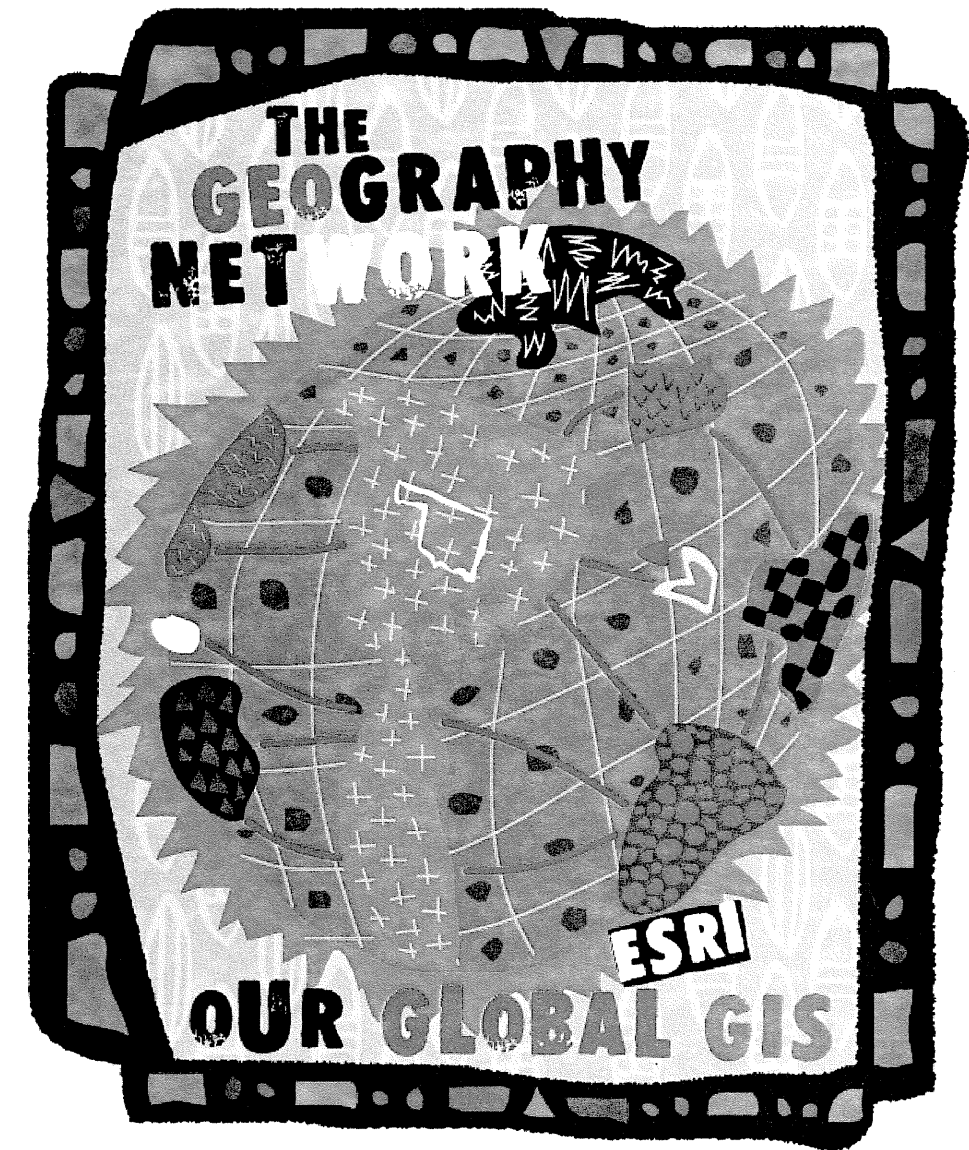


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September 21st

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NOTES:

Oklahoma Arc User Conference 2000

South Central Arc User Group
Oklahoma Chapter

September 21, 2000
Moore Norman Technology Center
Norman, Oklahoma

Greetings and Welcome,

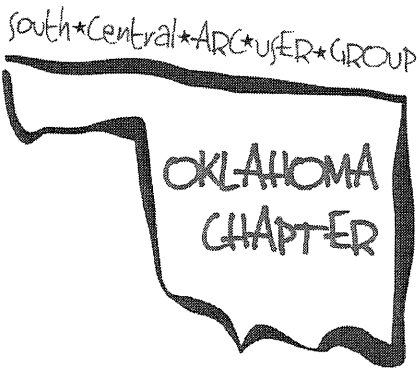
We are very pleased to host the fourth annual conference of the Oklahoma Chapter of the South Central ARC User Group. Each year the conference has grown and we hope you find both professional benefit and personal pleasure in learning and sharing information here.

A sincere thank you to the ESRI San Antonio Office for the many contributions they have made to this conference: staff, equipment and prizes. We are also grateful to the corporations who are supporting this event by being exhibitors, advertisers and sponsoring the social event .

Special recognition is due to Kara Flynn and Joyce Green for their time, effort, and know-how in organizing this conference.

Enjoy yourselves, improve your skills and we look forward to seeing you again next year.

Sincerely,
The Steering Committee:
Kara Flynn
Joyce Green
Scott Woodruff
Scott MacKelvie
Julie Parker
Ray Hardy
Genaro L. Garcia, Jr.
Gary McElhaney
Jean Vieux



Exhibitors

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Surdex Corporation

Topographic Mapping Company/Locarta Technologies, Inc.

Title: **Basin Project / Sardis Lake Bathymetric Survey**
Category: Communicative
Software: Arcview 3.1, Spatial Analyst, 3D Analyst, ArcInfo 7.x

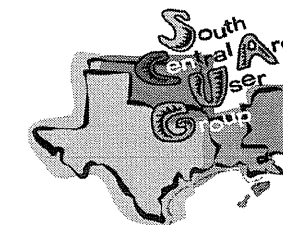
Abstract: GIS has played a very important role in the recent progress of House Concurrent Resolution 1066. The Water Resources Board has developed a comprehensive GIS database of the Kiamichi River Basin. This database includes digital layers of lakes, rivers, streams, groundwater aquifers, soils, land use, environmentally sensitive areas, endangered species, digital elevation models, digital ortho photography, permitted groundwater and stream water locations, cities, and roads.

In order to determine the total available water in the basin the Water Board conducted bathymetric mapping of Hugo and Sardis Lakes. This mapping provided valuable information regarding the depths and volumes of the lakes.

With GIS the Water Resources Board has been able to demonstrate how seasonal fluctuations in lake levels will impact the surrounding parks and resource areas. Using digital elevation models, the Water Resources Board has been able to determine the volumes and areas of proposed lakes and show what they would look like.

The Water Resources Board has used this GIS technology in over 30 presentations regarding the HCR1066 project. The visual power of GIS allows the public to see and more easily understand the information that we are presenting. This has allowed us to make great strides in resolving the issues at hand.

Presenter: Michael Sughru
Organization: Oklahoma Water Resources Board, 3800 N. Classen Blvd., Oklahoma City, OK 73118 Ph: (405) 530-8800 Fax: (405) 530-8900
mpsughru@owrb.state.ok.us



Luckey and Becker (1999), the Digital Elevation Model of Oklahoma (Cederstrand and Rea, 1996), and information regarding well depth from the Oklahoma Water Resources Board Well Log database, it was determined which wells drilled in Cimarron County were completed only in the High Plains aquifer and which penetrated the underlying units. A grid representing the base of the High Plains aquifer was extracted from the groundwater flow model and clipped to the Cimarron County area; the Oklahoma DEM was also clipped to this area. Wells of interest (agriculture, irrigation and public water supply use in the Cimarron County area) were queried out of the OWRB Well Log database and the LATTICESPOT command was used with the clipped DEM and base-of-aquifer grids to add fields regarding the elevation of the top and the bottom each well to the wells of interest database. The map calculator was used to find wells completed below the base of the aquifer and to calculate the percentage of each well completed below the base. Maps displaying this information were created using ArcMap. 3D perspective views were created using 3D Analyst for presentation impact.

Presenters: Lisa R. Penderson, Robert S. Fabian
Organization: Oklahoma Water Resources Board, 3800 N. Classen Blvd.
Oklahoma City, Ok 73118 405-530-8800 Fax: 405-530-8900

Title: GIS as a Decision Support Tool in Wastewater Master Planning
Category: Analytical
Software: ArcView 3.2

Abstract: In 1999, the City of Norman contracted with Camp, Dresser & McKee to draft a Wastewater Master Plan designed to determine the capacity of the City's current wastewater collection system and offer expansion alternatives which will serve the City's sewer needs through the planning horizon of 2040. Hydraulic modeling with Mike SWMM and Mouse GIS using data supplied by the City's Arc/Info based GIS played a major role in the process. The City discovered many of its main sanitary sewer lines exceeded 95% capacity. Section 19 - 415(g) of the City of Norman's Development Ordinance requires that development of new subdivisions be halted when 95% of the City's sewer capacity is allocated. As a result of the study, the City enacted a six-month freeze on new development August 22, 2000 while a solution to the problem is sought.

Presenters: Larry Knapp and Scott Woodruff
Organization: City of Norman

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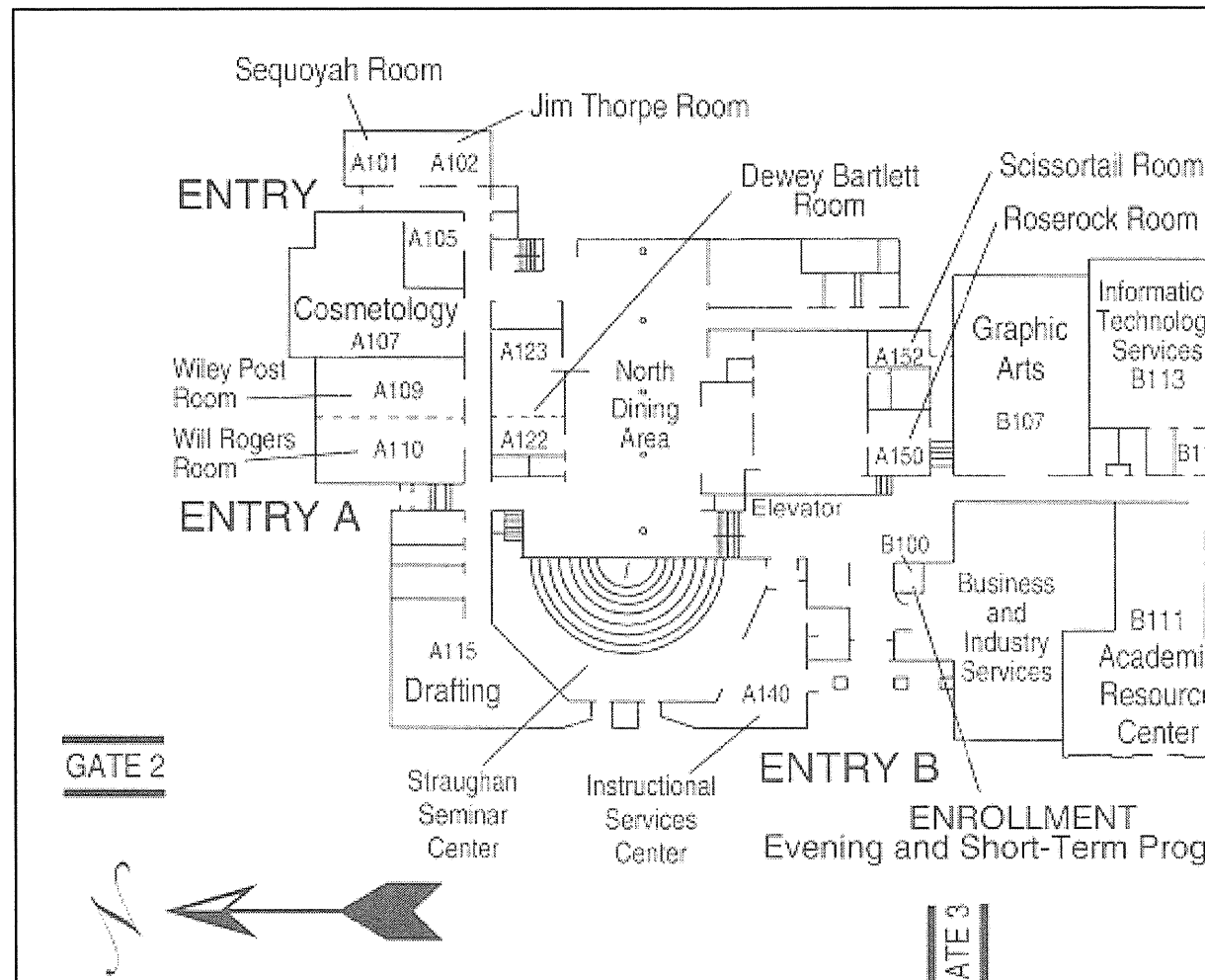
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Conference Area Layout Moore Norman Technology Center



Title: GIS in Water Resources Management: Lugert Altus Irrigation District
 Category: Analytical
 Software: ArcView, Network Analyst, MS Visual Basic, MS Access, MS Excel

Oklahoma Water Resources Board was approached by Bureau of Reclamation (B.O.R) and Lugert Altus Irrigation District (LAID) to do a study to better manage the water distribution along the District's 270 miles long canal system. Potentially significant amounts of water are lost from the District to the streams, and a considerably large amount is also lost as seepage.

Step 1 - Trimble GPS instruments were used to map the canals/laterals. This data was then converted to an ArcInfo Network coverage.

Step 2 - Telog gages were installed along the districts to monitor the flow of water. The data in (ft.) of water is computed to flow in (cfs) using Hydraulics/Hydrologic Open channel flow equations. The output from this step (a database) is used as attribute to the Seeps coverage.

Step 3 - A GPS coverage of farmlands of Jackson Co. was obtained from NRCS, to which Lugert Altus farmers' information and their ID were added/edited. This modified coverage is the Farmers' coverage.

Using the concepts of Network Analyst Object model and its classes, the distribution of water from Dam was modeled with the 3 above coverages as input.

Outputs of the model: For the given farmers' demands the model simulates flow, identifies seeps along the water run, and estimates the total amount of water to be released from the dam. The model lets the user compare the actual water released by the 'ditch riders' (to the above said farmers) to the model's computation, and computes excess water in the system. A time series charts of flow vs. time can be generated for any selected gage. Summaries of the water run can be generated as reports using Seagate Crystal Reports.

Presenter: Saji Varghese
 Organization: Technical Section, Planning & Management Division
 Oklahoma Water Resources Board

Title: Well Completion in the High Plains Aquifer in Cimarron County
 Category: Analytical
 Software: Groundwater Modeling System (GMS), ArcView (Spatial Analyst, 3D Analyst), ArcInfo 8 (Workstation, ArcMap)

Abstract: In the Cimarron County area, the High Plains aquifer (Ogallala Formation) is very thin and wells that are drilled there often penetrate the water-bearing units below it. For administrative purposes, it is essential to know if wells in this area are withdrawing water from the Ogallala Formation alone, or if some water is being contributed from underlying units. Using data from a groundwater flow model of the High Plains aquifer developed by

User Poster Presentations

Title: Metropolitan Area Projects
Category: Communicative

Abstract: The map display demonstrates the use of the Kodak Field Imaging System 265. Digital photos were taken of the various MAPS (Metropolitan Area Projects) projects and their current progress. With the attached Garmin GPS III Plus receiver, the digital photos were tagged with spatial coordinates which can be imported into ArcView GIS as point shapefiles. Hot-Links are automatically created to the point locations for each photograph. With the recent removal of Selective Availability (SA), positional accuracy is typically less than 15 feet.

Presenter: Mark Tullius and Jeremy Coffey
Organization: City of Oklahoma City, 420 W. Main, Suite 930, Oklahoma City, OK 73102
Ph: (405) 297-3965, Fax: (405) 297-3007
mark.tullius@ci.okc.ok.us

Title: Hydraulic Conductivity Maps of the Illinois River Basin
Category: Analytical
Software: ArcInfo 8.0.2, Arcview3.2, Microsoft Excel

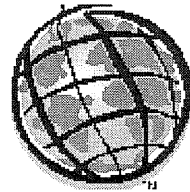
Abstract: One of the important information needs for hydrologic modeling is the hydrologic parameters that can be derived from soil characteristics. Accurate infiltration components are essential for process-based hydrologic or soil erosion models. Many current hydrologic models use equations to partition rainfall between runoff and infiltration. Infiltration rate is controlled by soil properties after ponding. Computing cumulative and instantaneous infiltration requires soil parameters, which in turn must be estimated from mapped soil properties. The soil parameter map was derived from the Map Information Assembly and Display System - MIADS data set. This data set contains a three-layer composite of data derived from county soil surveys, gridded using a 200-meter grid increment. It covers all of Oklahoma except the panhandle region west of about 100°W longitude.

Presenter: Gayatri Kesavamurthy
Organization: Environmental Modeling and GIS Laboratory
School of Civil Engineering and Environmental Science
University of Oklahoma, Norman, OK 73019 (405)325-5218
gayatri@ou.edu

Agenda

8:00	Registration opens with Vendors Exhibits		
8:30 - 8:40	Welcome Seminar Center		
9:00 - 11:30	Doctors Office Dining Area		
	ESRI Session I Seminar Center	ESRI Session II Will Rogers/Wiley Post Room	User Presentations Dewey Bartlett Room
9:00- 9:50	Chuck Killpack ArcGIS - ArcView8-Editor-ArcInfo	Adam Pittman Cartographic Mapping in ArcView 3.2	Mike Casillo & Ralph Heatly- Topographic Mapping Company & Locarta Technologies, Inc.
10:10 - 11:00	Adam Pittman Intro to ArcPad	Dal Hunter Customizing ArcMap	John Peterson- LizardTech Inc. John Sharp- Association of Central Oklahoma Governments
11:10 - 11:30	Poster Presentations		
11:15 - 12:30	Lunch		
12:45 - 1:45	Keynote Seminar Center		
2:00 - 3:30	Doctors Office - Dining Area		
	ESRI Session I Seminar Center	ESRI Session II Will Rogers Room	User Presentations Dewey Bartlett Room
2:00 - 2:50	Dal Hunter ArcIMS Part I	Adam Pittman Spatial Analyst With Model Builder	Jonathan P. Looper- Vieux & Associates, Inc. Saji Varghese- Oklahoma Water Resources Board
3:10 - 4:00	Dal Hunter ArcIMS Part II	Danny Spillmann ArcLogistics Route	Fekadu Moreda & Zhengtao Cui- EMGIS, CEES, OU
4:05 - 4:15	Closing Seminar Center Conference Survey Awards Door Prizes		

Keynote Speaker



Charles Killpack is General Manager and Director of Worldwide Sales for ESRI in Redlands, California. As such, he administers domestic and international sales and general management of ESRI at the corporate level.

Previously, in his capacity as Regional Manager for the ESRI office in Charlotte, North Carolina, he provided marketing support for ESRI in both the United States and internationally. He has been an active participant in GIS projects, in various capacities, over the past 22 years and is directly involved in ESRI's product development of future directions for the company. Mr. Killpack has been instrumental in ESRI research and development activities for future desktop mapping products.

Mr. Killpack has over 20 years experiences in all aspects of GIS including research, teaching, project management, and marketing. In 1976, while at the Holcomb Research Institute, he directed ground-breaking research efforts incorporating Landsat data with GIS for water quality planning. Also, as President of IRIS International, Mr. Killpack managed GIS projects for U.S. AID and the World Bank in countries such as Egypt and Malaysia.

Mr. Killpack was a Professor and Research Associate at Utah State University where he taught and did research in applications of GIS to Regional Landscape Planning. Mr. Killpack is a graduate of Harvard Graduate School of Design where he participated in one of the first research projects using computer mapping for analyzing trends and impacts of urbanization in the Boston area. He has authored many papers and has presented to diverse audiences on topics related to GIS and its impact.

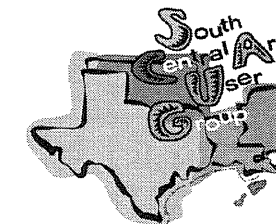
facilities and service areas was selected to model the problem. Using the object classes of Network Analyst and ArcView, for given farmers' demands the model would allocate/distribute water through the shortest route, and generate time-series flow charts for gages, reports for water summary, and calculate the excess amount of water in the canals.

Presenter: Saji Varghese
Organization: Technical Section, Planning & Management Division
Oklahoma Water Resources Board

Title: An ArcView Extension for Distributed Hydrologic Modeling
Software: Arcview3.2, Visual Basic6.0

Abstract: The hydrologic community has long recognized the value of spatial data. Maps of topography, soils, landuse, and rainfall are inputs needed to predict flooding, estimate soil erosion, or plan watersupply reservoirs. Preprocessing modules have been developed for processing maps for input to lumped models independent of the GIS environment, with few alternatives for actually simulating river basin runoff. Recent development of distributed modeling techniques now permits direct hydrologic modeling of river basins using maps of parameters controlling rate and volume of runoff. The finite-element simulation model *r.water.fea* was originally developed for the US Army Corps of Engineers. Porting the C-code to PC/NT platform and the ArcView/Avenue environment, the new module is termed Arc.Water.Fea. This ArcView extension contains three major functions: 1) watershed delineation, 2) data extraction, and 3) hydrologic simulation. Soil maps are used to model infiltration, maps of rainfall are taken from NEXRAD radar input. The hydrological model is integrated to run within the Arcview environment. Output includes the simulated hydrograph, which may be compared to observed river flow rates. Future enhancements include tools for developing parameters from base maps, calibrating the model, and visualization enhancements.

Presenters: Fekadu Moreda, Zhengtao Cui
Organization: EMGIS Laboratory, School of Civil Engineering and Environmental Science,
University of Oklahoma, Norman, OK 73019 (405)325-5218
fmoreda@ou.edu



minority populations receive from the Plan. These benefits include; transit services, new street and highway projects, and street maintenance at the regional level. The traditionally under served were also studied in regard to the travel times. The major question was, will the low income and minority populations disproportionately have greater travel times in 2025?

Presenter: John Sharp
Organization: Association of Central Oklahoma Governments (ACOG)

Title: GIS and Radar Rainfall for Hydrologic Analysis
Software: ArcView 3.2, Spatial Analyst

Abstract: Hydrologic analysis of flooding, water resources, engineering design, and flood warning systems requires rainfall data. An important new source of spatially distributed rainfall is available from the recently deployed radar system called NEXRAD. Working with radar rainfall and other spatial data such as digital elevations is facilitated using a GIS. A case study is investigated for the 49 mi² Cottonwood Basin located in Northwestern Oklahoma. This basin frequently floods the City of Cherokee in Alfalfa County. A significant storm event occurred on October 31-November 1, 1998. Hydrologic analysis of the flood event requires knowing how much rainfall fell over the basin and the temporal distribution. No rain gauges exist within the basin making the NEXRAD radar the only source of rainfall information for the analysis. Without radar rainfall, the analysis would be impossible.

Presenter: Jonathan P. Looper
Organization: Vieux & Associates, Inc.
1215 Crossroads Blvd, Suite 118, Norman, OK 73072
jpl@vieuxinc.com www.vieuxinc.com

Title: GIS in Water Resources Management: Lugert Altus Irrigation District
Software: ArcView and Network Analyst

Abstract: Oklahoma Water Resources Board was approached by Bureau of Reclamation and Lugert Altus Irrigation District (LAID) to undertake a study to better manage the water distribution along the District's 270 miles long canal system. LAID lies within portions of 3 stream systems - North Fork of Red River, Elm Fork of Red River, and Salt Fork of Red River. Potentially significant amounts of water are lost from the District to the streams, and a considerably large amount is also lost as seepage. Network Analyst, which is traditionally used to model traffic routes, find closest

ESRI Session Descriptions

9:00- 9:50	Seminar Center	ArcGIS - ArcView 8 - ArcEditor - ArcInfo Chuck Killpack, ESRI What's happening and what's going to happen- a look into the future of ArcInfo 8.1, ArcView8, and Arc Editor.
9:00- 9:50	Will Rogers/ Wiley Post	Cartographic Mapping in ArcView 3.2 Adam Pittman, ESRI Users will be taught how to create professional looking maps using AV3.2.
9:00- 9:50	Dewey Bartlett	Vehicle Tracking for the ESRI User (p10) Mike Casillo & Ralph Heatly- Topographic Mapping Company & Locarta Technologies, Inc.
10:10 - 11:00	Seminar Center	Intro to ArcPad Adam Pittman, ESRI An easy-to-use, lightweight, low-cost solution for mobile mapping and GIS. ArcPad downloads an image or map layer via wireless technology.
10:10 - 11:00	Will Rogers/ Wiley Post	Customizing ArcMap Dal Hunter, ESRI An introduction to how VBA can be used to customize ArcMAP.
10:10 - 11:00	Dewey Bartlett	Compression and Data Management of Documents & Digital Imagery: A Perfect Solution for GIS Users and IT Managers (p10) John Peterson, Lizard Technology A GIS Analysis of Environmental Justice Considerations in the OCARTS Area Transportation Plan (p 11) John Sharp- Assoc. of Central OK Governments
2:00 - 2:50	Seminar Center	ArcIMS Part I Dal Hunter, ESRI Introduction to ArcIMS.
2:00 - 2:50	Will Rogers/ Wiley Post	ArcLogistics Route Danny Spillmann, ESRI A demonstration of ArcLogistics Route and explanation of how it can be used to route vehicles, develop maps and reports, and manage costs.
2:00 - 2:50	Dewey Bartlett	GIS and Radar Rainfall for Hydrologic Analysis (p 12) Jonathan P. Looper-Vieux & Associates, Inc. GIS in Water Res Manage: Lugert Altus Irrigation Dist (p12) Saji Varghese-Oklahoma Water Resources Board
3:10 - 4:00	Seminar Center	ArcIMS Part II Dal Hunter, ESRI Continuation of ArcIMS.
3:10 - 4:00	Will Rogers/ Wiley Post	Spatial Analyst With Model Builder Adam Pittman, ESRI A demonstration of the new tools in Spatial Analyst 2.0. Discussion will focus on new Model Builder tools.
3:10 - 4:00	Dewey Bartlett	An ArcView Extension for Distributed Hydrologic Modeling (p13) Fekadu Moreda & Zhengtao Cui- EMGIS, CEES, OU

User Presentations

Title: **Vehicle Tracking for the ESRI User**
Software: ArcView Tracking Analyst, The Locarta 2020

Abstract: ArcView Tracking Analyst is a powerful extension for mapping objects that move or change status through time. It supports network and serial port connections to global positioning system (GPS) units and other devices, so you can map your data in real time. Tracking Analyst provides tools for viewing and analyzing tracking data of all sort, from the movement of delivery trucks or the migration of whales to the level of flood gauges or the status of alarms. ArcView Tracking Analyst integrates the capabilities of GIS and GPS technologies and the Locarta 2020 for Tracking Analyst builds on that relationship.

This session will present a general overview of the capabilities of ArcView Tracking Analyst and feature its use when combined with vehicle tracking hardware. The Locarta 2020 for ArcView Tracking Analyst is in-vehicle hardware designed to work specifically with ESRI's ArcView Tracking Analyst extension. It combines GPS, a microcontroller, and a CDPD transceiver to communicate with Tracking Analyst using an Internet connection.

Presenters: Mike Casillo, Ralph Heatly
Organizations: Topographic Mapping Company
Locarta Technologies, Inc. 6709 North Classen Blvd, Oklahoma City, OK 73116
405-841-2020 www.locarta.com

Title: **Compression and Data Management of Documents & Digital Imagery:
A Perfect Solution for GIS Users & IT Managers**

Abstract: With the acceptance and proliferation of Digital orthophotography and satellite data for use in planning and other GIS based applications and the increasing need for archiving and accessing documents on-line, the issues surrounding the management of such enormous amounts of data are becoming the next challenge of users of these types of data sets. We will present revolutionary solutions to reduce file sizes at the same time allowing a user to work with whole data sets (Multiple Giga-byte sized) that can be accessed for display, instantaneously. Other impressive features of state of the art compression, storage, related plotting tools, and dissemination software will be discussed and demonstrated that will be of benefit to all.

Presenter: John Peterson
Organization: LizardTech Inc., 505-821-4492 jpeterson@lizardtech.com

Title: **A GIS Analysis of Environmental Justice Considerations in the OCARTS
Area Transportation Plan**
Software: ArcView 3.2

Abstract: Every five years, the Association of Central Oklahoma Governments (ACOG) in cooperation with its members, update the Oklahoma City Area Regional Transportation Study (OCARTS) area Plan. The current plan spans a planning period from 1995 to 2025. The Transportation Equity Act for the 21st Century (TEA-21) requires that regional transportation plans be consistent with Title VI of the Civil Rights Act of 1964. This requirement is in place to ensure that individuals are not discriminated against as a result of a federally funded program. Specifically, regional plans should avoid or mitigate disproportionately high or adverse effects on low income and minority populations.

Staff utilized data available for small geographic areas including; 1990 Census figures, socioeconomic data and transportation modeling results, to review the possibility of any adverse effects on traditionally under served populations.

The cornerstone of the analysis centers around the benefits that low income and

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