

Subject: LTER Network Office mid-term site review Date: Fri, 29 Jun 2012 13:55:34 -0400

Dear Dr. Waide,

On behalf of the NSF LTER Working Group, I am pleased to forward to you the mid-term site review report, which we received on Monday 18 June 2012. The mid-term review and the committee's subsequent report are comprehensive and careful evaluations of diverse Network Office activities. As the report indicates, the site review committee was supportive of the Network Office's contributions in several areas. The committee also identified a number of areas in which improvements could be made along with recommendations that will strengthen the Network Office over its remaining three years.

NSF urges you to consider these recommendations as you plan resources and activities over the remainder of both of your current awards. This planning will be particularly important for the ARRA award, and NSF's comments on the revised scope of this award in light of the mid-term site review will be forthcoming.

Because the time available for a comprehensive review of an office as complex as yours was limited, the review committee may have missed important details or misinterpreted some of the information provided. We invite you to respond to this report, particularly with respect to misinformation or misinterpretations that it includes. If you wish to respond, we request that you do so within 30 days.

Peter McCartney, Matt Kane, and I have jointly composed NSF's response to the site committee's report, and we organize our comments and concerns to correspond with the key points in the report's Executive Summary.

The Executive Summary is concise and direct, and it largely reflects NSF's perception of the strengths of the Network Office. The Network Office clearly forms a critical center of the LTER network and is highly appreciated for bringing representatives from the LTER sites together in working groups, training sessions, and other LTER meetings. Development of core aspects of the PASTA architecture is another strength; this software will accelerate the availability of all LTER data through a single data portal. Many aspects of the more general information management support provided by the Network Office are also successful, and this success is evidenced by the fact that the LTER community looks to the Network Office for expanded IM support and training.

NSF also agrees with the weaknesses or areas for improvement highlighted in the Executive Summary. One pressing issue is for the Network Office to accelerate the production of PASTA, quickly moving beyond prototype into full operation. A second need is for the Network Office to engage fully in a broader range of activities to support the network. The Network Office has yet to develop a clear science agenda, and its absence has important consequences for all aspects of the Office, as detailed below. Communication, both within the LTER community and to a broader research community, needs strengthening, as do basic information technology services. There remains a serious lack of methods to evaluate and assess Network Office activities, even though this need has been raised since 2005. Details on each of these areas are provided below.

1. NIS and PASTA: The NIS presented to site review team differs substantially from previous descriptions; it has been pared down to focus on harvesting data and metadata from individual sites, identifying the provenance of data, and preserving data in accessible, well-documented states through a single data portal. The development of the PASTA architecture to accomplish this goal is commendable, and closely matches recent NSF recommendations. Full and speedy implementation of PASTA should finally eliminate the persistent problems encountered with accessing LTER data and could eliminate the need for individual sites to retain data registries. NSF strongly recommends that this portion of the NIS be made operational as soon as possible. Both the software and the user community are ready. Subsequent modifications can be made sequentially as active users identify problems. As noted by the site review

committee, rapid implementation of PASTA requires an operational plan that includes a phased roll out, testing, and subsequent improvements.

NSF considers production of NIS data modules or derived data products to be the second important component of a full NIS. These modules should address specific, LTER-wide scientific needs or questions. Early examples of NIS modules include ClimDB, HydroDB, and EcoTrends. This component of NIS was not presented during the site review. We left the review with the implicit understanding that data ingested via PASTA would be available to existing software programs such as Matlab or R to create derived data products and analyze data, but that the NIS would not include this important second component.

NSF agrees with the site review committee that LTER science priorities and scientists must be involved directly in the development and operation of the NIS, particularly with respect to the development of NIS data modules. It is not clear that the Network Office has engaged LTER scientists in this critical aspect or has plans to develop future NIS modules based on identified scientific priorities. Subsequent to the site review, individual sites have requested supplemental funding to develop new data products, although these are not defined by particular research questions. NSF feels strongly that such network-level activities or improvements should be motivated by scientific needs and supported by the Network Office to benefit all sites.

2. Synthesis Science: The process of synthesizing data and research activities across sites lies at the heart of the LTER 'network.' The Network Office clearly plays a vital role in coalescing sites into a network, but it has yet to develop a research agenda to organize and prioritize its activities, to guide future development of the NIS, or to coordinate its diverse activities. Given that LTER is fundamentally a research program, the goals and mission of the Network Office must be placed firmly within a scientific agenda.

The absence of metrics for assessment or evaluation relates to this concern, as there currently are no means in place for the Network Office to assess the effectiveness of its activities or to prioritize them. A related issue is a perceived lack of transparency with respect to some Network Office functions. Specifically, it is not clear how proposals (for workshops, training) are evaluated, what conflict of interest policy is in place, what criteria are used to make decisions, or what information is transmitted to unsuccessful researchers.

3. Communication: A Strategic Communication Plan places high priority on improved communication with policy, management, federal agencies, and the general public. NSF recommends that top priority be placed on improving internal communication. The Network Office produces a newsletter, but many LTER researchers have poor understanding of what the office does, what its goals, procedures, and timelines are, what it produces, and what services it provides. There are clear opportunities at meetings such as the Science Council for the Network Office to present updates on its activities. The second highest priority should be improved communication with the broader ecological community. This would bring numerous advantages, including wider use of LTER data. In NSF's view, the very lowest priority should be promotional communication.

4. Core IT Services: As mentioned above and in the site review report, the LTER community has come to expect from the Network Office consulting, training, and assistance on diverse data management and information technology issues. Providing these services clearly requires a balance between dependence on site Information Managers to develop the skills needed across the LTER community and provision, through the Network Office, of consulting and training in the necessary, basic skills. Currently, the Network Office appears to rely on site IMs to provide technical guidance, leadership, and the development of tools (such as a controlled vocabulary or EML standards). This reliance extends to development of core network products such as derived databases. NSF encourages the Network Office to play a larger role in the development of network-wide tools and data products. With respect to basic IT support, possible solutions include developing an IT help desk to address network-wide demands and compensating site information managers for their participation in network-wide improvements. There are

additional, unmet needs to improve the data management skills of site information managers, some of whom have fewer skills than others. The training facilities at the Network Office provide the perfect venue for this, but the training sessions offered are often unrelated to these basic skills.

5. Assessment and evaluation: In response to previous site reviews, the Network Office proposed to develop metrics to assess the performance and value of its various activities. NSF's experience with synthesis centers shows that carefully developed, formative evaluation and assessment tools are necessary to set priorities, evaluate ongoing activities, and manage a diverse project adaptively. This is one area where strategic partnerships could rapidly advance the Network Office's development. Regardless of how this need is filled, implementation of effective means of evaluation and assessment is essential.

6. Organization, Management, Institutional Support, Advisory input: Among the recommendations made by the site review committee in this broad area, NSF considers the most important to be a) establishment of an external advisory board and b) the strategic use of partnerships to forward goals of information management, assessment, education, and outreach. The current structure of the Network Office makes for very obscure lines of responsibility or reporting. Criteria used for reviewing personnel, the schedule for these reviews, criteria used to hire new staff, and the direct lines of reporting are poorly defined. This is a larger issue that needs to be resolved between NSF and UNM over coming year.

When these recommendations are taken together, NSF's agrees with the site review committee significant adjustments to Network Office activities along with reallocation of funds will be needed to ensure success during the remaining three years of the award.

I look forward to discussing these documents with you at your convenience,

With best wishes,

Saran

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