

Education Event Report

GIS Day 2004 and Geography Awareness Week 2004

Participant and Report Author :

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Dates: 9 November 2004

Location: Denver, Colorado

Summary

USGS scientists and information specialists hosted a **GIS Day/Geography Awareness Week event** at the Rocky Mountain Mapping Center in Denver, Colorado USA. Two separate events were held—one for 900 students from 8am to 3pm, and the other for 100 teachers from 4pm to 7pm. The students were from public schools, alternative schools, private schools, universities, and home school environments, ranging in age from 6 to 30. About 70% of the students were middle school aged, from 11 to 14 years old.

These events were held in conjunction with the University Corporation for Atmospheric Research (UCAR), the Geospatial Information Technology Association (GITA), the GLOBE project, and the Colorado Geographic Alliance (COGA). In addition, we had help from many volunteers from the GIS Colorado community, from universities, and from the general public.

Activities for students included hands-on work with maps, aerial photographs, satellite imagery, GIS, web mapping, orienteering, with tours of the USGS map distribution center, demonstrations of GIS applications by USGS staff, and tours of the Rock Core Research Center, and tours of

the National Ice Core Laboratory. The activities were set up conference style with each one lasting one hour. Most groups stayed for three to four hours.

Activities for teachers included all those listed above for students, and in addition, workshops on teaching and learning geography, including designing and teaching world geography, geoliteracy, teaching about South America, organizing a school-wide geography bowl, and activities using the State of the World atlas.



The event was held at the USGS in Denver, where 50 million maps are housed, digital spatial data is created, GIS is applied to a variety of societal issues, and where USGS information is distributed. The facility also houses the Rock Core Research Center (1.5 million linear feet of rock core), and the National Ice Core Laboratory, where ice from Greenland and Antarctica is analyzed as part of global climate change studies. This unique facility provided an excellent geographic and scientific backdrop to our GIS Day/GAW event.

What is GIS Day and Geography Awareness Week?

GIS Day (www.gisday.com) is a grassroots event that formalizes the practice of

geographic information systems (GIS) users and vendors of opening their doors to schools, businesses, and the general public to showcase real-world applications of this important technology. The event is principally sponsored by the National Geographic Society, the Association of American Geographers, University Consortium for Geographic Information Science, the **United States Geological Survey**, The Library of Congress, Sun Microsystems, and ESRI.

This is the 6th year that GIS Day has occurred, and we have participated during all six years. In 2004, thousands of organizations hosted GIS Day events in more than 100 different countries. Through the combined efforts of GIS Day participants, millions of children and adults have learned about GIS technology through geography, and how it affects their everyday lives.



Students arriving at the USGS benchmark at the edge of the Fort Logan 7.5-minute quadrangle for the start of GIS Day activities, 9 November 2004.

What is Geography Awareness Week?

Geography Awareness Week is part of National Geographic Society's initiative, *Geography Action*, a year-long program to

promote the teaching and learning of geography. National Geography Awareness Week was initiated in 1987 by the National Geographic Society Geographic Education Program to promote geographic literacy for K-12 students. National Geography Awareness Week took place this year from 14-21 November.

The theme of this year's GAW is Cultures: The Sound of Place. This theme challenges kids to explore how language, music, and other sounds of their environment give voice to the history, movement, and interaction of people through time. Sounds of Place lesson plans are available through www.nationalgeographic.com/geographyaction.



Students touching, smelling, and learning about rocks in the USGS Rock Core Research Center.



This scene was repeated all day long—big crowds, happy faces, learning about our world!

Announcement of GIS Day Event that I posted on www.gisday.com during the summer of 2004:

Do you love maps and GIS? The USGS Mapping facility in Denver is the place to be on GIS Day! Come tour the building where over 50,000,000 maps, posters, books, and digital data are shipped to data users around the world. After the tour, examine USGS maps, aerial photographs, and satellite images in our hands-on workshop! After the mapping workshop, we will do some real geographic field work, where we seek out and find several geocaches that have been hidden on the Denver Federal Center. Student events run from 9am to 3pm; teacher events run from 4pm to 7pm. For more information, contact: Joseph Kerski, USGS Geographer, at jjkerski@usgs.gov.

Observations

This was absolutely the largest and the best GIS Day / GAW event that we have ever

held here at the USGS in Denver. It was the largest crowd, outside of an official USGS Open House, that we have had at our facility here. In previous years for GIS Day, we have had up to 150 people at the USGS Rocky Mountain Mapping Center, but this year, we had 1,000, including 900 students and 100 teachers, plus a small number of GIS professionals from the Denver area.

We received positive comments during the day and are still receiving accolades weeks later from people indicating that they (1) are now excited to study or to teach with GIS; (2) previously had no idea that geography and GIS were so important to our society; (3) had a new appreciation for the USGS, UCAR, and other organizations represented; (4) that they understood the role of the Colorado Geographic Alliance and look forward to future educational events. An event this size would not have been possible without the help of many people (see acknowledgements).

The event was an excellent one also for renewing educational contacts (at COGA, GITA, school districts, and UCAR) and for forming new ones. We have worked with the GLOBE program for many years in our GIS education program. During the last two years, particularly in conjunction with DLESE (Digital Library for Earth Systems Science), we have increased collaboration with UCAR. We have been working actively with geographic alliances, including COGA, since 1994.

Acknowledgements

(1) I would like to thank everyone who attended this year event for their enthusiasm. I realize how difficult it is to get students off campus, and I appreciate the efforts that these teachers made to do so, and for the students for their interest and

energy.

(2) I thank ESRI's Maria Jordan and Esther Worker for GIS Day materials and for their enthusiasm and support of GIS not only on GIS Day, but throughout the entire year. Maria even FedEx'd several boxes of materials that arrived just as the geocaches were being depleted! Maria featured me in her first GIS Day Heroes newsletter:

<http://www.gisday.com/heroes.html>

... but I think that she is the REAL hero. It's a team effort!

(3) I thank the dozens of USGS staffpersons who helped with the event in planning, giving tours, workshops, and helping in many other ways.

These included people from all four disciplines of the USGS—biology, geography, geology, and water resources. I am *still* hearing about dozens of last-minute changes that they made and extra effort they went to in order to keep things running smoothly and to ensure that everyone had a positive experience.



Above, USGS Geographer Maria McCormick examines the schedule for GIS Day/Geography Awareness Week.

This event required a great deal of logistical planning, where we scheduled about 8 activities to take place every hour on the hour, from 8am to 7pm. As some of the events could not handle more than 30 people (such as the GIS Lab), we assigned the specific stops for each group. However, everyone seemed pleased with the outcome, even if everyone didn't see the same thing.

We assigned a USGS tour guide to remain with each group of 30 to 35 students throughout their stay at the USGS. I'm happy to report that everyone made it back to their school safely! I thank the excellent team we had to plan it and carry it forward to successful completion.

(4) I thank our partners in the day's events:

GITA, COGA, UCAR, and GLOBE. The staffs of these organizations made a big difference in the quality of the event and added much to the richness of the day.

(5) I thank and salute the many volunteers who gave their time and energy, including Janell Kerski, Kat Buscombe, Jim Castagneri, Jennifer Jorschumb, Sophia Linn, and others.



We had excellent help all day long from these high school students.. These students guided the younger students to where they needed to be, provided technical assistance in GPS and GIS workshops, and helped in many other ways.



Dennis Ward and Susan Gallagher, from UCAR, are still smiling after teaching numerous GIS and web mapping classes all

day long.

Geography “Geopardy” and Hands-on Mapping, Satellite Imagery, and Aerial Photography Workshop



Joseph Kerski, above, gives a GIS demonstration in the auditorium, followed by a hands-on mapping, aerial photograph, and satellite image workshop. This was followed by a Geography “Geopardy” contest, where I asked a series of questions, chose finalists, and conducted a final quiz round, concluding with prizes for everyone. This segment also included an explanation of the USGS and our mission, and what we do with GIS. During each hour, I varied the content of the workshop to keep things interesting for me and the students. Teaching 8 classes is nothing to these teachers—that’s what they do each and every day!



The auditorium segment of the event included hands-on work with maps, aerial photographs, and satellite imagery, as well as a Geography "Geopardy" contest.



Analyzing contour lines, landscapes, water resources, coordinates, land use, and other topics using maps and imagery.

GPS-Geocaching Event



We gave away books, booklets, posters, lesson plans, guidelines, maps, and CD-ROMs during the event, from the USGS, Digital Globe, ESRI, UCAR, GLOBE, National Geographic, GITA, and the Colorado Geographic Alliance. People definitely did not walk away empty handed!



USGS staffpersons Mark Thorp and John McCammon point to the location where the GPS geocaching route begins.



Students descend a slope after successfully finding the geocaches!



View from the hill showing the students geocaching and one of the many buses that transported students to our building.



Before the geocaching began, and while it

was occurring, John McCammon and other staffpersons from GITA and USGS helped the students navigate with their GPS units and understand concepts of coordinate systems.



USGS geographer John McCammon teaches classes throughout the year on GPS and we were fortunate to have his expertise for GIS Day.



Behind these students is the National Ice Core Laboratory and the Rock Core Research Center, where some of the students later went for tours and demonstrations.



Many of the teachers we have been working with for years in the areas of GIS and geography education brought their students to our GIS Day/GAW event. These are some of the most creative and energetic teachers I know.



*From above, John McCammon works with the students not only to find the geocaches, but to understand the concepts and the technology behind GPS. Ultimately, we wanted them to understand **why** we are interested in the locations of things—and how they might be able to use this technology on the job in the future.*



In each geocache, we hid objects from the USGS and ESRI, such as bookmarks, pencils, and GIS Day buttons. The students were given a list of 10 clues and questions to fill out en route.



Finding a geocache! The geocaches were laid out on the grounds of the Denver Federal Center with a series of clever and interesting clues.



Students spread out all over the area west of our building, but were quite engaged in the topic and we received many positive comments from the students and their teachers.

the GPS units will be an excellent resource in the months and years to come for the teachers.



More views of students geocaching.



The staff from GITA recently purchased GPS units for loaning to educators, and they brought them to the event at the USGS for GIS Day. This was a tremendous help and



Explaining GPS and coordinate systems at the start of the geocaching event.



We even discussed issues of datum and the true measurement of the shape of the Earth with students!

Hands-on GIS and Web Mapping Workshop



Above, Dennis Ward (UCAR education specialist) works with students in the USGS

training lab. Susan Gallagher from UCAR was the co-instructor. They alternated the workshops between a GIS-based analysis of meteorite impacts using ESRI's new Arc Explorer Java Edition for Education and web mapping with the National Atlas, Terraserver, Geomac (wildfires), and other sites.



Above, Joe Hanke, City of Loveland GIS Professional, observes students working with GIS and spatial analysis.





We had students from elementary to secondary age in our GIS and web mapping courses.



Above, right, Steve Reiter gives an explanation of the USGS Rocky Mountain Mapping Center to students from the University of Colorado-Boulder.

USGS Mapping Center Tours



Above, left, USGS staff cartographer Richard Shields gives students an overview of the USGS—what we do and why we do it.



Many people began the USGS tour by visiting our map and product sales area.



Fortunately, we have a large 17 acre facility, capable of handling the volume of people that we had in our building during GIS Day.



Students examining one of our exhibits on surveying and mapping equipment.



Many people spent time in the Central Region USGS Visitors Center, examining the information and displays about urban growth, natural hazards, recreation, and biodiversity. We also have a 3D model of Colorado and a T-Rex footprint cast in the visitors center, so there is much to see.



Above, right, Paul Wiese, geographer, explains how GIS is applied in our research section at the USGS Rocky Mountain Mapping Center for students from the University of Colorado-Boulder.

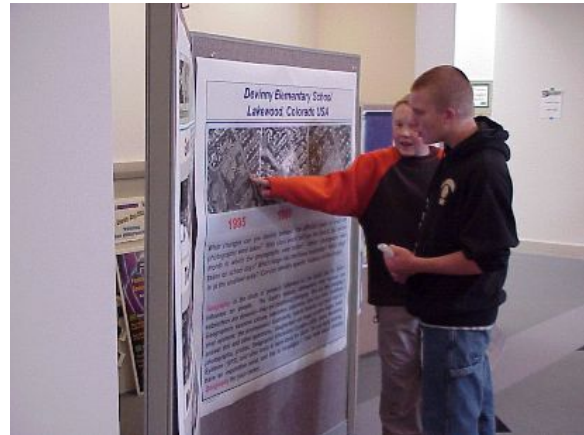


Students examining one of our displays—this one on John Wesley Powell, second director of the USGS, during the 1880s.



Ken Gerson, USGS Information Specialist, explains some of the USGS products.

Kat Buscombe guides the students through one of the most interesting parts of the Distribution Center, where our large thematic maps of land use, satellite imagery, natural hazards, and other topics are kept.



I created several posters for the event, including one highlighting the wildfire mapping work we did with students, the USGS GIS education program, and this one, above, showing change over time using USGS aerial photographs.



Somewhere in the crowd is Ken Gerson conducting a tour and explanation of the USGS Distribution Center.



Some students had lunch on the grounds of the USGS and the Denver Federal Center. Fortunately, for the 6th year in a row, the weather was excellent for GIS Day. Perhaps that is because we had Dennis and Susan here from UCAR (atmospheric research)!



USGS Rock Core Research Center Tours



Tom Michalski, left, gives an explanation of geology, rocks, minerals, and the USGS Rock Core Research Center to teachers at the teacher event in the evening. The Core Research Center is the world's largest single facility of its kind.



All day, students received excellent information and tours from Tom and the Rock Core Research Center staff.

USGS National Ice Core Lab Tours



It's cold in there! Students emerging from the National Ice Core Laboratory, where ice is stored at -40 C.



Students inside the National Ice Core Lab, treated to informative explanations by Geoffrey Mill Hargreaves and his staff.



Students gather outside the National Ice Core Lab before going in "The Freezer." Above, they learn about why ice core is a good recorder of climate change, and how the ice core is sampled, transported, and studied, and what it tells us about ancient and current climate and rates of change.

Teachers and Professors: 4 pm- 7 pm

General public and Student Tour Groups with their Teachers: 9am to 3pm

What the news media would see on November 9th:

Map Annotations Tour



Above, Shirley LaPedus provides students with an explanation of why maps need to be changed, the kind of changes that we make, and the USGS National Map Corps of Volunteers.

Hundreds of students outside using Global Positioning Systems receivers on a high-tech treasure hunt, students inside working with maps and aerial photographs, a geography "geopardy" contest, millions of maps, thousands of rocks, and ice core from Greenland and Antarctica, teachers working on professional development; people making maps on the computer.

Teachers: Do you love maps? Join us for a FREE evening of geography workshops, food, giveaways, and networking! This event will include a "Geography Geopardy" contest, geo-caching with GPS receivers, and tours: (1) of the 50 million maps at the USGS Rocky Mountain Mapping Center, (2) of the National Ice Core Laboratory where climate change studies are occurring, and (3) of the Rock Core Research Center.

Educator Event

The educator event was advertised on the Colorado Geographic Alliance web site: www.du.edu/coga as follows:

Join the Colorado Geographic Alliance (COGA), the USGS, the Geospatial Information Technology Association (GITA), the University Corporation for Atmospheric Research (UCAR), and the GLOBE program for:

Workshops will include: Mapping and Spatial Analysis on the Web, Organizing a School-wide Geography Bowl, GeoLiteracy, Geographic Information Systems, and Mapping with Topographic Maps, Aerial Photographs, and Satellite Images.

Free dinner, wine maps and other fun handouts ensure that this event will be a blast! Teachers will also receive a certificate of 3 contact hours, applicable towards CDE re certification!

Celebrate Geography, Colorado-style! GIS Day Colorado!

Tuesday, November 9th 2004

To secure your spot at this free event, please fill out our online response form or call 303.871.2405. Detailed directions and a

schedule of events will be mailed November 1st or see rockyweb.cr.usgs.gov/public/outreach/

Schools/groups: Students grades 4-12 and the general public are invited to the USGS for GIS demonstrations, geo-caching activities, map tours and more as part of GIS Day. To register your STUDENTS and yourself for the daytime event, contact Joseph Kerski at 303 202-4315 or jjkerski@usgs.gov

The resources were aimed to aid the teachers in their instruction of geography.



Teachers toured the Rock Core and Ice Core Laboratories and the USGS Rocky Mountain Mapping Center.



Geography Teacher Shanna Hurt, left, conducts a teacher workshop.



Above, Joseph Kerski, left, conducts a hands-on aerial photograph, satellite image, and topographic mapping workshop with teachers.



We distributed maps, guidelines, lessons, posters, CDs, and other resources for teachers during the educators' night event.



After the first hour of events, teachers gathered in the auditorium for a Geography Geopardy Contest and announcements.



Above, rotunda at the educator event.



We had nearly 100 teachers in attendance for the educators night and received many positive comments about the event.



Thanks to COGA, we fed the educators!



Above, Joseph Kerski talks with teacher who uses GIS in his courses.

*****end of report*****