

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.



Spitzer User Panel #14 Report Synopsis and Initial Responses

John Stauffer
SSC System Scientist

December 8, 2004

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Responses to SUP Report

- Beginning in about a year, the SSC will begin reducing staff as part of the original mission plan. 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 the user, pipeline and archive support.

RESPONSE:

The SSC has worked hard to find a way to bring additional resources to the two most understaffed teams (OST and IRS). We have negotiated an agreement with the Spitzer project office at JPL to reallocate some money from JPL mission support to the SSC. We hope that this new funding will allow us to hire three additional staff scientists. We also plan to allocate money from the "Enhanced Science Fund" to allow us to hire one more additional staff scientist. We are currently interviewing applicants for three positions, with the plan to allocate two new hires to the OST team, and one new hire to the IRS team.

We have recently asked the IST leads to develop detailed long-term plans for the level of effort needed to support on-going operations and improvements in the calibration, pipeline processing and post-BCD processing of data from their instrument. We will use their reports (plus similar reports from other teams) to help assess the needed staffing level for the SSC over the next few years, and determine whether our current funding profile is compatible with our staffing needs.

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Responses to SUP Report



- 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. In so far as possible, the SUP recommends trying to consolidate some of these positions (i.e. make the primary task a full time position), so that the job holders can better execute their primary duties.

RESPONSE:

Where possible, the SSC will try to do as recommended by the SUP. However, such task splitting is in part a result of the overall staff reduction. That is, there are many identifiable tasks at the SSC and a slowly shrinking number of FTE's, so some positions will be filled at the partial-FTE level. Another factor is that an increasing number of SSC science staff are already starting the migration to other IPAC projects – and one way we can retain their expertise is to have them work part-time for their new project and part-time for Spitzer.

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Responses to SUP Report



- 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 better used elsewhere. The SUP recommends that the resolution of within-Cycle duplicate observations be given low priority and that a plan be developed that permits reasonable checks for duplicate observations (GO vs. GTO/Legacy) but with substantially reduced burden on the SSC staff.

RESPONSE:

We agree with the SUP recommendation, and will try to implement the recommendation.

We are attempting to develop better tools for automatically flagging duplicate observations. To minimize one of the big time sinks, GO2-GO2 duplications approved by the TAC will simply be executed.

More generally, we agree that we need to find the correct balance between the desire to make the best use of Spitzer observing time (i.e. by not duplicating observations) and the need to accomplish all the other tasks needed to support the observatory, particularly in light of a staffing profile which is declining with time.

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Responses to SUP Report



- Visitors and workshops provide natural conduits for feedback to the pipeline and archive development process. The current plan –which will not accommodate visitors to the SSC until later in 2005 – should be re-examined. The SSC should endeavor to institute a larger panoply of workshops and onsite visits from guest investigators.

RESPONSE:

As indicated in the previous slides, we have a bare-bones staff level now. We are not able to duplicate the level of on-site visitor support provided by STScI or even that provided by IPAC for US ISO users. We will, however, to the best of our ability, support user workshops to, for example, help Spitzer GOs learn how to best analyze their Spitzer data.

An agenda item for SUP-15 will be a discussion of how to implement a limited visitor program within our resources. We will present a plan and ask for SUP comment.

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Responses to SUP Report



- A number of users have commented (both positively and negatively) on the volume of documentation available to support proposal development and data analysis. 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”. Cookbooks for post-BCD analysis are missing. At the same time, the structure and navigability of the SSC web pages could be improved.

RESPONSE:

We are continually trying to improve the documentation we provide, and the ease-of-use of our web pages. We hope the SUP (and the Oversight Committee) members utilize our website while working on GO-2 proposals, and provide us with specific suggestions. We realize that detailed cookbooks for Post-BCD analysis are missing, but (a) examples are already included as part of the Data Handbooks, and (b) OST hopes that with the new hires, we will be able to dedicate some resources to detailed post-BCD cookbooks.

December 8, 2004

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Responses to SUP Report



- The SUP notes that the state of the IRS pipeline continues to be a concern for the user community. The SUP recommends that the SSC assemble IRS-team members and GOs 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.

RESPONSE:

We are certain that the SSC will receive rapid feedback on the efficacy of the S11 pipeline changes for improving IRS BCD and PBCD products directly from the Legacy and GTO teams.

More generally, we will attempt to address the SUP concern either by scheduling a workshop (possibly in the spring or early summer next year) or perhaps by some other means, such as a questionnaire addressed to a representative sample of IRS users. We did not think it feasible to hold such a meeting at the San Diego AAS given that few users would have had time to work with S11 data in any detail prior to the meeting.

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Responses to SUP Report



- The one-phase proposal process has been identified as a burden on GOs. Plans that require large proposals to submit only example AORs for GO2 are a step in the right direction. The SSC should consider extending this model to small proposals, following the GO2 call experience.

RESPONSE:

- We will re-examine this issue after the GO2 call. However, we hope that the community will be better prepared for GO-2 based on the GO-1 experience, and that our model for GO-2 (single phase for small proposals, 2-phase for large) will be a substantial improvement.

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Responses to SUP Report



- Some GOs have expressed frustration with the lack of feedback concerning when accepted proposals will be scheduled on the observatory. The SUP requests that, if possible, GOs be given non-binding guidelines as to when observations will likely occur.

RESPONSE:

The visibility windows provided within SPOT, plus the "Baseline Instrument Campaign" schedule (which provides a long-term view of when each instrument will be in use) do provide a user with reasonably good insight into when his/her observations are likely to take place.

We have now provided better guidelines on our website for using the information we already provide (see ssc.spitzer.caltech.edu/documents/whenobs/).

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Responses to SUP Report



- At present, the archive appears to be seriously underscoped. The next SUP meeting will occur after the archive has been opened. The SUP would like to be provided with statistics of archive usage, and SSC perspective on how well the archive process is working.

RESPONSE:

The archive has had a number of start-up problems, many of which we are addressing in the S11 software release. We are working to make the archive easier to use. We plan to report on the archive status, as requested, at the next SUP.

December 8, 2004

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Responses to SUP Report



- The 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 and to permit users of Spitzer data to plan.

RESPONSE:

We will discuss this issue more at the next SUP.

Data reprocessing is another task (like the archive) which we deliberately placed at the bottom of our task list as lower priority, in order to allow us to dedicate our resources to the successful launch and initial operations of Spitzer. As the various parts of Spitzer operations move into a relatively steady state, we intend to shift our attention to these lower priority tasks. It is our intent to begin the first, full reprocessing of Spitzer data shortly after S11 is installed. Once that reprocessing is behind us, we will determine a schedule for future reprocessing and we will publicize that plan.

December 8, 2004

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Responses to SUP Report



- 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. The SSC should define its plan for delivering source catalogs to the archive and should make the projects documentation consistent with these goals.

RESPONSE:

The pipeline creates source catalogs now, but we do not provide those catalogs to users because the pipeline implementation of the source extraction process has not been validated. We have good people working on this (Yan and Marleau, our post-BCD scientists), and we will get these source catalogs validated as soon as possible.

December 8, 2004

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