

Recent Updates to the Herschel Explanatory Legacy Library (HELL) pages:

21/01/2021:

- A small change to each of the Level 2 and Level 3 page headers to allow the reader to jump straight to the Data Products, Overview, Performance and Calibration, or Data Processing documentation.

11/01/2021:

Two small updates to the PACS level 2 pages to correct the information relating to:

- [PACS Photometer Passbands and Colour Correction Factors for Various Source SEDs](#) (2011).
- [PACS Photometer Point Source Spread Function](#) (2015)

This has required a small update to the PACS documentation catalogue to correct the title of one document ([All documentation](#), [PACS](#)).

10/11/2020:

A major update to the [Herschel Short Videotutorials](#). Updates to the video generation software have allowed the format of the videos to be increased from 1080x720 to a more modern 1920x1080. All the videos – 41 in all – have been re-generated with the better resolution, using the updated software. Most of the videos have been further polished, with small, additional edits. All the links have been updated to the new, larger format.

14/09/2020:

Added the journal link to the paper “[Herschel-PACS photometry of the five major moons of Uranus](#)”, published today, which represents the formal publication of the corresponding HPDP.

The corresponding HPDP has been delivered and is awaiting ingestion into the HSA.

The corresponding document catalogue have been updated to reflect this update ([All documentation](#), [PACS](#)).

08/09/2020:

- Added the definitive journal links to the now published papers linked to the SPIRE FTS Spectral Feature Finder Catalogue HPDP. These links replace the previous, temporary links:
 - [The Herschel SPIRE Fourier Transform Spectrometer Spectral Feature Finder I. The Spectral Feature Finder and Catalogue](#) (2020)
 - [The Herschel SPIRE Fourier Transform Spectrometer Spectral Feature Finder II. Estimating Radial Velocity of SPIRE Spectral Observation Sources](#) (2020)

- [The Herschel SPIRE Fourier Transform Spectrometer Spectral Feature Finder III. Line Identification and Off-Axis Spectra](#) (2020)
- [The Herschel SPIRE Fourier Transform Spectrometer Spectral Feature Finder IV. Neutral Carbon Detection in the SPIRE FTS Spectra](#) (2020)
- The corresponding entries in the documentation catalogue have been updated and the catalogues re-generated.

30/06/2020:

A final check has been made of all catalogue data and a few, final additions and refinements made.

- All instrument documentation catalogues have been re-generated.
- Apart from any new publication that may appear, the documentation catalogue is now in its final, legacy form.

30/06/2020:

The revision of the documentation catalogue has been completed with the revision of PACS documentation pages. This has included:

- Check and verification of all URLs.
 - All documents have been sight-verified, as for other instruments.
 - A small number of bad or changed URLs have been identified and corrected, both in the catalogue and in the HELL web pages.
- Update of catalogue information
 - A number of additional DOIs have been identified and added to the catalogue data.
 - Cosmetic improvements have been made to data presentation in the catalogue.
 - Catalogue information has been added or updated where required.
 - Tiny URLs have been added for documents without a DOI.

11/06/2020:

Major revision of the SPIRE documentation pages in HELL. Among the updates are:

- Check and verification of all URLs.
 - A small number of cases have been identified where URLs have changed. These have been corrected in the documentation catalogue and in the HELL library pages.
- Updating of catalogue information on documents, where needed.
 - Missing information completed, where possible.
 - Some cosmetics in the catalogues have been clean-up.
- Adding Tiny URLs or DOIs to the [catalogue](#) for all documents.
 - DOI added for papers in refereed journals that offer a DOI if not previously added.
 - Tiny URL for all other documents.

10/06/2020:

- A bug has been fixed in the document catalogues for PACS and SPIRE that caused some DOIs to appear in the wrong row.
- Added four new papers linked to the SPIRE FTS Spectral Feature Finder Catalogue HPDP to SPIRE Level 2:
 - [The Herschel SPIRE Fourier Transform Spectrometer Spectral Feature Finder I. The Spectral Feature Finder and Catalogue](#) (2020)
 - [The Herschel SPIRE Fourier Transform Spectrometer Spectral Feature Finder II. Estimating Radial Velocity of SPIRE Spectral Observation Sources](#) (2020)
 - [The Herschel SPIRE Fourier Transform Spectrometer Spectral Feature Finder III. Line Identification and Off-Axis Spectra](#) (2020)
 - [The Herschel SPIRE Fourier Transform Spectrometer Spectral Feature Finder IV. Neutral Carbon Detection in the SPIRE FTS Spectra](#) (2020)

14/05/2020:

Major revision of the Observatory documentation pages in HELL. Among the updates are:

- Check and verification of all URLs.
 - A small number of cases have been identified where URLs have changed. These have been corrected in the documentation catalogue and in the HELL library pages.
- Updating of catalogue information on documents, where needed.
 - In particular, adding notes on documents, where useful.
 - Missing information completed, where possible.
 - Some cosmetics in the catalogues have been clean-up.
- Adding Tiny URLs or DOIs to the [catalogue](#) for all documents.
 - DOI added for papers in refereed journals that offer a DOI.
 - Tiny URL for all other documents.
- Update of the Twiki capture of the [Statistical Publication Reports](#) for Herschel science papers.
- Added a link to [Uplink and Downlink files exchanged with MOC](#) in Observatory Level 2.
- The ftp link to classic HSpot 7.0.0 download no longer functions.
 - Users should use the Virtual HSpot version instead, which can be downloaded here: https://archives.esac.esa.int/hsa/legacy/software/hspot_vm/.
 - The [software links section](#) in Observatory Level 2 has been updated to reflect this.
- The link to the [3D flash viewer](#) of the Herschel satellite in Observatory Level 1 has been temporarily inoperative as the file is being migrated to a new location within Cosmos. The link has been replaced with one that directs to where the file is stored. The Tiny URL directs to its new location is Cosmos which, at time of writing, is still awaiting activation.
- Added a link to a [Herschel biography listing](#) (in French) in [Observatory Level 3](#).
- The proposed update to [ECSS-E-70-41A: Ground systems and operations – Telemetry and telecommand packet utilization](#), was adopted and so the link to the proposal has been updated to link to [ECSS-E-70-41C](#) and the revised standard.

- The link to the [genealogy records](#) of Sir William Herschel has changed. The link has been updated.
- The link to [Herschel SGS Integration & Test Plan](#) (2006) linked to the wrong document. The link has been corrected.
- The [MOC Weekly and Monthly reports page](#) has been re-generated to correct (a) a forwarding error and (b) a dating error in the original of one of the reports.

20/03/2020:

A major revision of the documentation catalogue has been on-going for some time. The first release is for [HIFI](#), with other instruments being released progressively. Changes that will be seen by users are:

- All links have been checked and verified.
- All URLs now have an alternative DOI or Tiny URL link to make external linkage to a document easier due to the considerable length and complexity of some of the URLs created by Cosmos.
- Two, missing documents referring to HIFI Highly Processed Data Products (HPDPs) have been added.

As far as the HIFI documentation pages are concerned:

- The process of publication of HIFI instrumentation papers continues. As of today, there are just two more publications that are expected, but not yet published formally.

For all the instrument documentation pages:

- A page header has been added, explaining the contents and intended use of each level of documentation (**Level 1** for the general user who needs a top level view; **Level 2** for users who need a deeper, technical insight into different aspects of the instrument and its data; **Level 3**, intended mainly for instrument specialists).

30/11/2019:

- Most of the most important documents have had a Tiny URL made from their long, Cosmos URL.
- The DOI (for publications that have a Digital Object Identifier assigned) and Tiny URL information (for other documents) now appears in a dedicated column in the documentation catalogue alongside the Cosmos URL.
- Document catalogue updated to reflect recent changes and document updates ([All documentation](#), [HIFI](#), [Observatory](#), [PACS](#), [SPIRE](#)).

22/10/2019:

- Document catalogue updated to reflect recent changes and document updates ([All documentation](#), [HIFI](#), [Observatory](#), [PACS](#), [SPIRE](#)). In addition to the normal updates involving new documents, the following are reflected:
 - DOI information has been added for more than 70 documents.
 - Small incremental updates.
 - A couple of small, cosmetic corrections to repair minor defects.

02/10/2019:

- Fixed an issue that meant that the internal links to the individual presentations in the page for the [Herschel Calibration Workshop #3](#) did not work. The 25 presentations are now entered as standalone documents in Cosmos to give a stable link.

01/10/2019:

- Added a link to [HPDP Release Note: PACS-S Blue Edge Spectra](#) in PACS Level 2.

26/07/2019:

- Document catalogue updated to reflect recent changes and document updates ([All documentation](#), [HIFI](#), [Observatory](#), [PACS](#), [SPIRE](#)).

26/06/2019:

- Three documents on Quality Control (QC) have been added to provide some background on QC issues as they are being defined for other missions right now and the Herschel experience is very relevant:
 - [An introduction to Quality Control](#), in Observatory Level 1, Data Products. This is an excellent introduction to what QC is for and how it is defined.
 - [Quality Control Report Product Definition](#), in Observatory Level 2, Data Products. This is a more technical paper for QC experts.
 - [Quality Control Pipeline ICD](#), in Observatory Level 3, Data Products. A very detailed technical description.

04/06/2019:

- Document catalogue updated to reflect recent changes and document updates ([All documentation](#), [HIFI](#), [Observatory](#), [PACS](#), [SPIRE](#)).

29/05/2019:

- Changed the direct download link for the [Herschel: Science and Legacy](#) (post-mission brochure), because the direct link listed on the ESA page does not download it correctly.
- Added a link to the article [The Data Processing Pipeline for the Herschel-HIFI Instrument](#), which has now been published.

- Made a small correction to the tooltip of [Introducing Associated Arrays in CLASS](#) in HIFI Level 2.

22/05/2019:

- A new video - [Saving a SPIRE 3D FTS spectral cube as a 1D file](#) – has been uploaded to the Herschel Academy Channel in YouTube.
- All the Herschel Academy videos are listed on the [Legacy Training Materials](#) page.

21/05/2019:

- A new video - [Saving SPIRE FTS spectra as 1D CSV or ASCII files](#) – has been uploaded to the Herschel Academy Channel in YouTube.
- The videos - [How to search the Herschel Science Archive](#) and [Understanding the results of a Herschel Science Archive query](#) – have been moved from a temporary URL to their definitive location in Herschel Academy.
- All the Herschel Academy videos are listed on the [Legacy Training Materials](#) page.

13/05/2019:

- Added the link to the Herschel 10th Anniversary of Launch Brochure: [Web Page](#) and [Direct Download](#).

01/05/2019:

- Document catalogue updated to reflect recent changes and document updates ([All documentation](#), [HIFI](#), [Observatory](#), [PACS](#), [SPIRE](#)).

30/04/2019:

- A small change has been made to the [PACS Handbook](#) (aka PACS Explanatory Supplement) to correct an erratum in Equation 7.20. The PACS Handbook version has been changed from v4.0 to [v4.0.1](#).
- The postage stamp of the [PACS Handbook cover page](#) has been updated to the new version.

02/04/2019:

- Added a new document: [SPIRE FTS: converting integrated line fluxes to alternative units](#) to SPIRE Level 2, Performance and Calibration.
- Split “SPIRE Level 2, Performance and Calibration, Calibration Overview” into “Calibration Overview” (for general SPIRE calibration documents) and “Spectrometer Calibration” (for SPIRE Fourier Transform Spectrometer specific documents).

21/03/2019:

- A new version of the SPIRE FTS spectral feature finder catalogue has been released. You can find the data and the directory tree [here](#). A link to the Release Note has been added [here](#).

- Fixed a broken link to the PACS documentation catalogue.
- A full check of all the HELL pages has been carried out. A few, small cosmetic improvements have been made and a link check completed.

20/03/2019:

- Fixed a broken link to the PDF version of the [HIFI documentation catalogue](#).

07/03/2019:

After a small delay, due to the need to resolve some issues with the upgrade, on Thursday 7th March 2019, the Herschel Explanatory Legacy Library Webpages was, like other ESA science sites, rolled over to a new version of Cosmos. The change should be transparent to users of the documentation pages, but will make site maintenance easier for us.

The main changes that users should see compared to the previous version are:

- Small changes in the look and feel of pages.
- Greatly improved performance for users of mobile devices (Smart phones and tablets).

06/03/2019:

- A Quick Start Guide to the Herschel Science Archive has been added to Observatory Level 1: [The Legacy Herschel Science Archive](#) (2019).

05/03/2019:

- Document catalogue updated to reflect changes over the last month ([All documentation](#), [HIFI](#), [Observatory](#), [PACS](#), [SPIRE](#)).

04/03/2019:

- Some formatting issues that affected the tooltips in the [Herschel Videotutorial Series](#) have been fixed.

25/02/2019:

- In preparation for the Cosmos upgrade on March 6th, some small, background changes have been made to URLs throughout the HELL pages. These should have no impact on users, but will allow the upgrades to be acceptance-tested more thoroughly before being rolled-out to the community.

19/02/2019:

- Some further cleaning has been carried out of the compilation of SPIRE Instrument Control Centre (ICC) internal documents that improves legibility a little further by removing a column of

extraneous information. Presented in [Excel](#), [CSV](#), [CSV for Mac](#) and [PDF](#) format. Further explanation in the [ReadMe](#) and a link to [the listing of documents in the Legacy Area](#).

01/02/2019:

- A compilation of SPIRE internal documents has been added. This is a listing of 4730 SPIRE Instrument Control Centre documents that will be mostly of interest only to instrument experts. The catalogue – presented “as is” – and has been extracted automatically, with only a little human intervention, in [Excel](#), [CSV](#) and [PDF](#) format. Further explanation in the [ReadMe](#) and a link to [the listing of documents in the Legacy Area](#).
- As a result, the documentation catalogues for [SPIRE](#) and the full [Observatory](#) document catalogue have been updated.

31/01/2019:

- All the documentation catalogues and spreadsheets have been updated with the latest incremental changes to the contents of the HELL repository ([Observatory](#), [HIFI](#), [PACS](#), [SPIRE](#)). The total number of documents held in HELL is currently 1362.
- Some important updates to documents are expected during the month of February.

13/01/2019:

- A broken link was fixed in Observatory Level 1. There are, as far as is we are aware, no more broken links that are under our control.

22/01/2019:

- The link to [Herschel Ground Segment Design Description \(2006\)](#) and to [HCSS User Requirements Document](#) (2008) in Observatory Level 3 has been updated. This will require a small update in the documentation catalogue (pending – to be made as a cumulative update at the end of the current month).

11/01/2019:

- Two broken links and some typos have been corrected in the PACS Spectroscopy Quick Start Guide, which has been updated to version 1.3.

09/01/2019:

- A number of links in HELL that failed due to a software bug have now been fixed.

08/01/2019:

- Updated the postcard image of the cover page of the SPIRE and PACS Handbook cover pages.
- Updated new Handbook version tooltips.

21/12/2018:

- The PACS Handbook has been updated to [Version 4.0](#). Although formally the final version, it is likely that a Version 4.1 will be released in 2019.
- The SPIRE Handbook has been updated to [Version 3.2](#). This is expected to be the final version.
- Document catalogue updated to reflect latest changes ([All documentation](#), [HIFI](#), [Observatory](#), [PACS](#), [SPIRE](#))

19/11/2018:

- All the documentation catalogues and spreadsheets have been updated with the latest incremental changes to the contents of the HELL repository ([Observatory](#), [HIFI](#), [PACS](#), [SPIRE](#)). The total number of documents held in HELL is now 1362.

01/11/2018:

- Restored the document [On the comparison of PACS 160microm and AKARI 140microm maps](#) to the PACS, Level 2, Calibration section.

29/10/2018:

- Added a tool tip to the PACS Level 3 document: [Spikes on the blue bolometer signal](#).
- Completed the author list for the Observatory Level 2 document: [Herschel out-of-field stray-light characterization](#).
- Added the document: [SOVT-2 Test Report: Dark current measurements in spectroscopy](#) to PACS Level 3.

09/10/2018:

- Removed the references to the planned future delivery of the HPDP Release Notes for PACS-S Un-chopped Baseline Removal and PACS-S Expert Processed Problematic Observations from the PACS Level 2 listing of Highly Processed Data Products and from the documentation catalogue, as these will now not be delivered due to lack of resources.
- Updated all the documentation catalogues and spreadsheets with the latest incremental updates to the catalogue of Herschel documentation ([Full Herschel Catalogue](#), [HIFI](#), [Observatory](#), [PACS](#), [SPIRE](#)).

02/10/2018:

- Some small re-arrangements to the documents in the PACS Level 2 Performance and Calibration documents. Note added to the [Colour corrections: photometer passbands and EEFs](#) document, linking it to the 2015 update on the EEFs in the [PSF and EEFs \(aperture corrections\) as measured by the PACS Photometer](#) document.

25/09/2018:

- Added a simple [Herschel build-up animation](#).

04/09/2018:

- The main documentation catalogue, the Observatory documentation catalogue and the PACS documentation catalogue have been updated to include new documents, recently added and some small updates. The total number of documents held in HELL is now 1362.
- Added a link to the [Herschel-PACS Solar System Object Observations Comet Catalogue](#) in the Observatory Level 2 Highly Processed Data Products table.
- Added links to the [PACS](#) and [SPIRE](#) Point Source Catalogues in the Observatory Level 2 Highly Processed Data Products table.

03/09/2018:

- Added the document: “[Spectroscopy of Planetary Nebulae with Herschel: A Beginners Guide](#)”, to PACS Level 2, PACS Data Processing: Spectroscopy.
- Changed the year on the entry in PACS Level 2, PACS Data Processing: Photometry for [Noise characterization of high-pass filtered PACS photometer mini-maps](#) to 2018 to reflect the latest version that was linked.
- Corrected the link to [PSF and EEFs \(aperture corrections\) as measured by the PACS Photometer](#) in PACS Level 2, Performance and Calibration.
- Added the document “[Noise characterization of PACS photometer mini-maps processed with JScanam](#)”, in PACS Level 2, PACS Data Processing: Photometry.

30/07/2018:

- All the documentation catalogues and spreadsheets have been updated with the latest incremental changes to the contents of the HELL repository ([Observatory](#), [HIFI](#), [PACS](#), [SPIRE](#)). The total number of documents held in HELL is now 1358.

26/07/2018:

- Added the book “[Inventing a Space Mission: The Story of the Herschel Space Observatory](#)” in Observatory, Level 2.
- Added a section for Highly Processed Data Products in Observatory Level 2 and moved the Herschel Solar System Object Observation Catalogue to this section from the ADP section.

23/07/2018:

- A new HIFI Highly Processed Data Product (HPDP) Release Note for [HIFI spectral maps](#) has been added to HIFI Level 2.
- Links have been added to the ReadMe pages for the following HIFI HPDPs: [HIFI Reference Spectra](#), [HIFI Uncertainty Tables](#) and [HIFI Spectral Maps](#).

17/07/2018:

- The main documentation catalogue has been updated to reflect some minor corrections.

12/07/2018:

- The link-checking exercise is completed. In summary, two thousand links have been checked individually and all open correctly, showing the document that is meant to open.

11/07/2018:

- In addition to small number of the corrupted documents referred to in the previous entry, a few broken links have been repaired in Level 3 documents. All document links that are under ESA control should work correctly. Please note though that there is a bug in Internet Explorer that adds extra control characters to links with a “#” in the url and causes the link to fail. If a document fails to open in Internet Explorer, check that the browser has not added extra characters around a “#” sign.

10/07/2018:

- Several Level 3 documents were found to have been corrupted in upload to the document repository. These have been re-loaded and checked.

09/07/2018:

- Added a more informative tooltip and restricted access warning to the [MOC daily, weekly and monthly reports](#) section in Observatory Level 3.

03/07/2018:

- All the documentation catalogues and spreadsheets have been updated with the latest incremental changes to the contents of the HELL repository ([Observatory](#), [HIFI](#), [PACS](#), [SPIRE](#)). The total number of documents held in HELL is now 1353.

28/06/2018:

- Added the document [Noise characterization of PACS photometer mini-maps processed with JScanam](#) in the PACS Level 3 pages, Data Processing: photometer mappers section.
- Added the [PACS Observation Summaries ADP](#) and its associated [data](#) to the PACS Level 2 pages, ADP section.
- Tidied-up and corrected a couple of items in the [SPIRE ADP list](#) in the SPIRE Level 2 pages, ADP section

26/06/2018:

- Added the document [A Guide to the Herschel Science Archive User Interface](#) in the Observatory, Level 1 pages, Data Products heading.

23/06/2018:

- Updated the document [Noise characterization of high-pass filtered PACS photometer mini-maps](#) from v0.95 to final release v2.0.

22/06/2018:

- Added the document [Noise characterization of high-pass filtered PACS photometer mini-maps](#) to PACS level 2, [Photometry Data Reduction](#).

12/06/2018:

- Updated all the documentation catalogues and spreadsheets with the latest incremental updates to the catalogue of Herschel documentation ([Full Herschel Catalogue](#), [Observatory](#), [PACS](#)).
- Added an anchor to the [Full Herschel Documentation Catalogue](#) to allow the table of different formats to be linked directly.

11/06/2018:

- Added a link to the [data tables in CDS](#) for the paper by Klaas et al. “Herschel-PACS photometry of faint stars for sensitivity performance assessment and establishment of faint FIR primary photometric standards”.
- Further updated the [Dealing with Extended Sources Observed with PACS Spectroscopy](#) document (remains version 1.0).

02/06/2018:

- The paper in A&A “[Herschel-PACS photometry of faint stars for sensitivity performance assessment and establishment of faint FIR primary photometric standards](#)” has now been published. The reference (previously to the electronic version) has been updated to the reference for the paper version and the tooltip for the publication updated appropriately.

22/05/2018:

- Updated the [HPDP Release Note: The Pointing Offset Correction point-source calibrated spectra](#) document from a placeholder to version 1.0.
- Updated the HELL documentation catalogue and spreadsheet with small incremental updates.

21/05/2018:

- Updated the [PACS photometer flatfield measurement report](#) from version 1.2 to version 2.0.
- Updated the [Dealing with Extended Sources Observed with PACS Spectroscopy](#) document from a placeholder to version 1.0.
- Added a link to the [tarball](#) with useful HIPE scripts for the Forward Modelling Tool to be used in conjunction with the [Dealing with Extended Sources Observed with PACS Spectroscopy](#) document.

- Updated all the documentation catalogues and spreadsheets with the latest incremental updates to the catalogue of Herschel documentation ([Observatory](#), [HIFI](#), [PACS](#), [SPIRE](#)).
- Added anchors to the documentation catalogues and spreadsheets for each instrument ([Observatory](#), [HIFI](#), [PACS](#), [SPIRE](#)).

02/05/2018:

- Added [Herschel Telescope Specifications](#) document to Observatory Level 3.
- Re-ordered some sub-sub-sections in Observatory Level 3 to follow alphabetical order correctly in sub-sub-heading titles.

14/04/2018:

- Corrupted [HPDP Release Note: HIFI Reference Position Spectra](#) file replaced in HIFI Level 2.

30/03/2018:

- Minor updates to [Dealing with Point Sources Observed with PACS Spectroscopy](#)
- Minor updates to [Dealing with Semi-Extended Sources Observed with PACS Spectroscopy](#)

06/03/2018:

- Updated [PACS Products Explained](#) to v2.0
- Updated PACS [Product Decision Trees](#) to v3.0
- Updated the document catalogues for all instruments.

02/03/2018:

- Updated place-holder to v1.0 of [Dealing with Point Sources Observed with PACS Spectroscopy](#).
- Updated place-holder to v1.0 of [Dealing with Semi-extended Sources Observed with PACS Spectroscopy](#).
- Upgraded the [PACS Spectroscopy Quick Start Guide](#) to v1.2.

01/03/2018:

- Small update to the list of [Herschel Acronyms](#)

27/02/2018:

- Some small style changes to the Level 1 pages for all instruments.
- Changed link to SPIRE Data Reduction Guide from html to latest PDF.

26/02/2018:

- Added links to five new PACS documents in Level 2 (at present, four are place-holders for documents that will arrive imminently).

20/02/2018:

- Some small style updates to the Level 1 page for all instruments.

15/02/2018:

- The [HIFI frequency/velocity transform document](#) (2011) in HIFI Level 2 has been re-uploaded as it was found not to have uploaded correctly originally.

08/02/2018:

- Minor updates to Observatory Level 1 content.
- Small style changes to Level 1 pages for all instruments.
- Recent updates to page link added.

07/02/2018:

- Small style changes to instrument pages.
- HELL Document Catalogues updated. Minor changes only.

06/02/2018: HELL public release.

02-05/02/2018:

- Restoration of buttons to navigate between levels for all instruments and levels.
- Style changes to the documentation catalogue and handbook table for all instruments.
- Small changes to the style and order of the side-menu dropdowns.