Crime Mapping News

A Quarterly Newsletter for GIS, Crime Mapping and Policing

POLICE FOUNDATION

Free Maps to Drug Law Enforcement Agencies From The National Guard

Lt. Rickey Thomas

The National Guard Bureau Counterdrug Directorate's (NGB-CD) Digital Mapping Initiative (DMI) has the mission of providing computer-generated maps free of charge to Drug Law Enforcement Agencies (DLEA), throughout the United States and its territories. This includes any law enforcement or DOD agency that supports Counterdrug missions. Numerous state and local agencies request DMI's services for product support ranging from mission planning to spatial analysis utilizing Geographic Information System (GIS) tools. DMI provides products and GIS services to assist Drug Law Enforcement with their mapping requirements.

Background and History

DMI began operations in fiscal year 1993. Since that time, it has supported hundreds of federal, state, and local agencies nationwide with over 100,000 mapping products. The key to DMI's success is the quality and timeliness of the products and services. Since the products and services provided by DMI are free, Drug Law Enforcement is saved several thousands of dollars.

Support provided by DMI to DLEAs has grown steadily. Production has increased from 800 pages in FY93 to 33,197 pages in FY98. The projected production for FY99 is 40,000 pages. DMI manpower has increased from one system operator at one location in FY93 to five systems operators at three locations in FY99.

DMI Personnel

DMI personnel are Title 32 National Guard members with a proven track record of trust and professionalism ensuring that all requests are handled in a courteous, timely, and expert manner. The majority of DMI requests are from satisfied customers returning to DMI time and time again.

DMI Products and Services

DMI's maps are produced from digital data provided by the National Imagery and Mapping Agency (NIMA), U. S. Geological Survey (USGS), U. S. Census Bureau TIGER Data, and various other data sources. DMI also uses the Internet to download data at little or no cost. DMI is constantly networking with a variety of public agencies to encourage participation in data-sharing ventures, making DMI a proponent of open source data and data sharing for base mapping. DLEA-specific data is

Volume 1 Issue 2
Spring 1999

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2d Lt Rickey Thomas is the officer-in-charge of the National Guard Bureau Counterdrug Directorate's Digital Mapping Initiative

considered close hold and returned to the DLEA with the completed project. DMI maintains no level of DLEA data repository. The primary software used by DMI is ArcView from Environmental Systems Research Institute (ESRI-Redlands, CA), and ERDAS IMAGINE from ERDAS, Inc. (Atlanta, GA). Other software packages from commercial and government sources are also used to enhance DMI's mapping capabilities.

DMI's map products are produced at various scales (from 1:2,000,000 down to 1:24,000). Maps are customized to show terrain and aeronautical features, rivers, lakes, counties, cities, roads, highways, latitude and longitude grids, etc. In addition, maps may be customized to include statistics on arrests, seizures, and grow locations, as well as methamphetamine labs, crack houses, suspect locations, etc. The requesting DLEA must provide location data for customized maps. The data can be in the form of street addresses, Global Positioning System (GPS) coordinates, or latitude-longitude information. No suspect's names can be included due to Intelligence Oversight protection of U.S. citizens. Any location or database information provided to DMI by DLEAs is returned with the applicable mapping products requested. Street-level maps are also available at scales of 1:12,000 to 1:10,000. Maps may be provided as hard copy ranging in size from 8.5" x 11" to 36" x 48". Maps may also be provided on diskette or CD-ROM in bitmap format. All maps are produced in color unless otherwise requested. In an effort to keep costs down, only one copy of each map is normally provided unless the request is for preprinted large scale maps from NIMA and USGS. DMI can provide shapefile data on CD-ROM with ESRI's ArcExplorer, which is a free viewer providing the DLEA with the capability to view and manipulate the mapping data or the maps on their desktop computer without GIS software. Please note that ArcExplorer is simply a viewer and not a GIS software package. DMI provides GIS products and services only. DMI does not provide any commercially available software or hardware.
(Note: ArcView and ArcExplorer are registered trademarks of ESRI, and ERDAS IMAGINE is a registered trademark of ERDAS, Inc.)

DMI Systems Operations

DMI Systems Operations are located at Ft. Gillem near Atlanta, Georgia. DMI remote sites are located at Kirtland AFB in Albuquerque, New Mexico and at the Multijurisdictional Counterdrug Task Force Training Center in St. Petersburg, Florida. All orders should be placed with the Atlanta office. The systems operators in Atlanta will assist the DLEA in placing the order, and then route the request to the appropriate system for timely completion. DMI has successfully met DLEA suspenses. When placing orders, we request as much lead-time as possible in order to provide the best products available. Priorities are set by the date of order, availability of products, and the suspense dates provided by our customers.

DMI Technical Support

Even with today's technological advances, many local agencies still lack the necessary funding and resources to implement their own GIS capabilities. DMI helps fill this gap by satisfying the agency's need to obtain a variety of mapping products for its counterdrug missions. As well, some agencies with their own GIS capability may lack data for areas across multijurisdictional lines. For example, DMI can assist with drug cases which cross county, state, or international boundaries. DMI's nationwide GIS database enables support to agencies that have their own GIS capability. Additionally, some data sets are available for mapping areas outside of the United States. DMI makes every effort to stay on the leading edge of technology in an effort to support DLEA shortfalls.

DMI provides a versatile and powerful tool to support DLEAs with counterdrug mapping products. These maps can greatly assist in pre-mission planning, after-action reports, and courtroom graphics. Additional DMI capabilities include the ability to perform radar line-of-sight, radar coverage, and the display of historical counterdrug data in geographical format.

DMI maintains its commitment to support DLEAs, as a valuable force multiplier to the counterdrug community. DMI will continue to explore new technologies, along with other National Guard Bureau Counterdrug Directorate programs and initiatives to reach new horizons. These efforts will ensure that DLEAs requesting the support of DMI will receive the best geographic information systems support and services available through the National Guard.

For additional free information, sample products, or to request counter drug mapping support, please contact:
Lt. Rickey Thomas, TSgt. Ted Edwards, or TSgt. Gregg Williams at:
Commercial: (404) 363-5342
Fax: (404) 363-5342
E-mail requests to: dmi@cddmi.forscom.army.mil
On the web at: http://www-cddmi.forscom.army.mil

Technical Discussion: An Introduction to Geocoding

Geocoding is the process of mapping point locations defined by some form of address information. Basically, data pertaining to an event or events is entered into a database with one or several fields used to record address information. The address information is then imported into a GIS application and matched against a map of the area of interest. The successful matches are then used to create a new map layer with the physical location of each event represented by a point. To ensure consistency, the new address layer is transformed into the same projection and attributed with the same coordinate information as the base map, including geodetic reference system information.

How Geocoding Works

While a variety of geographic data types may be used as a reference layer, street files such as TIGER are the most commonly used. Street files generally have several fields that describe the physical address of each particular street segment in the layer, generally including street name, type, number, prefix and suffix, and alias. The name and type are self-explanatory and are recorded in one field each. The number is usually recorded as a range for both the left and right sides of the street segment. Four fields are usually used to record the number with a 'from' and 'to' field for both the left and right side of the street. The prefix and suffix fields are used to store information such as quadrant and other abbreviated identifiers. For example, 155 W Hollywood Dr. would include both a prefix (W for west) and a suffix (Dr. for Drive) as well as the street name and number.

Most software packages use a fairly simple method to accomplish the actual placement of the event point in relation to the base theme. All street files are comprised of sections of lines, each with an associated beginning and ending address range and an actual physical length. The majority of geocoding packages simply scale the placement of the event point to a proportioned length derived from a ratio of the difference between the maximum and minimum address values and the physical length of the line segment on the appropriate side of the street. For example, a line segment may represent a street that is 100 yards long. The beginning address for the left side of the street may be 101 and the ending may be 151. An address of 125 would be placed approximately halfway down the line on the left side. While this may be at times far from accurate depending on the detail of the street file, it is usually sufficient. Intersections can also be geocoded using street files. Different software packages use different techniques but all provide for intersection geocoding. Intersection geocoding is more accurate than street geocoding since there is no mathematical procedure to define the physical location of the point generated. The event point is simply placed at the location of the intersection. Intersection geocoding is often most useful for traffic citations along routes that may not have readily discernable addresses. Another common geocoding strategy uses a polygon base theme as opposed to a linear, street file theme. Employing this method, a parcel file can be used to generate a centroid within the parcel polygon in the event that a parcel's address matches an event address. This approach is also commonly used to aggregate information by block group or zip code. While parcel file geocoding is often the most accurate, parcel files are often costly and time consuming to maintain. While the aforementioned methods of geocoding are the most ubiquitous, many other reference layers can be used. Geocoding by any user-defined political or geographic region may be used depending on the available data.

Sources for More Information about Geocoding

General:

Clarke, Keith. 1995. *Analytical and Computer Cartography.* Prentice Hall: Englewood Cliffs, N.J.

Nober, Carolyn. "Geocoding Exercise: Where in the World?!" University of Texas at Austin. http://www.ce.utexas.edu/stu/nobelce/Project/Geocode.html

Olson, David. 1998. "Standards and Procedures for Geocoding and Transferring GIS-Based Data Within Police Agencies." Final Report to the Office of Community Oriented Policing Services.

MapInfo Specific Information:

MapInfo. 1999. *MapXtreme Java Edition Developers Guide*, "Chapter 6: Geocoding with MapInfo Products" http://www.mapinfo.com/docs/mapxtreme_java_edition_10_dev/geocoding.html

ArcView Specific Information:

ESRI. 1998. *ArcView Technical Notes.* http://www.esri.com/usersupport/support/faq/arcview/arcviewfaq.html

In every issue, Crime Mapping News presents an article about the successful implementation of GIS in law enforcement, written by law enforcement personnel involved in the implementation. Washington D.C. is working to develop innovative strategies for integrating GIS into their operations.

Mapping in Action: Washington, D.C.

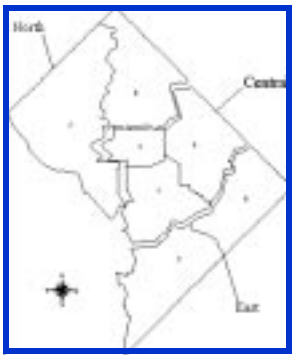
Success with GIS: In with the new, out with the old

by Douglas A. Jones, Sergeant
Metropolitan D.C. Police Department

Overview

Washington, District of Columbia (D.C.) has an area of approximately 68 square miles with a population of 523,124[1]. As the nation's capital it attracts hundreds of thousands of tourists each year.

Washington, D.C. is geographically divided into seven police districts consisting of 83 patrol service areas (PSA). To bring accountability to the field, Chief Charles H. Ramsey created three Regional Operations Commands (R.O.C.): North, Central, and East. Each R.O.C. is commanded by an assistant chief of police and is geographically located within their command area. The North R.O.C. consists of the First and Fourth Districts; the Central R.O.C. the First, Third, and Fifth Districts; and the East R.O.C. the Sixth and Seventh Districts.



Getting the Data

Each district has a crime analysis unit which is responsible for the entry of preliminary part one crime data into a stand-alone[2] system. Once entered, the data[3] is transmitted to the Central Crime Analysis Unit (CCAU). The daily crime data is geo-processed by CCAU personnel and appended to the central crime data repository.

Mapping Data

The Metropolitan Police Department (MPD) is currently in transition from MapInfo to E.S.R.I. ArcView 3.1 mapping software. MPD has added the power of the E.S.R.I. Spatial Analyst to ArcView and is producing many varieties of maps showing crime density ("hot spots"). Members are now able to quickly identify the problem areas and shorten their problem solving approach.

Mapping Packages

CCAU provides a weekly crime briefing package to the command staff. This package contains a variety of citywide, R.O.C., and individual district point and density maps ranging from single, part one crimes (homicide, sex abuse, robbery, burglary, etc.) to crimes against persons and crimes against property. Trend and time analysis charts are also provided.

CCAU also prepares an extensive Homicide Information Package for each open "criminal homicide" within 48 hours of the reported event. These packages contain crime, gun recovery information, calls for service, and adult and juvenile arrest information (three months prior to the event) within a one thousand foot radius of the target "criminal" homicide. Density overlays are provided for the calls for service and arrest information. Crystal Reports are generated for each information element (crime, gun recovery information, etc.) providing the investigators with descriptive information (first name, last name, nicknames, complainant/reporting persons and telephone numbers, etc.).

New "Automated" Mapping System

Mr. Walter Collier, Supervisory Programming Specialist, Strategic Planning and Development, has developed an automated mapping system for members. This desperately needed and long awaited system, dubbed I.R.M.A. will bring mapping to the unit-level. I.R.M.A. is an easy to use, GUI, point and click application which draws preliminary part one crime data from CCAU into an Oracle

continued on following page

[1] According to a July 1, 1998 U.S. Bureau of Census estimate.

[2] MPD is currently developing a new Record Management System (RMS). This new system will enable data entry from the patrol car level and will expand data collection to include part two offenses.

[3] The data consists of part one crimes for the preceding 24 hour time period

data table for rapid use by members. I.R.M.A. will be made available to members for testing June 1999.

FUTURE GOALS

In the near future, CCAU will use calls for service and adult and juvenile arrest information extensively to produce, in part, the following informative density maps:

- Order Maintenance
- Domestic Violence
- Assault on Police Officers (and officer in trouble)
- Recovered Stolen Automobiles
- Traffic Fatalities
- Traffic Accidents

In addition to the above information, CCAU will enhance their GIS through the use of demographic information (from the U.S. Bureau of Census), vacant property data (boarded/unboarded) from the Department of Consumer and Regulatory Affairs (DCRA), and parole/probation information from the Department of Corrections.

The use of GIS is rapidly evolving in MPD. Each day, our members are looking for new ways to enhance our dissemination of GIS information to members. MPD understands the usefulness of GIS and is constantly striving to generate information to help members solve past crimes and prevent future offenses. GIS is a fabulous and welcomed resource which has the uncanny ability to spontaneously generate individual crime solving and prevention ideas.

Feedback:
We welcome your reactions and ideas about this and other issues of *Crime Mapping News*. Do you have thoughts about stories that you would like to see in upcoming issues? Is your department employing cutting edge GIS strategies that you would like to share? Have we missed your Internet mapping site? Have you read a crime mapping related publication that you would like to recommend to others? Contact Emily Powell at the Police Foundation by phone: (301)721-9793, fax: (202) 659-9149 or email: epowell@policefoundation.org

Subscription Information
We have received several requests for information pertaining to *Crime Mapping News* subscriptions. This is a free publication funded by the Office of Community Oriented Policing Services. Copies of this newsletter are automatically distributed to police departments who have received COPS funding for mapping operations. Additional copies of the newsletter are distributed to the Police Foundation's research mailing list, and several other crime-analysis related professional organizations. To be added to the mailing list, please contact Police Foundation mapping staff.

Coming in the Next Issues of *Crime Mapping News*:

* Mapping in action article from Mesa, Arizona. Their new animated maps are stirring up talk in the crime mapping community. Read what they have to say about their mapping efforts.

* Technical discussion about the potential uses of aerial photos and digital satellite data for law enforcement.

* Guest column from a prominent GIS researcher.

*Guest colums from the ESRI and MapInfo GIS software companies.

Contacting the Police Foundation Crime Mapping Laboratory: By phone: **(202)721-9777**; fax:**(202) 659-9149**; email pfmaplab@policefoundation.org and by postal mail at **1201 Connecticut Avenue, N.W., Suite 200, Washington DC 20036**.

Feel free also to contact individual staff involved in the Computer Mapping Lab with questions or comments.
Michael Clifton, Director, Crime Mapping Laboratory: meclifton@policefoundation.org;
Emily Powell: epowell@policefoundation.org ; Jennifer Nickisch: jnickisch@policefoundation.org ;
Gordon Ainsworth gordonainsworth@policefoundation.org

Innovative Mapping: GPS and GIS

GPS: An Introduction

GPS (Global Positioning System) is a satellite navigation system maintained by the US Department of Defense. The principal mechanism used by GPS is the measurement of distance (or "range") between a receiver and the satellites for the purpose of calculating precise ground locations. Twenty-four satellites orbiting the earth every twelve hours along the different ground tracks, providing complete coverage, make up the GPS Constellation (Dana, 1996). In addition to the satellites, ground components are necessary for implementation of GPS. GPS receivers compute the four dimensions of X, Y, Z (position) and time at any given location by signals from four of the satellites. Three of the satellites are used for the geometric place calculation, and the fourth is used to correct for time inaccuracies between the Satellite's atomic clock and the GPS receiver. Often, these receivers store collected information for later download and use in mapping applications (Mizell, 1998). Receivers may also be equipped with transmitters used for real-time tracking, a use popular for monitoring a police department's fleet. This procedure requires that the GPS receiver unit is equipped with some sort of wireless modem and has access to a digital data transfer system, such as the cellular digital packet data (CDPD) system, already in use by many police departments for electronic document transfer.

Accuracy

There are two levels of positional accuracy available from GPS. Precise Positioning Services offer military and sanctioned users approximately 10 meter accuracy and 100 nanosecond time accuracy (Department of the Army, 1996). Civil users worldwide use the Standard Positioning System (SPS). Most receivers are capable of receiving and using the SPS signal. The SPS accuracy is intentionally degraded by the DOD by the use of Selective Availability. The accuracy predicted by the 1994 Federal Radio-navigation Plan for SPS is 100 meter horizontal, 156 meter vertical and 340 nanoseconds time accuracy (Dana, 1996). For many applications, this level of accuracy would not be sufficient, so methods have been devised to improve accuracy on a localized scale. Differential GPS is a method that corrects errors at one location with measured bias errors at a known location. Accuracy improves to 1.3 meters horizontal, 2.0 meters vertical in moving applications, and better for stationary readings after correction by differential methods (Trimble Navigation Limited, 1996). A base station at a precisely surveyed position computes corrections for each satellite signal by comparing the difference between the known position and the location information provided by the GPS satellites. This information, as calculated for all four of the satellite signals being used, is then transmitted to all roving receivers using the base station.

Integrating GPS and GIS

In addition to improving accuracy, the use of GPS eliminates many of the previously time consuming tasks in the creation of geospatial databases. Unfortunately, the major GIS software packages do not include seamless integration of GPS technology, creating the need to integrate other software systems into the mapping procedure. Data stored in a receiver and downloaded for integration into a GIS first must be interpreted by a software system capable of interfacing with the receiver. These often proprietary software packages, of which Trimble's Pfoffice package is an example, often allow automatic reformatting of data into formats easily manipulated by common GIS systems (Mizell, 1998). Third party vendors also offer complete packages that integrate all parts of a GPS system with the end user's existing GIS platform.

Sources (and other good documents on the Internet)

Blair, Bruce R. "GIS and GPS: Emerging Technologies in Law Enforcement." Montgomery County Police Department: WWW. (http://www.co.mo.md.us/services/police/Tech/geoconf2.html)

Dana, Peter H. 1994. *Global Positioning System Overview* University of Texas - Department of Geography - The Geographers Craft Project, November 11, 1996: WWW (http://www.utexas.edu/ftp/depts/grg/gcraft/notes/gps/gps.html)

Mizell, W. Francis. 1998. "GPS and GIS: The Untold Nightmare." Proceedings from the 1998 ESRI annual user conference. (http://www.esri.com/library/userconf/proc98/PROCEED/TO650/PAP619/P619.HTM)

____ 1996a. *Fact Sheet: U.S. Global Positioning System Policy* Office of Science and Technology Policy National Security Council: The White House, Washington, DC (http://www.navcen.uscg.mil/gps/geninfo/white.htm)

____ 1996b. *Use, Acquisition and Security of Precise Positioning Service (PSS) GPS Receivers for Civil Applications.* Department of the Army: US Army Corps of Engineers, Washington, DC (http://www.navcen.uscg.mil/gps/geninfo/white.html)

Trimble Navigation Limited. 1996. *All About GIS.* WWW (http://www.trimble.com/gps/)

Some Noteworthy Websites

Here are this quarter's selections of police department sites that we have landed on which demonstrate exemplary uses of mapping on the World Wide Web. In this issue, we also feature several sites that offer information about mapping and the uses of GIS that police departments might find particularly useful.

Charlotte- Mecklenburg, NC
http://www.ci.charlotte.nc.us/cipolice
The Charlotte-Mecklenburg Police Department is a great place to look for information about GIS, besides providing an example of the potential uses of crime mapping. Though the mapping portion of this site is not yet active, the Strategic Planning & Analysis Bureau offers explanations and examples of some of the current trends in crime mapping, such as automated pin mapping, hotspot analysis, and grid analysis on their portion of the site. This site could prove a useful first stepping stone into the world of GIS, as it goes beyond introducing technique to offer great information about the uses of GIS as an investigative tool, and presents an example of Charlotte-Mecklenburg's current research applications for GIS.

Check out the new badge!

Oxnard, CA
http://www.oxnardpd.org
The Crime Analysis Unit at the Oxnard Police Department not only offers crime and incident maps for the city of Oxnard, but also sets itself apart by offering maps with a community policing orientation. While many departments offer beat maps of their city, the maps at this site also provide names and phone numbers of beat coordinators. The other examples of mapping at this site also emphasize community policing. A new addition to this page is the Storefront/Drop-in location map which provides information about the department's neighborhood staffed and unstaffed locations.

New Orleans, LA
http://www.new-orleans.la.us/cnoweb/nopd/maps/basecrimemap.html
This site offers more temporal variety and accuracy in their crime mapping than any other site that we have reviewed. The highlight of the New Orleans Police Department's online mapping effort is an interactive map where the user can select a previous week's crime map for any of the eight police districts. Well-defined symbology is employed to illustrate all occurrences of UCR reported crimes in the designated area. For comparison, users can also view single-crime city wide maps for the previous four week period, since the beginning of the year, and for the previous year. This site is easy to navigate, with the crime mapping portion clearly marked and easy to access, and though it doesn't seem to incorporate sophisticated online mapping technology, the New Orleans PD deserves praise for this mapping effort which all things considered, is one of the best that we've seen.

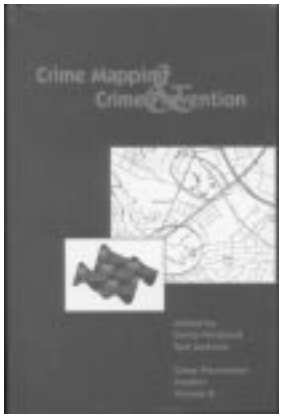
Updates: Since the last newsletter, several web addresses have changed, and a few sites have made some interesting new changes!

Since being reviewed in our last issue, Mesa, AZ has added some much discussed animated density map for police calls for service in their city. Check them out at: http://www.ci.mesa.az.us/police/anidensmap.htm

The Baltimore County Police Department has moved their page! The new address is: http://www.co.ba.md.us/bacoweb/services/police/html/police.htm Baltimore County's Neighborhood map (reviewed in the last issue) can now be found at: http://www.co.ba.md.us/bacoweb/services/police/html/rpdstats.htm

Lansing Police Department's site has moved to http://www.lansingpolice.com We're still awaiting the mapping application's debut. According to a source in their department, the crime mapping Internet Map Server site should be coming this fall.

Relevant Publications



Available from:
Criminal Justice Press
P.O. Box 249
Monsey, NY 10952
Fax: (914)362-8376
E-mail: info@cjpress.ucs.net

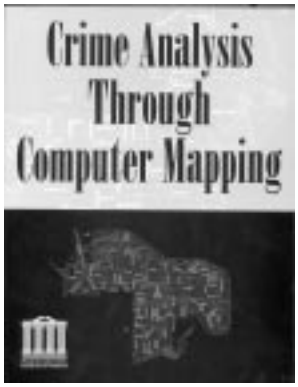
Crime Mapping & Crime Prevention
Edited by David Weisburd and Tom McEwen, 1997

In *Crime Mapping and Crime Prevention,* editors Weisburd and McEwen strive to fill some of the need for information that has emerged with the growth of computer mapping in crime prevention efforts. These twelve articles commisioned by some of the pioneers in the field can be loosely categorized into three sections: documenting crime prevention efforts expedited with mapping, current crime mapping research, and the innovations projected to have a large impact in the next ten years.

Subjects covered in the first section of the book surround implementing a successful mapping program in a police department. A main focus is the integration of data from multiple sources, which includes the necessity of community involvement in mapping applications. Anyone attempting to successfully implement community policing should find Taxman and McEwen's "Using Geographic Tools with Interagency Work Groups to Develop and Implement Crime Control Strategies" particularly useful.

Mazerolle, Bellucci and Gajewski's article which addresses the implementation issues that police departments must consider for successful mapping programs and Canter's article about mapping in the Baltimore County Police Department set the stage for the discussion of specific mapping projects to follow. The remainder of the book gives a hint of the infinite applications of crime mapping by presenting specifics about four successful research projects and the expanding technologies that are making mapping an ever more crucial part of the American policing strategy.

This work would be a useful addition to the library of anyone involved in crime mapping. The concepts throughout are presented in a format which is easy to understand for the novice and the ideas addressed should be considered by those in all stages of implementing crime mapping systems.



Available from:
Police Executive Research Forum
1120 Connecticut Ave., NW
Suite 930
Washington, DC 20036
(202) 466-7820

Crime Analyis Through Computer Mapping
Edited by Carolyn Rebecca Block, Margaret Dabdoub and Susan Fregly, 1995

Crime Analysis Through Computer Mapping contains an array of the early works of prominent practitioners and academics on the use of crime mapping in police agencies. Over 20 authors discuss a variety of topics ranging from "Strategic Crime Patterning: Problem-Oriented Policing and Displacement" (Chapter 1) and "The Use of Mapping to Support Community-Level Police Decision Making" (Chapter 24) to more technical issues such as "Integrating Crime Mapping with CAD and RMS" (Chapter 14) and "State of the Statistical Art: Point Pattern Analysis" (Chapter 11).

Other topics include discussions of hot spots, spatial distributions of crime, and geographic profiling of serial offenders. In several instances, specific crime mapping and spatial analysis projects undertaken by various cities across the United States such as Chicago, Baltimore and Jersey City, are detailed for the reader. For example, Chapter 9 provides a detailed example of the use of GIS in investigating the temporal ecology of domestic disputes in Charlotte, NC.

This text is an important primer for the GIS novice who would like a comprehensive overview of the uses of computerized crime mapping in support of police activities . Of particular interest in this regard would be Chapter 1, which provides a useful overview of the basic foundations of problem oriented policing, the SARA model, and displacement of crime (spatial, temporal, etc), and Chapter 2, which describes STAC (Spatial and Temporal Analysis of Crime), the software that pioneered the use of crime mapping technology for crime analysis purposes in Illinois in the 1980's.

The COPS Internet — Information on COPS and Community Policing is just a CLICK away

Visit the redesigned and easier to use COPS web site at www.usdoj.gov/cops.

Five key channels provide up to date information on COPS and its programs:

News & Information: For the latest grant announcements, press releases, and upcoming events

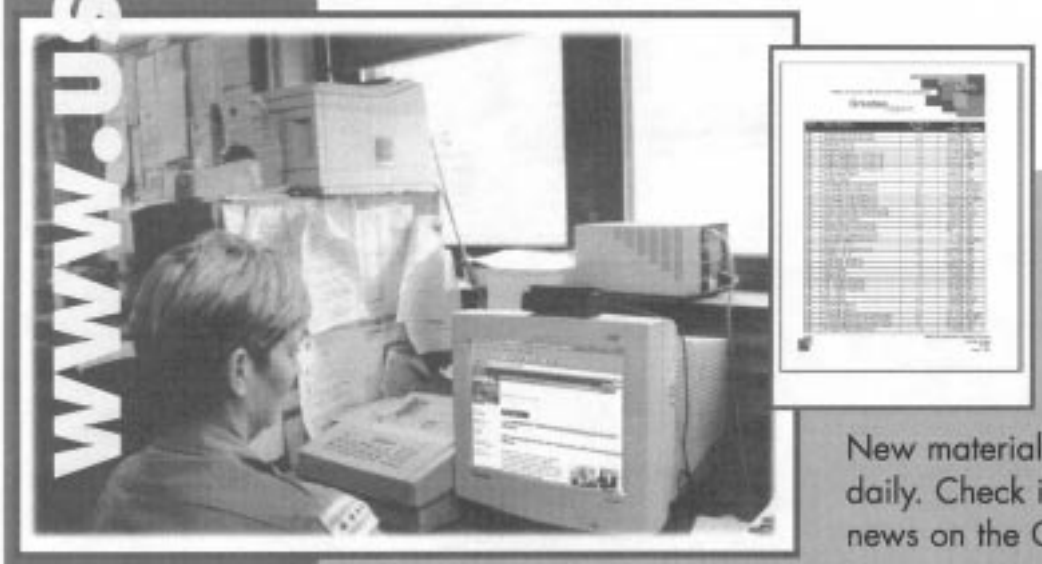
Grants, Programs, & Activities: For a list of current funding opportunities complete with application kits and comprehensive descriptions on all our grant programs and more, including training and technical assistance, compliance and monitoring, and program assessment and policy support

Grantee Toolbox: Resources for our grantees including contact information, tips, grant owner's manuals, and progress report forms

Community Policing Resources: A respository of excellent community policing resources including COPS funded studies, reports, curriculums, tools, and tips, conference capsules, ongoing assessments, and promising practices from the field

Freedom of Information Act (FOIA): For FOIA contact information and an electronic reading room, including state listings of all COPS grantees

WWW.USDOJ.



Visit the COPS Site today!

New material is posted to the site daily. Check it often for the latest news on the COPS program.

Upcoming Conference Schedule

June

June 1-2, 1999
New England GIS '99 Conference
Site: Sturbridge Host Hotel and Conference Center
Sturbridge, MA
Contact: URISA (847)824-6300
Web: http://www.gita.org/negis99

June 1-4, 1999
TU/GIS '99
Site: Baltimore Convention Center
Contact: Jay Morgan (410)830-2964
Email: jmorgan@towson.edu

June 3-4, 1999
Internet GIS
Site: University of Wisconsin-Milwaukee
Contact University Outreach, University of Wisconsin-Milwaukee (414)227-3200 or (800)222-3623
Fax: (414)227-3164 or (800)399-4896

June 7-9, 1999
1999 GeoData Forum
(sponsored by the Federal Geographic Committee)
Site: Marriott at Metro Center
Washington, DC
Contact: Infinity Conference Group (703)925-9455
E-mail: jeanhaigler@infinityconferences.com
Web: http://www.fgdc.gov/99forum

June 8, 1999
California/Hawaii/Nevada ArcView User Group Meetings
(sponsored by ESRI)
Site: Hyatt San Jose Airport
San Jose, CA
Contact: ESRI (909)793-2853 ext. 1-1070
Web: http://www.esri.com/seminars

June 8, 1999
GIS/SIG 8th Annual Spatial/Digital Mapping Conference
Site: Four Points by Sheraton Hotel
120 E. Main St., Rochester, NY 14604
Contact: Jeff Volpe (716)232-5137 ext.282

June 19-21, 1999
International Conference
on Geoinformatics and Socioinformatics.
Ann Arbor, MI
Contact: Program Committee,
c/o Dr. Shuming Bao (734)647-9610
Fax: (734)763-5540
E-mail: geoim99@umich.edu
Web: http://www.umich.edu/~iinet/chinadata/geoim99

June 20-22, 1999
GISOC'99
An International Conference on Geographic Information and Society
Site:University of Minnesota, Minneapolis
Contact: Eric Sheppard, University of Minnesota
Email: shepp001@tc.umn.edu
Web: http://www.ncgia.ucsb.edu/conf/gisoc99.html

June 24-26, 1999
UCGIS 1999 Summer Assembly
Site:Humphery Center at the University of Minnesota, Minneapolis, MN
Contact: William J. Craig (612)625-3321
Email:wcraig@atlas.socsci.umn.edu

June 25-26, 1999
Discovering GIS Workshop
(sponsored by Center for Image Processing in Education (CIPE), Atlantic City, New Jersey)
Contact CIPE (800)322-9884
Web: http://www.cipe.com

July

July 25-28, 1999
GeoComputation 99/4th International Conference on Geo-Computation,
Site: Fredricksburg, Virginia
Contact: U.S. Army Topographic Engineering Center
(703)428-6887, (703)428-6425
E-mail geocomp99@tec.army.mil
Web: http://206.37.29.157/GeoComp99/.

July 26-27, 1999
Discovering GIS Workshop
(sponsored by Center for Image Processing in Education (CIPE), Tucson, Arizona)
Contact CIPE (800)322-9884
Web: http://www.cipe.com

July 26-30, 1999
ESRI 1999 International User Conference
Site: San Diego Convention Center - San Diego, CA
Contact: ESRI (909)793-2853 x 1-1363
E-mail: uc99@esri.com
Web: www.esri.com/events/uc
Note: This conference is only open to ESRI software users.

August

August 13-15, 1999
Association for Information Systems (AIS) 1999 Americas Conference
Site: Milwaukee, Wisconsin.
Contact: Lawrence West or Brian Mennecke
Email: lwest@bus.ucf.edu or menneckeb@mail.ecu.edu
Web: http://www.isworld.org/ais.ac.99

August 14-21, 1999
19th International Cartographic Association (ICA) General Assembly and Conference
Site:Westin Hotel Ballroom
Government Conference Center, Ottawa, Ontario, Canada
Contact: ICA Ottawa 1999 (613) 992-9999
Fax: (613)995-8737
E-mail ica1999@ccrs.nrcan.gc.ca
Web: http://www.ccrs.nrcan.gc.ca/ica1999/

August 21-25, 1999
URISA 1999 Annual Conference and Exposition
Site: Navy Pier, Chicago, IL
Contact: URISA (847)824-6300
E-mail: info@urisa.org

August 29-September 2, 1999
National States Geographic Information Council (NSGIC)
1999 Annual Conference
Site**:** Hotel Monteleone, New Orleans, Louisiana
Contact: NSGIC (603)643-1600
E-mail: nsgic@aol.com
Web: http://www.nsgic.org.

September

September 8-10, 1999
1999 AR GIS Users Forum Conference
Site: Eureka Springs, AR
Contact: Phyllis Smith (501)569-8534
E-mail: pnsmith@ualr.edu

September 12-14, 1999
Information Technology Annual Conference/ Expo
Site**:**Hyatt Regency, Atlanta, Georgia
Contact: EEI Meeting Services
701 Pennsylvania Avenue, N.W., Washington, D.C. 20004-2696
Fax: (202)508-5360

September 27-29, 1999
Municipal and Environmental Applications of GIS
using ArcView
(sponsored by University of Wisconsin-Milwaukee)
Contact Non-Credit Registration Office, University of Wisconsin-Milwaukee (888)545-4700 or (414)227-3139
Fax: (888)545-4600
Web: http://www.uwm.edu/dep/.ccee

September 29-October 2, 1999
Association of Pacific Coast Geographers 1999
Site: John Ascuaga's Nugget in Sparks
Reno, NV
Contact: Gary Hausladen and Chris Exline (702)784-6999
Fax: (702)784-1058
E-mail: hausl@unr.edu
Web: http://www.csus.edu/apcg/meetings.htm

October

October 4-5, 1999
15th Annual New York State Geographic Information Systems Conference
GIS: Tools for Connecting to the Real World
Site: Holiday Inn-- Turf
Albany, New York
Contact: Carol Weinheimer or Horace Shaw (315) 470-6891
Fax: (315)470-6890
Web: http://www.esf.edu/conted/programs/nysgis99.htm

October 5-7, 1999
Trimble Worldwide Users Conference
San Jose, CA
Contact: Stacy Marshall (408)481-8465
E-mail: user_expo@trimble.com
Web: www.trimble.com/surv_map/userconf/

October 5-7, 1999
1999 Minnesota GIS/LIS Conference
Site:St.Cloud, MN
Web: http://www.mngislis.org/conf99.htm

October 8-10 1999
New England - St. Lawrence Valley Division of the
Association of American Geographers Annual Meeting
Site: University of Maine at Farmington
Contact: Cathleen McAnneny (207)778-7432
E-mail: mcanneny@maine.edu
Web: http://bondo.wsc.mass.edu/dept/garp/nestvaldepts.htm

October 6-8, 1999
International Association of Crime Analysts
1999 IACA Conference
Site: Sheraton Baltimore North Hotel
903 Dulaney Valley Road
Towson, Maryland 21204
Contact: (410)321-7400
Fax: (410)296-9534
Web: http://www.iaca.net/99con.htm

October 6-8, 1999
Street Smart and Address Savvy
Site: St. Anthony Hotel
San Antonio, TX
Web: http://www.urisa.org/address99/addressannounce.htm

October 8-9, 1999
Association of American Geographers
Middle States Division Annual Meeting
Site: West Chester University, Sykes Union
Contact: James P. (Jake) Lewandowski (610)436-2724
Fax: (610)436-2889

October 14
Geographic Information Systems in Public Works
Site: Carson Center
Carson, California
Contact: Doug Abramson (949)472-3505
Fax: (949)472-8373
E-mail: douga@rbf.com

October 17-22, 1999
ESRI Southeast Regional Users Group SERUG 99 Annual Conference
Site: Wyndham Orlando Resort, Orlando, FL
(formerly the Orlando Marriott International Drive)
Contact: J.J. Meadows (850)877-7275
Web: http://www.gis-services.com/SERUG/default.htm

October 20-22, 1999
Palm Beach- Broward County GIS Expo
Site: Sugar Sands community Center
Boca Raton, FL
E-mail: gisexpo@co.palm-beach.fl.us
Web: http://www.sfrpc.com/gisexpo/gisexpo.htm

ABOUT THE POLICE FOUNDATION

The Police Foundation is a private, independent, not-for-profit organization dedicated to supporting innovation and improvement in policing through its research, technical assistance, and communications programs. Established in 1970, the foundation has conducted seminal research in police behavior, policy, and procedure, and works to transfer to local agencies the best new information about practices for dealing effectively with a range of important police operational and administrative concerns. Motivating all of the foundation's efforts is the goal of efficient, humane policing that operates within the framework of democratic principles and the highest ideals of the nation.

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This project was supported by cooperative agreement #97-CK-WX-K004 awarded by the Office of Community Oriented Policing Services, U.S. Department of Justice. Points of view or opinions contained in this document are those of the author and do not necessarily represent the official position or policies of the U.S. Department of Justice.