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 on-line 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)
- Explore ArcView functionality and GIS applications via *Getting to Know ArcView* (1999-2001) or *Mapping Our World: GIS Lessons for Educators (2002)*

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

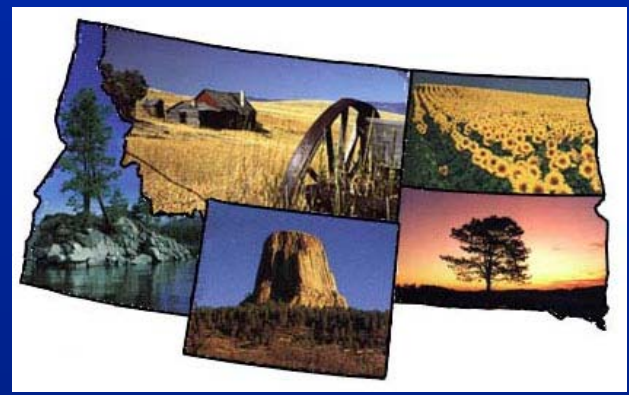
ESTE Workshop Details

- 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


21.6.2002

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

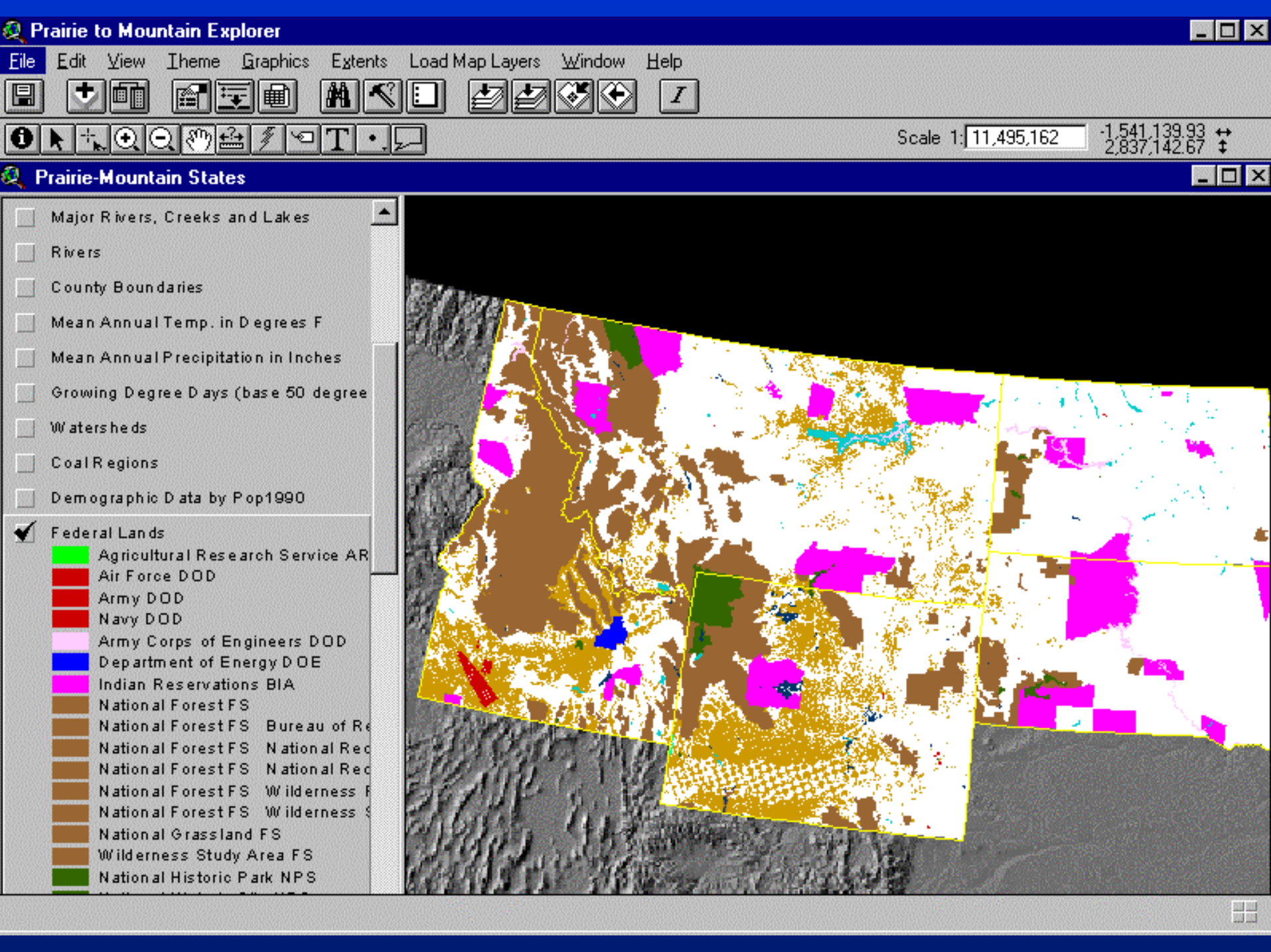
- Geographic coordinate system
- Geographic units = decimal degrees
- NAD83 datum
- ArcView shapefiles
- Naming conventions for files and fields
- Area units = acres

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

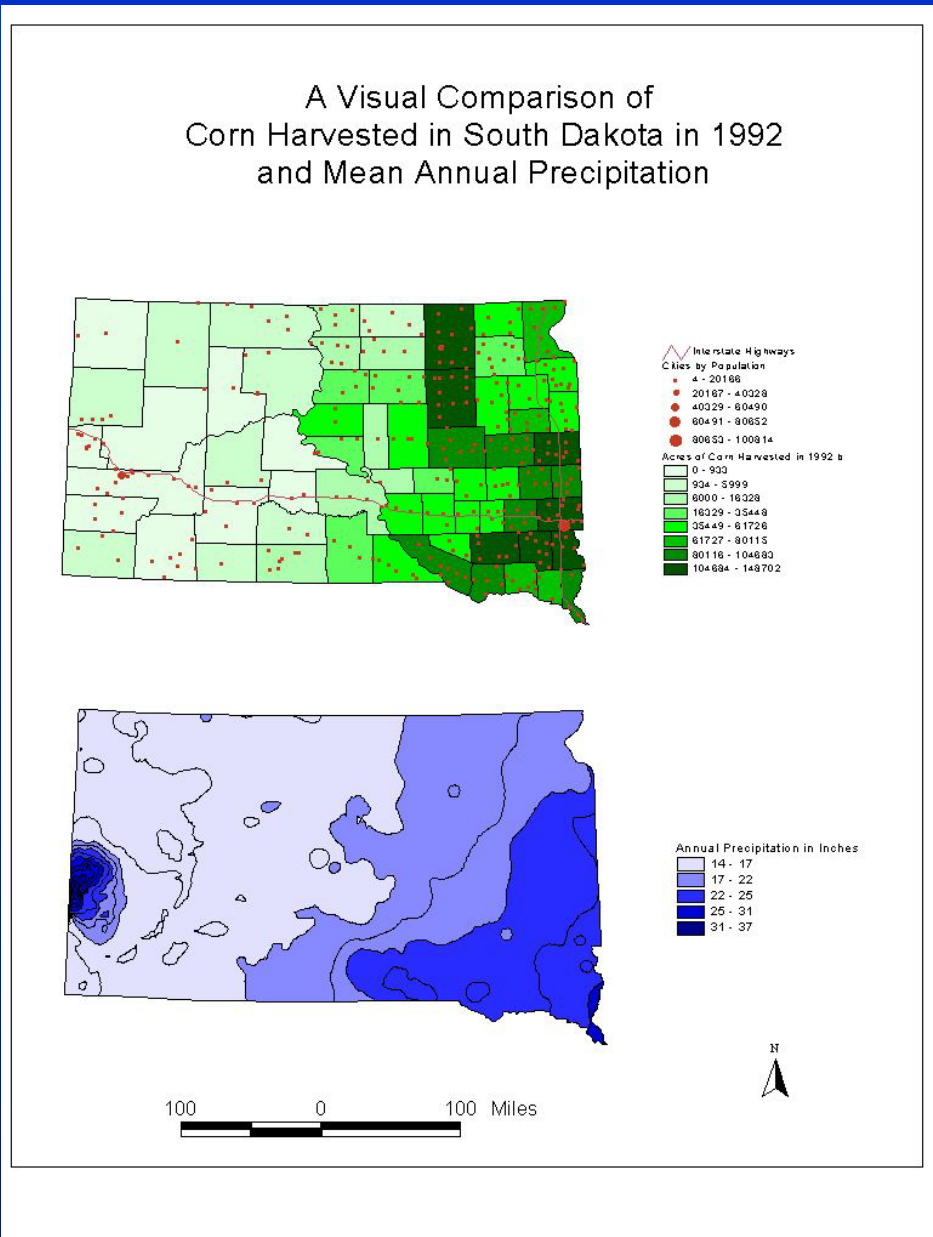
- 3 CDROMs
  - SD, ND
  - MT, ID
  - WY, Regional
- Datasets
  - 34 regional
  - 18 state
  - 6 county
- Installation procedures for PC and MAC


Prairie to Mountain Explorer
File Edit View Theme Graphics Extents Load Map Layers Window Help
Scale 1: 11,495,162
-1,541,139.93
2,837,142.67
Prairie-Mountain States
Major Rivers, Creeks and Lakes
Rivers
County Boundaries
Mean Annual Temp. in Degrees F
Mean Annual Precipitation in Inches
Growing Degree Days (base 50 degree
Watersheds
Coal Regions
Demographic Data by Pop1990
Federal Lands
Agricultural Research Service AR
Air Force DOD
Army DOD
Navy DOD
Army Corps of Engineers DOD
Department of Energy DOE
Indian Reservations BIA
National Forest FS
National Forest FS Bureau of Re
National Forest FS National Rec
National Forest FS National Rec
National Forest FS Wilderness
National Forest FS Wilderness
National Grassland FS
Wilderness Study Area FS
National Historic Park NPS

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

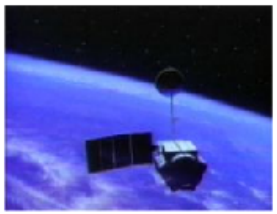
Adopt-a-Farm

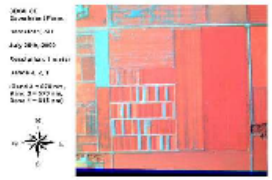
The "Adopt-a-Farm" website provides educational resources about agriculture, remote sensing and geographic information systems (GIS). The goals of this website are to:

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 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

"Adopt a Farm" Homepage





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 to improve resource management decisions in agriculture and

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

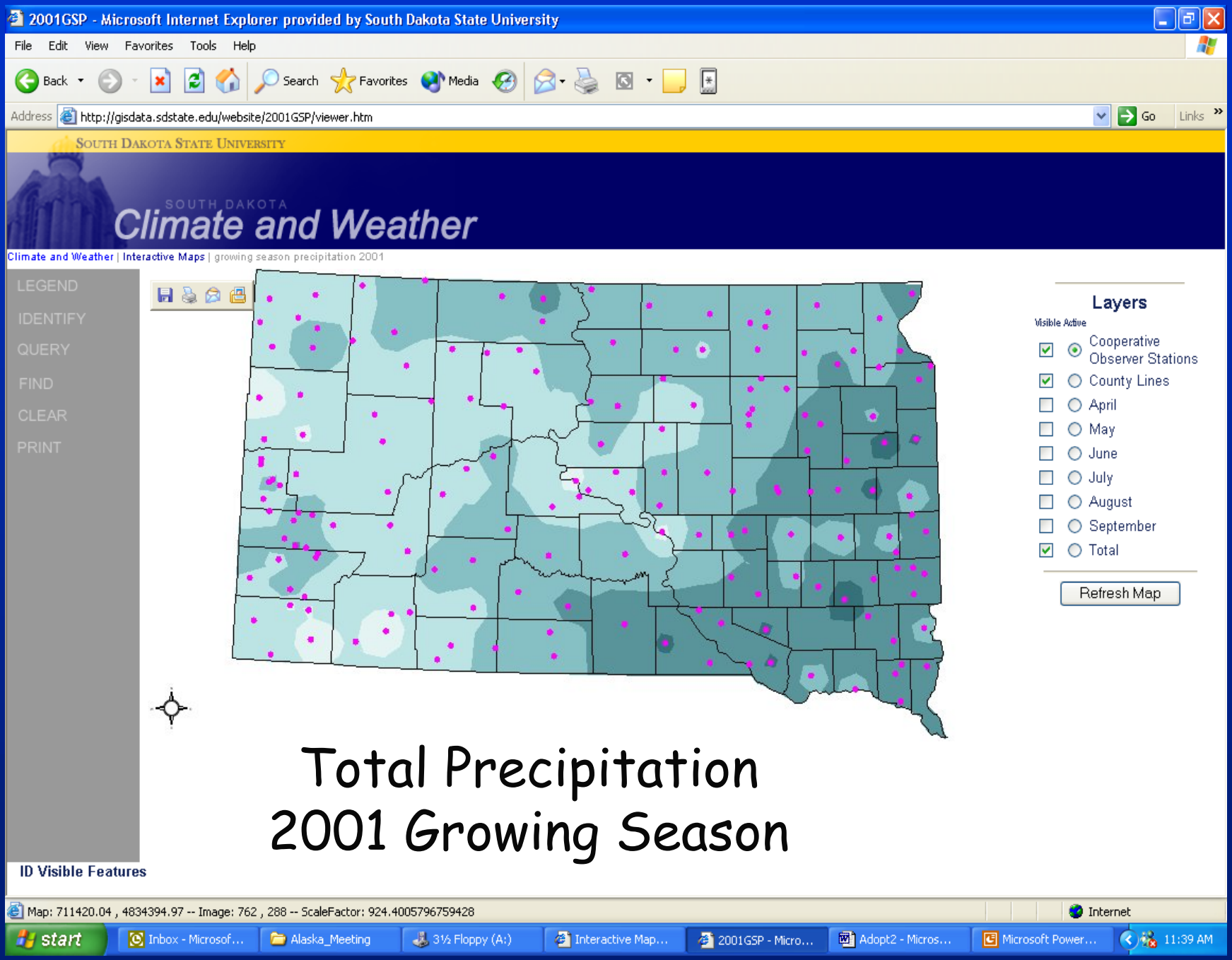
Use the buttons at the top of the page or click on a link below to use this website. The best place to start is reading the information on the "About This Website" WebPage.

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.

ArcIMS 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 for K-

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.


2001GSP - Microsoft Internet Explorer provided by South Dakota State University
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://gisdata.sdstate.edu/website/2001GSP/viewer.htm
Go Links
South Dakota State University
SOUTH DAKOTA
Climate and Weather
Climate and Weather | Interactive Maps | growing season precipitation 2001
LEGEND
IDENTIFY
QUERY
FIND
CLEAR
PRINT
ID Visible Features
Layers
Visible Active
Cooperative Observer Stations
County Lines
April
May
June
July
August
September
Total
Refresh Map
Total Precipitation
2001 Growing Season
Map: 711420.04 , 4834394.97 -- Image: 762 , 288 -- ScaleFactor: 924.4005796759428
Internet
start
Inbox - Microsof...
Alaska_Meeting
3½ Floppy (A:)
Interactive Map...
2001GSP - Micro...
Adopt2 - Micros...
Microsoft Power...
11:39 AM

Message Board Page

- 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 15th and 22nd, 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