Geospatial/GIS Panel

Western SGC conference

By Kevin Dalsted
Background

Position and experience
Discussion Topics

- Teacher training for GIS/Remote Sensing
- South Dakota View (as part of America View)
- Adopt-A-Farm
Earth Science Tools for Educators: Workshops for K-12 Teachers
The ESTE Workshops: What Are They?

- The *Earth Science Tools for Educators* workshops help K-12 educators to acquire foundational concepts and skills for the study of earth system science.
- They are week-long workshops held annually for the past five summers in South Dakota (coordinated by Mary O’Neill).
Earth Science Tools

Professional research tools used in the workshop include GIS software and data, GPS data collection equipment and processing software, remote sensing data, and technologies for the visualization and presentation of geospatial data.
ESTE Sponsors

- UMAC EdPARC
- SDView
- ESRI
- USGS EROS Data Center
- SD Space Grant Consortium
- South Dakota State University
- South Dakota School of Mines and Technology
- University of Sioux Falls
- Sinte Gleska University
ESTE Activities (I)

- Examine topics related to GIS, GPS, remote sensing, earth science and geospatial data sources
- Visit research and applied science facilities
- Collect and review educational materials online from the USGS EROS Data Center and other sites
- Practice a “hands-on” instructional approach integrating science, mathematics, geography and technology
ESTE Activities (II)

- Receive and learn how to use a GPS unit
- Learn how to use ArcView GIS software (1999-2001)
ESTE Activities (III)

- Receive Prairie-to-Mountain Explorer CDs and User’s Guide
- Receive a packet of lesson plans developed by K-12 teachers
- Develop a transportable GIS/GPS lesson plan
- Present the lesson plan to the workshop participants
ESTE Workshop Details

- **Credit:** 2 or 3 graduate credits
- **Housing:** Dorm rooms provided upon request
- **Daily Schedule:** 8 am – 5 pm and evenings
- **Duration:** Monday – Friday
- **Who:** K-12 educators - teams of two or more from same school encouraged
What is Prairie to Mountain Explorer?

- PTME is a set of three CDROMs containing spatial datasets for the UMAC states.
- PTME includes a user’s guide.
- PTME is a tool for integrating GIS, GPS and remote sensing technologies in the classroom.
PTME Datasets

- Regional (5 UMAC states)
  - 1:2,000,000 scale
- State
  - 1:100,000 - 1:500,000 scale
- County
  - 1:100,000 scale

- Geographic coordinate system
- Geographic units = decimal degrees
- NAD83 datum
- ArcView shapefiles
- Naming conventions for files and fields
- Area units = acres
PTME Datasets

- transportation
- streams/lakes
- elevation
- soils
- land ownership
- land cover
- NDVI
- geology
- Lewis and Clark sites/routes
- crops/livestock
- mineral deposits
- demographics
- temp/precip
- cities/landmarks
- dams
- toxic waste sites
- pollution emissions
- species habitats
PTME

- 3 CDROMs
  - SD, ND
  - MT, ID
  - WY, Regional
- Datasets
  - 34 regional
  - 18 state
  - 6 county
- Installation procedures for PC and MAC
Assignment:
Explore PTME datasets to determine if precipitation is a significant factor in the spatial distribution of corn as an agricultural crop in South Dakota.

One possible solution presented as an ArcView layout.
Statewide K-12 ArcView License

- ESRI site license agreement allows every school district in SD access to ArcView 3.x or 8.x
- Leica Geosystems joined the partnership by providing statewide license for Image Analysis tool
- Upon request, school districts receive
  - software from Department of Education
  - base data layers and SchoolHound from the Bureau of Information and Telecommunications
SouthDakotaView

Building Partnerships and Infrastructure in South Dakota to Facilitate the Availability, Timely Distribution and Utilization of Remote Sensing and Associated Geospatial Data and Technology
“AmericaView will develop remote sensing consortia in each participating state, such that the organization becomes a nationally coordinated consortium of locally controlled state-level consortia.”
Continue the development of the SDView consortium.

Add two new university and/or government agency members

Complete a 5-year plan for SDView

Implement an SDView listserv
“AmericaView participants will promote cooperation and sharing of expertise and remote sensing technology among and within participating states.”
Develop infrastructure for image archive and dissemination: hardware, software, data, the data/user interface and a management scheme. The proposed system must be capable of rapidly distributing Landsat and other data.
SDView Education Activities
2002-2003

- Adopt-a-Farm
- Farmer Training
Adopt-a-Farm

The "Adopt-a-Farm" website provides educational resources about agriculture, remote sensing and geographic information systems (GIS). The goals of this website are to:

1) Educate people living in urban and rural communities about using spatial information to improve resource management decisions in agriculture.

2) Explain how these decisions affect people in urban and rural communities who are not actively involved in agricultural production.

3) Add value to geospatial data by showing the human and biological side of agriculture production to the general public.

http://gisdata.sdstate.edu/website/AdoptAFarm/index.htm
Welcome to the "Adopt a Farm" website that provides educational resources about agriculture, remote sensing and Geographic Information Systems (GIS). The goals of this website are to:

1) Educate people living in urban and rural communities how spatial information can be used to improve resource management decisions in agriculture and

2) Explain how these decisions affect people in urban and rural communities not actively involved in agricultural production.

We will attempt to add value to the data by showing the human and biological side of agriculture production to the general public.

Use the buttons at the top of the page or click on a link below to use this website. The best place to start is reading the information on the "About This Website" WebPage.

About This Website: Information provided on this page explains how to use the Map Services and tutorials and how to email land managers to ask them questions about their farming operation.

Archives Map Services and Tutorials: This page allows the user to enter the Map Services component of this Website. A password will be necessary to enter this site. How to secure a password is explained on this page. Once the user has entered the Map Services page, a variety of tutorials on agriculture management, remote sensing and spatial data are available. Lesson objectives and questions will be provided as well.
Maps and Tutorials Page

- From this page, the user chooses from a wide variety of tutorials to learn more about production agriculture, remote sensing, spatial data collection and how agricultural activities impact their lives.

- ArcIMS was used to create these webpages.

- Within a tutorial, the user will be able to zoom into the map or image, turn on various map or image layers, and view pictures of the farm activities related to the tutorial.

- Objectives and study questions are provided for each tutorial.

- Another component of this website is interaction with a farmer. Students are encouraged to write down questions as they use the tutorials. After the student has completed the tutorial, he/she can log out of the Maps and Tutorials page and enter the Message Board page.
Total Precipitation
2001 Growing Season
From the Message Board page, the student can email questions to a farmer.

The farmer will check the website 2 or 3 times per week and answer questions.

The Message Board page is a secure page. The user must provide a password and relevant information about himself/herself to gain access. The Message Board page will be monitored for content. Any unacceptable content will be deleted and the user will not be allowed access to the site.
Links Page

- Government Agencies
- Equipment Links
- Remote Sensing and GIS
- Software
- Weather
- Agriculture Links
- Precision Agriculture Sites at Other Universities
Farmer Training

- One day training events on January 15\textsuperscript{th} and 22\textsuperscript{nd}, 2003
- Title: “How to Download and View Soil Survey Information in GIS Software”
- Software: ArcView 3.2
- Downloaded soil and DOQ datasets
- Prepared handout for computer hands-on exercises