

## **LTER Network Office Informatics Update #12**

To increase the time available at the IM committee meeting following the ASM next week for constructive discussion on critical issues, I'm providing an advanced summary of all the ongoing informatics related projects that the LTER Network Office is involved in. I'll use the time allotted at the meeting to bring you any last minute updates and answer any questions you might have. Thanks.

James

**Network Database Integration** – We've been actively engaged in the network database integration project since March when the new cooperative agreement started. Marshall White is the lead developer on this project backed up by Troy Maddux. The first requirements of unifying with a common ID structure, a one login/one password security model and meeting the old system functionality is now 99% complete. Phase II will add many new features including the new and easier ways for sites to provide updates – Phase III will enable support for EML. The new design is modular, written in PHP+ and perl with objects being designed for reuse. Already we're seeing some of these features being used in parts of the 2003 ASM pages. This effort is also closely linked to the RDIFS project (described below) which extends these features to the OBFS. In addition, we are reviewing content management systems (CMS) and strategies for implementation early next year. A CMS will allow easy maintenance of web documents by individuals and committees and working groups responsible for pages. Documents related to this effort can be viewed at: <http://intranet.lternet.edu/projects/informatics/>  
Contact: Marshall White (mwhite@lternet.edu)

**Strategic Planning** – The LTER Network Office is in the process of developing a strategic plan. This plan, called for in the new cooperative agreement, will help us better meet the needs of the network through goal-oriented decision making and priority setting. Part of the ongoing strategic planning process will be the development of a system of evaluation and feedback for the LTER Network Office by sites, PI's, and scientists. Strategic planning will also determine the level of emphasis and effort applied to informatics and IT. Contact: Robert Waide ([rwaide@LTERnet.edu](mailto:rwaide@LTERnet.edu)).

**Science Environment for Ecological Knowledge (SEEK)** - This project is an NSF-funded, five-year collaboration between the Long Term Ecological Research Network Office at the University of New Mexico, the San Diego Supercomputer Center at UCSD, the Natural History Museum and Biodiversity Research Center at the University of Kansas, and the National Center for Ecological Analysis and Synthesis at UCSB, developing new technologies for the integration, analysis, and synthesis of heterogeneous ecological data. The goals of SEEK are to make fundamental improvements in how researchers can gain global access to ecological data and information, rapidly locate and utilize distributed computational services, and exercise powerful new methods for capturing, reproducing, and extending the analysis process itself. In the first year of funding, SEEK researchers are developing a distributed database and resource infrastructure, called the EcoGrid, expected to be operational (with partial functionality)

within 6 months. Analytical resources are being developed using scientific workflow approaches, automated with technical advances in semantic mediation and knowledge representation. The first targeted application domain is ecological niche modeling, where multiple environmental and species occurrence datasets will be integrated to predict distributions under current and changed conditions. See: <http://seek.ecoinformatics.org>  
Contact: Bill Michener (wmichener@LTERnet.edu).

**Spatial Data Workbench (SDWB) - is a collaborative project between the LTER Network Office and the San Diego Supercomputer Center (SDSC),** as part of the National Partnership for Advanced Computational Infrastructure (NPACI) Earth System Science initiative. Data are available through a Storage Resource Broker (SRB) at San Diego that provides for the storage and dissemination of large LTER spatial datasets through World Wide Web access. The system contains airborne hyperspectral (AVIRIS) data for 1997 through 2001, for the Sevilleta, Jornada, Konza, Harvard Forest and Andrews LTER sites, and Landsat Thematic Mapper images, GFL reconnaissance data and current MODIS data for all of the LTER sites. Atmospherically corrected data, and data products, are being placed online. Other image types will also be uploaded, where available. Metadata for this imagery are being encoded in EML. See: <http://sdw.sdsc.edu/>  
Contact: John Vande Castle ([jvc@LTERnet.edu](mailto:jvc@LTERnet.edu)).

**Resource Discovery Initiative for Field Stations (RDIFS) - a Research Coordination Network Grant from NSF to develop the informatics framework that can facilitate storage, discovery, and access to the strategic environmental information resources that are collectively held at North American biological field stations now in its second year.** LTER Network Office activities focus on the development of databases that will support discovery of biological data and information resources at field stations and training in informatics. The biological field stations are being included in the network database integration project which will include a Site Characteristics Database for North American Field Stations; a Bibliography of North American Field Station Publications; and a Database of Field Station QA/QC and Standard Methods. Education this year will principally focus on the annual intensive (2-week) training workshops in ecological informatics that are developed around a series of course modules – this year the first week is devoted to data and information management while the second week is an intensive course in remote sensing and GIS. Contact: Bill Michener (wmichener@LTERnet.edu)

**Knowledge Network for Biocomplexity (KNB) - is a collaborative project between the LTER Network Office, the National Center for Ecological Analysis and Synthesis, and the San Diego Super Computer Center funded by the Knowledge and Distributed Intelligence (KDI) program at NSF.** Now in it's third year , the intent is to bring closure to the project by getting LTER Network metadata into the metacat repository creating the starting point for a national network that will provide efficient discovery, access, and interpretation of complex ecological data from a highly distributed network of research sites, and individual researchers. See: <http://knb.ecoinformatics.org> Contact: David Blankman (dblankman@LTERnet.edu).

**Ecological Metadata Language (EML)** - With the release of Ecological Metadata Language (EML) 2.0 last year the LTER Network Office has been engaged in the transformation of site metadata into EML and the development of harvester technologies to do efficient distributed updates. The LTER Network Office, LTER Network Information Managers, and others involved in similar projects have been collaborating with NCEAS for several years in developing EML version 2.0 - this is an ongoing process. In addition, the LTER Network Information Managers participated in a series of workshops funded by NSF through the LTER Network Office to develop and implement EML compatible structured metadata across the LTER sites. The most recent one in June focused on EML in a tiered implementation and best practices for completing EML. See: <http://knb.ecoinformatics.org> Contact: David Blankman (dblankman@LTERnet.edu).

**New Facilities** – We are now in the final year of a very long process to get new space for the LTER Network Office on the main campus of UNM. Although our current offices are spacious and have some advantages, being located on campus will be much better because we will be co-located, close to colleagues, close to food and supply outlets, we will have access to many more meeting facilities including the newly remodeled Student Union Building and a dedicated and specially designed training facility and access-grid conference room. To facilitate an orderly transition with minimal downtime we are making plans for the IT infrastructure move now.

**New Equipment** – Earlier this year we upgraded our Intel-based servers for local file system storage and our database server. We have only recently brought these online because of the inadequacies in the building electrical and cooling system. To mitigate this situation we had to install new electrical circuits and a dedicated refrigerated cooler in our server room. This has provided us with stable environmental controls for our server equipment over the next year until we move the equipment into a specially designed server room. Hopefully we will get the near 6 years of service that we have gotten out of the old servers. You can view the server room at <http://129.24.70.5>

### **Positions Available at the LTER Network Office:**

We are currently filling several positions at the LTER Network Office. The first two can be viewed and applied for at: <http://ejobs.unm.edu/>, the third will appear as a solicitation at Science online, IEEE jobs, and through the LTERnet mailing lists. Contact: James Brunt (jbrunt@LTERnet.edu).

**Web Designer** – this position replaces Marshall White who has been promoted to Sr. Web Designer – overseeing the integrated database and RDIFS database projects.

**Data Manager** – this position replaces Troy Maddux who recently moved to Corvallis to be with his partner. Troy will remain in a telecommuting status until the position is filled.

**Network Information System Developer / Research Assistant Professor** - this person will be the lead developer on the Network Information System Effort. This will be a 9-

month research faculty position with opportunities for expanding the NIS program through additional funding.

### **Services provided by the LTER Network Office to LTER Sites**

**Website Planning (new)** – Marshall White has now worked with several sites to facilitate the development of website plans that are functional and maintainable. I've watched this process and think it is really an excellent exercise for any site considering redesigning their web presence. Contact: Marshall White ([mwhite@LTERnet.edu](mailto:mwhite@LTERnet.edu))

**Centralized Personnel Database** – Web interfaces to this database allow searching and quick access to people in the network and provide easy update for individuals and data managers. Templates can be provided to sites for including the search and update routines in site web sites eliminating the need for sites to maintain their own personnel database. Contact: Marshall White ([mwhite@LTERnet.edu](mailto:mwhite@LTERnet.edu))

**Individual Mail Alias** – provides for each LTER person an @LTERnet.edu alias, for e.g., mharmon@lternet.edu, spickett@lternet.edu. This provides a convenient way to correspond with anyone in the LTER Network. The use of this service as steadily increased over the last 10 years.

**Mail List Management** – this function is migrating to a group management module of the integrated databases – it will still provide the capability to create and manage site, committee, or special interest mailing lists, @LTERnet.edu, based on the personnel database but will be more extensible and implements the mailing list as an optional function of a group. This is the long anticipated lists of lists function. An easy to use web interface is under construction for creation, update, and deletion of groups. The old mailgroups function has been suspended while we implement the new one to avoid any major incongruities.

**LTER All Site Bibliography** - this database of LTER publications from all 24 sites is a searchable resource to find and download information about published information from the LTER Network. The LTER Network Office is nearing completion of new interfaces to this data that will provide the sites with the capability to maintain a virtual bibliography with features like Endnote accessibility and EML export. This service can completely take the place of maintaining a local bibliography and can be accessed via the web interfaces or through any Endnote or other scientific bibliography client.

**Domain Name Aliases / DNS services**– Individual sites can get an lternet domain web address for their web site that uses their 3-letter abbreviation. Examples include:

Palmer	pal.lternet.edu
H.J. Andrews	and.lternet.edu
Luquillo	luq.lternet.edu
Hubbard Brook	hbr.lternet.edu
Santa Barbara Coastal	sbc.lternet.edu

This will be done for any site that requests it. It moves us toward a network identity and an easily remembered name. This also allows individual web sites to be indexed in search engines so they can all be searched at once. In addition, sites customized domain names, for e.g., sevilleta.org, obfs.org, can be hosted.

**Web Hosting** – Sites that do not have the resources or do not wish to host their own web site can use the LTER Network servers to host their web site. Several sites are doing this already as the costs of personnel time for managing computer systems has increased.

**Database Hosting** – Databases can be built and housed at the LTER Network Office to serve individual sites. People at the site have permissions on the database and can create tables and make change it as necessary.

### **On the Drawing Board**

**Offsite Backup Solutions** – The LTER Network Office is working towards being able to provide off-site backup storage for sites. This service has been requested and progress is being made towards this provision. Sites will be able to store and manage files on the backup server from a convenient web interface. The Network Office will routinely write these stores to tape providing a tertiary safety net for sites.

**LTERwide Collaborative Web Portal** – The implementation of a full featured web portal with collaborative tools, webmail, access to databases, access to other commercial web services, and more is part of the new LTER Network Office cooperative agreement and is currently in the planning and evaluation phase.