Communications, Synthesis, Education, and Training for Long Term Ecological Research

Matthew B. Jones
LTER Network Communications Office (LNCO)

Organization of Biological Field Stations Annual Meeting
September 23, 2016
LTTER Network

The Long Term Ecological Research (LTTER) network is the longest running ecological study in the United States. Research conducted within this network spans decades and has been integral to understanding how our environment has changed and what it may look like in the future.

This is a collaboration of more than 2,000 researchers whose goal is to document and analyze environmental changes to advance the health, productivity, and welfare of the natural environment.

Join us on a guided tour of the 25 Long Term Ecological Research (LTTER) sites to learn more about the exciting worldwide research to improve the health of the environment! On this tour you'll explore eight different biomes, from chilly alpine mountain peaks to dry desert floors, and learn how these environments have changed over the past three decades.

Please visit our website for more information: https://www.lternet.edu/


25 sites
36 years
2800 investigators
Site Research

- Andrews Forest LTER (AND)
- Arctic LTER (ARC)
- Baltimore Ecosystem Study (BES)
- Bonanza Creek LTER (BNZ)
- California Current Ecosystem LTER (CCE)
- Cedar Creek Ecosystem Science Reserve (CDR)
- Central Arizona - Phoenix LTER (CAP)
- Coweeta LTER (CWT)
- Florida Coastal Everglades LTER (FCE)
- Georgia Coastal Ecosystems LTER (GCE)
- Harvard Forest LTER (HFR)
- Hubbard Brook LTER (HBR)
- Jornada Basin LTER (JRN)
- Kellogg Biological Station LTER (KBS)
- Konza Prairie LTER (KNZ)
- LTER Network Communications Office (NCO)
- Luquillo LTER (LUQ)
- McMurdo Dry Valleys LTER (MCM)
- Moorea Coral Reef LTER (MCR)
- Niwot Ridge LTER (NWT)
- North Temperate Lakes LTER (NTL)
- Palmer Antarctica LTER (PAL)
- Plum Island Ecosystems LTER (PIE)
- Santa Barbara Coastal LTER (SBC)
- Sevilleta LTER (SEV)
- Shortgrass Steppe (No longer funded by NSF LTER) (SGS)
- Virginia Coast Reserve LTER (VCR)
Network Communications Office

“to foster and coordinate research, education, and outreach activities across the Network as well as facilitate Network governance ... and to promote the LTER program both nationally and internationally through centralized representation” (NSF15-535).
LNCO Leadership

Sam Norlin
Education and Training

Frank Davis
PI

Stacy Rebich Hespanha
Communications, Evaluation

Marty Downs
Communications

Jai Ranganathan
Communication Training

Matt Jones
Informatics training

Mark Schildhauer
Computing

Jenn Caselle
Research Coordination
Efficiency

• Efficiency through leveraging
  – NCEAS
  – Bren School of Environmental Science and Management
  – Strategic Environmental Communication and Media Program

Center for Environmental Communication and Education
Synthesis

- Synthesis Working Groups
- Distributed Graduate Seminars

Internal Communications

- Mailing lists
- Videoconferencing
- Shared drives
- ASM & SC Meetings
- Intranet
- Committees
- NSF relations

External Communications

- LTERNET website
- Social media
- Represent the network at scientific meetings
- Media relations
- Initial point of contact

Data science/synthesis • Tool-sharing • Watercoolers • Best practice guides
Synthesis

• Working groups
• Distributed graduate seminars
• All Scientists Meeting (ASM)
  – mini-ASMs
• Virtual interactions
Synthesis: Call for Proposals

• Call for proposals
  – Issued in January 2016 and July 2016, expected annually thereafter

• Round 1, funded 3 working groups
  • https://lternet.edu/synthesis-working-groups-2016
Stream elemental cycling

- Stream elemental cycling: Global patterns in stream energy and nutrient cycling
- Adam Wymore (LUQ) and Sujay Kaushal (BES)
- 19 sites

Metacommunity Dynamics

• A synthesis to identify how metacommunity dynamics mediate community responses to disturbance across the ecosystems represented in the LTER network

• Eric R. Sokol, MCM; Christopher M. Swan, BES; Nathan I. Wisnoski, AND
Plant responses to global change

- Integrating plant community and ecosystem responses to chronic global change drivers: Toward an explanation of patterns and improved global predictions
- Kimberly J. La Pierre, KNZ/CDR/SGS; Meghan L. Avolio, KNZ; Kevin R. Wilcox, KNZ/SGS
- 101 sites

Central Arizona-Phoenix LTER studying impacts of nutrient enrichment in urban desert parks.
Photo Credit: Tim Trumble, 2009.
Second Synthesis CFP
https://lternet.edu/rfp-2016-fall

• Deadline **October 5, 2016**
• 2-4 projects of up to 2 years in duration
• Core LTER thematic areas
  – Primary production
  – Population studies
  – Organic matter dynamics
  – Mineral cycling
  – Disturbance patterns and processes
  – Land use change
  – Human-environment interactions
• Integrative, cross-cutting
• Data from 2+ LTER sites and possibly other sites
• People outside of LTER can lead proposals
Communications

• Internal
  – Needs assessment
  – Community-building
  – Rewarding excellence
  – Social media

• External
  – Branding
  – Spotlighting
  – Media Relations
  – Online discovery
  – Social media

https://www.nceas.ucsb.edu/content/VizSearch#
**Science Update**

September 2016

**LTER in the News**

- Nature News & Comment, Secrets of Life in the Soil
- UConn Today, How 'Big Data' Changed the Science of Ecology
- Mountain View Telegraph, NMSU Engineering Students Design Cow Camera to Assist Researchers
- The Washington Post, How Amphetamine Use May Be Affecting Our Waterways
- Phys.org, Earlier Snowfall Reduces Forests' Ability to Regulate Atmospheric Carbon Dioxide
- PLOS Blogs, Functional Over Form: Predicting Disturbance Responses with Functional Traits at ESA 2016

**Recent LTER Publications**

- Beyond Arctic and Alpine: The Influence of Winter Climate on Temperate Ecosystems | Ecology

What impacts does winter weather have on temperate and semiarid systems? A recent study suggests that winter climate may be a crucial driver of growing season dynamics across a range of taxa and ecosystems. Using data from 11 LTER sites, researchers found that in many of the sample ecosystems, winter weather correlates with biotic responses as more strongly than growing season weather. Winter’s influence on overall nutrient, carbon, and water cycling, as well as plant and animal community composition in arctic and boreal regions is well-documented, but the extent of its role in temperate ecosystems has remained unclear – which in turn has limited scientists’ ability to predict the impact of warming winters in these areas. Though their correlations were...
Education and Training

Training
- Collaboration
- Open science
- Environmental communication

Education
- Promote diversity
- Information hub
- Public Participation in Scientific Research
- Partnerships
Training and Outreach Coordinator

• Recruitment ongoing
• Build a nationally-scoped training program
• Coordinate, design, and deliver training in open science serving synthesis
• Partner with other community programs
• Mentor graduate and undergraduate interns working on training and outreach
Open Science for Synthesis
Software Skills Training for Early Career Scientists

• Community building
Sessions

- Collaborative coding and design
- Analysis and Visualization
- Lightning talks
- Birds-of-a-feather discussions
Amplifying site-based activities

- Schoolyard Book Series
- Data Literacy/Data Nuggets
- Research Experience for Undergrads (REU) and Teachers (RET)
- Distributed Graduate Seminar on Ecological Theory and Long Term Research

Mary begins her summer of soil food web research at Toolik Field Station, Alaska. Photo from Amanda Morrisson
What about data?

• Leader in data sharing and preservation
• LTER Information Management Committee
The U.S. Long Term Ecological Research Network (LTER) data include ecological observations from the study of patterns and causes of ecosystem change.

Time period of data
1800 - 2016

The years in which data was collected, regardless of upload date. Only the most recent version of the data package is counted.
Coordination with Environmental Data Initiative

Environmental Data Archive
Maintain data repository to ensure secure long-term availability of environmental data and expose all data holdings to the broader community.

Data Management Support
Provide outreach, seek input, and develop targeted training and support to facilitate long-term data management in the broader environmental research communities.

Best Practices
Accelerate the data life cycle by demonstrating through best practices how to economically and efficiently document environmental data for preservation, discovery and re-use.

Welcome to EDI
The Environmental Data Initiative is an NSF-funded project meant to accelerate curation and archive of environmental data, emphasizing data from projects funded by the NSF DEB. EDI is a distributed organization, with personnel located at the University of Wisconsin, University of New Mexico, and UC Santa Barbara.

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OBFS and EDI

- EDI partnering with
  - NSF Macrosystems projects
  - NSF LTREB projects
  - OBFS
  - ...

http://environmentaldatainitiative.org/
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