

OUTREACH EVENT REPORT AND RECOMMENDATIONS

Attendee's Name:

Joseph J. Kerski Denver RMMC
Geographer

Location:

Dallas TX

Other USGS Attendees:

none

Trip Date(s):

23-26 January 2002

Purpose of Travel:

14th Annual Geo-Tech Texas Conference

Purpose of Event:

Geosciences Educational Technology
Conference

My Activities at Conference:

- (1) Conduct GPS-To-GIS workshop with 2 staffpersons from the Orton Foundation.
- (2) Conduct presentation on my new lesson on the construction, voyage, sinking, rescue, and discovery of the *Titanic*. The lesson makes heavy use of GIS technology and methods.
- (3) Help train teachers who signed up for "Advanced GIS" in the use of GIS in the curriculum, specifically emphasizing the downloading, formatting, and use of USGS base data sets.
- (4) Operate USGS exhibit in exhibit hall.
- (5) Receive training from ESRI Education Staff in ArcView version 8.



Participants at the GeoTech conference represented teachers, community college and university professors, and educational consultants.



Teachers, educational consultants, and ESRI staff discuss new ESRI Press book, Mapping Our World: GIS Lessons for Educators. I was privileged to have the opportunity to provide editing assistance for this book and look forward to using the lessons and the data in future training events. Several of the lessons use USGS earthquake and spatial data.

Conference Overview

The Geo-Tech conference is unique for several reasons. First, it is one of the few conferences that is specifically focused on geoscience and technology in education.

Obviously, that is well suited for organizations like the USGS to be involved in, given our scientific mission and commitment to education and technology, specifically, GIS and remote sensing.

Secondly, GeoTech brings in well-known educators and associated publicity. In 2001, Dr Sally Ride from NASA keynoted the conference. During other years, Dayton Duncan, the biographer of a book on Lewis and Clark and the director of the PBS special on the explorers, Ann E. Bancroft, the first woman to ski to both the North and the South Poles, and Bob Ballard, the discoverer of the *Titanic* and the *Bismarck*, have spoken at the conference. I have had personal contact with many of these individuals after the conference has ended. I supplied Ann Bancroft with Antarctica maps for her historic trip across the continent during the Winter of 2001.

Third, GeoTech not only provides us an opportunity to share with other educators what our organization can offer, but by bringing the ESRI Education Team to the conference, we have the opportunity to gain experience with the latest ESRI products and tools. The main conference lasts one day, with GIS in education training offered in beginning, intermediate, and advanced strands during the day before and the day after the main conference. For the advanced GIS participants, I taught several sessions:

- 1) Downloading and Using USGS DOQs and DRGs from Terraserver in ArcView.
- 2) Downloading, formatting, and using USGS DEMs from www.gisdatadepot.com in ArcView.
- 3) Downloading, constructing headers for, and using USGS National Land Cover Data

(NLCD) within ArcView. The teachers in the session commented that these exercises were useful.

While I did conduct these three sections of the Advanced GIS strand, I spent more time receiving training from the ESRI education team. This team was represented in the Advanced strand by Angela Lee on the Schools and Libraries Team. She provided the group with excellent training on ArcView version 8, part of the ArcGIS software package. We spent time comparing Version 3.2 and 8, and used the Spatial Analyst and 3D extensions as well. The most helpful part to me was the time we spent downloading and using TIGER and Census 2000 data from the Geography Network.

This professional development very helpful to me and no doubt will enhance all future trainings in the new software that I will conduct.



Michigan instructor Dr Al Lewandowski examines National Land Cover Data in the Advanced GIS training.

Fourth, this unique blend of geoscience, geography, technology, education, and internationally renowned guests takes place at a high school! Bishop Dunne High School, Dallas, is where principal Kate Collins Dailey has become one of the

foremost proponents of educational technology in geography. Her transformation of the school's performance, attendance, technology, and curriculum is a testament to what one principal with vision can accomplish.

GPS-to-GIS Workshop

Two staffpersons from the Orton Foundation and I conducted a workshop on bringing in coordinates collected with GPS receivers and associated attributes into GIS software for analysis. This was well received despite being a double length afternoon session.



Elizabeth Matlack and Dave Smith of the Orton Foundation presented the GIS-to-GPS workshop with me.

I have conducted two workshops with the Orton Foundation in the past, both in Steamboat Springs, Colorado, a 2-day workshop in June 2000 and a 1-week GIS workshop in June 2001. The Orton Foundation is a working foundation, rather than a funds-granting foundation, and their goal is to empower rural communities with resources to enable them to make wise land use decisions. Their community mapping program (www.communitymap.org) seeks to link educators with community decision makers, promotes real-world projects for students to learn about social and physical

sciences, and provides a method for students to give back to their community (through their research). Orton's goals overlap the USGS' in many areas and it is an excellent organization for the USGS to be involved with.



Some of the participants in the GPS-to-GIS workshop. The teachers who attended wanted to know how to use GPS in conjunction with GIS, rather than using GPS by itself.



Teachers leaving the field after collecting coordinates with GPS receivers and attributes. The Orton staff and myself compiled CD-ROMs for each participant that included USGS DLG, DRG, DOQ, and DEM data, as well as guidelines as to how to use the data, about GPS, and about bringing in GPS-gathered coordinates into GIS. I am

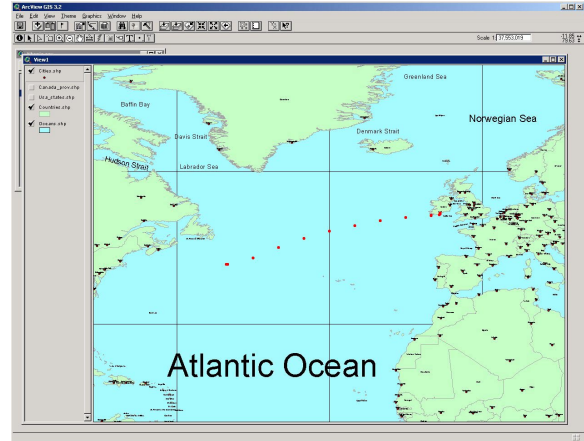
very pleased to report that the data I received from EDC to prepare for this workshop was much easier to understand than data I ordered years ago. It is my hope that we continue to strive to make our data more easily understandable for all of our data types to the user community.

Titanic Lesson

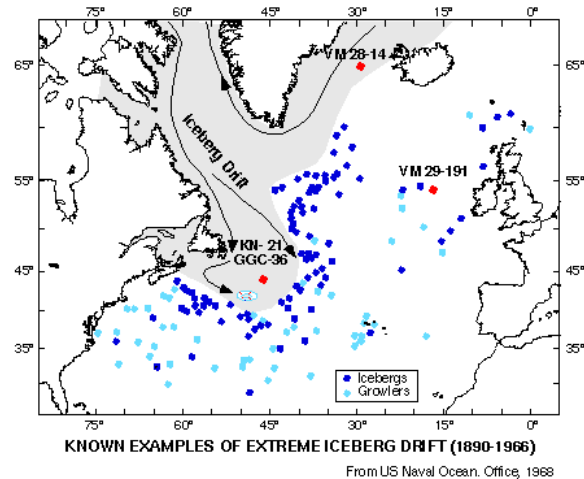
I created a 212-question educational unit for middle school through college level that explores the route, sinking, rescue, and discovery of the ocean liner *Titanic*. The unit is in 17 parts that the instructor can use all of, or select specific parts that match his or her curricular goals.

My objective was to create an interdisciplinary unit that uses history, geography, science, and math together with GIS technology and spatial analysis that is centered on a well-known event that I hope that students and teachers will find interesting.

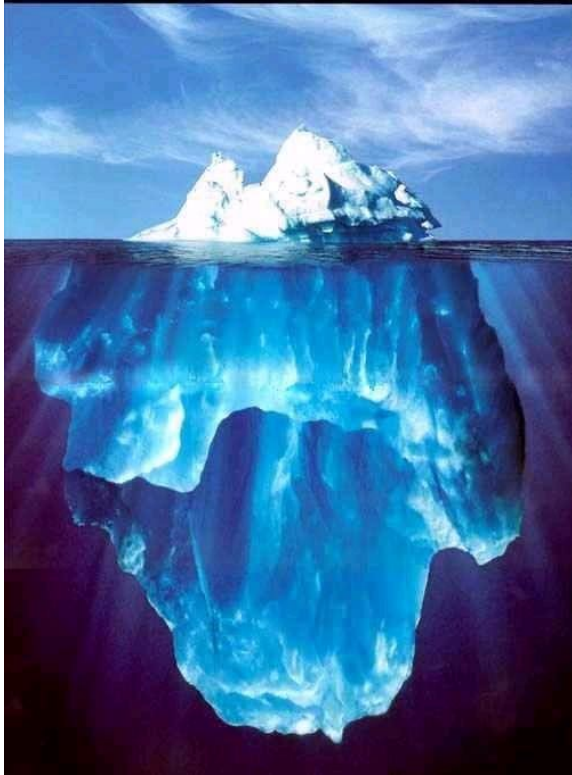
My goal is to post this lesson, teachers guide, all spatial data, and answer key on two sites in February: My own educational site at rockyweb.cr.usgs.gov/public/outreach/ and the ArcLessons site at www.esri.com/arclessons.



A screenshot from the Titanic Unit that shows coordinates that students will enter to plot the route of the ship.



The Titanic unit uses a satellite image of the earth, ice drift and extent, and many other charts and maps to explore the event. The unit's objective is to teach about map projections, coordinate systems, history, geography, and science using GIS technology.



The Titanic unit requires the students to analyze the ice warnings that the ship received and assess the rescue operation, as well as the 1985 discovery of the ship.

Exhibit and Materials



Joseph Kerski at the USGS exhibit at the conference, next to a NAPP image of the conference site.

Our exhibit emphasis was USGS resources to support GIS in education and real-world scientific investigations in the classroom. Other exhibitors included the Texas Bureau of Economic Geography, ESRI, and the Texas Alliance for Geographic Education, plus several private companies. The Bureau of Economic Geology has an education outreach program as well, and we are working with them on The National Map effort and on interdisciplinary research projects.

I created and handed out the following materials: Map Mysteries lessons, Teaching With Topographic Maps Lessons, paper on the Implementation and Effectiveness of GIS, my *Titanic* lesson, my teachers guide to the *Titanic* lesson, and the answer key to the *Titanic* lesson.



Teachers examine materials at the USGS exhibit at GeoTech Texas. As in the past, our presence at the conference was much appreciated.



The Earth Balloon from a science center in Louisiana allowed participants to be inside the planet to get a unique geographic perspective.

I shipped and distributed teachers packets, GIPs, water education posters, miscellaneous topographic maps, maps for the workshop, maps for the door prizes, fact sheets, GPS setup and issues handouts, GPS in education articles, water resources circulars, posters, and Texas map indexes.

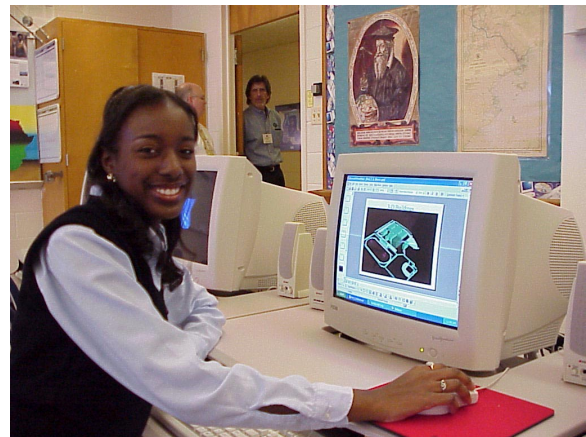
GIS In Education at Conference Site

When one is involved with a program for many years, it is rewarding to see some of the fruits of that effort. Brad Baker attended a GIS-for-educators institute that we co-conducted with the ESRI staff in 1998 at Southwest Texas State University. To see what he and his students have done with GIS technology just a few years later at Bishop Dunne is truly amazing. It is extra special to know that we had at least a small part in helping Mr. Baker to realize his dreams of conducting real-world spatial analysis with his students. He acknowledges that Principal Kate Dailey's support of his efforts have been critical. Mr. Baker's students conducted demonstrations of their GIS-based investigations throughout the conference. We used Mr. Baker's new computer lab

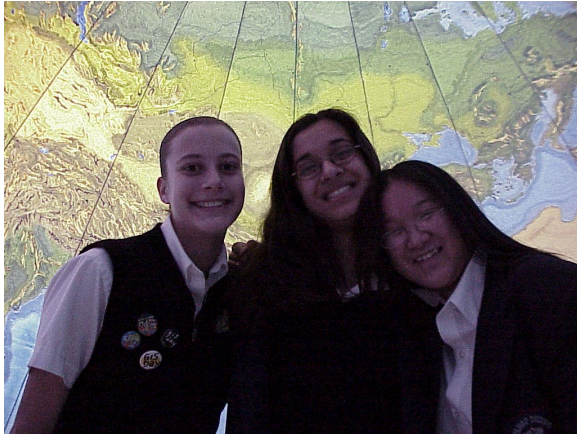
during the Advanced GIS training. The lab was dedicated during the conference and received many visitors.



Mr. Baker prepares to collect coordinates and attributes with a Trimble GPS receiver and ArcPad. He has access to a lot of equipment and software that I only dream about !



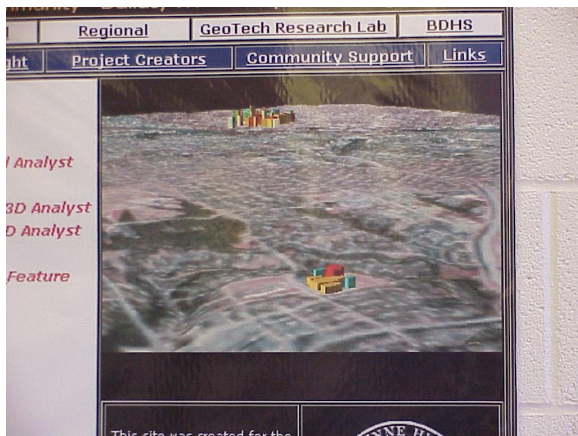
Student in Mr. Baker's GIS course demonstrates the many real-world problems to which she has applied GIS technology and methods.



Students at Bishop Dunne School impress me each year with their professionalism, pride in their work, and vision for the future.



One of Wade Davis' presentations at GeoTech 14 was held in the Dallas World Aquarium, a remarkable location.



One of Mr. Baker's GIS projects, which shows the location of the school in relationship to downtown Dallas, with a DOQ and 3D Analyst.

Keynote Address

Dr Wade Davis, world-renowned anthropologist, spoke at the GeoTech 14 Conference. Dr. Davis holds a Ph.D. in ethnobotany from Harvard University. He is currently an Explorer-In-Residence at the National Geographic Society. He has spent time studying cultures in Borneo, Haiti, the Amazon, Tibet, the Arctic, Kenya, Peru, and other places.

Dr Davis has written for Newsweek, Outside, Harpers, Fortune, National Geographic Society, and others, and his projects have been the subject of 500 print, radio, and television interviews and reports all over the world. He wrote, among other books, *The Serpent and the Rainbow*, which appeared in 10 languages and later released by Universal as a motion picture.

In his addresses, Dr Davis emphasized rapidly changing cultures around the world, conservation-based development, and through a series of stunning slides, sounded a very clear alarm for protection of cultural and biological diversity, before the bulk of it is lost. It was the type of address that made a deep impression on me and most likely on others in attendance, from someone who not only understands the importance of the world's diversity, but has lived it, and has fought to preserve it.

ArcGIS Version 8 Notes

I thought the following highlights from my notes taken during the ArcGIS training (version 8) would be helpful to others:

1. The equivalent of project repair in

version 3 is, in version 8, under layer properties, source, set data source.

2. Saving a layer as a shape file: data --> export data.

3. Setting relative path names is much easier in Version 8: Map Properties, Data source options, store relative path names. Once inside 8, you can still, under properties, change the data source.

4. Views in version 3 are similar to data frames in version 8.

5. Group Layers are helpful in manipulations and analyses within your map document.

6. Bringing .aprs from version 3 into version 8 works fine except for any tables joined to .shps. These don't come over to 8. Therefore it is best to save the joins as .shp's in version 3 before bringing the apr into version 8.

7. The .mxd map document in version 8 is equivalent to the .apr in version 3, but the mxd is binary and cannot be edited. Fortunately, with the relative path name option that I indicated above in bullet 3, one should not need to edit the .mxd.

8. To change the projection, right click on the data frame, go to properties, then change the coordinate system. This does not change the data file, just the way it is viewed in the map document.

9. In version 3, one needs to click on a theme to make it active. In version 8, one needs to go to the layer and click on "activate."

10. In ArcCatalog, under properties, fields, shape, this gives the projection of the data.

11. ArcCatalog can search your data by geography! To find all of your files that are in, say, Texas.

12. Layouts. A Layout View is the way to view the layout. Only one layout per map document. If you need more, then create a new map document. The .mxd just holds pointers to the data, like a version 3 .apr did, and therefore you're not wasting a lot of disk space to copy the .mxd several times to obtain several layouts.

13. To join tables, version 8's wizard-like interface makes it easier than in version 3.

14. There is an ArcView backup utility on ArcScripts that lets the data user select files to copy to a CD-ROM. Run it outside of ArcView 3.x.

15. Per Brad Baker, there is a free program called CrimeStat, which is like Spatial Analyst for point data, from the National Institute of Justice.

16. Extensions are under tools --> extensions.

17. 3D. ArcScene. Is the 3D viewing document. ArcScene is on the same level as ArcMap and ArcToolbox.

18. 3D. To pan image, use both mouse buttons simultaneously.

19. 3D can calculate volumes; our example used before and after scenes of Mt St Helens.

20. Arc8 can copy anything to the Windows clipboard! Then it can be used inside PowerPoint, Word, and other programs! Very handy.

21. Procedures for downloading Census 2000 data in the geophytnetwork.com.

Go to the following site:

geophytnetwork.com/data/tiger2000.

PL1 is the long form sample data; PL94 is the 100% data from the short form.

First, select the county, grab layers. Then select the layer, and grab the demographics. Download and join tables.

Observations and Recommendations

The only disappointing thing about GeoTech 14 was that the attendance was lower than in past conferences. This could reflect the fact that teachers have more difficulty obtaining release time in the past, particularly with the emphasis in recent years on standards-based tests. The GeoTech conference emphasizes interdisciplinary linkages between geography and science. It also emphasizes examining real-world issues in education and standards-based education. Therefore, it is important that we remain involved with this conference.

I believe that the USGS should play a major role in preparing teachers and students to use our data and products, and spatial data and technologies. Our relationship with the GeoTech conference organizers is longstanding, dating back to the early 1990s and mid-1990s, and needs to continue.

The reason for conducting workshops at the conference is to add value to our presence above and beyond our exhibit. The traffic at the exhibit is, as is the case during many of the conferences we attend, is lighter than during break times. By conducting workshops, we have the opportunity of

working one-on-one with the teachers. We have the opportunity of obtaining their feedback on curricular materials that we develop. We work with educators to demonstrate *how* our products and spatial data in general can be used in conjunction with national science and geography standards. It does more than telling folks *what* products are available.

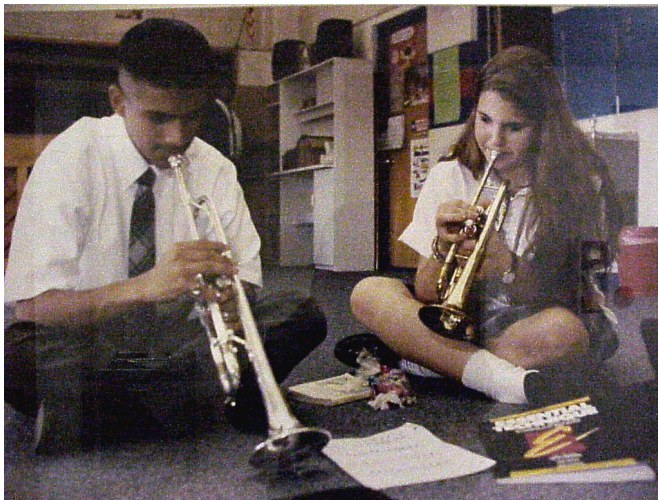
I attempted to emphasize USGS strength in real-world data and technology in education, particularly geospatial and scientific information. Both the growth in educational technology and the curricular content standards present excellent opportunities for us to introduce our data and products to students and educators across the country. Educators who are trained in the types and applications of our data are a powerful lobby for the USGS. Students familiar with our data will form a geospatially-literate society. Another objective was to "train the trainers"--teachers--to magnify our effectiveness and maximize our limited resources. These trainers will themselves network with and train other teachers, administrators, and students.

By participating in this event, the publicity generated from teachers and students across the country for the USGS could be enormous, given current concern with teaching about globalization and technology.

We need to remain involved in education as an agency. Education shows our relevance to Congress and the general public. Education serves the needs of diversity, recruitment, and retention. Education ties into all six major outreach audiences.

Acknowledgements

I appreciated the USGS' support of the time for my attendance at this event. For the first time at an off-site event, I used a laptop that Mark Eaton approved the purchase of. This greatly enhanced my ability to learn and teach ArcGIS and to conduct the workshops at the conference. I thank the organizers of GeoTech, particularly Christine Voigt, for her support of our exhibit and workshops, to Kate Dailey, principal of Bishop Dunne High School, for hosting the conference, and to the students for their enthusiasm and hope for the future.



Junior and senior high school students at Bishop Dunne have the option of assisting with the conference. One of the highlights of this year's conference was seeing a student who helped us set up our exhibit in 1997 as a middle school student at the school. Now, she is a senior and still remembers us!

*** End of GeoTech Texas 2002
Conference Report ***