

## SUP 14 report

With the opening of the Spitzer Archive in May the SSC is now supporting end-to-end observatory data acquisition and delivery on behalf of the Guest Observer community while still fulfilling the needs of the Legacy and GTO communities. Scheduling and operation of the observatory is running at near-peak efficiency and the operations staff continues diligent work to optimize the use of this precious resource. All three instrument pipelines are producing data products which have enabled basic scientific analysis by the observing teams - as vividly demonstrated in the publication of 86 papers in the Astrophysical Journal Supplement Spitzer special issue. Every one of the developments above has required generous, if not heroic, contribution of SSC staff time and effort, many times at the expense of their promised time for individual science. Given the modest level of staffing and the magnitude of the task, the current status and capability of SSC is simply remarkable. Much remains to be done and there are several issues requiring near-term attention, but the SSC can be proud of their achievement and they are deserving of the community's gratitude.

### Staffing issues:

The SUP recognizes that the options for expanding SSC staff are limited and that pending issues must be addressed largely within the existing staffing profile. Nevertheless, SSC has benefited recently from receiving 3 FTEs at this critical time from reallocation from within the Spitzer Project Office. These incremental positions have been extremely valuable in addressing pipeline development and archive issues -- both of vital interest to the user community. The SUP encourages the project to continue to investigate the internal re-distribution of funding to the SSC. One of Spitzer's most valuable characteristics is the 5-year length of its mission which enables observations in the early years to feed back to observing programs later in the observatory's lifetime. Now is the time to optimize the observatory's throughput to the scientific community in order to reap out-year rewards. At this point, the SUP sees each incremental SSC position as directly addressing this critical issue of scientific throughput.

Beginning in about a year the SSC will begin reducing staff as part of the original mission plan. The SUP sees the beginning of this era of contracting resources as a particularly critical time. Only now are the consequences and true personnel costs of routine data acquisition, processing, archive population and reprocessing, and Guest Observer support becoming apparent. The staff is already spread thin. At its next meeting the SUP would like to review SSC's

plan for addressing this era of contracting resources and its implications for user, pipeline, and archive support.

The SUP observes that many of the SSC employees have significantly split responsibilities, including those having primary responsibility for functions such as the archive and public affairs. Given the mission-critical nature of the archive the SUP recommends that SSC management consider consolidating fractional FTE's so a single individual has full-time responsibility for archive management. Similarly, given the importance of maintaining a functional and aggressive public interface the SUP recommends making public affairs a full-time responsibility for a single individual.

Re-allocation of effort within the spectrum of existing tasks can also lead to greater productivity in serving the user community. The SUP notes that a disproportionate fraction of staff time is being consumed by the mechanical support of the GO proposal process. Specifically, the evaluation and resolution of duplicate observations is absorbing substantial effort that could be dedicated to direct user or archive support and thus more effective use of the Observatory's data products. The SUP recommends that the resolution of within-Cycle duplicate observations be given lower priority. SSC should develop a plan which still permits reasonable checks for duplicate observations but with substantially reduced burden on the SSC staff. This plan should be reviewed by the SUP and in place prior to the evaluations necessary for Cycle 2.

#### Visitors:

Visitors and workshops provide natural conduits for feedback to the pipeline/archive development process. The current plan - which will not accommodate visitors to SSC until later in 2005 - should be re-examined. SSC should develop an explicit plan for visitor/community interaction at SSC and is encouraged to accelerate the initiation of a visitors program. Users of the other Great Observatories have come to expect a robust and ongoing program of direct community interaction through workshops and on-site visits from guest investigators.

#### Structure and Navigability of Documentation:

A number of users have commented (both positively as well as negatively) on the volume of documentation available to support proposal development and data analysis. Users are appreciative of the extent and depth of the information available but, at the same time, details are often difficult to find amongst the large amount of

material. A user wishing to develop a new proposal has a choice between the skeletal "Quickstart Proposal Submission Guide" and the 230-page "Observation Planning Cookbook." Cookbook guides for post-BCD data analysis (APEX, MOPEX, IRSFringe...) are lacking in detail.

At the same time, the structure and navigability of the SSC web pages could be improved. The pages provide access to a vast volume of information, but the organization of these pages is often more web-like and tangled than hierarchical. Some example observations from the front SSC web page can illuminate the issues.

- the left-side menu navigation bar changes to a completely different menu bar when pursuing any of the menu links.
- no reference to the list of Spitzer publications appears on the front page. The Spitzer archive of publications is a primary reference and tool for users generating new proposal ideas.
- users "New to Spitzer" are first directed to the 230-page(!) "Observation Planning Cookbook"
- the main text frame on the front page is filled with a mixture of "what's new" items on a broad range of subjects. By contrast, the Chandra front web page provides a structured grouping of practical links in its main text window.
- the ``Spitzer Observer's Manual'' is not linked on the front page. After getting to this manual after following a couple of links one finds (36 pages into the sixth chapter) ``How to Use IRAC'' - which might be a new user's prime objective.

Some restructuring, particularly of the top level page, would provide a more readily navigable interface for incoming new and seasoned Spitzer users.

#### IRS:

The SUP notes that the state of the IRS pipeline continues to be a concern for the user community. The S11 software delivery, and subsequent reprocessing of the entire archived IRS database, may very well address many of these concerns. Rapid community feedback on the results of the S11 IRS reprocessing should be used to inform pipeline development resource allocation. The SUP recommends that SSC assemble IRS-team members and GO's whose observations make significant use of IRS early next year, possibly coincident with the San Diego AAS, in order to assess the community's satisfaction with the S11 IRS data products and overall SSC IRS support.

#### Efficiency of the proposal process:

The one-phase proposal process, requiring submission of both scientific justification and detailed AOR's supporting the observing plan has been identified as a burden on GO's. Plans that require large proposals to submit only example AOR's for GO2 are a step in the right direction. Small proposers are still required to submit complete sets of AOR's with their proposals. The SUP should examine the impact of these requirements on GO proposals following GO2 selection.

#### GO scheduling:

Some GO's have expressed frustration with the lack of feedback concerning when accepted proposals will be scheduled on the Observatory. The SUP recognizes that detailed long-term scheduling is costly, but does request that, if feasible, GO's be given non-binding guidelines as to when observations will likely occur. The SUP notes that as Legacy products become available and proposals naturally concentrate on follow-up observations of specific Legacy targets, long term scheduling will be essential to avoiding conflicts arising from substantial oversubscription of sky locations, particularly given Spitzer's visibility constraints.

#### Archive issues:

**Future Load:** Opening a populated archive on May 11, as recommended in the previous SUP report, was a tremendous achievement for SSC. It was clear from the presentations at the meeting that SSC recognizes the challenges which lie ahead. Demand is increasing substantially and will spike with the opening of archive access to Legacy data products. At present, the archive appears to be seriously underscoped. The next SUP meeting will occur after the archive has been opened for Legacy access. At this time the SUP should review the state of the archive and its usage. This review should be informed by robust statistics reflecting archive usage.

**Reprocessing:** Each successive delivery of new pipeline software invites the opportunity for complete reprocessing of the archive data. As more and more data accumulates in the archive, each reprocessing becomes an increasingly intensive task. SSC should provide and advertise an explicit reprocessing plan which identifies a schedule and policy for reprocessing both to aid in the overall management of the archive as well as to permit users of Spitzer data to plan.

**Post-BCD Source Extraction:** The IRAC section of the Spitzer Observer's Manual (page 121) states that post-BCD processing ``... detects and extracts photometry of point sources, and merges these lists such that fluxes at different bands are associated with

each other.'' Source extractions do not currently appear in the post-BCD section of archived data. Some users are submitting proposals engineered around the expectation that post-BCD source extractions will be available at the time data are delivered as advertised. Community exploitation of the First Look Survey - designed to enhance the scientific productivity of Spitzer by delivering a fiducial database characterizing the infrared sky - is hampered by the lack of available source extractions in the archive. The SSC should define its plan for delivering source extractions to the archive and should make the project's documentation consistent with these goals.

Other issues:

A number of features of the GO2 Call for Proposals such as theory proposals and joint collaborative proposals are new and should be advertised to the community as soon as possible.

Where practical, Legacy data product keywords and formats should be made uniform.