SERVING THE INTERESTS OF THE NWC GIS COMMUNITY

WxGIS

Volume 1, Issue 1 10.20.05

VISION

To establish a world leadership in weather GIS and achieve a seamless integration of GIScience and weather in research, education, and operations.

Inside this issue:

Inaugural Meeting of WxGIS

The inaugural meeting of the WxGIS Initiative took place August 30, 2005 with 26 charter members in attendance. Participants represented 15 government and academic organizations from the University of Oklahoma and National Weather Service research communities. Charter members introduced themselves and their GIS interests and needs. Eight primary areas of interest in the initiative were identified and discussed by the group:

- Data archiving
- Data integration
- Data visualization and mining
- Dissemination tools to serve the broader community
- Education
- Social impacts and hazard risk management
- Spatial analysis tools
- Spatial decision support

The group consensus of a vision for the initiative is to create a one-stop GIS data store, to provide analysis and visualization tools, to provide educational opportunities in GIS for initiative members, to provide technical support for GIS efforts within the group, and to create a synergistic GIS community within the National Weather Center. Major challenges to the effort include education, technology access, and technical support. Prior to adjourning objectives for the short, medium, and long term were established.

Short-term goals year 1

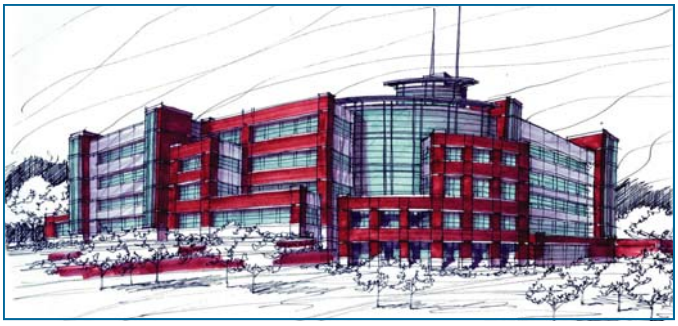
- Launch lunch series
- Develop web page and WxGIS web data server
- Assemble directory of local expertise and publications
- Hire system administrators and obtain human resources to support GIS web and data administration
- Create a testbed for exploration and initiation of new GIS projects
- Integrate weather products and CASA data with GIS data and develop middleware for GIS data handling and analysis
- Develop a WxGIS strategic plan

Mid-term goals years 2-3

- Institute leadership and education roles of WxGIS in the National Weather Center
- Coordinate efforts to relate to the NOAA strategic plan
- Develop training programs

Long-term goals beyond year 3

- Extend research and development to operations
- Establish an integrated weather GIS enterprise as a world leader in weather GIS research and applications



Multicriteria spatial decision support for NERON. Potential locations for new NERON sites shown in dark green. Selection criteria in this example includes proximity to roads, slope, and avoidance of conservation lands and water.

NERON: Project Overview

The primary goal for CSA's NERON GIS is to develop comprehensive spatial decision support methodologies and procedures for the NERON project. We anticipate that the research outcome not only will ensure systematic and strategic NERON site selection nation-wide, but also will contribute to scientific and technological advances in GIS. We are developing a prototype web-based NERON GIS portal and will convert the portal to a NERON spatial decision support system (SDSS) to ensure effective communication of our research results among NERON teams. Future work includes creating the NERON Collaboratory to broaden NERON's social and economic impacts beyond climate observations and detection. CSA is collecting a vast amount of GIS and related data in the process of building the NERON SDSS. The data include administrative boundaries, digital elevation models, digital orthoquad (DOQ) aerial photographs, land cover, hydrologic units, water bodies, transportation sites and networks, and many varied weather-monitoring network assets. These data are being processed specifically for NERON SDSS suitability analysis, but they have potential application toward many other weather GIS initiatives.

Progress Toward Goals

Since the first WxGIS meeting, we have made significant progress toward short-term objectives and establishing an infrastructure to serve the WxGIS community.

- A WxGIS list-serve has been created to facilitate communication between members, and charter members were automatically subscribed. Those interested in subscribing or changing their options can visit https://geomail.ou.edu/mailman/listinfo/wxgis. To post a message to the list email wxgis@gcn.ou.edu
- We have hired a web developer to design the initial web page as discussed at the inaugural meeting. Our web page address will be http://wxgis.ou.edu/. Email the page at wxgisnfo@gcn.ou.edu
- Development of the web-based GIS data portal is underway. Map server has been installed and verified. Work continues on developing the web page and user interface to present data.
- We are actively seeking funding opportunities to support the WxGIS mission and goals.

NSSL Hazardous Weather Testbed: Greg Stumpf

There are plans to develop a severe weather warning component to the NSSL Hazardous Weather Testbed (HWT) during the next few years as the Norman weather community moves to the new National Weather Center. The testbed facility is to be located in a high-visibility location at the NWC, and will be used as a proving ground to test new severe weather warning applications and concepts before they are transitioned into National Weather Service operations. One important component of the testbed will the be the testing of experimental WxGIS concepts in an operational setting. We hope to have a first simple WxGIS project defined and running by next year at the HWT. One such potential project has been submitted as part of an HPCC proposal for FY06, entitled "On-demand CONUS Multiple-Radar and Multiple-Sensor Products to Support Severe Weather Warning and Verification.

Member Profile: James Hocker

I am beginning my second year as a masters student in the OU School of Meteorology. Since January 1, 2005 I have been a graduate research assistant with the Oklahoma Climatological Survey (OCS) working under Dr. Jeffrey Basara. Ever since I was a child I have always been interested in severe weather and storm forecasting; lucky for me I have been able to focus on this childhood interest in my thesis research. My thesis is entitled, "A Twelve Year Climatological Analysis of Severe Local Storms Observed by the Oklahoma Mesonet" and the purpose of my research is:

- to identify severe storm events that have occurred in Oklahoma over the past 12 years
- to categorize storm types into 3 major categories: multicell clusters, multicell lines, and supercells
- to identify storm tracks, initiation locations (and time), and termination locations (and time)
- to analyze surface data prior to and during the occurrence of severe local storms using the Oklahoma Mesonet

I plan to use GIS to illustrate where storms have occurred in Oklahoma over the past 12 years for different time scales and different storm types. For instance I will be able to show where all supercells occurred during a specific year, month, or even over a decade. This will hopefully yield useful information such as typical storm initiation regions, regions of high activity, and regions of low activity. Geographic information systems will be a very useful tool for this study because it will allow the geographic and spatial information to be pulled out of the meteorological data. Understanding where, when, and why past storm events have occurred can only improve the forecasting of future events.

Although relatively new to GIS, I have been taking all the opportunities I can to become more skilled and knowledgeable in geographic information systems. This past May I attended the 2005 Geospatial Summer Institute at the University of Oklahoma and I gained important experience in geographic information sciences. The two week program opened my eyes to the wide array of potential GIS applications in many different disciplines. I found that GIS is a powerful tool for displaying, analyzing, and organizing significant amounts of data; all of these strengths are very useful in meteorology. Currently I am enrolled in a full semester GIS course and I hope to build on the concepts I learned in the Geospatial Summer Institute. I would like to stay involved as GIS is implemented more in the field of meteorology.

As far as a career goes, I am highly interested in working operationally in meteorology. Currently, as a volunteer for the national weather service office in Norman, OK, I can definitely see the utility of GIS in daily weather operations from both the scientific and public points of view. For example, new experimental products such as RIDGE (Radar Integrated Display with Geospatial Elements) illustrate how the public can benefit from the incorporation of GIS technology and meteorological data. Although still in the initial stages, I foresee GIS becoming a major tool used in operational meteorology and it should help to better communicate forecasts and warnings to the public. GIS technologies and atmospheric sciences will only become more closely linked with time, so I am preparing myself now with the necessary skills to be ready to handle this relationship in my career.

WxGIS

cooperation
coordination
collaboration

How you can help

At the first WxGIS meeting several members expressed the importance of maintaining group momentum. Please consider:

- Contributing to the newsletter
  - news items
  - member profiles
  - project overviews
  - other items of interest
- Assisting with the member expertise and publications directory
- Propose a lunch meeting topic or plan and host a meeting

SERVING THE INTERESTS OF THE NWC GIS COMMUNITY

WxGIS
100 East Boyd Stree, SEC 694
Norman, OK 73019

Phone: 405.325.4567
Fax: 405.325.6090
E-mail: wxgisinfo@gcn.ou.edu

WxGIS List-serve
Subscribe:
https://geomail.ou.edu/mailman/listinfo/wxgis
Post:
wxgis@gcn.ou.edu

Coming Soon
http://wxgis.ou.edu/

Initiative Background: In anticipation of the move to the National Weather Center, the WxGIS initiative was launched to develop a strategic plan for GIS collaboration and coordination within the NWC community with the goal of promoting cooperation and synergy of GIS research, infrastructure, and activities.

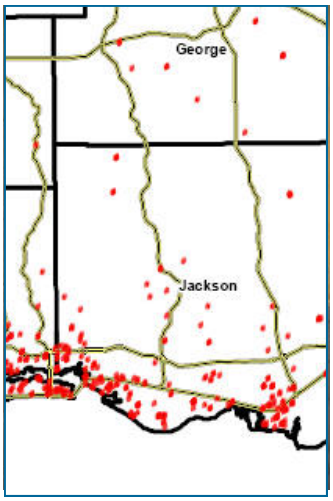
GISCorps Makes Immediate Impact Following Hurricane

For Immediate Release: URISA

September 6, 2005 (PARK RIDGE, IL) – Less than one week ago, URISA's GISCorps began the process of recruiting and identifying volunteers to head to the region affected by Hurricane Katrina. The ideal volunteer would have "enough GIS experience to work effectively in an emergency situation; have expertise in map production, performing analysis, data management, etc.; and have expertise in disaster management and working with GPS equipment". The Call for Volunteers went out and more than 500 people responded! The GISCorps Committee worked tirelessly to identify 20 individuals with the right qualifications who are now volunteering their time and expertise at the Emergency Operations Center in Jackson, Mississippi. The volunteers come from Ohio, Missouri, Florida, North Carolina, Illinois, California, New York, Texas, Arkansas, and Colorado and have an average work experience of 8 years. They have had an immediate impact on the situation.

Working with local universities, the team has been involved in the following (through September 4, 2005):

1. Search and Rescue. We translated more than 100 addresses/locations into GPS coordinates for the US Coast Guard rescue helicopter evacuation missions. Many of these location to GPS translations could only be done fast enough using GIS - (sometimes the calls come in as "I'm trapped at the water treatment plant in _____" or "I'm about 1 mile north of _____ and I can see a church steeple".



GISCorps geocoded last known locations of Mississippians for the missing persons database.

2. Developed the missing persons website report and database (http://www.gistools.org/mema.html) to assist with the taking of missing persons reports (8,000 and climbing rapidly). These reports spit out a geocodable table that is letting us build a missing persons feature class. This feature is the "Last known location" layer helping to map and direct emergency response.
3. We built the initial indexed search maps for the initial responders and strike teams - printed nearly 200 maps in under 10 hours. We are now finishing a revised and expanded search map set that covers eight county areas and will be used for house-to-house.
4. We ran the initial HAZUS model that provided what's turned out to be an unfortunately accurate prediction of what has happened. This helped operational managers pre-position response assets out of harm's immediate way and still within range to help.
5. We have printed more than 5,000 linear feet of maps off of two plotters. Mapping support services include the location of critical infrastructure such as water well heads, water treatment plants etc... that cannot be easily located due to the amount of debris.
6. Generated the briefing maps being seen by everyone from the individual responder through the President and showing things such as power outages, location of trees road closures, etc...