

EDUCATION EVENT REPORT AND RECOMMENDATIONS

Events:

- (1) GIS Education Meeting, Automated Geographic Reference Center
- (2) Annual Conference, National Council for Geographic Education (NCGE)
- (3) GIS Course, Salt Lake Community College

Location: Salt Lake City, Utah USA

Dates: 7-11 October 2003

Attendee's Name and Report Writer:
Joseph Kerski, Geographer:
Education/GIS, USGS, Denver,
Colorado.

Other USGS Attendees: Lawrence Handley, USGS National Wetlands Research Center, and David Vincent, USGS Mapping Liaison to Utah

Acknowledgements

Highlight

I submitted the following highlight to the US Department of the Interior and the White House for these events:

USGS Supports Geography Educators at the National Council for Geographic Education Conference

USGS scientists will conduct workshops and operate a USGS information exhibit for 650 university, secondary, and elementary-level instructors at the annual conference of the National Council for Geographic

Education (NCGE), Salt Lake City, Utah, 8-11 October 2003. The workshops will focus on analyzing flooding in local communities, educational partnerships, and using USGS maps, aerial photographs, and satellite images in the geography curriculum. The USGS information exhibit will feature new USGS maps of Lewis and Clark's expedition and Utah's landforms. USGS geographer Joseph Kerski will also co-conduct a Geographic Information Systems (GIS) workshop at Salt Lake Community College on 11 October. The NCGE, founded in 1915, is the largest professional association of geography educators in North America (Joseph Kerski, USGS, Denver, jjkerski@usgs.gov, 303-202-4315).



Salt Lake City and the Wasatch Front, taken just before we landed, 7 October 2003.

My Participation in the NCGE Conference

- 1) NCGE Board Meetings. I was elected to a 2002-2004 term on the Research and External Relations Committee.
- 2) Workshop: World Confluence Project: Exploring the Earth with Thousands of Georeferenced Photographs
- 3) Paper with Anita Palmer: The Implementation of GIS in Education—A

New Survey of 250 Educators

- 4) Workshop with AP Geography High School students.
- 5) Setting up and operating the USGS Information Exhibit, with David Vincent.
- 6) Paper with Sophia Linn: Developing Assessment Tools for GIS-Based Education
- 7) Assisting with staffing NCGE exhibit and welcoming first-time NCGE conference attendees at the "First-Timers" gathering.
- 8) Submitting two posters for the conference—Partnerships for Education, and Flood Hazards in Local Communities.

Acknowledgements

This is the 9th year I have been a member of the NCGE and have attended their annual conferences. The annual conference is an event to which many of us look forward, to meet new colleagues and to renew existing professional relationships and personal friendships. It is an honor and privilege to be working with such a professional, knowledgeable community that is passionate about geography education. I thank them for all that they have given me over the years, and I hope I have contributed a bit in return.

I consider NCGE to be the single most important event in my role as educational geographer of any of the approximately 20 conference I attend during a typical year. If I had to choose between the four most valuable conferences, I would choose, NCGE, ESRI-UC, the Geographical Association, and AAG.

I thank Ann Young, Allison Newton, Michal LeVasseur, Susan Hardwick, Ken Foote,

and the rest of the NCGE board members for their contribution in this year's meetings. I appreciated working with the teachers who attended the conference, and am thankful for the opportunity that NCGE Associate Director Allison Newton gave me in working with the AP geography students from Bellaire High School, Texas.

I thank Cindy Clark, Don Cressall, and all those in the GIS education community in Utah who are leading the nation in many ways in this field.

I thank all those who attended our GIS workshop at Salt Lake Community College. I appreciated the excellence of my teaching colleagues at these events—Esther Worker and Ann Johnson of ESRI, Dorleen Jenson and Scott Brown of Salt Lake Community College, and my research colleagues Anita Palmer, Shannon White, and Tom Baker.

Thanks also to my USGS colleagues David Vincent and Liz Colvard for their assistance with planning and staffing the USGS exhibit, Mary Wadding and Jennifer Booras for materials, Gene Jackson for materials and topographic maps, Mark Barber for image materials, and Jack Fordham for supporting my attendance at this event.



*All of these October 2003 events took place in Salt Lake City, Utah.
Above, top of the temple in Salt Lake, 7 October 2003*

The Status of Geographic Education in the USA

The field of geography education in the USA experienced a resurgence beginning in 1984. Some would argue that the renaissance has not ended, but developments since 1999 have persuaded me that we are now in a reassessment and regrouping phase.

The renaissance began with extensive media coverage of the lack of geographic knowledge by not only K-12 and college-level students, but also by the American public. A report entitled "*A Nation At Risk*" maintained that a lack of geography knowledge was hindering and harming the success of the country on multiple levels stemming far beyond the walls of schools and universities. During the 1980s, geography was included in one of the five

core subjects in the President's "Goals 2000—National Education Act." Also during the 1980s, the National Geographic Society established a nationwide network of geography alliances in each state, through the efforts of Society Chairman Gilbert Grosvenor (see below—I was finally able to meet him at the 2003 NCGE conference!). We at the USGS have been supporting the geography alliances for years; and I personally have participated in alliance activities in Texas, Iowa, Colorado, Tennessee, New York, Wyoming, Arizona, and Nebraska (see some of my reports of these events).

In 1994, the National Geography Standards were published in a book entitled *Geography for Life*. A more recent advancement for geography education was the addition of geography as one of the subjects in which secondary students may take "Advanced Placement" or A.P. courses. The development of the A.P. curriculum and national standards are two later in a nearly century-long list of accomplishments by NCGE members.

Recently, geography has been cut from some statewide educational programs due to increased emphasis on standardized, high-stakes testing in math, reading, and science. Subjects not rigorously tested tend to be crowded out of the curriculum as school districts seek to meet test requirements. Furthermore, NCGE has restructured some of its funding support for the alliances, signaling a change in how these alliances will go forward to meet new challenges.

Therefore, geography education has seen some recent "ups and downs," but the field has always been led by bright, knowledgeable, and enthusiastic individuals who realize how important the discipline is

for our society. This is especially true in the 21st Century, as we grapple with political, social, and environmental change, development pressure, and globalization—these topics have always been central to the discipline of geography. It is up to all of us to spread this message to the wider community, to the media, to the boards of education, and to Congress.



Old Lake Bonneville shorelines are visible in the Wasatch Front foothills, Salt Lake City.

The National Council for Geographic Education (NCGE)

For nearly 100 years (1915), the NCGE has been championing, promoting, and actively improving the effectiveness of geography education at all levels. NCGE has over 3,000 members, including K-12 teachers, university and community college faculty, graduate students, representatives from government, private industry, and nonprofit organizations, and others. The NCGE publishes the *Journal of Geography* and a newsletter, *Perspective*. Their web site is www.ncge.org and their headquarters since 2002 has been at Jacksonville State University in Alabama. Dr Michal LeVasseur is the Executive Director, and Allison Newton is the Associate Director. The 2003 President is Dr Susan Hardwick of the University of Oregon.

The Five Themes of Geography

To specifically serve the teacher population, the publication *Guidelines for Geographic Education* was published by NCGE in 1984. Its contents became known as the “Five Themes of Geography”, and include:

1. Location: Absolute and Relative
2. Place: Human characteristics, and physical characteristics.
3. Human-Environmental Interactions, including humans adapt to the environment, humans modify the environment, and humans depend on the environment.
4. Movement: People, Goods, and Ideas.
5. Regions: Formal, Functional, and Vernacular (Perceptual).

The five themes served as a framework upon which the content of geography can be taught, as did a 1964 article by Pattison entitled “The Four Traditions of Geography.”

The six elements in the national geography standards (1994) embrace the five themes, and therefore, the themes remain a valuable tool for students to use in developing a geographic perspective.

The 18 National Geography Standards

The geography content standards, published in 1994, indicate what the geographically informed person should know and understand.

The World in Spatial Terms

Geography studies the relationships between people, places, and environments by mapping information about them into a spatial context. The geographically informed person knows and understands:

1. How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information.
2. How to use mental maps (a person's internalized picture of a part of the Earth's surface) to organize information about people, places, and environments.
3. How to analyze the spatial organization of people, places, and environments on Earth's surface.

Places and Regions

The identities and lives of individuals and peoples are rooted in particular places and in those human constructs called regions. The geographically informed person knows and understands:

4. The physical and human characteristics of places.
5. That people create regions to interpret Earth's complexity.
6. How culture and experience influence people's perceptions of places and regions.

Physical Systems

Physical processes shape Earth's surface and interact with plant and animal life to create, sustain, and modify the ecosystems. The geographically informed person knows and understands:

7. The physical processes that shape the patterns of Earth's surface.
8. The characteristics and distribution of ecosystems on Earth's surface.

Human Systems

People are central to geography in that human activities help shape Earth's surface, human settlements and structures are part of Earth's surface, and humans compete for control of Earth's surface. The geographically informed person knows and understands:

9. The characteristics, distribution, and migration of human populations.
10. The characteristics, distribution, and complexity of Earth's cultural mosaics.
11. The patterns and networks of economic interdependence.
12. The processes, patterns, and functions of human settlement.
13. How the forces of cooperation and conflict among people influence the division and control of Earth's surface.

Environment and Society

The physical environment is modified by human activities largely as a consequence of the ways in which human societies value and use Earth's natural resources and human activities are also influenced by Earth's physical features and processes. The geographically informed person knows and understands:

14. How human actions modify the physical environment.
15. How physical systems affect human systems.
16. The changes that occur in the meaning, use, distribution, and importance of resources.

The Uses of Geography

Knowing geography enables people to understand the relationships between people, places, and environments over time.

The geographically informed person knows and understands:

17. How to apply geography to interpret the past.

18. How to apply geography to interpret the present and plan for the future.

GIS Education Meeting at the Utah Automated Geographic Reference Center (AGRC)

I attended a GIS education meeting of the AGRC on 7 October 2003 at the AGRC's offices adjacent to the Utah State Capitol with Charlie Fitzpatrick (ESRI), Esther Worker (ESRI), and Anita Palmer (GIS ETC).



The AGRC (www.agrc.utah.gov) is the focal point for geospatial data coordination in the state of Utah. The last time I was in this office was while working on the TIGER program for the US Census Bureau in the 1980s. Some of the technology has changed, but the AGRC remains as committed now as it was then to serving the needs of geospatial data users in the state.

I have been in contact with the AGRC for over a year regarding GIS in education, but to see first-hand what they are doing to support GIS in education at all levels, it was truly heartening. I believe that through their statewide ArcView K12 site license agreement with ESRI (the third state to do so in the USA), and bringing together GIS, city, county, state, and federal agencies, educators, and software companies, this bodes well for the adoption of GIS, GPS, and remote sensing technologies and methods. Students will be using these tools to learn about earth science, population, natural hazards, watersheds, biodiversity, history, and many other subjects.



Cindy Clark, second from right, presides over GIS in education meeting at the AGRC. In my opinion, Utah is one of the leaders in the nation in this effort. Just as an example, the site www.edtechsupport.net/gis, created by educator Don Cressall, puts a wealth of geospatial data by county easily into the hands of data users.

NCGE Board Meeting

We had a productive meeting of the entire NCGE board and its committees during the day before the conference began. My position is on the Research and External Relations Committee, headed by Dr Ken

Footnote of the University of Colorado. Other committees include finance, publications, administrative, and curriculum and instruction.



NCGE Executive Director Dr Michal LeVasseur, left, introduces new Associate Director Allison Newton to the NCGE Board members.

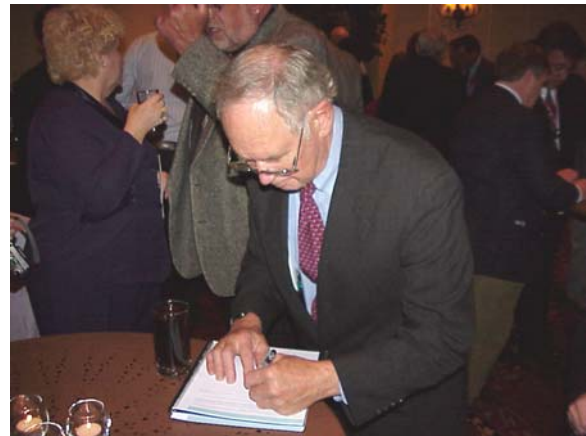


Many of the NCGE board members can be seen in this photograph, 8 October 2003. We discussed partnerships with other organizations, membership, finances, new research, new resources, and the mission and future of the NCGE. The board meets twice each year, at the NCGE conference and at the Association of American Geographers (AAG) conference.

Conference Highlights



Registration center at the conference. The NCGE staff did their usual exceptional job at helping all of the attendees. I must also add that the staff at the Salt Lake City Downtown Marriott went above and beyond the call of duty, helping with exhibit materials, audiovisual equipment, room access, and more. I did not have to do my usual hunt through various nooks and crannies of the hotel to find our workshop and exhibit materials!



National Geographic Society Chairman Gilbert Grosvenor signs a copy of the new ESRI Press book Community Geography—GIS in Action. Although I have heard Gilbert Grosvenor speak at a past NCGE conference, it was a special thrill to actually meet him in person. In addition, we had a

role in editing the book he was signing and the pleasure of working with the book's exceptional authors.



*Christine Voigt and Anita Palmer with Gilbert Grosvenor. Voigt and Palmer's book *Mapping Our World—GIS Lessons for Educators* (authored with Lyn Malone) won the 2003 NCGE Excellence in Media award.*



One of the wonderful young musicians who played during the reception for Gilbert Grosvenor!



I sat near these two stellar students during the awards ceremony. Both of their parents are geography teachers! I was pleased to note that several of the teachers in our GIS workshops this past year received teaching awards!

Workshops and Paper Sessions



Joseph Kerski, Christine Voigt, Anita Palmer, and Tom Baker at the NCGE conference. It is a true pleasure to be working with such excellent geographers!



Joseph Kerski stands with the two posters I submitted for the conference—Partnerships for Education, and Flood Hazards in Local Communities.



We were very pleased with the attendance at our session, particularly with the late afternoon time slot; after I took this photograph, every seat became filled by the time we began.



Dr Sarah W Bednarz begins our research session on GIS in education. She and Tom Baker outlined current research in the field and the upcoming issue of the Journal of Geography devoted to the subject that they are co-editing. They were followed by a presentation by Anita Palmer, Tom Baker, and I on a survey of GIS implementation and attitudes of teachers who have attended one of the training sessions we have conducted. This project is an attempt to fill in some of the gaps in GIS education research by determining why and how teachers are implementing GIS in their classrooms.



Attendees at my confluences / GPS workshop.

Other Workshops Attended

I attended part of the *Journal of Geography's* editorial board meeting, as I am a member of this board, reviewing articles for the *Journal*.

I attended Eric Fornier's session on setting the correct tone for teaching through activities designed for the first day of geography class.

I attended JoAnn Vender's session on teaching to the standards using her new excellent K12 scope and sequence publication. I also attended the Geography Bee session by the NGS staff because I will be helping run the Bee in an elementary school this year. My only disappointment was in not being able to attend AAG President Alex Murphy's presentation on Enhancing Geography's Role in the Public Debate.

I attended Anita Palmer and Christine Voigt's presentation on GIS in education (below).



Discoveries at Conference

I viewed some astounding new maps produced by Daniel Rirdan of the Exploration Company (www.theexplorationcompany.com) including a USA shaded relief map with tribal lands.

Books I learned about included:

Handbook of Research in Teacher Education, 2nd Edition; John Sikula, Thomas Buttery, Edith Guyton.

Handbook on Research in Social Studies Teaching and Learning. Macmillan NY. 1991. James Shaver, editor.

The World 21 resources have been published, including world geography videos, student worksheets, ArcView GIS software, teacher materials, and more. Publishers are BBC Worldwide, Public Media Inc., and ESRI. I played a small role in the initial editing and was thrilled to see the final product.

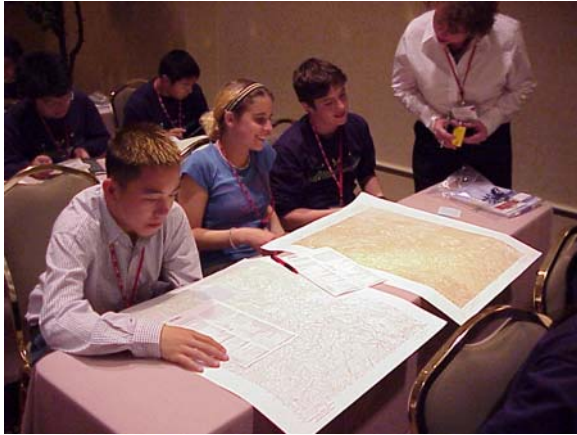
Annenberg's new video series "The Power of Place" is one of my favorite new resources.

Bellaire High School Students

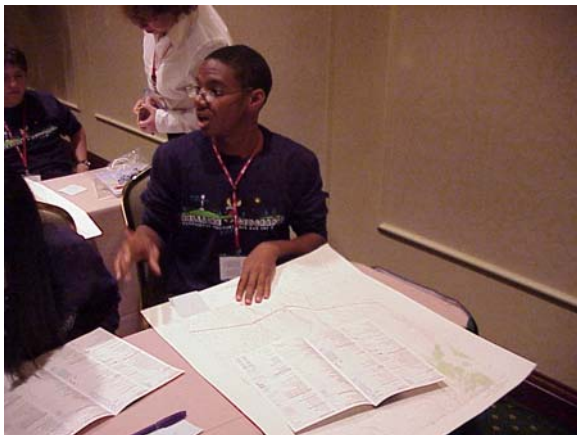
One of the highlights of the conference for me was to work with Ann Linsley-Kennedy's excellent AP Geography students. These students had been on a field trip to Yellowstone and Grand Teton National Parks, and were on their way back to Bellaire High School near Houston, Texas.



Although I had visited Ms Linsley-Kennedy's class at her high school in 1999 during an educational technology conference in Houston, I was still impressed with the answers students gave to my activities, and also the questions they were asking!



After a brief discussion of what geography is and what geographers do, I led the students in two activities—playing “topo bingo” (above) and examining land use change using Landsat imagery with Geographer Lisa Keys Mathews.

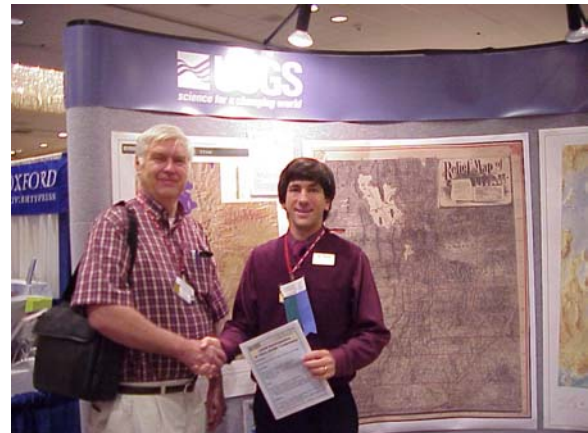


It was a pleasure to work with these students. My workshop was followed by presentations by geographers Lisa Keys-Mathews (University of North Alabama), Lawrence Estaville (Texas State University), Howard Johnson (Jacksonville State University), and Charlie Fitzpatrick (ESRI).

Exhibits

The exhibits at the NCGE conference include private map and textbook publishers (such as Rand McNally, Nystrom, Brooks Cole, and others), private software vendors

(ESRI and others), nonprofit organizations (Wetlands Education Through Maps and Aerial Photographs—WETMAAP, the Grosvenor Center for Geographic Education, and others), and government organizations (such as the USGS).



Joseph Kerski (right) greets a Utah educator at the USGS exhibit. Our exhibit featured posters, CD-ROMs, lesson plans, and maps pertinent to the teaching and learning of geography.



We displayed several maps of Utah at the exhibit—shaded relief from the National Elevation Dataset, 1895 relief map, and the Earthquakes in Utah map. I handed out sample thematic maps of Utah, the USA, and the world, all of which were gone within the first three hours of the opening of the exhibit. We also distributed hundreds of

surplus Utah 1:24,000-scale maps, thanks to Gene Jackson, USGS RMMC.



Several items stood out in our educational exhibit. First, I made arrangements with AGI to ship some of the 2003 Earth Science Week packets to the NCGE conference. This contained, among other useful items, a North America Global GIS CD together with a lesson I wrote to accompany it. Second, we displayed the “topo salad tray” 3D model, above, which attracted much attention because of its simplicity yet effectiveness in teaching topographic map concepts.



USGS Geographer Lawrence Handley works at the WETMAAP exhibit, that features the curricular resources that help teachers and students understand wetlands through geography.

Recommendations

1) These are exciting yet challenging times for geography education. Never before in the history of the world has geography education been such a need for our society and for all people around the world. As a member of the NCGE board and after nearly a decade of attending the NCGE conferences and working with their membership, I must state that the NCGE is a world-class organization. Its people and mission are closely aligned with my own. As one of the nation's largest scientific organizations, the USGS can and has provided great input to publications, data sets, software, and other items related to geographic education. The NCGE currently has two USGS scientists (Joseph Kerski and Lawrence Handley) on its board. The conference is our bridge to the social studies. Because of the entrenchment of geography in the K-12 social studies curriculum, the NCGE is the primary means by which social studies teachers can find out about the USGS. The relative small size of the NCGE conference compared to the NSTA (500 vs 19,000) shows how far that geography needs to go for equal footing in the curriculum as the sciences. Still, it has made much progress since 1985. I recommend that the USGS continue to participate in the NCGE each year.

2) The value added in our involvement with the education focus area of communications is that we work with educators to demonstrate *how* our products can be used in conjunction with national science, geography, and technology standards.

It is not enough to tell educators which products are available. When we get involved with teachers—getting their input and working with them—we can better understand how to meet their needs.

3) NCGE is working with many of our existing and potential USGS partners—the AAG, NGS, and NASA, to name three. I recommend that we increase our involvement with the NCGE. The NCGE holds tremendous potential for untapped partnership opportunities.

4) At our board meeting, I discussed the possibility of NCGE distributing some out of print USGS teachers packets, which attracted much interest. I will pursue these discussions that would be of benefit to the entire educational community.

5) Again, I recommend that for all of the events in which we participate with an exhibit, that we conduct at least one workshop. There is no need to go overboard as I tend to do with all of my workshops at NCGE each year, but at least one would be an excellent supplement to our exhibit.

6) The amount of GIS in education at this and other educational conferences is increasing, and we need to remain active participants in these efforts—research, curricular resources, and the production of data. The Global GIS project and lessons is a significant step in the right direction.

7) The NCGE knows how to run a valuable conference. My only suggestion for improvement is to place the poster sessions in a main hallway so more people will see them.

8) We need to increase our work with other geography professional societies in Mexico, with Canada, in the UK, Australia, and elsewhere.

Canadian Council for Geographic Education:

www.ccge.org/geosources/English.htm

Royal Canadian Geographic Society:
www.rcgs.org/English/English.htm

Canadian Cartographic Association:
www.cangeo.ca

NRC Centre for Topographic Information:
Maps.nrcan.gc.ca

National Air Photo Library:
Airphotos.nrcan.gc.ca

Canadian Association of Geographers:
Venus.uwindsor.ca/cag/cagindex.html

Canada Centre for Remote Sensing:
www.ccrs.nrcan.gc.ca

Geographical Association, UK:
www.geography.org.uk

The next NCGE conference will be held during October 2004 in Kansas City, Missouri.

Salt Lake Community College GIS Workshop

Two ESRI staffpersons (Ann Johnson and Esther Worker) and I, together with Dorleen Jenson of Salt Lake Community College, began to plan for a workshop at the college earlier this year. Dorleen Jenson had attended our GIS workshop at Mesa State College in April 2003. We held the Salt Lake workshop on Saturday 11 October 2003. We were pleased with the attendance at the workshop (25) and the feedback we received on the evaluation forms.



L-to-R: Salt Lake Community College teaching team Joseph Kerski (USGS), Dorleen Jenson (Salt Lake Community College), Ann Johnson (ESRI), and Esther Worker (ESRI).



We downloaded and examined data for the Wasatch Front—liquefaction zones from earthquakes, floodplains, streets, and other layers. Above, photograph I took from the airplane, Provo, 7 October 2003. The website was the excellent one that arose from the Utah partnership in GIS education and it was ranked as one of the most useful parts of the workshop.



Attending the full day GIS workshop were 4H technology coordinators, teachers, secondary students, and college students.



The 4H technology coordinators in Utah are leading the nation in GPS and GIS training; some of the 4H participants are pictured above.



A Salt Lake Community College graduate discusses his current work in the field of GIS. He was a great example of someone becoming excited about the field of geographic information sciences, in this case, in one of Ms Jenson's classes, and then having much success as a practitioner in the field.



Hands-on GIS activities included the analysis of USA and Utah historical and current population, and Wasatch Front natural hazards. I was very impressed by the campus. SLCC includes over 25,000 students—that's as large as most universities!



The start of hands-on activities for the workshop was a GPS and tree-species collection project. After gathering the information on campus, we entered it into ArcGIS 8.3 software.



We usually include a door prize giveaway at the end of the training sessions; I gave away some USGS maps, books, and CDs, and the ESRI staff (above), as usual, generously gave away textbooks, map books, and other useful items.



We were grateful to have help during the workshop from our colleagues in GIS and geography education Jennifer Caito of Washington DC (left), Amanda Gierow of Colorado, and Sophia Linn of Colorado (not pictured).



The participants of the workshop working through some of the GIS lessons; we had almost no computer problems thanks to the assistance of lab manager Scott Brown.

Field Activity

No geography conference would be complete without a field-based activity. Because my conference schedule prohibited me from attending any of the NCGE official field trips, I made up my own. After Day 2 of the conference, I attempted a pilgrimage to 41 degrees north latitude, 112

degrees west longitude. Recall that one of my workshops at the conference was on the degree confluence project. My excellent colleague, and one of the attendees of the workshop, Shannon White, made the pilgrimage with me. Reaching the spot required us to traverse some open fields (not a problem) and the salt marsh on the edge of the Great Salt Lake (a problem).



Burrs from our marsh hike cling to Ms White's arm as she documents the adventure for her technical media course at North Carolina State University.



It took us over an hour to travel a few hundred meters through this terrain; the reeds were over 3 meters high in places and the water was up to our thighs. A geographer's paradise?



Self-portrait, Joseph Kerski and Shannon White, facing the unknown as the sun set on the salt marsh and they were left to find their way back to solid ground by moonlight.



Shannon White emerges from the marsh to encounter more deep water and bugs. We truly experienced the Great Salt Lake in a way that undoubtedly no other conference attendee did. After we safely arrived back at the conference site, we concluded that our experience was (almost) worth it.

****End of 2003 NCGE Report****