SOFIA
Data Reduction Pipeline Status

• Melanie Clarke
• for the Data Processing System (DPS) team
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DPS Software

The DPS software team produces and maintains:

- data reduction pipelines for all facility class instruments
- infrastructure tools to facilitate automated data reduction, storage, and transfer to the IRSA archive
- data QA support tools for updating metadata, creating reports, and analyzing data products.

The team:

- 5 software engineers, 1 part-time systems engineer
- in coordination with the data systems science lead.
Facility Class Pipelines

• DPS supported instruments:
  FORCAST, FIFI-LS, FLITECAM, HAWC+, and EXES (in transition).

• Pipelines were originally developed in a variety of languages:
  IDL, Python, Java, C, and FORTRAN.

• For consistency, maintainability, interoperability, and modernization, we are working toward reimplementing them all in Python with standard scientific libraries in a single, integrated package.
Facility Class Pipelines: Status

✓ FORCAST: Fully reimplemented in Python.

✓ FIFI-LS: Fully reimplemented in Python.

☐ FLITECAM: First Python version complete; release expected in September 2021.

☐ HAWC+: One remaining component to reimplement; release expected before 2022.

☐ EXES: IDL pipeline received July 2021; reimplementation will commence in 2022.
Public Release

Python pipelines are now available to the SOFIA community as an open-source package, called SOFIA Redux.

This public release enables the user community to better understand SOFIA data reduction, customize their own reductions, and provide feedback to the pipeline team.

• First release: v1.0.0, July 15, 2021, including FORCAST and FIFI-LS support.
• Source code is available via the SOFIA-USRA GitHub repository.
• Installation via standard Python distribution tools is available:

    pip install sofia_redux
Public Release: Features

• Extensive software documentation is available online, including user manuals for every pipeline.

• Tutorials for introductory pipeline usage with sample data sets are also available, via the SOFIA website.
Public Release: Features

• Full-featured interactive pipeline interface.

• Batch-mode interface also available.
Public Release: Features

- Integrated analysis and display tools can also be used as standalone tools.
Public Release: Coming Soon

The FLITECAM pipeline will be released publicly immediately following internal release of the Python version.

• New FLITECAM data products are more consistent with FORCAST, easier to understand.

• New pipeline algorithms implement several improvements, particularly for imaging products.
Public Release: Coming Soon

Object: NGC 2023, Filter: FLT_PAH_329

Filename: F0340_FC_IMA_0400585_FLTPAH329_CAL_0446-0485.fits

Object: NGC 2023, Filter: FLT_PAH_329

Filename: F0340_FC_IMA_0400585_FLTPAH329_CAL_0446-0485.fits

IDL: FLITECAM Redux v1.2.0
Python: FLITECAM Redux v2.0.0dev0
Public Release: Feedback

Questions? Feedback? Contributions?

• File a ticket on the GitHub project: https://github.com/SOFIA-USRA/sofia_redux

• Send a message to the SOFIA helpdesk: sofia_help@sofia.usra.edu