

LTER National Advisory Board - 2001 Comment

The National Advisory Board met for the second time 7-8 February 2001 in Arlington, VA. Unfortunately, only three members of the board were available. Paul Risser attended for day one, and Jim MacMahon and Bill Heal for both days. Thus, this report will not have the same spectrum of viewpoints that might have occurred had other board members been in attendance.

The LTER program continues to be a very successful scientific endeavor. Many important insights have derived from the work conducted on these sites. Significant contributions have been made to both applied and theoretical ecology by the cadre of scientists associated with the LTER. Our comments are not meant to be negative. Rather, they offer advice concerning areas that could further enhance the scientific quality and reflect the maturity of the program as well as responding to research priorities. It is our impression that the LTER program scientists have responded very positively to the past comments made in the National Advisory Board's 1998 report and we are confident they will do so for this report.

Here we list some important topic areas and briefly mention some of our observations.

1. Setting Priorities - Priorities have been analyzed by assessing the preferences of LTER scientists in order to use these data to set a final series of project priorities. In order to set a reasonable group of priorities, it is important that the scientists clearly define their goals, strategies, and the activities needed to attain these goals. This will be a complicated process but is an important component of the upcoming 20-year review. The data from the internal site survey suggest some priority areas. However, much remains to be done to define strategies and activities, to develop network activities and to ensure external consultation.

2. Network structure - It seems important, at this juncture, that the network begin to consider the number of sites that is optimal for this program. One could increase the number of sites if there was a scientific basis for adding a site that was

related to current research. Additions might be accomplished in order to finish analysis of a particular environmental gradient or to extrapolate processes to a variety of other sites. Any consideration of the expansion to the program must be based on a series of explicit scientific questions that the investigators believe are important to the overall project. We are not suggesting that additional sites be considered. We merely want to be clear that scientific questions, not geographic representation or other criteria, be used to make decisions about possible program expansion.

3. Increasing Responsibilities - It is important that scientists do not overreach their capacity to perform. Many activities may seem significant and important, however, any one of these might detract from the overall goal of scientific excellence in long-term ecological processes. Major new activities should be scrutinized carefully to evaluate the real cost in terms of the dollars and manpower that they require. Education is an example of such an activity. Outreach and education are important components of LTER projects, however, delving into this area too greatly is an example of mission creep and with resources as scarce as they are, one has to weigh investments made in any new endeavor against those demanded by the science of the LTER network. As in other topics, the educational opportunities provided by LTER can be exploited primarily by professional educationalists rather than by LTER researchers.

4. ILTER - International cooperation is a complicated matter and LTER has been a key stimulus to the development of LTER sites around the world. The US program should continue to foster international cooperation and capacity building but cannot expend much time or many resources on doing this. In fact, we must establish relations that help the US program to attain its science goals and not merely form relationships with any program that happens to get started. Strengthening of international regional networks can focus on common environments and issues. It is conceivable that the US LTER could supply a coordinator to help assure the strength and direction of such cooperative international programs but co-sponsorship with other national or regional organizations could share costs and effort.

5. Partnerships - Again, partnerships, e.g., with Federal agencies and NGOs, can be extremely positive associations for the LTER program. However, constant vigilance must be given to the cost to LTER in terms of time and money and LTER must be sure that its goals and standards are consistent with their partners. Partnerships with physical and social scientists may become an increasing priority as the emphasis shifts towards scaling up from site to system science.

6. Regionalization - There may be other regions within North America and other countries that would be reasonable places for satellite studies linked to existing LTER sites. Reasons that this might be important are to develop either short duration, high intensity sites to test a specific hypothesis or long duration, low intensity sites that provide monitoring to help fill in a gradient of some ecological variable measured on an existing LTER site. Similarly some studies of satellite sites, in addition to the current suite of LTER sites, might be established in order to respond to specific, infrequent events with studies directed to elucidate principals that are being studied over a longer term by the LTER program.

7. Cross-site activities - Cross-site comparisons and other activities depend on investigator-driven research questions. The central program can stimulate and enhance such activities, but chances are if they tried to mandate them they will meet with failure. Thus, creative ways must be developed to foster these kinds of activities. Examples of successes to date include some cross-site comparisons, the production of site-oriented or process-oriented books, and the LIDET Program. As previously recognized, much more synthesis activity is required of the LTER program if its overarching are to be met.

8. New metrics of performance - It is extremely important that the LTER program develop a series of metrics to measure its performance. These metrics must be specifically directed to quantifying the attainment of the science goals of the project. This must be accomplished in the very near future so that the scientific community and funding agencies see that, by any objective measure, this program is attaining its goals and is worth further investment. This is one of the few programs that is in a position to

look at long term, non-linear, threshold phenomena that may be extremely important in driving natural systems. It is important that this program be continued, however, it must demonstrate its 20 years of success in an objective and unambiguous manner. Finally, the design of the LTER program pre-adapts it to address an ever-changing array of questions important to the scientific community and society. It should seize this unique situation to further promote its value by demonstrating its strength.

9. New methods - Since outreach is one goal of the LTER program, some time should be spent on how one can inexpensively produce outreach programs that have the highest impact. Perhaps the use of Instructional Technology techniques to create virtual field trips such as that produced by Niwot Ridge or the Visit Us Program of the Antarctic program could be used. These activities need to be coordinated across sites. Their production needs to be professional and economical. Paper-based outreach may be expensive and ineffective in many cases.

After 20 years, some introspection is warranted. One final concern is that we had the feeling that LTER personnel were prepared to answer questions that might be asked, not questions that should be asked. There are insufficient funds for this program to be all things to all people. They must hold the course of directing themselves to a set of well articulated scientific questions as their highest priority.

Undoubtedly, this is a very successful program with a promising future. The LTER sites and network can increasingly provide a critical focus for understanding ecosystem responses to change. We are happy to be associated with it.