GIS-GPS for Alaska Teachers

Summer 2004: A reflection

Anupma Prakash

Gary Cooper

Day : Thursday
Date : October 13, 2004
Time : 1.00 am to 2.15 pm
Place : Lathrop High School

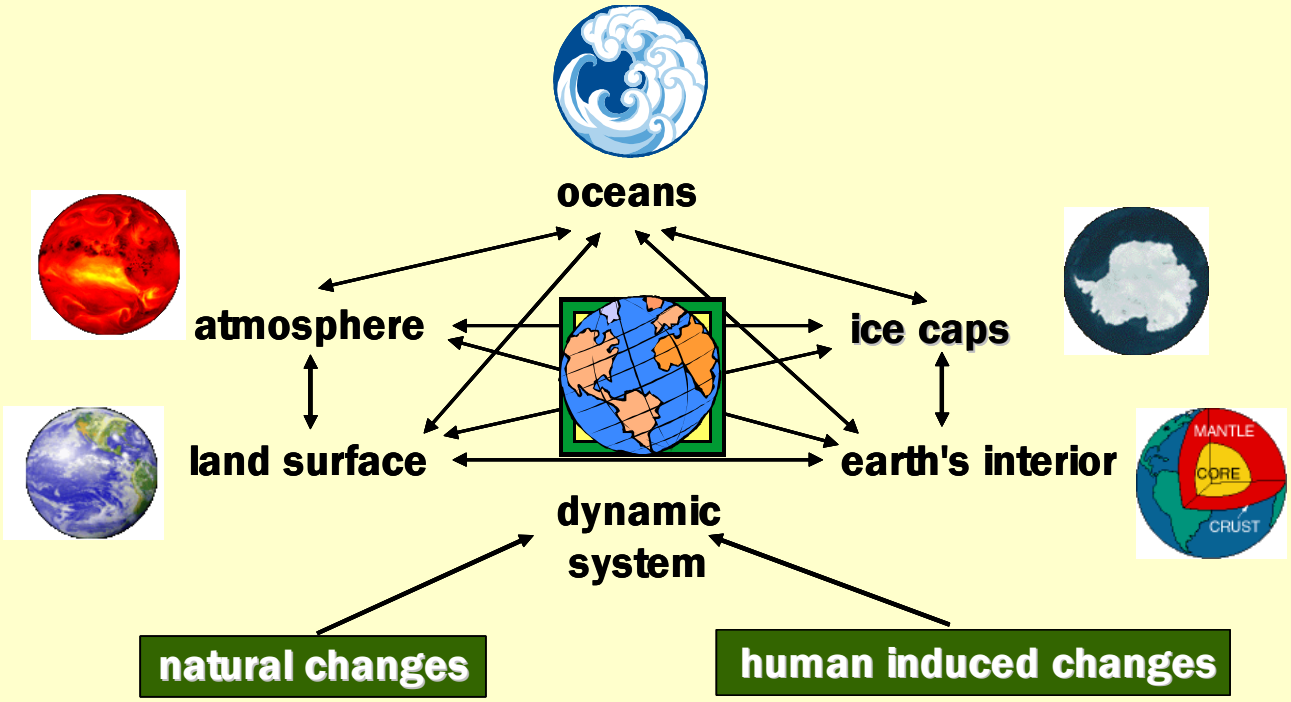
Inspiration

- NASA's mission *To inspire the next generation of explorers*

- NASAs interest to strengthen the STEM pipeline

Inspiration

- Funded project by the Earth System Science Education for the 21st century.



Inspiration

- Neal Brown – Director, ASGP

Inspiration

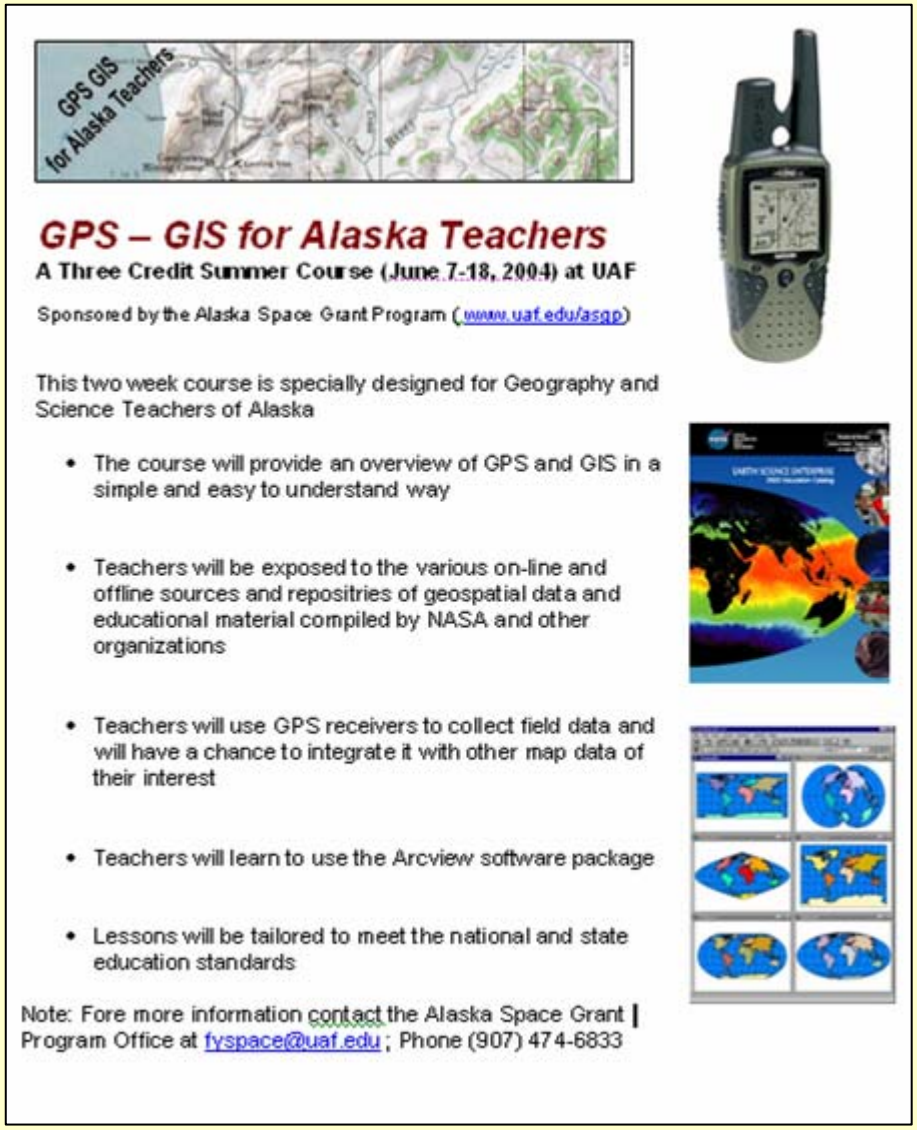
- Geospatial workforce development funds
- Picked up
  - Tuition and lab costs
  - Material costs (text book, license, CDs, prints)
  - Partial expenditure for outstation participants

About the course

- Two weeks (June 7–18)
- Pre/Inservice Alaska teachers
- 3 credit course
- 25 hrs of lectures
- 45 hrs of supervised laboratory time
- 8 hrs field visit to an industry
- Arcview 3.x exercises
- Independent project

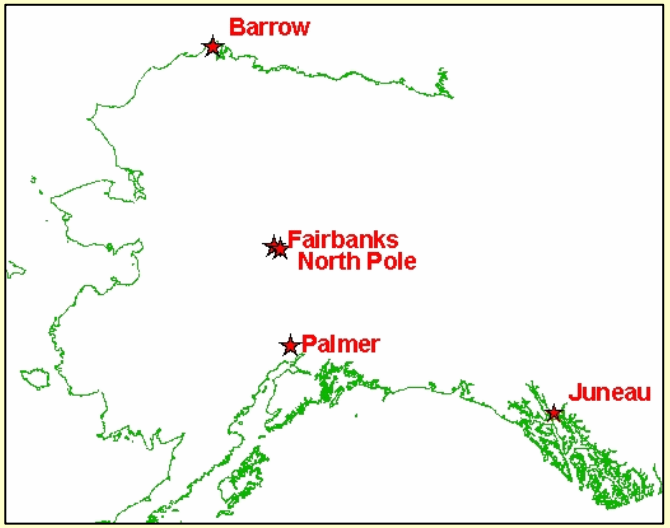
Announced

- List servers (ATRM, NASDUG)
- Web sites (ASGP, UAF, ASTA)
- Conferences
- Flyers
- Word of mouth (most effective)



Participants

- 13 teachers (cap limit)
- 7 schools
- 5 different locations



Components of the course

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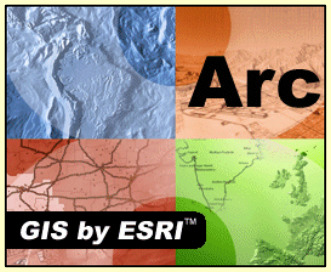
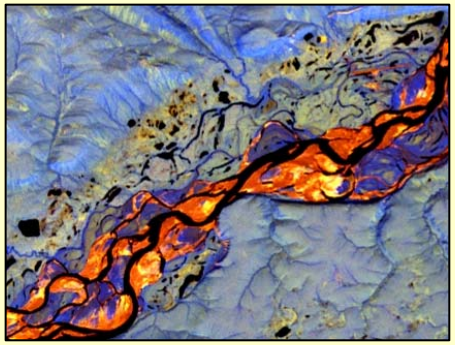
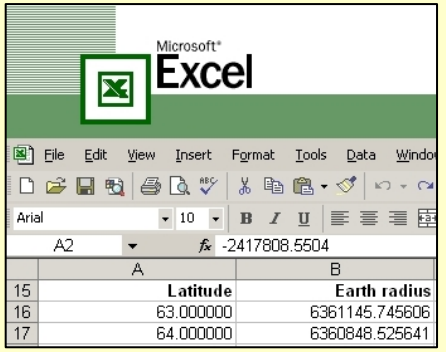
Lecture/Lab	Topic
Lecture 1	Introduction to the course - GIS / GPS
Lecture 2	Geospatial data and Alaska data
Lab 1	Getting started + Geospatial data sources
Lecture 3	More about GIS
Lecture 4	Point, vector and raster data
Lab 2	ArcView basics
Lecture 5	Introduction to GPS
Lecture 6	Integrating GPS data in a GIS
Lab 3	GPS data collection and processing
Lecture 7	Defining a GIS project
Lecture 8	Sample GIS applications
Lab 4	Landforms and physical processes
Lecture 9	GIS in Physical Geography 1
Lecture 10	GIS in Physical Geography 2
Lab 5	Ecosystems, climate and vegetation
Lecture 11	Analysis in GIS -1
Lecture 12	Analysis in GIS -2
Lab 6	Population patterns and processes
Lecture 13	Analysis in GIS -3
Lecture 14	Analysis in GIS -4
Lab 7	Political geography
Lecture 15	Analysis in GIS -5
Lecture 16	Cartography Basics
Lab 8	Economic geography
Lecture 17	Map Projections
Lecture 18	Creating your map
Lab 9	Human/Environment Interaction
Lecture 19	Tips and tricks for project reporting
Lecture 20	Printing final map and report
Lab 10	Issues/concerns/future direction

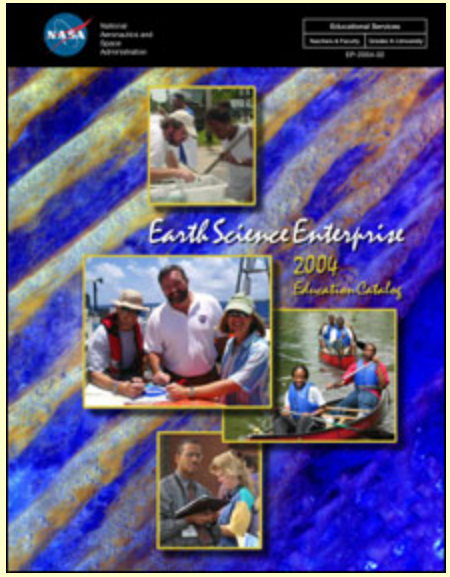


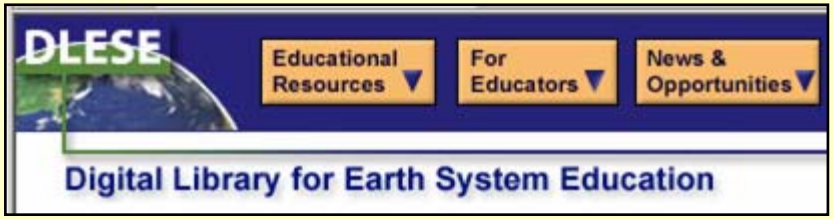


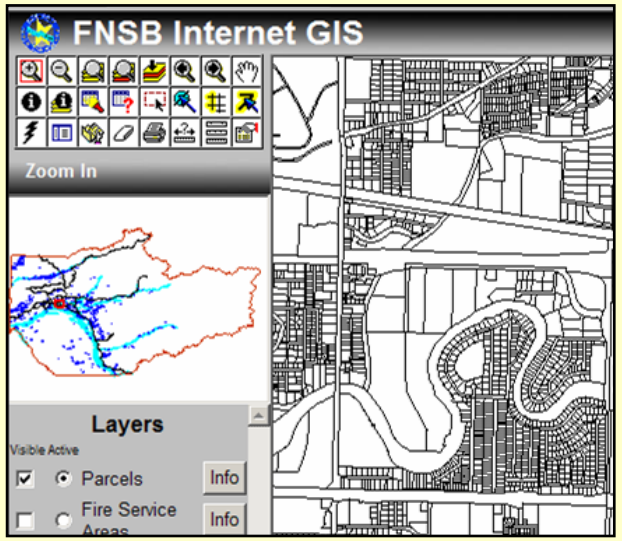


Data

- Data Formats
- Remote sensing data
- Earth Science data
- Alaska specific data



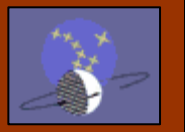


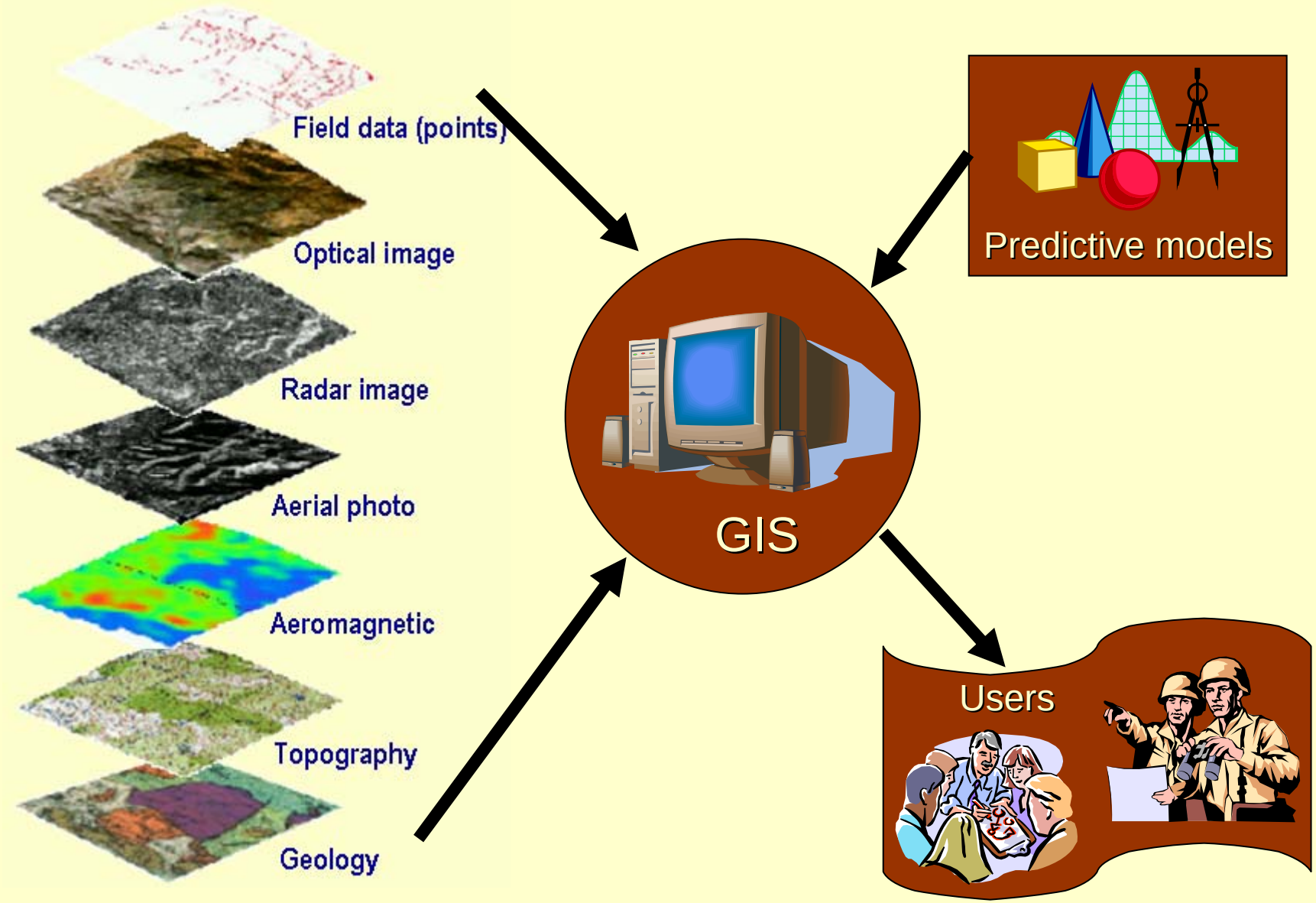


GPS

- Data collection
- Geocaching
- Direct import

GIS





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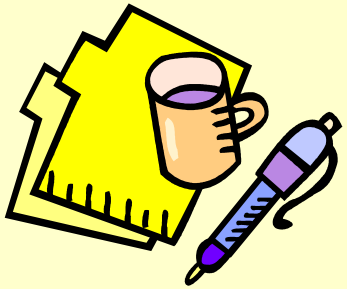
Lecture material

- Powerpoint
- Flip charts
- Sticky notes
- Group discussions
- Interactivity
- Coffee-cookie break



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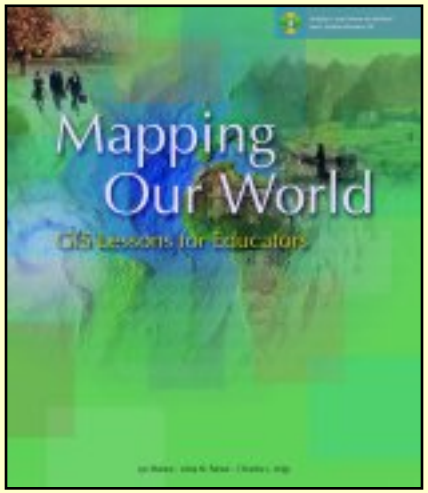
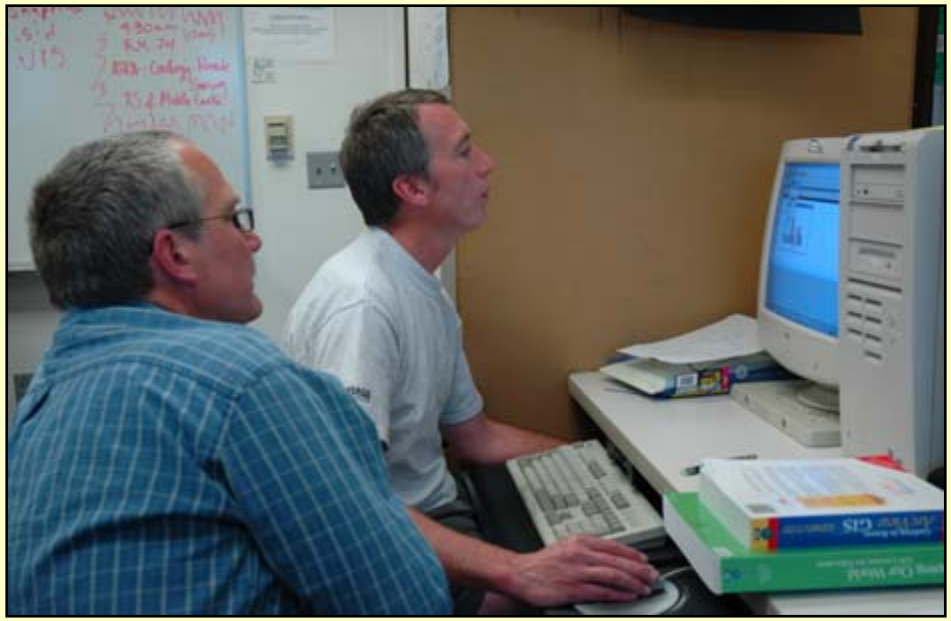
Industry visit

- Fairbanks north Star Borough GIS facilities

Supervised labs

- Followed ESRI text book
- Supervision assistance: Bill Witte, Rudi Gens, Stefan Gaston (summer intern)





Independent projects

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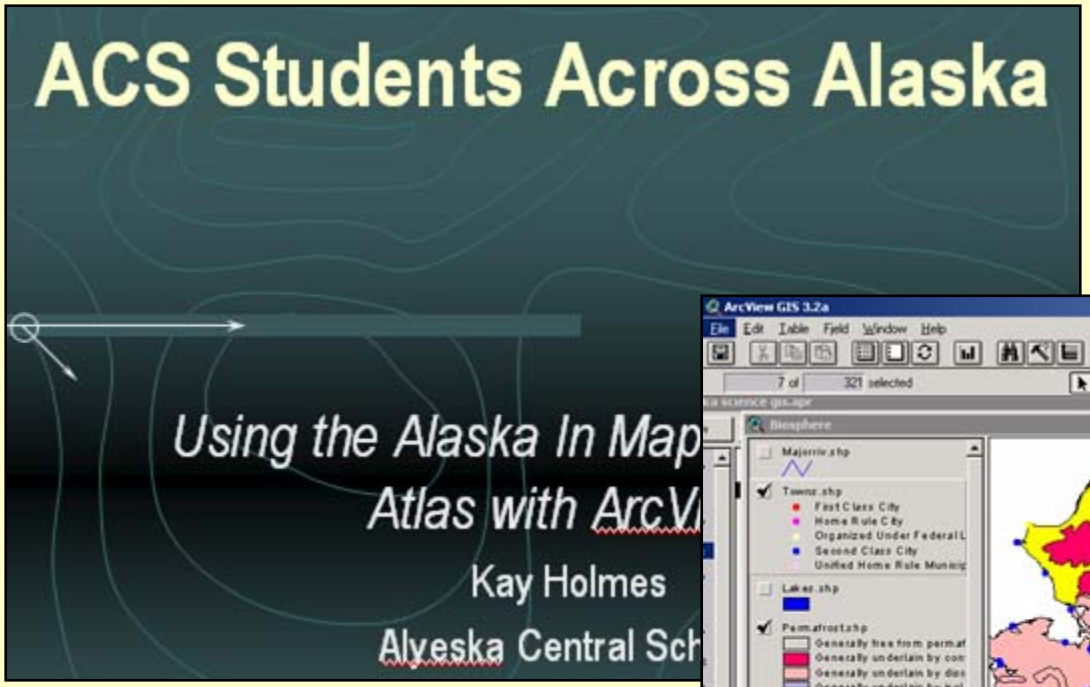
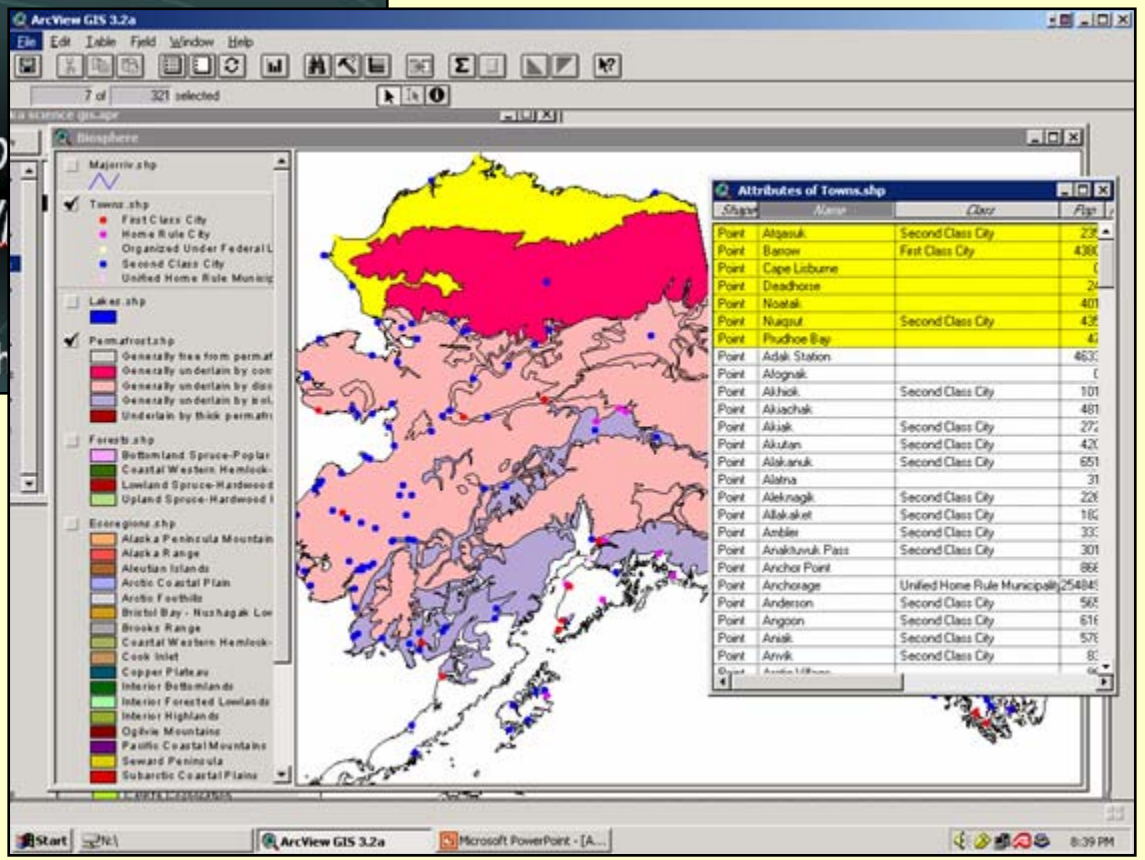


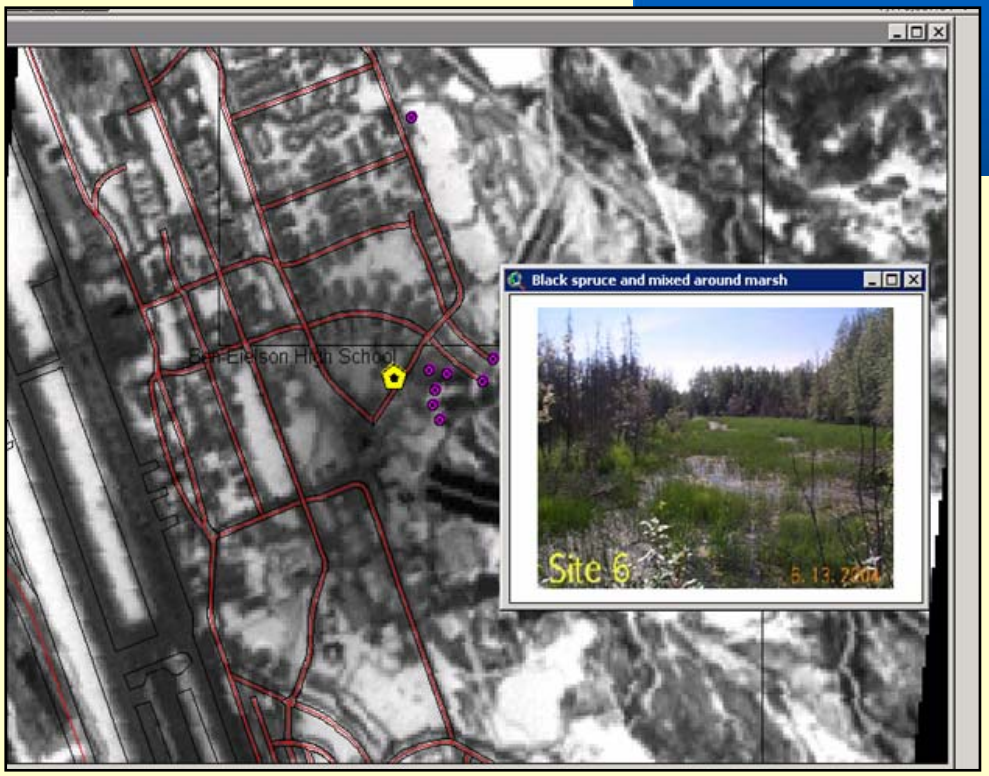


Independent projects

Forest Vegetation Types in the Vicinity of Eielson High School

Pat Cromer and Larry Terch

-Ben Eielson High School



Independent projects

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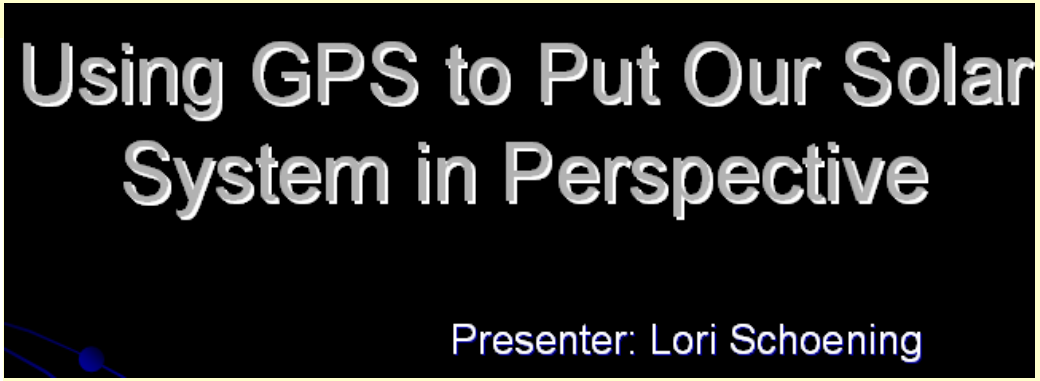
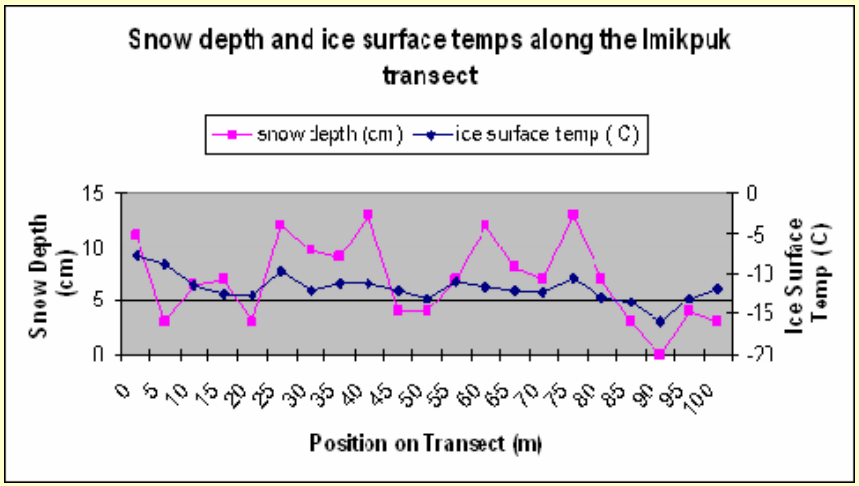


Independent projects



IMIKPUK LAKE / ALISON DATA MANAGEMENT

Tim Buckley

Barrow High School

Conclusions

- Broaden the topic. A single transect on a single lake is too narrow
- Data can be more than numbers
- A database and a spreadsheet are NOT the same thing
- Think BIG PICTURE!!!

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Independent projects

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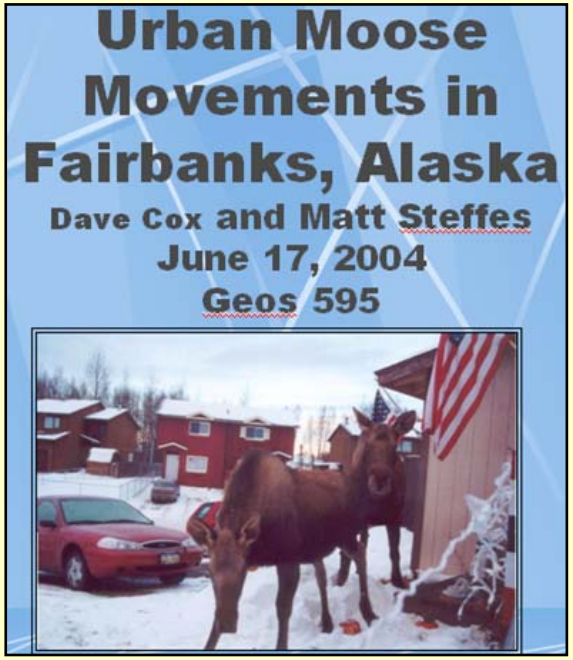

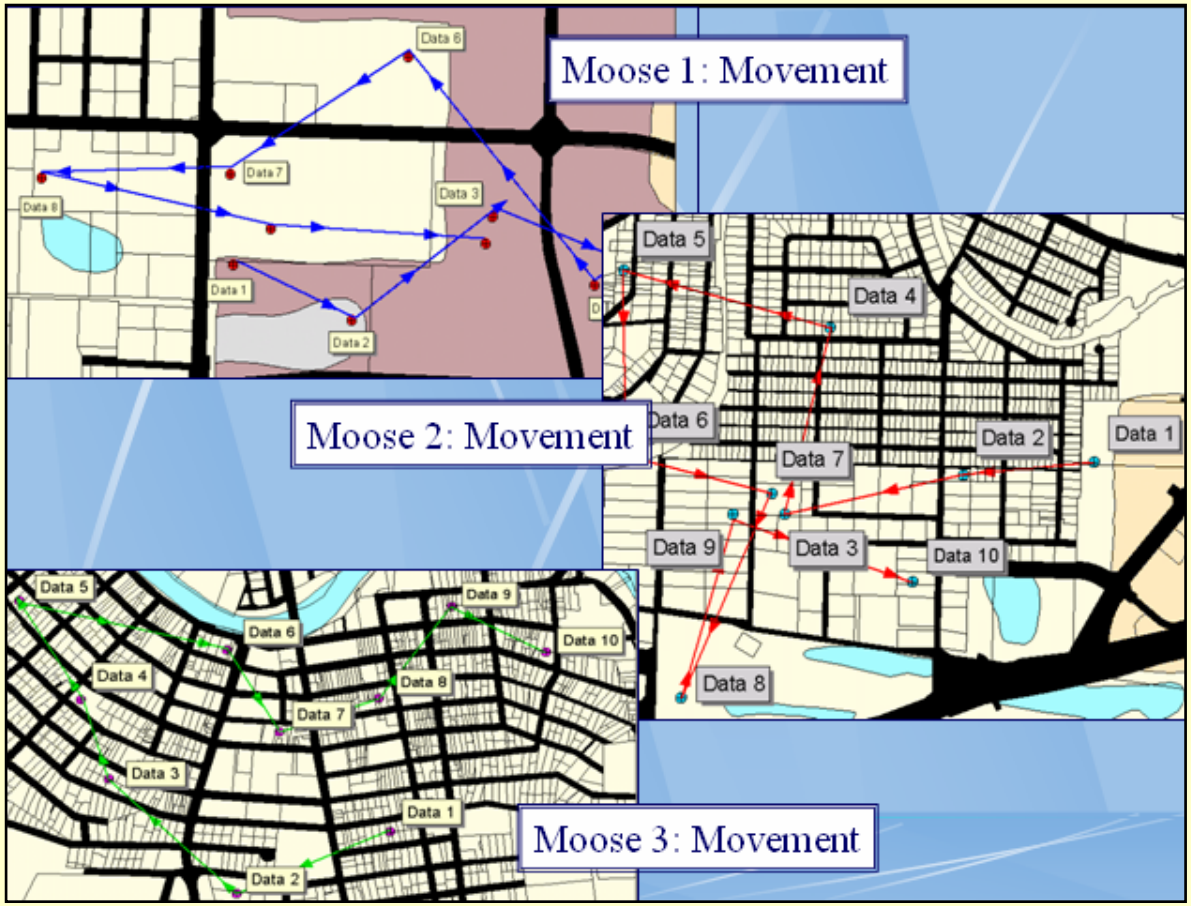

Independent projects

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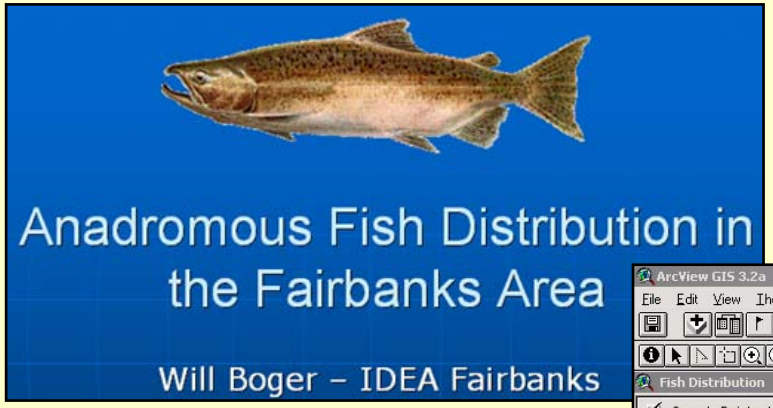
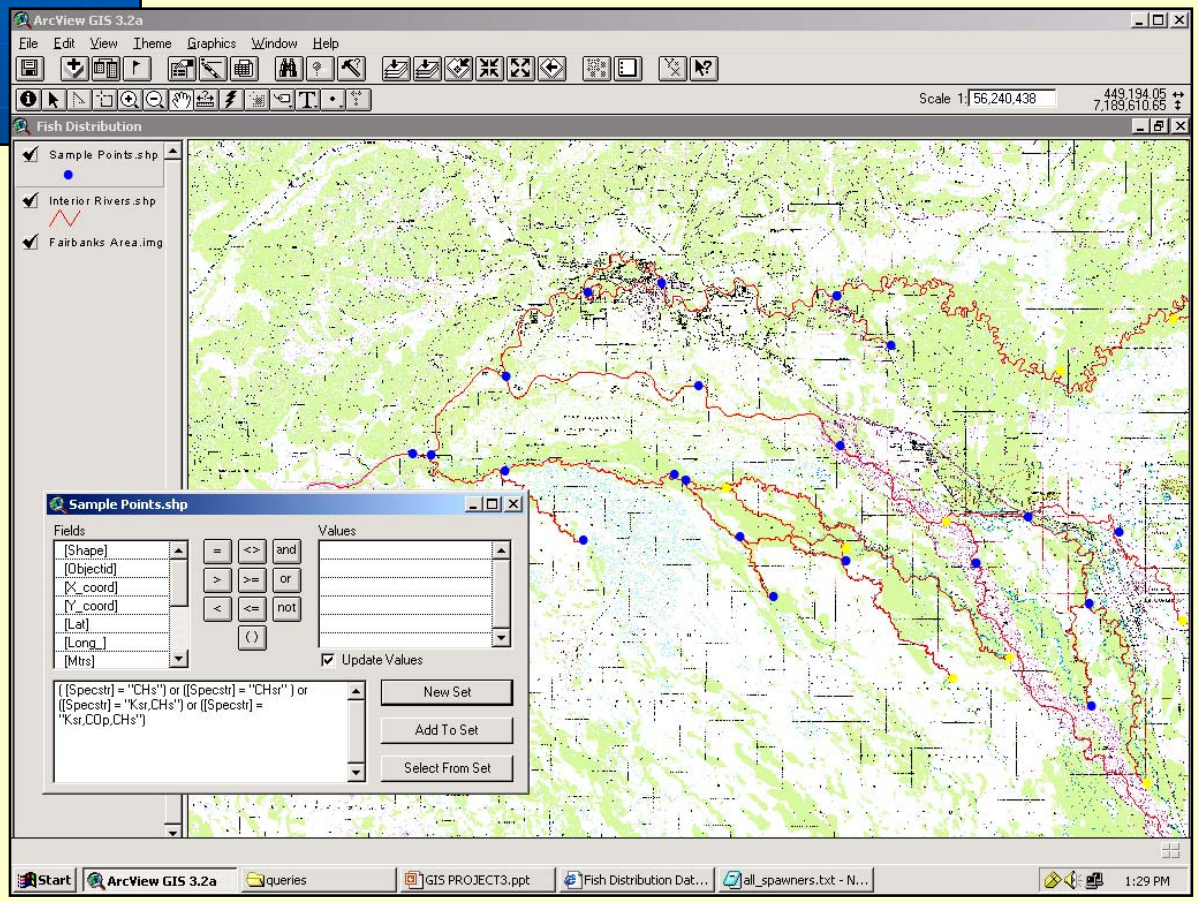
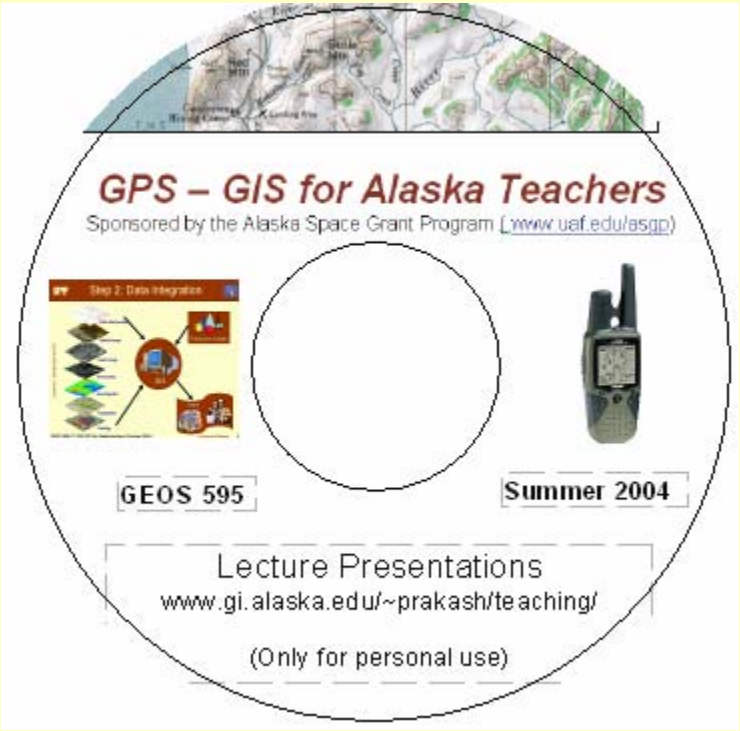




Stress release break

Follow up

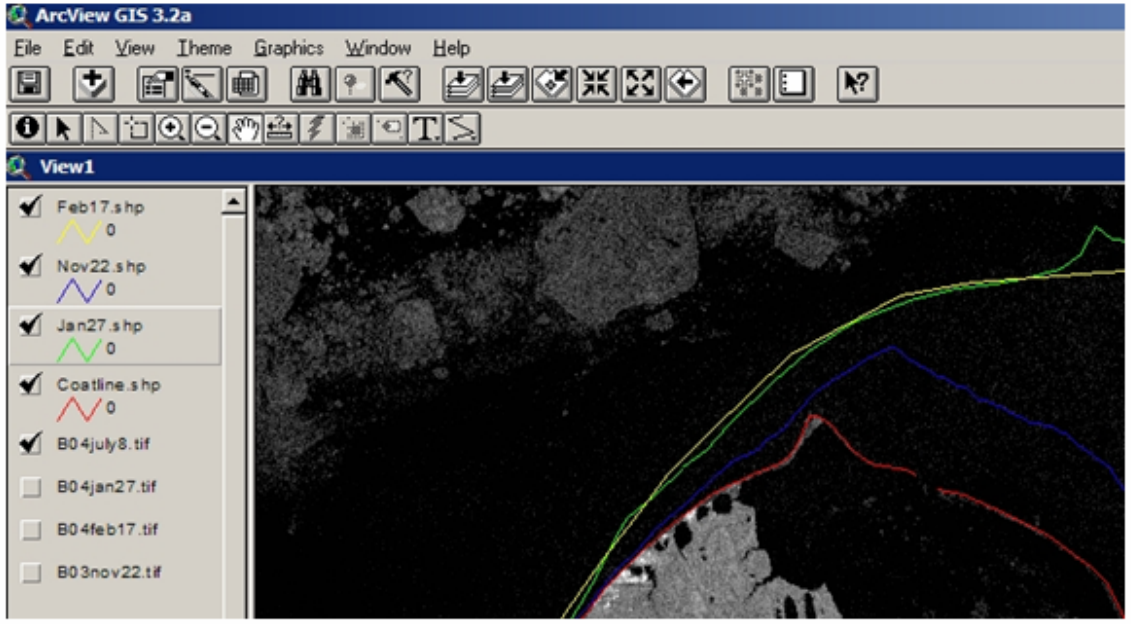
- Teachers added to ATRM list serve
- Lecture material, additional information CDs, data backup were mailed to each individual
- Follow up visit: Barrow



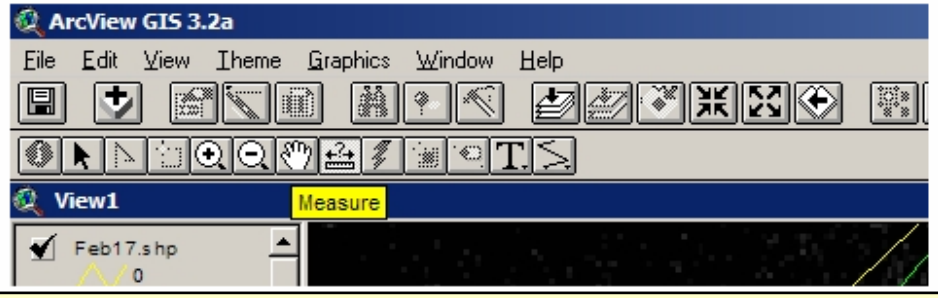
Barrow HS lab

New exercise

Step 15. To trace the landfast ice edge for other dates, select the tif image of the other dates and repeat the procedure from step 8 through step 14. Assign a different color to each of the shape files so generated. Display the 4 vector shape files on top of the july 2004 image. Below is a sample of what your view may look like.



Step 16. Use the measure tool to measure the extent of the landfast ice edge from the shore.



New web page

Web site under construction

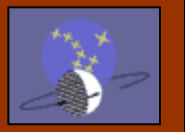
www.gi.alaska.edu/~prakash/teaching/k12/barrow

Hands on with students

Network + new proposals

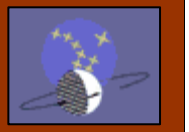
- With ASGP (Neal Brown): NASA
- With UAS (Cathy Connor): NSF
- With ESSE21 participants: Others

Lessons learned



- GPS – GIS are great to introduce at school level
- They address several established standards
- Teachers and students are enthusiastic
- Class exercises need to be tailored to fit into the short 45-50 minute period
- Instructions have to be crisp and crystal clear

Some questions



- ArcView 3.x or ArcGIS 9 or ??
- Hardware and software costs
- Technical/maintenance issues
- Time within existing curriculum
- Sustainability: One time training reaching broad audience or repeat training with a narrow audience
- Funding

For summer 2005

- Alaska Space Grant Program Booth
- www.uaf.edu/asgp
- ATRM list serve
- ASTA web page
- Contact:

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