



Hazards, Disasters, and *The National Map*

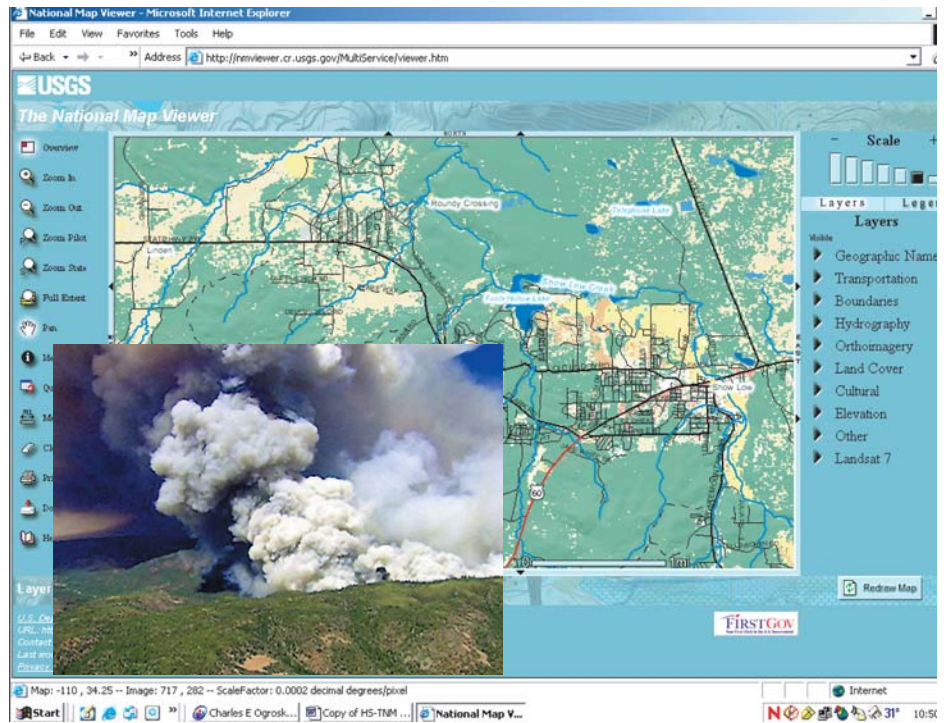
Tools for the Nation: Maps and Geographic Information

Governments depend on base geographic information that describes the Earth's surface and locates features. They use this information for economic and community development, land and natural resource management, delivery of health services, and ensuring public safety. It is also the foundation for studying and solving geographically based problems. Geographic information underpins an increasingly large part of the Nation's economy. It is an important part of our national infrastructure in the same way that the Interstate Highway System is an essential element of our transportation network.

Federal, State, and local response and management personnel must have current, reliable, and easily accessible geographic information and maps to prepare for, respond to, or recover from emergency situations. In life-threatening events, such as earthquakes, floods, or wildland fires, geographic information is essential for locating critical infrastructure and carrying out evacuation and rescue operations.

The National Map Provides the Starting Point

The U.S. Geological Survey (USGS) is working with its partners to develop *The National Map* to ensure that current, accurate, and complete base geographic information is available for the Nation. *The National Map* is designed as a network of digital databases that will provide a consistent geographic data framework for the country. This base geographic information will be the foundation for integrating, sharing, and



Base geographic information from *The National Map* is combined with wildland fire perimeter reports to provide fire fighting operations managers with maps that are used to stage personnel and equipment. (Rodeo-Chediski Fire, Arizona, 2002)

using USGS earthquake epicenter and magnitude reports, streamflow monitoring data, and so on. *The National Map* will enable other government agencies, private industry, and the public to link and share additional data that provide even more information.

The USGS is promoting partnerships to ensure that base map data are up to date, readily available, and shareable among local, State, and national users. These efforts with State and local governments will help standardize the data by reducing data inconsistencies between neighboring jurisdictions and will help fill in the gaps for those places where data are lacking.

Natural Hazards

Hurricanes, wildfires, floods, earthquakes, and other natural events affect the Nation's economy, infrastructure, property, and lives. In addition to its mapping activities, the USGS provides critical, up-to-the-minute (realtime) information. In cooperation with organizations across the country, the USGS gathers and disseminates real-time hazard data to relief workers, conducts long-term monitoring and forecasting to help minimize the impacts of future events, and evaluates conditions in the aftermath of disasters.

The National Map makes accessible the base geographic data layers needed in

planning and responding to disasters. In a flood situation, for example, the integration of feature attribute data from the hydrography data layer with realtime stream gage data allows scientists to predict the timing and magnitude of downstream flooding in support of emergency operations.

For wildland fires, the integrated elevation, transportation, land cover, and water feature data from *The National Map* are used by emergency operations specialists to plan the distribution of fire-fighting equipment and personnel and are combined with other data, such as wind direction, speed, and relative humidity, to model and predict the behavior of a fire.



The 1994 Northridge, California, earthquake resulted in 72 deaths and \$25 billion in damages. *The National Map* is a geographic framework for specialized earthquake and other natural hazards data.

Other Emergencies

The events of September 11, 2001, have emphasized that complete and up-to-date geographic information and maps must be immediately available. Most people either live or work in the metropolitan areas of the United States. These cities are also State capitals or major centers for banking, health care, industry, transportation, and special activities, including major conventions and sporting events. Many heavily populated areas are subject to natural disasters because they are located on earthquake faults, on rivers, and on ocean coasts. These areas are also vulnerable to human-induced disasters.

The USGS is focusing efforts to implement *The National Map* so that up-to-date base geographic information is available and easily accessible on the Web for the Nation's urban areas.



America's principal urban areas, State capitals, and associated watersheds are home to more than 180 million Americans and much of the Nation's critical transportation, utility, economic, and other infrastructure. (Anchorage and Juneau, Alaska, Honolulu, Hawaii, and San Juan, Puerto Rico, are not shown).

The USGS is working with Federal, State, and local agencies to identify critical map information needed to respond effectively to disasters of all types. Some of these needs include the following:

- Current, high-resolution map data and information, including true-color imagery
- Additional information about critical infrastructure, such as power and water utilities
- Identification of places that could close access or evacuation routes

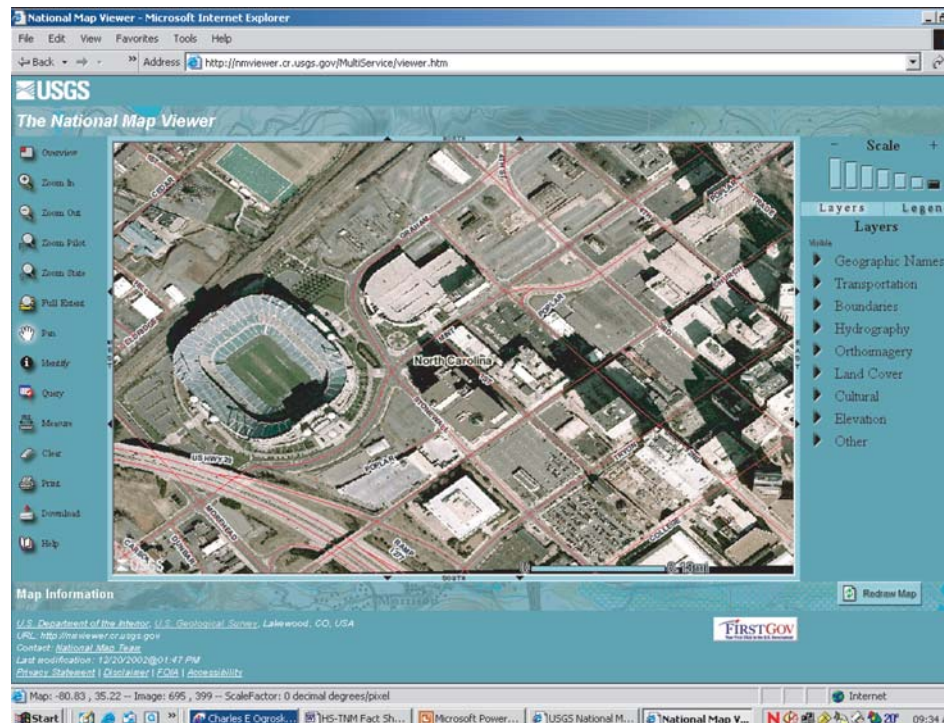
- Information linked to mapped features, such as details about the capabilities of hospitals
- Availability of information through the World Wide Web in a form that can be used for computer analysis and mapping

The National Map will provide detailed color imagery, elevation data, and delineations of transportation and hydrography networks, geographic names, structures, boundaries of jurisdictions, and other essential infrastructure for the urban areas.

Additional Information

More information about *The National Map* is available at nationalmap.usgs.gov.

For information on other USGS products and services, call 1 888 ASK USGS or visit the general interest publications Web site on mapping, geography, and related topics at erg.usgs.gov/isb/pubs/pubslists/. For additional information, visit the ask.usgs.gov Web site or the USGS home page at www.usgs.gov.



High-resolution orthoimagery combined with road centerlines and names from the USGS - Mecklenburg County, N.C., partnership. Served over the Web through *The National Map* viewer, the integrated data provide information for analysis, modeling, and disaster response and recovery operations.