DRAGONS

Release 3.0.4

Gemini Observatory

November 2022

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Document ID: PIPE-USER-103_DRAGONSManual

This document is a collection of links and document IDs making up the DRAGONS documentation.

CHAPTER 1

Tutorials - Reducing data with DRAGONS

Imaging

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Longslit Spectroscopy

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CHAPTER 2

DRAGONS Manuals

- (Document ID: PIPE-USER-105_AstrodataCheatSheet)
- (Document ID: PIPE-USER-106_AstrodataUserManual)
- (Document ID: PIPE-USER-104_AstrodataProgManual)
- (Document ID: PIPE-USER-108_RSProgManual)
- (Document ID: PIPE-USER-109_RSUserManual)

CHAPTER 3

Workshops

To learn more about how to tame the DRAGONS, try the self-study workshops.

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CHAPTER 4

Releases

4.1 Release Notes

4.1.1 V3.0.4

This patch release includes several small fixes and improvements, many related to the Quality Assessment Pipeline run internally at Gemini. Provenance for flux calibration is now included. The patch is recommended to all but not critical for most.

4.1.2 V3.0.2 and V3.0.3

Note that 3.0.2 was found to have one broken recipe, 3.0.3 fixes it.

This patch release improves the reduction of GMOS-S data obtained since the event on January 28, 2022 that led to the failure of amplifier 5. This patch also adds support of the new Flamingos 2 filters and the filter wheel reshuffling that occurred earlier this year. Various other fixes and features are also contained in this patch. See the *change logs* for details.

4.1.3 V3.0.1

This is a patch release that fixes bugs related to the `section` parameter of some primitives and the WCS of longlist spectra. There has been a change in the `findApertures` interface to better optimize the automatic detection of the source apertures. See the *change logs* for details.

4.1.4 V3.0.0

This new release includes several new features, new support, and several bug fixes. See the *Change Logs* for details.

This major update of DRAGONS has two big changes over V2:

- New "quicklook" reduction for GMOS longslit data

- Python 3 compatibilty only. Python 2 is no longer supported.

With this release, DRAGONS offers support for:

Science Quality reduction

- GMOS imager
- NIRI imager
- GSAOI imager
- F2 imager

Quicklook Quality reduction

- GMOS longslit spectrograph

For imaging, this software should be used instead of the Gemini IRAF package.

For GMOS longslit spectroscopy, use this package only for quicklook purposes. Please continue to use Gemini IRAF for science quality reductions. We are working on a science quality package for GMOS longslit but it is not ready yet. We believe that releasing what we have for quicklook inspection will nevertheless be useful to our users.

Installation instructions can be found in the Recipe System User Manual at:

http://dragons-recipe-system-users-manual.readthedocs.io/en/v3.0.4/

4.2 Change Logs

4.2.1 3.0.4

Bug Fixes

geminidr.gmos

- Allow `maskFaultyAmp` to work on astrodata objects with no mask.
- Fix `maskFaultyAmp` to work on central stamp ROI.

geminidr.core

- Adjust minimal dither separation for fringe frame creation.

astrodata

- Fix AstroData `info()` method to handle extensions with no pixels. Required for upcoming GHOST data.

Improvements

geminidr.gmos

- Update to the GMOS-S Hamamatsu 4x4 imaging illumination mask.

geminidr.core

- Improve behavior of `addIllumMaskToDQ` to cope with larger shifts due to recent GMOS misalignment.
- Add provenance for the flux calibration step.

gemini_instruments.f2

- Switched to using WAVELENG for central_wavelength for F2 to be better aligned with the instrument and observatory software.

gempy

- In `dataselect`, make the disperser selection default to the "pretty" mode rather than requiring the full component ID.

Quality Assessment Pipeline

- Increase robustness of measureIQ for 2D spectra.
- Interface improvements to the QAP Specviewer.
- Fix missing `maskFaultyAmp` in some QAP recipes.
- Limit the number of aperture/spectra selected in GMOS LS QA recipes for performance reasons.

4.2.2 3.0.2 and 3.0.3

Note that 3.0.2 was found to have one broken recipe, 3.0.3 fixes it.

Bug Fixes

geminidr.core

- Continue without crashing when `traceApertures` cannot identify a starting location for a trace.
- Fix issues with assignment of on-source/sky frames when the user specifies specific frames.
- Fix bug where `stackFrames` crashed if using the `statsec` parameter when scaling or zero-offsetting.
- In fringeCorrect, `do_cal=force` has been reactivated.
- Better handling of infinites and NaN in the flat normalization.

geminidr.gmos

- Added new primitive to the recipes to mask amplifier 5 in GMOS-S data obtained since January 28, 2022. GMOS-S amplifier 5 suffered a major failure and it is not usable.
- Ensure that the masks are used when calculating the statistics in scaleByIntensity.

geminidr.gnirs

- Added missing support for YPHOT filter.

geminidr.f2*

- Support of the Flamingos 2 filters.

New Features

** geminidr **

- Add `wave_units` and `data_units` parameters to `write1DSpectra` to configure the output
- Under-the-hood modification to distinguish data reduced in quicklook mode versus science mode.

Interface Modifications

- Internal Gemini catalog server URL updated.

Documentation

- Various fixes to the documentation affecting formatting, not the content.

4.2.3 3.0.1

Bug Fixes

geminidr.core

- Fix bug where `section` start/end comparison was made on string, not numeric, values.

gempy.library.transform

- Fix bug that caused longslit spectra to have incorrect WCS, offset from true slit location.

Interface Modifications

geminidr.core

- Expose `min_snr` parameter in `findApertures`, make `use_snr=False` the default, and estimate noise from pixel-to-pixel variations, regardless of its value.

Documentation

- Various fixes to the documentation.

4.2.4 3.0.0

This release includes new support for GMOS longslit data. Reduction of GMOS longslit data is offered only quicklook mode. It does not produce science quality outputs, yet.

Bug Fixes

geminidr

- In imaging mode, the science recipes now include a call to `scaleByExposureTime` before the stacking step. It is now possible to stack frames with different exposure times.

gemini_instruments.gemini

- Fix the GCALLAMP tag for NIR data to include the QH lamp.

geminidr.core

- Remove incorrect logging in separateSky when object and/or sky files are specified.
- Improve algorithm for separating on-source and on-sky frames.
- Avoid upsampling OBJMASK from uint8 to uint16

- In near-IR imaging mode, frames that fail to be sky subtracted are removed from the main reduction stream to avoid contamination. The reduction continues with the "good" frames. If all frames fail the sky subtraction, then all frames will be passed to the next step of the reduction.

geminidr.gemini

- Fix to the calculation of the CC-band used in nighttime sky quality assessment.
- Fix to the calculation of the BG-band used in nighttime sky quality assessment.

gempy.gemini

- Ensure NIRI skyflats satisfy calibration association requirements

gempy.numdisplay

- Fix a Python 3 compatibility issue.

New Features

geminidr

- Quicklook (`--ql` mode) reduction support for GMOS longslit data.

geminidr.core

- Add `remove_first` parameter to removeFirstFrame primitive.
- Add `match_radius` parameter to adjustWCSToReference primitive.
- Add an IRAF compatibility primitive and recipe for Flamingos 2.

astrodata and recipe_system

- Provenance history stored with the data in tables named: PROVENANCE and PROVHISTORY.

Interface Modifications

geminidr.core

- `biasCorrect`, `darkCorrect`, `flatCorrect`. The `do_bias`, `do_dark`, and `do_flat` input parameters have been replaced with `do_cal` with more options than True or False. Use `showpars` to inspect the options.

Compatibility

- Python 2 support has been dropped. Starting with v3.0.0, DRAGONS requires Python 3. All tests were run on Python 3.7, and this version of Python now serves as the minimal required version.
- Improved the F2 processed products backward compatibility with Gemini IRAF.

Documentation

- Fix various links in the documentation.
- Add examples and cross-reference to disco-stu usage documentation.
- New tutorial for the **quicklook** reduction of GMOS longslit data.

4.2.5 2.1.1

Bug Fixes

geminidr.core

- Fix a crash when a section was used when stacking.

gempy scripts

- Add missing third party adpkg and drpkg support to utility scripts dataselect, showpars, typewalk, and showrecipes.

gempy.library

- Fix to Jacobian calculation for non-affine transforms

recipe_system.adcc

- Make adcc more robust to missing connection to fitsstore.

Compatibility

gempy.gemini

- Add compatibility with sigma_clip for astropy v3.1+
- Add IRAF compatibility keywords on GMOS mosaiced data.
- Add compatibility with astroquery 0.4.

geminidr.core

- Add compatibility with sigma_clip fro astropy v3.1+

geminidr.gmos

- Add IRAF compatibility recipe.

Documentation

- Various fixes to documentation and instruction manual following feedback from users.