



# JWST Data-Analysis Tools Development

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with input from the JWST Data Analysis Development Forum



## Post-pipeline analysis and visualization

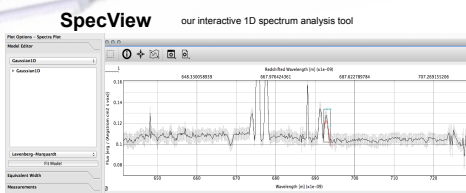
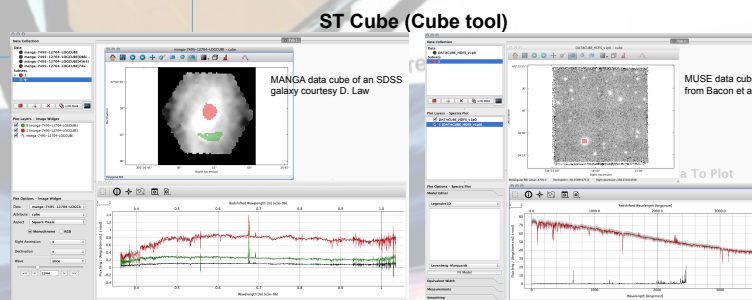
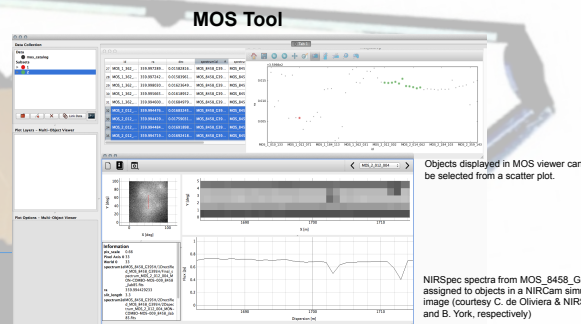
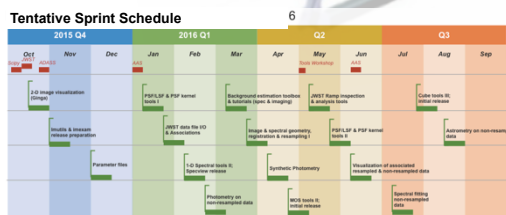
The JWST Data Analysis tools development effort centers on making it convenient for JWST users to inspect, manipulate, and model their data. Basic capabilities familiar to users of IRAF, STSDAS and IDL will be available (many already are) in the python/astropy software ecosystem. The tools are being built to understand JWST data structures, including uncertainties, detector geometries, data associations and data quality flags. Basic tools will have a consistent python API and command-line interface. Extensible visualization tools are being developed for certain interactive workflows such as inspection of MOS and IFU data and are highlighted here.

## How we decided what to develop

- Collected 31 "Use Cases"
- Searched for commonalities, use of pre-existing software
- Divided into levels of importance
- Determined the FTEs are required
- Decided what to develop
- Implementation via coding sprints

## Guiding Principles

- Open source software
- Easy to install
- Well documented
- Easy to extend
- Multiple interfaces
- Built on stable, widely adopted languages
- Built on stable, widely adopted code libraries
- Leverage existing codes and algorithms



## Completed Coding Sprints

- 1D interactive spectral analysis
- Image utilities (imarith, imstat, etc.)
- Non-interactive fitting of 1D spectra
- Signal processing: filtering and interpolation
- Tools for Cubes I
- Tools for Cubes II
- MOS Tools I

## Infrastructure

- Python, using C for speed if needed. Python 2.X and 3.X and standard scientific libraries (scipy, numpy, and matplotlib).
- Tools will be contributed to Astropy, build upon Astropy libraries, and there will be support and training for community contributions through Astropy.
- Options & prototype development are being explored for image display and GUI interaction, including the GINGA viewer (Python-based) and Glueviz for linked data sets and visualization tools (IFU and MOS tools shown here).

## Join Us!

- Join the JWST Data Analysis Development Forum (JWST DADF). Subscribe to the email list by sending a message to [jwst\\_dadf-subscribe-request@mailist.stsci.edu](mailto:jwst_dadf-subscribe-request@mailist.stsci.edu). We have ~monthly meetings (remote access available) where new coding sprints are initiated and ending coding sprints demonstrate their outcome
- Participate in and/or inform coding sprints in person or remotely
- Participate in workshops
- Monitor progress at: [bit.do/jwst](http://bit.do/jwst)

