## INTERACTIVE TOOLS, POSTER PAPERS AND DISPLAYS SESSION

## *Introduction*

**Dr. Stuart Nishenko,** Earthquake Policy Advisor, Mitigation Directorate and FEMA Forum Coordinator

The introduction of Geographic Information Systems (GIS) has ushered in a new era of emergency management. This session presents three talks that highlight some of the recent advances in disaster information technology and a number of poster papers and displays that discuss the application of these technologies to risk management and disaster reduction. (See Appendix B for a copy of their presentations.)

## *Global Disaster Information Network (GDIN)*

**Mr. Joe Szwarckop,** Director, GDIN Committee Support Office

**Synopsis.** Mr. Szwarckop stated that the GDIN challenge is to deliver the right information in the right format to the right person at the right time to make a right decision, which leads to the need to address problems associated with accessibility to disaster information. He said that emergency managers require interactive access to situation information in a spatial context (map-based) and coordinated tracking of the changing conditions and management actions. This last one has to be a part of the information management structure and should be at multiple levels such as regional/state, county/local, and interstate levels. He stated that the GDIN vision is to have a robust, integrated virtual network for cooperative exchange of timely, relevant information during all phases of a disaster. This virtual network would include multiple sources of knowledge, integration of standards and protocols, multiple types of connectivity, and multiple participants.

Mr. Szwarckop stressed that GDIN's "value added" would be integration of information for decision making, certification of the accuracy and quality of information and standardization for compatibility of information products. He next provided background information on the Executive Order issued on April 27, 2000 that began a Federal initiative to establish an Interagency Coordination Committee (ICC) on disaster information. The ICC is to provide coordination of Federal agency efforts, provide manpower and material support for network development activities, and develop, delegate, and monitor interagency opportunities and ideas supporting the development of the network. The ICC mission is to enhance access to and use of relevant disaster information resources worldwide. An example given was the use of risk analysis and consequence analysis affecting land use decisions. He also described the use of 3-dimension models for visual representation of disaster information and noted upcoming international coordination meetings.

## *Open Geographic Information System (GIS) Consortium (OGC): Benefits of Spatial Interoperability*

**Mr. Mark Reichardt,** OGC

**Synopsis.** Mr. Reichardt first described the vision and mission of OGC. The OGC vision is the complete integration of geospatial data and geoprocessing resources into mainstream computing. The mission is to develop the interface specifications needed to achieve the vision. Such interfaces should be based on field standards, be affordable, and provide rapid technology test-beds. The interfaces will help to translate and fuse data and provide guidance for applying data from multi-sources to facilitate decision-making. OGC encourages the fielding of standards-based Commercial off the Shelf products and services to consumers at a reasonable cost.

Mr. Reichardt next covered the approach taken by OGC to accomplish the vision and mission. OGC uses a global, non-profit, and consensus based process, which has over 200 members from industry, government, academia. They collaborate to develop interface specifications that make geospatial data and processes an integral part of the process. This specification program develops implementation level spatial technology specifications for open access and use. The interoperability program is an innovative, hands-on engineering and test environment designed to deliver proven standards for finalization through the specifications program. OGC also coordinates with the international and commercial standards organizations to focus the agenda for spatial technology interoperability. OGC's vision is to have an open web service which would provide easier access to multiple online information sources and services, use and reuse different vendor solutions, reduce deployment costs by reusing information from other communities, and provide tools to provide custom information to users.

Results from the 2000 interoperability program include accessibility to critical information and establishment of geospatial fusion services. Critical information can be obtained from an update web map server with symbolism controlled by the client. The web site has feature and coverage servers, GML and Imagery Markup Annotation Language based extensions of XML, integration of access control security, and geospatial fusion operators. Geospatial fusion services provides: OGC based applications which can be employed on intelligence problems; cooperating analysts who can discover, access, register, correlate, analyze, and store related multi-source information; and collections of information which can be captured and shared through the Location Organizer Folders (LOFs). OGC plans to improve capabilities in 2001 by initiating the third phase of web mapping, the Inter-Community Enablement Phase 1, the Geoanalysis & Decision Support Phase 1, and the open location services test bed.

In summary OGC brings to the table interfaces to support interoperable, component-based products. Mr. Reichardt recommended the participation in OGC interoperability initiatives, inclusion of international and commercial standards and specification conformance requirements in procurement, serving your data via OGC-based server products, and participation in the OGC standards development and special interest groups.

**Website**: www.opengis.org

## *Center for Integration of Natural Disaster Information (CINDI)*

**Ms. Susan C. Clark,** Research and Communications Coordinator, Center for Integration of Natural Disaster Information (CINDI), U.S. Geological Survey (USGS)

**Synopsis.** Ms. Clark stated that CINDI was established to help fill the need for a single source of the broad range of information needed for natural disaster reduction and to help integrate information from diverse sources. The mission of CINDI is to serve as a research and operational facility that explores methods for collecting, integrating and communicating information about the risks posed by natural hazards and the effects of natural disasters. Through CINDI, USGS seeks to broaden, integrate, and promote collaboration of universities' and agencies' understanding of physics, geology, hydrology, biology, and cartography. The facility is the USGS focal point for data integration for hazardous events, provides real-time operational hazards coverage, provides data collection and integration software, and is developing an enhanced communication infrastructure for long-term data vital to both emergency response and analysis of hazard risks. These allow CINDI to analyze multiple themes of the data and to support applied hazards research by allowing assessment and integration of key multi-disciplinary data sets, construction of predictive models and decision support systems, and application of intuitive data visualization techniques. During 2000, CINDI's hazards research included development of flood extent and visualization models, an integrated information management system for the West Nile Virus, a hazard information seamless deliver and distributed data system for the Red River system, and web-based software to develop estimates of population density. CINDI has participated in recent outreach activities, such as the USGS Natural Hazards Workshop, the National Disaster Education Coalition, the Natural Hazards Speaker Series, and the USGS open house on April 28, 2001. On-going efforts in hazard data infrastructure development are focused on providing basic information tools; acquisition of new data, damage and risk assessment models; data integration and delivery of products and data; and capacity building. In addition, CINDI is collaborating with other agencies on the following projects:

- Coastal Hazards Risk Atlas (NOAA, FEMA, and USGS)
- Climatologic Integration (NOAA/Forecast System Lab and USGS/CINDI)
- International Imager Node (Office of Foreign Disaster Assistance and USGS/CINDI)

**Website**: cindi.usgs.gov

## *List of Poster Papers and Displays.*

The following groups provided papers and displays concerning risk management in the conference room for viewing and for discussion with the authors during breaks.

**Baker, Inc:** Ms. Kathryn Field: *Staying Afloat--A GIS-Based Communications Floodplain Management Tool*
Ms. Jane Huzil: *Past, Present, and Future - Hazards U.S. (HAZUS), GIS-Based Loss Estimation Software*

Mr. Edward Mifflin: *A Risk Analysis of Exposure to Natural Hazards in the U.S.*

**Federal Emergency Management Agency** (2 displays)**:**
*HAZards U.S. (HAZUS)*
*FEMA Flood Map Modernization Program*

**Centers for Disease Control and Prevention:** Dr. Josephine Malilay, Team Leader for Disaster Epidemiology and Assessment, National Center for Environmental Health, *Estimating Health Risks from Natural Hazards Using Risk Assessment and Epidemiology*

**National Academy of Sciences** (book display)

**U.S. Geological Survey:** Mr. John Sutter, *Forecasting Geohazards Vulnerability in the Tri-State Region of Indiana, Kentucky, and Illinois*

**University of DC:** Dr. Mark Siegal, *Multihazard vulnerability assessment in the greater Evansville, IN (Tri-state) region: R&D tools for communication with non-geoscientists*

**Oak Ridge National Laboratory/Department of Energy (DOE):**
Dr. John Sorensen and Dr. Barbara Vogt, *Risk Assessments of Environmental Hazards*

**Cooperative Institute for Research in the Atmosphere (CIRA), Colorado State University:** Dr. Chris Adams, Research Scientist: *Colorado State University Flash Flood Laboratory*