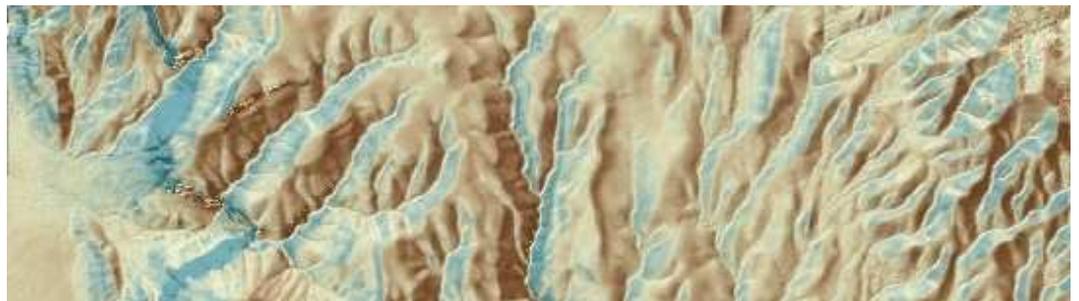


NMGIC Spring Meeting 2008

The New Mexico Geographic Information Council, Inc. (NMGIC) will hold its 2008 Spring Meeting on April 25th, 2008 in Albuquerque, New Mexico. The meeting theme is "From DOQQ to Google: Facing the Challenge of Geospatial Imagery", with presentations on managing, deploying and incorporating imagery in geospatial applications. The meeting will be held at the Rotunda of the Science & Technology Park (a map, as well as meeting details can be found at the NMGIC website <http://nmgic.unm.edu>). A brief summary of the program is given on page 3.

The Spring Workshop will be held Thursday, April 24th from 9am – 4pm and features both **Bob Potter** from CompassTools Inc. - *MapGuide Open Source: Quickly Develop & Deploy Web Map Applications and Geospatial Web Services*, and **Nelson Guda** from Roadless-land.org - *Serving Up Your World: How to Get Your Geographic Data Online with Google & Other Available Tools*. Workshop admission is free. (Continued on page 3 ...)



Looking Beyond RMSE As A Metric For DTM QA/QC

by Rick Koehler (State of NM Energy, Minerals & Natural Resources Department)

In 2005, New Mexico acquired digital orthophotography for the entire state; a Zeiss DMC camera was mounted on a jet which flew the state collecting both natural color RGB and color infrared imagery at 1 meter resolution. Through a rather complex collaboration, thirteen agencies ranging from local through tribal and state to federal worked together to fund the project. The resulting comprehensive state-wide natural color coverage has been made available through the RGIS Clearinghouse, as well as being distributed to the contributing agencies on portable hard drives, and a county mosaic delivered to each county. New Mexico received a lot of bang for the buck. But the story doesn't end there.

As many of you know, within the last year, New Mexico embarked upon some uncharted waters (at least, for NM): developing a comprehensive set of Digital Terrain Models (DTM) from that same imagery acquisition. Using a technique called spatial auto-correlation (SA), elevations were derived from the imagery data-

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The Map Legend

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NMGIC Spring 2008 Meeting *(Continued from page 1)*

Generalized Meeting Program:

Time	Description
8:30 to 8:45am	Registration / Coffee-Tea / Exhibits
8:45 to 9:00am	Announcements/Welcome
9:00 to 9:30am	N.M. Premier of "An Idea that Worked", celebrating former Secretary of Interior Stewart Udall
9:30 to 10:00am	Presentation: Nelson Guda – The Road to Roadlessland
10:00 to 10:30am	Presentation: Bob Potter – Web Publishing Using MapGuide (Open Source & Enterprise)
10:30 to 11:00am	Break
11:00 to 11:30am	Presentation: Rich Friedman & Bobby Kimball, City of Farmington - Pictometry Demonstration
11:30 to 12:00pm	Presentation: David Jordan, Intera - Field Verification of a Remote-Sensing Based Method ...
12:00 to 1:10pm	Lunch
1:10 to 2:10pm	Vendors' Vignettes - Perspectives on Delivering Imagery to Large Audiences
2:10 to 2:20pm	Short Break
2:20 to 3:15pm	Vendor Roundtable – Discussion / Questions about the direction the industry is heading
3:15 to 3:30pm	Wrap-up, Door Prizes and Closing Session

Mystery Photo Location

This Mystery Photo was taken somewhere here in New Mexico. Can you identify the location?

Only one person has correctly identified any of the photo sites to date, so at the request of "HA", this month's photo actually has a visible "horizon line"!

A "semi-luxo" prize will be awarded to the first person who correctly identifies the location.

Contact Rick Koehler with your answer.



Message From The Outgoing NMGIC President

NMGIC'ers

With 2007 coming to a close here's a little recap and review of the year to come. 2007 was an interesting year for NMGIC. We only held one official NMGIC meeting but were honored to co-host the 2007 Southwest Users Group in Santa Fe this fall. The year began with our Spring Meeting that included a very interesting talk by Chris Blewitt speaking on the Rail Runner and many other papers focusing on *Bringing GIT Home: Community & Regional Geospatial Applications*. Planning for SWUG then made the remainder of the year fly by as the summer months were consumed by many of us preparing for SWUG. We soon discovered that this was no small undertaking for a bunch of amateurs.

The 2007 SWUG conference was held October 30 through November 1 in Santa Fe. It was a great success with over 215 attendees from at least 8 states and two countries. The focus of this conference was "*How you did it*" with the goal being "*Treat Us to Your Tricks*". The historic La Fonda hotel provided a wonderful venue with great New Mexican atmosphere for those coming from out of state. To kick it off Anna Sofaer, Bill Stone and Rich Friedman gave a fascinating keynote presentation on the Archaeo-Astronomy research they've conducted at Chaco Canyon over the last 10-15 years. Their talk was featured in a recent edition of GIS Cafe.com (http://www10.giscafe.com/nbc/articles/view_weekly.php?articleid=460092). The SWUG 2008 conference will be held in Laramie, WY October 20th-October 24th. Stay tuned to www.swuggis.org for details.

I'd like to thank all of those who helped put the meeting together and hand out some awards:

- **Doug Strech** – Lead Co-Chair – Awarded committee member most likely to be putting in extra hours
- **Amy Ballard** – Registration – Awarded cheeriest committee member
- **Shirley Baros** – Facilities – Awarded committee member most likely to have family members putting in extra hours
- **Deniz Berdine** – Exhibits – Awarded committee member with the most creative use of ArcMap
- **Larry Brotman** – Treasurer - Awarded committee member whose job will last the longest
- **Amy Budge** – Logistic Support – Awarded committee member with the most SWUG planning experience
- **Gar Clarke** – Special Events – Awarded committee member with the most knowledge on SWUG history
- **Jason Fink** – Web Guru – Awarded the best Jason on the committee and best musician
- **Kevin Hodson** – ESRI Liaison – Awarded best sport
- **Bart Matthews** – Workshops – Awarded committee member with the most participant ribbons
- **Christina Noftsker** – Posters – Awarded committee member most likely to invite Al Gore to speak
- **DeAnna Phillips** – Papers – Awarded committee member with the most colorful emails...not language wise...actually really colorful



Also last Fall NMGIC held its' annual Board election. Rick Koehler was re-elected, along with new Board members Gathen Garcia (PNM), Larry Brotman (NMTRD) and Leland Pierce (NMDGF). Previous Board members Sarah Masek, Bart Matthews and Kerri Mich decided not to re-run this year. I'd like to take this opportunity to thank them for their hard work on the board over the last several years. They have all made large contributions to NMGIC.

This Spring Chandra Bales again coordinated the NM Geographic Bee on Friday April 4th, 2008. I've been a judge in a couple and I can report that it's a blast. The kids are a lot of fun and have an impressive amount of geographic knowledge. It's a great event to support. For more information contact Chandra Bales (cbales@edac.unm.edu).



I look forward to seeing everyone at the Spring Meeting.

Kurt Menke, 2007 NMGIC President

Message From The Incoming NMGIC President

Dear NMGIC Members:

This next year, 2008, will be an interesting and busy year for many of us in the GIT community. To give you a quick update on NMGIC related topics:

- USGS will be providing a week of field time this Spring to collect x, y, and z data to validate the NM Digital Terrain Model. Over half of the state is completed and will be available following the QA/QC in a few months. One of our NMGIC board members is involved in the validation efforts - Rick Koehler.
- Another by-product of the 2005 orthophotography acquisition, in addition to the DTM, is elevation contours. Three quarters of the state's contours have been completed and are also undergoing QA/QC.
- Future aerial photography acquisition may happen in 2010. Much coordination and collaboration through GDACC is setting the groundwork for a collaborative effort to try to minimize costs.
- NMGIC continues to support the Statewide Geographic Bee which took place April 4th, 2008 at UNM. Chandra Bales from EDAC is the tireless coordinator of the Bee.
- We have decided to invigorate our GIT in Education Subcommittee. The kickoff meeting on March 21st was extremely successful. Areas of focus for the committee will be on curricula sharing, from K-12 through post secondary education and on GIT outreach efforts/information sharing. Look for more details in upcoming NMGIC emails.
- Bob Julyan from GNIS has hired Mike Burns as his intern. Mike is going through each USGS quad map in NM and reviewing the names on all geographic features except wells and mines. When he finds mis-located features, such as federal buildings, he tries to relocate them. He has completed approximately 34 quad maps. Please Note: If anyone has quad maps that they would like to make a priority, Bob can potentially move those to the top of the list.
- The Height Modernization Program is gaining steam here in New Mexico with the help of Bill Stone from the U.S. Geodetic Survey. One result of the two forums held in May, 2007, in Albuquerque and Las Cruces, was the formation of a Height Modernization Working Group, under the auspices of the New Mexico Geospatial Advisory Committee (GAC). The group is co-chaired by Garry Nielsen, NMDOT, and Prof. Earl Burkholder, NMSU Surveying Program. The fourth meeting of the group was held in January 2008 in Socorro at NM Tech. Dr. Gary Jeffress, director of the Texas Spatial Reference Center and head of the Texas Height Modernization Program, shared his experiences in building the Texas Height Modernization Program.
- Under a proposed joint NM-TX effort, NM and the Texas Spatial Reference Center have applied for federal funding to the National Geodetic Survey to build our Height Modernization capability. The result COULD be considerable (grants will range from \$100,000 to around \$1,000,000) funding for New Mexico to further our ability to accurately and efficiently determine elevation.

NMGIC is offering the Spring Workshop and Meeting, April 24th and 25th at the UNM Rotunda in Albuquerque. The topic for the Workshop is Creating Google Earth Mashups and using Open Source MapGuide. We are seeing Google Earth and other Earth Browsers causing a big shift in how we see the world. Find out how you can provide web based solutions to communicate with your customers/the public/the rest of your organization and take demand off of your employees. Is access to your geospatial data restricted because not everyone has ArcMap 9.x? Let the web distribute your geospatial data to people who might otherwise never experience it.

Friday's Meeting will build on the Workshop with the theme - From DOQQ to Google: Facing the Challenge of Geospatial Imagery. Our meeting will focus on topics ranging from GeoWeb of distributed imagery to how state agencies are using image analysis to assess water rights and everything in between. The Spring Meeting traditionally is our "vendor show" and we look forward to visiting with them and learning of new products and services. Drawings for some very nice door prizes will complete the day. Gathering at the NMGIC conference is a vehicle for personal and professional networking, and for sharing ideas and solutions using GIS. I am looking forward to sharing our work and seeing how we distribute our data on the Geoweb.

Hope to see you at the workshop and meeting! Christina Noftsker, NMGIC President

DTM QA / QC continued

(Continued from page 1)

set; these elevations were tied together using a series of established control points spread throughout the state. Bohannon-Huston, Inc. (BHI) performed the SA work, while 3001, Inc., the contractor who conducted the data-gathering flights, created contours as the elevation data became ready. The SA work was done using a 10x10 meter grid, for a number of reasons including data storage limitations, processing time required, and the potential degree of “noise” which might be generated by using a finer grid (such as 5 x 5 meter).

Early samples of the elevation data and derived contours were reviewed by members of the State’s Geospatial Data Acquisition Coordination Committee (GDACC) and others; the comparisons between existing contours (which were created over several decades) and the newly-created contours were favorable (see Figure 1), and work proceeded. Subsequent analyses of Root Mean Square Error (RMSE) for the elevations, conducted by BHI on each of the six processing “blocks” spanning the state, also seemed to indicate the elevations were within specifications for projects of this nature.

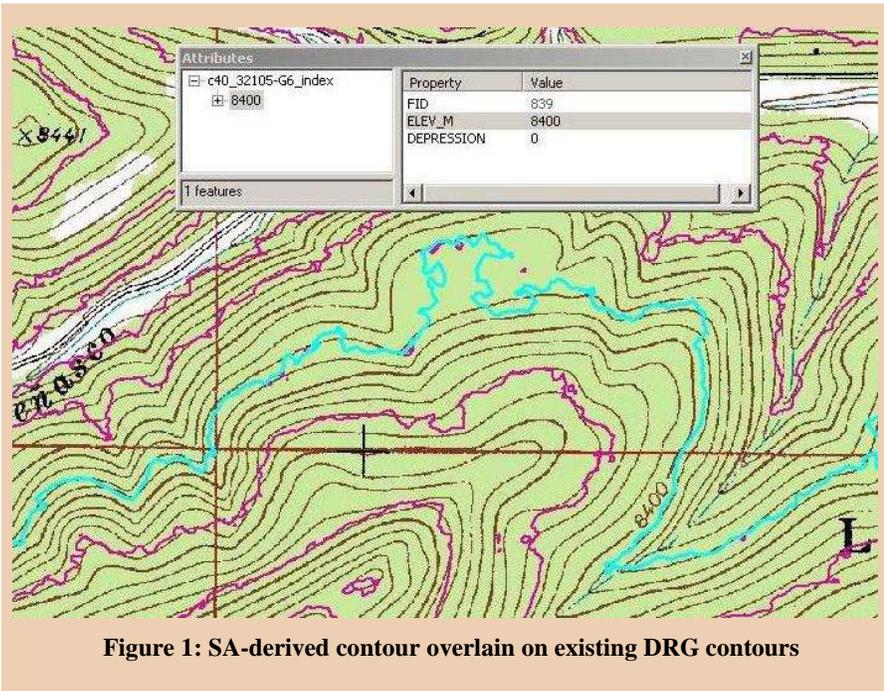


Figure 1: SA-derived contour overlain on existing DRG contours

It must be mentioned that doing spatial auto-correlation on such a large scale is fairly rare, if not unique, considering that New Mexico is the fifth largest state (~ 121,000 square miles), and encompasses roughly 8000 quarter quads. The sheer scale of the effort to produce the elevation data was daunting. Just as with the original orthophoto acquisition, or the processing of the color infrared data to produce CIR orthos, the funding for the DTM project came from a number of disparate sources (at times it seemed like desperate sources, indeed).

Members of GDACC decided to have a third party evaluate the elevation data, with the United States Geological Survey (USGS) being the logical choice. Gary Kress, the USGS Liaison for New Mexico,

was contacted, which also led to John Kosovich and Rusty Grout of USGS-Denver getting involved. It was hoped that if the elevation data passed muster, it might be found “fit enough” to be incorporated into the National Elevation Dataset (NED). Partially as a result of telephone conferences with the USGS, it occurred to the author to try comparing the new elevation data with existing DEM elevations using grid math. A group of DTMs near the Alamogordo, NM area had been delivered for analysis, so a grid math analysis was performed whereby one set of elevation data was subtracted from the other. If the elevations perfectly matched, the resultant grid would be populated with zeroes; if the new and old elevations differed, the individual cells would contain values reflecting the degree of apparent error (see Figure 2 on next page).

Susan Morrison of EDAC, and John Kosovich of USGS also began performing the same type of analyses, and arrived at the same rather jarring resultant grid, which seemed to indicate that, while there are scant disparity between new and old in the flat portions of the study area, the areas in the dissected hillslopes leading to higher elevations showed significant variances, and the high elevation/high relief areas had differences in excess of 180 meters. Theories flew fast and furious as to why such differences would crop up: were the two elevation datasets based on the same datum? (yes: the analysis was performed on equivalent datums); did the higher elevation areas contain greater amounts of vegetation which were somehow not eliminated in the processing? (maybe, but it’s hard to imagine 600 foot tall trees near Alamogordo), etc.

(Continued on page 7)

DTM QA / QC continued

(Continued from page 6)

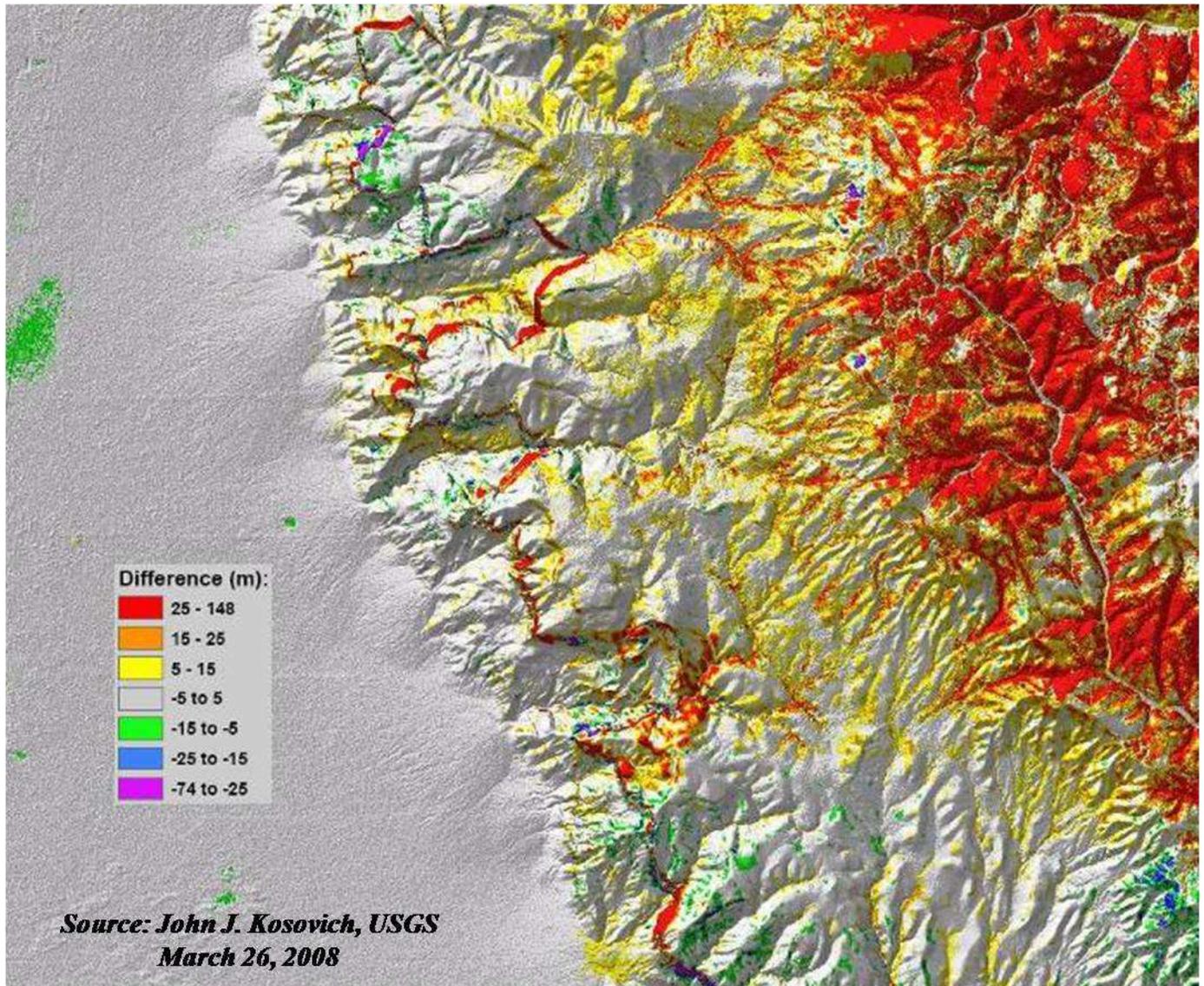


Figure 2: Spatial auto-correlation elevations minus elevations from NED (existing DEMs), Alamogordo area

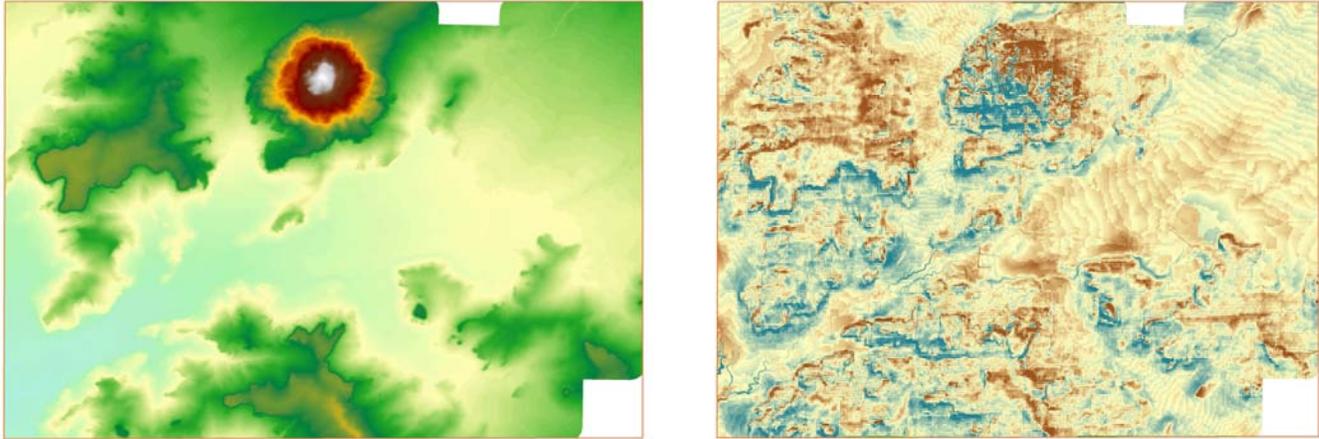
Test studies using both ArcGIS and other methods did show that a minor offset in the horizontal position of nominally co-located points would hardly effect the resultant grid in low relief areas, but could dramatically affect the differences in areas of high relief. Models were created to simulate this phenomena to a fairly high degree of success. But it was also important to understand that the problem might not be with the new DTMs, but rather with the existing DEMs which were largely produced by “dragging contours” and creating an allowable-but-discernable degree of error. So, it was a natural progression to add LiDAR datasets to the mix: two approximately 25 square mile areas in western New Mexico where the Energy, Minerals & Natural Resources Department (EMNRD) had acquired LiDAR in 2003.

Comparisons between the LiDAR and the existing DEMs show the same kind of discrepancies evident when comparing the Alamogordo area DEMs and new DTMs (see Figure 3a and 3b). Subsequent comparisons

(Continued on page 8)

DTM QA / QC continued

(Continued from page 7)



Figures 3a and 3b: Contour map of LiDAR area (left), and grid resultant from differencing LiDAR & existing DEM

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Kosovich of the LiDAR with the new SA-derived DTMs indicated a high degree of correspondence between the two elevation datasets (see Figure 4), and brought a sense of relief to the group investigating the accuracy of the SA DTMs. Studies continue, however, in an effort to further improve not only the degree of confidence in the new DTMs, but also to create a basis for even better elevation products in the future.

By mid-May, groups of workers from the New Mexico Department of Transportation, EMNRD (and other agencies perhaps) will begin a series of trips to collect control points across the state, using geodetic-quality GPS equipment to collect positions at predefined sites, mostly in high relief areas. These control points can be used for comparison to the elevations indicated by the SA process, as well as providing a more densified network of control for any future projects.

As of the time of publication, it appears the NM DTM data will likely be accepted for inclusion into the NED, which will be a milestone for New Mexico and the US. The DTMs themselves will be delivered in five different formats:

1. As a 32-bit binary .flt file, the preferred format for DTM delivery, compatible with typical GIS software;
2. As a “traditional” .DEM file (ASCII-based, with embedded Record A Header and metadata);
3. As a minimalist “x, y, z” ASCII-based file together with a separate header/metadata file;
4. As contours in ESRI .shp format, with either 10, 20, or 40 foot contour intervals, depending on relief;
5. As hillshade files in ESRI grid format

This suite of DTM / elevation products should suffice for most of the elevation needs in the state, and should be ready for dissemination within the next few months. While the “10 meter” grid size of the SA process might lead one to question whether the new SA-derived DTMS offer any advantage over the existing 10-meter DEMs currently available (through RGIS, the NED, etc.), a close inspection of equivalent areas shows that the SA DTMs are superior in a variety of respects:

- The “stair-stepping” artifacts on the earlier DEMs are missing in the SA DTMs, which provide a more natural gradient, especially along gentle slopes (like on bajadas and alluvial outwash areas);
- More detail is visible in drainages, water courses, embankments, etc., beneficial for hydrological calculations;
- Dirt roads, and trails are plainly visible in areas where they could only be inferred in the existing DEMs;

(Continued on page 9)

DTM QA / QC continued

(Continued from page 8)

- The entire state will be covered by one consistent elevation dataset, collected from one short period of acquisition, and created by one process by one group of workers, as opposed to the existing DEMs which were developed from topographic maps themselves created over a span of decades.

In summary, lessons have been learned, and the story isn't over yet, but New Mexico will have a quality DTM dataset covering the entire state which will serve it well for years.

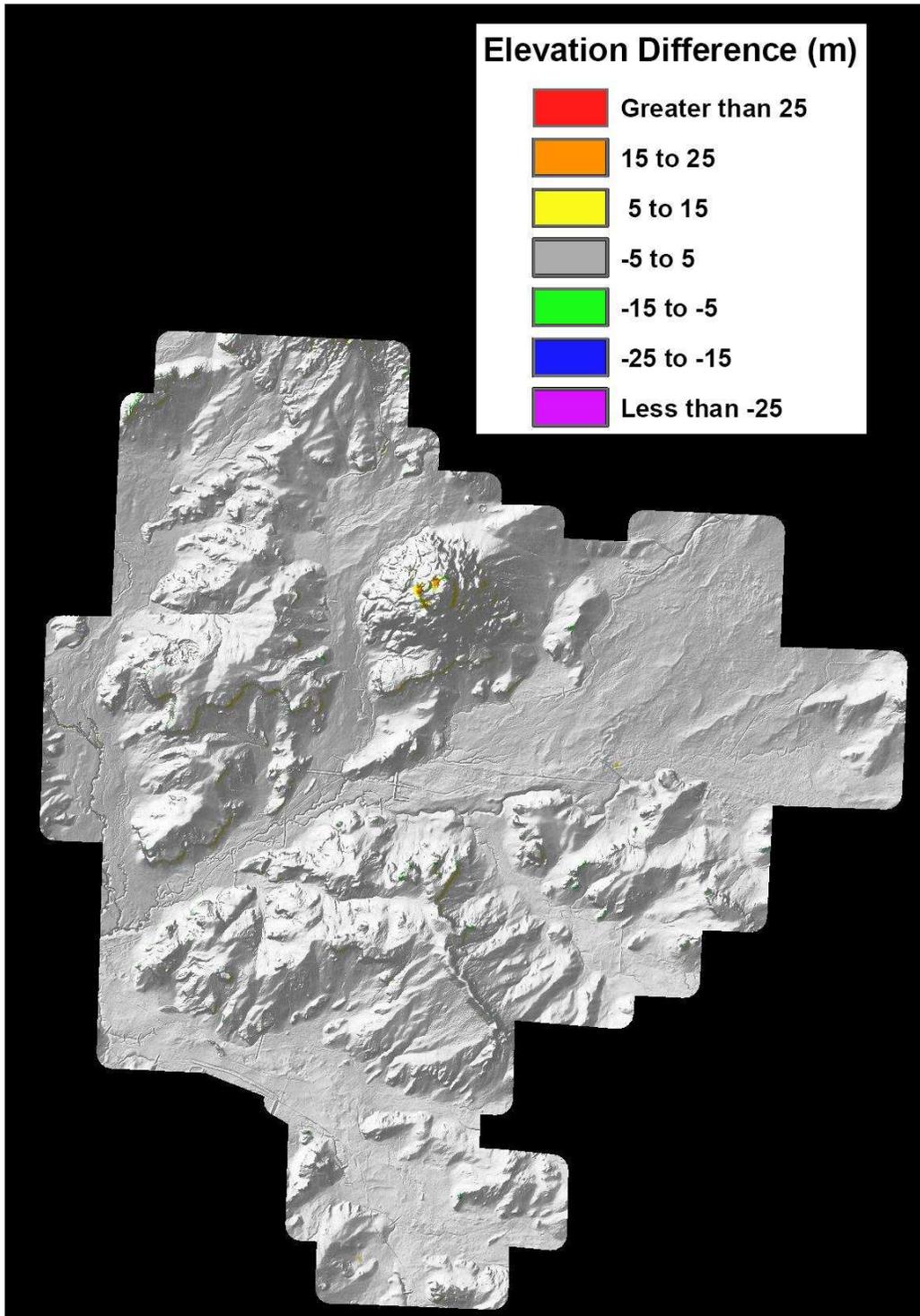


Figure 4: Grid resultant between LiDAR from same area as Figures 3a and 3b, and the new SA-derived elevations.

Note that the only discernable difference is a few isolated areas on top of butte in center of area.

Analysis performed by John Kosovich, USGS.

As 2007 drew to a close, the State of New Mexico's Geospatial Advisory Committee (GAC) prepared to appoint a Chair for 2008: Lance Tyson, GIS Coordinator for the New Mexico Department of Game & Fish, answered the call. Lance inherits a GAC that's gone "workgroup silly" in the past several months. Groups convened to consider a number of topics that include the National Hydrography Dataset (NHD), the State's Archaeological Records Management System (ARMS), the Homeland Security Infrastructure Program (HSIP), statewide parcel data, and the "New Mexico Geospatial Strategic Plan: Phase 1." The two workgroups noted below have made recent progress on initiatives that will provide tangible results for the State's residents and will be reflective of the significant contributions made by New Mexico's geospatial community and its partners.

With the help of Dely Alcantara, Ph.D. Senior Demographer at UNM's Bureau of Business and Economic Research, the GAC launched the "New Mexico Population Workgroup" in May 2007. A charter was drafted and the group's goals include: support the Census 2010 Local Update of Census Addresses (LUCA), assist in the timely collection of data as enumerated, assist in the Census 2010 LUCA review, and serve liaison with state, local, and universities for dissemination of Census information. The workgroup has met four times and is now chaired by Laird Graeser, Chief Economist at the Department of Finance and Administration and New Mexico's Governor Liaison to the Census Bureau.

Lance inherits a GAC that's gone "workgroup silly" in the past several months.

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Contributors to the NM Population Workgroup effort include a diverse mix of folks representing several state agencies, local government and the New Mexico Association of Counties, and UNM's BBER and Division of Government Research (DGR). A notable outcome of these meetings has been a formal agreement between DFA and UNM's BBER and Earth Data Analysis Center (EDAC) to collaborate on New Mexico's participation in the U.S. Census LUCA. This is a critical component in an effort to develop accurate population counts and estimates for our State in the future. In addition to apportioning Congressional seats, Census data are used in 50+ Formula Grants that appropriate funding to many federal and state programs. For additional information on LUCA, please visit <http://www.census.gov/geo/www/luca2010/luca.html>.

Another "high point" includes the launch of the "Height Modernization Workgroup." Following the "Height Modernization Forum" presented at the NMGIC Spring Meeting and hosted by Bill Stone New Mexico Geodetic Advisor for National Geodetic Survey, Garry Nielsen from New Mexico Department of Transportation, and Dr. Earl Burkholder Associate Professor at NMSU in the Department of Engineering Technology and Surveying Engineering, Dr. Burkholder and Mr. Nielsen agreed to co-chair the workgroup. The first meeting was held in July and there have been two since. In addition to Dr. Burkholder, Garry, and Bill, participants include folks representing state agencies (OSE, TRD, etc.), local government and the New Mexico Association of Counties, and the private sector survey, engineering, GIS, and realty communities.

The January 11, 2008 Height Modernization Workgroup meeting was attended by Dr. Gary Jeffress, Director of the Texas Height Modernization Program. Height modernization is, "...a program in NOAA's National Geodetic Survey (NGS) that uses GPS and other new technologies to increase the accu-

(Continued on page 11)

NM GAC Update *continued*

(Continued from page 10)

racy of elevation measurements that comprise the vertical portion of the National Spatial Reference System (NSRS)... It is the reference base for latitude, longitude, height (elevation), and distance between points on the Earth's surface and defines the nation's shoreline." In New Mexico enhanced benchmarks derived from this effort will initially benefit transportation and flood plain mapping projects. For more on height modernization, see <http://oceanservice.noaa.gov/topics/navops/heightmodernization/welcome.html>.

On the communication front, although the GAC webpage has remained rather static, the GAC Forum has experienced consistent activity and now includes 73 registered members representing state, local, federal, academic, and private sectors. There are currently 19 "sub-forums" that support dialogue and the dissemination of information regarding general and specific topics relevant to our State's geospatial community. To join and contribute please visit <http://nmgac.informe.com/>. For more information please contact Larry Brotman at 505-827-2318 or larry.brotman@state.nm.us.

GAC Forum Statistics

Statistic	Value	Statistic	Value
Number of posts:	154	Posts per day:	0.65
Number of topics:	116	Topics per day:	0.49
Number of users:	73	Users per day:	0.31
Board started:	06 Apr 2007 04:21 pm		
Database size:	1.44 MB		

NSGIC Update *by Leland J. S. Pierce, NM Representative to NSGIC*

As with 2006, the top priority for the National States Geographic Information Council (NSGIC) last year was the ongoing effort to provide orthoimagery across the United States. Two main notes from the "Imagery for the Nation" effort (IFTN) were the completion of a cost-benefit analysis and the effort to get at least a portion of the program funded through the pending Farm Bill. The cost benefit analysis determined the best program to be the following: 1-meter RGB DOQQ funded by the federal government, 1-foot resolution imagery every three years that is federally funded, with an optional 50% cost share, and 6-inch resolution imagery of identified urbanized areas every three years that would be acquired through a mandatory 50% cost share program. To date, the IFTN failed to make the House version of the Farm Bill, but the NSGIC legislative staff was pressing for the Senate version to include this program. Passage would fund the 1-meter acquisition for the nation every year until the next Farm Bill renewal.

Other programs underway or still of top priority with NSGIC are a nationwide transportation layer (Transportation for the Nation), better defining what exactly the National Spatial Data Infrastructure (NSDI) is, funding strategic planning through USGS CAP grants, the use of the spatial data inventory system RAMONA, and developing better relationships between the states and private entities, such as Google Earth.



For more information on NSGIC, visit: <http://www.nsgic.org>

NMGIC Committees To Be “Revived”?

During the January NMGIC Board Meeting, the topic of “dormant subcommittees” was raised. NMGIC has four subcommittees which have been active in recent years, but several which have been quiescent - Local Government Records, Framework, and GIS. New Mexico has a vibrant geospatial community, with many people willing to share their expertise and their energy for the betterment of the state. It was also recognized that education, local & tribal government, and framework data issues are perhaps in need of greater attention. The Board decided to put out a call to NMGIC membership to revive two of these “sleeping committees” - if the NM geospatial community expresses an interest in doing so.

The old “Local Government Records Committee” was renamed the “Local & Tribal Government Committee”, as that allows for a broader scope to the potential work, in terms of both constituency and of issues which it would address. Parcels & assessments, records, flood control, facilities/utilities, data acquisition, dealing with unfunded mandates - all (and more) could be part of the Committee’s scope. Temporarily, NMGIC Board member Larry Brotman has agreed to serve as Lead Contact for the Committee; contact him if you’re interested in participating or have input.

The Framework Committee would deal with the creation of a set of “framework data” for the state. “Framework data” typically refers to seven commonly needed datasets which are developed and maintained for a specific geographic area by public & private organizations: Geodetic Control, Cadastral, Orthoimagery, Elevation, Hydrography, Administrative Units, and Transportation. Together, the framework themes could comprise a New Mexico Base Map, a foundation common to most geospatial applications. For more information on this Committee, contact Rick Koehler; for a good background on the framework concept, see <http://www.fgdc.gov/framework/>.



A new committee, the NMGIC Geospatial Education Committee, is already off to a great start; a kickoff meeting was held March 21st, and resulted in lots of good ideas. The committee has two Co-Chairs - **David Jordan** from Intera and **Denise Chavez** from SIPI. The impetus for the meeting was to discuss how a NMGIC committee could play a positive role in K-12 and university level education in New Mexico. Topics included:

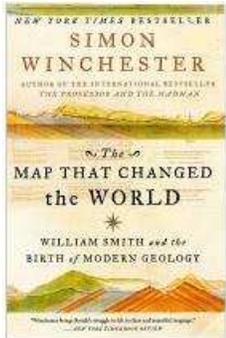
- Should we get involved in local schools and university curricula?
- Are students being educated in GIT to meet the needs of our local businesses?
- Sharing curricula between schools/programs, integrating GIT into engineering and natural science programs.

If you would like to be involved in this committee or would just like to come and listen, please attend the second meeting on Wednesday, April 23rd, at UNM, Bandelier West Conference Room, from 1:30pm to 3:30pm.



SWUG 2007 photos: from left, Amy Budge, Shirley Baros, Denise Chavez, Kurt Menke, Jason Fink, and Doug Strech (the hardest working man in showbiz, or at least at SWUG 2007!)

This issue: **The Map That Changed the World: William Smith and the Birth of Modern Geology**, by *Simon Winchester* (Viking Press 2001, 352 pages)



The story of William "Strata" Smith, arguably the father of modern geology, and certainly of geologic mapping. Smith, born of "yeoman-stock" out of Oxfordshire in 1769, was a self-taught, highly observant, very energetic man who pursued a singular vision, creating the science of stratigraphy along the way. Simon's book charts Smith's trails and travails as Smith fights to bring his ideas to light in the time of "gentleman scientists" - an era when scientific pursuits were primarily the domain of privileged men of leisure.



Smith was a practical man, part engineer, part surveyor, cartographer and geologist, who by trade built canals to facilitate the shipping of coal. He began to notice relationships in the various rock layers he encountered, and in the fossils which occurred in those layers. Supplemented by readings of like-minded contemporaries, and supported by a loose network of friends and patrons, he began to piece together the threads of southern England's regional geology. As Smith's knowledge increased, he was able to predict the geology in neighboring areas, and gradually began crafting a map to organize and depict the patterns he observed. Winchester does a fine job of engrossing the reader in this tale of scientific discovery, opening successive windows into William Smith's world and thought processes, just as Smith himself opened windows into the interpretation of the geologic past.

As Smith's work progressed, others in the scientific world of England in the early 1800s took notice, unfortunately often with an intent to claim his work as their own. Smith, although quite the scientist and earning a modest living, was not particularly astute in negotiating the social and political environment of the day, and perhaps tried to live beyond his means. He wound up in debtor's prison - the King's Bench Prison, and spent many years dancing a fine line between success and failure, of respect for his contributions and scorn for his humble beginnings.

It is perhaps one quirk of Simon's writing that he felt compelled to point out Smith's being born of "simple yeoman stock" (or some similar term) numerous times. One gets the sense that perhaps Simon himself has not quite shaken the belief that science should be the realm of the elitist aristocrats, that a "tradesman" could "join the club." On the other hand, Simon's descriptions of Smith's haunts, such as the "honey-brown" oolitic limestone homes around Bath, make one want to book passage to England to explore the wonders of the Jurassic Coast, to hike the back roads and rail cuts and canalways of places like Combe Hay and Limpley Stoke, trying to see the world that inspired William "Strata" Smith. For geologists, such a trip would be akin to a pilgrimage.

Simon's book reads a little like a mystery, or a thriller (to us geoscientific geeks), as we wonder "will truth and justice and merit prevail?" Will Smith publish his map before his antagonists can steal his ideas? Will he die a pauper, his fundamental contributions to a nascent geologic science forgotten? Can an inferior oolite succeed? Without giving away too much, suffice it to say that the good guys win in the end.

Would you like to submit a book review for the [MapLegend](#)? Please do! It should fit within this space, and be about something of interest to the geospatial community: geosciences, mapping, geodesy, ... as long as it's "mappish", send it in to the Editor. And yes, Geoff Raffie is a *nom de plume*.

Cool Links: Key Federal Laws, Policies and Guidance Affecting Geospatial Information Systems

By Denise Bleakly — For this edition of Cool Links, I’ve deviated from my usual listing of websites I’ve found from various sources on a single topic. I’m currently working on a project involving legal issues and GIS, and while reviewing a General Accounting Office (GAO) Report entitled, “**Geospatial Information Better Coordination Needed to Identify and Reduce Duplicative Investments**” (GAO report GA0-04-703 Dated June 2004 <http://www.gao.gov/new.items/d04703.pdf>), there was an appendix, entitled, “**Key Federal Laws, Policies and Guidance Affecting Geospatial Information Systems**” that I thought members of NMGIC should know about.

I’ve adapted the appendix from the report below and put it in a more easily accessible format. I’ve included web links to all the applicable laws, policies and guidance documents. This may not be a definitive list, but it was very helpful to me. As usual, if you have any questions or comments, please feel free to contact me, Denise Bleakly, at drbleak@sandia.gov.

Name	Discussion	Link
<p><i>The E-Government Act of 2002, Section 216: Common Protocols for Geographic Information Systems.</i></p> <p>(Public Law 107-347, 44 U.S.C. Ch 36)</p>	<p>The purposes of this section are to (1) reduce redundant data collection and information and (2) promote collaboration and use of standards for government geographic information. It requires the Director of OMB to oversee (1) an interagency initiative to develop common geospatial protocols; (2) the coordination with state, local, and tribal governments, public private partnerships, and other interested persons of effective and efficient ways to align geographic information and develop common protocols; and (3) the adoption of common standards.</p>	<p>www.whitehouse.gov/omb/memoranda/m03-18.pdf</p> <p>www.senate.gov/~gov_affairs/egovsectionbysection.pdf</p>
<p><i>The Clinger-Cohen Act of 1996</i></p>	<p>The Clinger-Cohen Act directs the OMB Director to promote and improve the acquisition, use, and disposal of information technology by the federal government to improve the productivity, efficiency, and effectiveness of federal programs, including through dissemination of public information and the reduction of information collection burdens on the public.</p>	<p>Brief Summary at: www.osec.doc.gov/cio/oipr/clingersum.htm</p> <p>DOE Implementation Summary: www.ig.doe.gov/text/ig-0507.rtf</p>
<p><i>The Paperwork Reduction Act of 1995.</i></p>	<p>This legislation directs the OMB Director to oversee the use of information resources to improve the efficiency and effectiveness of government operations to serve agency missions, including burden reduction and service delivery to the public. This includes developing, coordinating, and overseeing the implementation of federal information resources management policies, principles, standards, and guidelines.</p>	<p>www.cio.gov/archive/paperwork_reduction_act_1995.html</p> <p>www.thecre.com/pdf/Carter_PaperworkRedAct1995.PDF</p>
<p><i>Executive Order 12906: Coordinating Geographic Data Acquisition and Access.</i></p>	<p>The National Spatial Data Infrastructure. This order, originally issued in 1994 and revised in 2003, establishes FGDC as the interagency coordinating body for the development of the NSDI and directs FGDC to involve state, local, and tribal governments in the development and implementation of the NSDI. The executive order also establishes a National Geospatial Data Clearinghouse, directs FGDC to develop standards for implementing the NSDI, and requires that federal agencies collecting or producing geospatial data shall ensure that data will be collected in a manner that meets all relevant standards adopted through the FGDC process. In addition, the executive order requires the Interior Secretary to develop strategies for maximizing cooperative participatory efforts with state, local, and tribal governments, the private sector, and other nonfederal organizations to share costs and improve efficiencies of acquiring geospatial data.</p>	<p>www.archives.gov/federal_register/executive_orders/pdf/12906.pdf</p>

Continued on next page ...

Cool Links continued

Name	Discussion	Link
<p><i>OMB Circular A-11: Preparation, Submission, and Execution of the Budget. Part 7, Planning Budgeting, Acquisition, and Management of Capital Assets.</i></p>	<p>This circular establishes policy for planning, budgeting, acquisition, and management of federal capital assets and instructs agencies on budget justification and reporting requirements for major IT investments. It requires agencies to submit business cases to OMB for planned or ongoing major IT investments and to answer questions to help OMB determine if the investment should be funded.</p> <p>Notes: According to OMB Circular A-11, a major IT investment means a system or investment that requires special management attention because of its importance to an agency's mission; the investment was a major investment in the fiscal year 2004 submission and is continuing; the investment is for financial management and spends more than \$500,000; the investment is directly tied to the top two layers of the Federal Enterprise Architecture; the investment is an integral part of the agency's modernization blueprint (EA); the investment has significant program or policy implications; the investment has high executive visibility; or the investment is defined as major by the agency's capital planning and investment control process. Investments that are e-government in nature or use e-business technologies must be identified as major investments regardless of the costs.</p>	<p>www.whitehouse.gov/omb/circulars/a11/02toc.html</p>
<p><i>OMB Circular A-16: Coordination of Geographic Information and Related Spatial Data Activities.</i></p> <p><i>OMB Circular No. A-16 Revised: August 19, 2002</i></p>	<p>This circular calls for a coordinated approach to developing the NSDI, establishes FGDC and identifies its roles and responsibilities, and assigns agency roles and responsibilities for development of the NSDI. The document states that "implementation of this Circular is essential to help federal agencies eliminate duplication, avoid redundant expenditures, reduce resources spent on unfunded mandates, accelerate the development of electronic government to meet the needs and expectations of citizens and agency programmatic mandates, and improve the efficiency and effectiveness of public management."</p>	<p>www.whitehouse.gov/omb/circulars/a016/a016_rev.html</p>
<p><i>OMB Circular A-130: Management of Federal Information Resources.</i></p>	<p>This circular requires agencies to ensure that improvements to existing information systems and the development of planned information systems do not unnecessarily duplicate IT capabilities within the same agency, at other agencies, or in the private sector. The OMB Director is designated to provide overall leadership and coordination of federal information resources management within the executive branch.</p>	<p>www.whitehouse.gov/omb/circulars/a130/a130tr ans4.html</p>



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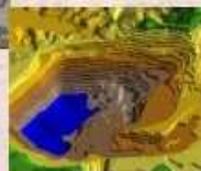
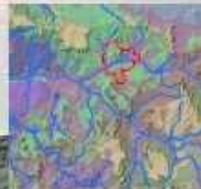


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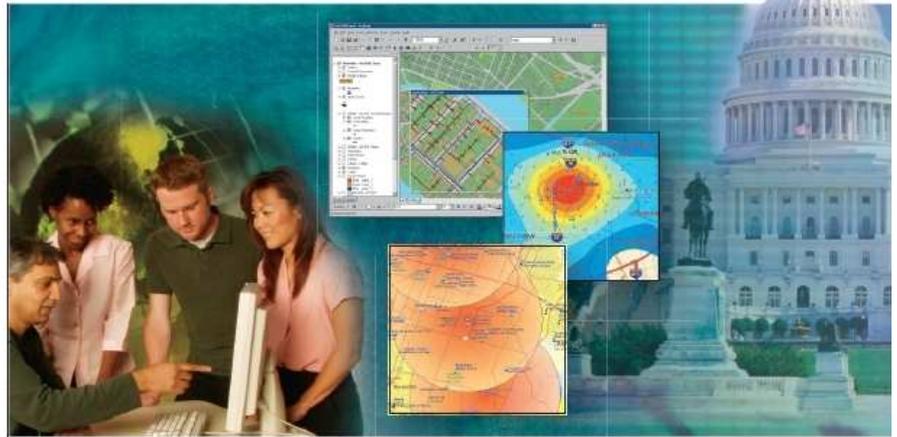
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2008 GIS Calendar of Events

NSGIC

2008 Annual Conference, September 7th-11th, 2008, in Keystone, Colorado

ASPRS

2008 Annual Conference April 28th-May 1st, 2008 "Bridging the Horizons - New Frontiers in Geospatial collaboration", in Portland, Oregon

NMGIC

Spring Workshop, April 24th, 2008 in Albuquerque at the Rotunda
Spring Meeting 2008, April 25th, 2008 in Albuquerque at the Rotunda

ESRI

28th Annual International User Conference, August 4th-8th, 2008, in San Diego, California

URISA

2008 Annual Conference October 7th-10th, 2008, in New Orleans, LA

2008 Membership Dues

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