educational Session:
Spatial Analysis
Location: MTC, Oakland, CA

NOVEMBER 19, 2008

GIS Day
Location: TBD

DECEMBER 2008

BAAMA Holiday Party
Location: TBD



GIS EDUCATION AROUND THE BAY CONCLUDED

around the country that were treated to wonderful presentations from professionals who use GIS in urban planning, resource management and emergency service provision. This conference also introduced GPS technology to many of the attendees who

learned, for example, how GPS plays a role in "precision agriculture" and in reducing the amount of toxic fertilizer infiltrating the soil and groundwater supply.

Upon return to San Francisco, we obtained a Mentorlinks Grant from

the American Association of Community Colleges that paired our staff with many of the presenters we met in New Orleans, including faculty members from Lakeland College in Illinois, and Kentucky Community and Technical College. These trusted friends and supporters recognized that San Francisco is a technologically savvy city and were eager to spur our efforts to launch the Center. In particular, they noted the free online tool available on the city's web site, SFProspector, which provides demographic and economic data to the general public. We continue to work closely with one another and enjoy the relationship with our friends and supporters who generously share their knowledge and skills with us.

In addition to our Center, City College of San Francisco provides other opportunities to learn about GIS. The Earth Science Department offers a three course certificate worth eight college credits that begins with Introduction to Geographic Information Systems, followed by an intermediate and advanced course. This program is cross-listed with the Engineering Department, encouraging collaboration between the two disciplines.

If you would like more information about the GIS Education Center (GISEC) or the certificate program in the Earth Science Department, please contact Suzanne Korey at 415-550-4420 or visit www.ccsf-gis.org.

ABOUT THE AUTHOR

Suzanne Korey is the Director of the Northern California Logistics and Distribution Project (NCLAD) and the GIS Education Center at City College of San Francisco. ✨

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WHERE IN THE BAY AREA?

High-resolution aerial photography can be extremely valuable to Bay Area companies and governments, because it gives detailed information that can be used for project planning, as effective basemap data for beautiful cartography, and as a foundation for creating thematic data, such as vegetation classifications, building footprints, and other land cover and land use maps.

This image clip shows sub-meter-resolution true-color aerial photography of a place in the Bay Area. Use the high level of detail to your advantage to find clues to help you figure out where it is!

Identify this location and win a prize! Send your answers to editor@baama.org. One lucky winner will be randomly selected from all correct entries received by September 15, 2008. The winner will be announced in the next issue.

BAAMA EXTENDS SPECIAL APPRECIATION TO ITS CORPORATE SPONSORS

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- Bay Area Air Quality Management District (www.baaqmd.gov)
- Boundary Solutions (www.boundarysolutions.com)
- California CAD Solutions, Inc. (www.calcad.com)
- California Water Service Company (www.calwater.com)
- Caltrans (www.dot.ca.gov/dist4)
- Central Contra Costa Sanitary District (www.centrsan.org)
- City College of San Francisco (www.ccsf.edu)
- City of Berkeley (www.ci.berkeley.ca.us)
- City of Fremont (www.ci.fremont.ca.us)
- City of Oakland (www.oaklandnet.com)
- City of Palo Alto (www.city.palo-alto.ca.us)
- City of Pleasanton (www.ci.pleasanton.ca.us)
- City of San Jose, GIS/Infrastructure Public Works (www.sanjoseca.gov/publicWorks)
- City of Stockton (www.stocktongov.com)
- City of Walnut Creek (www.ci.walnut-creek.ca.us)
- Contra Costa Water District (www.ccwater.com)
- County of Alameda, Community Development Agency (www.acgov.org/cda)
- County of Alameda, Environmental Health/Vector Control
- County of Alameda, Public Works Agency (www.acgov.org/pwa)
- County of Contra Costa, Public Works (www.co.contra-costa.ca.us/depart/pw)
- County of Marin, Community Development Dept (www.co.marin.ca.us)
- County of Santa Clara, ISD (www.sccgov.org)
- County of Santa Clara, Planning Office (www.sccgov.org/portal/site/planning)
- EarthData International (www.earthdata.com)
- East Bay Regional Park District (www.ebparks.org)
- EBMUD (www.ebmud.com)
- Ellis Geospatial (www.ellis-geospatial.com)
- EOA, Inc. (www.eoainc.com)
- Erich Seamon & Associates (erichseamon.com)
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- Farallon Geographics, Inc. (www.fargeo.com)
- Geocadd Aerial Surveys (www.geocaddsurveys.com)
- Geodesy (geodesy.net)
- Geomatrix Consultants, Inc. (www.geomatrix.com)
- Geosyntec (www.geosyntec.com/UI)
- GIS Academy (www.gisacademy.net)
- GIS Consultants (joffes.com/GIS)
- GIS Planning, Inc. (www.gisplanning.com)
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- Metropolitan Transportation Commission (www.mtc.ca.gov)
- Michael Baker Jr., Inc. (www.mbakercorp.com)
- Microdesk (www.microdesk.com)
- MoosePoint Technology (www.moosepoint.com)
- Munsys, Inc. (www.munsys.com)
- Pacific Gas & Electric Co. (www.pge.com)
- Policy Innovation Works (www.4piw.com)
- PSOMAS (www.psomas.com)
- San Francisco Estuary Institute (www.sfei.org)
- San Jose Water Company (www.sjwater.com)
- San Ramon Valley Fire Protection District (www.srvfpd.dst.ca.us)
- Santa Clara Valley Water District (www.valleywater.org)
- Spatial Systems Group Prevention Research Center, Pacific Institute for Research and Evaluation (www.pire.org/PRC/SSG)
- Stamen Design (stamen.com)
- Stanford University (www.stanford.edu)
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