



Introduction to HIPE: basic functionality

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Outline



HIPE: Herschel Interactive Processing Environment

- **About the Herschel data: Levels and Contexts**
- **General description of the software**
 - All in one (data retrieval, reprocessing, analysis and storage)
 - Programmed in Java and Jython (python over java)
 - Modular: interchangeable tasks
 - Dual Interactive – Console (all interactive sessions can be replayed)
- **HIPE Tour**
 - Start-up, views, perspectives and preferences.
 - Visualizing observation Contexts, images, cubes and spectra.
 - Running pipelines and user scripts.
 - Wrapping-up everything in a processing script.

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The Herschel Data: Levels



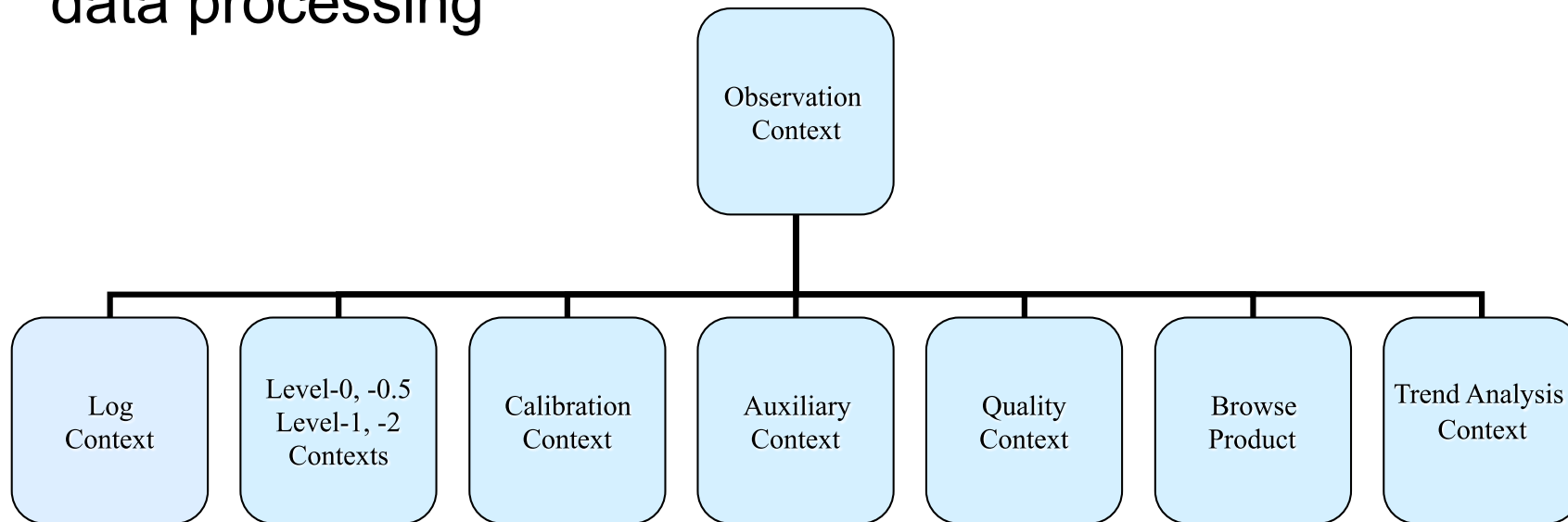
- **Level 0 products:**
 - Raw science telemetry data in the form of (sub)instrument timelines
 - Equivalents: ISO's ERD (Edited Raw Data)
 - Examples: bolometer currents or chopper positions with time
- **Level 1 products:**
 - Science instrument timelines corrected for Herschel specifics
 - Equivalents: ISO's SPD (Standard Processed Data)
 - Examples: bolometer total fluxes in absolute physical units
- **Level 2 products:**
 - Fully calibrated science data ready for analysis
 - Equivalents: ISO's AAR (Auto-Analysis Results) and Spitzer's BCDs (Basic Calibrated Data)
 - Examples: flux-calibrated images with astrometric information, fully calibrated spectra, spectral mapping data cubes
- **Level 2.5 - 3 products:**
 - Publishable results combining different observations. E.g. line fluxes or mosaics
 - Equivalents: ISO's HPDP (Highly Processed Data Products) and Spitzer post-BCDs

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The Herschel Data: Contexts



Data products are organized in “contexts”, which are wrappers of information with everything needed for the data processing

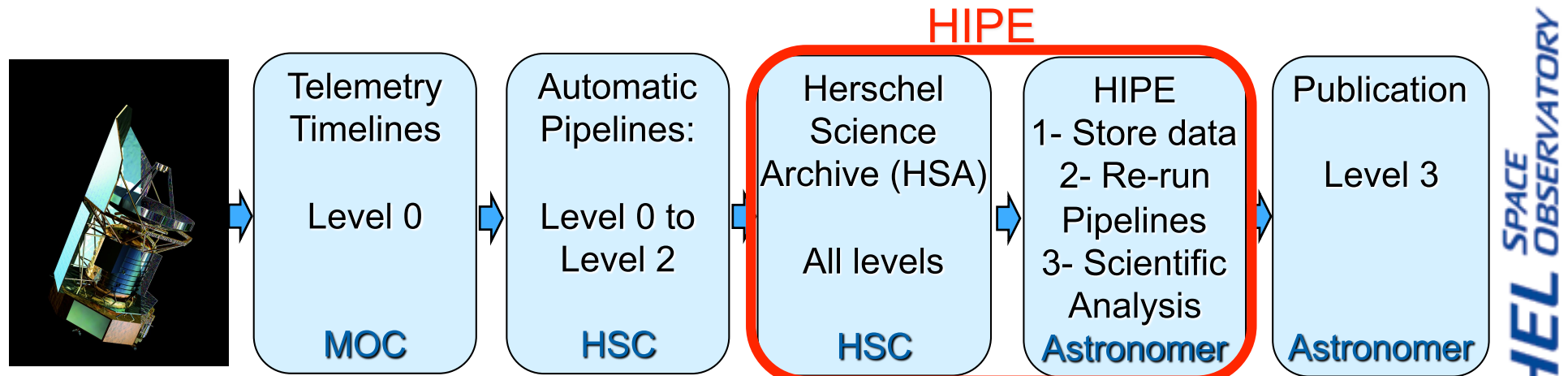


- The Observation Contexts contain all the calibration information, quality control, pointing data, onboard logs and science data that is needed to process any given observation.
- HIPE and the DP pipelines are programmed to handle and extract automatically the information needed from these products

What do you do with HIPE?



1. Herschel performs an observation following a user AOR
2. The spacecraft telemetry arrives at Mission Operations Control (MOC) centre packed in timelines and is sent to HSC



3. The data is run automatically through the HSC data pipelines to remove all instrumental effects to produce level-2 products
4. Raw and processed data is placed in the HSA for the users
5. Astronomers will use HIPE to download, reprocess the data and analyze it within just one single environment



HIPE Tour

(see also video tutorials at <http://youtube.com/learnhipe>)

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