SIRTF User's Panel (SUP)
Meeting #6
2000 November 13-14

Report submitted by Steve Strom (Chair)

Large Programs with SIRTF

The SIRTF Legacy TAC noted the high quality of the proposals received in response to the Legacy Science Call for Proposals and urged the SSC consider the option of reserving time in Cycle 2 to enable scheduling of large, coherent science programs. In response, the SSC asked the SUP to discuss the merits of providing the option to propose large (100-300 hour) programs in Cycle 2 and beyond. The SUP strongly endorses the notion of including a call for large proposals in Cycle 2.

Based on experience with HST and ground-based facilities, we believe (1) the opportunity to propose such programs will likely elicit a large number of excellent proposals; (2) that review of such large programs be carried out either by a separate TAC assigned a TBD fraction of the total available time, or a 'super-TAC' charged with establishing the optimal balance between normal GO and large proposals based on the relative merits of proposals in the 'grey area' of each category.

SUP believes that proposals for large programs need not require the same level of responsibility for management, SSC project review, or ancillary data analysis tool development as required of Legacy teams. However, the SUP was not of single mind regarding the data release policy for large proposals. Some members argued that the call for large proposals include 'incentives' to encourage early release of datasets to the SIRTF archives, while other argued in favor of a normal (one year) data evaluation period.

We request that SSC provide a strawman outline for a 'large proposal' call prior to our FEB 01 telecon. At that time, we will provide more detailed commentary on the merits and liabilities of each element of the call.

The Science Staff at SSC

The SUP has noted on several occasions the importance of recruiting and motivating a first-rate scientific staff at SSC. We are pleased to note the quality of recent recruits and their obvious strong commitment to SSC goals. We commend SSC management for their efforts not only in attracting excellent people, but in providing an exciting and challenging environment.

A high quality staff, involved intimately with the scientific use of SIRTF is critical to SSC's continued ability to provide knowledgeable service to the community of several

thousand potential SIRTF users. The SUP would therefore like to re-emphasize its support for efforts at SSC aimed at providing a stimulating environment for SSC staff and especially for preserving sufficient 'science time' for the staff. Absent opportunities to DO science in a coherent way, we are concerned that the effectiveness of the staff will diminish with time.

We choose to raise this issue again, following our observation that staff seem consumed by a variety of pressing tasks -- so much so that actual time for doing science may be approaching dangerously low levels. This is especially concerning given the relative youth of many SSC staff members.

We urge that SSC management continue to monitor closely (1) the actual COHERENT science time available to SSC staff members; (2) their success in LEADING significant science programs; and (3) the actual service burden on individual staff. Following full implementation of staff evaluation procedures, SUP would like to receive an assessment from SUP regarding the balance of staff science and service time evaluated in light of the high value we place on ensuring the continued scientific vitality of the staff.

We also urge the SSC to explore with NASA Headquarters the possibility of seeking support for postdoctoral fellows whose collaboration with scientific staff members would enable them to continue active research programs even in light of enormous service burdens. Furthermore, SSC management should evaluate and implement, where practical, creative mechanisms for increasing the scientific interactions between in-house staff and external users. In the long term, however, there can be no substitute for coherent, predictable time for doing science.

SUP would like to receive regular reports from SSC management regarding their perceptions of the scientific culture at SSC, the scientific leadership and productivity of the staff and the balance between service and research time. We are prepared in future to provide commentary on the possible need for additional staff at SSC and, if requested, on the appropriate balance between investment in additional SSC scientific staff and the run out in support of GO science. Our success as a community in using SIRTF depends critically on the quality and morale of the SSC scientific staff, and we want to ensure that both remain high.

Pipeline and Analysis Tools

The development of high priority pipeline and analysis tools in time for use by the GTO and Legacy Teams is critical to the early scientific success of the SIRTF mission, and underlies as well the ability of GOs to reduce and analyze their data in a timely way.

The Committee commends the SSC for the impressive progress to date on the development of the downlink pipeline and associated analysis tools. SUP has a keen interest in monitoring progress in this area and anticipates receiving detailed briefings over the next 18 months.

As we continue to review progress in this critical area, it would be helpful were the SSC staff to provide a consolidated overview of the data pipeline and analysis tool package. We understand the current plan of the SSC is to develop an architecture in which most reprocessing by general users is done at the SSC, rather than one in which most reprocessing is done on the user's computer. It is, however, expected that the pipeline or portions thereof, and analysis tools would be available to "power" users on an individual basis.

The SUP would like to have available in advance of its next meeting a more detailed description of the entire data analysis architecture, including most importantly how the archive will work In particular, a more detailed understanding of the plans for on-the-fly calibration would be helpful in order to guide a responsible recommendation regarding the extent to which the complete pipeline packages need be released broadly and quickly to the community.

The SUP also needs additional information regarding how the SSC plans to develop special purpose analysis packages and how they would work within IRAF or IDL. Moreover, it would be helpful to have a more detailed understanding of how tools and analysis packages would be integrated with one another. Expecting interested users to create their own interfaces to IRAF or to IDL is not credible, and will lead to confusion when the SSC has to respond to the problems that users have.

We urge that SSC continue to build on the heritage of algorithms, data reduction modules, and techniques already extant in the astronomical community. To these ends, the SSC staff are urged to contact STScI, CHANDRA, and NOAO IRAF staff and RSI IDL developers and, if possible within schedule and budget constraints, to release analysis packages that are wrapped into complete (e.g., fully-documented, with appropriate parameter files,etc) client installable packages. Lastly, to anticipate potential community requests, the SSC should develop guidelines and policies pertaining to the potential release of the complete pipeline at a time in the mission when a high level of code maturity, fidelity, and calibration accuracy is achieved.

AOT Prioritization

SIRTF science center personnel gave a broad overview the events which led to recent delay of the SIRTF launch date and the new schedule. Although any launch delay is regrettable, the SUP notes with approval the fact that the delay will allow the SIRTF team to begin work on additional AOTs.

The SUP believes that pre-launch development of the IRS spectral mapping mode is of significantly higher scientific priority than development of the IRS peak-up imaging mode. The spectral mapping mode exploits SIRTF's sensitivity to extended emission and will provide SIRTF users with a unique capability for efficient multi-color imaging of planetary nebulae, large galaxies, reflection nebulae. The data cube produced by a

spectral imaging AOR can provide a monochromatic image at any wavelength from 5 to 40um, filling some of the functions of the IRS peak up imaging mode. It may also provide important efficiency gains for studies of bright point sources and will be used in establishing the cross-calibration between the instruments.

The SUP notes that the enhanced capability which peak-up imaging would bring to SIRTF users - particularly the well-sampled imaging at 15um which fills an important gap between MIPS and IRAC - is important scientifically and encourages the SSC to implement this capability following the launch. Furthermore, the SUP recommends that the SSC request and fund the proper cold-filter scan of witness samples of the 15 um and 24um filters from the IRS team to enable the proper photometric calibration of the peak-up array.

SSC Visitor Policy

It is important that the SSC be viewed as the center of SIRTF science activity, not merely as an entity responsible for processing data. One of several ways to achieve this [in perception as well as in reality] is to encourage visits from members of the SIRTF user community, who could both contribute to and share in the scientific ferment which should permeate the SSC. Visitors might come to work with SSC staff on joint research programs or on problems with the SIRTF data products which they have uncovered at their home institutions. The SUP recognizes that the SSC cannot accommodate large numbers of visitors for extended periods of time but encourages the SSC to make it clear that visitors of all types will be welcome under certain [to be defined] conditions.

Calibration Issues

In order to better understand and evaluate the ultimate relative and absolute calibration requirements of the three SIRTF instruments and the calibration performance expected as a function of mission phase, we request that the SSC to provide a one page summary of these data, including as well information about the cross-calibration requirements and the evolution of the cross-calibration with time, to the SUP at our next meeting.

General

The SSC should be congratulated on its rapid development of visualization tools. When completed, the package we reviewed should be an enormous help to the community in planning SIRTF programs.

The SSC deserves praise for restructuring activities in a way that seems to take good advantage of the 'extra' time deriving from the launch slip. The added software capabilities and deeper understanding of instrument checkout and calibration promise a stronger, better SIRTF system.

The SUP recommends that SSC post on the SIRTF web-site a synopsis of the SUP reports to alert and inform the general SIRTF user community about our activities and recommendations.

Telecon

The SUP expects to schedule a telecon with SSC management in mid- to late- FEB 01, with the goal of discussing in some detail priorities on uplink and downlink software following key ground tests.