

International Network-to-Network Collaboration in Integrated Environmental Research and Management *A Summary of the Science Policy Forum, Versailles, France*

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As human population centers increase pressure on surrounding ecosystems, studying ecological, biophysical, and socio-economic systems in isolation from one another becomes increasingly impossible. The boundaries between these systems continue to crumble, and scientists acknowledge that almost all human activities have potential relevance to global environments.

The United States' Long Term Ecological Research Network (LTER) and France's Zones Ateliers (ZAs) are both manifestations of a growing need for integrated environmental research and management (IERM), and proof of recognition that an IERM effort requires a conceptual approach, integrating the ecological, biophysical, and socio-economic components of the study systems. The integration of data, information, and knowledge is a central theme of IERM.

The LTER and ZA initiatives both offer

unique approaches to traditional scientific research because they do not focus on the study of *a priori* defined research themes (e.g., productivity, biological diversity) but on specific questions pertaining to understanding the functioning of specific ecosystems. Another distinguishing feature of these two initiatives is their shared goal of developing networks of research projects that, although studying varied aspects of widely different ecosystems, interact and collaborate on shared areas of interest, rather than portfolios of independent projects working on similar topics.

The International LTER Workshop at the LTER ASM 2000 resulted in a workshop sponsored by the US National Science Foundation (NSF) and the French Centre National de Recherches Scientifiques (CNRS), organized in Versailles, France (January 15-19, 2001). Participants explored the merits and added value of French-US collaboration in IERM. This workshop aimed at providing guidance on the substantive focus, institutional arrange-

ments, and strategy for designing and implementing the proposed areas and mechanisms of collaboration between the two national research networks.

The 44 scientists attending the workshop (12 US, 30 French, and representatives from two other European countries) addressed three questions pertaining to the challenges, contributions, added value, and mechanisms to foster international network-to-network collaboration in IERM: 1) What are the challenges and potential contributions of the French-US collaboration to the integration of information and knowledge across disciplines, spatio-temporal scales, ecosystem types, and geographic locations? 2) What principles of integration of information are best suited to an international network-to-network collaboration in IERM? 3) What are some of the research and management themes common to the French and US environmental research networks?

Five areas were recognized as requiring attention in an international network-to-network collaborative effort in IERM: integrated modeling, instrumentation, retrospective/prospective analysis, integrated ecological assessments, and synchrony/asynchrony of processes. These five areas are shared by most study sites involved in an IERM network, regardless of the specific research topic and ecosystem of interest. The workshop participants, organized into five breakout groups each addressing an area of interest, stressed the importance of reflect-

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Field Trip to Zones Ateliers—France


Karen Baker, Palmer LTER

The ILTER workshop at Snowbird in August 2000 resulted in a meeting between US LTER and French Zones Ateliers (ZA) participants mid January 2001 in Versailles, near Paris. ZAs are part of the French Centre National de la Recherche Scientifique (CNRS, <http://www.cnrs.org>). These meetings explored the existing and potential developments for ecological networks and collaborations. An afternoon trip to Forest Fontainebleau and Station Biologique de Foljuif provided an opportunity for participants to explore the research sites.

Forest Fontainebleau, a Man and the Biosphere (MAB) reserve since December 1998, is one of the few very old lowland forests in Europe. It is located south of Paris, west of the Seine. The forest was last logged in 1372 and possibly not since. The area has 20 to 30 year storm events with winds up to 140 km/hr. The most recent of these occurred in December 1999. The forest is dominated by beech trees with 5-15% in gap regeneration at any one time. Plantings have included bracken fern, oak and scots pine and, gap dynamics have lead to low diversity.

The Station Biologique de Foljuif is associated with Ecole Normale Supérieure. It was created decades ago as a field station for forest studies, use now includes experimental ecology, such as biodi-

versity, population dynamics, landscape fragmentation, and breeding termites. The station includes 50 hectares of land although additional land is being acquired in order to focus more on long-term experiments. New work includes an interest in mesocosm manipulations and linking experimental ecology and field observations from different landscapes. Since human activities impact carbon storage in forests and in rural environments, the Forest Fontainebleau and the Station Biologique de Foljuif are sites

from which community structure and ecosystem function can be considered. 



On a field trip to Forest Fontainebleau (left) and Station Biologique de Foljuif (above), during the recent Science Policy Forum, Versailles, France. Photos: Karen Baker

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ing national and/or regional differences in approaches and diversity of viewpoints, cultures, and socio-economic conditions in IERM. At the same time, it was recognized that international cooperation was needed to cover the full range of conditions in a gradient of ecological, biophysical, and socio-economic patterns and processes. The different sites, topics, and locations selected within and among each national network complement each other along this gradient, providing a major advantage of international network-to-network collaboration in IERM that was highlighted by all breakout groups.

Discussions involved international network-to-network collaboration at two of the three levels of activities conducted within a national IERM network. The participants emphasized that an interactive, mostly bottom-up approach should be retained. Areas of collaboration were prioritized at each of the two identified levels of network-to-network interactions (e.g., site-to-site joint studies, workshops, and integrated information management). Likewise, challenges, contributions, principles of integration, and shared research and management themes were identified using the following criteria to assess network-to-network collaboration in each of the five areas of interest: why collaboration is done, how it is done, the role of theory and decision-makers in framing the problem/question/approach, and the challenges and benefits of the activity.

Five initial projects, including data analysis, prototyping of tools common to the two national networks, and data/question driven workshops, were identified. They were selected because they could be completed within twelve months of the end of the workshop with little additional resources and minimal impact on the researchers involved. However, they are designed to be the first steps in a series leading to long-term, sustained collaboration at the two levels of international network-to-network collaboration. ☺



International LTER Information Management Workshop in Central Europe

Submitted by John Porter, VCR LTER

As part of International LTER outreach activities in Eastern Europe, in conjunction with local host Dr. Edit Kovácsné Láng, Dr. Kristin Vanderbilt of the Sevilleta LTER site organized a week-long training workshop on information management in Vacratot Hungary October 29 through November 3, 2000. The workshop had participants from the Czech Republic, Hungary, Poland, Romania and Slovakia. U.S. LTER participants, in addition to Dr. Vanderbilt, were Dr. Peter McCartney (CAP), and Dr. John Porter (VCR).

During five intensive days the workshop covered a wide variety of topics (Concepts in Ecological Information Management, Distinctive Characteristics of Ecological Information, Developing Good Collaborative Relationships Between Scientists and Information Managers, Information Management Policies, Using Microsoft ACCESS, Developing World-Wide Web Pages, Database Design and Modeling, The Data Cycle, Quality Control and Quality Assurance, Techniques for Connecting Databases to the WWW, Administration of WWW servers, Ecological Metadata and the Global Terrestrial Observing System [GTOS]) in lecture, discussion and laboratory formats. The laboratory portions of the training sessions were greatly facilitated by access to a computational laboratory with Internet connections and six PC workstations provided by the Hungarian Botanical Institute. During laboratory exercises, workshop participants designed databases, practiced simple QA/QC procedures, ran database queries and created web pages.

Workshop presenters were able to build on the increasingly large amount of material on ecological information management. The text for the course was the new "Ecological Data: Design, Management and Processing" book, edited by William Michener and James Brunt of the LTER Network Office. Material in the form of Powerpoint slides were also obtained from William Michener of the LTER Network Office and Ray McCord and Dick

Romanian participant Ana Maria Benedek works with Hungarian participant Gabor Varbiro on a laboratory exercise. Photo by John Porter.



Slovakian representatives Henrik Kalivoda, Gabriel Bugar, and Robert Kanka and Czech Republic representatives Vaclav Hauser, Zdenek Fajfr work on a database exercise while U.S. representative Peter McCartney (CAP) looks on. Photo by John Porter.

Olson of Oak Ridge National Laboratories.

Participants in the workshop set up a Web page containing all the workshop training materials at: <http://www.krnapp.cz/lter/>, and photos of the workshop are available at: http://www.vcr.lter.virginia.edu/images/lter_network/ILTER_Hungary_2000/IM_Training/

Following the workshop, Dr. Vanderbilt spent an additional several weeks in Hungary helping to establish soils research plots at the Síkfökút deciduous forest LTER site near Eger, Hungary in association with Dr. János Attila Tóth. Dr. Porter stayed an additional week and made one-day visits to each of the Hungarian LTER sites (Kiskun [sand dunes, grassland and shrubland], Síkfökút [deciduous forest] and Lake Balaton [aquatic]). Photos from those sites are available at: http://www.vcr.lter.virginia.edu/images/lter_network/ILTER_Hungary_2000/ and more detailed videos of the tours are available on request. ☺

Central European ILTER Information Management Workshop Participants

Czech Republic: Zdenek Fajfr,
Vaclav Hauser

Hungary: Gabor Varbiro, Sandor
Barabas, Barbara Lhotsky, Janos
Garadnai

Poland: Pzemyslaw Wasiak,
Stanislaw Twerek

Romania: Dan Cogalniceanu, Ana
Maria Benedek

Slovakia: Henrik Kalivoda, Gabriel
Bugar, Robert Kanka

United States: Peter McCartney,
John Porter, Kristin Vanderbilt