EDUCATION EVENT REPORT AND RECOMMENDATIONS

Report Writer's Name:
Joseph J. Kerski
Geographer, USGS

Location: Copper Mountain, Colorado

Other USGS Attendees: none

Event Date(s):
22-27 June 2003

Purpose of Events:

1) 3rd Annual GeoTech Colorado Conference, 22-23 June 2003.

2) 17th Annual Technology in Education (TIE) Conference, 24-27 June 2003.

Purpose of Event:

GeoTech: Empowering teachers to use GIS and GPS technologies in the K-12 curriculum.

TIE: Support and train teachers in the use of a variety of technologies in K-12 education.

My Activities at Conferences:

(1) Secure USGS as one of the sponsors of GeoTech, along with the Colorado Geographic Alliance (COGA) and ESRI, Inc.

(2) Serve on planning team for the past year for GeoTech.

(3) Give keynote address at GeoTech.

(4) Operate USGS exhibit at GeoTech.

(5) Conduct three workshops at GeoTech: Demographics and Earthquakes, County and Neighborhood Census analysis, and fire tower analysis using USGS DEM, DLG, and other data.

(6) Co-conduct GIS workshop at TIE with Sophia Linn, COGA Program Manager.

(7) Operate USGS information exhibit at TIE conference.

(8) Encourage and strengthen USGS educational partnerships with groups such as COGA, ESRI, Orton Foundation, with school districts, and with individual teachers.

GeoTech and TIE were both held at the Copper Mountain Resort, Colorado. In 2001 and 2002, we held GeoTech in El Paso County, Colorado (see my reports on these events), but this year, we fastened GeoTech at the beginning of the TIE conference to encourage attendance and to foster a partnership with the TIE board of directors. TIE (www.tie-online.org) has been held at Copper Mountain for the past several years and will be held there at least through 2005. TIE is the largest educational conference in Colorado, attracting over 1,100 teachers from Colorado and elsewhere annually. TIE is the only major educational conference that brings in and

networks 500 computers to meet the goal of hands-on learning. This is quite a feat, accomplished by a fleet of dedicated educators who volunteer their time and talent for this event.

GeoTech 2003 Conference

The GeoTech 2003 conference was advertised as follows:

Join us...

As the world becomes ever more connected, managed, and observed through the use of computers and other technologies, students have opportunities like never before to have the world at their fingertips – whether using the Internet, geographic information systems (GIS), the global positioning system (GPS) or satellite imagery. What better opportunity could classroom teachers have to instill in students a curiosity about their world than by using these increasingly available tools?

GeoTech Colorado is a two-day conference that offers presentations and hands-on workshops for teachers who want to learn more about using GIS, digital data, and online resources – many of which are free! Experienced teachers will share classroom tips while professionals outside of education will offer insights into applications of GIS and other tools in planning, engineering, science, and business. Geography, environmental and earth science teachers of all grade levels are encouraged to attend, as are any other teachers who are interested. Students and pre-service teachers are welcome, too!

What is GIS?
What are “geospatial technologies”?

A geographic information system, or GIS, is a computer-based system designed for storing, updating, analyzing, displaying, and manipulating spatial data – information about places on the planet. It allows the user to answer questions by arranging and displaying data about places in a variety of ways via maps, databases, images, and graphs. GIS can be used in the classroom to address geography, history, science, and technology standards.

For more information about using these tools, visit:

http://rockyweb.cr.usgs.gov/public/outreach/
http://www.esri.com/k-12

Why should kids learn this stuff?

Students can use these tools to explore the cultural and physical environment – population distribution, historical settlement, watersheds, landforms, natural hazards, land use, and more. From participating in local community projects to observing trends at a global scale, students at all grade levels can use geospatial technologies. These types of educational experiences are extraordinary for students – hands-on, real world, and high-tech! In addition, the skills they learn can be transferable to the work place.

The GeoTech 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.

GeoTech was held in the Copper Mountain Center at the bottom of the ski slope in this photograph. We used three meeting rooms and the foyer for the conference.

Dan Mahar, left, and others from the Rocky Mountain URISA organization (Urban and Regional Information Systems Association) congratulate the recipients of the GeoTech scholarship. RM-URISA donated 10 full scholarships for teachers to attend the GeoTech conference and to lodge at Copper Mountain, for which we and the teachers were very appreciative.

Approximately 50 educators attended GeoTech; the evaluations indicated that they were satisfied with the training that they had received. As 2003 was the first year we held GeoTech in conjunction with the TIE conference, we were pleased with the turnout and the presentations. I am hopeful that next year we can have GeoTech advertised on the TIE webpage and increase the attendance to 100. The teachers were from elementary to secondary level and included science, geography, history, technology, and language arts teachers, illustrating the interdisciplinary nature of using GIS in the curriculum.

Joseph Kerski at the USGS information exhibit at the GeoTech conference. Other exhibitors included the Colorado Geographic Alliance, National Geographic Maps, the Denver Biodiversity Project, the Orton Foundation, the Colorado Geological Survey, Science Discovery at the University of Colorado, ESRI, Denver Temporal GIS, and the Geological Society of America.

Several members of the GeoTech planning board appear in this photograph, including Esther Worker, ESRI, left background, Connie Knapp, Orton Foundation, left foreground, Sophia Linn, COGA, right foreground, and Robb Mienzes, Denver Public Schools, background. Also appearing in right background is David Smith, who has been very active in supporting GIS in K-12 education. Also on the planning board were Amanda Gierow from Denver Public Schools, Scott Gaffri from the Center for Teaching and Learning Technology, Jim Castagneri, US Census Bureau, and Camille Schiraldi, Pickens Technology School.

I gave the keynote address at the conference, which included the following:

1—What is GIS and GPS?
2—Why are educators interested in GIS?
3—What can students do with GIS and GPS?
4—Recommendations for GIS in education based on GIS-based research and GIS-based trainings.
5—Recommendations for taking advantage of this year's GeoTech conference.

Following the keynote address, we held three concurrent hands-on sessions on Sunday afternoon, Monday morning, and Monday afternoon. These included such topics as analyzing local terrain, bringing in GPS coordinates to GIS, examining Census data, working through lessons from the book Mapping Our World—GIS Lessons for Educators, *examining historical and community-based data, and analyzing world demographics and earthquakes. Our presenters included Larry Kendall from the University of Arizona, and members of the GeoTech planning board—Jim Castagneri, Joseph Kerski, Connie Knapp and David Smith, Scott Gaffri, Amanda Gierow, and Sophia Linn.*

All of us on the GeoTech board had a hand in creating the text and graphics for the GeoTech t-shirts, and we thank Esther

Worker and ESRI for making them possible.

During the first evening of GeoTech, we held a geocaching event. Geocaching is a very popular activity worldwide (see www.geocaching.com, for example) and we believe it has merit for education. We created booklets with questions and coordinates. The teachers were instructed to find the caches, stamp their booklets with the stamper that was in the cache, and answer the geography-related question there. Above, Ashok Wadwani of Applied Field Data Systems provides an introduction and background to the participants in this event.

Ashok Wadwani works with teachers participating in the geocaching event.

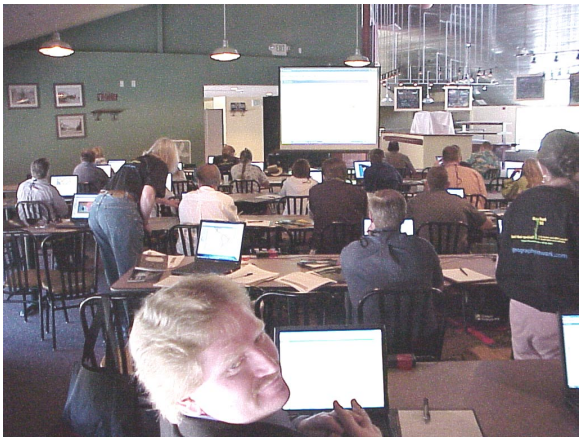
Close-up of a geocache. We set up 8 geocaches around the Copper Mountain complex. Each cache consisted of a Tupperware that contained a stamp pad, stamper, and a geography-related question.

Above, Sophia Linn, Amanda Gierow, and Jim Johnston find the first geocache. Jim and Christel Bayer were two of the excellent volunteers who helped make GeoTech a success.

Above, searching near the snowfields on the day after the summer solstice for the next geocache.

Technology In Education (TIE) 2003 Conference

TIE is a Colorado-based organization founded in 1986 by a group of teachers with a vision of the important role technology would play in education. Today, with over 1,200 members, TIE has become the premier training institute in Colorado. TIE is organized by a governing board of 9 volunteers. TIE's major objective is to host this four day, hands-on conference in a mountain community during early summer that models the use of technology integration into the classroom. The 2002 conference featured over 165 different workshops and spot light sessions with over 140 different presenters, mostly classroom teachers. This is a wonderful opportunity for interdisciplinary networking and training across all levels of education.

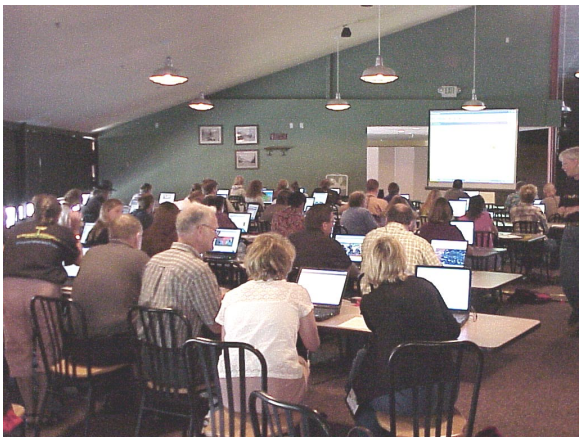


I was astounded at the number of GIS and GPS workshops at the TIE conference—at least 6. Sophia Linn and I gave the first three-hour session, pictured above, where we emphasized the analysis of world demographics and world earthquakes in a cultural and physical geography setting, respectively.

Almost all of the GIS and GPS sessions were filled to capacity. Our session attracted 50 people who signed up for it beforehand. Ashok Wadwani's GPS workshop attracted 120 people! This indicates that the interest in using GIS and GPS technologies and methods in the classroom are growing

Some of the reasons for the growing interest in using GIS and GPS in the classroom are that these technologies and methods are inquiry-based, problem-solving, connected to national and state geography, math, science, and history standards, they increase student interest, and they provide employment opportunities.

The exhibit hall at the TIE conference was located in the building at the base of the golf course in the center of this photograph.



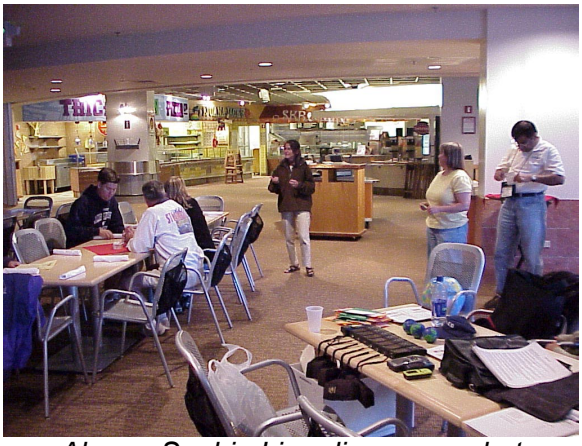
Denver Public Schools alone sent over 200 teachers to the TIE conference, and they have a full ArcGIS site license, signed last month. I met many of the teachers who will be involved in this new initiative and look forward to teaching a GIS course at Emily Griffith Opportunity School in Fall 2003 to help jump-start the program.

Joseph Kerski at the USGS information exhibit. I distributed various topographic and thematic maps, posters, and booklets on GIS, mapping, biology, earth science, geography, and hydrology. I also distributed some of my own GIS-based lessons and those written by others. The exhibit was especially crowded during a special two hour session from 7 to 9pm on the first day of the exhibit. The position of the exhibit was at the entrance to the exhibit hall, which was excellent. Thanks to Jack Kriss of the TIE board, I was able to operate this exhibit at no charge.

The materials I distributed were very popular with the educators, and it was a privilege talking with them about what they are doing in the classroom.

Exhibitors at TIE included companies and nonprofit organizations that promoted learning with technology, including hardware and software manufacturers such as Dell and HP, and organizations such as National Geographic. Our USGS exhibit was located next to the National Park Service exhibit.

At the request of the TIE board, we ran another geocaching event, this time for the TIE attendees, during another evening. Above, Ashok Wadwani and Camille Schiraldi talk with the 30 educators present about the event.

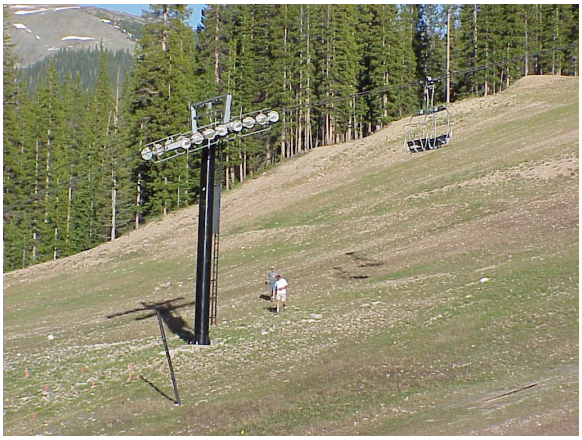


Above, Sophia Linn discusses what occurred at the GeoTech event and why educators are interested in GPS with the TIE geocaching attendees.

Ashok Wadwani, Esther Worker, and Sophia Linn participate in the geocaching event with the teachers.

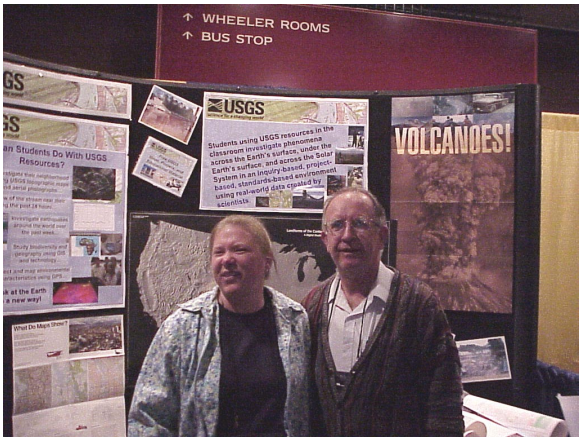
Esther Worker and I find one of the geocaches under a ski area sign; it was a beautiful evening.

Teachers learn about UTM coordinates and educational applications of using GPS receivers in the curriculum.



The TIE geocaches were set up in a bit more difficult locations than those for GeoTech, since we had a bit more time for this event.

Joseph Kerski on the base of the ski slope during the GeoCaching event.



These two Powells teach in Strasbourg Colorado, and are very interested in geography and earth science. They named their son, who is now 9 years old, ***John Wesley Powell****, after the second director of the USGS! I invited them to our USGS building to have their photograph taken next to our Powell exhibit!*

Observations and Recommendations

The GeoTech conference emphasizes interdisciplinary linkages between geography, technology, 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. The TIE conference also has a goal of empowering teachers to use scientific data in a technology-driven environment, and therefore is also an appropriate and key event in which to participate.

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 mid-1990s in some cases, and needs to continue.

The reason for conducting workshops at the conference is to add value to our presence above and beyond our exhibit. 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 GeoTech and TIE, 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 communications audiences.

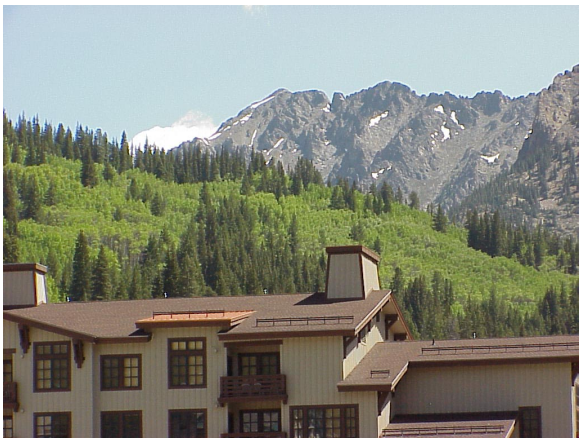
Acknowledgements

I appreciated the USGS support of the time of my planning for and my attendance at this event. I thank Cheryl Davis and Ben Kelley for their help with equipment.

I thank the other members of the GeoTech planning board, for their hard work over the past year to make this a success. They were a pleasure to work with.

I thank Jack Kriss, Randy Stall, and others at TIE for their enthusiasm and support.

I especially thank the teachers who attended both conferences for their dedication and inspiration.



I definitely recommend that we participate in the 2004 TIE conference in a variety of ways—helping to plan the event, with an exhibit, and with workshops.

I believe we interacted more significantly with more educators at these two conferences than at any educational event in Colorado over the past decade.

*** End of GeoTech Colorado 2003 and TIE 2003 Conference Report ***