

## EDUCATION EVENT REPORT

Attendee and Report Writer:  
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Purpose of Event:

### **Cherokee Ranch Wildfire Study, Mountain Ridge Middle School**

Location: Douglas County, Colorado.

Dates: September 2004

### **Summary**

I was invited by teachers from Mountain Ridge Middle School, Douglas County, Colorado, to work with them and with their students to study the environmental impacts of wildfire. The unit of study was interdisciplinary, involving over 110 students in both Grades 7 and 8, and teachers from mathematics, language arts, environmental science, and other disciplines, and included a significant and unique field component.

The field component included collecting data on the impacts of the fire on grasses, trees, bushes, wildlife, streams, and other features, together with the gathering of coordinates with GPS units, and later, mapping these data within a GIS environment. Several of the school's teachers have been involved with the GIS training that we have conducted over the past several years, and it was excellent to work with them—to see their vision for the integration of spatial technologies come true in a meaningful way with the students in an exciting, problem-based unit of study.



The above tree, now cut in pieces, was the cause of the fire, when it fell in high winds on the power line below. I learned this from several friendly South Metro Fire personnel while giving them ride back to their fire vehicles. They were at the field study site helping the students and ensuring their safety. These fire managers were also knowledgeable about GIS and GPS.



The fire burned mostly on Wednesday 29 October 2003. The fire began around 1230pm in an open space area in Central Douglas County, to the east of Sedalia and to the north of Castle Rock, Colorado. The weather conditions were extremely conducive for the fire's growth, with a temperature of 80 degrees, humidity of 8-10%, and winds of 20-30mph, gusting to 40.

A Red Flag Fire Warning was in place at the time of the fire. The fire grew to around 1,000 acres. Another fire in Boulder County grew to 5,000 acres at the same time the Douglas County fire was burning.

South Metro Fire, West Douglas Fire, and Littleton Fire responded to the initial call, but many additional agencies and resources were quickly brought in, both for structure protection units and wild land units. Contractors brought in graders, scrapers, and water, while Douglas County Public Works dispatched numerous water tankers as well. The fire moved into a developed area with large homes, some valued at over 1 million dollars. The fire occurred just north of the Castle Pines country club, home to the annual International Golf tournament. Over 3,000 residents were evacuated, which was more persons evacuated than the Hayman Fire of 2002.



Students examined news reports and photographs such as the one above, to fully understand the dangers and the type of work environment that firefighters endure. Firefighters and EMT personnel were on the site during the students' field experience to ensure safety and also to talk with the students about the fire and their work.

Firefighters were able to hold the line as the fire advanced into the housing area, and a

cold front brought much higher relative humidity and colder temperatures around 830pm that day. Overnight temperatures dropped into the upper 20s with humidity over 90% range as well, and fog and light drizzle formed, helping to contain the fire.



Mountain Ridge Middle School, Highlands Ranch, Colorado, above, where the teachers and students hailed from for this study.



Inside the school, students were examining photographs of the fire and some had already been in the field on a reconnaissance mission to plan and gather data in advance of the main group.



The main field day's success was the result of many hours of effort by teachers, parent volunteers, administrators, and even the school district's lawyers, securing permission for the students to enter the field site. Ms Deb Fox-Gliessman, above, was one of the main teachers involved. She attended our GeoTech Colorado 2004 GIS-GPS event (report on <http://rockyweb.cr.usgs.gov/public/outreach/reports/geotechco04t.pdf>).

The major part of the land burned was on open space land owned by Shea Homes. What was the quite exciting about this project was that the students were the first people to be allowed on the site after the wildfire. They were told that they would be the *only* people allowed on the land this entire year. Students took care to cause minimal disturbance to the land, and had a very real sense that they were involved in something unique.



Students examined maps of the wildfire burn area that they received from the Douglas County GIS department. Students will soon be able to generate their own maps such as this when they finish inputting their data into their own GIS.



Another view of the work area where the students examine aspects of the fire and display their work for others.



GPS units, field notes, and cameras ready for the students to use in the wildfire burn area. Each student team had a GPS and camera, and was required to visit a certain line of longitude, taking qualitative and quantitative assessments and measurements of several characteristics. They did this every .05 minutes of latitude along the line of longitude. Each team of students collected data for at least 10 sites.

The teachers at the school asked me to talk with the students about careers in GIS, how we map wildfires at the USGS ([www.geomac.gov](http://www.geomac.gov)), why spatial analysis is relevant to society, and how they might learn more about it. I brought materials to hand out to the students after my talk was over. The students were very polite and it was a pleasure to work with them. I told them that they were involved with something that a lot of college-aged students weren't even doing!



We're in the field! Arriving at the site in multiple buses, trucks, cars, and vans and receiving an re-orientation to the study and the site.



Students quickly observed that oak and other shrubs had been growing during the summer of 2004, resulting in plants that were over 1 meter high (above).

Students gathering field data (below). The students I worked with made excellent observations about the effect of slope and vegetation on the wildfire damage and recovery.



Student-gathered data will be given to Shea Homes, Douglas County, South Metro Fire, and other groups as they assess how the area burned and is recovering.



Measuring height of plants (above) and photographing the vegetation for future hyperlinking in the GIS environment (below).





Student taking notes and GPS coordinates (above).

The integration of spatial technologies, such as GIS and GPS, as was emphasized in this study, once again proved itself to be a relevant addition to an interdisciplinary unit of study. The students were enthusiastic about the project, and had a very real sense of ownership about the project.

I commend each of the teachers, students, volunteers, and all others who contributed not only to this study, but who work daily to enrich the educational experience of students. It certainly is not easy to pull this sort of unit together, yet these educators believe very strongly in field-based, meaningful experiences for students.

I believe that these students will be well equipped to be the ones making decisions about the complex human-environmental issues and problems that we face. This is exactly what we need more of in the educational curriculum.

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