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Report on Two Free Hands-On Courses

(1) Using and Analyzing Federal Data Sets Within ArcGIS
(2) National Hydrography Dataset Workshop

Report Writer: Joseph Kerski, Geographer, USGS, Denver.

From 13-16 May, a group of approximately 28 GIS professionals from Colorado and Montana gathered at the USGS Rocky Mountain Mapping Center in Denver, Colorado, for the above two courses. The courses were taught by Joseph Kerski and Jeff Simley, respectively, of the USGS Rocky Mountain Mapping Center. The course was designed for hands-on experience with downloading, formatting, and analyzing USGS digital data sets, including DLGs, DEMs, DRGs, DOQs, NED, NLCD, NHD, and Landsat data. The course also included analysis of TIGER data from the US Census Bureau.

At right, participants in the course gather GPS coordinates for later input into ArcGIS. We used data portals such as the seamless USGS data server, The National Map Viewer, the EDC FTP site, Earth Explorer, the Geography Network, and GIS Data Depot. We used ArcGIS version 8.1 software from ESRI, Inc., including ArcMap, ArcToolbox, and ArcCatalog.

At right, the participants gather for an obligatory group photograph. We had an excellent group and we look forward to working with these individuals in the future.

The group included representatives from the University of Colorado, National Geographic Maps, city governments, county governments, state of Colorado governments, and federal agencies such as EPA, National Park Service, FEMA, and the US Forest Service, among others.

Course Advertisement: Confused by the wealth of raster and vector data sets available from the USGS and other organizations? Join USGS geographer Joseph Kerski for a three-day, hands-on class using ArcGIS from ESRI to better enable you to make full use of digital line graphs, digital orthophotoquads, national land cover data, national elevation data, digital raster graphics, satellite imagery, other USGS data, as well as data from the Census Bureau, NRCS, and other organizations. Emphasis will be placed on how to locate, download, and format these data sets for ESRI's family of products, and how to apply these data to real-world problems and issues. Following this course will be a 1-day course designed to help you take full advantage of the capabilities of the National Hydrography Dataset (NHD).

Dates and Times

Tuesday 13 May - 11am to 430 pm. This will follow the monthly Federal GIS meeting from 9 to 11am. We encourage you to attend the Federal GIS meeting, and then attend the hands-on GIS class.

Wednesday 14 May - 8 am to 430pm

Thursday 15 May - 8 am to 430pm

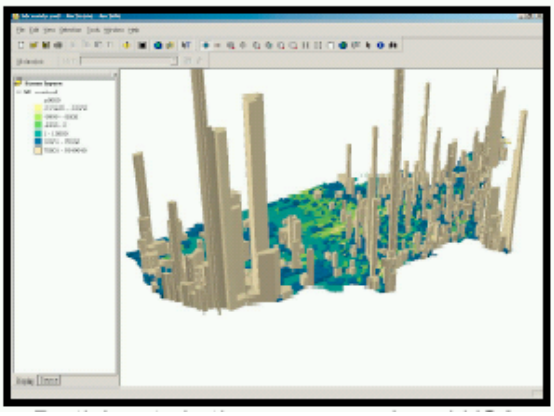
Friday 16 May – 8am to 430pm (NHD Course)

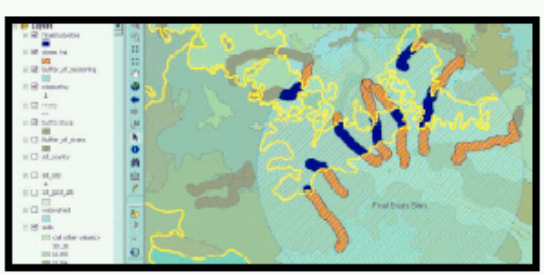
Location

USGS Rocky Mountain Mapping Center
Denver Federal Center, 6th and Kipling, Lakewood
Building 810, Building Entrance W-5, Discovery Room

Location maps on:
http://rockyweb.cr.usgs.gov/public/outreach/dia2dfc.html
and
http://rockyweb.cr.usgs.gov/public/outreach/dfc.html

Topics Addressed in GIS Course

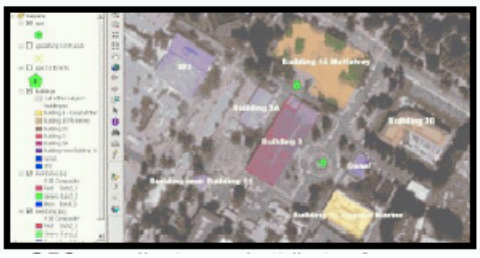




Definition of GIS
Applications of GIS
Description of ESRI GIS Products
Spatial and Tabular Query and Analysis
Joining and manipulating tables
Spatial Data Types, Producers, and Sources
Vector and Raster Data Structures and Analysis
Collecting GPS coordinates
Moving GPS coordinates and attributes to GIS
Hyperlinking Features to Photographs
Registering Imagery
Digitizing points, lines, and polygons
Displaying and symbolizing data
Creating attributes
3D analysis
Buffering
Geocoding
Overlaying: clip, merge, intersect
Projecting Data
Downloading and formatting data for GIS

Sample activities

Downloading and formatting DEMs, DLGs, TIGER, and other data sets
Analyzing population change in 3D
Siting a fire tower using DEMs and DOQs
Examining earthquakes, hurricanes, and tornadoes
Selecting study sites for riparian plant analysis
Registering imagery using Georeferencing
Downloading and using Imagery from Terraserver
Importing GPS coordinates and attributes into ArcGIS



About Your Instructors

Joseph Kerski serves as education outreach geographer in the national mapping program of the USGS. He conducts over 45 GIS and geography training events annually for government, educators, legislators, private companies, and the news media, operates USGS exhibits at conferences, and develops GIS-based curricula, web pages, and other items designed to inform the public about the USGS and spatial analysis. Joseph has taught GIS at Metro State College, Red Rocks, and the University of Denver and formerly worked as a geographer at the US Census Bureau. Joseph holds three degrees in geography including a Ph.D. from the University of Colorado with an emphasis in geography education, population geography, and GIS. In short, he loves this stuff! And looks forward to working with you.

Jeff Simley is the Program Manager for the USGS National Hydrography Dataset. He was assigned to this role in 2001 to help guide the production of the high resolution NHD, a $30-million program that covers the production of over 2,000 datasets and will involve the partnership of 60 agencies. He has 25 years of experience in developing digital geospatial databases, spending 10 years with the Defense Mapping Agency and the past 15 years with the U.S. Geological Survey.

About the National Hydrography Dataset

The National Hydrography Dataset (NHD) is a partnership between 40 Federal, State, regional, and local agencies to produce a consistent nationwide hydrography layer for GIS. The NHD differs from traditional hydrography layers because all of the hydrography is networked for downstream flow and uses an addressing scheme for linking attribute data. This makes it possible to automatically determine the contributing upstream or affected downstream water network from any point along any waterway in the country. The 1:100,000-scale NHD is currently available for the U.S., while the 1:24,000-scale NHD is currently in production for about a third of the country. Over three million records of Environmental Protection Agency water quality data are linked to the NHD. The NHD is currently available from the web as Arc Coverages and comes with a NHD Toolkit for use with ArcView that provides a user interface to networking and attribution. The NHD is currently being converted to an ESRI Geodatabase to take advantage of the improved functionality of ArcGIS.

NHD Workshop Agenda

National Hydrography Dataset Overview
Downloading the NHD – live demonstration
Look at the NHD data – what do all those tables mean – make a map using this data
NHD Extensions in ArcView – the tools that bring instant power to the NHD
Creating the NHD workspace in ArcView – setting up the data so you can use the tools
Navigating through the network – tracing the flow of water throughout the hydrologic network
Explore the NHD data – a detailed look at what is going on in a subbasin
Analyze the NHD tables – a detailed look at the fields in the tables and how tables relate
Reach Indexing – how to link your attributes to spatial data – point, line, and area indexing
Streamgage Events – linking streamgages to the NHD as an example of linking attributes
Streamgage Linear Events – using the network to create a linear event of streamflow
Make a Map of Streamflow – symbolizing the events to make an effective map
Using Multiple Subbasins – how to work with larger areas
Editing the NHD – revising names and flow
The NHD in Geodatabase

Tour

The class will include a tour of the USGS Rocky Mountain Mapping Center. Did you realize that right here in your own state is the largest depository of maps in the world? Over 100,000 titles -- 50 million individual items -- of maps, digital data, books, posters, and other publications await your exploration as you explore the 17-acre Rocky Mountain Mapping Center with USGS staff. The tour will also include production areas for land use, hydrography, and elevation data, and research projects on abandoned mine lands and urban growth.

How To Register

Email Joseph Kerski at:

jjkerski@usgs.gov

Include in the email:

1. Your contact information and where you work.
2. Your prior experience with GIS.
3. What you would like to get out of the course.
4. Indicate whether you would like to take the GIS Course, the NHD Course, or both.

Course Enrollment Cap

The courses will be capped at 25 students.

We have 16 computers in the classroom, so please realize that you might have to share a computer.

For More Information

Contact Joseph Kerski at 303-202-4315 or jjkerski@usgs.gov

Acknowledgements

I thank all those who helped make the course a success: Jeff Simley, Richard Jimenez, Gary Grande, Steve Reiter, Chris Royer, Melanie Hood, and Mike Tate.