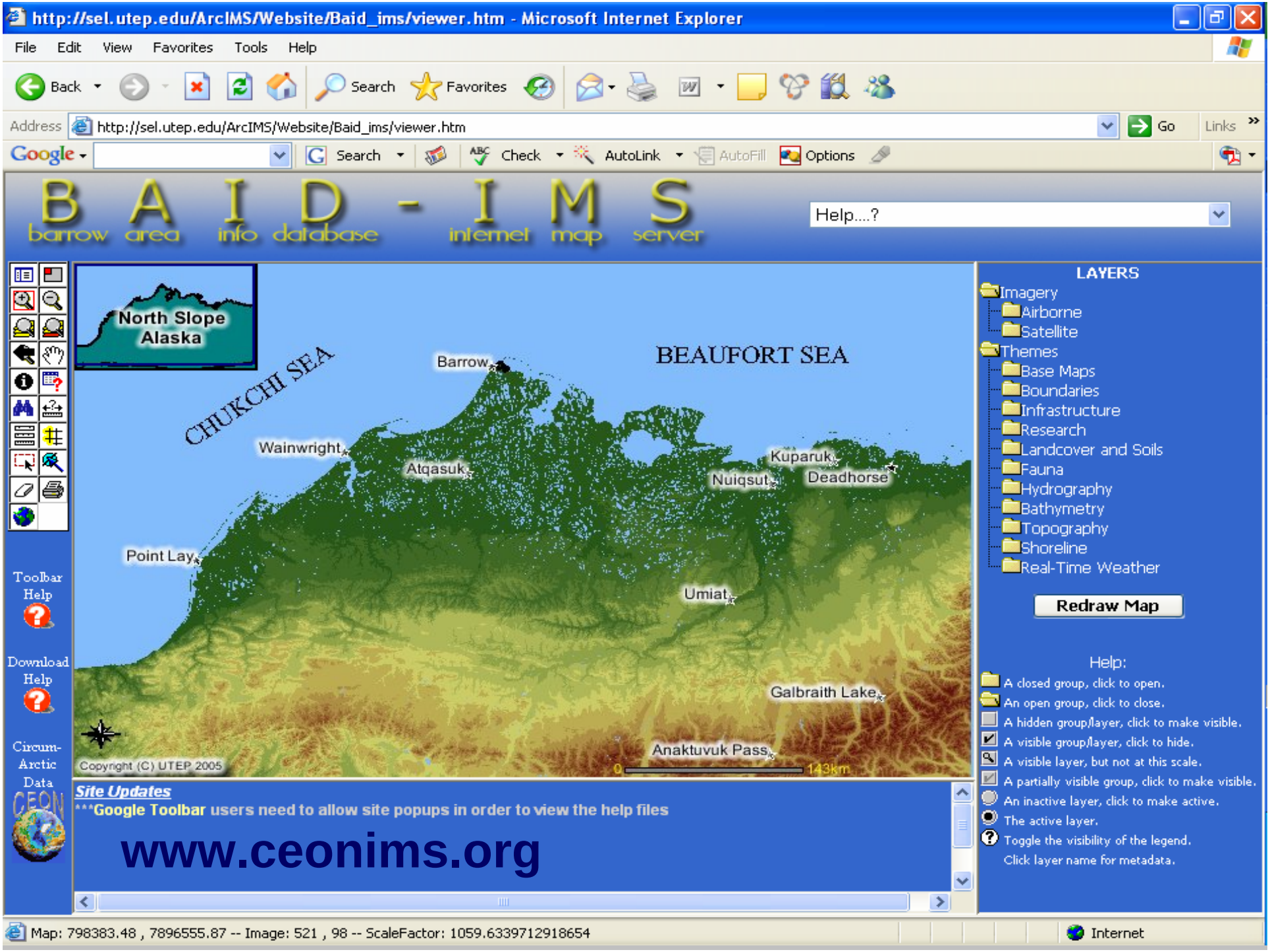
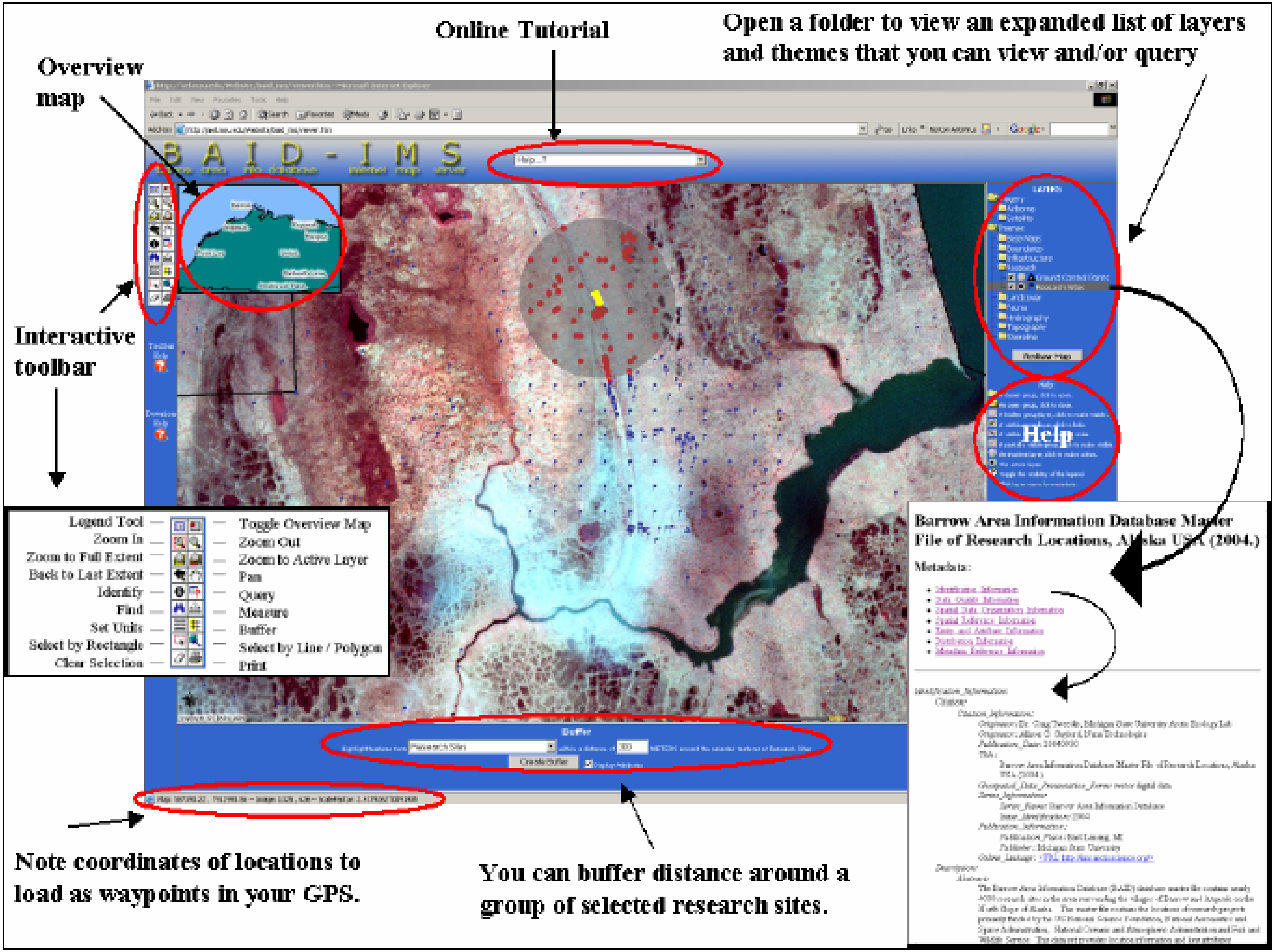
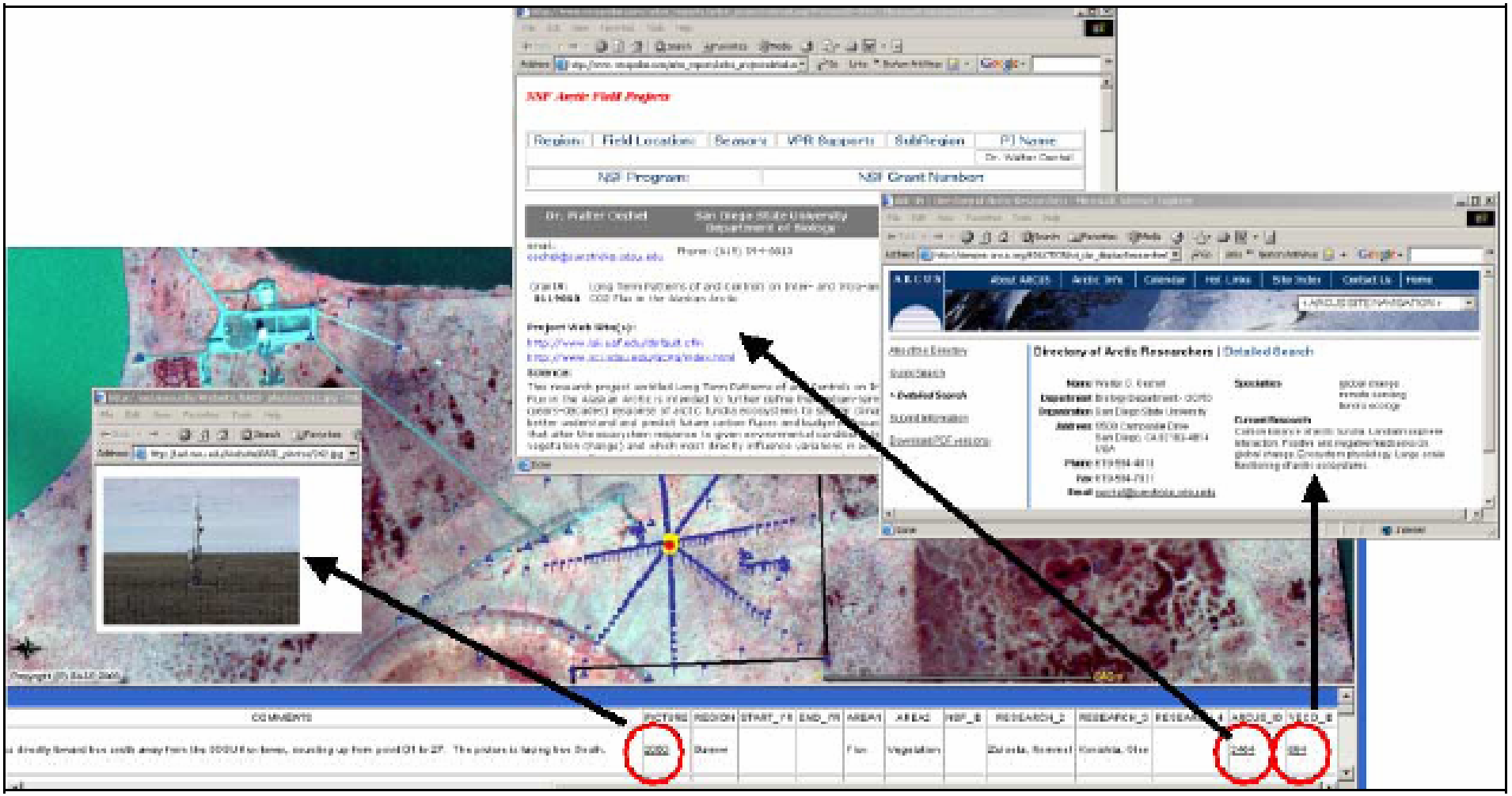
armap.org

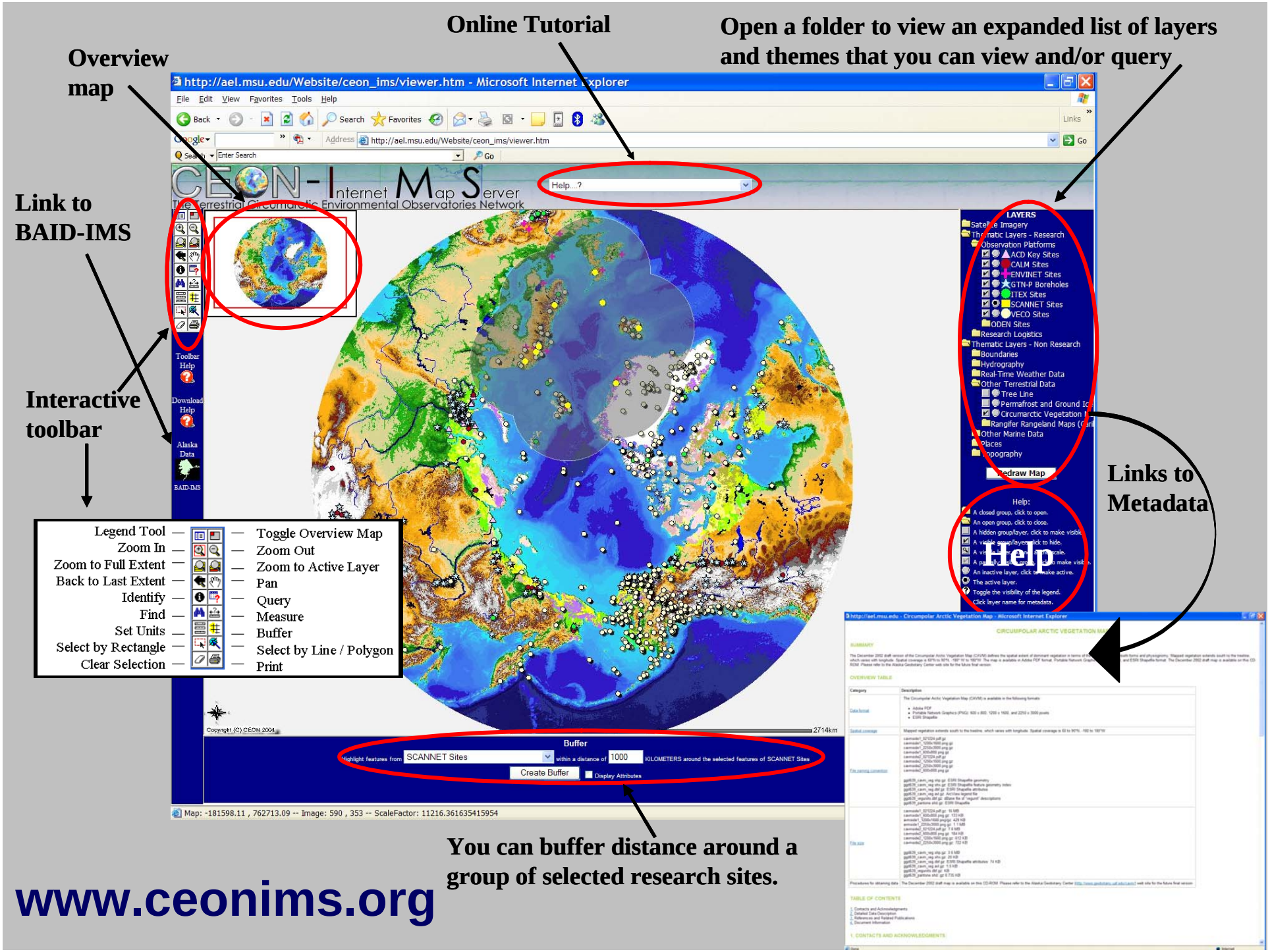
ArcticResearchMapping Application…

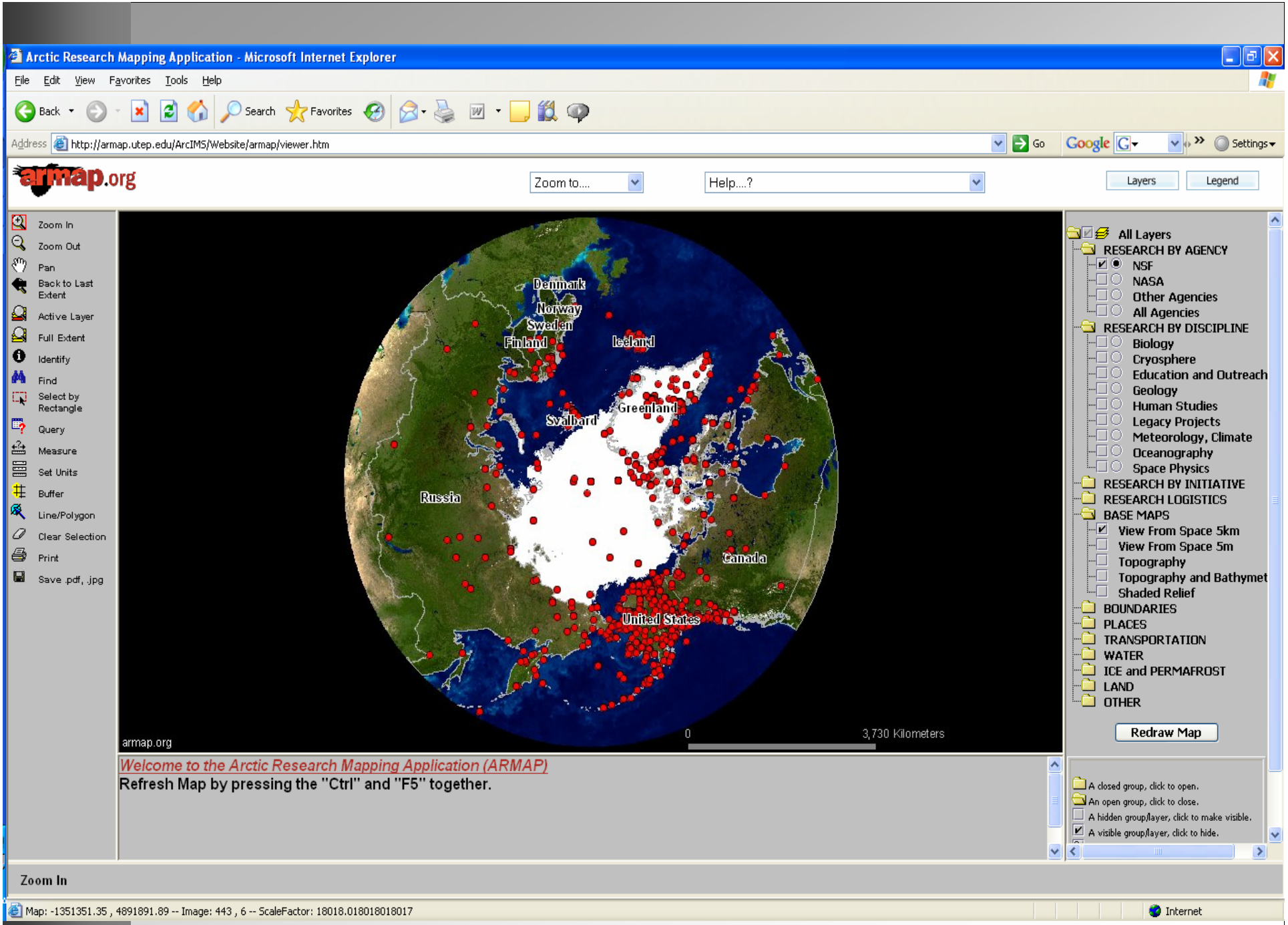
Craig E. Tweedie
Department of Biology and the Environmental Science and Engineering Program
The University of Texas at El Paso, Texas, USA


http://sel.utep.edu/ArcIMS/Website/Baid_ims/viewer.htm - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://sel.utep.edu/ArcIMS/Website/Baid_ims/viewer.htm
Go Links
Google Search Check AutoLink AutoFill Options
B A I D - I M S
barrow area info database internet map server
Help....?
North Slope Alaska
CHUKCHI SEA
BEAUFORT SEA
Barrow
Wainwright
Atqasuk
Kuparuk
Nuiqsut
Deadhorse
Point Lay
Umiat
Galbraith Lake
Anaktuvuk Pass
0
143km
Copyright (C) UTEP 2005
Toolbar Help
Download Help
Circum-Arctic Data
LAYERS
Imagery
Airborne
Satellite
Themes
Base Maps
Boundaries
Infrastructure
Research
Landcover and Soils
Fauna
Hydrography
Bathymetry
Topography
Shoreline
Real-Time Weather
Redraw Map
Help:
A closed group, click to open.
An open group, click to close.
A hidden group/layer, click to make visible.
A visible group/layer, click to hide.
A visible layer, but not at this scale.
A partially visible group, click to make visible.
An inactive layer, click to make active.
The active layer.
Toggle the visibility of the legend.
Click layer name for metadata.
Site Updates
***Google Toolbar users need to allow site popups in order to view the help files
www.ceonims.org
Map: 798383.48 , 7896555.87 -- Image: 521 , 98 -- ScaleFactor: 1059.6339712918654
Internet


Online Tutorial
Open a folder to view an expanded list of layers and themes that you can view and/or query
Overview map
Interactive toolbar
B A I D - I M S
Help
Legend Tool
Zoom In
Zoom to Full Extent
Back to Last Extent
Identify
Find
Set Units
Select by Rectangle
Clear Selection
Toggle Overview Map
Zoom Out
Zoom to Active Layer
Pan
Query
Measure
Buffer
Select by Line / Polygon
Print
Barrow Area Information Database Master File of Research Locations, Alaska USA (2004.)
Metadata:
Buffer
Note coordinates of locations to load as waypoints in your GPS.
You can buffer distance around a group of selected research sites.

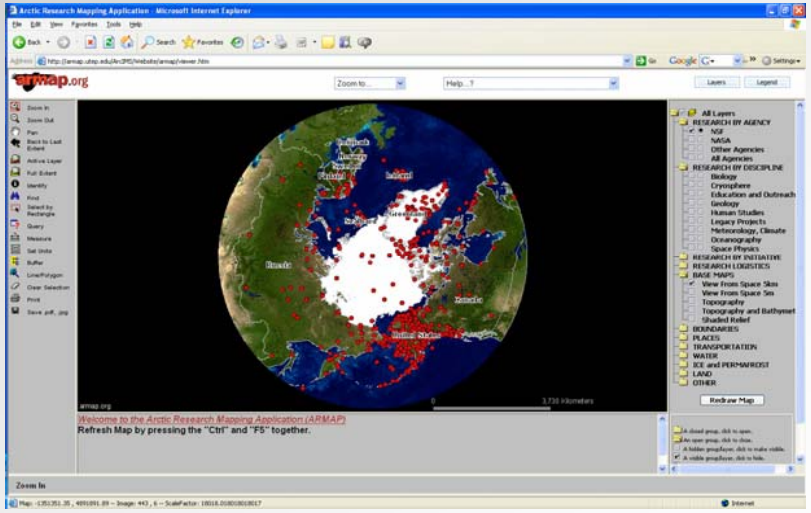

NSF Arctic Field Projects
Region
Field Location
Seasons
VPR Supports
SubRegion
PI Name
NSF Program
NSF Grant Number
Dr. Walter Oechel
San Diego State University
Department of Biology
Directory of Arctic Researchers | Detailed Search
COMMENTS
PICTURE
REGION
START_YR
END_YR
AREA1
AREA2
REF_ID
RESEARCH_1
RESEARCH_2
ARCUS_ID
VEG_ID


Online Tutorial
Open a folder to view an expanded list of layers and themes that you can view and/or query
Overview map
Link to BAID-IMS
Interactive toolbar
Links to Metadata
Help
Legend Tool
Zoom In
Zoom to Full Extent
Back to Last Extent
Identify
Find
Set Units
Select by Rectangle
Clear Selection
Toggle Overview Map
Zoom Out
Zoom to Active Layer
Pan
Query
Measure
Buffer
Select by Line / Polygon
Print
You can buffer distance around a group of selected research sites.
www.ceonims.org


Arctic Research Mapping Application - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://armap.utep.edu/ArcIMS/Website/armap/viewer.htm
Go Google Settings
armap.org
Zoom to....
Help....?
Layers
Legend
Zoom In
Zoom Out
Pan
Back to Last Extent
Active Layer
Full Extent
Identify
Find
Select by Rectangle
Query
Measure
Set Units
Buffer
Line/Polygon
Clear Selection
Print
Save .pdf, .jpg
Denmark
Norway
Sweden
Finland
Iceland
Svalbard
Greenland
Russia
Canada
United States
armap.org
0
3,730 Kilometers
All Layers
RESEARCH BY AGENCY
NSF
NASA
Other Agencies
All Agencies
RESEARCH BY DISCIPLINE
Biology
Cryosphere
Education and Outreach
Geology
Human Studies
Legacy Projects
Meteorology, Climate
Oceanography
Space Physics
RESEARCH BY INITIATIVE
RESEARCH LOGISTICS
BASE MAPS
View From Space 5km
View From Space 5m
Topography
Topography and Bathymet
Shaded Relief
BOUNDARIES
PLACES
TRANSPORTATION
WATER
ICE and PERMAFROST
LAND
OTHER
Redraw Map
Welcome to the Arctic Research Mapping Application (ARMAP)
Refresh Map by pressing the "Ctrl" and "F5" together.
A closed group, click to open.
An open group, click to close.
A hidden group/layer, click to make visible.
A visible group/layer, click to hide.
Zoom In
Map: -1351351.35 , 4891891.89 -- Image: 443 , 6 -- ScaleFactor: 18018.018018018017
Internet

Overview

1. Background
2. Capabilities of ARMAP
3. Development Team
4. Layer Developmental
5. ARLSS
6. Automated updates of ARLSS
7. Hardware configuration
8. Software
9. Future Directions
10. Conclusion



…….Q & A and live demonstration

1. Background

- ARMAP was built under subcontract to NSF's Office of Polar Programs in late 2006.
- Tool for program officers to enhance research and logistic planning, international collaboration and reporting.
- Now being adopted by US and some international researchers.
- Built in time for IPY but also includes projects before IPY.
- **Not a data archive** ARMAP is an information portal.

armap.org

2. Capabilities of ARMAP

- Users of ARMAP can:
  - Zoom in/out, zoom to regions of interest
  - Change base maps and points/lines/shape layers of interest ~ over 70 layers currently
  - Identify and query relevant information
  - Measure distance, buffer an area around a point of interest
  - Print maps and save maps to file (jpg, pdf, tif etc)
  - View FGDC metadata for each layer
  - Export data to MS excel
  - Find links to download data, find out more information etc.

armap.org

3. Development Team

- **VECO Polar Resources (VPR)**
  - Mike Dover, Diana Garcia-Lavigne, Lucian Novac, Robbie Score
- **Nuna Technologies**
  - Allison Gaylord
- **UTEP**
  - G. Walker Johnson (PhD-Biology), Joaquin Aguilar (BSc Comp. Sci.), Raed AlDouri (PhD Geol.), Katherine Fernald (PhD-Env.Sci.&Eng.), Craig Tweedie
- **INSTAAR/UC**
  - William Manley

4. Layer Development

- Layers are in an ArcSDE Geodatabase.
- Have been re-projected to Polar Lambert (WGS84).
- Updated copies processed from ESRI ArcGIS 9 CD/DVDs.
- 1979-2006 Sea Ice Min / Max processed by NSIDC.
- 5km base map from the ESRI CDs is used for initial extent.
- Blue Marble 500m map is used for better resolution when zoomed into a certain extent.
- Data automatically updated from ARLSS via .NET using a VECO web service and an ArcGIS model.

5. ARLSS

(Arctic Research & Logistics Support System)

- ARLSS is the primary source of project information for ARMAP.
- Database maintained by VPR since 1999.
- Information gathered from award database, award jacket, and data provided by PI.
- High-level project information (PI, abstract, project-related URLs, research lat/long, etc.).
- Mostly Arctic field projects funded by NSF.
- Future ~ info from all US federally-sponsored Arctic field projects ~ some requests internationally.
- Project data constantly added and updated.

6. Auto Updates from ARLSS

- Project information on ARMAP is updated automatically through a web service and a series of data conversion models.
- Data are retrieved via .NET using a VECO web service.
- Conversion of the XML database to *.csv format is scripted.
- ArcGIS Model automates the creation of a series of Geodatabase feature classes (layers).
- Updates occur daily

armap.org

7. Hardware Configuration

Development Environment (Systems Ecology Lab)

Server Name:
sealtest.utep.edu

Dell PowerEdge 1300
466 Mhz processor
512 MB RAM
10/100 Ethernet

Obtained from UTEP Surplus

FTP

Production Environment (Information Resource and Planning)

Server Name: irpsrvgis05.utep.edu
Proposed Alias: armap.utep.edu

Dell Blade Server
1855 Dual 3.2 Ghz processors
8 GB RAM
Dual 146 GB mirrored hard drives
Automated backups
24/7 support
Internet 2

Dell EMC SAN
providing up to 2.3 TB storage

Access via Microsoft Remote Desktop, FTP, and
ArcSDE Client (ArcCatalog)

** Leverage UTEP bulk hardware purchasing with Dell Computer Corp*

8. Server Software

- ArcGIS 9.1 SP2
- ArcIMS 9.1 SP2
- ArcSDE 9.1
- Jarcarta Tomcat 5.0.28
- Java Development Kit 5.0
- Microsoft Internet Information Server 6
- Microsoft SQL Server 2005
- Microsoft Visual Studio 2005
- Microsoft Remote Desktop

* All leveraged from UTEP bulk software licensing programs

armap.org

9. Future Directions

- Maintain ARMAP.
- Develop additional layers as required.
- Increased number of web services will be added as these are developed or are requested.
- Liaise with NSIDC to visualize and link to IPY-DIS.
- Transition to ArcServer 9.2 from ArcIMS.
- Develop auto-updates for *.kml files for Google Earth.
- Develop prototype 3D application.
- Maintain full application documentation and free access to data and customizations.
- Develop training modules and conduct training sessions.
- Educate students in web-based GIS development.

armap.org

Comparison of ArcIMS, GIS Explorer and Google Earth

	ArcIMS (html viewer)	ArcGIS Explorer	Google Earth 4	Comments
3D Geobrowser	No	Yes	Yes	
Download and software installation required	No	Yes	Yes	
Open Source	No	No	No	
WMS / WFS client (Open Geospatial Consortium standards)	Yes	Yes	No	
Supplies default imagery	No	Yes	Yes	Base imagery largely provided by developer with Arc products. GE has superior default base imagery.
Supplies default terrain	No	Yes	Yes	Custom terrain easily integrated into Arc products.
Supplies default framework data such as roads, placenames	No	Yes	Yes	Custom vector based framework data is easily integrated in all products
Widespread appeal	Yes	Unknown	Yes	GE most widely used 3D Geobrowser
Performance	Varies	Varies	Excellent	Performance for Arc products varies due to imagery used, WMS, database performance, server capacities, internet hosting, etc.
Can make complex searches	Yes	Yes	No	
KML support	No	Yes	Yes	
GIS functionality	Yes	Yes	No	

*The Arc products have an extensive network of support services including user forums, blogs, technical support, online classes and script archives.

*GE developer network appears to be limited to bulletin boards and blogs, but growing rapidly.

10. Conclusion

- ARMAP was developed under contract to NSF-OPP to improve capacities for science, logistics and coordination in US arctic research.
- ArcIMS has proven to be a useful tool in this development ~ needs to be faster and more stable.
- Future developments will expand the data and information available to users, increase speed and stability, and develop a 3D prototype application.
- Educate next generation of web based information system developers.

armap.org

Thanks for watching…..

Craig E. Tweedie
(Department of Biology and the
Environmental Science and Engineering Program)
Office: 103/413 Biology Building
Lab: 325/420 Biology Building
Email: **ctweedie@utep.edu**
Office: 915-747-8448
-

www.armap.org

www.baidims.org

www.ceonims.org