OUTREACH EVENT REPORT AND RECOMMENDATIONS

Event: GIS Workshop

Location: University of Texas - El Paso

Dates: 5-7 September 2002

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

Acknowledgements

I would like to thank Bob Gray at UTEP for their willingness to work with me, for advertising the institute, for technical assistance in the lab, with data, and for teaching with me in the workshop. He went above and beyond the norm in ensuring the workshop's success. I also thank Diane Stephens, USGS RMMC Cartographer, for funding this event with her recruitment and retention account. I thank our workshop attendees for participating and sharing their own GIS experience with the group. They were excellent people to work with and I look forward to working with them in the future.

Highlight

The following highlight made the final cut to DOI headquarters and the White House:

Researchers from U.S. and Mexico Use Geographic Information Systems at USGS-sponsored Workshop at the University of Texas-El Paso

USGS Geographer Joseph Kerski and University of Texas-El Paso (UTEP) researcher Bob Gray conducted a workshop designed to increase skills in geographic information systems at the UTEP campus on 6 and 7 September 2002. Over 45 planners, researchers, and scientists from the El Paso and Juarez region analyzed satellite imagery, investigated health data for both sides of the US-Mexico border, and collected coordinates and field measurements using Global Positioning Systems (GPS) technology in the workshop. The workshop was part of a USGS recruitment effort that is designed to attract future USGS scientists from UTEP and other universities. Geographic information systems is a problem-solving tool that is used daily in engineering, marketing, biology, geography, retailing, utilities, corporate management, environmental studies, hydrology, land management, and education to make wise decisions about Earth-based issues (Joseph Kerski, USGS, Denver, 303-202-4315).

Background

Joseph Kerski, left, and Bob Gray, right, instructors for the workshop, in front of a Landsat image of Juarez-El Paso in the NASA facility at UTEP.

Workshop site, the Undergraduate Learning Center, funded in part by NASA. UTEP's architecture is modeled after that of the country of Bhutan.

UTEP is located in El Paso, Texas, a city of 800,000 at the westernmost tip of the state. UTEP's student population is more than two-thirds Mexican American, and another 9% of its students are from Mexico.

UTEP is one of the universities targeted by DOI and the USGS for recruitment efforts. RMMC Cartographer Diane Stephens applied to the DOI Human Resources Initiative funds during Fall 2000 to add a GIS component to the recruitment-retention work that Diane has been doing for years at the University of Texas El Paso (UTEP). Diane had been receiving inquiries about GIS, and because GIS is mentioned in several of the vacancy announcements we hand out at the career fairs, it seemed natural to include a hands-on GIS institute. We conducted a GIS workshop in the Geological Sciences Department during September 2001. Contact me if you are interested in reading my report about that workshop. This September 2002 workshop was therefore the second one co-conducted by USGS and UTEP.

Juárez, Mexico, on 7 September 2002, seen from the rooftop of our training site on the UTEP Campus. Juárez, at 1.8 million, joins with El Paso to form the largest binational metropolitan area in the world.

Harry Schulte, left, from the NASA facility on campus, was very supportive in helping to ensure the workshop's success.

This workshop was conducted with the Center for Environmental Resource Management (CERM), foreground. CERM was where Chip Groat worked before he came to the USGS, so it is excellent to work with folks who know Dr Groat. The workshop was conducted in the NASA-funded Undergraduate Learning Center building in the background.

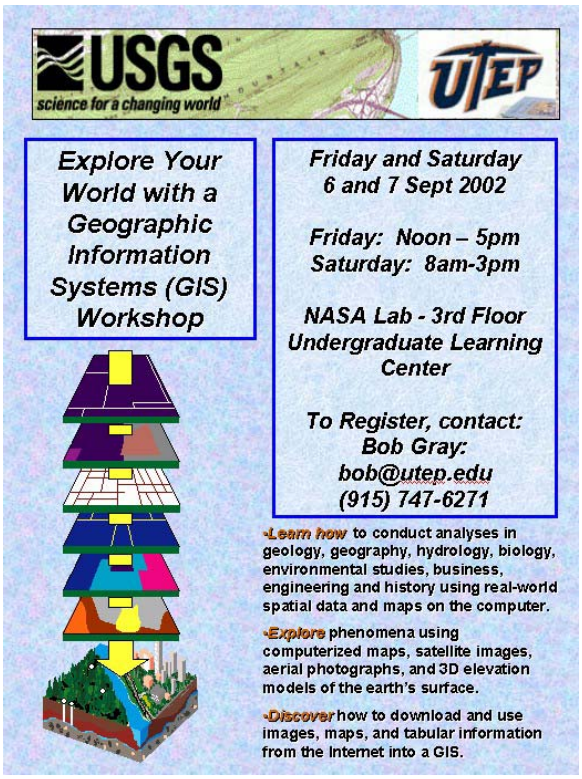
Over July and August, we worked on the agenda and publicity. Our goals were to:

1) Assemble a cross-section of GIS users in the region together to begin thinking about joint projects;

2) Think jointly about how GIS, remote sensing and GPS can be used to improve the quality of life of all in the US-Mexico El Paso region.

GIS Workshop

The number of attendees exceeded my hopes. Approximately 40 people attended the workshop.



Flyer created for the workshop. We had an excellent cross-section of attendees comprised of university faculty, graduate students, undergraduates, but mostly, GIS professionals from one of the most diverse groups I have yet worked with—the FBI, health services, E-911, planning and zoning, even the editor from the El Paso Times--from 2 countries and 3 states!

Workshop Agenda

Location: NASA Lab in Undergraduate Learning Center - 3rd Floor - Max Students = 45

Friday 6 Sep 2002

Noon

Introductions
Materials in back
Goals for the workshop
What is GIS? - Who Uses GIS?

Why Should I use GIS?
Exploring ArcIMS sites
Nationalatlas - www.nationalatlas.gov
Geomac - wildfires: www.geomac.gov
Terraserver topo maps and aerial photographs: terraserver.microsoft.com
TNRIS - TX Natural Resources Info System - www.tnris.org
Paso del Norte Mapping for Public Access - www.pdnmapa.org

Download a few layers (aquifers, precipitation, dams, geology) from nationalatlas

Download DOQ and DRGs for UTEP campus from terraserver for later analysis

Download Landsat 7 satellite image from synergy2.csr.utexas.edu

Break

View downloaded layers from National Atlas with ArcExplorer software

Join historical and 2000 population data to 1990 Census demographic data;

Analyze population change by county; save NM and TX data

County 3D population analysis.
3D theme properties:

Value=percent/10 Extrude by Using as Absolute

Download TIGER streets, block group boundaries, and demographic data for county - Print layout

Join TX block group demographic information to El Paso BG polygons

Make thematic maps with demographic data - - Normalizing, chart maps

Break

Analyze regional dataset from borderhealth.net (cams.utep.edu/usmbhc/hp) or
pdnmapa.org
US Mexico Border Health Comm--> fire stations --> El Paso and Juarez

Add fire stations for El Paso and then for Juarez (They are in stpln. Project stpln to dd using arcview/samples/ext/prjctr.apr)

Analyze El Paso fire stations vs. demographic data - buffering

Merge fire stations for El Paso and Juarez into 1 file

Download El Paso centerline data from www.pdnmapa.org

Geocode fire stations from the dbf using El Paso centerline data (state plane)

Edit the point file of fire stations, move some of the stations, digitize additional station

5pm Summary and End
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Sat 7 Sep

8am

Review: Analyze water wells with unsolomapa data: txnm_features_stpln, pdn_watersheds, pdn_topography, pdn_pub_waterwells, pdn_majorroads, pdn_landuse, pdn_hydro, pdn_irrig

Data description and sites: USGS, UTEP,
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

TNRIS, and transboundary region sites - 30 minutes

Refer to DRGs and DOQs from terraserver

Download DRG and DOQ from TNRIS

SHOW the Rio Grande COG DOQs
GPS Introduction

Collect coordinates (lat-long) with GPS and temperature

Set view properties to UTM for DRGs and DOQs

Upload coordinates and temp into GIS with basemaps, make thematic maps

Then, add theme: Bob's high-res EPA DOQs

Break

Hyperlink 1 photo to field site and discuss cams.utep.edu/cams/uglc.html - 30 min

Download ZIP code bdys (www.census.gov/geo/www/cob/z52000.html) for El Paso County

Download local health asthma data from tnrcc.utep.edu/tanu/test1999/multiple1999.cfm - 30 min

Make summary table, join to TIGER zip code shp; analyze

Noon - Lunch

1255pm - Make a grid from El Paso-Juarez ozone data:
cams.utep.edu/nih/cams_net.gif

3D analysis with DEM from unsolomapa (vertical exaggeration = 12)

Flood the DEM

Compute amount of roads flooded, overlay parcels.
Project the fire station merged dd data to UTM using arcview/samples/ext/prjctr.apr

Analyze number and pattern of flooded fire stations

245pm Next steps:
Training: Gray/Kerski partnership, UMT, Virtual Campus, UTEP
Resources: CERM/UTEP data holdings; Mapping our World book

3pm Summary and End

Joseph Kerski works with participants in GIS institute… perhaps getting a little TOO excited about spatial analysis.

Workshop Objectives

1. To be aware of the principles, applications, trends, and pertinent issues of geographic information systems and peripheral technologies, and geographic information science, particularly to those not previously exposed to GIS.

2. To become competent in solving

demographic, hydrologic, geologic, biologic, and geographic problems with spatial analysis by using geographic information systems software (ArcView).

3. To understand the nature of spatial data and its format.

4. To feel more confident in downloading and using spatial and tabular data on the Internet, with an emphasis on data for El Paso, Juarez, and Las Cruces.

Format

Each day's class contained a bit of discussion time and demos, but was 95% hands-on work with GIS software and spatial data to solve problems.

Skills Addressed in GIS Institute

Computer file and data management
Selecting features and attributes
Querying features and attributes
Analyzing tabular information
Site selection
Projecting Spatial Data
Joining tabular information
Registering Imagery
Downloading Internet spatial data
Formatting data for use within a GIS
Collecting and using GPS coordinates
Hotlinking photographs to maps
Buffering spatial data
Merging spatial data
Creating and Using 3D Scenes
Analyzing grid data
Analyzing and overlaying spatial data to make an informed decision.

Materials For Institute

How to Get Information from the USGS
Science, Society, Solutions
Earth Explorer
Deserts
USGS GeoData
Joseph's How to Use DLG Data Guidelines
Joseph's How to Use USGS Data in ArcGIS
Texas Fact sheet
Transboundary Information
HUD-Colonias Information
Eagle Pass Information Sheet
USGS web sites
Map Projections
Landsat cards

Joseph's How to Use Terraserver Guidelines

Syllabus
Signs for Doors
Sample GIS publications
Implementation and Effectiveness of GIS in Education
GIS Touches our Everyday Lives
ArcGIS information sheets

I

Because many of the students in the course were working GIS professionals, we were able to move quickly through a variety of activities. They were also willing to help those who were just starting in GIS tools and analysis.

A geographer's dream—2 countries, 3 states! Joseph Kerski's right hand, pointing to New Mexico, left hand pointing to Chihuahua, Mexico, and behind him rise the rhyolite adjacent to the campus in Texas!

Bob Gray will conduct the first follow-up session with these students in mid-September 2002.

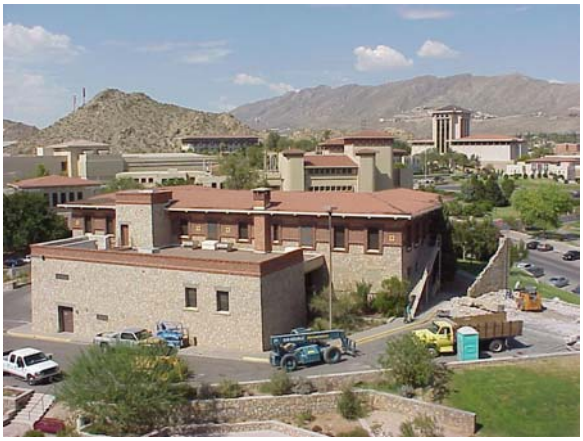
Attendees completed a questionnaire at the end of each workshop, which was quite valuable in planning for the following day's activities and future events.

The Rio Grande, with I-10 and the USA on the right, Juarez Mexico on the left. The El Paso-Juarez region includes significant environmental, security, health, water, and other issues of importance that can be addressed with properly applied spatial reasoning, data, and tools.

The workshop included a fieldwork segment where we collected coordinates using GPS units and brought them into our GIS package, displaying them on top of a DOQ and DRG of El Paso. In addition, we used Bob Gray's 10-inch resolution color DOQs for El Paso as a base map behind out GPS coordinates.

Joseph Kerski and Bob Gray work with attendees in the institute.

The entire staff in the NASA Undergraduate Learning Center were very helpful to us. This will also be the site for the INET (International Network for Educational Technology) conference, January 2003. We met with the INET planning staff, who invited us to conduct a workshop and a USGS and GIS exhibit for the estimated 500 attendees at that conference.



UTEP holds 2 career fairs each year; the one for the whole university in September, and one emphasizing science and engineering, in February. Diane Stephens represents the USGS at both of these events. I helped with it during 2001, and Diane will represent USGS at UTEP during the mid-September 2002 and February 2003 fairs.

Recommendations

1. UTEP is at the intersection of many important initiatives—ArcIMS projects, Colonias/HUD project, US-Mexico Transboundary project, GIS Education Project, and USGS recruitment-retention, to name a few. We should definitely continue our excellent working relationship with the staff of UTEP and the data users in the area. We should seek ways to expand our activities in the region. Bob and I have talked about conducting future workshops for educators, as he already does through his Community Scholars program. I recommend we pursue this.

2. We should give serious consideration to conducting a workshop and hosting a USGS exhibit at the INET conference in January 2003 on the UTEP campus.

3. Once again, I was very impressed by UTEP's spirit of intra-campus cooperation, which, frankly, I have not observed in all universities. UTEP and El Paso-Juarez have a fantastic cultural and physiographic diversity. The faculty is also very willing to work with us, fostered, undoubtedly, by Diane working with them these past few years. I also have a profound impression of politeness and efficiency of all whom I encounter on the UTEP campus.

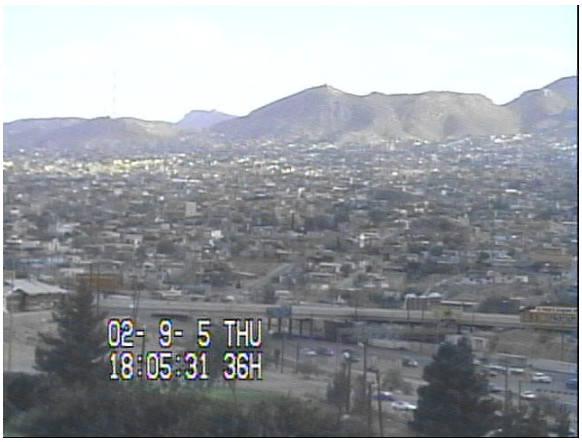
This project is a great example of the interaction between outreach, researchers, and recruitment-retention efforts.

4. UTEP's location helps provide perspectives on a wide range of national and international issues, and gives students rich social and cultural experiences not available on most university campuses. UTEP's faculty conduct nationally competitive research which capitalizes on its unique setting in such areas as environmental science and engineering, history, manufacturing engineering, psychology, and international trade. UTEP has attracted more than $115 million in new research grants and sponsored projects in the past 5 years.

I have already received several inquiries from participants after the workshop with requests for information. I will send a

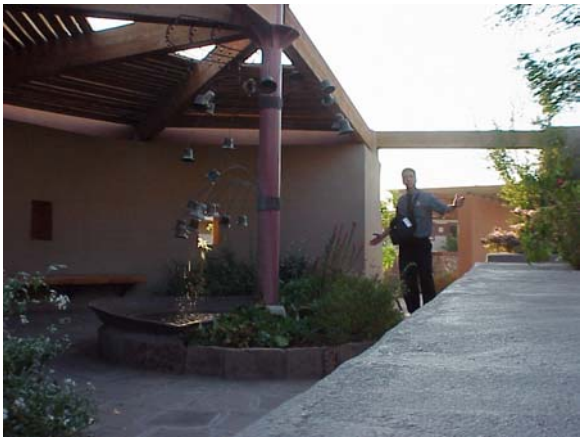
follow-up email to the participants in the course, thanking them for allowing us to be a part of their “GIS journey.”

Bob Gray giving a rooftop tour at the conclusion of the workshop. Bob is gesturing at the video feed, a live web cam, which can be seen on the image below.



The image captured by the above web cam: http://cams.utep.edu/cams/uglc.htm

Fireworks at the Sun Bowl stadium on the UTEP campus.



Joseph Kerski pausing in the beautiful contemplative garden in the middle of the UTEP campus.

end of report