LTER GIS Meeting Summary

October 21-23, 2002

Meeting notes and summary by Theresa Valentine (Theresa.Valentine@orst.edu)- H.J. Andrews LTER.

Resulting from an organizational workshop at the 2000 LTER All Scientists meeting, this report is the result of a two day follow-on meeting of GIS issues related to LTER Network Information System developement.

Action Items proposed during the meeting:

1. A LTER Infromation Management "Databits" special addition on GIS/Internet Mapping (Todd Ackerman will be the contact), take over one issue, target late August 2003:
2. Summary of workshop, Spatial Data Workbench, case studies on map services Project description/experiences, service approach to internet mapping (Peter McCartney),
3. White paper on EML for spatial data, Overview of technologies, relationships between them, (Ilya Zaslavsk).
4. White paper on Integration between spatial/non spatial data (Theresa Valentine), link to workshop website,
5. Follow-up workshop at All Scientist Meeting.
6. Post results of meeting on technology page (John Vande Castle).
7. Target report to go in the response to the 20 year review and LTER strategic planning.
8. Write up a vision of managing geospatial data.
9. Spatial data and metadata standards for LTER sites.
10. Conduct a survey of GIS Internet developments at sites and post results.

Progress to Date: (June 2003)

Workshop has been proposed for 2003 All Scientist Meeting.

Spatial Data Workbench Wish List completed and ready for posting.

First draft of Spatial Data Standards complete and ready for review by group.

Live-link poster session has been proposed for 2003 All Scientist Meeting.

Meeting Notes:

The meeting was organized by the LTER Network Office and hosted and cofunded by the San Diego Supercomputing Center . The following people attended the meeting:

Todd Ackerman, Peter Arzberger , Mike Bailey, Kirsten Barber, Chaitan Baru , Bryan Baker, Tim Craig, Tony Fountain , Dylan Keon, Radha Kunda, Bertram Ludäscher, Peter McCartney, Ashraf Memon, Barbara Nolen, Deanna Pennington, Ken Ramsey , Ming Tsou, Theresa Valentine, John Vande Castle , Ilya Zaslavsky

The meeting agenda is available on this link.

There were representatives from four LTER sites, the LTER Network Office, San Diego Supercomputing Center (SDSC), Northwest Alliance for Computational Science and Engineering (NACSE), and Environmental Systems Research Institute (ESRI).

During the introduction, ideas were captured about current issues the individual sites were facing and some larger picture issues. These issues were used to frame our discussions and build the breakout groups during the workshop.

E ach of the LTER sites represented at the meeting presented their current status and ongoing projects. Sites represented were the HJ Andrews, Niwot Ridge/Green Lakes Valley, Central Arizona - Phoenix Urban, Jornada Basin , and the Network Office. The status of Internet GIS on the sites ranged from ArcIMS applications built in-house to development work by contractors. Many of the sites that did not attend do not have any Internet GIS applications in development. We discovered that we have similar needs and problems, and we are not working together enough to sharing ideas, solutions, and development costs.

The next segment of the meeting consisted of several presentations on emerging technologies and applications in the Internet GIS/Mapping/Service world. There were presentations on the following topics:

- Spatial Data in the LTER Network Information System and Ecological Metadata Language (NIS/EML) presented by Peter McCartney
- Background of LTER Spatial Data presented by John Vande Castle
- Jornada Basin LTER IMS and Map Services report presented by Ken Ramsey
- Status of Niwot Ridge LTER GIS presented by Todd Ackerman
- Spatial Information Management on the HJ Andrews LTER presented by Theresa Valentine

- The LTER Spatial Data Workbench presented by Deana Pennington, John Vande Castle, and Tony Fountain
- ESRI Metadata Server and Web Services presented by Bryan Baker
- San Diego Super Computer Applications with Web Services, SOAP, WSDL presented by Chaitan Baru
- Spatial and Non-spatial Information Integeration Using I2T and Web Services presented by Ashraf Memon and Kirsten Barber
- Science Environment for Ecological Knowledge (SEEK) presented by Bertram Ludäscher

The group then divided into smaller groups to discuss the following topics in depth:

- Spatial-Non Spatial Data Integration
- Delivery of Data to Researchers
- Standards for Map Services
- Spatial Data Workbench Wish List

Each group presented their finding back to the larger group. Recommendations to the LTER Information Management Executive Committee (IMExec) were developed and workgroups developed for future collaborations.

Recommendations and Assignments:

1. Further development on spatial data workbench. Develop the Spatial Data Workbench Wish List (see below) into a vision (Peter McCartney to take to NIS committee) This was completed at the workshop.

2. Statement about LTER spatial data standards (see below) for LTER (Todd Ackerman). This includes the metadata standards as well as recommendations on what basic level of GIS data should be available on the web for download. These standards will be incorporated into the overal design of the LTER Network Information System.

3. Push for providing data via some type of map service (Peter McCartney to start write up for report)

4. Develop plan of action for the All Scientist Meeting in September:

- Live poster session (computers running map web sites) (Theresa Valentine, Lead, request is in)
- Workshop: Data Integration through Internet Mapping Case studies of Integrated GIS Sites: Spatial Data Workbench (Theresa Valentine, Lead, workshop registered)
- Training for LTER sites: Look at survey and see what people need

Resources needed:

1. Need resources for implementing 2 and 3 (need to identify what resources we need)
2. Need to survey LTER sites: (committee, Theresa Valentine lead)
3. Survey existing map services out there…(Dylan Keon, and Ilya Zaslavsk)

Spatial Data Workbench (SDW) Wish List Breakout Group Notes from 2002 GIS Workshop
*list has not been prioritized

1. Add spatial component to CLIMDB (link GIS to CLIMDB)
2. Add support for simulation modelers
3. Add metadata for models (simulation and others)
4. Tools to develop pipelines – analytical, processing, simulations
5. Add other 'tabular' (ecological research) data to SDW
6. Add GIS (vector) data
7. Incorporate Social Science data (census data, surveys, etc.)
8. Expose Map Services of Raster Data (AVIRIS, etc.)
9. Combine functionality of analytical and map feature tools
10. 3D visualization tools
11. Integrate MCAT and EML (Metacat)
12. Federate site data into TerraGrid (allow site data to stay at site without having to import site data into SDW)
13. Adopt EML as metadata exchange format for SDW
14. Resource discovery tools
15. Information Manager control of data update when uploaded to SDW
16. Allow Researchers to control access to their data using authentication control
17. Distribute SDW applications and data geographically (similar to NBII Clearinghouses)

Suggested GIS Standards for Maximizing LTER Site Map Accessibility

We propose that every site needs georeferencing information for every research plot/site /observation location. This information should be in a GIS file format, such as a shapefile, coverage, etc.

Rather than imposing minimum site requirements for spatial data layers and spatial metadata, we will conduct a telephone survey to determine where each of the 24 sites currently stand with respect to site GIS resources, spatial data layers, and metadata. The primary data layers required at each site will follow NIS suggestions.

Based on the results of the survey, we would like to have the sites that are already in the GIS/GPS and map serving arena to assist by adopting a site or two to produce a map of the adopted site/s to be served over the map servers that are already in place. These adopted sites will be mapped to show a boundary or quasi-boundary of the site (this boundary should include 85 – 90% of research plots/sites/observation location); some basic background layers, i.e. DEM, TM scene, roads; and a couple of research site locations that can be mapped to link to the research data collected at these sites. The spatial metadata will be included, with all of the required EML information such as projection, coordinate system, datum and attribute information, as well as spatialReference in spatialVector. The information produced from this effort should be include in SiteDB with links to the map services.

The survey will allow us to know where funds will be needed to bring those sites who need assisted mapping, up to a level where they can handle their own georeferencing for all research sites, GIS data layer production and mapping. We suggest that the network office may at some point offer map services for those sites that will not have the resources to handle their own GIS.

AGENDA:

Monday

8:30 am Introductions, workshop goals, logistics

8:45 Site products

1. 1. identify goals for workshop. Ask each presenter to spend one slide on their approach/view of Tuesday subject matter
2. 2. current stuff 10 min per site

9:45 Break

10:00 Current technologies (presentations)

10:00 Spatial Data in the NIS /Spatial Data in EML McCartney

11:00 "LTER Spatial Data and the Spatial Data Workbench" - John Vande Castle, Deana Pennington, Dylan Keon, and Tony Fountain.

12:00 Lunch

1:00 Metadata Server/Web Services ESRI Representative

2:30 SDSC Web Services Solutions: Chaitan Baru, SDSC

3:00 Break

3:15 Web services, DDI and ArcIMS integration Ashraf Memon, Kirsten Barber, SDSC

3:45 SEEK Bertram Ludaescher, SDSC

4:15 Spatial Data Visualization Resources (ArcGlobe,) Mike Bailey and/or Eric Frost, SDSC

5:00 Close

Tuesday: Working sessions/discussions

8:30 am Spatial-non spatial integration

1. Spatial data in EML, integration issues, standards

12:30 pm Delivery of data to researchers

1. Formats, processing , search capability

3:00 pm Standards for map services

6:00 pm Dinner sponsored by SDSC in the patio at Piatti.

Wednesday (form working group)

8:30 am: Planning for ASM workshop.

10:00 am Other outreach activities

11:00 am collect presentations and work on a "final draft" report of the workshop

12:00 Lunch (type up lose ends)