Connecticut's Geospatial Newsletter

CONNECTICUT Geo-Focus

Spring Edition 2012
Volume 5, Issue 1

Last Issue: From the CT GeoDESK

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Newsletter Contacts

Submit letters, projects, feedback and articles to:
beth.kelly2@us.army.mil or
peter.sandgren@ct.gov

These articles are published for the education and enjoyment of the GIS community, and may be edited to fit space available.

The CT Geospatial Council does not endorse or recommend any software programs.
www.ct.gov/gis

Governor's BILL 5027

an act implementing the Governor's Budget recommendations concerning the elimination, consolidation and modification of various boards and commissions.
http://www.cga.ct.gov/2012/TOB/H/2012HB-05027-R00-HB.htm
(a) The Office of Policy and Management shall constitute a successor department to the Geospatial Systems Information Council in accordance with the provisions of sections 4-38d and 4-39.

Raised BILL No. 426

An Act Concerning Geographic Information Systems Data Sharing:

On or before January 1, 2013, and quarterly thereafter, each electric company and electric distribution company, as defined in section 16-1 of the general statutes, shall file with the Public Utilities Regulatory Authority an updated electronic copy of any geographic information systems or geospatial information systems data set for such electric or electric distribution company's service area. Any such data set shall identify any right-of-way or easement and such electric or electric distribution company's electric distribution infrastructure including, but not limited to, utility pole data.
http://www.cga.ct.gov/2012/TOB/S/2012SB-00426-R00-SB.htm

Improving Customer Service and Accountability using GIS, GPS, and Web Technologies

By Scott Roberts, CGCIO, GISP
CIO / Director Information Technology
Dawn Mulholland, GIS Analyst
Town of South Windsor, CT

Here in South Windsor we are working with new technology to allow town staff to interact and collaborate with our citizens in an effort to provide project and community event information, better respond to community complaints/issues, and allow the public to view the status of some of our mobile programs. Our software solution, built on ArcGIS by ESRI, displays work ticket locations in real-time via a public website displaying the citizens concerns, staff assignments and the tickets active status. *Continued on pg 2, 3*

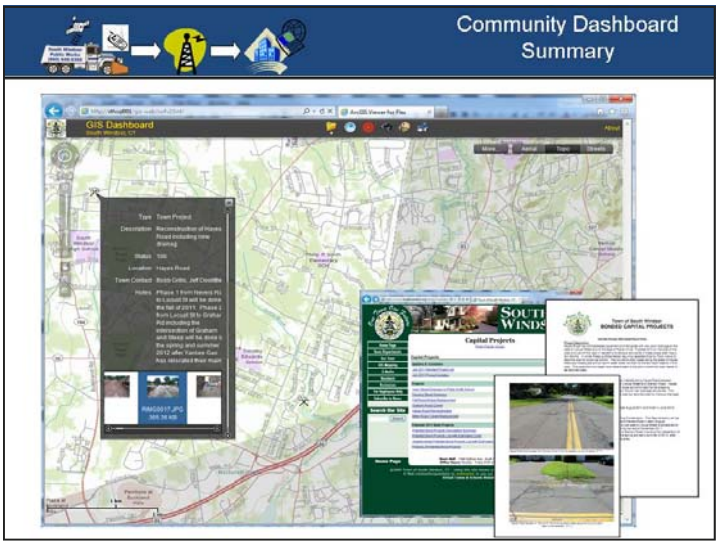
GET ON BOARD WITH THE DASHBOARD

Continued from page 1.

This provides real-time feedback and accountability for all involved. Additionally, we have integrated this mapping technology with our email system to respond to staff and the original requestor to provide feedback thru all critical stages of the work ticket from submittal to closure.

The Citizen Service Request (CSR) dashboard was implemented in January 2012 after intensive use and testing internally by town staff and our project leaders that included Mike Gantick, Scott Roberts and Dawn Mulholland.

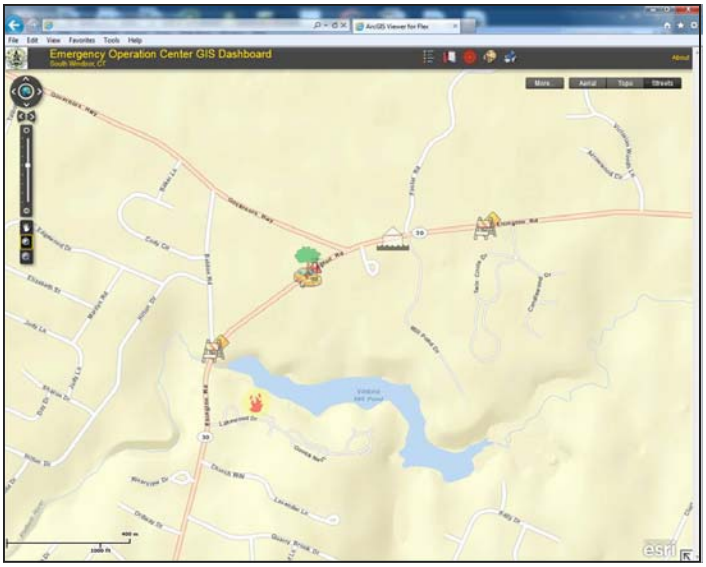
The list of service requests that the public can submit is quite extensive. Examples are potholes, dead animals, missed trash and recycling and storm related damages. "Now that service requests are stored in one database we are less likely to have requests fall thru the cracks improving service and accountability." said Gantick.



During Hurricane Irene and the devastating October 2011 snow storm we made use of the existing citizen service request dashboard to manage the down power lines and road closures in our Emergency Operations Center (EOC).

The public and staff can access the system with any internet browser that supports adobe flash and work is underway to support other mobile platforms such as the iphone, android phones and even tablets. Increasing the number of devices that can access the CSR Dashboard will improve the overall citizen satisfaction in their government. We have integrated a custom reporting engine that allows for flexibility as staff / department requests change. This ability will improve the visibility and analysis of the data to staff as they provide information for budgeting and program evaluation.

We also have a component of this system that allows town staff to post critical (construction) project information on the dashboard. This allows citizens to view updates to construction activities like detours and progress of construction throughout town. In addition, construction schedules, press releases, photos and links to other valuable website links will be provided. This allows the town staff, contractors and the public to stay informed about the projects in one easy to use location. There is a community events dashboard which displays where an event will be held along with associated information (example- Hartford Marathon, Wapping Fair, or Hazardous Waste Collection). Here we will provide links to other related website or sources of information as well as road closures, and public viewing locations.



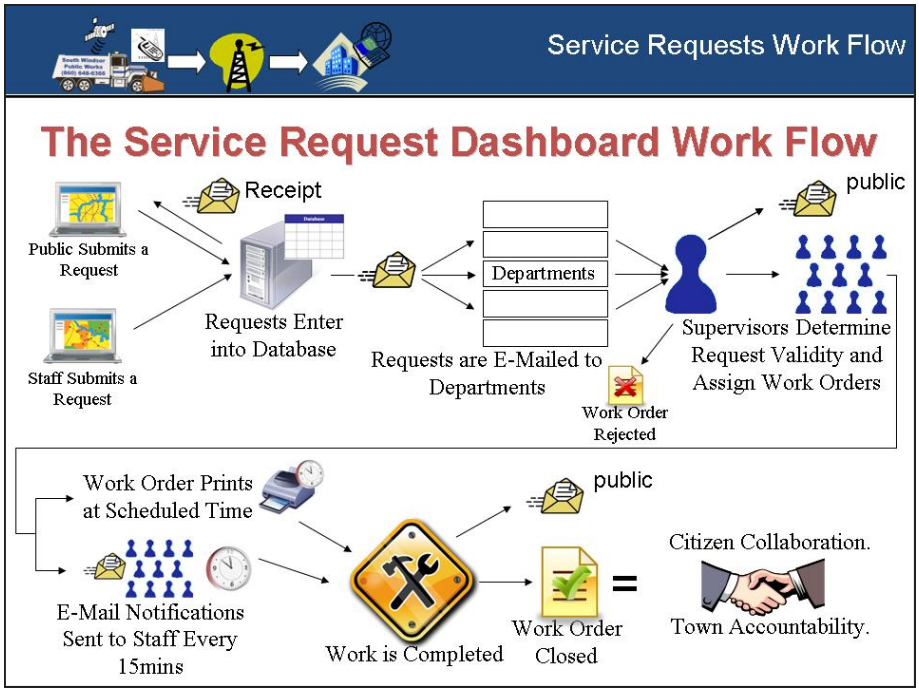
With the integration of GPS technology into the dashboard we are able to display the locations of leaf collection machines, snow plows, and other equipment to better manage and dispatch during programs like leaf collection, snow removal, and other events. *Continued on page 3*

GET ON BOARD WITH THE DASHBOARD

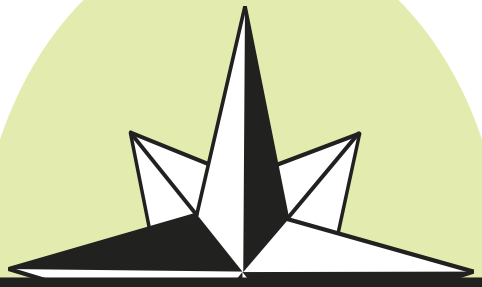
Continued from page 2.

During the 2011 October snow storm, we used the GPS tools with our leaf collection program quite extensively. Our GIS Analyst received daily updates from the Town's debris contractor and overlaid the information with our leaf collection routes. Having the ability to see where the debris had been removed made the scheduling and collection of leaves more efficient and enabled staff to keep the residents updated on the status of both programs. The Town Council and Town Manager's Office received many positive comments from our citizens on how Public Works managed the debris and collection process. We have recently completed the installation of additional GPS units in our snow plows trucks. Using the new snow plow dashboard, Public Works managers have the ability to see real-time locations of their trucks and determine operational guidelines are being met with regards to travel speed, centerline clearing or final cleanup. We have installed a tablet computer within the public works supervisor's truck that allows managers to use the snow dashboard in the field.

During Hurricane Irene and the devastating October 2011 snow storm we made use of the existing citizen service request dashboard to manage the downed power lines and road closures in our Emergency Operations Center (EOC). Although the tool was beneficial, we quickly learned more symbology and additional fields of data were needed to manage the events. Based on our experience and feedback from our police and fire officials we have developed an Emergency Operations Center dashboard. We have created new symbology for emergency requests and for outside agency crews such as CL&P, Yankee Gas, AT&T, MDC and others. This dashboard allows us to track where crews are, when they arrive and most importantly when they complete their task. With the existing ability to show real-time locations of our public safety vehicles, Public Works trucks and outside agencies using the gps technology, our emergency officials can better facilitate response and deliberation.



Our dashboard technology is flexible. Holding ownership of the source code, staff can make modifications and enhancements to current dashboards and produce numerous variations in as little as an hour of time which can be very beneficial in an emergency situation. Our technology is adaptable and allows us to fulfill public requests while meeting the needs of our staff. We are providing tools to allow the public to engage its government 24/7 in an effort to build synergy and team work among town staff, and the public. That is the real value of the dashboard technology, and it is only the beginning!!



"Cloud Atlas"

"Three or four times only in my youth did I glimpse the Joyous Isles, before they were lost to fogs, depressions, cold fronts, ill winds, and contrary tides... I mistook them for adulthood. Assuming they were a fixed feature in my life's voyage, I neglected to record their latitude, their longitude, their approach. Young ruddy fool. What wouldn't I give now for a never-changing map of the ever-constant ineffable? To possess, as it were, an atlas of clouds."

— David Mitchell, Author

Free FEMA Flood Maps

Spring rains are right around the corner. Preplan with the FEMA Flood Maps for your area by requesting a CD from their website. An image viewer, called Flood Map Image Tool (F-MIT) Basic version 1.0, is packaged with the scanned maps on CD-ROM. It allows customers to view, zoom in and pan the image. In addition, F-MIT enables customers to create a "FIRMette". Go to Digital Flood Insurance Rate Maps (DFIRMs) and order at no cost.

Map Data: Alternative Fuel Stations!
Map Data: Solar Energy Potential!
Map Data: DOE Facilities!

The geospatial vector data has been compressed into one file. You will need to uncompress it before using a geographic information systems (GIS) program to view the data.

http://energy.gov/downloads/map-data-alternative-fuel-stations

SPRING NEARC Tuesday, May 22, 2012

at Smith College Campus Center North Hampton , MA
Posters, Presentations, Keynote Speaker, Lightning Talks and Lightning Karaoke, Workshops, Open Discussion in the Campus Pub http://www.northeastarc.org/index.html

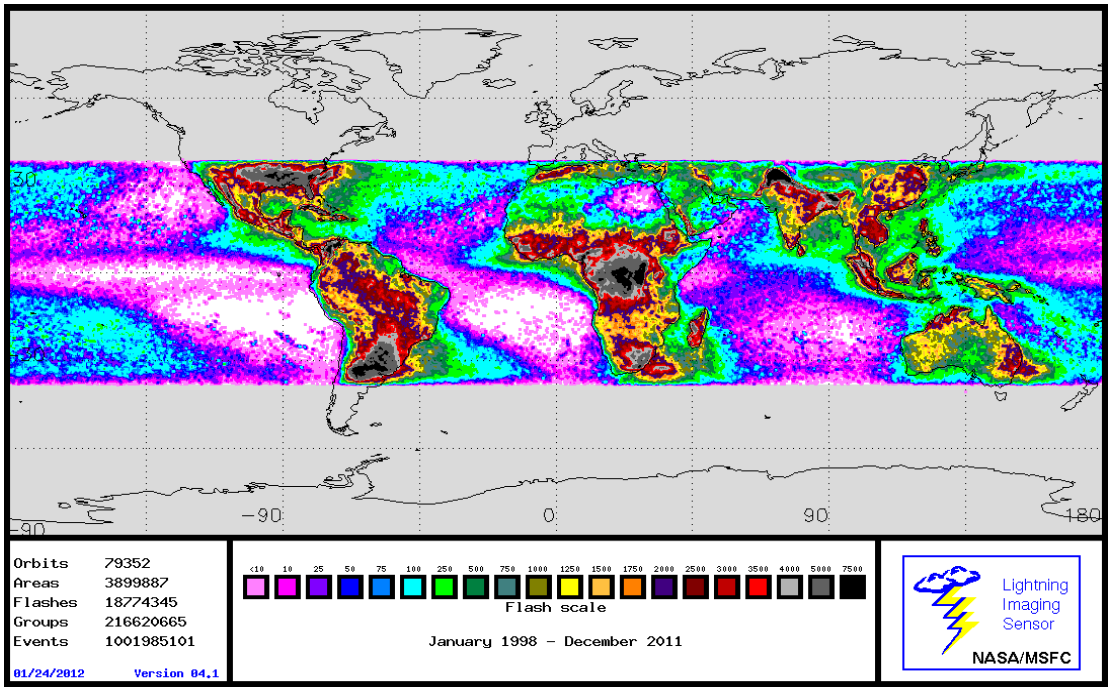
NEARC Northeast Arc Users Group

New York State GIS Conference May 15-16, 2012

This year it will be held at Syracuse, NY
Crowd-sourcing, smartphones, cloud computing...if it's a hot topic in the industry, we'll be talking about it! Register for this exciting conference at www.esf.edu/nysgisconf/2012/register.htm

Lightning Mapper Sensor (LMS) Program by NASA

The Lightning Mapper Sensor Program is intended to place a sensor, capable of continuously mapping lightning discharges during both day and night, into a geostationary orbit. From this orbit, the sensor would be capable of detecting all forms of lightning with a high spatial resolution and detection efficiency. This sensor could continuously monitor lightning activity over the United States and provide a more complete dataset than is currently possible. With such an instrument, scientists could study the electrosphere over dimensions ranging from the Earth's radius all the way down to individual thunderstorms. The sensor would be capable of detecting all types of lightning phenomena, and would provide nearly uniform spatial coverage.



Disseminating this information in near real time, these measurements could be related on a continuous basis to other observable data, such as radar returns, cloud images, and other meteorological variables. Since this data would be distributed in real time (as it is collected), it would also be an invaluable tool to aid weather forecasters in detecting severe storms in time to give advance warning to the public.

They have been producing maps of global lighting activity derived from the Defense Meteorological Satellite Program (DMSP) Operational Linescan System (OLS) sensor. Initially, they used the analog film strips archived at the National Snow and Ice Data Center located at CIRES/University of Colorado. Lightning signatures appear as horizontal streaks in the smoothed (2.5 km) nighttime visible band imagery. A human analyst would hand digitize these streaks and record the latitude, longitude, and time of the lightning discharge. For example, the 1986 annual lightning distribution is derived from more than 40,000 orbits (film strips). (Reference: Goodman, S. J. and H. J. Christian, 1993: Global Observations of Lightning, in "Atlas of Satellite Observations related to Global Change," Gurney, Foster, and Parkinson, ed., Cambridge University Press, 191-219). In 1991-1992 the film archive transitioned to a digital archive, also located at the University of Colorado and the National Geophysical Data Center (NGDC). They have recently succeeded in developing and implementing a neural network and pattern recognition algorithm that automatically extracts the lightning discharge time and location (primarily from the F10 and F12 satellites).

They are using these data bases to extend our observations into the mid 1990s. They are also inter-comparing these lightning distributions to those derived from observations made by the recently launched NASA Optical Transient Detector. This instrument was a prototype for the EOS Lightning Imaging Sensor (LIS) that was launched on the Tropical Rainfall Measuring Mission (TRMM). In addition, They can compare the occurrence of lightning with the Special Sensor Microwave/Imager (SSM/I) indications of rainfall and precipitation sized ice using the multispectral passive microwave frequencies. These data sets have been requested and used by atmospheric chemists studying NOx budgets and transport (lightning is a significant natural source of NOx) and by atmospheric physicists and meteorologists interested in the natural variability of thunderstorms.

Geo-Networking

URISA Connect—Webinar Events

Flood Hazards: GIS Applied in the Collection and Dissemination of Spatial Data — March 27
I've Seen the Future and it's my Browser: GIS Development in the Mobile Era — April 11
LiDAR Webinar Series

- April 25, 2012 : Part 1 - LiDAR 101
- May 23, 2012 : Pat 2 - Project Planning
- June 27, 2012 ; Part 3 - Data Quality Control

Asset Management Webinar Series

- September 18, 2012 : Part 1 - Introduction to Asset Management
- October 16, 2012 : Part 2 - Asset Management Data Collection
- November 13, 2012 : Part 3 - Asset Management Analysis and Maintenance

There is a registration fee for these Webinars. If you are a member of URISA some of them are free.
Follow the link for more information. http://urisa.org/

The Connecticut GIS User to User Network Meeting

Thad J. Dymkowski, GISP, President Connecticut User To User Network

The Connecticut GIS User to User Network will hold their Spring Quarterly Meeting on Friday, March 30, 2012 at the University of Connecticut, Greater Hartford Campus, 85 Lawler Road, West Hartford, CT. The meeting will start with networking opportunities at 8:30 AM and the first presentation will begin promptly at 9:00 AM. Among the presenters and presentations will be Mr. Tyler Kleykamp from the State Office of Policy and Management. He will be speaking on the recent Governor's Bill Number 5027 regarding the impacts on the Connecticut Geospatial Council and future plans regarding GIS in the State of Connecticut.

For those of you unable to physically attend the meeting, arrangements are being discussed for a web broadcast of the meeting. Additional details regarding this meeting will be forthcoming over the next few weeks. I look forward to seeing you all there for this important presentation.

University of Connecticut | College of Agriculture & Natural Resources
Center for Land Use Education & Research

CLEAR's Spring/Summer Geospatial Training Schedule

- **Geospatial Technologies at Work: An Introduction to GIS: April 18-20 and June 20-22**
- **Creating and Using Geospatial Models: An Introduction to ModelBuilder: April 25**
- **Developing Custom Geoprocessing Tools: An Introduction to Python Scripting: May 1-2**
- **Pictures, Points and Places: An Introduction to GPS: June 14-15**

Coming soon!

Using ArcGIS Online to Create and Share Interactive Web Maps - summer 2012
Visit http://clear.uconn.edu/geospatial

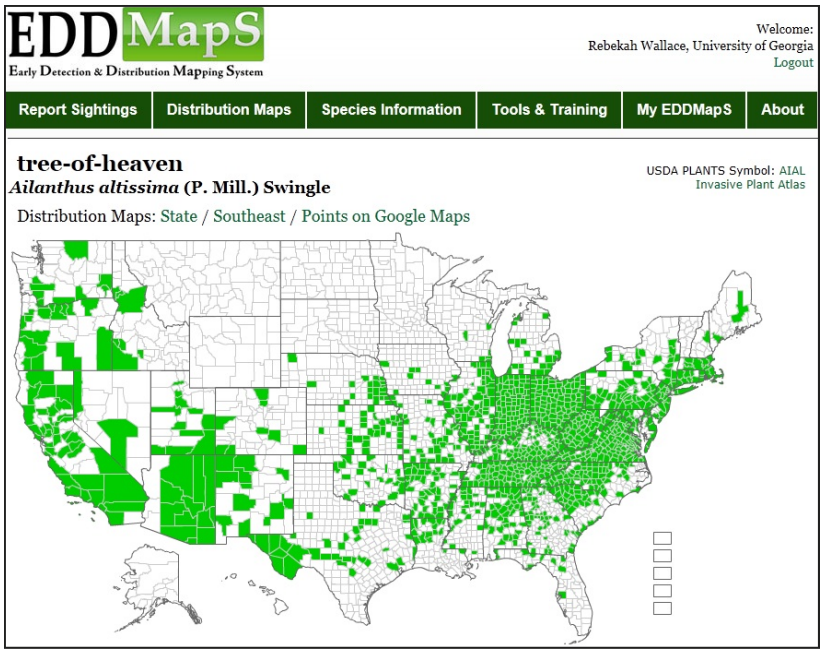
CLEAR

Mapping Invasive Species with EDDMapS

Rebekah D. Wallace and Charles T. Bargeron, University of Georgia

The Early Detection and Distribution Mapping System (EDDMapS) was developed by the University of Georgia's Center for Invasive Species and Ecosystem Health (CISEH) and launched in 2005. It was designed as a tool to aid Early Detection and Rapid Response programs by aggregating and displaying invasive species distribution data on a county, state, national, and international basis. EDDMapS recruits data from a variety of sources including USDA NRCS Plants Database, The Nature Conservancy, the National Park Service, state departments of agriculture, herbariums, regional invasive mapping efforts, and individual reports. CISEH is also working toward incorporating existing invasive species mapping databases, such as the Invasive Plant Atlas of New England (IPANE), into EDDMapS. By incorporating data from many resources, EDDMapS is able to provide a more complete picture of an invasive species' range and call attention to the leading edge of the infestation as well as any gaps where data may not exist.

The EDDMapS database is housed in Microsoft SQL Server 2008 and ColdFusion 9 is used to create XML or JSON data feeds which are combined with either FlashMaps or the Google Maps API to generate dynamic representations of the data. Flashmaps is used to display distribution data on a state and county level. The Google Maps API Version 3 is embedded within the EDDMapS website and is used to show aggregated clusters when viewed at higher level and individual points when the user zooms in. Point data can only be viewed if the user recorded the GPS coordinates in the field, or if the coordinates were selected via the embedded Google map on the web reporting forms. The combination of these reporting features and map types allows for quick and easy uploading and display of submitted data by anyone from a homeowner to a geospatial analyst.



The growing adoption of smartphones has led to the production of new tools in invasive species mapping. CISEH has worked with several regional Cooperative Invasive Species Mapping Areas and Exotic Pest Plant Councils to offer smartphone applications to make invasive species mapping even easier. Most smartphones have a built-in camera, GPS, browser, and ability to download applications which can replace the need to carry a separate GPS unit, camera, pen and paper, and ID guides. One such app, IveGot1 for iPhones, was developed by CISEH with the support of the National Park Service, Florida Fish and Wildlife Conservation Commission, and University of Florida for invasive plants and animals in Florida. All apps provide text and pictures for identification, maps, and reporting of the species of concern for those projects and regions. With these tools, reporting can be done in field when prepared for invasive species mapping or when seeing something while walking around your neighborhood. For more information go to http://eddmaps.org/

Trooper holding Python by Bob DeGross, National Park Service, Bugwood.org

Radio Tagging Python by Lori Oberhofer, National Park Service, Bugwood.org

Aquatics and many other categories are also mapped by state or county.

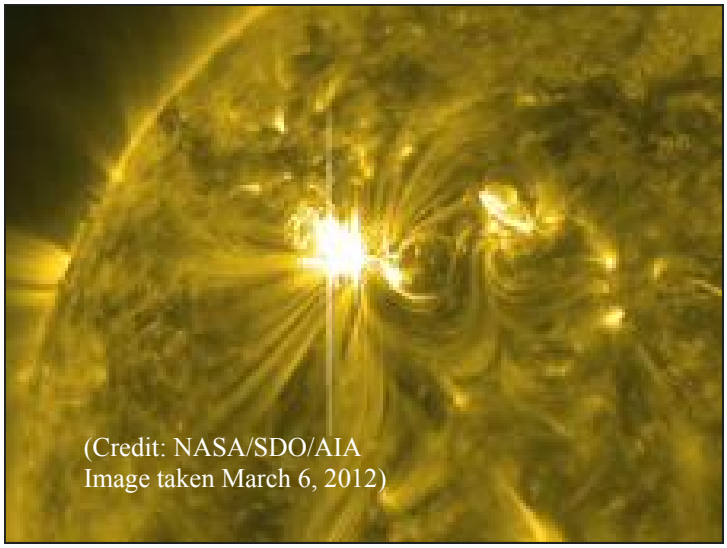
The National Alliance for Public Safety GIS Foundation

The National Alliance for Public Safety GIS Foundation is looking to bring in members from Connecticut. The National Alliance for Public Safety GIS Foundation is a 501 (C) (3) not-for-profit organization that was formed in 2005 to overcome the challenges faced by Federal, tribal, state, and local public safety agencies. It was reorganized in 2008 to operationalize the mission through education and research around information sharing and data interoperability associated with GIS and advanced technologies used by the public safety and homeland security communities. NAPSG Foundation relies on a broad base of support from public safety and homeland security professionals across all levels of government. It also works with private sector industries that are dedicated to achieving a higher level community resilience. If you are interested in participating in this group of very special GIS practitioners and professionals, please contact Capt. Steve Pollackov at the Fire Department New York City at pollacks@fdny.nyc.gov for details on becoming part of the newly expanded North East Group. Posted to the CTGIS_LISTSERV on February 3, 2012
http://www.napsgfoundation.org/

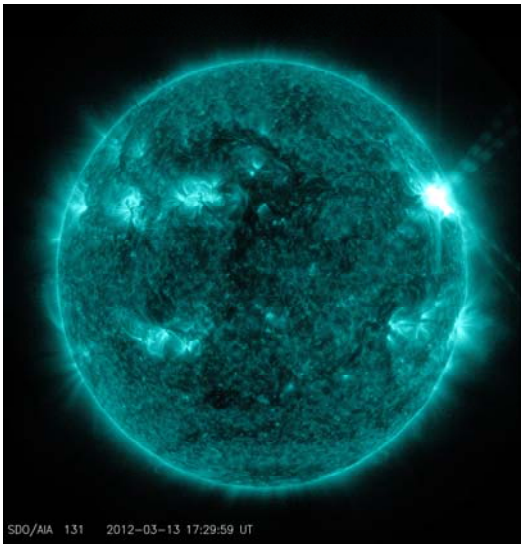
Solar Flare Imagery From NASA

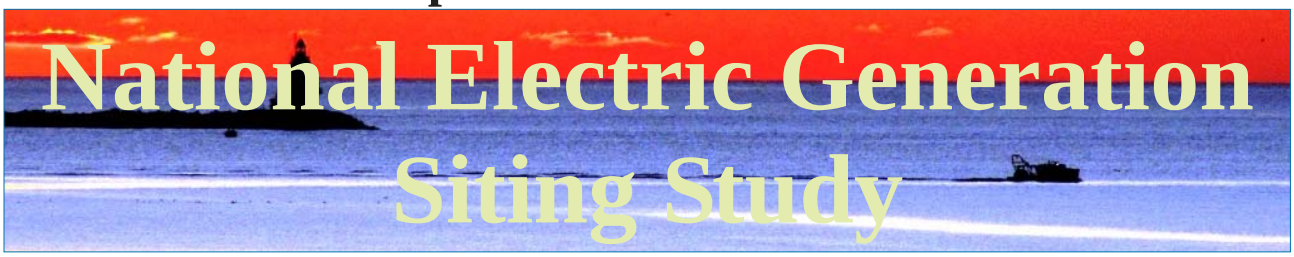
Geostationary Operational Environmental Satellites (GOES) # 15 will become the Primary SWPC SXI satellite replacing GOES 14. There is no Secondary SXI satellite. The GOES 12 through 15 spacecraft each carry a sophisticated Solar X-ray Imager to monitor the Sun's X-rays for the early detection of solar flares, coronal mass ejections, and other phenomena that impact the geospace environment. This early warning is important because travelling solar disturbances affect not only the safety of humans in high-altitude missions, such as human spaceflight, but also military and commercial satellite communications. In addition, coronal mass ejections can damage long-distance electric power grids, causing extensive power blackouts.

On March 13, 2012, the sun erupted with an M7.9-class flare that peaked at 1:41 p.m. EDT. This flare was from the same active region, No. 1429, that has been producing flares and coronal mass ejections all week. That region has been moving across the face of the sun since March 2, and will soon rotate out of Earth view.


(Credit: NASA/SDO/AIA
Image taken March 6, 2012)

The photo on the right was taken on March 13, 2012 at 1:29 p.m. of a solar flare captured by NASA Solar Dynamics Observatory. The photo on the left is from the March 6, 2012 flare captured by the Solar Dynamic Observatory in the 171 Angstrom wavelength

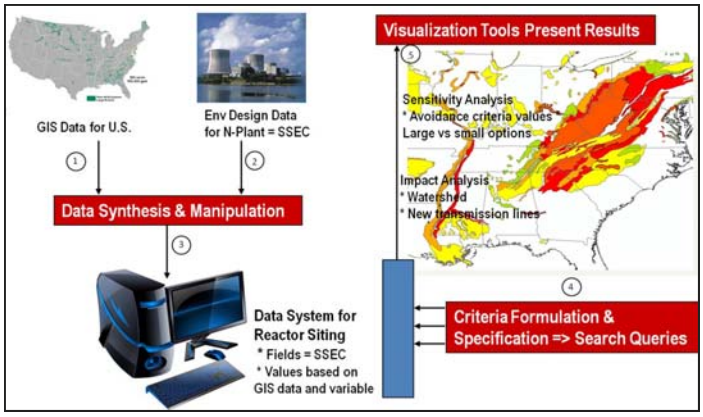




Application of Spatial Data Modeling and Geographical Information Systems (GIS) for Identification of Potential Siting Options for Various Electrical Generation Sources

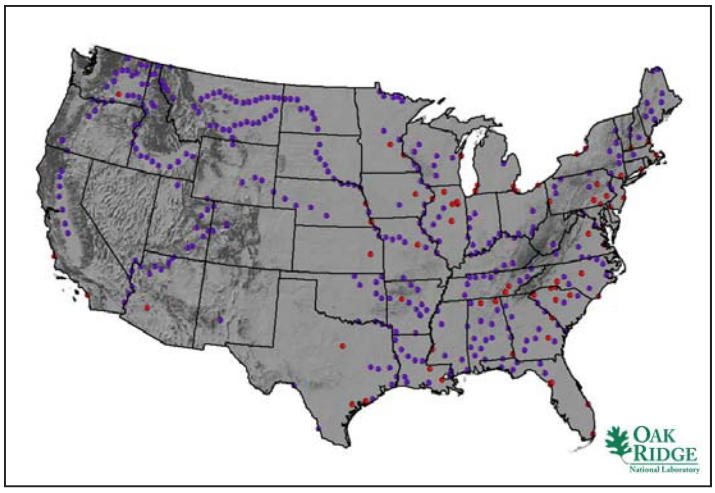
Prepared by G. T. Mays (Project Manager), R. J. Belles, B. R. Blevins, S. W. Hadley, T. J. Harrison, W. C. Jochem, B. S. Neish, O. A. Omitaomu, A. N. Rose

Oak Ridge National Laboratory (ORNL) initiated an internal *National Electric Generation Siting Study*, which is an ongoing multiphase study addressing several key questions related to our national electrical energy supply. This effort has led to the development of a tool, OR-SAGE (Oak Ridge Siting Analysis for power Generation Expansion), to support siting evaluations. The objective in developing OR-SAGE was to use industry-accepted approaches and/or develop appropriate criteria for screening sites and employ an array of Geographic Information Systems (GIS) data sources at ORNL to identify candidate areas for a power generation technology application. The initial phase of the study examined nuclear power generation. These early nuclear phase results were shared with staff from the Electric Power Research Institute (EPRI), which formed the genesis and support for an expansion of the work to several other power generation forms, including advanced coal with carbon capture and storage (CCS), solar, and compressed air energy storage (CAES). Wind generation was not included in this scope of work for EPRI.



The OR-SAGE tool is essentially a dynamic visualization database. The results shown in this report represent a single static set of results using a specific set of input parameters. In this case, the GIS input parameters were optimized to support an economic study conducted by EPRI. A single set of individual results should not be construed as an ultimate energy solution, since US energy policy is very complex. However, the strength of the OR-SAGE tool is that numerous alternative scenarios can be quickly generated to provide additional insight into electrical generation or other GIS-based applications.

The scope of work for this geospatial study is aimed at identifying candidate site areas for a variety of electrical generation plants and further characterizing these sites to support comparing and contrasting them; e.g., for a given site, which type of plant is best suited for that site, how far is it to existing electrical transmission capacity, what is the distance to underground geological formations suitable for carbon sequestration, and what should the mix of generation be under certain conditions. The results provide insight into certain advantages one generation source may have over the others. This is typically a regional debate. Often, the generation source with the best advantage is not conveniently located near any load demand. Such situations necessitate a coordinated energy policy to generate and deliver power where it is needed. The OR-SAGE siting analysis tool provides the capability to evaluate a variety of power generation sources simultaneously. This capability can factor into policy and economic decision making. The geospatial analysis of additional power generation sources should be included in follow-on studies when possible to maintain a well-rounded policy and economic viewpoint. To view the entire report go to http://www.osti.gov/bridge



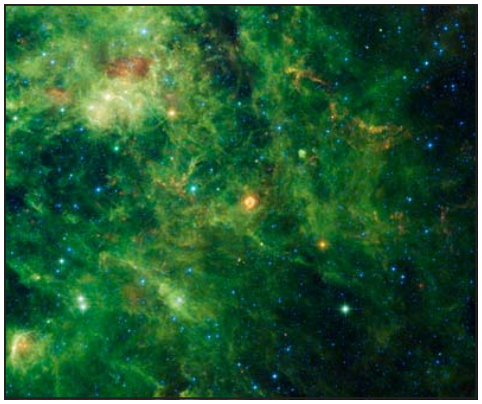
Large reactor plant placement capacity estimated by state,
Red dots—Proposed and existing sites.
Purple dots—New capacity estimate

NASA Releases New WISE Mission Catalog Of Entire Infrared Sky

NASA unveiled a new atlas and catalog of the entire infrared sky today showing more than a half billion stars, galaxies and other objects captured by the Wide-field Infrared Survey Explorer (WISE) mission.
"Today, WISE delivers the fruit of 14 years of effort to the astronomical community," said Edward Wright, WISE principal investigator at UCLA, who first began working on the mission with other team members in 1998.

WISE launched Dec. 14, 2009, and mapped the entire sky in 2010 with vastly better sensitivity than its predecessors. It collected more than 2.7 million I mages taken at four infrared wavelengths of light, capturing everything from nearby asteroids to distant galaxies. Since then, the team has been processing more than 15 trillion bytes of returned data. A preliminary release of WISE data, covering the first half of the sky surveyed, was made last April.

The WISE catalog of the entire sky meets the mission's fundamental objective. The individual WISE exposures have been combined into an atlas of more than 18,000 images covering the sky and a catalog listing the infrared properties of more than 560 million individual objects found in the images. Most of the objects are stars and galaxies, with roughly equal numbers of each. Many of them have never been seen before.

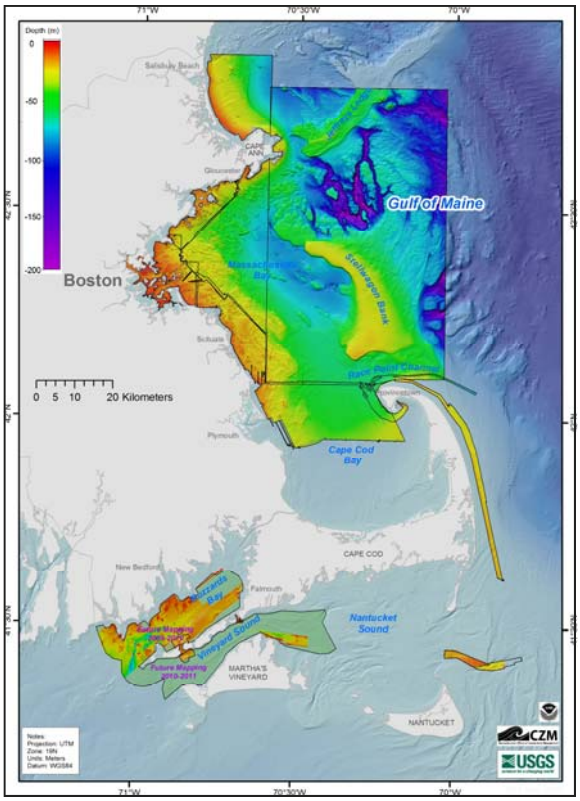


Echoes of a Death Cry— 11,000 years ago, a massive, supergiant star in our Galaxy came to the end of its life. In the image, the central bright cloud of dust is the blast wave moving through interstellar space heating up dust as it goes. Image credit: NASA/JPL-Caltech/WISE Team.

WISE observations have led to numerous discoveries, including the elusive, coolest class of stars. Astronomers hunted for these failed stars, called "Y-dwarfs," for more than a decade. Because they have been cooling since their formation, they don't shine in visible light and could not be spotted until WISE mapped the sky with its infrared vision.

WISE also took a poll of near-Earth asteroids, finding there are significantly fewer mid-size objects than previously thought. It also determined NASA has found more than 90 percent of the largest near-Earth asteroids.

For a collection of WISE images released to date, visit: http://wise.ssl.berkeley.edu/gallery_images.html
An introduction and quick guide to accessing the WISE all-sky archive for astronomers is online at: http://wise2.ipac.caltech.edu/docs/release/allsky

Geologic Mapping Of the Seafloor Offshore Massachusetts

Two seafloor-mapping surveys off the coast of Massachusetts in spring and summer 2011 wrapped up fieldwork for the mapping phase of the investigation by the Massachusetts Seafloor Mapping Cooperative (http://woodshole.er.usgs.gov/project-pages/coastal_mass/), a collaboration between the U.S. Geological Survey (USGS) Woods Hole Coastal and Marine Science Center (WHSC) and the Massachusetts Office of Coastal Zone Management (CZM). The long-term objectives of this program are to provide a framework for scientific research and to develop geologic information to assist the management of coastal and marine resources. High-resolution spatial data and detailed maps of seafloor geology build a foundation for protecting fish habitat, delineating marine resources, and assessing environmental changes caused by natural or human impacts. Initiated in 2003, this collaborative program has produced five USGS Open-File Reports containing spatial data and geologic interpretations of the seafloor within state waters. A regional seabed characterization map will be produced as a final product of the mapping phase, along with derivative reports on the Quaternary geology of the region.