

PUBLIC HEALTH GIS NEWS AND INFORMATION

May 2001 (No. 40)

Dedicated to CDC/ATSDR scientific excellence and advancement in disease control and prevention using GIS

Selected Contents: Events Calendar (pp.1-10); Outreach (pp.10-11); Special Reports and Update (pp.13-17); Website(s) of Interest



2); News from GIS Users (pp.2-10); GIS GIS Literature (pp.11-13); DHHS and Federal (pp.17-19); Final Thoughts (pp.20-23)

I. Public Health GIS (and related)Events SPECIAL CDC/ATSDR GIS LECTURES

May 16, 2001, "Address Coding and Other Georeferencing: A Primer for Effective Geocoding," by Frederick R. Broome, Chief, Geospatial Research and Standards Staff, Geography Division, U.S. Census Bureau. This program will be held 2:00-3:30 P.M. at the NCHS Auditorium, **RM1100**, Hyattsville, MD; Envision is available to offsite CDC/ATSDR locations; **See abstract this edition.** Note: Cosponsors to the NCHS Cartography and GIS Guest Lecture Series include CDC's Behavioral and Social Science Working Group (BSSWG) and Statistical Advisory Group (SAG). All NCHS GIS and mapping presentations are open to the public. [Contact: Editor, *Public Health GIS News and Information*]

[Note: Calendar events are posted as received; for a more complete listing see prior two bimonthly reports at NCHS GIS website]

☛ GIS Applications to Bioinformatics, Virginia Tech University, May 16-17, 2001, Blacksburg, VA [See: <https://www.conted.vt.edu/ssl/gisbio-reg.htm>]

☛ Second Colloquium on GIScience and Vector-Borne Disease, sponsored by the University Consortium for Geographic Information Science (UCGIS) and USGS, May 22-24, 2001, Warrenton, VA [See: <http://ucgis2.org>]

☛ International Conference on the West Nile Virus, New York Academy of Sciences, April 5-7, 2001, White Plains, NY [See: <http://www.nyas.org> and description, Section II this report]

☛ Hazardous Materials and Waste Conference, National Environmental Health Association, July 1-3, 2001, Atlanta, GA [See: www.neha.org]

☛ Twenty-First Annual ESRI International User Conference, July 9-13, 2001, San Diego, CA [See: www.esri.com/events/uc]

☛ The First National CDC Prevention Conference on Heart Disease and Stroke: "Building and Expanding Comprehensive State-Based Cardiovascular Health Programs," National Center for Chronic Disease Prevention and Health Promotion, American Heart Association and the National Heart, Lung, and Blood Institute, August 22-24, 2001, Atlanta, GA [See: <http://www.cdc.gov/nccdphp/cvd/conference/index.htm>]

☛ The Third International Conference on Oxygen/Nitrogen Radicals: Cell Injury and Disease (ONRCID 2001), September 16-19, 2001, Morgantown, WV [See: <http://www.cdc.gov/niosh/celconf.html>]

☛ 2001 Annual Training Conference: "For Analysts, By Analysts," International Association of Crime Analysts (IACA) and the Southern California Crime & Intelligence Analysts Association (SCCIA), September 18-21, 2001, Long Beach, CA [See: <http://www.IACA.net>]

☛ Geographic Information Sciences in Public Health-2001, First European Conference, September

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19-20, 2001, Sheffield, UK [See: <http://gis.sheffield.ac.uk>]

☛ 21st Annual Meeting of the North American Cartographic Information Society, October 3-6, 2001, Portland, OR [Contact: James Meacham at email jmeacham@oregon.uoregon.edu]

☛ International Conference on Objective Measurement: Objective Health Care Measurement: From Theory to Application, October 19-20, 2001, Chicago, IL [See: http://www.rasch.org/icom_2001]

☛ International Society of Exposure Analysis 2001 Conference, Exposure Analysis: An Integral Part of Disease Prevention, November 4-8, 2001, Charleston, SC [See: <http://www.musc.edu/isea2001>]

☛ Federal Committee on Survey Methodology (FCSM) Research Conference November 14-16, 2001, Arlington, VA [See: <http://www.fcsm.gov>]

☛ ESRI Health & Human Services GIS Conference, November 12-14, 2001, Washington, DC [Contact: Jennifer Harar, at voice (703) 506-9515, Ext. 8055 or email jharar@esri.com]

☛ Annual American Water Resources Conference, November 12-15, 2001, Albuquerque, NM [Contact: Michael Campana at voice (505) 277-5249 or email aquadoc@unm.edu]

☛ Fifth Annual International Crime Mapping Research Conference, December 1-4, 2001, Dallas, TX [See website: <http://www.ojp.usdoj.gov/cmrc/conferences/Call4Papers.html>]

☛ Mobilizing for a SafeUSA: A Leadership Conference to Reduce Violence and Injury in America, CDC cosponsored, December 3-5, 2001, Atlanta, GA [See: <http://www.cdc.gov/safeusa/abstracts.htm>]

II. GIS News

(Please communicate directly with colleagues referenced below on any items; *please note that the use of trade names and commercial sources that may appear in Public Health GIS News and Information is for identification only and does not imply endorsement by CDC or ATSDR*)

A. General News and Training Opportunities

1. From **Eric S. Jefferis**, Crime Mapping Research Center, National Institute of Justice: I am pleased to announce the release of a new publication by the NIJ/CMRC. In "**Mapping and Crime Analysis by Community Organizations in Hartford, Connecticut**", Tom Rich presents interesting findings on the effect of placing basic crime mapping and analysis tools directly in the hands of neighborhood-based organizations. This innovative use of mapping technology will certainly be of interest to many members of this list and we invite you to download the report from the CMRC web page at www.ojp.usdoj.gov/cmrc. [Contact: Eric, Acting Director, at email jefferis@ojp.usdoj.gov]

2. From **Susanne Stoiber**, Institute of Medicine: "**Through a Kaleidoscope: Viewing the Contributions of the Behavioral and Social Sciences to Health**," The Barbara and Jerome Grossman Symposium, May 23, 2001, at The National Academy of Sciences, 2101 Constitution Avenue, N.W., Washington, D.C. Topics include: Introduction to the subject; What we know: the tantalizing potential; Interventions; Why exploiting this knowledge will be essential to achieving health improvements in the 21st century; Priority investments necessary to support rapid advances in the behavioral and social sciences; Understanding the mechanisms through which social and behavioral factors influence health: need for research tools, etc.; Investments in longitudinal surveys, databases, advanced statistical research and computation technology; Investments in research and Interventions at the community level; and Reactor panel for research funders [Contact: Susanne, Executive Director, at email sstoiber@nas.edu]

3. From **Richard E. Hoskins**, Washington State Department of Health (2001 Summer Institute for Public Health Practice: **Applying Geographic Information Systems to Define and Solve Public Health Problems**, June 11-15, 2001): This course will emphasize instruction in how to use GIS in the real world of public health. The emphasis is on "how to think with maps" and how a public health practitioner can think geographically and spatially. We will show you how to do some statistical modeling, simple statistical descriptions of spatial data as well as make pretty maps. With software, a public health practitioner with no specialized training can create geographic analysis and effective maps. Relying primarily on experience and common sense, the major obstacles for public health practitioners to use GIS in their everyday work are gone. Students are strongly encourage to have had one or more courses in statistics and epidemiology as well experience using a statistical software package such as SAS, SPLUS, SPSS, SYSTAT, Stata, or EpiInfo. This and other courses offered at the University of Washington, through the Northwest Center for Public Health Practice, are available at <http://healthlinks.washington.edu/nwcp hp>. [Contact: Dick at email richard.hoskins@doh.wa.gov]

4. From **Erwin J. Villiger**, George Mason University (GIS Certificate Program): For the past couple of years George Mason University has been offering a **Professional Certificate in GIS**. This program was created by Susan Jampoler, Executive Director, the University Consortium for Geographic Information Science (UCGIS) and President, GeoKnowledge, Inc. It consists of a series of short courses covering some of the fundamental issues in GIS as well as an introduction to prominent GIS software packages. The program emphasizes: comprehensive instruction on all aspects of GIS technology; in-depth training in database design and development; integration of GIS into management information systems; application of GIS as an

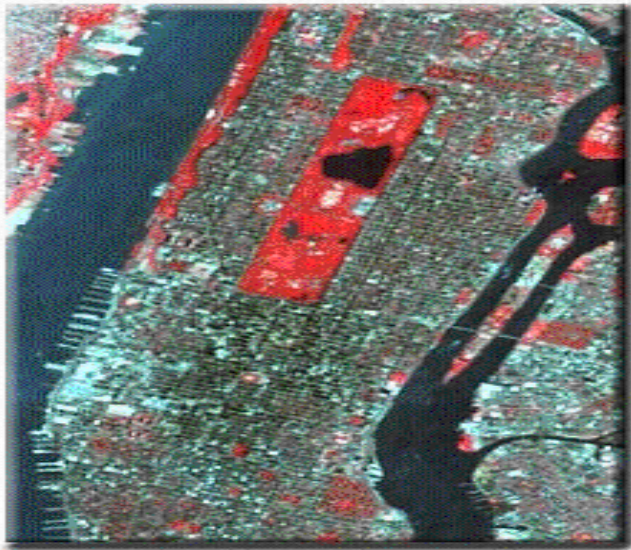
analytical and decision support tool; and laboratory exercises using a variety of commercial GIS packages. Susan coordinates the GIS certificate program and teaches Introduction to GIS, Components of Geographic Information Systems and some Introduction to ArcView classes. A new sequence of courses will be starting in May. More information on the program can be found at <http://gis.ocpe.gmu.edu>. [Source: Erwin at email evillige@osf1.gmu.edu]

Editor: There are other professional certificate programs available. For example, Rutgers University offers a **Professional Certificate Program in Geomatics**. GEOMATICS is a term used to describe the related fields of Geographic Information Systems (GIS), Global Positioning Systems (GPS), remote sensing and photogrammetry. In many cases these disciplines have been treated as separate fields; however, the related techniques and applications achieve their greatest power when used in combination with one another. [See: <http://www.crssa.rutgers.edu/profcert>]

5. Editor: The **NYCMap** (pronounced "nice map") is an interactive database, a quilt of aerial photographs layered with geographic information, all of it painstakingly assembled using complex algorithms and simple shoe leather. It spans almost 35 miles-183,421.006 feet, actually- but is accurate to within 12 inches. At the moment, impressive as it is, the NYCMap is more a framework than anything else, a composite photograph of the entire city aligned with a precisely corresponding map of streets, alleys, driveways, curbs, tracks, viaducts and runways; buildings, bridges, tunnels, towers, piers, antennas, subway entrances, emergency exits and ventilation grates; cemeteries, parks, beaches and wetlands; water bodies and topographic contours. On this framework can be superimposed as many layers of information as there are sources of geographic data: water mains, sewers and underground utilities; census tracts; tax lots, property and ownership records; even water depth,

based on bathymetric measurements by the Army Corps of Engineers.

From a menu on screen, viewers can choose which layers they want to see, separately or superimposed. Some layers will be confidential, however. "You don't want to let everybody know the location of all the valves for gas mains," Mr. Dobrin, Commissioner of the New York City Department of Information Technology and Telecommunications, said. That includes potential terrorists. Nonetheless, he said, the idea is to open the NYCMAP to wide use. "It's important that the data be made available to businesses and residents," Mr. Dobrin said. "As we build out the functions, with your browser alone you'll be able to analyze property values and census data. Government is something you'll do at home or from your business." It's use will be free to the public.



Hunter College, part of the City University of New York, is involved in the creation and maintenance of the NYCMAP through its Center for the Analysis and Research of Spatial Information, directed by Dr. Sean C. Ahearn. [Source: Excerpted from "Hey, New York. Nice Map. Care to Give It a Try?," by David W. Dunlap, February 15, 2001; see <http://www.nytimes.com/2001/02/15/nyregion/15NYCE.html>]

6. From **Rachel Boba**, Police Foundation: I would like to announce the posting of another report on crime analysis mapping from the Police Foundation's Crime Mapping Laboratory (CML). The CML through funding from the Office of Community Oriented Policing Services (COPS) has developed a report entitled, "**Manual of Crime Analysis Map Production.**" Through discussion and comprehensive examples, this manual provides guidelines for introductory-level crime analysis mapping for use in a law enforcement environment. To produce accurate and effective crime maps, there are three initial factors to consider: (1) the purpose of the map, (2) the audience of the map, and (3) the types of data to include in the map. These considerations often dictate the type of map that will be used and the method of presentation. This manual begins with a brief examination of these initial factors, follows with a discussion of the types of maps and design elements, and concludes with five comprehensive, practical examples that illustrate the process of crime analysis mapping. This report is available in PDF format on the COPS Web site at http://www.usdoj.gov/cops/cp_resources/pubs_prod/s45.htm (sixth report down). [Contact: Rachel, Director, Crime Mapping Laboratory, at email rboba@policefoundation.org]

B. Department of Health and Human Services Agency for Health Care Research and Quality
7. The International Conference on Objective Measurement: Focus on Health Care will be hosted by the Agency for Healthcare Research and Quality (AHRQ), the Department of Veterans Affairs (VA), Health Services Research and Development Service, the Institute for Objective Measurement (IOM), and the University of Illinois at Chicago (UIC), on October 19-20, 2001. One of the main conference goals is to provide educational opportunities to maintain and increase the knowledge and skills of measurement professionals and health care practitioners as technology advances. [See Announcements, Section I]

Agency for Toxic Substances and Disease Registry

8. The Winter 2001 edition of ATSDR's newsletter *Hazardous Substances & Public Health* is devoted to ATSDR's **Nationwide Environmental Health Nursing Initiative**, a project begun seven years ago and designed to increase the competencies of nurses in the area of environmental nursing and health. A variety of activities have evolved from this national initiative including the Howard University (Washington, D.C.) *Environmental Health and Nursing* curriculum, a nursing listserv, and a Public Health Training Network Satellite Broadcast this past summer ("Environmental Health: A Nursing Opportunity"). The broadcast may be viewed online at <http://www.cdc.gov/phtn/envhealth/nursing.htm> or obtained as a videotape from email ATSDR-nurse@cdc.gov. [For more details about the Mississippi Delta Project, a partnership between ATSDR, The Howard University College of Nursing and the Minority Health Professions Foundation, see Section II.C. this edition]

Centers for Disease Control and Prevention

9. **International Conference on the West Nile Virus**, April 5-7, 2001, White Plains, New York [a New York Academy of Sciences conference co-sponsored with the New York State Department of Health, New York City Department of Health, and Centers for Disease Control and Prevention (CDC)]. This conference was designed to review and update the state of knowledge on arboviruses in general and the West Nile Virus in particular. The conference provided individuals and agencies working on the detection, surveillance, control, treatment, management and other aspects of the WNV an opportunity to discuss their findings from the Summer of 2000 and earlier. The meeting's primary goal was to enhance understanding of the problems associated with WNV and develop more effective and better-coordinated efforts to address future concerns. Session themes included: historical overview; epidemiology, distribution and spread of

the northeastern US outbreak, 1999 and 2000; surveillance mechanisms: what are we looking for and how do we find it?; Human and veterinary pathology; viral and vector biology; Panel discussions on laboratory testing; and interventions and strategies for dealing with WNV in 2001; and other topics [See: <http://www.nyas.org>]

10. **"Using PRIZM Lifestyle Geodemographic Segmentation to Profile Low Fruit and Vegetable Consumption in California,"** was held May 2, 2001, sponsored by the Division of Nutrition and Physical Activity, NCCDPHP. Based in San Diego, California, Claritas, Inc. is a worldwide provider of precision marketing solutions developed, in part, through intricate customer segmentation systems and other such marketing tools. Through contractual agreements, CDC collaborates with Claritas, Inc., in developing profiles of various target audiences using census demographics and lifestyle behavioral data. These profiles are used in conjunction with syndicated media and consumer surveys to determine the best ways to reach target audiences. After an overview of the PRIZM segmentation system and description of its lifestyle clusters, Claritas presented findings from a recently completed PRIZM Target Analysis profiling low fruit and vegetable consumption groups in California using state BRFSS data. Additional examples of how the target segments have previously been used at CDC were presented, with particular emphasis on the risk areas of poor nutrition and physical inactivity. [For more information contact Bill Pollard at email bdp4@cdc.gov]

11. CDC and Emory University's Rollins School of Public Health will co-sponsor a course, **"Introduction to Public Health Surveillance,"** June 18-22, 2001, in Atlanta, GA. The course is designed for state and local public health professionals. The course will provide practicing public health professionals with the theoretical and practical tools necessary to design, implement, and

evaluate effective surveillance programs. Topics include overview and history of surveillance systems; planning considerations; sources and collection of data; analysis, interpretation, and communication of data; surveillance systems technology; ethics and legalities; state and local concerns; and future considerations. There is a tuition charge. Deadline for application is May 4, 2001.

12. GIS speaker sought for annual *Assessment Initiative/NAPHSIS Leadership Institute Joint Conference*, Sept. 12-14, in Minneapolis, MN. If you have experience in use of GIS to support public health surveillance/Healthy People 2010 activities at the state level and broad knowledge of practical, low-cost GIS resources currently available to state health departments, please consider sharing your expertise at our conference. The general audience will consist of state NAPHSIS members, epidemiologists, and other state health department staff involved in public health assessment, data collection, analysis, and reporting. We are most interested in a presentation highlighting 3-4 specific, low-cost/easy-access GIS resources useful for state health departments in a public health surveillance capacity. Sharing examples of ways in which states have successfully used these systems is also highly desirable. [Anyone interested in potentially being a presenter may contact: Pat Schumacher, CDC's Epidemiology Program Office at voice (770) 488-8375 or email prs5@cdc.gov]

13. The Third International Conference on Oxygen/Nitrogen Radicals: Cell Injury and Disease, September 16-19, 2001, Morgantown, WV (sponsored by Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health, West Virginia University School of Medicine/Office of Continuing Medical Education, West Virginia University School of Medicine/Department of Pathology/Research and Graduate Studies, Department of Labor/

Occupational Safety & Health Administration and the U.S. Environmental Protection Agency). The first conference in this series was held in Morgantown in 1993 and the second was held in Durham, North Carolina in 1997. The third conference in 2001 promises to expand on the success of those past meetings allowing scientists and clinicians to interact and exchange the most recent information on new and emerging advances concerning mechanisms of disease development and its prevention. Invited speakers will provide critical discussion and debate concerning state-of-the-art approaches and current hypotheses for the role of oxidative stress in disease initiation and progression. Oral and poster presentations in seven categories will allow debate and discussions in many aspects of current research. Topics covered include Alzheimer's disease, atherosclerosis, diabetes, disorders of the eye, infectious diseases, myocardial diseases, neoplasia, neuro-muscular disorders, nutritional disorders, Parkinson's disease, pulmonary disorders, rheumatoid arthritis, and skin disorders. Proceedings of the conference will be published in *Environmental Health Perspectives*. [See: <http://www.cdc.gov/niosh/celconfa.html>]

14. CDC and Emory University's Rollins School of Public Health will co-sponsor the "International Course in Applied Epidemiology," September 24-October 19, 2001, in Atlanta, GA. This basic course in epidemiology is directed at public health professionals from countries other than the United States. Course content includes presentations and discussions of epidemiologic principles, basic statistical analysis, public health surveillance, field investigations, surveys and sampling, and discussions of the epidemiologic aspects of current major public health problems in international health. Included are small group discussions of epidemiologic case exercises based on field investigations. Participants are encouraged to give a short presentation reviewing some epidemiologic data from their own country. Computer training

using Epi Info 2000 (Windows® version), a software program developed at CDC and the World Health Organization for epidemiologists, is included. [See: <http://www.sph.emory.edu/EPICOURSES> or e-mail pvaleri@sph.emory.edu]

15. From **Iris Shimizu**, NCHS: Now posted on the Washington Statistical Society (WSS) Methodology Section web pages is the October 2000 tutorial, "**Data Presentation-A Guide to Good Graphics and Tables**," by Marianne W. Zawitz, Bureau of Justice Statistics. Available for downloading are her slides and handouts as follows: slide presentation on graphics entitled "Data Presentation: A Guide To Good Graphics"; handout entitled "Good Graphics: Simplicity of Design and Complexity of Data"; slide presentation on tables entitled "Data Presentation: A Guide To Good Tables"; and handout entitled "Good Tables: Numbers Have Architecture." [See: Methodology Section at <http://www.science.gmu.edu/~wss/methods/index.html>]

16. From **Alvan Zarate**, NCHS: Last week, the Government Accounting Office (GAO) issued a report that has received a good deal of attention. A number of NCHS staff contributed to its development. The report, "**Record Linkage and Privacy: Issues in Federal Research and Statistical Information**," focuses on linkage projects conducted under federal auspices that produce new research or statistical information. It describes (1) how record linkage can create new research and statistical information; (2) why linkage heightens certain privacy issues, (3) techniques addressing privacy issues, and (4) how data stewardship might be enhanced. This report should prove valuable in bringing together the practices and restrictions involved in making the best use of the information we gather. [See the full report at <http://www.gao.gov/cgi-bin/getrpt?gao-01-126sphttp>]

17. Editor: The Sixth Workshop on Case Studies of Bayesian Statistics will take place on September 28-

29, 2001, at Carnegie Mellon University, Pittsburgh, PA. The Workshop will feature in-depth presentations and discussions of substantial applications of Bayesian statistics to problems in science and technology, and poster presentations of contributed papers on applied Bayesian work. In conjunction with the workshop, the Department of Statistics' Sixth Morris H DeGroot memorial lecture will be delivered by Sir David Cox. [See: <http://lib.stat.cmu.edu/bayesworkshop/2001/Bayes01.html>]

National Institutes of Health

18. From **Linda Anderson**, National Cancer Institute (Round Two of Applications Sought for Geographic-based Research in Cancer Control and Epidemiology): Applications are invited once again that use the Atlas of Cancer Mortality in the United States, 1950-1994 as a catalyst for research in cancer etiology and control. Two Program Announcements (PAS) were issued last year that invited investigator-initiated R01 and R03 (small grant) applications, and offered two dates for receipt of applications. The second and final opportunity to apply for research funding under these PASs is approaching: Letters of intent are due June 14, and applications are due July 19, 2001.

Further epidemiologic research is needed to identify the reasons for the geographic variation of specific cancers, including the clustering of areas with high or low incidence and/or mortality rates. In addition, Geographic Information Systems (GIS) provide new tools to explore these patterns and for use by cancer surveillance and control programs. NCI wishes to stimulate research in three areas to encourage researchers to use the Atlas to speed the process of scientific discovery and application. These areas are: (1) epidemiologic research to study determinants of the geographic patterns uncovered by the Atlas, (2) use of GIS for cancer research in response to the Atlas, and (3) methodologic GIS research needed to accomplish such research. The Atlas is available at <http://www.nci.nih.gov/atlas>.

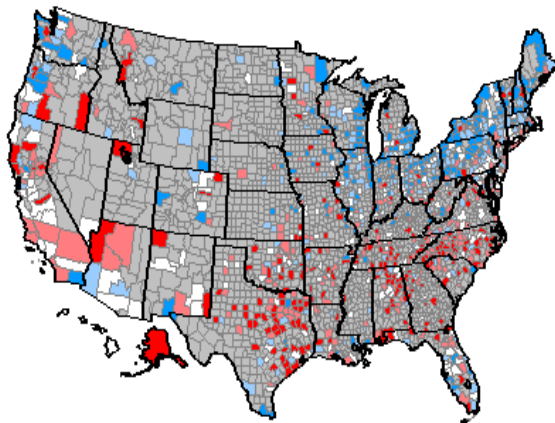
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For more information, refer to the PASs that appeared in the NIH Guide for Grants and Contracts, July 14, 2000: <http://grants.nih.gov/grants/guide/pa-files/PAS-00-120.html>, and <http://grants.nih.gov/grants/guide/pa-files/PAS-00-121.html>. NCI has set aside about \$3 million in total costs, for the PASs combined, for the first year of funding this second round of applications, subject to availability of funds. [Contact: Burdette (Bud) Erickson, Jr., Division of Cancer Control and Population Sciences (DCCPS), at email berickso@mail.nih.gov]

19. From **Dan Grauman**, National Cancer Institute: NCI has just released the *Cancer Mortality Maps & Graphs* Web site (<http://www.nci.nih.gov/atlasplus>), which is an enhancement to the Atlas of Cancer Mortality in the United States, 1950-94 Web site, released in December 1999. The new site, which has been extensively tested for usability, is more easily navigable than its predecessor. The data download interface is easily accessible from the site's Home Page. Some of the new data available on the site include: Rates for blacks at the county level from 1970 onward; 5-year rates for the time periods 1950-54 through 1990-94; Rates for the 4 age groups, 0-



19, 20-49, 50-74, and 75+; and Boundary files for ArcView, AtlasPro, and MapInfo mapping software users.

One of the exciting new features is the interactive cancer mortality charts and graphs created for NCI by Corda Technologies of Lindon, UT (<http://www.corda.com>). These charts are created “on the fly” over the Web in seconds and come in the following file formats: GIF (Graphic Interchange Format), which can easily be copied and pasted or saved; PDF (Portable Document Format), which allows the user to view the document the way it actually looks, and which also has search, copy, paste, and zoom capabilities; and SVG (Scalable Vector Graphics), which is like PDF, but also includes pop-up text boxes within the document. SVG files be viewed by downloading a free SVG viewer from Adobe (<http://www.adobe.com/svg/viewer/install>)

Another unique feature, introduced nationally by Corda Technologies on April 16), is the [D]-Link, which makes all the graphs and charts on the site accessible to the visually-impaired and blind, through text files, which are dynamically generated at the same time that the graphs are, and are then read to the visually-impaired user by a screen reader. This feature brings the *Cancer Mortality Maps & Graphs* Web site into compliance with Section 508 of the Rehabilitation Act, which requires all Federal Web sites to have this capability by June 21, 2001.

The maps available on the current site have also been greatly enhanced by MapInfo Corporation of Troy, NY (<http://www.mapinfo.com>). The user can now generate multiple maps for the entire U.S. or a specific region and animate the maps. Maps can be generated using individual scales or a common scale across all maps. The example shown here is user created for county mortality rates, melanoma of the skin, white females, 1950-94. The “Atlas of Cancer Mortality in the United States, 1950-94”, which was the centerpiece of the original Web site, is now a link off the Home Page. It has been greatly improved, offering the user more intuitive navigation, and text, maps, and figures in several formats. Links to related U.S. and international Web

sites are also available on the site. [Contact: Dan at email dan_grauman@nih.gov]

C. Historical Black Colleges and Universities (HBCUs) and Other Minority Program Activities

20. Mississippi Delta Project: Education and Preparation of Nurses (Project Description): The Mississippi Delta Project is a response, in part, to Executive Order 128908 (February 11, 1994), which outlines federal action to address environmental justice in minority and low income populations. Among the areas of the country most threatened by indiscriminate prevalence of environmental hazards are the 219 counties within the seven states comprising the Mississippi Delta Region (MDR); Arkansas, Illinois, Kentucky, Louisiana, Mississippi, Missouri, and Tennessee, an area rich in agricultural production, corporate farming, petroleum processing and other related industries. These counties have disproportionately high mortality and morbidity rates for diseases linked to a variety of excess hazardous chemicals found in the Mississippi Delta. The Minority Health Professions Foundation (MHPF) partnered with the Centers for Disease Control and Prevention (CDC) and the Agency for Toxic Substances and Disease Registry (ATSDR) to address concern for the effects of environmental pollutants on the health of residents of the Delta and the role that health professionals might play in addressing these concerns.

In 1994, Howard University College of Nursing entered into an agreement with MHPF to spearhead a nursing initiative to increase a focus on environmental health, with particular attention to the MDR. Nursing, the largest of the health professions, is well positioned as a primary conduit through which prevention and health promotion messages and strategies can be conveyed, interventions can be targeted, surveillance and case finding can be achieved, and communities empowered to organized to address current and potential threats. The curriculum consists of six modules: environmental health of the Mississippi Delta; the role of culture,

poverty, race and economic development on environmental health; toxicology- major substances affecting the data; assessing individual, family, and community responses to toxic substances; environmental justice; and community perspectives- organization, empowerment, partnering and education [Sources: Howard University Division of Nursing at <http://www.nursing.howard.edu> and *Hazardous Substances & Public Health*, Vol. 11, No. 1, Winter 2001, at <http://atsdr1.atsdr.cdc.gov/HEC/hsphhome.html>]

21. From Ronald Abeles, NIH: Researchers conducting behavioral and social sciences research often have questions about the applicability of their research to the Federal regulations protecting human subjects (research participants). Basic questions arise including even "Am I conducting research that involves human subjects?" This document addresses many issues including: The definition of human subjects; What you need to do to comply with Federal requirements if your research involves human subjects; The role of your Institutional Review Board (IRB) and the types of review it conducts; How to decide if your research falls into an exemption category and does not require IRB approval; Informed consent requirements; Privacy and confidentiality including applying for a certificate of confidentiality; Key points when applying for federal funding; and Additional resources. The document is posted at <http://obsr.od.nih.gov/IRB/protect.htm> [Contact: Ron, Office of the Director, at email AbelesR@OD.NIH.GOV]

D. Other Related Agency or Business GIS News

22. From Mark E. Reichardt, Open GIS Consortium, Inc. (OGC Seeks Input for Geographic Web Services Testbeds): The Open GIS Consortium, Inc (OGC) announces the release of a Request for Technology (RFT) for a major Web Services Initiative. The RFT is available on the OGC website at www.opengis.org. This set of six planned

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activities will extend OpenGIS standards, enabling freer access to web services that process geographic information. The Web Services Initiative is part of OGC's Interoperability Program, a global, collaborative, hands-on engineering and testing program that delivers proven candidate specifications into OGC's OpenGIS Specification Development Program. In OGC's Interoperability Initiatives, international teams of technology providers work together to solve specific geoprocessing interoperability problems posed by the Initiative's sponsors. The Web Services Initiative will build on the results of previous OGC testbeds and pilot projects. [Contact: Mark, Director of Marketing and Public Sector Programs, at email mreichardt@opengis.org]

23. From **ESRI**, Redlands CA: ESRI is pleased to announce that **ArcView 8.1** is now shipping. ArcView 8.1 is the most significant release in the history of ArcView software. Using feedback and requests from users, ESRI has built ArcView 8.1 with a host of improvements including on-the-fly projection, improved annotation management, and exceptional map production tools. Visit the ArcView 8.1 page at <http://www.esri.com/software/arcgis/arcview/index.html>. For more information, including new features, licensing options, system requirements, and frequently asked questions see <http://www.esri.com/extensions>.

24. Space Imaging's **IKONOS Satellite is Imaging Entire Country of Jamaica**. Space Imaging has signed an agreement with the government of Jamaica to take 1-meter, high resolution satellite images of the entire country. The satellite imagery would be used by all of Jamaica's land-related and mapping agencies. The project, which is worth more than a million dollars, will be the first time an entire country has been commercially imaged with 1-meter satellite imagery. Shown here is the Montego Bay image. According to the Jamaican government, the last color aerial images assembled for the entire

4,411 square mile island, which is slightly smaller than Connecticut, was in 1991. The last comprehensive maps were made 20 years ago. Now, by using current satellite imagery, government agencies will join together to assemble information for many applications such as urban and cadastral mapping, environment, transmission systems design, telecommunications, farming, housing, mining, real estate, public safety, emergency response and population/demographic assessment. The project includes the delivery of 1-meter resolution precision



pan-sharpened as well as 4-meter multi-spectral imagery for the entire country. [See: http://newswire.spaceimaging.com/images/features/Jamaica/montego_bay.jpg]

III. GIS Outreach

[Editor: All requests for Public Health GIS User Group assistance are welcomed; readers are encouraged to respond directly to colleagues]

☛ From **Mark Schneider**, Kentucky Injury Prevention and Research Center, University of Kentucky: Are any Public Health GIS Users aware of any websites that map traffic incidences with geocoding? [Contact: Mark, Director of Technology, at email mark1@pop.uky.edu]

☞ From **Tom Bryant**, Duval County Public Health Department, FL: I will be developing a data center for the Duval County Public Health Department in the upcoming months. I am searching for sites and info to assist me in this endeavor. Additionally, can you recommend a good comprehensive GIS training course for me. I have a rudimentary understanding of GIS with a background in research, program evaluation, statistics, and database development. I do not know the GIS software packages well. My health department uses ArcView. Also, is there other training or books you would recommend? [Contact: Tom at email Thomas_Bryant@doh.state.fl.us]

☞ From **Rich Ann Roche**, Texas State Department of Health: I'm in the midst of a potential reorganization of our GIS unit. I've been asked if other state health departments have centralized GIS units, where on the department organizational chart are they located-information systems, epi, etc? I know people at a couple of other state health departments and can speak to their situation, but I don't have time to collect data on more states. Do other Public Health GIS Users have information on this topic? Even a guestimate as to how many state health departments are using GIS would be helpful. I'd appreciate any feedback. [Contact: Rich Ann at email richann.roche@tdh.state.tx.us]

☞ From **Linda Balluz**, CDC: I have a request from a person at the National Center for Atmospheric Research (NCAR) about graphic, spatial representations of populations vulnerable to extreme weather. For example, the CDC has graphics of maps from which you can see globally where the areas of malaria risk exist, among others. Does anyone know if anything like that exists for populations vulnerable to extreme weather events? [Contact: Lina, National Center for Environmental Health, at email lballuz@cdc.gov]

Technical Talk: GML 2 On the Way to Adoption

Open GIS Consortium, Inc. (OGC) announces that the Geography Markup Language (GML) Editing Committee completed its work on the **GML 2.0 Recommendation Paper**. This action paves the way for balloting to make the paper an official OpenGIS Implementation Specification. The recommendation paper is available at <http://www.opengis.org>. GML, a structure for storing and sharing geographic data, is an encoding of the OGC Simple Feature geometry model using Extensible Markup Language (XML). Geographic data stored in GML includes both the geometry (location) and descriptive attributes of map features. GML 2.0 significantly expands the capabilities of GML 1.0. GML 2.0 is based on XML Schema, and enables the encoding of complex features and feature associations. Part of the allure of GML is that software vendors who choose to support it will be able to access data from any source that publishes data expressed in GML, and then manage, display and use this data as they like. OGC's vision is "the complete integration of geospatial data and geoprocessing resources into mainstream computing." [Contact: **Mark E. Reichardt**, Open GIS Consortium, Inc, at voice (301) 840-1361 or email mreichardt@opengis.org]

IV. Public Health and GIS Literature

Emerging Infectious Diseases

Emerging Infectious Diseases is indexed in Index Medicus/Medline, Current Contents, Exerpta Medica, and other databases. Emerging Infectious Diseases is part of CDC's plan for combating emerging infectious diseases; one of the main goals of CDC's plan is to enhance communication of public health information about emerging diseases so that prevention measures can be implemented without delay. The online journal is located at <http://www.cdc.gov/ncidod/EID/index.htm>. The **March-April 2001** issue of CDC's journal, Emerging Infectious Diseases (EID), is now available at website <http://www.cdc.gov/ncidod/eid/upcoming.htm>. This issue contains proceedings from the 4th Decennial International Conference on

Nosocomial and Healthcare-Associated Infections. Selected articles include: About the Fourth Decennial International Conference; Nosocomial *M. tuberculosis* in International Settings; Pediatric Viral Respiratory Infections; Tuberculosis Control in the 21st Century; Waterborne Infections in Health-Care Settings; Applying Economic Principles to Health Care; Economics of Antimicrobial Resistance; Cost-Effective Infection Control; Surveillance Data Feedback for Infection Prevention; Clinical Microbiology in Developing Countries; Molecular Approaches to Infectious Diseases; Infection Control Through Facility Design; Managed Health Care and Associated Infections?; and Infection Prevention: Beyond 2000.

Morbidity and Mortality Weekly Report

Selected articles from CDC's ***Morbidity and Mortality Weekly Report (MMWR)***: [Readers may subscribe to MMWR and other CDC reports, without cost, at <http://www.cdc.gov/subscribe.html> and access MMWR online at <http://www.cdc.gov/mmwr>]- Surveillance Summaries, Vol. **50**, Number **SS-2**- *Surveillance for Fatal and Nonfatal Firearm-Related Injuries-United States, 1993-1998; Appendix Standard Error Tables and Formulas for Fatal and Nonfatal Firearm-Related Injuries Recommendations and Reports*, Vol. 50, No. RR-4 *Prevention and Control of Influenza: Recommendations of the Advisory Committee on Immunization Practices (ACIP)*; Vol. **50**, No. **15**- 50 Years of the Epidemic Intelligence Service; Mortality During a Famine-Gode District, Ethiopia, July 2000; Fatal and Severe Hepatitis Associated With Rifampin and Pyrazinamide for the Treatment of Latent Tuberculosis Infection-New York and Georgia, 2000; Cluster of Tuberculosis Cases Among Exotic Dancers and Their Close Contacts-Kansas, 1994-2000; Outbreaks of Escherichia coli O157:H7 Infections Among Children Associated With Farm Visits-Pennsylvania and Washington, 2000; Surveillance Summaries, Vol. **50**, No. **SS-1**: *Malaria Surveillance-United States, 1996; Malaria*

Surveillance-United States, 1997; Vol. **50**, No. **14**- Prevalence of Risk Behaviors for HIV Infection Among Adults-United States, 1997; Human West Nile Virus Surveillance-Connecticut, New Jersey, and New York, 2000; Progress Toward Poliomyelitis and Dracunculiasis Eradication-Sudan, 1999-2000; Notice to Readers: Revision of Guidelines for Surveillance, Prevention, and Control of West Nile Virus Infection; Vol. **50**, No. **13**- Preliminary FoodNet Data on the Incidence of Foodborne Illnesses-Selected Sites, United States, 2000; Occupational and Take-Home Lead Poisoning Associated With Restoring Chemically Stripped Furniture-California, 1998; Notice to Readers: Satellite Broadcast on a Public Health Response to Asthma; Notice to Readers: Epi Info 2000: A Course for Developers of Public Health Information Systems; Vol. **50**, No. **12**- Public Health Dispatch: Update: Assessment of Risk for Meningococcal Disease Associated With the Hajj 2001; Apparent Global Interruption of Wild Poliovirus Type 2 Transmission; Severe Malnutrition Among Young Children-Georgia, January 1997-June 1999; Notice to Readers: Publication of Surgeon General's Report on Smoking and Health; Vol. **50**, No. **11**- World TB Day-March 24, 2001; Tuberculosis Treatment Interruptions-Ivanovo Oblast, Russian Federation, 1999; Evaluation of a Directly Observed Therapy Short-Course Strategy for Treating Tuberculosis-Orel Oblast, Russian Federation, 1999-2000; Influenza Activity-United States, 2000-01 Season; Notice to Readers: World Water Day-March 22, 2001; Vol. **50**, No. **10**- Lyme Disease-United States, 1999; Notice to Readers: Update on the Supply of Tetanus and Diphtheria Toxoids and of Diphtheria and Tetanus Toxoids and Acellular Pertussis Vaccine; Vol. **50**, No. **9**- National Colorectal Cancer Awareness Month-March 2001; Trends in Screening for Colorectal Cancer-United States, 1997 and 1999; Physical Activity Trends-United States, 1990-1998; Vol. **50**, No. **8**- Blood and Hair Mercury Levels in Young Children and Women of Childbearing Age-United States, 1999; Progress Toward Poliomyelitis

Eradication-Afghanistan, 1999-2000; Public Health Dispatch: Outbreak of Poliomyelitis-Dominican Republic and Haiti, 2000-2001; Notice to Readers: International Course in Applied Epidemiology; Notice to Readers: Introduction to Public Health Surveillance Course.

V. Other Related Presentations

NCHS Cartography and GIS Guest Lecture Series

MAY 16, 2001, "Address Coding and Other Georeferencing: A Primer for Effective Geocoding," by Frederick R. Broome, Chief, Geospatial Research and Standards Staff, Geography Division, U.S. Census Bureau. This The program will be held at the NCHS Auditorium, 2:00-3:30 P.M., in RM. 1100, Hyattsville, MD. Abstract: Perhaps the most important tasks in making any spatially referenced data useful to users are associated with geocoding. Geocoding is all about location. Typical concerns of public health departments and researchers are: Where are the people in need of health services?; Where are the existing health service facilities?; Who is in a specific 'at risk' location or area?; What is the proximity of cases to potential sources of exposure?; What are the potential health effects of the construction of new Interstate highways on the access of a community to medical service? These and many more questions rely on location information for the answer. Unfortunately, few databases in the health field are constructed to allow for location-based queries. Fewer still provide effective means to allow for the 'mining' of the data for epidemiological and other health studies while maintaining confidentiality.

This presentation will discuss how to turn addresses into coordinates and use them to answer location-based questions. The presentation will be in two parts. First, the general principles of geocoding will be described, and include some readily available tools for geocoding. Then, examples of how geocoded address information can be used will be

demonstrated. Emphasis will be on geocoding as a means to allow the 'mining' of individual data records for research studies while maintaining confidentiality. Discussion will include cost-benefit considerations, such as the effect of 'approximate' locations on a location-based study. [**Editor:** This presentation will prove invaluable to many Public Health GIS Users who want to startup or improve existing geocoding capabilities. Fred Broome is a national experts in this field. He is one of the architects of TIGER, teaches university courses on the topic and serves as a technical consultant to many government agencies in developing geocoding strategies. Fred also will devote time following the formal presentation to any geocoding concerns you may wish to bring to his attention. *I encourage everyone involved in GIS activities to join us for this special program*]

VI. Related Census, DHHS, FGDC and Other Federal Developments

Update: West Nile Activities

Centers for Disease Control and Prevention

From budget to statistics, CDC works daily to improve the fight against West Nile virus. It joins forces with state and local health departments, various federal agencies, and international experts. In 2000, West Nile virus has been identified in 188 WNV-infected birds from 34 counties in four northeastern states. These include 128 birds from New York, 54 from New Jersey, four from Massachusetts, and two from Connecticut. WNV positive pools of mosquitos have also been detected in New York state and Connecticut. This monitoring effort has provided public health officials an early warning and hint of the potential for transmission of WNV to humans in the surveillance area. This warning has allowed careful targeting of prevention and protection efforts to reduce the risk of human infection from West Nile virus. CDC continues its efforts to reduce the risk of human WNV infection. CDC works with other federal agencies to support

local and state health departments as they implement recommended outbreak prevention and guidance plans. CDC works with national and international experts from many disciplines to combat West Nile virus.

Summer 2000: Systematically fighting a new threat. (1) To date, CDC has awarded 44 states, 4 cities, and the District of Columbia grants totaling nearly \$7 million. The grants support state and local health departments in their efforts to track West Nile virus and other mosquito borne viruses. Grants have been extended to states beyond the Eastern seaboard, into the Midwest, and across the West coast. The states include Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming. The cities include Houston, Texas, Los Angeles, Co., California, New York City, New York, and Philadelphia, Pennsylvania. (2) CDC worked with the New York City health department to identify the first human case of West Nile virus in 2000, a 78-year old man from Staten Island, New York. (3) CDC continues to lead the West Nile virus coordination committee. This committee is comprised of representatives from the Department of Health and Human Services, including the CDC and the National Institutes of Health; the Department of Interior, including the U.S. Geological Survey and the National Park Service; the Department of Agriculture's Animal and Plant Health Inspection Service; and the Environmental Protection Agency. (4) CDC provides ongoing leadership through weekly conference calls with state and local health departments, as well as other federal agencies to discuss monitoring efforts and to share information

on the control and prevention work being conducted against West Nile. (5) CDC continues to supply technical support and control and guidance to the states. A multi-agency team headed by CDC continues to analyze information on possible ways West Nile entered the Western Hemisphere. (6) CDC maintains a West Nile conference Web site for public health professionals involved in the West Nile prevention and control efforts that gives automatic access to updated findings across a series of scientific disciplines. [National guidelines for surveillance, prevention and control of West Nile virus, "*Epidemic/Epizootic West Nile Virus in the United States: Guidelines for Surveillance, Prevention, and Control*," emphasize that monitoring for the West Nile virus should be a high priority and offer guidance on the timing of surveillance based on geographic regions in the United States. Guidelines are made available at: http://www.cdc.gov/ncidod/dvbid/arbovirus_pubs.htm]

Summary Reports to be Produced by CDC and the National Atlas (U. S. Geological Survey)

A working list of basic summary reports (maps, tables, and graphs) includes data contained in the master database of numerator and denominator data (i.e., data that have been approved and released by the states). These reports are generated automatically each week. Maps are generated by USGS/National Atlas Project staff and available on the National Atlas web site. The National Atlas is a U. S. government-wide project directed by USGS. Further information is available at <http://www.nationalatlas.gov/federal.html>. The basic set of dynamic maps and corresponding graphs and tables are available on the National Atlas web site by each Friday evening. Additional maps are available by the following Tuesday evening.

Federal Geographic Data Committee (FGDC)

[*The Federal Geographic Data Committee (FGDC) is an interagency committee, organized in 1990 under OMB Circular A-16, that promotes the coordinated use, sharing, and dissemination of geospatial data on a national basis. The FGDC is composed of*

representatives from seventeen Cabinet level and independent federal agencies. The FGDC coordinates the development of the National Spatial Data Infrastructure (NSDI). The NSDI encompasses policies, standards, and procedures for organizations to cooperatively produce and share geographic data. The 17 federal agencies that make up the FGDC (pending DHHS membership) are developing the NSDI in cooperation with organizations from state, local and tribal governments, the academic community, and the private sector. See <http://www.fgdc.gov>]

Federal Geographic Data Committee (FGDC)

Progress Summary: February 2001

The FGDC was established in 1990 by OMB Circular A-16. The Circular called for improved coordination and collaboration in geographic information activities among federal agencies and with non-federal sectors. The revised Circular also called for the eventual development of a “national digital spatial information resource,” now known as the National Spatial Data Infrastructure (NSDI). The FGDC includes members of 17 Federal Departments and Executive level Agencies, and has established stakeholder relationships with national organizations and over 30 State Geographic Information System (GIS) Councils. The FGDC Staff and agency-led Subcommittees and Working Groups establish and implement policy, strategic guidance, and other activities to support the development of a National Spatial Data Infrastructure and to improved coordination of federal activities.

While much still remains to be done to achieve the dynamic and robust spatial data infrastructure that is envisioned much progress has been made in the development and implementation of the NSDI. The following is a brief summary of some of the progress and accomplishments of the agencies, stakeholders and other partners who are working collaboratively to make current and accurate geographic information readily available to contribute locally, nationally, and globally to economic growth, environmental quality and social progress.

Summary of Progress/Accomplishments:

Through the coordinated activities of the many participants of the FGDC, the NSDI is growing and the critical elements are now in place. The NSDI

enables citizens and organizations across the nation to find, access, share, and use geographic data. This infrastructure establishes the foundation for GIS applications and many other uses and services.

Spatial Data infrastructure: The FGDC is a leader in establishing national geographic data documentation and content standards that provide the basis for interoperability and efficient data sharing. The FGDC established 16 Data Standards for use by Federal agencies and has an additional 16 standards under development. The FGDC metadata and other standards have been adapted by many states and are the basis for input into international standards activities.

The FGDC established a spatial data Clearinghouse, which is a distributed electronic network of data repositories connected via the Internet. The Clearinghouse is a standards-based geospatially-enabled search capability that allows searches by geographic location and other user-defined queries. The NSDI Clearinghouse Network includes 238 inter-connected data servers around the nation and the world containing thousands of datasets.

Most GIS users have a need for similar basic geographic data to use as a starting point for their geographic information activities. The FGDC has adopted a set of 7 specified data layers as the NSDI Framework. The need for consistent Framework data is now well-recognized and approximately 20 state efforts are in progress to develop framework data sets as partnership activities among all levels of government and non-government organizations. Recently, OMB proposed a Geospatial Information Initiative to further stimulate Framework and other data partnerships.

Data policies that support greater efficiency, data sharing and improved access and use have been developed and adopted by the FGDC. These statements build upon existing law and support the principles of full and open access to federal geographic data.

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Enabling Communities: The FGDC has sponsored a number of programs to build partnerships and to enable communities to more effectively use geographic information and technologies: The Cooperative Agreements Program



(CAP) is a competitive grants program that stimulates community partnership activities to improve geospatial data sharing and use, and to begin implementing NSDI principles and practices. In its 7 years of operation, this program has approved over 300 awards totaling \$9 million, involving about 1000 organizations across the nation. There were 54 proposals received and awarded funds for the period ending March 15, 2001. The attached map includes awards for metadata implementation assistance, clearinghouse integration with web mapping, and a Canadian/US framework project. Metadata trainer awards are not shown.

The NSDI Community Demonstration Project focused on the use of geographic information to help communities address issues of concern. Six Communities were selected through a nomination process and dealt with issues such as community growth, flood hazards, crime, and environmental restoration.

The FGDC conducted a study of issues and

alternative methods of financing the NSDI. Funding is identified as a fundamental barrier by many government organizations. The study, performed by contract, identified many ideas and options for financing spatial data collection and use.

Federal Agencies: OMB Circular A-16 identified 12 federal members when FGDC was formed in 1990. Since that time 5 additional agencies have joined and several others are possible additions in the future.

Geospatial data and the NSDI have become recognized as foundations for electronic government. FGDC has recently been asked to work with Federal E-Gov initiatives and with the Council for Excellence in Government to help ensure that governments take advantage of this opportunity to geospatially enable e-gov.

The OMB has increased its management support of actions to coordinate geographic information and related spatial data activities. The OMB Information Initiative and the proposed revision of Circular A-16 to update FGDC roles and Federal agency responsibilities will help secure increased Federal agency support for NSDI implementation.

Engaging the Non-Federal Sectors: Important national stakeholders include the Intertribal GIS Council (IGC), the National States Geographic Information Council (NSGIC), the National Association of Counties (NACo), the National League of Cities (NLC), the International City/County Managers Association (ICMA), the Open GIS Consortium (OGC), the University Consortium for Geographic Information Sciences (UCGIS), and over 30 Individual State GIS Councils.

A few significant activities include: Work with the Intertribal GIS Council and the Southwest Indian Polytechnical Institute to sponsor a quarterly broadcast that focuses on geospatial initiatives and training to 32 Tribal colleges; Sponsorship of the National Geodata Forum to provide an opportunity for addressing issues that cross all sectors. The 1999

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Forum initiated the exploration of a new structure to facilitate participation by all relevant and affected parties in geospatial data across the nation. This initiative is developing a new public/private partnership called the GeoData Alliance; FGDC and stakeholder participation in the first Congressional Hearing on GIS held by Congressman Horn in June 1999. The FGDC Chair along with participants from other sectors discussed the value of geospatial data and the need for enhanced coordination and collaboration; NSGIC and many states and the FGDC cooperatively participate in training, conferences and in projects to implement NSDI practices; NACo, NLC and ICMA established the Local Leaders in GIS Forum to facilitate cooperation among local governments as part of the NSDI; The OGC and FGDC have cooperated in establishing an Interoperability Testbed to try out new technologies and procedures for improved use of data and technology. An important ongoing activity is the WebMapping Testbed.

International Activities: The work of the FGDC and the Stakeholders has significant influence internationally. Interest in international coordination and collaboration has increased greatly in the past 2-3 years. Approximately 40 other nations are either developing or planning to develop a spatial data infrastructure. Most are adopting a form of the NSDI model. The FGDC provides leadership to the international community and supports the Global Spatial Data Infrastructure Steering Committee with Secretariat assistance. The FGDC is also a critical partner in this past year's establishment of a Permanent Committee for Spatial Data Infrastructures in the Americas. [Source: March 13, 2001, FGDC Coordination Group Meeting. Complete FGDC Coordination Meeting minutes are available at http://www.fgdc.gov/fgdc/coorwg/2001/cwgmin_2001.html]

Web Site(s) of Interest for this Edition

<http://www.fgdc.gov/nsdi/docs/communications> The

NSDI Communications Toolkit. This is a set of three interrelated briefing materials that describe the power of geospatial information and technology. These communication tools have been developed through a cooperative partnership between the National States Geographic Information Council (NSGIC) and the FGDC. These materials are intended to assist you in educating managers and policy officials about the widespread potential of spatial data and geospatial technology to assist their decision-making processes. The tools are designed to help you familiarize officials with a more effective way of addressing real world problem solving in the day-to-day business of government through the power of geographic information. [To receive the complete NSDI Communications Toolkit, please send your request to: National States Geographic Information Council, 167 W. Main Street, Suite 600, Lexington, KY 40507-1324 or use voice (859) 514-9208 or email Brian Doty at bdoty@amrinc.net]

<http://health-track.org> Health-Track Mapping. This new on-line mapping system offers easy access to combined data on mortality rates for cancers known or suspected to have environmental causes and toxic chemical releases of known or probable carcinogens. The maps allow the public to review rates of cancer deaths and the emissions of certain toxic chemicals in their communities simultaneously. There are limitations to the data and the system is **not** designed to provide cause and effect evidence. Several elevated cancer concentrations include bladder cancer in the Northeast, breast cancer in the Northeast, West Coast and Great Lakes regions, and non-Hodgkin's lymphoma in the Northeast and Great Lakes regions.

<http://www.ithacamaps.org> IthacaMaps.Org. The City of Ithaca started developing its GIS mapping effort in 1990. The City's base map information is derived from photogrammetrically produced maps (flown in November 1991) as part of a county wide

partnership. The City is providing access to its GIS data via the World Wide Web. Anybody with a browser can view many of the layers of information on the City's GIS. This is not a series of static images. Users can zoom into an area they want, click on a building, parcel, street tree, neighborhood or voting district and get information and pictures.

<http://www.scoringscience.com/products/index.html>
Stone Analytics Scoring Science: Building and Deploying an Aggregate Model using Scoring Science. An aggregate model is designed to identify groups based on individual data that is combined, or aggregated. The Census data contained on the Business Analyst CDs has a category called Block Groups, which is a geographical area of between 400 and 700 households. Block Groups will be used to define our neighborhoods for building and deploying the tutorial model. This tutorial takes you screen-by-screen, through the steps for building and deploying an aggregate model. It uses as its example a fictitious Texas healthcare agency preparing for the coming flu season, identifying neighborhoods in the state where a high percentage of residents are likely to receive a flu shot. The agency has detailed flu-shot data for the Dallas area from a survey performed earlier in the year. This data serves as the basis for a model of the entire state. Additionally, this model will use Census data on the entire state of Texas that is included on the Business Analyst database CDs.

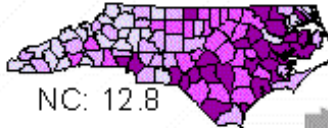
<http://nationalatlas.gov/natlas/natlasstart.asp> We again feature the USGS National Atlas of the United States to call your attention to the vector-disease surveillance data on West Nile Virus and mosquito vectors. These CDC surveillance data are posted regularly to the National Atlas and provide a good source to visualize spatial change through time. In the **Final Thoughts** section, this edition, the discussion is dedicated to the vector-borne disease initiative by UCGIS and USGS.

<http://www.ojp.usdoj.gov/cmrc/conferences/Papers2000.html> The Fourth Annual International Crime Mapping Research Conference proceedings are now available for viewing online. Pre-Conference Primers include: Data Scrubbing; Mapping for Managers; Implementing GIS into a Law Enforcement Agency; Hot Spot Methods; Quantitative Crime Analysis; Privacy, Confidentiality, and Data Display; and Getting Started with ArcView: A Hands-on Workshop- Part I. General Sessions (selected topics) include: School Safety: Case Studies; Journey to Crime and the Geography of Serial Offenders; Census 2000: Data Sources, Analysis, and Applications; Evaluating the Impact of GIS Implementations; Advanced Hot Spot Methods; Interactive Web-Based Mapping Showcase; Mapping Across Boundaries: Multi-Agency Applications; Exploring the Role of Remote Sensing in Law Enforcement; Crime Patterns in Non-Urban Settings; and others.

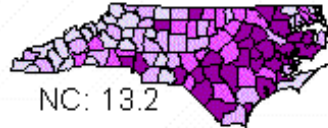
<http://www.schs.state.nc.us/SCHS/healthstats/atlas/syphilis.html> Provides an animated time series of syphilis in NC. The below maps are a static representation of primary and secondary syphilis in North Carolina, 1980-1999. The North Carolina Health Atlas, from which these graphics were obtained, contains maps of North Carolina that depict county level health and health-related information. The primary purpose of the Atlas is to provide a way to interpret visually a broad range of data and information about the health of North Carolinians. The *North Carolina Health Atlas* currently includes over fifty maps portraying the state's *Leading Causes of Death* and *Infant Mortality (LCDIM)* for the period 1993-1997 and 1994-1998. Also included is a set of maps that describes how much reduction in the county mortality rates is needed to meet the national **Healthy People 2010 Objectives**, which were published in January 2000.

Syphilis in North Carolina 1982-1997 5-Year Average Incidence Rates

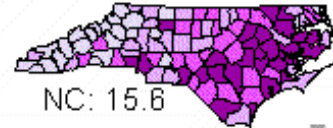
1982 (80-84)



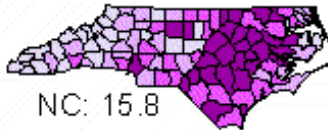
1983 (81-85)



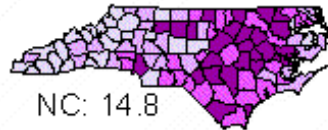
1984 (82-86)



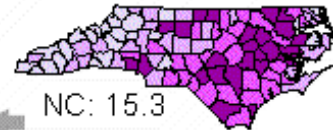
1987 (85-89)



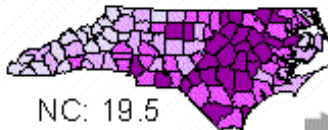
1986 (84-88)



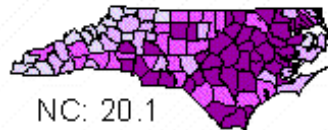
1985 (83-87)



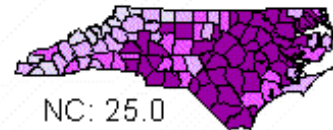
1988 (86-90)



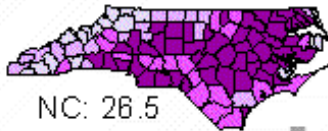
1989 (87-91)



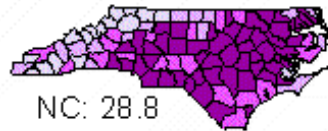
1990 (88-92)



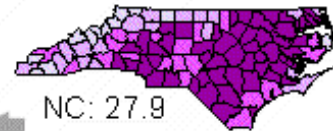
1993 (91-95)



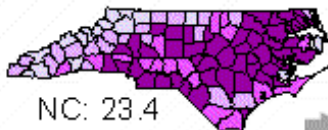
1992 (90-94)



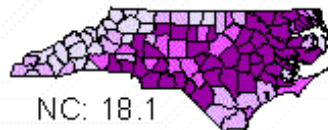
1991 (89-93)



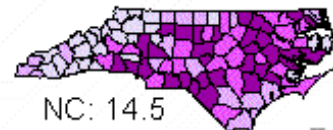
1994 (92-96)



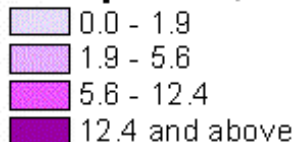
1995 (93-97)



1996 (94-98)



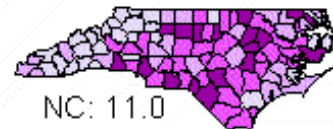
Cases per 100,000



Note:

The target for Healthy People 2010 Objective 25-3--"Eliminate sustained transmission of primary and secondary syphilis"--is 0.2 case per 100,000 population.

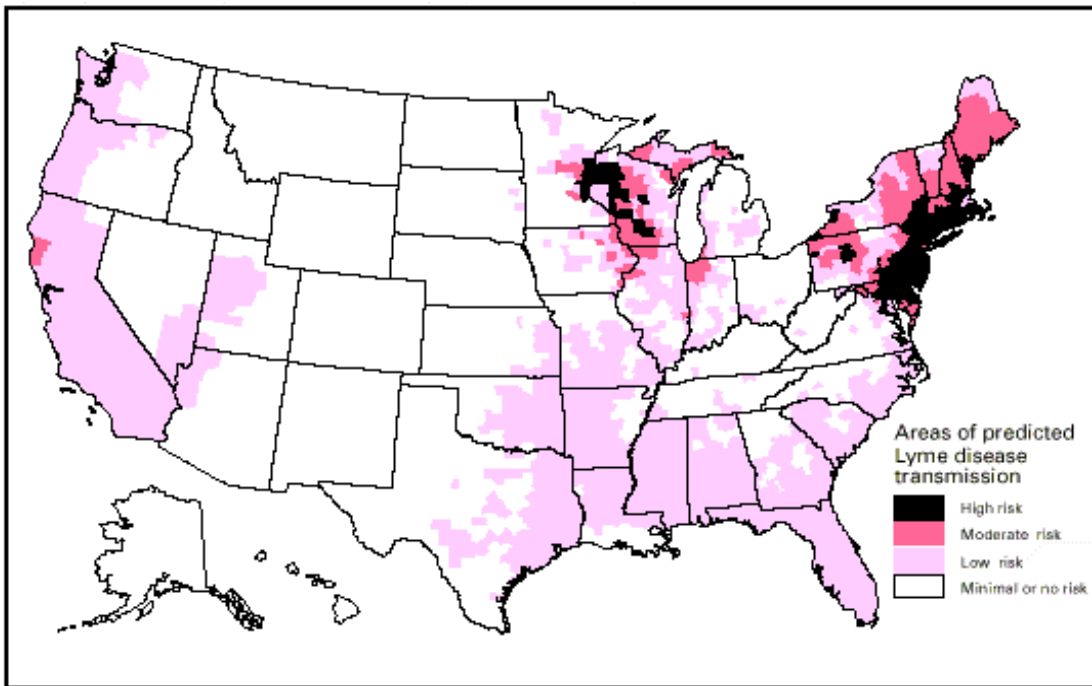
1997 (95-99)



Final thought(s): UCGIS/USGS Disease Symposia on GIScience and Vector-Borne Disease

One of the most important pieces of the emerging gestalt of GIS and public health is the research arena. In the January edition (2001, No. 38), I spoke about the broad and potentially far reaching spatial data research activities of the Digital Government Consortium. Now I want to direct your attention to a new research initiative that is focused on public health. Specifically, it is the recently convened symposia on GIScience and Vector-Borne Diseases. This initiative is cosponsored by the University Consortium for Geographic Information Science (UCGIS) and the U.S. Geological Survey (USGS).

National Lyme disease risk map with four categories of risk



Note: This map demonstrates an approximate distribution of predicted Lyme disease risk in the United States. The true relative risk in any given county compared with other counties might differ from that shown here and might change from year to year. Risk categories are defined in the accompanying text. Information on risk distribution within states and counties is best obtained from state and local public health authorities.

The first in the series was held January 3-5, 2001, in La Jolla, CA. The second will convene May 22-24, 2001, in Warrenton, VA. This is a timely development for the public health community. It has all the ingredients for pushing the GIScience envelope beyond its current boundaries. This initiative is directed at building a robust GIS scientific approach to the

understanding and risks, taxonomy, measurement, modeling and validation of vector-borne diseases on human and animal populations. That may sound ambitious but the good news is that the first symposium broke important ground in consensus building and defining the playing field. It also produced a follow up agenda for filling in the some of the blanks. Before reviewing these items, I'll begin with some background information on the significance to public health of vector-borne diseases.

Vector-Borne Disease Background¹

What makes this initiative timely is there has been an emergence, and resurgence, of vector-borne parasitic, bacterial, and viral diseases, beginning in the 1970s. It has become especially intensified in the past 20 years.

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Although the reasons for the failure of containment and elimination programs are complex and not well understood, two factors appear to have played important roles: 1) the diversion of financial support and subsequent loss of public health infrastructure and 2) reliance on quick-fix solutions such as insecticides and drugs.

What we do know is vector-borne diseases need a blood-sucking arthropod vector for transmission to humans. Historically, malaria, dengue, yellow fever, plague, filariasis, louse-borne typhus, trypanosomiasis, leishmaniasis, and other vector-borne diseases were responsible for more human disease and death in the 17th through the early 20th centuries than all other causes combined. By 1910, other major vector-borne diseases such as African sleeping sickness, plague, Rocky Mountain spotted fever, relapsing fever, Chagas disease, sandfly fever, and louse-borne typhus had all been shown to require a blood-sucking arthropod vector for transmission to humans. However, by the 1960s, vector-borne diseases were no longer considered major public health problems outside Africa. The benefits of vector-borne disease control programs were short-lived.

The resurgence of malaria in Asia in the late 1960s and early 1970s provides a dramatic example of how quickly vector-borne disease trends can change. Malaria, transmitted to humans by anopheline mosquitoes, is the most common imported disease in the United States. Approximately 1,000 suspected malaria cases are imported into the United States each year, associated with increased frequency of autochthonous cases; since 1987, 16 incidents of autochthonous malaria have occurred in nearly all parts of the United States. In each incident, however, transmission was limited to only a few cases.

Lyme disease, a bacterial tick-borne infection, was discovered in the United States in 1975. The disease has continued to increase in incidence and geographic distribution since national surveillance was initiated in 1982. At that time, 497 cases were reported compared with 11,700 to 16,455 cases each year between 1994 and 1997. Approximately 90% of reported Lyme disease cases occur each year in the Northeast (Connecticut, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, and Rhode Island), upper Midwest (Minnesota and Wisconsin), and Northwest (California).

In late summer 1999, the first domestically acquired human cases of West Nile (WN) encephalitis were documented in the U.S. The discovery of virus-infected, overwintering mosquitoes during the winter of 1999-2000 predicted renewed virus activity for the following spring and launched early season vector-control and disease surveillance in New York City and the surrounding areas. These surveillance efforts were focused on identifying and documenting WN virus infections in birds, mosquitoes and equines as sentinel animals that could predict the occurrence of human disease. By the end of the 2000 transmission season, WN virus activity had been identified in a 12 state area from Vermont and New Hampshire in the north to North Carolina in the south. In 2000 there were 21 human cases, 63 horses, 4,304 birds (78 species including 1999 data), and 480 mosquito pools (14 species) reported with WN virus. This annual human case incidence now ranks WN virus second only to LaCrosse encephalitis virus as the leading cause of reported human arboviral encephalitis in the U.S.

Reversing the trend of emergent/resurgent vector-borne diseases remains a major challenge. Vaccines, available for only a few diseases (yellow fever, Japanese encephalitis, tick-borne encephalitis, tularemia, plague), are not widely used and vaccine prospects for major vector-borne diseases are not good. With the

exception of malaria, few other vector-borne diseases have funding for vaccine research. In the next decade, vector control will be required to interrupt transmission of most emergent/resurgent vector-borne diseases. Environmentally safe insecticides and research on alternative approaches (such as biological control) are needed. Integrated prevention strategies must be developed and implemented in endemic/enzootic-disease areas. In addition to economic support for research, human resources are needed to develop and implement sustainable prevention programs. Adequately trained personnel are lacking in most developing countries, as are academic institutions with the programs to train them. Policy changes must be made to support public health approaches to disease prevention. All these factors are needed to rebuild the public health infrastructure.

First Disease Symposium on GIScience and Vector-Borne Disease [January 3-5, 2001]²

Major issues at the January symposium centered around several axes, the first being data. Guideline questions about **data types** concerned their type, acquisition, integration and management. For example, what are the kinds of data needed and how do they relate to a hierarchy of diseases, risks and models? Questions on **data acquisition** concerned the usefulness of data given confidentiality constraints. What would be appropriate or cost-effective sampling strategies and how might one estimate over or under reporting? **Data integration** questions concerned the integration of multiple datasets at multiple geometries, scales and resolutions. How can space and time be linked? **Data management** questions included how can data from multiple agencies be integrated? How can data quality be measured and reported?

The issue of models was a second axis. Questions involved the **science** of models such as how can one develop spatially explicit epidemiological theories of vector-borne diseases? In terms of **spatio-temporal** modeling how does one model vector/host spatiotemporal interactions? And, what is a useful disease taxonomy based on scale, environment, dynamics, transmission, vector/host behavior? How can we forecast the future course of an outbreak? The issue of model **scale** raised the question can scientists agree on a mutually acceptable definition of scale/resolution/level/hierarchy? Further, what are appropriate scale ranges for analysis and interpretation? In terms of modeling **risk**, what is risk and how can it be measured and mapped? What can science say about the possible success of an intervention?

The third axis concerned knowledge such as the identification of successful GIScience to vector-borne diseases and effective communication techniques to insure dissemination and replication. Questions on **collaboration** included how does collaboration arise and how can barriers be minimized? How can geography's position at the interface between the physical, natural, and social sciences be instituted? In terms of **training**, what is the future supply and demand for GIScience skills and what is appropriate training for GIScientists? How can practical experience be incorporated into education?

Follow up agenda for Second Symposium on GIScience and Vector-Borne Disease [May 21-24, 2001]³

The following items outline selected goals for the second symposium. They include the need for specific projects to advance participant knowledge; demonstration projects; case studies outlined and explained with analytical techniques applied, and outcomes identified; in-depth specifics of current research projects and examples of ongoing projects; tutorials with existing software (i.e. Biomedware); presentations of practical studies from entomologist, epidemiologist, geographer, geologist, biostatistician; presentations of potential research projects; hands on collaborative exercises; in-depth breakout discussions of conceptual case studies

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using GIS hands on and an experimental data set: methodological challenges; analysis of sample datasets, and others.

New developments will emerge from this initiative. I am pleased to report that **UCGIS** will take a particularly proactive role and provide a locus for its promotion. Recommendations for UCGIS leadership include: create and maintain a web site related to GIScience and vector-borne disease; coordinate future meetings; interface with funding agencies re: appropriate proposal review for interdisciplinary proposals; bring together various disciplines and facilitate multi-disciplinary dialogue; encourage scientists to work together on specific projects; provide a link between federal, academic and other interested scientists; advocate federal level support for data infrastructure and vector-borne disease programs; develop clearinghouse or metadata programs to help people find data already available; find ways to communicate at state and local levels; coordinate grants to access data quality and prepare draft guidelines for practitioners; act as a lobbying group to support data availability and quality; challenge members to come up with appropriate analytical techniques and visualization tools; and others. [Editor: Special recognition is accorded **Suzy Jampoler**, Executive Director, UCGIS, for her excellent leadership of the symposium initiative. Contact: Suzy at the University Consortium for Geographic Information Science, 43351 Spinks Ferry Road, Leesburg, VA at voice (703) 779-7980, (888) 850-8533 or email execdir@ucgis.org]

Footnotes:

¹Based on (1) "Resurgent Vector-Borne Diseases as a Global Health Problem," by Duane J. Gubler, *Emerging Infectious Diseases*, 4(3), July-September, 1998 and (2) Centers for Disease Control and Prevention, "Epidemic/Epizootic West Nile Virus in the United States: Revised Guidelines for Surveillance, Prevention, and Control," from a workshop held in Charlotte, North Carolina, January 31-February 4, 2001, April 2001.

²See: <http://www.ucgis.org>.

³See: <http://www.ucgis.org/f2events.html> for the entire program and symposium notes.

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Please join us at NCHS [May 16, 2001](#) for the NCHS Cartography and GIS Guest Lecture, "**Address Coding and Other Georeferencing: A Primer for Effective Geocoding**," This presentation will be envisioned to CDC/ATSDR and webcast nationally. Our Web Page is located at http://www.cdc.gov/nchs/about/otheract/gis/gis_home.htm