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ATD Response to NSF Review Panel Recommendations

Summary

In late October and early November of 2001, a distinguished group of atmospheric scientists reviewed NCAR's Atmospheric Technology Division as part of an overall NSF review of NCAR programs and activities. In a thoughtful and thorough report, the review panel made many recommendations. Overall, the review panel concluded:

“The overall quality of ATD instrumentation, platforms, and deployment services, and science is high. ATD management and staff appear committed to a properly balanced program of serving the community, advancing technology, and conducting scientific inquiry.”

ATD extends sincere thanks to the panel members who read all the review materials, listened to all the presentations, and spent considerable time in discussions with staff. ATD has developed positive responses to each recommendation as follows.

II. Findings and Recommendations.

A. Productivity in the past three years and projected productivity for the next three years; including cross-divisional activities.

Recommendations.

“ATD should attempt to develop better metrics for the scientific success that results from their deployments and facilities instruments.”

Response – In the current NSF-approved facility request process, ATD asks each investigator to list all publications resulting from previous uses of Lower Atmospheric Observing Facilities (LAOF). In addition, ATD applies various search tools to publication databases to identify uses of NSF LAOF systems. ATD will periodically report such information to the OFAP (Observing Facilities Advisory Panel) and to the NSF LAOF Program Manager. No method catches all publications. NSF may have its own scientific metrics that apply to LAOF systems. ATD will work with NSF LAOF on this issue.

“ATD should continue to pursue instrument developments that are compatible with its funding, engineering, and scientific capabilities and should partner with the external community for more complex developments.”

Response – We believe plans expressed in ATD's annual budget narrative/program plan and ATD's participation in various NCAR science initiatives follow exactly this model. In particular, ATD's plans for a complex high-resolution scanning water vapor DIAL system

involve national and international partners. ATD expects many of the HIAPER instrumentation development efforts to involve substantial university, laboratory, and international partners.

“ATD should establish a website that can serve as a clearinghouse for all instrumentation that is available within the larger science community, so that potential collaborators are made aware of their existence. PI’s would be responsible for the descriptions of their instruments on the website.”

Response – ATD will evaluate the content and usage of the current chemistry instrumentation inventory on the web and develop a prototype of a proposed expanded instrumentation clearinghouse web site for OFAP in fall 02 or spring 03. This activity will have to wait until after IHOP.

B. Consistency with NCAR’s six thematic areas.

Recommendations.

“ATD staff should survey university faculty members about the utility of education strategies, including deploying an ISS for education, before initiating them.”

Response – ATD, UCAR and AMS have done repeated surveys of community needs in the areas of using observational systems as part of campus educational activities and overall education in use of observations. No clear consensus emerges. ATD will continue to focus on supporting university faculty who want to use ATD systems for educational programs on their campus, on post-Docs and other visitors, and on summer internships for pre-engineering or early engineering students. ATD will work with OFAP to identify other educational opportunities.

C. Service to the atmospheric sciences community.

Recommendations.

“ATD is encouraged to continue to develop open communications and teamwork between project management, aircrews, and scientists to achieve the goals of each field experiment with the safest possible operations.”

Response – ATD will continue the strong communication and safety efforts currently led by Jeff Stith at RAF.

“ATD should develop methods to efficiently transfer technology and knowledge about instrument automation and downsizing to community scientists who need it. This will require a reconsideration of staffing constitution and staffing duties.”

Response – ATD will take this aspect of technology transfer and community information sharing very seriously as part of its role in NCAR’s Advanced Observing System Initiative.

“ATD should continue to work with Unidata, SCD, and JOSS to integrate data and make manipulation and retrieval as seamless and straightforward to the user as possible.”

Response – ATD and UNIDATA have continued to work together on a new 3-D data viewer and will deploy that viewer in test mode during IHOP. The ATD Director and ATD Research Data Program Manager will continue to play key roles in the planning and leadership of UCAR-wide data management groups. ATD will continue to work with SCD to make ATD easily available from the SCD Mass Store.

D. Division management and leadership; workforce / workload issues.

Recommendations.

“ATD should determine, with more specific and quantitative justification, how many staff are needed to address its diverse missions. Undertaking this process is particularly important in an environment of level funding.”

Response – ATD prepared specific staffing recommendations and requests as part of the annual budget narrative/program plan process within NCAR. ATD management continually assesses staff needs against changing workloads and will continue to provide feedback on those issues to NCAR and NSF.

“ATD management needs to communicate better with staff, especially regarding difficult priority issues that arise from resource and staff shortages.”

Response – The ATD management team commits to increasing communication via messages and meetings, especially as ATD and the HIAPER Project Office begin the actual work of procuring HIAPER.

“Based on the expected demand for HIAPER, ATD management and NSF must provide resources for additional staff to support HIAPER and must develop the funding stream as soon as the complete HIAPER funding materializes.”

Response – ATD, NCAR and NSF have identified a staffing and operational increment needed to cover the expected level of HIAPER operations. The NSF MRE (now MREFC) budget requests and the NCAR and ATD program plans identify these funds as a long-term need.

“NCAR should devote significant energy to selecting the right person as the HIAPER Project Office manager. It is critical that this person be able to maintain close relationships with ATD management and staff to ensure the success of HIAPER and the smooth integration of HIAPER into the RAF fleet.”

Response – NCAR has just announced the selection of Krista Laursen, one of ATD’s top field project managers, as HIAPER Project Office Director. ATD feels confident that Krista will maintain strong successful connections with ATD throughout the HIAPER procurement.

“The panel encourages the hiring of new, early-career scientists and engineers, which will help productivity. The achievement of satisfactory workforce diversity should be a high priority within ATD.”

Response – ATD has made significant progress in hiring young scientists and engineers from diverse backgrounds in the past 15 months. NCAR plans to include engineering professionals as part of a new round of institutional recruitment of young staff.

E. Setting priorities: deployments/development/science; facilities

Recommendations.

“ATD should establish a process by which more community input and ATD staff input is used in deciding which instrument development projects are viable, useful to the community, and should go forward.”

Response – In developing long-term plans, ATD relies heavily on community-based planning processes such as the NRC BASC report process, the US Carbon Cycle science planning process, and various USWRP prospectus teams and planning meetings. In addition, ATD pays close attention to the observing system needs of large research projects that represent a substantial community planning effort, such as IHOP, THORPEX, RIME, etc. In partnership with NSF and members of the university community, ATD holds workshops on specific observational systems, such as water vapor remote sensing and ground-based mobile systems. ATD works in partnership with other NCAR divisions on major proposals for outside development funding and in planning observational components of NCAR’s on-going programs and strategic initiatives. This array of community input and review regularly identifies needs for new or upgraded observing systems and for expanded ATD services. ATD integrates community requirements and requests with knowledge of capabilities, partnerships, schedules, and resources to identify development efforts that seem likely to serve the largest fraction of NSF-funded users. ATD will work with the NSF LAOF Program Manager and NSF/ATM Grants Program Managers to assess current processes and evaluate various mechanisms for additional community input.

“OFAP should be consulted at the earliest possible stages in the development of large projects.”

Response – ATD strongly agrees with this recommendation and will work with OFAP chairpersons to ensure that the panel has sufficient time to devote to development planning and review.

III. Summary Evaluation.

“The overall quality of ATD instrumentation, platforms, and deployment services, and science is high. ATD management and staff appear committed to a properly balanced program of serving the community, advancing technology, and conducting scientific inquiry.”

Response - ATD faces a continual challenge to maintain an effective balance among field project support, new development efforts, and individual and collaborative research. ATD appreciates the panel’s assessment that the current balance seems appropriate.

“The panel is concerned that this quality, level of activity, and balance is threatened in a current climate of level funding. NSF, NCAR, and ATD need to ensure that the resources are available to maintain ATD’s high performance in these areas. Closer communication and coordination

between ATD and ATM concerning potential research and development projects is becoming more critical.”

Response – For its part, ATD will work with NCAR and NSF to identify resource levels appropriate for sustaining ATD’s high level of community service. With NCAR support, ATD will re-institute briefings to NSF/ATM about upcoming projects and developments and work closely with the LAOF Program Manager on communication and coordination issues.

“HIAPER is expected to be the single largest facility investment at NCAR in the next five years. ATD management and staff should determine the total impact of HIAPER on ATD and its activities. NCAR, ATD, and the HIAPER Project Office must develop a plan for obtaining the necessary staff and resources to address that impact.”

Response - NCAR, ATD, and the HIAPER Project Office expect to establish an effective and productive staffing and working relationship to enable ATD to sustain its community service functions while HIAPER Project Office meets its oversight and management requirements.

“ATD should determine, with more specific and quantitative justification, how many staff are needed to address its diverse missions in a resource-limited environment.”

Response – ATD regularly prepares specific staffing recommendations and requests as part of the annual budget narrative/program plan process within NCAR. The NCAR Director will work with NSF to ensure appropriate support for ATD’s activities within overall NCAR missions and priorities.

“Getting community advice into the selection process for new instrument developments is important for ATD and good for the community’s scientific productivity.”

Response - ATD feels that it incorporates an extraordinary amount of community advice in all its activities, including in instrument developments. ATD will continue to work with the NSF LAOF Program Manager and NSF/ATM Grants Program Managers to assess current processes and evaluate various mechanisms for additional community input.