

NASA Herschel Science Center Users Panel Report for meeting on April 7 & 8, 2011:

To: George Helou, Director of the NASA Herschel Science Center (NHSC) and Bill Latter, Deputy Director of NHSC

From: Margaret Meixner, Chair of the NHSC Users Panel (NUP), on behalf of the NUP

In attendance:

NUP:

Margaret Meixner, Chair

Paul Harvey

Joseph Hora

Barbara Whitney

Andrew Harris

Moshe Elitzur

Ex/Officio: Paul Goldsmith

NHSC staff: George Helou

Bill Latter

David Ardila

Phil Appleton

Y. Mei

Bernard Schulz

John Rector

Colin Borys

Babar Ali

Gordon Squires

Pat Morris

Executive Summary:

NHSC support of the Herschel Mission:

NHSC has been very proactive in supporting the community and seems to be a slim but well running outfit. NHSC is well integrated with the instrument teams and the Herschel project. For example, they actively support the data processing effort with science guidance and coding.

NHSC has adapted well to new demands from OT1, although as noted the data for OT1 are still mostly in the future. The workshops, web tutorials and data processing sessions have been very successful and useful to the community. The NHSC seems to know what will be needed for these training sessions and deliver excellent workshops. The HSC used

a lot of the training material from the NHSC in their workshops demonstrating the quality and utility of the effort.

The computer resource offered by NHSC is a very valuable resource and we hope it is well utilized. It should be advertised in an e-news, and also mentioned when funding notifications for approved programs are released.

Our concerns from the last meeting a year ago have largely been met. e.g. Website improvements are very good and have made the documentation more useful. Below we outline a few areas that may benefit from attention in the coming year, in a prioritized list. This list is expanded below with further details.

Recommendations:

- 1) For future HIPE development: keep the primary focus/effort on the proper removal of instrumental artifacts and calibration of the data. Areas in need of particular attention include: PACS spectroscopy, SPIRE and PACS spectral mapping and low-level diffuse emission in large maps.
- 2) Lead some Data Processing Interest Lists, broken down by specific AOTs, e.g. PACS spectroscopy, SPIRE spectroscopy. These may well substitute for workshops.
- 3) A clear policy for filler / priority 2 programs needs to be set before the next call.
- 4) The Herschel data archive needs support from the NHSC. Given Herschel's short lifetime the work for complete calibration and characterization of the data will not be finished when the helium runs out. NHSC will require funding on the same time scale as their European counterparts.

Expansion on the recommendations

Data Processing:

Broad view advice: Make the archive of well calibrated data the overriding focus for Data processing software.

Summary: On the software, put your time into making sure the instrumental artifacts and data calibration are done well. There are enough visualization software tools in the community that adding these bells and whistles to HIPE is not a high priority. Some problems you want the Herschel experts to do: e.g. destriping. There are others, e.g. cube analysis, that can be done in other ways if not available in HIPE. Create an analysis tool only if there are no options outside of HIPE for it.

Documentation on the software tools: this has improved a lot, but more work can be done, e.g. for releases of the software, a README file on what has changed is important with the right level of detail to be useful to users. People find that their scripts that worked one time, no longer work.

Please do keep the User Releases (URs) of HIPE because they represent stable configurations. However the calibration updates and the CIBs are useful and should be available at the users risk.

It may be useful to do another poll on what users want, e.g.:

- 1) How much analysis in HIPE is done? Analysis: defined as post instrumental signatures removal and then analysis
- 2) When do you comfortably step out of HIPE? e.g. HIFI, level. 2.1 to CLASS

Software areas needing particular attention:

-PACS spectroscopy: no data pipeline exists and there are many programs relying on this mode,

-SPIRE & PACS spectral mapping:

-At some point the MADMap C version needs to be supported for external use for really LARGE maps that HIPE cannot handle. Support for this would be useful.

-HIFI: calibration issues are limiting the science papers more important than making maps (this can be done in CLASS and is probably preferred by many).

New additions we like about HIPE:

-PACS Calibration products are decoupled from HIPE which allows users to stay current without having to wait for a full upgrade.

User Support:

Put an emphasis on Data Processing Interest Lists: there should be a critical mass of users with enough experience to make these groups interesting. But these groups will need coordination/leadership from the NHSC or HSC. We note that such Data Processing Interest Lists may be needed more by US investigators since we are on the fringe of the Herschel project and do not necessarily have a co-I from one of the ICCs. NUP panel members found similar forums on Spitzer to be very useful.

A suggested approach: For each Data Processing Interest List, someone from the project should make a core of ~4 people from the successful OTKP and OT1 using a particular

observing mode (e.g. PACS spectroscopy) by directly inviting these individuals and getting a commitment. Invite all others using a general email to successful proposal PIs for the same observing mode. Initiate a telecon series that meets from monthly to every 3 months. The results of these telecons could provide material for a yearly mini-workshop on a special data processing/calibration topic, e.g. SPIRE FTS spectroscopy. This could also provide useful feedback and input into the project. We suggest that you try it for at least 6 months. If the telecons are not found useful, then discontinue. These Data Processing Interest Lists may take the load off the orientation workshops.

Continue with workshops for new people, but do not increase the number over what you do now. For experienced people divert them to web tutorials.

In summary: Appelton made a list of possible solutions to the expected onslaught of OT1 proposers:

- Could aggregates of small teams be combined by observing mode and assigned a collective liaison

- Could attempt to re-invigorate the ESA Data processing Interest Lists through periodic telecons.

- Could have several “mini workshop” – e.g. on topics like “Mapping Larget srouces.. and simple.

We note the first 2 possibilities could be combined into the Data processing Interest Lists. These could feed into mini-workshops (option 3) at which people present their issues and solutions.

OT1 & OT2:

OT1 priority 2 time provides a thorny issue for both HSC and NHSC.

US investigators with priority 2 time will be disappointed to know these observations may not be carried out. However, the NUP understands that unless these are eliminated, there is essentially no time in the OT2 call, an unfortunate management issue.

The handling of duplications puts too much of a burden on the HSC staff and a rank ordered list from the HOTAC will be important.

For OT2:

There should be a clear statement and odds for getting a certain part of the sky; some may no longer be available.

Recommend no priority 2 time in OT2, just pick filler programs that are designed as filler. For example, specifically as for filler programs for under utilized parts of the sky.

If the Herschel project decides to not guarantee a certain level of completion of these priority 2 projects, then we suggest that the priority 2 funding dollars be put back in the pool to be redistributed to the users with time. We would be disappointed if the funds were returned to NASA when current users of Herschel are underfunded.

The funding overall seems reasonable and consistent with prior approaches with Spitzer. The NUP inquired about archive funding for Herschel data. Helou and Storrie-Lombardi clarified with NASA headquarters that Herschel data that is in the archive by 5/13/11 is eligible for funding support in the NASA ADP program. The NHSC has taken an action to advertise this to users.

Future of NHSC:

Projects come in and out of IPAC, people move onto other projects within IPAC but are around with corporate memory for prior missions. There is no big project just after Herschel and IPAC remains but with smaller staff levels. The Herschel team has been focused on the work and so far plans to stick with it. The hope is that these people will land in other projects and be around as corporate memory for Herschel. IPAC has partnered with a number of explorers, etc. NASA has asked for IPAC to partner on WFIRST.

However, there may be efforts needed on Herschel that keeps the group going. Time scales are short on Herschel and the data processing will evolve after the helium runs out. This data processing and calibration work needs to continue to make the best archive for Herschel. NHSC staff have been so important in the project so far, it would be good to keep the group going in parallel with the HSC to make sure that US programs are properly looked after. At a minimum the NUP hopes the NHSC will be funded in a similar fashion as the European HSC is funded to 2018. It is important to make sure that the former HSC staff are around in some way so that the expertise remains available.