LTER NETWORK ACTIVITIES

PIE LTER has established numerous linkages with other LTER sites and the LTER network. We have hosted and co-organized network-wide meetings, initiated new network-wide intercomparison projects, organized science symposiums, served on steering committees for several intersite and network activities, participated in LTER Planning Grant development and worked to involve LTER interests and sites within the NEON and CUASHI programs.

PIE scientists have participated at a variety of levels in network-wide committees. IM manager, Hap Garritt, has been a member of the unit dictionary and GIS Information Managers working groups, and is currently a member of IM EXEC. Charles Hopkinson has been the site representative on the Coordinating Committee and is currently a member of the Executive Board. He also represents the research community on the Network Information Science Advisory Committee (NISAC).

PIE scientists have been frequent participants in the annual mini-symposiums held at NSF in Washington, DC each winter. For the 2003 mini-symposium, Hopkinson spoke on the subject of linking social science with land-water interactions. He co-organized (with Ducklow and Reed) and spoke at the coastal/marine science mini-symposium in March 2005. This past winter (2007), he co-organized (with Carpenter and Grove) the mini-symposium featuring the linking of social and ecosystem science in the LTER network. In 2004, Gil Pontius participated in another mini-symposium featuring social science, speaking on the issue of land use change modeling.

Comparative and cross-site research has been a strong theme in PIE research. In addition to comparisons across systems within our own research program, PIE scientists have been involved in several cross-site experimental and synthesis activities that involved multiple LTERs. Bruce Peterson has been involved in the LINX (Lotic Interstream Nitrogen Experiment) cross-site stream experiments, serving on the executive committee of LINX II, which compared N cycling dynamics in "disturbed" agricultural and urban systems across the country (Fig 8-1). The Plum Island Sound watershed was one site across 8 biomes in the US chosen for intensive experimentation. The experiment involved the use of ^{15}N tracers to determine nitrate uptake and denitrification in forested, agricultural and urban streams in the Ipswich and Parker River watersheds. The goal was to improve our ability to predict the extent of nitrogen processing in streams and it's relationship to land use patterns in the watershed. Chuck Hopkinson participated (2003-2005) in an LTER-initiated and NCEAS funded project examining the use of an ecosystem services-based approach to guiding natural resource management (Farber et al. 2006). This activity and PIE's involvement continues with additional funding from the Moore Foundation to BES scientist, Bob Constanza, at UVM. Another project, initiated at the Salt Lake City All-Scientists Meeting workshop, has been studying organic matter preservation in soils and sediments. PIE scientists, Jim Morris and Chuck Hopkinson, took the

Fig 8-1. PIE scientists Bruce Peterson and Suzanne Thomas working with Jody Potter from UNH on a tributary of the Rio Icacos, a Luquillo LTER LINX-II site.

initial lead in developing this intersite, comparative study into the controls on organic matter storage in soils and flooded sediments. We were successful in obtaining network office funds to expand these activities for several years. The group is now preparing a manuscript summarizing findings under the direction of Chris Craft from the Georgia Coastal LTER. Finally PIE scientists are always well represented at the LTER all-scientists meetings. In the 2003 meeting in Seattle, Anne Giblin was one of the invited plenary speakers.

PIE scientists have also played an active role in the ongoing LTER network-planning grant. With NSF funds the LTER network is actively developing a strategic plan for LTER that will raise social science to be an equal partner in ecosystem research at LTER sites as well as promote much more extensive intersite, cross-site, synthetic and regional science in the LTER program. Liz Duff, our schoolyard director, has participated in several educational committee strategic planning meetings and has been working on including science from the Arctic and Harvard Forest LTERs into her K-12 activities. Gil Pontius has been an active player in incorporating social science into the strategic plan, participating in mini-symposia at NSF and attending and organizing workshops. Chuck Hopkinson organized a workshop with Deb Peters from the Jornada LTER to discuss the role of simulation modeling as a means of promoting synthesis within the LTER network. Joe Vallino actually represented PIE at the modeling workshop in Las Cruces in Aug 2006. Joe Vallino also attended the many workshops on developing "human – natural system loop-diagrams for the strategic plan. Finally Hopkinson organized along with David Foster and Charlie Driscoll a joint New England (and potentially Baltimore) LTER meeting / workshop to discuss regional collaborations as a means of promoting synthesis as a component of the strategic plan.

NEON (National Ecological Observatory Network) has also been a component of PIE's LTER network activities. Our participation was mostly focused on trying to involve as much of the LTER network into NEON as possible. Monitoring ecological systems is a major component of all LTERs so it made sense to try to involve LTER sites as NEON sites. Towards this involvement PIE scientist John Hobbie organized a meeting to discuss simulation modeling as a synthetic tool within NEON. Gil Pontius, Joe Vallino, and Charlie Vörösmarty attended the workshop. Hopkinson and Hobbie attended the 3C's NEON planning meeting at Las Cruces in 2006 with the goal of developing 2 continental scale gradient networks, one involving suburbanization, land use change and N deposition gradients and another involving the effects of sea level rise and hurricanes on the ability of coastal wetlands and inland forests to provide ecosystem services. RFIs submitted on these subjects recommended the inclusion of several LTER sites into proposed networks (urban/rural RFI led by Nancy Grimm with Hopkinson as 1 of 6 other contributors and coastal wetland/ hurricane RFI led by Chuck Hopkinson with 4 other LTER scientists (from Puerto Rico and Georgia coastal) and many out-of-LTER-network contributors).

Finally PIE LTER has also been involved in the Consortium of Universities for the Advancement of Hydrological Sciences (CUAHSI) through Charlie Vörösmarty. Vörösmarty has received funding by NSF to spearhead a regional synthesis center with the primary goal to quantify the widespread alteration of hydrologic systems over local-to-regional domains focusing on the Northeast corridor of the United States over a 500-yr period (1600 to 2100). This effort also involves Co-PIs L. Band, D. Lettenmaier, and R. Vogel,

A working group will study Regional Watersheds, Hydromorphology, and Continental Processes, for the purpose of carrying-out synthesis activities and serving as a test-bed for ideas

on how to optimally execute synthesis. The Northeast corridor is the focus area because it offers a data rich environment bearing a long history of human interaction with ecohydrologic systems. The presence of four LTER sites (Hubbard Brook, Plum Island Estuary, Harvard Forest, and the Baltimore Ecosystem Study) and other intensive research sites embedded within larger watersheds provides a context for spatial scaling and for investigating the 500-year history of hydromorphic evolution of regional watersheds. Three of the LTER sites incorporate integrated studies of historical ecohydrologic, land use, and societal change. Three of the sites (HB, PIE, BES) include intensively instrumented, nested watershed systems, while two (HF and BES) include eddy flux towers in forest and urbanized landscapes. All sites incorporate a gradient from forest to urban sites, with comprehensive information and research programs on water, carbon, nutrient cycling. Comprehensive environmental histories of colonization, industrialization, urbanization/suburbanization also help to ensure detection of strong signal-to-noise relationships. Ongoing studies of land-to-coastal ecosystem coupling (e.g. Ipswich River / Plum Island Sound and Chesapeake Bay studies) also argue for the region as an important testbed to assess human impacts on major economically important environments of an entire region.