Users´ feedback in Data Processing
Status report for HUG#6 meeting

Bruno Merín, on behalf of the Herschel Data Processing Users´ Group

OUTLINE

- Updates on Data Processing Interest Lists
  - Membership in lists slowly growing but only used for announcements of DP webinars
  - Currently on-going DP webinars for each HCSS release and HIPE community page contains all that info
  - Future DP webinars planned for fall 2013 led by instrument specialists and associated to HCSS releases.

- Feedback on DP from Key Program PI's at wrap-up telecons
  - So far 41 telecons held.
  - In general very good appraisal for HIPE and products but a few smaller issues/suggestions need to be followed-up and prioritized at the Configuration Control Boards.

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DATA PROCESSING INTEREST LISTS

Group	# Members by HUG3 -> 4 -> 5 -> 6	Chair
PACS photometry	57 -> 77 -> 79 -> 83	P. Riviere (CAB, ES)
PACS spectroscopy	57 -> 65 -> 66 -> 71	R. Oonk (U. Leiden, NL)
SPIRE photometry	42 -> 50 -> 53 -> 54	J. M. Castro Cerón (HSC)
SPIRE spectroscopy	29 -> 36 -> 37 -> 39	Vacant
HIFI	37 -> 42 -> 42 -> 45	E. Caux (IRAP, FR)
Large maps and source extraction	42 -> 55 -> 57 -> 59	V. Könyves (Saclay, FR)
Spectral mapping	36 -> 46 -> 46 -> 47	Vacant
HIPE	38 -> 40 -> 39 -> 40	M. Groenewegen (OB, BE)
HIPE contributors	34 -> 34 -> 33 -> 34	C. Martin (Oberlin, USA)

Membership slowly growing.

• Since HUG#5, another series of topical DP telecons have been organized (Spring 2013) with a varying attendance, but mostly "SGS internal" (i.e. from HSC, NHSC, ICCs of Guaranteed Time Key Programmes).
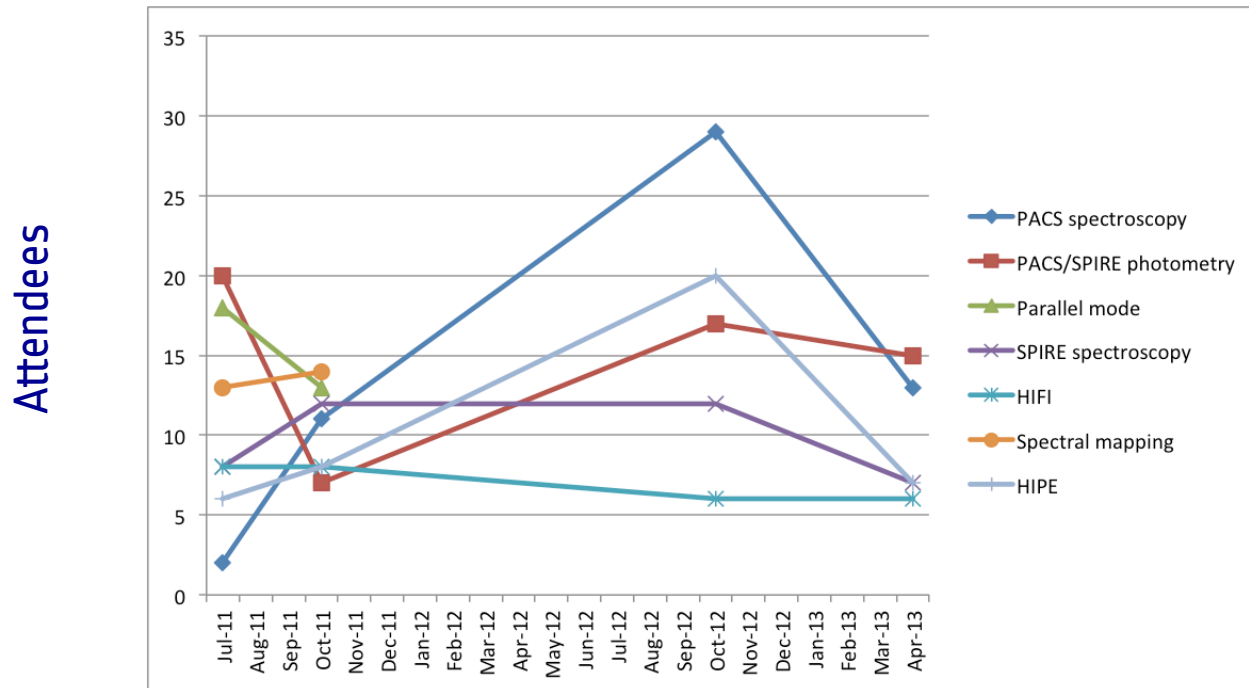
•Video recordings and Q&A's are kept on-line at the HIPE community page.

DATA PROCESSING INTEREST LISTS

Current status:

- So far, very little activity in the lists although used for announcements of the DP webinars.
- Membership very slightly increased between HUG#5 and 6.
- One DPIL chair (R. Oonk) gives good feedback to the DPUG on user-related discussions, the rest are idle at the DPUG.

Future

- A round of new HSC DP webinars is planned for each major HIPE release: next one on the fall 2013 for HCSS 11, then yearly.

• We keep video recordings and Q&A's of the DP webinars at the HIPE community user portal:

http://hipecommunity.wikispaces.com

Overall status of DP at Key Programmes

DP status at Key Programmes

- No bottlenecks
- Pb. w/ HIFI OTF
- Pb. w/ HIFI HEB fringes
- Pb. w/ PACS-S cal.

Number of comments per area
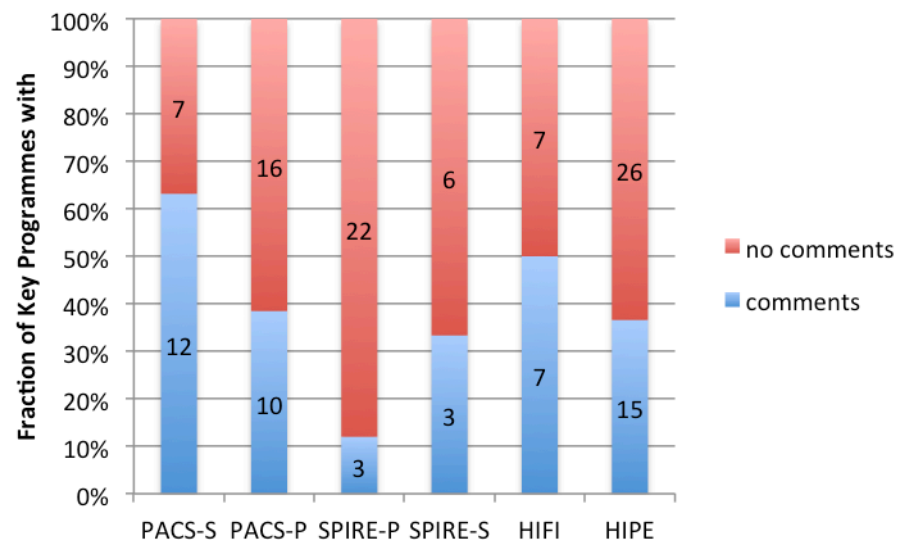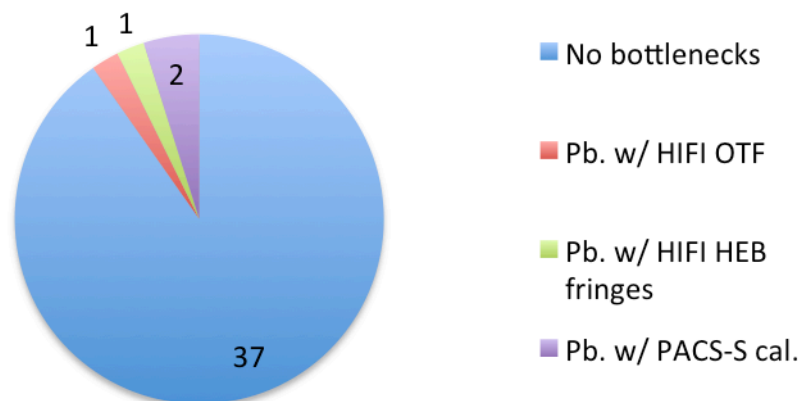
- Inputs from 41 Key Programme consortia (all but KPOT_gsmith01_1).
- The absolute majority of the KPs are using HIPE to reduce the data and have no major bottlenecks to reduce the data
- The most common combination is HIPE plus some other tools, with all Key Programmes using HIPE at least up to some level of processing.

Problems	Times mentioned	
HIPE too complex for the work we are doing		2
HIPE takes a lot of memory		2
Incompatibility/complex format w.r.t. other FITS formats		2
Many known issues are not well documented		1
HIPE written in object-oriented language		1
Documentation in programmers' language		1
Reduction of HIFI data in HIPE is very slow		1
Instable subinstrument code at earlier times		1

Observations/suggestions	Times mentioned	
Error measurement in images		1
Documentation (recipes), clearly for PACS Spectroscopy.		1
Recipes for HIFI - pipeline is too detailed		1
fitting of the lines in HIPE		1
Spectral data in HIPE, otherwise migrate to CLASS		1
Simple things to work better and easier		1
a single script to get a sensible map		1
Public calibration data		1
Visualization all the spectra aligned in the same velocity scale.		1
A tool to cross-check the profile in velocity		1
Add date information to known issues doc.		1
Pointing improvements		1
PSF photometry in HIPE		1
List driven source extraction (linearList in IDL)		1

Problems	Times mentioned
Astrometry differences with acillary data	2
Source confusion recipe	1
Point source photometry error estimate recipe	1
Recipe for producing reliable upper limits	1
Large changes of zero-level fluxes w/ HCSS versions	1
Stripes in the images	1
Updated SPIRE-P calibration accuracies with HIPE versions	1
Calibration observations made easily available to users	1
Recipe for extracting point sources on extended emission	1
Recipe for aperture photometry in HIPE with SPIRE data	1
Negative background in images	1

Observations/suggestions	Times mentioned
Processed the data with Scanamorphos	4
Processed the data with SANEPIC	2
Source extraction performed in IRAF	1
Processed the data with SMAP	1
Point source photometry with Starfinder	1
Processed the data with Unimap/ROMAGAL	1
Point source photometry with fortran	1
Multi-color point source extraction in external S/W	1
Point source photometry with IDL	1
Recipe for estimating noise properties	1

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KP FEEDBACK ON SPIRE-S

Problems	Times mentioned
Recipe for irregular, semi-extended sources	1
Updated calibration of extended souces	1
Cross-calibration diffs of 30-50% with SPIRE photometer	1
Unclear cross-calibration between SPIRE-S, HIFI and PACS	1

Observations/suggestions	Times mentioned
Strong interaction needed with instrument team	8
Line fluxes measured with Lethbridge S/W	1
Line fluxes measured in IDL	1

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Problems	Times mentioned
Close monitoring of pointing	4
Stripes in maps	2
Noise estimation recipe / discussion	2
Negative background in maps	2
Difficult source extraction on crowded fields	2
Unclear calibration uncertainties for extended emission	1
Surface brightnesses inconsistent with MIPS/IRAS	1
Point source photometry done with IRAF	1
Point source fluxes extracted with SEXtractor	1
Non timely communication of calibration accuracies	1
MadMap black box, lack of control on artifacts	1
Lots of RAM memory needed	1
Inconsistent flux and shape in scans at low fluxes	1
Inconsistent absolute flux calibration with HIPE 10	1
Help from the ICC critical for success	1
Effect of high-pass filter width on point source flux	1
Complex/human-intensive instrument drift removal	1
Better 1/f noise correction	1

Observations/suggestions	Times mentioned
Processed with Scanamorphos	11
Processed with TAMASIS	3
PSF photometry with StarFinder	2
Point source photometry done with IDL	2
PSF photometry with CuTex	1
Processed with Unimap/Romagal	1

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KP FEEDBACK ON PACS-S

Problems	Times mentioned
Official numbers of extended emission calibration	5
Line flux calibration	5
Incomplete calibration holding papers	5
Pointing reconstruction	4
Timeliness of calibration updates (postdosc leaving)	3
Dust/broad features (RSRF)	3
Treatment of detector transients in unchopped	2
Spectrometer beams	2
Flatfielding for non-standard modes	2
Problems saving to FITS final cubes	1
Problem with units when calculaing line fluxes	1
Off-position subtraction recipe for unchopped	1
Memory consumption	1
Interaction between beam and pixel size	1
Information regarding calibration updates	1
Documentation too detailed, prefer recipes	1
Difficult to find wavelength in cube FITS files	1
Differences between chopped and unchopped lines	1
Cross-calibration with ISO and KAO	1
Cross-calibration between PACS-S and SPIRE-S	1

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Problems	Times mentioned	
Recipe to deal with HEB bands 6-7 electronic fringes		6
Recipe to identify baselines/pointing in OTF data		3
Interactive inspection of individual scans needed		2
fitFringe does not work well in all cases		2
Problems with pointing information		2
Zig-zag pattern in OTF data		1
Different pointing for each polarization		1
CLASS fits files are not readable in HIPE		1
Load chop with off position observations unusable		1
Wavelegth switching mode unsuable due to instabilities		1
Contamination from OFF position		1
Contamination from Jupiter 80" from off position		1
Inconsistent Hspot-HIPE noise calibration (do-filter load)		1

Observations/suggestions	Times mentioned	
Line analysis done in CLASS		11
Strong interactions needed with instrument team		8
Line analysis done in IDL		5
Workshop focussed on OTF data reduction		1
Deconvolution done in CLASS		1
Simple recipes for HIFI data reduction (pipeline too complex)		1
Line analysis done in python		1

MORE SCIENCE-DRIVEN PRIORITIZATION

- Remaining high priority areas from the KP feedback to be promoted at the different Configuration Control Boards of the project:

    - HIFI: provide tools and documentation to deal with realistic HEB bands standing wave mitigation and OTF data reduction use-cases.

    - PACS-P: improve the quality of the SPG-produced scanmaps and document their accuracies and possible use cases.

    - PACS-S: improve the pointing reconstruction and flux calibration of point sources and give further documentation to deal with extended sources.

    - SPIRE-S: document cross-calibration recipe with SPIRE-P and other instruments.

    - SPIRE-P: improve documentation for realistic point source extraction use cases.

    - HIPE: Simplify basic/beginner user workflows in HIPE.

    - HIPE: Improve HIPE's FITS input/output compatibility with other systems.

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