Survey — help get word out
Comm. Plan
GS symposium

LNO report – May 14, 2009

1. LNO renewal proposal

- Submitted March 31, 2008, with three elements: core operations, CI, DP
- Site visit in September 2008 led to a recommendation for full funding
- Revised budget submitted in December 2008
- Another revision in February
- A separate proposal for CI and Decadal Plan activities submitted in March
- Cooperative Agreement for Core Operations completed last week
- CI and Decadal Plan proposal includes the following activities:
  - Development of Strategic Communication Plan for LTER
  - Support the management and curation of existing and new EcoTrends data.
  - Complete the LTER NIS, thereby providing access to all LTER site data sets for the advancement of Network-level science and data synthesis.
  - Integrate Network databases including EcoTrends, ClimDB, and HydroDB into the PASTA framework for inclusion in the LTER NIS.
  - Provide or coordinate training for LTER scientists and information specialists in support of Network science and CI development.
  - Support for short (1 month) working visits by IMs to other sites or to the LNO
  - Support two production meetings a year to address specific technical aspects of LTER information management.
  - Support additional planning meetings for DP activities.
  - Support 10-12 working groups per year.
  - Support two synthesis projects by providing support for scientists or students.
  - Develop new synthetic databases resulting from SC and Decadal Plan activities.

2. ASM report

LNO has worked closely with the Program Committee and the Schneider group to conceive and implement the program.

Recent accomplishments:

- Second call, including preliminary program
- Information to sites on funding
- Opened working group submission
- Opened housing reservations
- Opened poster submission

Upcoming:

- June 1 – meeting registration open
- July 1 –working group submission closes
- August 15 – final program

Appendix I. Major disturbances and associated characteristics for each LTER site based on a survey of principal investigators.

Site code and ecosystem type	Major disturbances (and recent trends)*	Drivers of change	Mechanism by which disturbance impacts ecosystems	Consequences	Return interval (yr)	Median size (km2)	Website
H.J. Andrews Experimental Forest[1] (coniferous forest)	Fire (↓)	Management policy/ action (fire use, suppression)	thermal stress	mortality	50-500	.01 - 10^4	http://www.fsl.orst.edu/
	Logging (↓)	Federal land policy	Tree bole removal	mortality	100 (formerly)	2	
Arctic (tundra)	Frost heave (↑??)	Climate warming	Physical stress	mortality	1	.000001	http://ecosystems.mbl.edu/ARC/
	Fire?? (↑)	Climate warming	Combustion	mortality	300	1	
Baltimore Ecosystem Study (city)	Land conversion (↑ or ↓?)	Globalization; Human population redistribution	Altered social capital	Land conversion	50	.001	http://www.beslter.org/
	Sea level rise (↑)	Climate warming	Threatened properties		decades	global	
Bonanza Creek (boreal forest)	Fire (↑)	Climate warming	Combustion	mortality	80	100	http://www.lter.uaf.edu/
	Insect outbreak (↑)	Climate warming	Consumption	mortality	4	100	
Central Arizona-Phoenix (city)							http://caplter.edu
California Current Ecosystem (coastal)	ENSO (unclear trend)	proximal causes are changes in Walker	increased water column stratification, reduced nutrient supply	Faunal/floral displacements	2-7 y	Pacific basin	http://ccelter.sio.ucsd.edu/

		circulation, winds					
	Coastal upwelling variability (↑)	Increased wind stress, climate warming	Increased nutrient supply	Species change	3-10 days	100s of km	
Cedar Creek (grassland)	Fire (↓)	Human population redistribution, fire suppression	combustion	mortality	1-3	1	http://www.lter.umn.edu/
	Drought (↑)	Climate change	Water, heat stress	mortality	50	50,000	
Coweeta (eastern deciduous forest)	Fire (↓)	Human population redistribution, Fire suppression	combustion	mortality	None in 70 yr	.01-.1	http://coweeta.ecology.uga.edu/
	Disease (↓)	Globalization	defoliation?	mortality	decades	10000	
Florida Coastal Everglades (coastal wetland)	Flooding (↓)	Human pop. redistrib.	deposition	biogeochemical change	10	2500??	http://fcelter.fiu.edu/
	Fire (↑)	Human pop. redistrib.	Combustion	mortality	10	100	
Georgia Coastal Ecosystems (coastal wetland)	Severe drought (↑)	Climate change	Water, heat stress	mortality	3	10,000	http://gce-lter.marsci.uga.edu/
	Hurricanes (↑)	Climate change	Erosion-deposition	mortality	Years???	100	
Hubbard Brook Ecosystem Study (eastern deciduous forest)	Logging (↓)	Globalization, Human population redistribution	Tree bole removal	species change	100	.001-.01	http://www.hubbardbrook.org/
	Hurricanes (no **Δ**)	climate	Mortality	species change	200	.01-.05	

3. Annual report summary

- LNO staff began preparation for the 2009 LTER All Scientists meeting including selecting the venue and dates and writing proposals for supplemental funding for the meeting. Preparations included contracting with the venue, the YMCA of the Rockies, for appropriate meeting space as well as with a professional meeting organizer, the Schneider Group, to assist the LNO with the meeting.
- The LNO provided funding for seven new LTER working groups.
- LNO staff provided overall logistical support for the 2008 LTER Science Council meeting held at the Baltimore Ecosystem Study LTER Site.
- The LNO supported participation by seven LTER scientists in the 2008 mini-symposium at NSF and facilitated the organization of the meeting.
- Continued development of the design and development of the Network Information System. Effort on the Network Information System was focused in supporting sites in their goal toward compliance with the LTER Data Policy by finalizing the Data Access Server (DAS). The DAS model routes all data requests through an authentication, auditing, and notification service, prior to allowing the pass-through of the LTER data on behalf of the site.
- The NIS development team refined the EcoTrends data delivery interface and assisting EcoTrends staff with data entry. Enhancements to the EcoTrends exploratory interface included: adding contextual help for Browse pages; adding multiple selections to drop-down lists in Advanced Search page; restructuring and making search layout collapsible in Advanced Search page; adding advanced sorting and reorganizing layout on Search Result; adding plot options to Search Result; adding additional metadata to the Data Download page; adding additional citation information to all metadata; and refining and reformatting Plot functions.
- The LNO developed and implemented a 3-day training session for LTER Information Managers on working with XML (eXtended Markup Language) and included a special session on Cybersecurity by Mark Servilla and James Brunt. Twenty-five information managers attended.
- LNO staff expended significant effort to engage appropriate user groups to identify site and Network needs to be addressed in the renewal proposal.
- LNO staff coordinated all logistical requirements for 29 meetings involving 374 participants for a total cost of $270,846.
- The LNO formed new partnerships with the National Evolutionary Synthesis Center, Oak Ridge National Laboratory, the USGS NBII, the Global Biodiversity Information, the University of North Carolina, and Yale University in two projects: an NSF INTEROP project (Creation of a Virtual Data Center for the Biodiversity, Ecological and Environmental Sciences) and a second project commonly called DRYAD ("A digital repository for preservation and sharing of data underlying published works in evolutionary biology").

present, and future landscape patterns in the Douglas-fir region of the Pacific Northwest. In: Rochelle, James A.; Lehmann, Leslie A.; Wisniewski, Joe, eds. Forest fragmentation: wildlife and management implications. Leiden, The Netherlands: Koninklijke Brill NV: 61-86. implications.

[2] Yao J, Peters DPC, Havstad KM, Gibbens RP, Herrick JE. 2006. Multi-scale factors and long-term responses of Chihuahuan Desert grasses to drought. Landscape Ecology 21: 1217-1231; Fredrickson E, Havstad KM, Estell R, Hyder P. 1998. Perspectives on desertification: south-western US. JAE 39:191-207.

3 Doran P. T., Priscu J. C., Lyons W. B., McKnight D. M., Fountain A. G., Virginia R. A.,Wall D. H., Parsons A. N., McKay C. P., Clow G. D., Moorhead D. L., and Fritsen C.H. (2002) Antarctic climate cooling and terrestrial ecosystem response. Nature 415: 517-520; Foreman, C.M., C. F. Wolf, and J.C. Priscu (2004) Impact of episodic warming events on the physical, chemical and biological relationships of lakes in the McMurdo Dry Valleys, Antarctica. Aquatic Geochemistry 10: 239-268; Foreman, C.M., C. F. Wolf, and J.C. Priscu (2004) Impact of episodic warming events on the physical, chemical and biological relationships of lakes in the McMurdo Dry Valleys, Antarctica. Aquatic Geochemistry 10: 239-268.

4 Sherrod SK, Seastedt TR, Walker MD. 2005. Arctic, Antarctic, and Alpine Research 37:585-590; Walker DA, Halfpenny JC, Walker MD, Wessman CA. 1993. Bioscience 43:287-301. Litaor MI, Williams MW, Seastedt TR. 2008. J. Geophysical Research vol 113; Seastedt TR, Bowman WD, Caine N, McKnight D, Townsend A, Williams M. 2004. BioScience 54:111-122.

5 Malanson GP, Butler DR, Fagre DB, Walsh SJ, Tomback DF, Daniels LD, Resler LM, Smith WK, Weiss DJ, Peterson DL, Bunn AG, Hiemstra CA, Liptzin D, Bourgeron PS, Shen Z, Millar CI. 2007. Alpine treeline of Western North America: Linking organism-to-landscape dynamics. Physical Geography 28: 378–396.

6 Eberling AW, Laur DR, Rowley RJ. 1985. Marine Biology 84: 287-294; Harrold C, Reed DC. 1985. Ecology 63: 547-560; Reed DC, Rassweiler A, Arkema KK. 2008. Ecology 89:2493-2505.

7 Parmenter, RR. 2008. REM 61:156-168.

8 Augustine, D. J., M. R. Matchett, T. P. Toombs, J. F. Cully Jr, T. L. Johnson, and J. G. Sidle. 2008. Spatiotemporal dynamics of black-tailed prairie dog colonies affected by plague. Landscape Ecology 23:255-267.

Santa Barbara Coastal (terrestrial)	Fire (↑)	Human pop. redistrib., climate warming	Combustion	mortality	15	1	
	Grazing (↓)	Globalization	↓ consumption		50	100	
Sevilleta[7] (iarid grassland)	Drought (↑)	Climate change	Water, heat stress	Mortality	2-3	1000	http://sev.lternet.edu/
	Fire (↑)	Human population redistribution	Combustion	mortality	8-10	.1	
Shortgrass Steppe[8] (semiarid grassland)	Plowing (↓)	Human policies	altered landscape composition/connectivity	Species loss	>50y	.2	http://sgs.cnr.colostate.edu/
	Prairie dogs (↑)	Introduction of exotic disease	Burrowing, plant consumption	Altered species composition (flora/fauna), soil redistribution, change in nutrient cycling	2-20y	1	
Virginia Coast Reserve (coastal)							http://www.vcrlter.virginia.edu/

*Major disturbances are defined as those having the greatest importance in recent decades in shaping the structure and long-term (decades to centuries) dynamics of a site. These disturbances could be small in extent and frequently occurring or large in extent or infrequent. The trend (positive, negative, no change) over the past decades is also shown. Both natural-occurring and anthropogenic disturbance can be listed.

[1] Morrison, Peter H.; Swanson, Frederick J. 1990. Fire history and pattern in a Cascade Range landscape. Gen Tech. Rep. PNW-GTR-254. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 77 p.; Garman, Steven L.; Swanson, Frederick J.; Spies, Thomas A. 1999. Past,

Coral Reef (coral reef)	(pH ↓)	CO_2 levels – climate change	(↓) growth		1000??		
	Coral bleaching (↑)	Climate change – irradiance and SST		(↑) mortality	50-100	Local - Global	
North Temperate Lakes (lakes)	Invasive species (↑)	Human transport		Species change	Not cyclic	0.01-10	
	Eutrophication (↑)	Agricultural practices, land disturbance		Change in nutrient cycles, water quality, species	Not cyclic	100-1000	http://limnosun.limnology.wisc.edu/
Niwot Ridge[4] (alpine tundra)	Gopher activity (no Δ)	unknown	burrowing	Species change	Decadel	10-100 m2	
	Snow amount/duration (↑)	climate change	deposition	Species change	1	100s	
Niwot Ridge[5] (forest-tundra ecotone)	Snow amount/duration (no Δ)	Climate change	deposition	Tree and patch distribution change	1	100-500	http://culter.colorado.edu/NWT/
	Wind (no Δ)	Climate change	Temperature stress	Tree and patch distribution change	1	1000s	
Palmer Station (Antarctic marine)	Snowfall (↑)	Sea ice retreat		Seabird mortality ↑	1	100	
	Sea ice retreat (↑)	Climate warming		Albedo change; trophic change	1	1000	http://pal.lternet.edu/
Plum Island (coastal)	Land-use change (↑)	Human population redistribution		Hydrologic change	1	1000	
	Storms (↑)	Climate change	Erosion		Years??	1000?	http://ecosystems.mbl.edu/PIE/
Santa Barbara Coastal[6] (coastal)	Large wave events (↑)	Climate change		Mortality	2	100	
	Episodic grazing (↑)	Climate change, fishing		Mortality	3-5	1	http://sbc.lternet.edu/

Harvard Forest (eastern deciduous forest)	Land clearing (↓)	Human population redistribution	Landscape change	species change	100	10,000	http://harvardforest.fas.harvard.edu/
	Logging (no Δ)		Tree bole removal	Mortality	10	.01	
Jornada Basin[2] (desert grassland)	Drought (↑)	Climate change	Water, heat stress	State change	30-50	100s	http://jornada-www.nmsu.edu
	Grazing (↓)	management	Grass consumption	State change	1	100s	
Kellogg Biological Station (agricultural)	Drought (↑)	Climate change	Water, heat stress	↓ NPP	3-10	10s	http://lter.kbs.msu.edu/
	Exotic pest (invasive species) (↑)	Globalization	defoliation	↓ NPP	10-20	100s	
Konza Prairie (mesic grassland)	Fire (↓)	Human population redistribution, fire suppression	combustion	Woody plant expansion, land cover change	5	.1-1.0	http://www.konza.ksu.edu/
	Grazing (↑)	Human population redistribution	↑ consumption	↓ landscape heterogeneity	1	10	
Luquillo (tropical forest)	Hurricanes (↑)	Climate change	defoliation	Biomass transfer from canopy to soil surface	20	100??	http://luq.lternet.edu/
	Logging (↓)	Globalization; human pop. redistrib.	Tree removal	Species conservation	50??	1	
McMurdo Dry Valleys[3] (Antarctica)	Summer air temperatures (↓)	Ozone hole		microbial abundance (↓)	??	$>10^4$ km^2	http://www.mcmlter.org/
	Floods	Air temperatures melting ice	Soil wetting, sediment to lakes		10		
Moorea	Ocean acidification	Atmospheric	(↑) mortality		100-	Global	http://mcr.lternet.edu/