ILTERT Strategic Plan Documents, 1998-2003

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Proposal Routing Sheet for Arts & Sciences

(Do not expect less than one week turn-around service at the College level if your grant proposal involves cost-sharing or off-campus overhead rates. If it does not involve these issues, you can get 10-minute service by bringing along an extra copy of the proposal for the College's files and a completed copy of this sheet. Also bring this sheet completed if you are requesting cost-sharing.)

Proposal Title:
Supplement to LTER Network Office Grant for International LTER Activities

PI Name(s):
Robert B. Waide

Agency to Which Submitted:
NSF

Total Proposed Budget Per Year for Each Year:
137,585

Total Proposed IDC Per Year for Each Year:
12,410

Total Proposed Amount Requested for UNM Cost Sharing, followed by break down, in dollar amounts, and the equivalent percentage of the total IDC generated that are requested from each level in the "food chain," PI, Dept., College, and VPR:

10-20-Line Rationale for Cost Sharing, if requested:

Signature Lines for Each Party Involved in Cost Sharing, if requested:

[Signature]
Robert B. Waide
PI

[Signature]
Chairman of Biology

[Signature]
Dean of A&S

[Date]
5/7/98
Date

[Signature]
Date

[Signature]
Date
**UNIVERSITY OF NEW MEXICO PROPOSAL DATA SHEET (INTERNAL USE ONLY)**

<table>
<thead>
<tr>
<th>DEPARTMENT (Lead department if multiple departments)</th>
<th>ORG CODE</th>
<th>CURRENT ACCT #/PDS #</th>
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<tr>
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<td>10212</td>
<td>3-47971 / 105</td>
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<tr>
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<th>SSN</th>
<th>E-MAIL</th>
<th>PHONE</th>
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<tbody>
<tr>
<td>Robert B. Waide</td>
<td>[redacted]</td>
<td><a href="mailto:rwaide@lternet.edu">rwaide@lternet.edu</a></td>
<td>505/272-7316</td>
</tr>
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<table>
<thead>
<tr>
<th>CO-PI (If more than one, list on back)</th>
<th>SSN</th>
<th>E-MAIL</th>
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<tr>
<th>DEPARTMENT CONTACT</th>
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<tr>
<td>Sharon Kubler</td>
<td>7-0617</td>
<td>NSF 96-14 (International Opportunities)</td>
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<th>FUNDING AGENCY</th>
<th>AGENCY CONTACT</th>
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<tr>
<td>NSF</td>
<td>Scott Collins</td>
<td>703/306-1479</td>
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**PROJECT TITLE**

Supplement to LTER Network Office Grant for International LTER Activities

<table>
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<th>THIS ACTION</th>
<th>PROJECT CATEGORY</th>
<th>IDC RATE</th>
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<tr>
<td>☐ REVISION</td>
<td>☐ INSTRUCTION &amp; TRAINING</td>
<td>40%</td>
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**PROJECT PERIOD**

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<th>LOCATION IF OFF CAMPUS</th>
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<tr>
<td>5/15/98</td>
<td>2/28/99</td>
<td>☒ ON CAMPUS</td>
<td>OFF CAMPUS</td>
</tr>
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**CHECK APPROPRIATE BOX(ES) IF THIS PROPOSAL INVOLVES ANY OF THE ITEMS LISTED BELOW. SEE PI GUIDE FOR ADDITIONAL INSTRUCTIONS.**

- COST SHARING OR MATCHING
  - ☐ Required
  - ☐ Voluntary

- ADDITIONAL OFFICE/LAB REQUIRED
  - ☐

- RECOMBINANT DNA/BIOHAZARDS HAZARDOUS MATERIALS/WASTE RADIOACTIVE MATERIALS
  - ☐

- EXTRA COMPENSATION
  - ☐

- RELEASE TIME
  - ☐

- CONTROLLED SUBSTANCES
  - ☐

- CONFLICT OF INTEREST
  - ☐

- MULTIPLE DEPARTMENTS
  - ☐

- FUNDING AGENCY FOREIGN OWNED
  - ☐

- PROPRIETARY, CLASSIFIED OR SENSITIVE INFO.
  - ☐

- SUBCONTRACTS
  - ☐

WE, THE UNDERSIGNED, DO HEREBY AGREE THAT ALL INFORMATION ON THIS FORM IS COMPLETE AND ACCURATE TO THE BEST OF OUR KNOWLEDGE. IN THE CASE OF MULTIPLE DEPARTMENTS USE THE PERCENTAGES STATED BELOW FOR PURPOSES OF CALCULATING THE BASE FOR OVERHEAD ALLOCATIONS UPON AWARD OF THIS PROPOSAL.

**PI SIGNATURE**

Robert B. Waide 5/15/98

**Chair Signature**

Michael McPherson 7/19/98

**Dean/Director**

Jeri H. Quinn 7/19/98

**Director, Research Administration**

Jeri H. Quinn 7/19/98

**Associate Provost for Research**

Jeri H. Quinn 7/19/98

If you give permission for your proposal to be used as an example for UNM Faculty/Staff, sign below.

---

Revised 12/08/05
Generally used subcodes are listed below. Use the blank lines for more detailed subcodes if needed.

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<thead>
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<th>Faculty</th>
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<td>Technician</td>
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<td>Temporary/Student</td>
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<tr>
<td>Professional</td>
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<td>Fringe Benefits</td>
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<td>Travel-Foreign</td>
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<td>Amount</td>
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INDIRECT COST RATES 7/1/94 - 6/30/98

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<td>Research</td>
<td>48%</td>
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<tr>
<td>Instruction/Training</td>
<td>50%</td>
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</tr>
<tr>
<td>Other Sponsored Activities</td>
<td>32%</td>
<td>24%</td>
</tr>
</tbody>
</table>

IDC Calculation: When full indirect costs are allowable, apply the appropriate cost rate to the modified total direct costs (MTDC) base. Items not in the MTDC base are:
- Student support costs
- Capital equipment (items over $500 each)
- Tuition and participant support costs (stipends, dependency allowances, scholarships/fellowships)
- Subcontract amounts over the first $25,000 of each subcontract
- Rental/maintenance of off-campus space
- Patient care fees

PROPOSAL SHOULD INCLUDE THE FOLLOWING:
- Signed PDS (must be double-sided on blue paper)
- Program announcement or solicitation
- Original and two copies of proposal
- Conflict of Interest Disclosure Form for key personnel
- Committee approvals
- Cost sharing commitments

SUBMIT PROPOSAL PACKAGE FOR ORA
APPROVAL TWO BUSINESS DAYS PRIOR TO MAILING DATE

COMMENTS:
UNM CONFLICT OF INTEREST DISCLOSURE STATEMENT

Principal Investigator/Co-Investigator: Robert B. Waide

Department: Biology

Funding agency: NSF

Dates of project: 5/15/98 – 2/28/2003

PDS #

Project Title: Supplement to LTER Network Office Grant for International LTER Activities

The Principal Investigator/Co-Investigator is required to complete this disclosure statement and submit it with each proposal for new or renewal support. If "yes" is given to any of the questions, please describe in detail on a separate sheet any apparent conflict of interest.

Do you: (please circle)

YES NO 1. have any agreement with one or more private parties that would give them preferential treatment over a government funding agency, (e.g., requirement to deliver project data to them first)?

YES NO 2. have any outside employment that may result in a potential conflict of interest with this project?

YES NO 3. have any agreement to receive financial benefits from the research conducted under this project beyond what is described in the proposal budget submitted to the University?

Do you have a direct or indirect interest in a private firm conducting business in an area that is closely related to the research work conducted under this project, and:

YES NO 4. have a direct or indirect investment of more than $10,000 or 5% of a company's equity (whichever is less), or

YES NO 5. hold a position as a director, officer, partner, trustee, employee, or any other position of management in the company, or

YES NO 6. have a spouse, communal partner, or dependent child owning directly, indirectly, or beneficially an interest of more than $10,000 or 5% in a company's equity (whichever is less), or

YES NO 7. have a consulting agreement of more than $5000 per year in an area that is closely related to the key person’s sponsored research?

Are you aware of any other potential or actual conflict of interest situations in this project?

Except as answered above and detailed on the attached sheet(s), I know of no other conflict situations. I will report any changes in accordance with the policy.

Signature of Principal Investigator ___________________________ Date ___________________________ 5/17/98

COI Form 8/95
**Title of Proposed Project:**
Supplement to LTER Network Office Grant for International LTER Activities

**Requested Amount:** $137,585

**Proposed Duration (1-80 Months):** 9 months

**Requested Starting Date:** 5/15/98

**P.I./PI/PD Department:** Department of Biology
**P.I./PI/PD University:** University of New Mexico
**P.I./PI/PD Fax Number:** 505.272.7080

**Names (Typed):**
- Social Security No.: *
- High Degree, Yr: Ph.D.
- Telephone Number: 505.272.7316
- Electronic Mail Address: RWaide@LTRnet.edu

**Notes:**
THE FULLY SIGNED CERTIFICATION PAGE MUST BE SUBMITTED IMMEDIATELY FOLLOWING THIS COVER SHEET

*SUBMISSION OF SOCIAL SECURITY NUMBERS IS VOLUNTARY AND WILL NOT AFFECT THE ORGANIZATION'S ELIGIBILITY FOR AN AWARD. HOWEVER, THEY ARE AN INTEGRAL PART OF THE NSF INFORMATION SYSTEM AND ASSIST IN PROCESSING THE PROPOSAL. SSN SOLICITED UNDER NSF ACT OF 1950, AS AMENDED.*
CERTIFICATION PAGE

Certification for Principal Investigators and Co-Principal Investigators

I certify to the best of my knowledge that:

(1) the statements herein (excluding scientific hypotheses and scientific opinions) are true and complete, and
(2) the text and graphics herein as well as any accompanying publications or other documents, unless otherwise indicated, are the original work of the signatories or individuals working under their supervision. I agree to accept responsibility for the scientific conduct of the project and to provide the required progress reports if an award is made as a result of this application.

I understand that the willful provision of false information or concealing a material fact in this proposal or any other communication submitted to NSF is a criminal offense (U.S. Code, Title 18, Section 1001).

Name (Typed) | Signature | Date
--- | --- | ---
PI/PD Robert B. Waide | Robert B. Waide | 5/7/98
Co-PI/PD
Co-PI/PD
Co-PI/PD
Co-PI/PD

Certification for Authorized Organizational Representative or Individual Applicant

By signing and submitting this proposal, the individual applicant or the authorized official of the applicant institution is: (1) certifying that statements herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and conditions an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding Federal debt status, debarment and suspension, drug-free workplace, and lobbying activities (see below), as set forth in the Grant Proposal Guide (GPG), NSF 95-27. Willful provision of false information in this application and its supporting documents or in reports required under an ensuing award is a criminal offense (U.S. Code, Title Section 1001).

In addition, if the applicant institution employs more than fifty persons, the authorized official of the applicant institution is certifying that the institution implemented a written and enforced conflict of interest policy that is consistent with the provisions of Grant Policy Manual Section 510; that to the best of his/her knowledge, all financial disclosures required by that conflict of interest policy have been made; and that all identified conflicts of interest will be satisfactorily managed, reduced or eliminated prior to the institution’s expenditure of any funds under the award, in accordance with the conflict of interest policy. Conflicts which cannot be satisfactorily managed, reduced or eliminated must be disclosed to NSF.

Debt and Debarment Certifications  
(If answer "yes" to either, please provide explanation.)

Is the organization delinquent on any Federal debt? Yes ☐ No ☒

Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal Department or agency? Yes ☐ No ☒

Certification Regarding Lobbying

This certification is required for an award of a Federal contract, grant or cooperative agreement exceeding $100,000 and for an award of a Federal loan or commitment providing for the United States to insure or guarantee a loan exceeding $150,000.

Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer employee of any agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, “Disclosure of Lobbying Activities,” in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements and that all subrecipients shall certify and disclose.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE

NAME/TITLE (TYPEP)
Marjorie Hudson/Contract & Grants

SIGNATURE
Marjorie Hudson

DATE
5/14/98

TELEPHONE NUMBER
505 277 2968

ELECTRONIC MAIL ADDRESS
mhudson@controlr.unm.edu

FAX NUMBER
505 277 5568
INFORMATION ABOUT PRINCIPAL INVESTIGATORS/PROJECT DIRECTORS

Submit only ONE copy of this form with your proposal. Attach it on top of the cover page of the copy of your proposal that bears the original signatures. Leave the back of the page blank. Do not include this form with any of the other copies of your proposal, as this may compromise the confidentiality of the information.

Please check the appropriate answers to each question for all principal investigator(s)/project director(s) listed on the cover page, using the same order in which they were listed there:

<table>
<thead>
<tr>
<th>Principal Investigator/Project Director</th>
<th>First Additional PI/PD</th>
<th>Second Additional PI/PD</th>
<th>Third Additional PI/PD</th>
<th>Fourth Additional PI/PD</th>
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<tr>
<td>1. Is this person</td>
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</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
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<tr>
<td>Male</td>
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<tr>
<td>2. Is this person a</td>
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<tr>
<td>U.S. Citizen</td>
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<tr>
<td>Permanent Resident</td>
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<tr>
<td>Other non-U.S. Citizen</td>
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<tr>
<td>3. Which one of these categories best describes this person’s ethnic/racial status? (If more than one category applies, use the category that most closely reflects the person’s recognition in the community.)</td>
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<tr>
<td>American Indian or Alaskan Native</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black, not of Hispanic Origin</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Pacific Islander</td>
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<td></td>
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<tr>
<td>White, not of Hispanic Origin</td>
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<tr>
<td>4. Does this person have a disability* which limits a major life activity?</td>
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<tr>
<td>Yes</td>
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<tr>
<td>No</td>
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</tbody>
</table>

Check here if this person does not wish to provide some or all of the above information

Required: Check here if this person is currently serving (or has previously served) as PI, Co-PI or PD on any Federally funded project.

AMERICAN INDIAN OR ALASKAN NATIVE: A person having origins in any of the original peoples of North America and who maintains cultural identification through tribal affiliation or community recognition.

ASIAN: A person having origins in any of the original peoples of East Asia, Southeast Asia or the Indian subcontinent. This area includes, for example, China, India, Indonesia, Japan, Korea and Vietnam.

BLACK, NOT OF HISPANIC ORIGIN: A person having origins in any of the black racial groups of Africa.

HISPANIC: A person of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin, regardless of race.

PACIFIC ISLANDER: A person having origins in any of the original peoples of Hawaii; the U.S. Pacific territories of Guam, American Samoa, and the Northern Marinas; the U.S. Trust Territory of Palau; the islands of Micronesia and Melanesia; or the Philippines.

WHITE, NOT OF HISPANIC ORIGIN: A person having origins in any of the original peoples of Europe, North Africa, or the Middle East.

*Disabled: A person having a physical or mental impairment that substantially limits one or more major life activities; who has a record of such impairment; or who is regarded as having such impairment.

WHY THIS INFORMATION IS BEING REQUESTED:
The Federal Government has a continuing commitment to monitor the operation of its review and award processes to identify and address any inequities based on gender, race, ethnicity, or disability of the proposed principal investigators/project directors and co-principal investigators. To gather the information needed for this important task, you should submit a single copy of this form with each proposal; however, submission of the requested information is not mandatory and is not a precondition of award. Any individual not wishing to submit the information should check the box provided for this purpose. (The exception is information about previous Federal support, the last question above.)

Information from this form will be retained by Federal agencies as an integral part of their Privacy Act Systems of Records in accordance with the Privacy Act of 1974. These are confidential files accessible only to appropriate Federal agency personnel and will be treated as confidential to the extent permitted by law. Data submitted will be used in accordance with criteria established by the respective Federal agency for awarding grants for research and education, and in response to Public Law 99-383 and USC 1885c.

NSF Form 1225 (8/93)
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction and Justification</td>
<td>2</td>
</tr>
<tr>
<td>Role of Network Office in ILTER</td>
<td>4</td>
</tr>
<tr>
<td>Types of Activities Covered</td>
<td>4</td>
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<tr>
<td>Strategic Plan for International LTER Activities</td>
<td>6</td>
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<tr>
<td>Overall Goals</td>
<td>7</td>
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<td>Status of ILTER</td>
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<td>Steps in ILTER Development and Networking</td>
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<tr>
<td>Priorities for ILTER Development</td>
<td>11</td>
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<tr>
<td>Division of Effort</td>
<td>14</td>
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<tr>
<td>Projecting Long-Term Needs</td>
<td>19</td>
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<tr>
<td>Budget</td>
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<td>Budget Justification</td>
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Introduction and Justification

Long-term data are now recognized as crucial to our understanding of environmental change and management. Historically, these studies have been difficult to maintain because of the dominance of short-term funding programs, a misconception that long-term studies are merely monitoring, and an emphasis on short-term experimentation or hypothesis testing of specific interactions or processes. The recent review by a special committee of the Ecological Society of America on the Future of Long-term Ecological Data (FLED) called for new initiatives to protect and increase our ability to adequately manage long-term data sets for future scientists. The National Science Foundation responded to the need for support of long-term studies by initiating a program in Long-term Ecological Research (LTER) in 1980. The LTER program has now grown to a network of 21 sites across the continental United States and Antarctica serving as a resource for nearly 1,400 scientists and students (http://www.LTERnet.edu). NSF anticipates adding more sites to the network in upcoming years. This networking of scientists and sites is an important objective for the program and generates an approach to environmental science that complements the normal way science is being performed in academic institutions.

The need for collaborations among the numerous scientists and high-quality programs that are involved in understanding the various areas of our globe is an even stronger argument for the development of a worldwide network of LTER sites and programs. As a result of an international meeting in 1993 to focus exclusively on networking of long-term ecological research, an International LTER (ILTER) Network was formed with a mission to facilitate international cooperation among scientists engaged in long-term ecological research. The main objectives are to:

- Promote and enhance understanding of long-term ecological phenomena
across national and regional boundaries;

- Facilitate interaction among participating scientists across sites and disciplines;
- Promote comparability of observations and experiments, the integration of research and monitoring, and the exchange of data;
- Enhance training and education;
- Contribute to the scientific basis for ecosystem management and improve predictive modeling at larger spatial and temporal scales.

Based on the recommendations of the summit's working groups, directives for the U.S. LTER participation in an International LTER program include the following:

- Assisting in the establishment of networks for long-term ecological research in other countries;
- Creating programs and scientist exchanges between U.S. and foreign LTER sites and networks;
- Developing and operating a communication and data sharing system among an international network of sites.

Each country must assess its own needs and resources if it wishes to involve itself in an ILTER program. Each will have a unique set of opportunities and limitations that are best evaluated by the scientists and policy makers of that country. The typical procedure for a country is for the scientists of that country, along with the funding agencies, to decide whether to endorse the premise that ecology and environmental management are significantly benefited by studies in long temporal and broad spatial scales. A plan is then developed that establishes the context and mission for such studies, identifies sites and programs that will contribute to this mission, and obtains support for implementation and continued maintenance from within that country or international organizations (e.g., World Bank, European Commission). Exchanges of
scientists are encouraged and funded as appropriate by participating countries. It is anticipated that each country's program will be part of a global network of scientists and of scientific information that will advance our understanding of not only local and regional but also global issues and provide solutions to environmental problems at these scales. To that end, considerable effort has been expended by the U.S. Network Office to promote international electronic communication and data management training.

The ILTER Network now provides unparalleled opportunities for cross-site and comparative research efforts on many of the world's ecosystems at levels from genes to landscapes. These global LTER sites function as "research platforms" that lead to interdisciplinary research and extrapolation to larger areas or regions. They provide the scientific basis for management and policy decisions that incorporate social and economic issues, and attract scientists from other sites and networks, expanding the effective "network" of sites. An important goal of the overall effort is to enhance the communication and translation of results to increase the value of the research programs at individual sites and, ultimately, their collective value. We anticipate that the ILTER effort will contribute significantly to other international efforts such as the Global Terrestrial Observing System (GTOS) and the International Geosphere-Biosphere Program (IGBP). GTOS is being formed because we do not know how, where and over what time frame humankind is endangering terrestrial and freshwater ecosystems, and we do not fully understand the role of these ecosystems in global processes. We cannot answer these questions because of a lack of spatially and temporally comprehensive data on the physical environment and on biological processes in these ecosystems. ILTER can complement the scientific process in major ways that will address these concerns.
Role of Network Office in ILTER

The U.S. LTER Network Office must continue to play an important role in the further development and activities of the ILTER Network. From the 1993 International Summit to the present, the Network Office has provided the catalytic efforts to encourage the growth of long-term research in developed and developing countries, the stimulus to focus on research-intensive (research platform) sites as a fundamental way to understand complex systems, and the training/leadership required for electronic communication, networking activities and information management. Without this continuing effort, we feel that ILTER growth would not continue and might regress. Other countries have made it very clear that the U.S. LTER Network Office must continue to play a significant role in the development and continuation of the networking needed for this global research program. The maturation of the ILTER Network has expanded and progressed to the stage where it is now important for the broader LTER and environmental science community to become actively engaged in developing research efforts that promote scientist-to-scientist, site-to-site, and network-to-network interactions. The Network Office remains the primary mechanism to stimulate these follow-up activities.

Types of Activities Covered

The range of activities has been and will continue to be:

- initial activities that promote the development of a long-term research program in additional countries that have been targeted by the ILTER Network Committee;
- developing funding for the initial workshops that bring U.S., other-country, and within-country representatives together to plan for research efforts that benefit all;
facilitating training efforts specifically needed by countries developing an LTER network. A common need is information management, electronic networking, webpage (internet) development for data sharing;

- promoting exchanges of scientists and students, not only between the U.S. and a particular country but among other countries in the ILTER Network;
- serving as a clearing house for information on the ILTER Network, providing web server facilities to allow connectivity to the servers for the LTER programs of different countries;
- developing interactions between ILTER and other international activities such as GTOS, IGBP, GCTE that have specific research efforts and information needs; and
- developing international data and metadata standards to allow data sharing, access to massive data sets (e.g., remote sensing imagery), and access to the high performance computing (e.g., San Diego SuperComputer Center) that will facilitate analyses, visualization, and modeling of global research efforts.

Strategic Plan for International LTER Activities

The rapid growth of the LTER Networks around the world requires the development of a strategic plan to guide the expenditure of ILTER resources. Since the initial ILTER organizational meeting in 1993, 15 countries have developed networks dedicated to the study of long-term ecological processes (Figure 1). Another nine countries are in the process of developing such networks. The spectacular growth of the ILTER network of networks has been facilitated by the efforts of the Chair of the U.S. LTER Coordinating Committee, the Network Office, and a small number of LTER scientists, generously supported by the National Science Foundation. However, given
ILTER Network Countries
- Brazil
- Canada
- China
- Colombia
- Costa Rica
- Czech Republic
- Hungary
- Israel
- Korea
- Poland
- South Africa
- Taiwan
- United Kingdom
- United States
- Uruguay
- Venezuela

Countries in the process of developing a LTER network, awaiting formal recognition from their governments
- Australia
- Egypt
- Japan
- Mexico
- Mongolia
- Morocco
- Paraguay
- Portugal
- Spain

Countries expressing interest in developing a network of LTER sites
- Argentina
- Bolivia
- Chile
- Ecuador
- France
- Indonesia
- Italy
- Kenya
- Namibia
- Panama
- Peru
- Switzerland
- Tanzania

Figure 1
the anticipated growth of ILTER, it is necessary to focus the limited amounts of time and funds available on those tasks that will bring us closer to realizing the overall goals of the ILTER effort. The strategic plan described below provides that focus by identifying the priorities and timeline for future ILTER activities and allocating human resources to carry out these activities.

**Overall Goals**

The Ten-Year Review of the LTER Program (Risser 1993) challenged the U.S. LTER community and NSF to create a global network of 100 sites dedicated to long-term ecological research. The development of such an international network was seen as a mechanism to break down national boundaries that often proscribe the scope of ecological studies. In addition, the existence of a global network of sites conducting long-term ecological research was viewed as a needed tool to address issues of global change that have increasingly dominated the attention of ecologists and policy-makers.

The development of an international network of networks is only the first goal of the ILTER effort; the linking of scientists, sites, and networks through a well thought out global research strategy is the ultimate objective of the International LTER program.

**Status of ILTER**

Risser (1993) called for a global network of 100 sites, 50 in the United States and 50 in other countries. The U.S. LTER Network has at present 21 sites, with reasonably good expectations of increasing that number within the next few years. Moreover, increasing interest in the LTER concept from other Federal agencies offers the possibility of augmenting the U.S. Network through the inclusion of sites funded from non-NSF sources. The achievement of a network of 50 sites remains the goal of our national efforts.
The growth of international LTER sites has already exceeded the standard proposed by Risser (1993) in the five years since the initiation of ILTER efforts. Two hundred and thirty-nine LTER sites now exist outside of the United States, and this number is expected increase by half again in the next few years. These sites all have official recognition from their national governments and allocations of funds. Although the selection process for sites has varied depending on the needs of each country, ILTER sites share a common dedication to understanding local ecological processes that act on long time scales and to linking that understanding at regional, continental, and global scales.

During the first ILTER Workshop, held in conjunction with the 1993 All Scientists Meeting in Estes Park, Colorado, an International LTER Network Committee was formed that identified 10 regions of the globe to provide the focus for ILTER activities (Figure 2). Growth of national networks and the development of regional infrastructure have been more rapid in some of these regions than in others. In geographic regions with several national networks (East Asia/Pacific, North America, Latin America, Central Europe), regional networks have formed that provide the first step toward large-scale comparison and synthesis of results. For example, the Central and South America/Caribbean region now has networks in Costa Rica, Colombia, Venezuela, Brazil, and Uruguay. Three regional conferences have already been held (Puerto Rico, Costa Rica/Panama, and Brazil) and a fourth is planned for Venezuela in June, 1998. The East Asia/Pacific Regional Network (including Mongolia, Eastern Russia, and Australia/New Zealand) will hold its third regional meeting in Korea in 1999. The North American Region (Canada, Mexico, and the U.S.) and the Central European Region (Poland, Hungary, and the Czech Republic) will hold their initial regional meetings later this year.

Three other regions (Africa, the Iberian Peninsula, and the Middle East) have at least two developing national networks (Figure 1). Other countries in the African and Middle
Eastern Regions have expressed interest in the LTER concept, but these countries have yet to hold organizational meetings or receive visits from U.S. LTER scientists. Appropriate venues are being sought to disseminate information about the importance of long-term ecological research in these countries.

Little progress has been made in developing the LTER concept in the Western Europe/Scandinavia or Western Former Soviet Union Regions. The United Kingdom has a functioning network, and groups in France, Italy, and Ukraine have expressed interest in the ILTER program. Jim Gosz gave a presentation to the Life and Environmental Sciences Committee of the European Science Foundation in February, 1998, but to date this organization has not decided whether to support regional LTER efforts in Western Europe. We expect that interest in LTER will increase as a result of the ILTER symposium to be held at the INTECOL meeting in Florence in July and the involvement of ILTER/U.S. LTER in the Global Terrestrial Observing System (GTOS) that has support in Europe.

Steps in ILTER Development and Networking

The development of effective international research networks is a process that requires time, effort, and coordination. The steps required to encourage the development of LTER networks were addressed first at the 1993 International Summit and have been refined through experience gained since that meeting. We recognize a sequence of seven steps that are necessary for the formation of a national network, the linking of that network to other networks, and the initiation of large-scale scientific activities. The proximate goal of this exercise is to strengthen long-term ecological research at many sites throughout the world and to link these international sites with U.S. scientists and sites. The ultimate goal of network development is to provide a sufficiently large group
of sites to be able to understand ecological processes acting at broad scales. The following sequence of activities is necessary to achieve these goals.

1. Identify targeted region

Because of limited human and financial resources, the development of ILTER must focus on regions sequentially. This approach was used to encourage the formation of regional networks in East Asia, Central Europe, and, most recently, Latin America. By initiating ILTER activities in several countries in a region simultaneously, we benefit from uniform development of sites and national networks. Parallel growth of national networks in an area facilitates regional linkages and promotes efficient use of developmental resources by taking advantage of multinational meetings and workshops. This strategy, however, results in regional networks that are at different levels of maturity.

2. Develop and sustain site-to-site and scientist-to-scientist links

Successful network development requires partnerships between scientists from mature and developing LTER sites. These partnerships must be initiated through the identification of individuals on each side who are dedicated to international cooperation and must be fostered initially through meetings and workshops designed to develop national research themes, enhance connectivity, and secure stable funding. Cooperative research ventures among individuals and sites are an important goal at this stage of development.

3. Provide support for development of national networks

The formation of national networks benefits from the involvement of individuals associated with mature networks. These individuals provide experience in network development and management and can often suggest strategies to obtain funding.
Developing a functioning network from a group of unrelated sites is a key challenge that requires significant assistance, particularly in the areas of information management, acquisition and use of remotely-sensed data, and cross-site synthesis. Targeted workshops and short-term visits by technical experts are the most profitable activities at this stage. In addition, reciprocal visits by senior and junior scientists help to promote cohesiveness in national networks and network-to-network interactions.

4. Identify and link key countries

The most advanced countries in each region need to take the lead in forming regional networks. This process can be facilitated by participation of U.S. scientists in regional workshops and planning meetings. Invitation of lead scientists from ILTER networks to U.S. LTER meetings can also promote connectivity.

5. Encourage regional cohesiveness

At some point in their development, regional networks become too large to be treated as individual national networks and must develop a structure to interact with other regional networks. Selection and involvement of a regional representative to the ILTER Network Steering Committee is one of the steps in this process. The U.S. LTER can assist by proposing international research initiatives and identifying appropriate sources of funding. This may require jointly funded planning workshops.

6. Encourage global networking (GTOS and similar efforts)

Affiliation with existing global networks, such as the Global Terrestrial Observing System (GTOS), can provide benefits to developing LTER sites and networks. For example, participation in GTOS makes sites eligible to receive satellite images free of cost from new sensors developed by NASA. Mature LTER networks can help developing networks affiliate with these initiatives and can provide technical expertise for taking full
advantage of the benefits. The U.S. Network Office can function as a point of contact and clearing house for such initiatives. Such activities also will stimulate the development of standards for data collection, data sharing, and cross-site and cross-country analyses.

7. Initiate global scientific activities

The development of global scientific endeavors is the ultimate and most difficult challenge for the ILTER effort. To date, no such activities have been agreed upon except for those associated with other global networks. However, ILTER Networks are maturing rapidly, and the next logical step is to identify and bring about a global-scale ecological experiment. We propose to address this challenge at the next LTER All-Scientists Meeting to be held August 2-5, 2000, at Snowbird, Utah. Participation of representatives from regional LTER networks will be crucial to the success of this meeting.

Priorities for ILTER Development

Although the steps outlined above provide a framework for planned development of ILTER networks, the actual course of such development is dependent on a series of factors that cannot be predicted, much less controlled. Each developing national network proceeds at its own pace and with its own objectives, with the result that the assistance the U.S. LTER Network can offer will often be in response to unanticipated overtures from developing networks. Because developing networks exist in varying states of maturity and connectivity, the U.S. LTER community is presently involved in activities directed at all of the seven steps outlined above. Given these constraints, however, it is critical to establish priorities for the development and linkage of ILTER networks in order to maximize the scientific results from these efforts. The priorities for
each LTER region described below will be subject to periodic revision as regional networks mature.

Africa

National networks that are forming in Morocco and South Africa should be the focus of scientific exchanges in the near future. Opportunities to initiate LTER activities in other African countries (Kenya, Tanzania, Namibia) should be sought. At present, development of a regional network appears to be a more distant goal.

Central and South America/Caribbean

The next important step in this region is the encouragement of LTER development in several key countries (Argentina, Chile, Ecuador) that have not yet received targeted attention. Presentations by NET personnel followed by scientific interchanges are the planned activities. Regional networking will continue to develop at the Latin American Regional Information Management meeting to be held in Venezuela. Consolidation of networks in Colombia, Uruguay, and Bolivia will require technical assistance and the initiation of scientific interchanges.

North America

While we await the formal establishment of the Mexican network that was stimulated by binational workshops organized by Terry Yates of the Sevilleta LTER site, regional activities will be initiated at a workshop involving the U.S., Canada, and Mexico in Guadalajara in November, 1998. We anticipate that this workshop will generate plans for international experiments, future meetings, and a strategy for the development of a North American Regional LTER effort.
East Asia/Pacific (including Mongolia, Eastern Russia, and Australia/New Zealand)

The principal focus in this region will be on regional network development, with an emphasis on re-engaging Australia/New Zealand in the ILTER process. Meetings planned for China (CERN anniversary) and Korea (regional ILTER) during the next year will provide the mechanism for this effort. Direct assistance from NET and U.S. LTER personnel as well as scientific interchanges are needed to facilitate network development in Japan, Mongolia, and Korea. The LTER concept will be allowed time to mature in other countries (e.g., Indonesia, Vietnam, Philippines, Singapore, Malaysia, Eastern Russia, New Zealand, Australia) where it has been introduced.

Central Europe

Network-to-network interactions will be encouraged through participation by a U.S. contingent in the meeting of the International Association of Landscape Ecologists (IALE) in Prague and a workshop in Poland immediately following the IALE meeting. We plan on vigorously pursuing potential collaborative activities that follow from this meeting. One such activity is the development of a workshop to stimulate a regional cooperation by countries in and adjacent to the Carpathian Basin. We are arranging for other LTER scientists to be involved and lead the development of the workshop.

Iberian Peninsula

Developing networks in Spain and Portugal will be allowed time to mature and offered such assistance as they deem valuable. The most recent request from Francisco Andrade of Portugal was for assistance in promoting the concept and need for an LTER program to new appointees in the funding agency in Portugal.
An international workshop to develop the scientific program for a network of sites in Israel in March, 1998, and a future workshop on biodiversity to be held in Israel in June, 1999, have provided opportunities for scientific exchange with the U.S. Network. We will pursue opportunities to introduce the LTER concept to other countries in the region. The Sandia National Lab has offered personnel and funding assistance to help develop collaborative efforts among the countries in this region. A senior Sandia Lab manager recently traveled to Israel to visit their LTER sites and offer assistance in the development of a regional LTER effort.

Western Former Soviet Union

Opportunities to introduce the LTER concept in the region will be pursued, beginning with the Ukraine, where the scientific community has shown particular interest. The establishment of national and regional networks will be a long-term process.

Western Europe/Scandinavia

We anticipate that the ILTER Symposium to be held at the INTECOL meeting in Florence will stimulate interest in ILTER in this region. We are actively following up on expressions of interest from French scientists, and we plan to take the initiative to introduce the LTER concept in Germany and Scandinavia. We believe that this region has great potential for ILTER development and that we must devote more attention to encouraging this development. We plan visits by NET and U.S. LTER personnel followed by scientific exchanges to be held over the next few years.
Division of Effort

Partners in the development of ILTER Networks include the ILTER Network Committee, the U.S. LTER Network, the U.S. LTER Network Office, and the national funding agencies that support long-term ecological research. The rapid proliferation of ILTER Networks can be sustained only if each of these partners assumes part of the burden of guiding this development. We propose below what we believe to be a reasonable division of effort among the partners in ILTER, given the present status of the program. This division of effort will be reviewed periodically as the scope of the program changes.

The Chair of the U.S. LTER Coordinating Committee and the ILTER Steering Committee will be responsible for the following activities:

- ILTER Regional and Global Management, including representing the U.S. LTER Network at regional and global meetings
- Ceremonial activities related to the establishment of new networks
- Exploratory contacts with countries without LTER Networks when and where opportunities present themselves
- Support relating to the development of networks in North America, Central and Western Europe, Middle East, East Asia/Pacific

The Executive Director and staff of the U.S. LTER Network Office have the responsibility for supporting the development of ILTER in general as well as specific responsibilities relative to ILTER regions:

- Organizing and supporting ILTER meetings and seeking funding for these meetings
- Helping to develop connectivity and information management capabilities among ILTER sites and networks
- Exploratory contacts with countries without LTER Networks when and where opportunities present themselves
- Support relating to the development of networks in Central America, South America, the Caribbean, Iberian Peninsula, and Africa. The Executive Director will focus on northern South America and the NSF detaillee on southern South America (see below)

**Christine French of NSF’s Division of International Programs** has been temporarily assigned to the LTER Network Office to facilitate international LTER activities. With the assistance of NET staff, Ms. French will be responsible for the following activities:

- **Information Resource**: Provide advice about NSF/INT priorities and procedures. Promulgate information about scientific characteristics and opportunities at foreign LTER sites. Promulgate information about other international activities and organization relevant to LTER objectives. (Via web, directed e-mail, CC meetings, network newsletter)

- **Exploratory Contacts**: Respond to inquiries from foreign scientists interested in LTER; maintain or seek additional contacts within countries that have shown some interest in LTER but not yet established national networks

- **Point of Contact for National Networks**: Act as first point of contact for most business matters addressed to NET or U.S. LTER Chair by members of ILTER Network; assign, consult/forward or handle as appropriate. Work with national networks in each region to encourage local coordination via regional networks. Work within U.S. Network to promote key links to particular foreign national networks.

- **Coordinator of Regional Workshops and Annual LTER meeting**: Provide principal liaison between U.S. Network and organizers of regional ILTER meetings, coordinating any U.S. participation including seeking site scientists to represent
relevant U.S. Network activities. Seek to streamline annual ILTER meetings by implementing CC concept involving regional network representatives. On behalf of ILTER Network Chair (currently from the U.S. network), organize participation of U.S. and non-host country representatives in annual ILTER meeting.

- Facilitator for Student Activities: Work with LTER Student Representatives and site representatives to establish means for communicating with LTER students as a group. Survey students about their international interests and needs. Work with site directors in U.S. and national coordinators in Asia to arrange reciprocal student exchange program for 1998 and 1999. Design, advertise and implement competition for U.S. student participants. Seek to expand exchange opportunities to other regions of the world, reflecting interests expressed by scientists and students from U.S. sites.

- Support Development of Networks: Within scope of priorities expressed in U.S. Network planning document, assume principal responsibility for encouraging and assisting the development of national networks in Chile and Argentina.

The members of the **U.S. LTER Executive Committee** can assist the Chair of the U.S. Coordinating Committee and the Executive Director of the Network Office in their ILTER responsibilities. In particular, members of the Executive Committee can substitute when the Chair and Executive Director are unable to attend scheduled ILTER functions. In addition, members of the Executive Committee can provide advice and guidance to developing ILTER networks in countries with which they are familiar. Specific opportunities to promote ILTER development include:

- Supporting developing ILTER Networks by representing the U.S. LTER at meetings and workshops
- Exploring opportunities to develop LTER Networks in countries that presently do not have such networks
- Identifying scientists within the U.S. LTER Network who are capable of developing site to site and scientist to scientist contacts with ILTER networks

The Principal Investigators of the 21 LTER sites have specialized knowledge about the management of long-term research programs that can be used to facilitate the development of ILTER networks. In addition, they are familiar with science being conducted at their sites and site personnel and are therefore in an excellent position to identify potential cross-site studies. Principal investigators can strengthen ILTER in the following ways:

- Initiating and sustaining site-to-site activities by identifying likely partners, encouraging scientific interchanges, and seeking funds for such interchanges
- Distributing information about the U.S. LTER Network at international meetings
- Assisting their counterparts in developing networks to formulate research and management plans

The members of the standing Committee on Information Management have been among the most active participants in developing connectivity and cross-site research. The special skills that these scientists possess are of great value to developing networks. With the assistance of the Associate Directors for Information Management (James Brunt) and Technology Development (John Vande Castle) of the Network Office, site information managers can contribute to the advancement of ILTER by:

- Disseminating examples of protocols for information management and assisting in the training of information managers from developing networks.
- Providing expertise for the development of connectivity within new ILTER networks
• Establishing and maintaining network-to-network connectivity

**Site Investigators and their graduate students** are crucial representatives of the U.S. LTER Network. By far the most international contacts are made by this group of LTER scientists through the dissemination of their LTER results at scientific meetings and through publications. LTER investigators can advance the development of ILTER by promoting long-term research and the development of networks among their international colleagues. They can further contribute to the development of a global LTER network by carrying out international comparisons and encouraging such studies among their students. LTER scientists are the most important players in the establishment of meaningful scientific partnerships between the U.S. LTER and ILTER Networks.

**Projecting Long-Term Needs**

In this proposal, we request funding to assist in the development of international LTER Networks with an eventual goal of initiating global measurements and experiments using this network of networks. As a context for our request, we present above a strategic plan for the development of international LTER activities, a tactical plan for network development within a region, a set of regional priorities for network development, and a description of the division of effort needed to carry out these activities. We believe that this document provides a framework for the present request and a base for future ILTER activities. We further believe that it is prudent to establish jointly with the National Science Foundation long-term projections for funding ILTER activities. For example, the next LTER All Scientists Meeting is scheduled for August, 2000, and planning for international workshops to be held in conjunction with this meeting should begin soon.
To aid in long-term planning, we recapitulate below the priorities for each ILTER region and the specific activities that we anticipate. We welcome commentary regarding the scope of these efforts from relevant NSF program officers. We recognize the importance of keeping the National Science Foundation informed of the results of the activities described below. We plan to do this through a variety of formats, including individual trip reports, separate reports from funded workshops, a section of the annual report prepared by the Network Office, and semi-annual briefings associated with LTER Executive Committee meetings in Washington.

Africa:

Africa has been identified as a target region (step 1), and two activities (South Africa and Morocco) have been initiated.

South Africa - Trips to discuss the LTER/ILTER concept and program have been performed by Jarres Gosz and Robert Waide during the past two years. The scientific community endorsed the concept at a meeting sponsored by the Foundation for Research Development (FRD). An invitation by South Africa to host the next ILTER Network Committee meeting has been accepted and is being planned. That ILTER meeting in Durban, South Africa, will provide the opportunities for the next steps of encouraging regional interactions in southern Africa and promoting scientist-to-scientist and site-to-site interactions between the U.S. and South Africa. We anticipate the development of more specific workshops on a range of scientific issues over the next five years that will develop collaborative research projects with U.S. scientists. These will be led by co-organizers from both the U.S. LTER community and the South African scientific community.

Morocco - The northern region of Africa is at an earlier stage of development, and the initial trip to Morocco (Rabat) is being planned to present the LTER and ILTER concepts. Morocco is the headquarters for a regional networking effort (ROSELT) that
will aid the development of ILTER regional networking in that area. We anticipate the
next steps in the ILTER development of this region will be for introductory workshops
with scientists in the region to formulate network level research programs and the
identification of training needs and research opportunities for U.S. scientists. We have
identified several individuals in the U.S. who would be appropriate to lead these
workshop efforts. We expect regional efforts to be developed within the next five years
as well as active participation of scientists following workshops during that interval.

Central/South America:

Progress has been rapid in Latin America during the recent two years, with a
number of countries developing LTER Networks and regional efforts to develop a Latin
American Regional LTER Network. We are at a stage where training in information
management is needed for countries with established programs (planned for this year)
followed by the specific development of U.S. and Latin American scientist collaboration.
The countries of Brazil, Venezuela, Uruguay and Costa Rica are at this stage, and
subsequent workshop efforts will be aimed at developing scientist-to-scientist
interactions. Networking activities also will be developed as these countries formalize
their internal electronic networking activities following the workshop this summer.

A number of countries are at the earlier stage of finding national leaders who will
stimulate the development of LTER research efforts. An initial trip has been made to
Bolivia, and Chile and Ecuador have had individuals participate in ILTER Network
meetings. Next steps for these countries would involve the development of workshops
to present the LTER/ILTER concept to a broader range of scientists to advance the
support for this approach in the scientific community and in funding agencies. These
workshops also would involve U.S. scientists who would encourage the development of
collaborative research efforts.

Colombia’s unique in that it developed the concept of an LTER Network without
U.S. involvement. The next steps for this country involve the development of regional efforts and participation in the Latin American Regional LTER effort. We expect that this will require a trip to discuss the regional development issues as well as potential interactions among Latin American and U.S. scientists. We also anticipate the need to host or co-organize a workshop with Colombia to involve the scientific communities of Colombia and the U.S.

Argentina is a country that is at the earliest stage, in that a visit is being planned to present the LTER/ILTER concept. A number of U.S. scientists already have interactions with Argentinean scientists, and we will involve those individuals in the development of presentations and workshops. We anticipate a need to involve scientists from Argentina in the Latin American regional efforts/workshops/annual meetings to build the interactions that will lead to regional cohesiveness for this country.

**North America:**

Canada (EMAN) has an active program and is eager to develop a more regional effort with the U.S. and Mexico. The meeting in Mexico will stimulate a number of efforts/strategies to develop scientist-scientist and site-site collaborations. As Mexico brings its LTER Network on line over the next several years, there will be opportunities to involve scientists from the U.S. and Canada directly in their research efforts. The basis for electronic communication and networking is quite good, and the interest in collaborating will facilitate future developments. We expect a number of interactions/workshops over the next five years that will be stimulated by different agencies in the three countries, similar to the meeting being planned in Mexico this fall. There are good interactions among the scientists of the three countries at present, and the major challenge is to organize efforts to allow regional comparisons and integration. A special effort or student exchanges is anticipated over the next several years to help develop the long-term potential for cross-site studies and interactions.
East Asia/Pacific:

The countries of China, Taiwan and Korea have made good progress in developing LTER Networks, and Taiwan has been stellar in leading the development of a regional Asia-Pacific LTER Network. They are organizing regional LTER meetings without stimulation from the U.S., and we expect they will continue. The most important need for those countries at this time is the support of the U.S. scientific community in terms of collaborators and demonstrating of how LTER science can be used to solve environmental problems. The workshop in China this autumn is designed to accomplish that goal. We anticipate that U.S. scientists will be invited to these country-specific and regional workshops, and it is important for the U.S. to continue to be involved scientifically. We anticipate that this role will be played by scientists in the LTER community that develop collaborative research efforts in those countries.

Mongolia - There is extreme interest in Mongolia in developing an LTER Network, and the trip planned for this summer will help promote that development. Other activities with U.S. scientists are being planned to formulate collaborative research efforts, provide training and develop student exchanges. We anticipate additional workshops over the next five years that will address an array of scientific issues. These efforts will be co-organized by scientists in Mongolia and other Asian countries and the U.S. As the communication infrastructure becomes better developed in Mongolia, there will be increased opportunities for networking in the region and developing regional cohesiveness. There is strong leadership in the U.S. (Clyde Goulden, Dennis Ojima) for the development of interactions with Mongolia, and we anticipate these individuals will continue in that role over the next five years.

Australia/New Zealand - After initial expressions of interest in ILTER, these countries did not make the same level of progress as other Asia-Pacific countries. We have had recent expressions of renewed interest by scientists from both countries and
the meeting in Florence (INTECOL) will allow continued development of interactions with ILTER. A representative of Australia (Mick Brown) is leading the development of an LTER Network in Australia and will be at the ILTER Network meeting in Florence. We anticipate a workshop in the next several years that will concentrate on developing collaborative scientific projects and encourage regional cohesiveness for these countries.

Central Europe

Three programs (Hungary, Czech Republic and Poland) form the basis for a regional effort, and the workshops planned for this autumn (IALE, Czech Republic, and Poland) will reinforce regional cohesiveness. Efforts to develop collaborative research with U.S. scientists are in progress, and we anticipate the preparation of research proposals by U.S. scientists to continue those interactions. The LTER Network will continue to stimulate individual scientists to develop workshops and research projects on both sides.

Ukraine, Slovakia and Romania represent countries at the early stage of the ILTER effort. A trip is being planned for Ukraine to promote the development of LTER sites in that country, and individuals are being invited to the ILTER Network meeting in Florence to facilitate this interaction. We anticipate the need to develop workshops in these countries to stimulate the scientific communities and funding agencies to support this effort, as well as the opportunity to involve U.S. scientists in projects.

A separate activity is being developed (not requested in this supplement) under the leadership of Kate Lajtha to organize a workshop for the development of a regional program for the Carpathian Basin. This activity is a result of the workshop efforts currently being developed. We anticipate additional regional workshops that directly involve U.S. scientists in this region and the development of training activities and student exchanges.
Western Europe/Scandinavia/Iberia

A number of activities in Western Europe will facilitate the interaction of those countries in ILTER and the Global Terrestrial Observing System (GTOS). The U.K. is taking a leadership role in the development of a European Network (NoLIMITS) that will develop collaborative research efforts with ILTER countries and GTOS. The U.S. LTER Network Office now is actively engaged with GTOS. An additional interaction is planned specifically with France following their expression of interest in developing an LTER Network and the identification of several people who would lead that effort. A trip to promote the LTER/ILTER concepts is planned, and we anticipate several workshops over the next five years with countries such as France, Germany, and Italy to promote the development of collaborative research projects with U.S. scientists. The meeting in Florence, Italy, will provide an excellent opportunity to stimulate the support needed for a network of sites in Italy.

Iberia - Progress was made following the trips to Portugal and Spain two years ago, and there was support for the development of LTER Networks in both of those countries. Subsequently, changes in government and funding agencies have slowed further progress. The leaders of those respective efforts (Francisco Andrade - Portugal, Francisco Garcia-Novó - Spain) have requested help in presenting the LTER/ILTER concept to these new government officials. We anticipate some travel that would repeat the early stages of fostering LTER Networks. Sites have tentatively been identified for networking, and after successful promotion of LTER efforts, these countries should make progress. A number of U.S. scientist interactions have occurred in these countries, and we anticipate the development of collaborative research efforts. The GTOS meeting in Spain last year and another meeting of GTOS in Spain this year will help stimulate LTER progress.

Scandinavia - This is a region that is at the early stage of ILTER development
because it is a region that was last in the sequence of target regions. We anticipate, following a visit to Sweden, that we will initiate a workshop that will present the LTER/ILTER concept. There are many U.S. scientists working in this region, and we anticipate great interest in leading other collaborative research efforts.
**SUMMARY**

**PROPOSAL BUDGET**

**ORGANIZATION**
University of New Mexico

**PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR**
Robert B. Walde

### A. SENIOR PERSONNEL: PI/PD, Co-P’s, Faculty and Other Senior Associates
(List each separately with title. A.7. Show number in brackets)

<table>
<thead>
<tr>
<th>Calculated</th>
<th>Acquired</th>
<th>Summarized</th>
<th>Proposer Requested</th>
<th>Grant Funded</th>
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<td>SUMR</td>
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6.  ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET EXPLANATION PAGE)  
7.  ( ) TOTAL SENIOR PERSONNEL (1-6)

### B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)

<table>
<thead>
<tr>
<th>Description</th>
<th>Calculated</th>
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<th>Grant Funded</th>
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<td>6. ( ) OTHER</td>
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</table>

TOTAL SALARIES AND WAGES (A + B)

### C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)

### D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)

TOTAL EQUIPMENT

### E. TRAVEL
1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)  
2. FOREIGN  

F. PARTICIPANT SUPPORT COSTS
1. STIPENDS  
2. TRAVEL: $99,320  
3. SUBSISTENCE  
4. OTHER  

( ) TOTAL PARTICIPANT COSTS

G. OTHER DIRECT COSTS
1. MATERIALS AND SUPPLIES  
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION  
3. CONSULTANT SERVICES  
4. COMPUTER SERVICES  
5. SUBAWARDS  
6. OTHER

TOTAL OTHER DIRECT COSTS

### H. TOTAL DIRECT COSTS (A THROUGH G)

I. INDIRECT COSTS (F&A) (SPECIFY RATE AND BASE)
48% of INC less Participant Support

TOTAL INDIRECT COSTS (F&A)

### J. TOTAL DIRECT AND INDIRECT COSTS (H + I)

### K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECT SEE GPG II.D.7.J.)

### L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)

$137,585

M. COST-SHARING: PROPOSED LEVEL $  

**PI/PD TYPED NAME AND SIGNATURE**
Robert B. Walde

**ORG. REP. TYPED NAME & SIGNATURE**
Marjorie Hudson

**AGREED LEVEL IF DIFFERENT: $**

**DATE: 5/7/98**

**FOR NSF USE ONLY**

**INDIRECT COST RATE VERIFICATION**

**DATE**

**Date Checked**

**Date of Rate Sheet**

**Iniitis-ORG**

*SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.3)*

NSF Form 1030 (10/97) Supersedes All Previous Editions
Budget Justification

We describe below each of our requests for funding for international LTER travel (Table 1). We include the purpose, location, dates, and cost of each trip, a brief description of the history and goals of the activity, and information regarding relevant contacts with NSF. Most of the identified activities have been presented to NSF programs and divisions prior to this supplement request to make sure the activity was appropriate for funding and the efforts of the Network Office. We group our requests by region. Some of the travel has already taken place, and we include descriptions and costs for these trips to provide an historical context for our request.

Africa

SUPPORT FOR FORMATION OF NETWORK - South Africa, March 18-22, 1998 -

$3,562 spent from 1997 NET award

Bob Waide was invited to attend a meeting of representatives of South African scientific societies to discuss the formation of an LTER Network in that country. The meeting was organized by Johan Pauw of the Foundation for Research Development, who covered in-country expenses for Waide’s trip. Waide made two presentations, one on the status of the ILTER network and the other on models for the development of an LTER network. He also participated in a discussion that led to the consensus among the participants to go forward with developing an LTER Network in South Africa. A committee was formed to begin planning for network development, and as its first action extended an invitation to the ILTER Network Committee to meet in Durban in 1999 in conjunction with the annual meeting of the Quaternary Society. This invitation was made formally to the LTER Executive Committee by Dr. Norman Owen-Smith at the April, 1998, Coordinating Committee meeting.
TABLE 1. HISTORY OF AND PROJECTIONS FOR INTERNATIONAL LTER ACTIVITIES

The first column represents travel funded out of the Network Office award; the last two columns form the request to NSF. These two columns are summed by region (in bold). Shaded rows reflect travel already completed.

<table>
<thead>
<tr>
<th>Trips by Region, Destinations, and Date</th>
<th>Use of Annual LTER Award</th>
<th>Request for NET staff and Gosz</th>
<th>Request for LTER scientists and others</th>
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<tbody>
<tr>
<td>Africa/Middle East</td>
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<td>Israel – April 1998</td>
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<td>Morocco - Fall 1998</td>
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<td>*South Africa, Annual ILTER - July 1999</td>
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<td>Central/South America $31,000</td>
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<td>Venezuela - September 1997</td>
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<td>Bolivia - February 1998</td>
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<td>Colombia/Ecuador - 1999</td>
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<td>Canada EMAN – January 1998</td>
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<td>Ukraine - Winter 1998</td>
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<td>W. Europe/Scandinavia $22,125</td>
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<td>Italy, ESF – February 1998</td>
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<td>France - Winter 1998</td>
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<td>Scandinavia – 1999</td>
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*Multi-national Workshops/Meetings
#Supplement for US Participants/Speakers Encouraged by BIO/DEB
SUPPORT FOR NETWORK FORMATION - Morocco - autumn, 1998 (INT contact, Alice Leeds) - $2,250 requested

A network of 25 sites exists in East Africa, West Africa, and North Africa, identified as ROSELT (Reseau d'Observatores de Surveillance Ecologique a Long Terme), represents an important addition to ILTER. The aims of this network are:

1. to promote the operation of a regional network of sites performing ecological monitoring activities
2. to enhance capacity building of member sites
3. to promote development of products useful to decision-makers
4. to stimulate regional and international cooperation on ecological monitoring activities
5. to facilitate integration of local population into development processes.

James Gosz has been invited by the director of ROSELT (Professor Hamid Narjisse, Institut Agronomique et Veterinaire Hassan II, Rabat) to make presentations to the scientific community to stimulate additional support for long-term research and the further development of the ILTER Network in this region. The ILTER Network Committee has identified the continent of Africa as critical in the development of global analyses of environmental conditions, and this network offers an ideal complement to activities in South Africa, the Middle East, and the Iberian Peninsula. The trip by Dr. Gosz would allow the identification of leaders in these areas for follow-up activities. This activity is similar to others performed in different regions. It is the first step in informing the funding agencies and scientific leaders of the ILTER program and building support for the development of networking activities. In this case, some of the initial effort has been accomplished since the network has been identified. This trip should facilitate the rapid development of follow-up research efforts between U.S. and regional scientists.

This request is based on $1600 airfare and four days of per diem.
ILTER ANNUAL MEETING 1999 - South Africa, July 31-Aug 3, 1999. - $24,000 to be spent from 1999 NET award

The developing South African LTER Network has invited the ILTER Steering Committee to hold their annual meeting in Durban in 1999. This meeting will be held in conjunction with the annual meeting of the International Union For Quaternary Research and will provide an excellent opportunity to initiate contacts with African scientists about the possibility of developing LTER networks. We anticipate that the U.S. contingent to this meeting will consist of Bob Waide, an LTER Data Manager, and two LTER scientists to stimulate the formation of scientific exchanges. The cost of this annual meeting is contemplated in the Network Office contract. Additional travel funds in the budget will be used for the participation of U.S. LTER scientists.

Central and South America/Caribbean

DEDICATION OF VENEZUELAN LTER NETWORK – Venezuela, September 29-30, 1997 - $2,300 spent from 1997 NET award

James Gosz and Bob Waide were invited by CONICIT to attend the dedication and planning meeting for the Venezuelan LTER Network in Caracas. Gosz gave a presentation on the U.S. LTER Network and met with officials of CONICIT. He also visited several of the proposed sites for the Venezuelan Network. Waide gave a brief presentation at the dedication ceremony and participated in the organizational meeting. Planning for the upcoming regional ILTER meeting to be held in Puerto Ordaz was initiated at this meeting.
SUPPORT FOR FORMATION OF NETWORK – Bolivia, February 15-18, 1998 - $1,831
was spent from 1997 NET award

Bob Waide was invited to accompany a group from the University of New Mexico to
tavel to La Paz to dedicate a network of Bolivian sites dedicated to the monitoring of
infectious diseases. He presented a seminar on LTER and ILTER research as part of a
daylong symposium whose audience included Bolivian scientists and scientific
administrators. Separate discussions about the formation of an LTER Network were
held with the Carlos Aguirre, President of the Bolivian Academy of Sciences, and Dr.
Luis Alberto Rodrigo Gainza, Executive Director of the Environmental Defense League.
The UNM group met with the Vice-President of Bolivia and visited field sites in the
country. We extended an invitation to Mr. Aguirre to participate in regional ILTER
activities and to develop further scientific exchanges with the U.S. Network.

LATIN AMERICA REGIONAL/DATA MANAGERS WORKSHOP AND FOLLOW-UP –
Venezuela, May 31-June 6, 1998 (INT Contact, Harold Stolberg) - $15,300 is requested
and $1,700 will be spent from 1998 NET award

The Latin American regional network is building rapidly as new countries establish
national networks. Important considerations in the effectiveness of these networks are
data management standards and assessments of information technology needs. The
Network Office hosted a working group meeting in December, 1997, to facilitate
preparation of a regional workshop to share information and build consensus about data
management for LTER in Latin America. This workshop will be held as part of the
upcoming regional Latin American LTER meeting in Puerto Ordaz, Venezuela. Two
data managers from the U.S. LTER network will participate in this workshop (Eda
Melendez from LUQ and John Porter from VCR.). Support ($5000) is requested for their
participation in this meeting. Robert Waide, Executive Director of the Network Office, will be a keynote speaker. Dr. Waide’s travel will be covered by the 1998 NET award. Since most of the participating countries will need to send two representatives (a scientific coordinator and a data manager), support ($6000) is requested for airfares to Venezuela for six Latin American participants from countries with nascent networks who cannot find other support: Uruguay (2), Costa Rica (2), Ecuador (1) and Mexico (1). CONICIT of Venezuela is subsidizing the lodging and meals for these participants.

Other expected participants have indicated that they have the resources to pay their own airfare. In addition, we request support now for follow-up trips to additional countries by two U.S. data managers from sites which are developing collaborations with LA networks, in order to co-ordinate data protocols. (Estimated cost: $4000 for two trips.) Finally, it is hoped that the workshop in Venezuela will produce a manual of sorts, which we would like to print in Spanish for the use of the networks in the region. We estimate the cost for production, printing and distribution will be approximately $2000.

SUPPORT FOR NETWORK FORMATION - Argentina/Chile, 1998. - (INT contact, Beverly Diaz) - $9300 is requested.

These two countries have not yet taken significant steps toward the establishment of national LTER networks, though scientists from Argentina have participated in two regional Latin American meetings. Key officials in the Argentinean government science establishment have expressed interest in LTER, and have recently been sent printed materials on the U.S. network model. There has been limited communication with scientists in Chile as well. Considering the significant strengths of the scientific communities in these major South American countries, and numerous one-on-one scientific links with U.S. ecologists, it is very desirable to encourage the development of LTER sites and networks in these two countries. After laying appropriate groundwork,
the Network Office proposes to organize a team visit of three LTER scientists (possibly including Indy Burke, Bill Lauenroth, Ariel Lugo, or Jerry Franklin), to promote local efforts in LTER in these countries and explore opportunities for site-to-site collaboration and student exchanges with the U.S. Network. Airfare is estimated at $1500 for multiple destinations in these two countries, and per diem at an average of $200/day for 8 days including travel time between sites.

SUPPORT FOR FORMATION OF NETWORK - Colombia/Ecuador, 1999. - (INT contact, Beverly Diaz) - $6,400 is requested.

Colombia and Ecuador are two countries in which development of LTER activities seems to have reached a plateau. We believe that a visit from a small group of LTER scientists would be useful in re-vitalizing LTER in these two countries. Because of their high biodiversity and the existence of such critical sites as the Galapagos Islands, these two countries are extremely important in the development of a regional LTER network. Therefore, we request funds for a visit to Colombia and Ecuador for Bob Waide and two LTER scientists. One of these scientists would probably be Howard Snell, of the University of New Mexico, who has a long-term research project on the Galapagos Islands and strong connections with the Darwin Foundation and Ecuadorean scientists. The purpose of this trip would be to support the development of LTER in Colombia and to assist in the initiation of LTER activities in Ecuador.
North America

EMAN – Canada January 20-23, 1998 - (INT contact, Harold Stolberg) - $1,904 was spent from the 1997 NET award and $1,900 is requested.

The recent changes in the Canadian Environmental Monitoring and Assessment Network (EMAN) and the upcoming formation of the Mexican LTER Network will allow the formation of a North American Regional LTER Network. This activity is one of the desired outcomes of the ILTER Network, a regional scale focus among neighboring countries that facilitates collaborative research and data sharing. A meeting in Washington, DC, at the National Science Foundation with Dr. Tom Brydges (Director of EMAN), Dr. Gerardo Ceballos (leader of the Mexican LTER Network effort), and Dr. James Gosz, Chairman of the U.S. LTER Network, initiated the planning effort for the development of the North American Regional LTER program. Dr. Erik Taylor of EMAN was invited to the October 1997 LTER Coordinating Committee meeting to make a brief presentation about EMAN and learn about the LTER Network system. At the invitation of Dr. Brydges, Dr. Gosz and Dr. John Magnuson (North Temperate Lakes LTER) went to the annual EMAN meeting in Quebec, Canada, and made a keynote presentation on the U.S. LTER Network and the International LTER Network activities. There was additional opportunity to discuss this activity with numerous EMAN participants ranging from site managers to information managers for the Network. It was important for the scientific community in Canada to learn of the ILTER program as well as for Dr. Gosz to understand the scientific issues and EMAN program. The meeting reinforced the interest in Canada to develop a collaborative effort with Mexico and the U.S. Dr. Cele Aguirre Bravo from Mexico also was at the EMAN meeting and plans were developed for a North American Regional Workshop to be held in Guadalajara, Mexico, in November, 1998.
ENCOURAGE REGIONAL COHESIVENESS AMONG NORTH AMERICAN LTER NETWORKS - Mexico, November 1-6, 1998 (INT contact, Harold Stolberg) - $13,900 is requested

North American Symposium "Toward a Unified Framework for Inventorying and Monitoring Forest Ecosystem Resources", November 1-6, 1998, Guadalajara, Jalisco, Mexico. This meeting provides an immediate opportunity to develop further activities among the North American countries of Mexico, U.S. and Canada. The goal for the symposium is to build on the best science and technology available to assure that the data and information produced in future inventory, monitoring and long-term research programs are comparable, quality assured, available, and adequate for their intended purposes, thereby providing a reliable framework for characterization, assessment, and management of forest ecosystems in North America. This symposium is focused on forest ecosystems because of the high economic value of these systems in all three countries. Concentrating on a particular ecosystem type also allows the development of comparable techniques and data. Dr. Gosz and Dr. Ceballos are co-chairs of the Long-Term Research section of the Symposium and Dr. Brydges is the chair of the Biodiversity section. Dr. Aguirre Bravo is the Chair of the entire Symposium. The U.S. LTER program would like to have scientists from the forest LTER sites make presentations in the Long-term Research and Information Management Sections. We have identified and received agreements from the following people to attend the meeting:

Dr. Mark Harmon, HJ Andrews LTER
Dr. Tim Fahey, Hubbard Brook, LTER
Dr. James Vose, Coweeta LTER
Dr. David Foster, Harvard Forest LTER
Dr. Ariel Lugo, Luquillo Experimental Forest LTER
Dr. William Michener, Data Manager
James Brunt, Network Office Information Manager
Donald Henshaw, HJ Andrews Data Manager
Dr. Robert Waide, Executive Director, LTER Network Office

Dr. James Gosz will present a keynote paper on the Long-term Research Network of the U.S. and ILTER

This symposium is expected to facilitate the development of specific scientist-to-scientist and site-to-site interactions. It will build on some activities already started among these sites but broaden them to develop additional collaborations between all three countries. The request is based on a range of airfares from $450 to $600 plus six days of per diem (currently $135 in Guadalajara).

**East Asia/Pacific (including Mongolia, Eastern Russia, and Australia/New Zealand)**

**EAST ASIA-PACIFIC REGIONAL ILTER MEETING – Taiwan, November 12-13, 1997 - $7,332 spent from 1997 NET award**

This regional meeting provided a forum for developing further interactions and planning future meetings in Korea, China, and Mongolia. The International LTER Committee agreed that the ILTER Network should participate in Global Terrestrial Observing System (GTOS). As part of this participation, ILTER sites will receive free satellite imagery of NPP at a 1 km² scale from NASA in return for providing climate, vegetation, LAI, or soil type data. The US LTER Network Office agreed to facilitate with software or technique training (possibly organizing data management workshops) as well as serve as a clearinghouse for data and images.
All but two participants agreed to participate in an ILTER network-wide, cross-site research project. An e-mail group was created to present possible whole network, cross-site topics. Simultaneously, the investigation of questions relevant to regional or research-field scales will be facilitated through the creation of a list of potential compatible sites and personnel. It was generally agreed that the aim would be to pose an ecologically relevant question for the whole network project. Potential topics included the correlation between net primary productivity and biodiversity and the effect of global change on ecotone gradients and sensitive biomes.

WORKSHOP TO FACILITATE THE DEVELOPMENT OF LTER NETWORK - Mongolia, June 29-July 4, 1998 (INT contact, Bill Chang) - $8,900 is requested.

At the last ILTER Network Committee meeting in Taiwan, the President of the Mongolian National Academy of Sciences identified the interest that Mongolia has in developing an LTER Network in Mongolia and asked for assistance in developing such a program. He specifically asked Dr. Gosz, Chairman of the ILTER Network Committee, to visit the Mongolian National Academy of Sciences and make presentations on the value of long-term research and the ILTER Network Program. Dr. Clyde Goulden also has been interacting with the Mongolian Academy and recently made arrangements for the development of a workshop in Mongolia to facilitate the development of their LTER Network. Dr. Gosz and Dr. Goulden will attend the workshop and provide guidance based on the experiences in the U.S. LTER program and the ILTER Network. The workshop will take place in Ulanbaatar, June 29 – July 4, 1998. We request $2,700 to support travel by Dr. Gosz and $6,200 for the workshop organization.

SCIENTIFIC INTERCHANGE – China, September, 1998 (INT Contact, Bill Chang) - $8300 is requested
At the November 1997 annual ILTER meeting, the Chinese representative announced plans to host a symposium in September 1998 focused on applications of LTER. Many of the 29 Chinese LTER sites focus on agriculture and reclamation. In order to facilitate the exploration of cooperative research opportunities and the sharing of expertise, funds are requested to support the participation in this meeting of four LTER scientists from U.S. sites with comparable interests, possibly including one person from the Network Office with expertise in GIS or data management. Airfare costs are estimated at $4,800, plus per diem for four days in Beijing at $207 ($3312) plus visa costs ($188).

EAST ASIA-PACIFIC REGIONAL LTER MEETING – Korea, 1999 (INT Contact, Bill Chang) - $3,600 is requested

Korea is close to completing the process of establishing a national network, which will make it the third active Asian member of that growing regional Network. Its offer to host the next regional East Asia-Pacific LTER meeting was accepted at the 1997 ILTER meeting. This regional meeting will occur some time in 1999. Funds are requested to support Jim Gosz as ILTER Chair and one other LTER scientist (Dennis Ojima) who is willing to take the lead in future interactions with the Korean LTER network. The presence of these two scientists will help to bring the formation of the Korean LTER Network to a successful conclusion and to initiate U.S.-Korean scientific exchanges. Four days of per diem are requested ($146 currently in Seoul) plus airfare for two people.

Central Europe
SUPPORT FOR NETWORK FORMATION – Poland, June 22-28, 1997 - $6,215

exceeded from the NET award
This visit to Poland by Jim Gosz and John Vande Castle was the result of initial discussions during an ILTER meeting held in Central America in late 1996. Drs. Tadeus Prus and Kajetan Perzanowski attended that meeting and requested a follow-up visit by LTER "experts" to Poland to meet with officials and scientists of the Polish Academy of Sciences, the International Center of Ecology, several National Parks (MAB reserves) and other scientific groups throughout Poland. In all, they visited four sites deemed excellent prospects for an LTER network and they had several fruitful discussions with key officials in the Polish scientific establishment. The visit had tremendous impact, and in March 1998 we were notified that the Academy had approved the formal establishment of an LTER network in Poland comprising these four sites. Now, as hoped in our strategic plan, we are developing a follow-up workshop (see below) with broad participation of US LTER scientists to identify and plan collaborative research.

IALE - Czech Republic, September 7–12, 1998  (INT contact, Bonnie Thompson) $15,000 is requested

This 1998 annual meeting of the International Association of Landscape Ecologists (IALE), to be held in Prague, Czech Republic, offers an important opportunity for U.S. scientists to develop new projects or enhance existing projects with scientists from the Czech Republic. Thus, this activity is an important part of the ILTER strategy of developing scientist-to-scientist and site-to-site interactions with the Czech Republic. The Czech Republic has made excellent progress in developing a network of sites for their LTER program and is an enthusiastic participant in the ILTER Network effort. We feel that they will be important players in the development of a regional effort in Central Europe (along with Hungary and Poland).
We are requesting travel funds for six U.S. scientists who have a strong interest in collaborative research efforts in this region. Transportation is estimated at $6,648 plus $3,521 in per diem (six days each at $232 currently). We asked interested individuals in the LTER Network to contact us and describe existing projects or topics that were being planned with Czech scientists to maximize the success for this interaction. We also requested that the individuals present papers at the meeting to maximize the exposure of these research projects to the IALE participants. Based on the above criteria, we have identified six individuals whom we would support for travel to this meeting. They are:

James Gcsz, Chair of the ILTER Network Committee
John Vankat, Miami University of Ohio
Emily Russell, Rutgers
David Wear, USDA Forest Service (Coweeta LTER)
Steve Macko, University of Virginia
Iris Anderson, VIMS

LTER NETWORK WORKSHOP - Poland, September 15-18, 1998 (INT contact Cassandra Dudka) - $15,000 is requested

We received information from Professor Tadeusz Prus in Poland that the Foreign Department of the Polish Academy of Science (PAS) has provided $6,000 to cover local expenses of participants in a workshop in Warsaw that would have the following tasks:
1. Furnish the LTER Network in Poland with computer and internet connections to the ILTER Network
2. Provide a foundation for cooperation between Polish and U.S. scientists within the ILTER network
3. Identify regional ecological problems that would provide the basis for collaborative research efforts.

This workshop initiative was proposed during the visit of Dr. James Gosz to Poland and in subsequent interactions with the director of the Foreign Department of the PAS. This activity is important for the continued development of the Polish LTER Network. The organizers of the Polish Network have made the important first steps of acquiring approval from the PAS and naming of a national committee that is in the process of identifying additional sites. At this time four sites have been recognized.

The workshop also has two important additional goals: initiation of a Central European Regional LTER Network and formulation of follow-up research projects by U.S. LTER scientists. Professor Prus has suggested that the workshop involve scientists from the LTER programs of Poland, Hungary, and the Czech Republic, as well as leaders from Slovakia and the Ukraine. These additional countries are potential members of the ILTER Network and have expressed interest in establishing such programs.

The size of the workshop will be approximately 30 individuals and involve 10 from Poland, up to 10 individuals from the U.S., and 1-2 from each of Hungary, Czech Republic, Romania, Slovakia and the Ukraine.

The U.S. representatives would be chosen from LTER sites that have an interest in developing site-to-site research collaborations with these countries. For example, Dr. Kate Lajtha, Oregon State University, is expected to take a leadership role in follow-up activities in this region and is currently discussing additional activities with INT. Since this workshop will follow the IALE workshop, some of the IALE participants may also be interested in contributing to it. We have not contacted them at this time. Another group
of individuals that would be important to involve is data managers from the Network Office and one or two U.S. LTER sites. This would help to accomplish the first goal of the workshop. The workshop could be patterned after the workshop in Venezuela this summer, with concurrent sessions that would focus on the scientific efforts needed in the region and the information management, web page construction, and internet needs of sites and countries.

We are requesting travel support for a total of 10 people from the U.S., plus some travel to help several scientists from countries in the region that do not have sufficient funds to participate.

**Western Former Soviet Union**

SUPPORT FOR NETWORK FORMATION – Ukraine (INT Contact, Cassandra Dudka) - $5000 is requested
The Network Office has received several communications in the past year from scientists in the Ukraine who are interested in creating a national LTER network. They have specifically requested a visit from a knowledgeable representative of the U.S. Network to meet with scientists and government officials to expedite development of LTER efforts there. Funds are requested for Jim Gosz to travel to the Ukraine, accompanied by one interested network scientist (to be recruited) who can take the lead in follow-up contacts with Ukrainian researchers. To allow sufficient time for visits to potential sites in the Ukraine, five days of per diem (at $249) is requested in addition to airfare.
Western Europe/Scandinavia

ESF – Rome, February 9-10, 1998 - $1,463 was spent from 1997 NET award

Discussions between NSF and the European Science Foundation (ESF) resulted in Dr. James Gosz being invited to the meeting of the Life and Environmental Sciences Core Group of ESF in Rome on Feb. 9-10, 1998. Dr. Gosz made a presentation on the ILTER Network and the value of environmental observation programs such as those being performed at LTER sites worldwide. He discussed the developing interaction between the ILTER Network, the Global Terrestrial Observing System (GTOS) and the European Ecological Network (NoLIMITS) relative to the scientific interests of ESF. The Life and Environmental Sciences Core Group discussed this scientific approach with Dr. Gosz and then met in closed session. The Committee agreed to bring this issue to the full ESF Steering Committee at its next meeting. Dr. Gosz provided LTER and ILTER materials and also suggested that Prof. Istvan Lang of Hungary (Steering Committee member) would be able to identify the value of ILTER to Hungary and his efforts to develop a Regional ILTER Network Program for the Carpathian Basin region.

INTECOL – Italy, July 17-26, 1998. (NSF Contact, Scott Collins) - $15,820 is requested

U.S. LTER symposium participants; $24,000 will be allocated for the ILTER meeting from the 1998 NET grant

A two-day symposium on has been organized as part of the 1998 World Congress of Ecology (INTECCL) to be held in Florence, Italy. It will provide an overview of the development of LTER Networks in many parts of the world, as well as presenting several on-going cross-site studies and a workshop on Information Management for LTER. The location of the meeting and the international membership of INTECOL should provide an
opportunity to introduce the ILTER network to a broader European audience. In addition, the 1993 ILTER Network Committee meeting will take place in conjunction with the INTECOL Congress. Travel support for the members of the ILTER Network Committee is available from the LTER Network Office contract. Additional support is requested to pay the registration costs ($5,000) for fourteen of the symposium speakers (including the U.S. group) and the travel costs ($13,525) of five U.S. LTER representatives involved in this symposium: Robert Christian (VCR), who is a co-organizer, plus speakers Mark Harmon (AND), John Magnuson (NTL), John Vande Castle (NET), and John Porter (VCR). Seven days of per diem in Florence (at $215) will be $1505 per person, and the average airfare is estimated to be $1200.

SUPPORT FOR FORMATION OF NETWORK – France, 1998 (INT Contact, Rose Gombay) - $1,600 is requested

Recent contacts from French scientists (Henri Decamps, Robert Barbeau) regarding LTER indicate that the time is propitious for a visit to this country. Decamps of CNRS has informed us that he has begun consultations with other French scientists and expects to have a preliminary proposal outlined by the time of the INTECOL meetings in late July. He has been invited to attend the associated ILTER business meeting. To maintain momentum, we request round trip airfare and three days of per diem for Jim Gosz to visit France a few months after the discussions at INTECOL to address pragmatic details of the formation of an LTER Network with a broader audience assembled by Decamps and others of CNRS.