

Imagining a New Long-term Ecological Research Site for Arid Lands

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NSF LTER Program

First and longest-running ecological network in the USA

Created in 1980

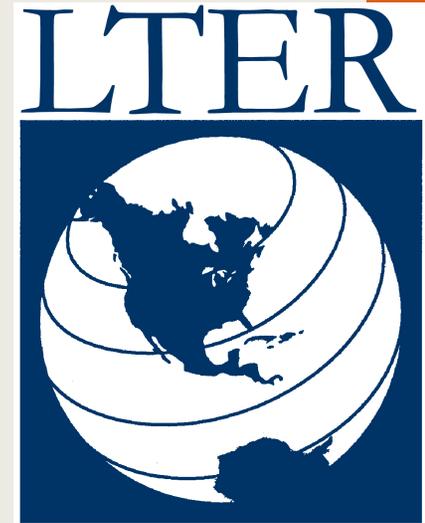
Presently 25 sites

- **Founding Principle:**

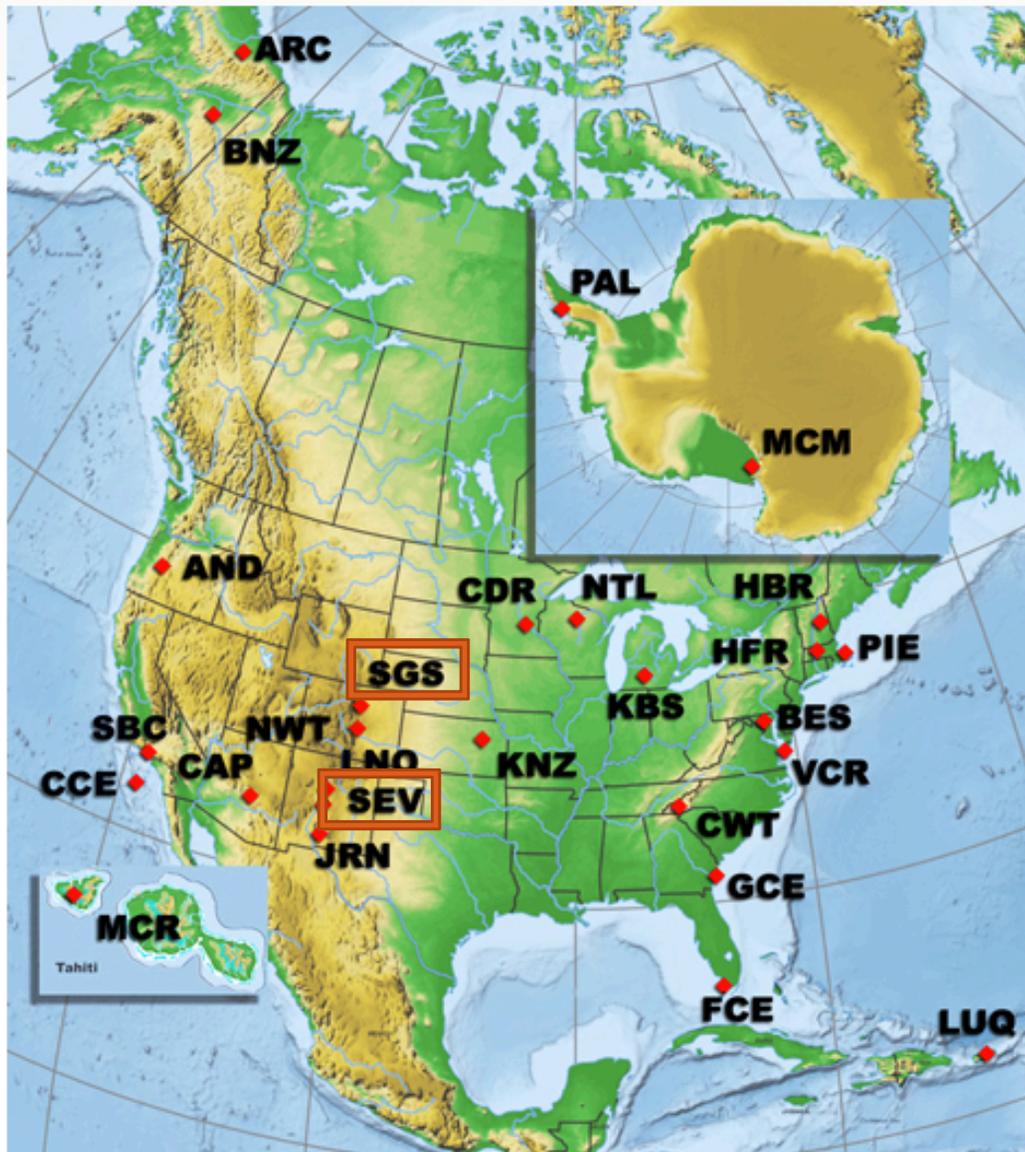
- Long-term and broad-scale research is required to truly understanding environmental phenomena

- **Goal:**

- Provide long-term data and information for informed decision making from a broad range of key ecosystems



The LTER Network



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 Office (LNO) Now in Santa Barbara

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) Funding not renewed

Shortgrass Steppe (No longer funded by NSF LTER)
(SGS)

Virginia Coast Reserve LTER (VCR)



International
Long Term
Ecological
Research

[LTER-Europe Web site](#)

[US LTER Web Site](#)

[Americas Forum](#)

[East Asia Pacific Forum](#)

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User login

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Welcome to ILTER

What is ILTER?

ILTER is a 'network of networks', a global network of research sites located in a wide array of ecosystems that can help understand environmental change across the globe. ILTER's focus is on long-term, site-based research and monitoring.

"ILTER's vision is a world in which science helps prevent and solve environmental and socio-ecological problems"

ILTER can contribute to solving international ecological and socio-economic problems through question and problem-driven research, with a unique ability to design collaborative, site-based projects, compare data from a global network of sites and detect global trends.

Most ILTER members are national or regional networks of scientists engaged in long-term, site-based ecological and socio-economic research (known as LTER or LTSER). They have expertise in the collection, management and analysis of long-term environmental data. Together they are responsible for creating and maintaining a large number of unique long-term datasets.

LTER Program Mandate

- Conduct research on comparable ecological processes
- Make data accessible to scientific community using common data management protocols
- Participate in cross-site and cross-agency research
- Participate in network level and science synthesis activities



2015 Annual All Scientists Meeting, Estes Park, CO

ILTER Site Goals

- Sites represent major ecosystem types or natural biomes
- Provide experiments, databases, and research programs for use by other scientists
- Make data collected by all LTER sites broadly accessible
- Emphasis on study of phenomena over long periods of time, based upon data collection in *five core areas*



ilter Network Data Portal

HOME DATA TOOLS HELP LOGIN

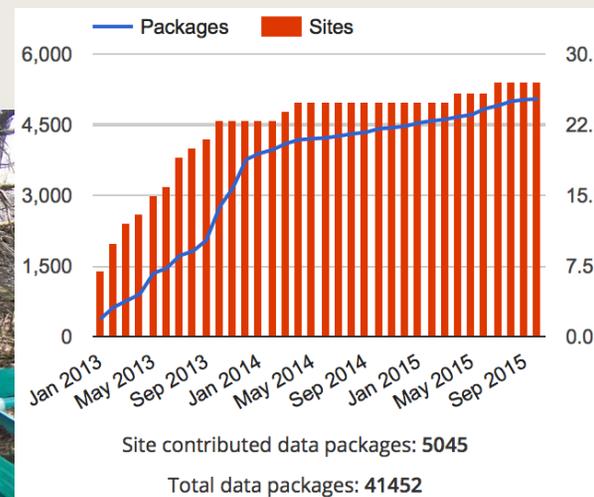
enter search terms

ADVANCED SEARCH

Browse Data by Keyword or LTER Site

Browse data packages by keyword or LTER site using the links below. The number of matching data packages is shown in parentheses.* **

- › LTER Sites
- › organizational units
- › disciplines
- › events
- › measurements
- › methods
- › processes
- › substances
- › substrates
- › ecosystems
- › organisms



Five Core Research Themes

1. Primary Production

- amount and type

2. Population Studies

- plants, animals

3. Movement of Organic Matter

- cycling of organic matter (and the nutrients it contains)

4. Movement of Inorganic Matter

- cycling of N, P and other mineral nutrients

5. Disturbance Patterns

- effects on ecosystem processes

Emphasis:

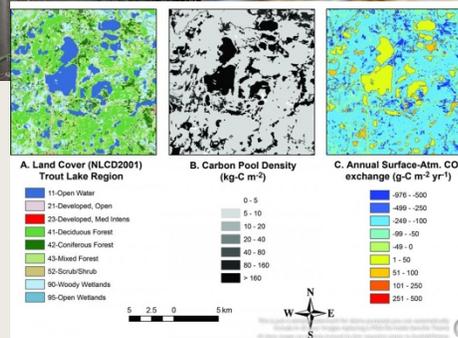
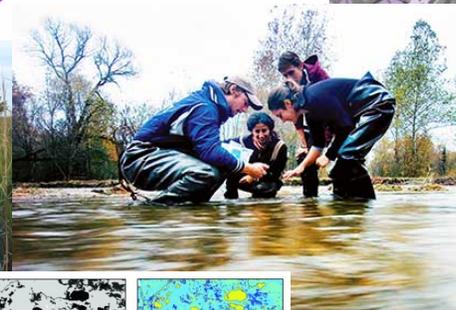
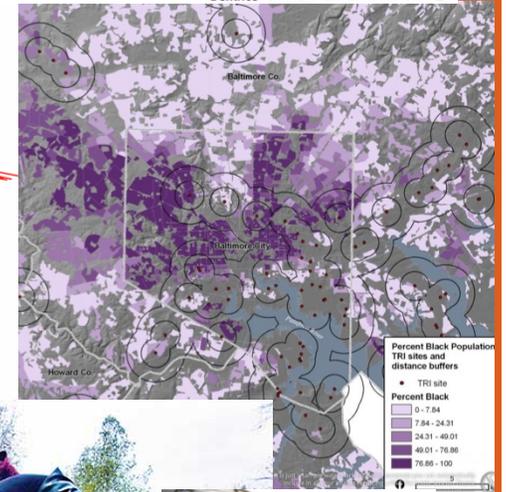
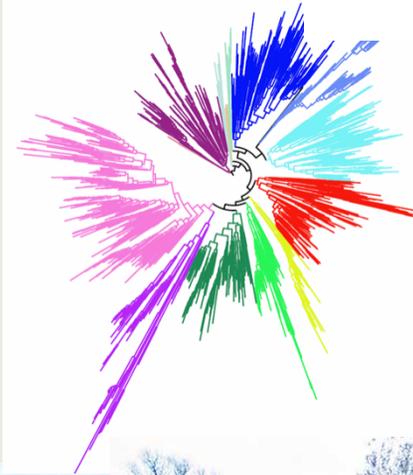
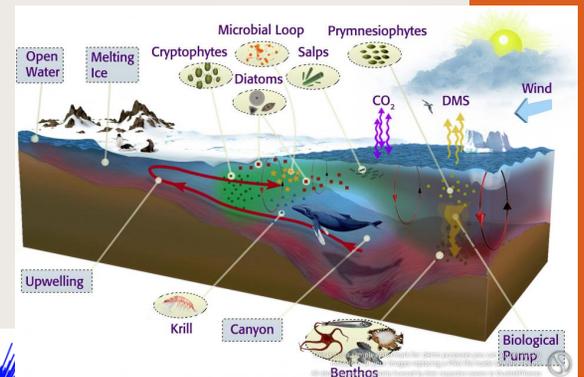
- Prediction
- Broader context

Involvement of many scientific disciplines required



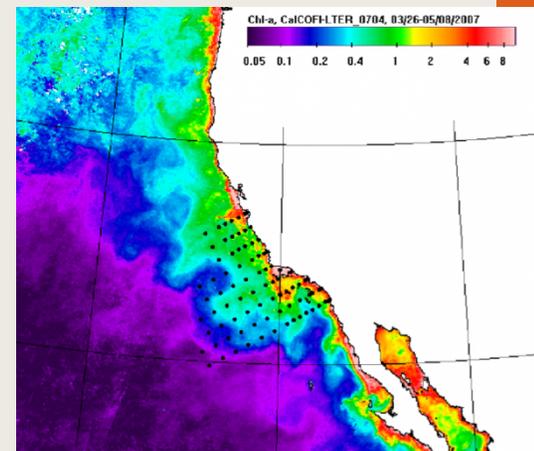
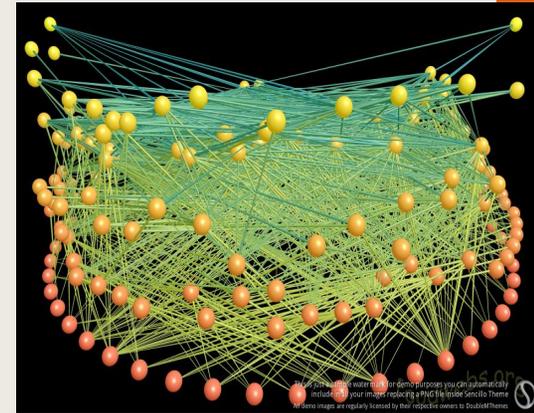
Disciplinary Scope

- Population and community ecology
- Ecosystem science
- Evolutionary biology
- Phylogenetic systematics
- Social and economic sciences
- Urban ecology
- Oceanography
- Mathematics
- Computer science
- Science education



ILTER Data

- Standardized methodologies facilitate comparisons across sites
- The existence of a network allows for continental-scale questions to be addressed
- Tests important ecological or ecosystem theories including, but not limited to, ecosystem stability, biodiversity, community structure, and energy flow



Schoolyard LTER



The Long Term Ecological Research Network


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PEOPLE

LTER Education program

Program Description:

The Long Term Ecological Research (LTER) Education Program is an NSF funded, nonprofit, collaborative organization dedicated to best practices and leading advancements in the training, teaching, and learning about the Earth's ecosystems. Its ability to implement long-term educational initiatives allows for unique approaches to train future researchers and to learning and teaching ecological concepts. Evaluating and disseminating this approach through the involvement of graduate and undergraduate students, postdoctoral scientists and other professionals, K-12 educators and students, and the general public will help ensure the success of long-term ecology in the future.

Overarching mission

To use the uniqueness of the LTER programs and network to promote training, teaching, and learning about long-term ecological research and Earth's ecosystems.

Unique features associated with LTER include:

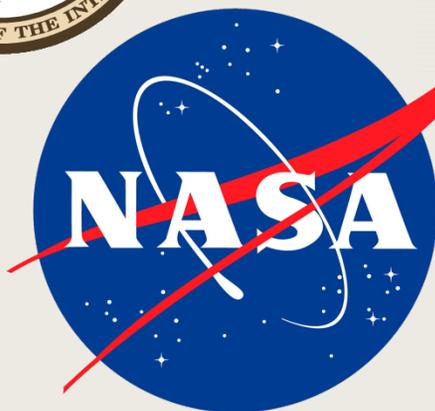
- Long term research, detecting patterns and phenomena of importance that are not typically discernible through short-term study.
- Cross-site comparison and synthesis, taking advantage of parallel methodologies, data availability, and a culture of collaboration and synthesis.
- Study of large-scale systems, phenomena, and processes affecting significant portions of the globe.
- The sustained nature of our individual and collective programs, allowing long-term relationships to build between scientists and various education communities.
- The LTER culture of inclusion, cross- and inter-disciplinary thinking, and application to real problems.



Katerina Potesta assists with planting native species at the CEMEX Florida East Coast Quarry Wetland Reclamation project

NSF Partners

- EPA
- Fish and Wildlife Service
- NASA
- NPS
- USDA Forest Service and Agricultural Research Services
- USGS



Links between LTER and NEON



NSF LTER Site Funding

- Peer-reviewed, six-year grants
- Renewable based on the soundness of science *and* network participation
- NSF site reviews at the midpoint of each grant cycle

What we “know” (as of 23 Sept 2015)

BIO directorate will support a new terrestrial site designated for arid or semi-arid ecosystems

Solicitation being developed

- Must clear a number of administrative levels within NSF; preliminary proposal as precursor to full proposal
- Anticipated release – Nov or Dec (pending federal budgets)
- Pre-proposal/proposal deadlines - ????

What is “arid/semi-arid”?

- Definition based primarily on rainfall amounts and patterns
- Not prescribing vegetation types or temperature regimes

Potential Sites (speculation)

Shortgrass Steppe (CSU)

Sevilleta (UNM)

Annual Grasslands (California e.g. Jasper Ridge)

Cold Desert (Idaho, Oregon, Nevada, Utah State, Univ Utah, U Wyo)

- Sagebrush Steppe
- Pinyon-Juniper

Hot Desert (UA, ASU, Nevada, California)

- Chihuahuan (Jornada Basin covers that)
- Mojave desert scrub
- Sonoran desert scrub and grassland

UA Potential Sites

- Santa Rita Experimental Range (w/ NEON sentinel)
- Walnut Gulch
- V Bar B Ranch
- Las Cienegas National Conservation Area
- Buenos Aires National Wildlife Refuge
- Appleton-Whittell Research Ranch (Audubon Ranch)
- Portal LTREB site
- Others ?



UA Institutional Assets

- Institute of the Environment
- Biosphere 2 (experiments & outreach)
- Bio 5
- iPlant
- National Phenology Network
- Graduate Interdisciplinary Programs (GIDPs)
- Cooperative Extension
- AZ Remote Sensing Center
- Others ?



Arizona Remote Sensing Center

BIO5TM
Institute



Institute of the Environment

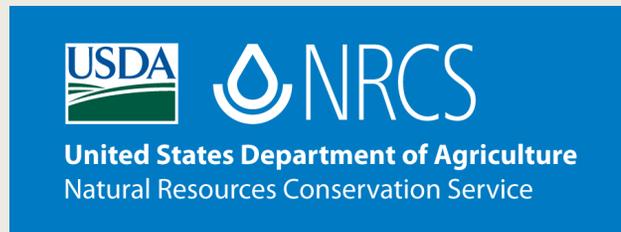


COLLEGE OF AGRICULTURE
AND LIFE SCIENCES
COOPERATIVE EXTENSION



Potential collaborators

- ARS
- USGS
- NGOs (TNC, Sonoran Institute)
- BLM
- Forest Service
- NRCS
- Others?



Anxiously awaiting the RFP.....