

Herschel HPDP and associated HUI interface needs meeting #4
Legacy Product Task Force – 19/04/2016 – 2:00pm CEST – Room C031
Minutes of Meeting.

Present: KE, EV, EPu, MR, JCS, JGC (webex), DT

The viewgraphs used during the meeting can be found at:

http://herschel.esac.esa.int/twiki/pub/Public/HPDPDefinitionPage/HPDP_meeting_ICs_19April2016.pdf

1. Review of action items

AI	Description	Actionee	Due date	Comment
HPDP2-AI4	Perform dry run of large Unimap processing on 128 Gb machine to see if this is sufficient memory	LC/BA	End-Oct.	Only map left is LMC in blue band – will be done on a 256 Gb machine to be booked on SciCloud@ESAC
HPDP2-AI5	Write HPDP user requirements for HUI.	DT	Dec. (next meeting)	Closed – document v1.3 to be discussed today
HPDP2-AI6	Distribute flow diagram for PACS HPDP generation	EPu	Week 25-29 April	Probably to be re-scoped now – Elena will look into a simplified version of the diagram for the HPDPs she is curating
HPDP3-AI1	Provide list of Obsids applying to each HPDP and indicate fraction of observations concerned by the contemplated improvement	All	2 weeks before review at ESAC	Overdue – can probably be simplified as a requirement to provide an approximate fraction number of concerned Obsids
HPDP3-AI2	Get in touch with instrument experts to create representative HPDPs for illustration at the HSC POPS at ESAC	DT	2 weeks before review at ESAC	Closed – DT sent email with request for inputs for the Legacy Phase Readiness Rev.

HPDP3-AI3	Contact ICC relevant persons to confirm the completeness of the list of items considered for Ancillary Data Products	All	Ideally by the end of January – will be brought up again at PACS handover in March	HIFI: Closed – all needed material at hand SPIRE: On-going – we are on track PACS: Closed (EPu -> Rik)
HPDP3-AI4	Get in touch with Pedro to discuss what to do with some of the Ancillary Data Products requests like Jira dump or Versant backups	DT, EV	January	Closed: we won't store those specifically
HPDP3-AI5	Get in touch with Pedro to discuss how to handle non-averaged level 2 products	DT, EV	January	Closed: they will be delivered as UPDPs
HPDP3-AI6	Contact Javier Gracia-Carpio to inquire about the exact Obsid list is considering for this level3 king size products	LC	January	Closed: Javier is now in the loop reg. HPDP schedule and convention. He is already generating products (see 3.)

2. Master schedule for HPDP/ADP effort

A master work plan for all ICS WPs has been prepared, and is available at:

http://herschel.esac.esa.int/twiki/pub/HSC/WebHome/ICS_Task_MasterTable.xls

It contains in particular details about the timeline and milestones associated to the generation and delivery of HPDPs and ADPs. In a nutshell

- HIFI: *all HPDPs/ADPs by June 2016, except*
 - *Spectral scans and spectral maps (Sep 2016)*
 - *Line catalogue (Sep+Dec 2016)*
- SPIRE:
 - *ADPs expected from ICC needed by June 2016*
 - *HSC-curated HPDPs/ADPs to be delivered all over 2016 – extra help to Ivan being currently sought for period July-Dec 2016*
 - *SPSC schedule yet unclear – will be discussed at HPSC WS*
- PACS:
 - *Spectrometer HPDPs will not be started before 14.2 is out*


- *Photometer HPDPs long to be generated, but on-going process since almost 6 months now – load shared with Bruno and Javier G-C.*
- *ADPs expected to be provided to large extent by ICC*

3. Summary status of HPDP/ADP definition, generation and delivery

Delivered Products:

- HIFI non-averaged Level 2 spectra for pointed mode observations (delivered as a UPDP)
- HIFI Trend Analysis Data Products (delivered as an ADP)
- Draft (prototype) delivery made for HIFI Spectral Map HPDPs
- SPIRE-S corrected products for background contamination in sparse mode observations: HPDPs ready, delivery imminent, pending completion of release notes.
- Large fraction of the PACS-P JScanam King Size maps by Javier Gracia-Carpio is available on [VOspace](#) (HiGAL_PACS_JScanam).

Official COSMOS pages for product access

- <http://www.cosmos.esa.int/web/herschel/ancillary-data-products> 
- <http://www.cosmos.esa.int/web/herschel/highly-processed-data-products>

Repository for HPDP/ADP/UPDP deliveries:

- Just a reminder about the account to use to make product deliveries (log from the net4 network):

```
> su - updp
pwd: change&n0w!
```

Two dedicated directory trees have been prepared for deliveries:

- HPDP
- Ancillary

Please add sub-directories as you see fit.

New PACS-P HPDP

Javier gives a summary of what he has been working on to generate the so-called “kingsize” PACS-P JScanam fields. He has posted a large fraction of the covered obsids in the VOspace (see “Delivered products” above).

The idea is that every obsid associated with a HPDP will have 2 HPDP maps covering the same region as the L2.5 map. However, these data will include data from all other obsids overlapping that region (typically 6 obsids in total) allowing to nicely fill in the gaps at the map border. Also, all maps in the delivery would benefit from the same background reference. These will correspond to about 70% of all parallel mode observations.

As an example, the Milky Way HPDP maps were created using 376 obsids, meaning that we will have $376/2=188$ obsid pairs. Each pair will have its individual red and blue HPDP maps. i.e. we will have a total of 376 HPDP maps.

In this product delivery the SMC and LMC will also be considered, in a similar fashion as what is already done with Unimap.

Some questions raised and discussed during the meeting:

- How many obsids shall we put in the header: strictly speaking, the common practice would be to put all 6 obsids used to generate the product into the header as OBSIDxxx. However, in this case, typically 4 of the 6 obsids will correspond to fields centred quite far from the main 2 obsids, so a query in the archive would serve products with a low relevance. We agreed to limit the OBSIDxxx entries as 2 in the header, but inform by other means of the other obsids used in the process (possibly with a new ad hoc FITS keyword, and/or with a list of all involved obsids to be given in an appendix in the release note)
- For the HiGal sample, we are also looking into providing larger merging of tiles. One possibility would be to use the same size decision as SPIRE level 3, namely fields 15 degrees wide. We discussed the possibility that those could be distributed as a UPDP, instead of an alternative set of products within the same HPDP delivery as the above obsid pair treatment.
- Javier will work on that in the coming 2 months, although he will have to give priority to any 14.2 work.

New PACS-P HPDP

Bruno Altieri has taken the initiative to look into a expert treatment of the deepest cosmological fields taken by PACS-P. The goal is to process with Unimap 6.4 (delivered in the framework of an ESA EXPRO) the 4 deepest fields covered by Herschel/PACS for legacy:

- GOODS-S (~300 obsids)
- GOODS-N (75 obsids)
- UDS (Ultra Deep Survey) (70 obsids)
- COSMOS deep field (note wide 2 square degree COSMOS field) (~80 obsids)

i.e. 4 out of the 5 CANDELS fields

(http://candels.ucolick.org/survey/Field_Maps.html)

The reprocessing considers 1) the re-centering all the observations for their relative offsets (up to 4 arcsec) and 2) correcting the timing shift between frames and pointing that elongates the PSF along the scan direction. The software for 1) and 2) is developed by Koryo Okumura for David Elbaz (CEA/SAp).

So far we have only fully processed GOODS-South, encountering some problems with GOODS-North (offset correction)/ Access to a 256GB RAM machine on the SciCloud should allow to proceed further and faster in the next weeks.

The products will be maps with their associated coverage.

Delivery time frames: before the summer 2016 on a best effort basis.

Possible new SPIRE-P HPDP

The SPIRE-P team is looking into two new possible categories for HPDPs:

- Revisited map combinations for large fields (e.g. LMC/SMC, Galactic Plane)
- Obsids affected by an isolated issue that prevented the pipeline from processing the data optimally – the obsids are summarized in [SPIRE-5897](http://herschel.esac.esa.int/jira/secure/attachment/26050/MapQualityVisual.csv) (<http://herschel.esac.esa.int/jira/secure/attachment/26050/MapQualityVisual.csv>) . This concerns 146 PSW maps, 201 PMW maps, and 224 PLW maps. Whether there is any resource to work on those is highly uncertain, esp. since each obsid probably requires an ad hoc reprocessing. As a minimum we should probably add something in the QSummary to reflect the particular issues.

PACS-S HPDPs vs HIPE 14.2 prospect

We went through the list of products presented at the PACS hand-over meeting:

http://herschel.esac.esa.int/twiki/pub/HSC/PACS_HSC_HandOverReviewMeeting/HPDProducts.pdf

The following was reported:

- Sara Regibo from KUL has run a check of the offset between the intended and achieved position of PACS-S observations. In her report, there appears to be 32 obsids (out of ~4500) having an offset larger than half of the spaxel size (4.7"). This provides an lower limit of the number of cases to looked at in the framework of the off-centred point source spectra.
- Elena expresses her worry that the 14.2 work on red leak region treatment may not be ready on time given the 14.2 schedule (RC2 being due end of May)
- The new transient correction seems to not provide really noticeable improvement compared to the 14 products that benefit from the revisited flat-fielding method (cubic splines). This suggests 1) that the flat-fielding does a good job against transient, 2) that there may be no need in the end to look into the HPDP dealing with un-chopped observations run with the new transient – a higher priority should be given to providing products with the continuum removed.

PACS-S HPDPs vs HIPE 14.2 prospect

Some feedback from the PSC workshop plenary session that took place on April 19th at NHSC:

- On the PACS side, the source extraction of the red band has finished (green and blue band still TBD) – about 0.5 Million source candidates,

with a very small number of multiple detection. This number is obtained after discarding about 85-90% of the detections considered to be spurious

- On the SPIRE side, ~6900 obsids are available, and 99% of this has been used for the source extraction (the other 1% are either problematic pointing observations, or missed observations from the SPIRE observing log), resulting in about 6.5 Million candidates – in the end one expects ~2 Million independent objects per band.

4. User requirements on HUI for HPDP and ADPs

The user requirement document has finally been distributed mid-February. After receiving some comments, version 1.3 was prepared just before the meeting, and can be fetched at the following link:

http://herschel.esac.esa.int/twiki/pub/Public/HPDPDefinitionPage/HPDP_ADHUI_Requirement_v1.3.pdf

We discussed the requirements on the product deliveries and their content. They are summarized in slide 11 of the presentation. It is acknowledged that elements such as the naming convention, or the release note templates, are to be used as guidance, but are not a strict rule. The three mandatory elements that should be honoured by any HPDP creator are, however:

- The presence of the obsid as a keyword in headers of FITS files for products to be linked to observations
- The presence of obsid in the file name of additional files that need to be associated to observations, typically the postcard.
- The presence of a release note – the abstract/introduction of this document is meant at being used as summary for the HPDP when providing this information in the HSA

We discussed the need for any requirement on the structure of the tarball delivery. While it is strongly recommended to use sub-directory per obsid when applies, esp. to ease navigation inside a full archive download, Eva noted that for the HSA ingestion, the necessary structure is actually totally flat. We agreed that the HPDP curators should optimize the structure in the prospect of a full download use case, while the HSC will take care of bringing all files into the flat structure necessary for the ingestion.

We walk through all requirements phrased in the present document and discuss possible implications in terms of implementation. It was acknowledged that the concept of “ADP types” is not applicable to the HSA interface as no search action is envisaged for Ancillary Data Products. The elements of this specification can, however, be used to e.g. classify ADPs in certain categories in the Cosmos web page where they will be served from an FTP repository.

We then looked at how the ESA Hubble Archive looks like, and the kind of functionalities and ideas we would like to inherit from that – see:

<http://archives.esac.esa.int/ehst/>

Among the features considered particularly attractive in this implementation would be 1) the different tabs used to list different products (i.e. possibility to tabulate separately SPG, UPDP and HPDP query results), 2) the possibility to display quick-look information about more than one product per obsid (so-called “Show/Hide members” icon under the black cross – see screen shot below).

hst observations (471)		hla observations (342)	hisp observations (0)	proposals (36)	publications (219)			
<input type="checkbox"/>		Observation ID		RA	Dec	Target name	Observation Date	Exposure Time
<input type="checkbox"/>		IB7795010		00h 42m 41.91s	+40d 51' 55.53"	M32-NUCLEUS	2010-08-21 04:08:13	600.000
		IB7795FNQ		00h 42m 41.92s	+40d 51' 55.64"	M32-NUCLEUS	2010-08-21 03:58:31	300.000
		IB7795FPQ		00h 42m 41.90s	+40d 51' 55.42"	M32-NUCLEUS	2010-08-21 04:08:13	300.000
<input type="checkbox"/>		IB7795020		00h 42m 41.91s	+40d 51' 55.52"	M32-NUCLEUS	2010-08-21 04:05:25	120.000
<input type="checkbox"/>		ICNW110D0		00h 42m 57.98s	+40d 51' 30.14"	MESSIER-032-FIELD1	2015-02-18 09:01:19	1198.463
<input type="checkbox"/>		ICNW110E0		00h 42m 50.58s	+40d 50' 10.14"	MESSIER-032-FIELD2	2015-02-18 09:35:06	1198.463

Clicking on one of the Observation ID link above, a new window opens on the right hand side, which could be used to provide further information on each product, including summaries, postcard(s), etc, i.e. fulfilling several of the specified requirements. We will need to make some decision reg. e.g. the preferred order in which products should be display in such a menu (in case some preference needs to be given).

Juan-Carlos warns that postcard should not be too big in order to allow efficient visualization by the users. We note that, in any case, postcards meant at being shown in the result table are usually degraded in resolution before they are embedded into the table. We could also have an intermediate level of quality degradation for the “full size” display of a given postcard, in case the latter would exceed a certain size – this limit size is still TBD. We propose to wait until the first deliveries arrive and have Miriam A. pay particular attention to the typical postcard sizes, raising a warning above typically >10-20 Mb.

5. AOBs

We should have our next meeting in about 3 months, i.e. beginning of July. This will be the moment to revisit where we are reg. HIPE 14.2 and the implication for the PACS HPDP. Also, some prototype of the HAS 8.0 should be available for testing with the hopefully numerous HPDPs already available by then.

6. New action items:

AI	Description	Actionee	Due date
