

Taipan-FluxCal: TAIPAN Flux Calibration Status

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Australian Government
Department of Industry and Science

TAIPAN TEAM MEETING, AUGUST 31 2016



GOALS

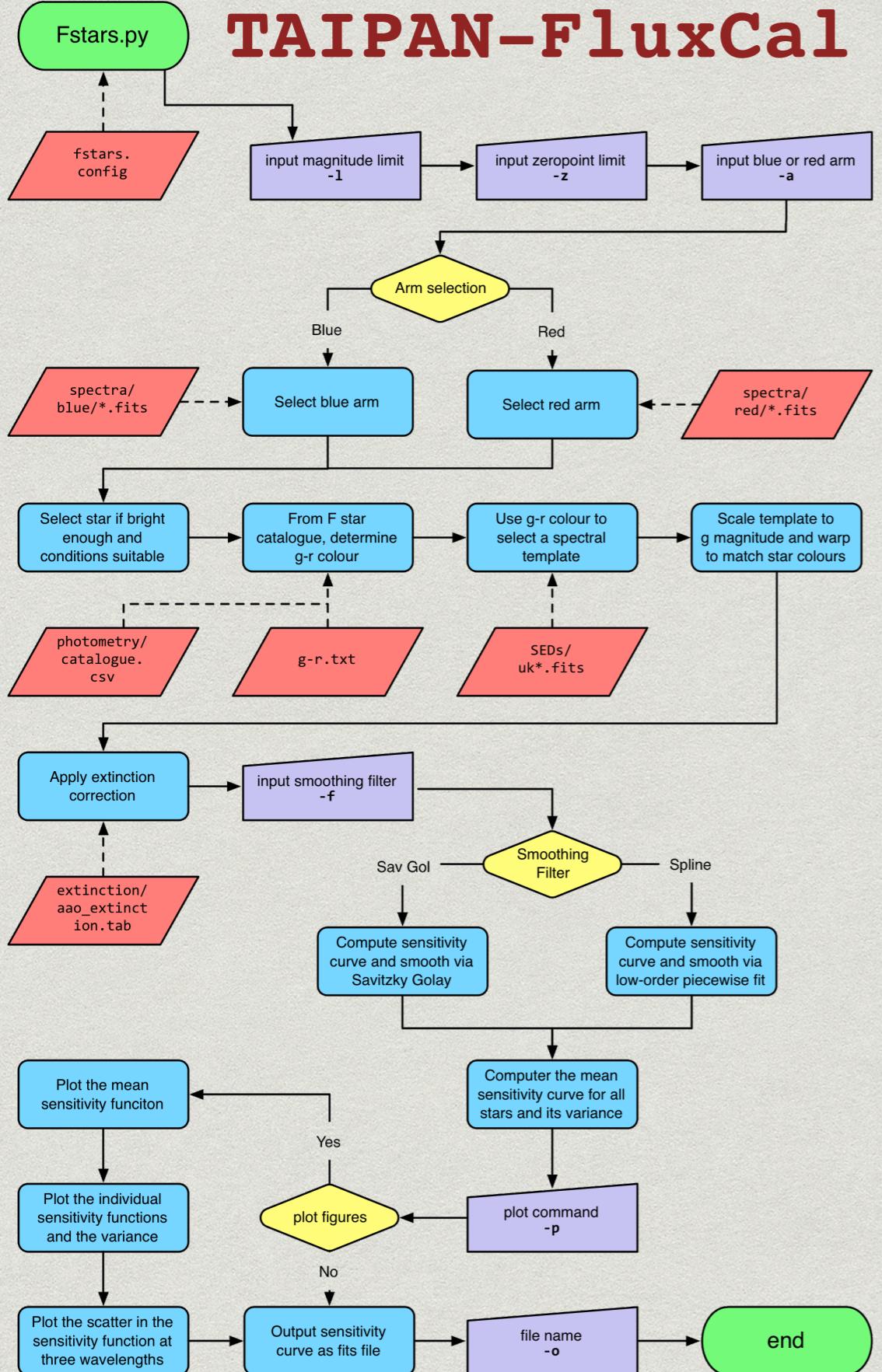
- I. Enable high accuracy flux calibration for TAIPAN
2. Provide simple flux calibration code that can be integrated into the **TLDR** pipeline

GOALS

- I. Enable high accuracy flux calibration for TAIPAN
2. Provide simple flux calibration code that can be integrated into the **TLDR** pipeline:

- ...
- ...
- sky-subtracted 1D spectra from **TLDR**
- **throughput vectors from TAIPAN-FluxCal**
- throughput vector and splicing applied by **TLDR**
- redshifting and everything else...
- ...
- ...

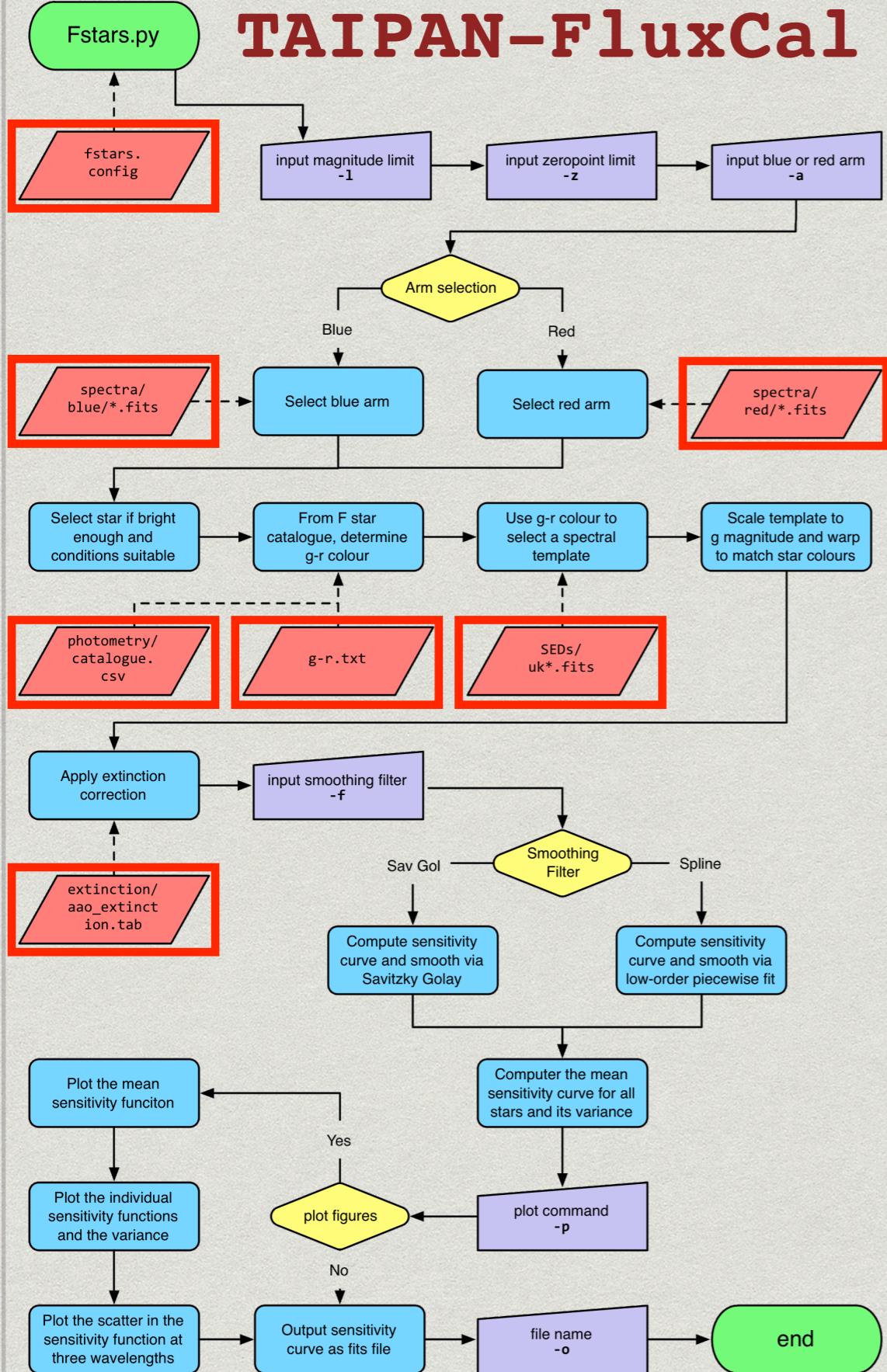
TAIPAN-FluxCal



Thanks, Chris



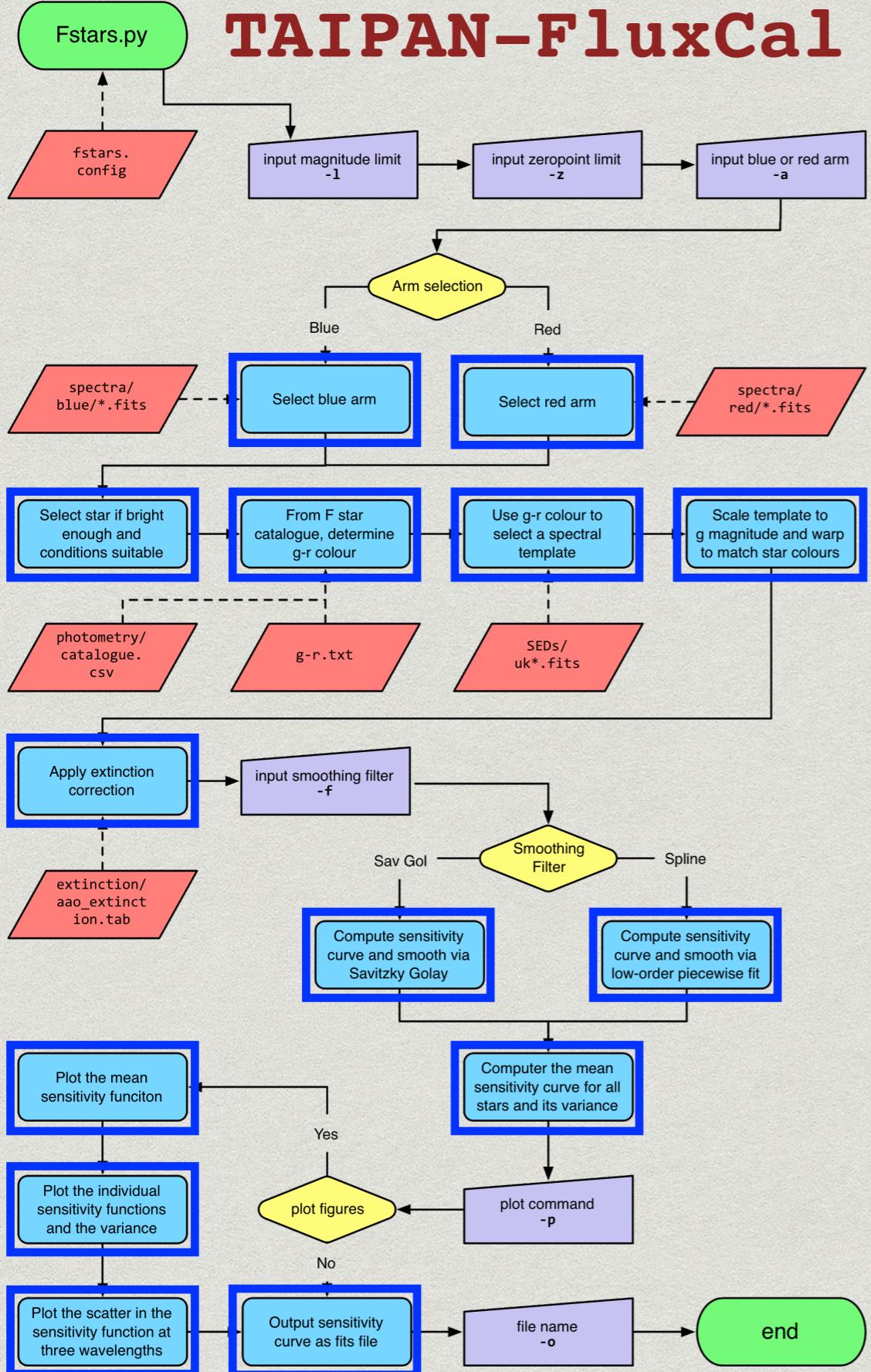
TAIPAN-FluxCal



Inputs

- F star photometry
- F star spectra
- Spectral templates (various F-type from Pickles+98)
- Colours of spectral templates (g-r)
- Atmospheric extinction at AAT
- Filter curves for TAIPAN

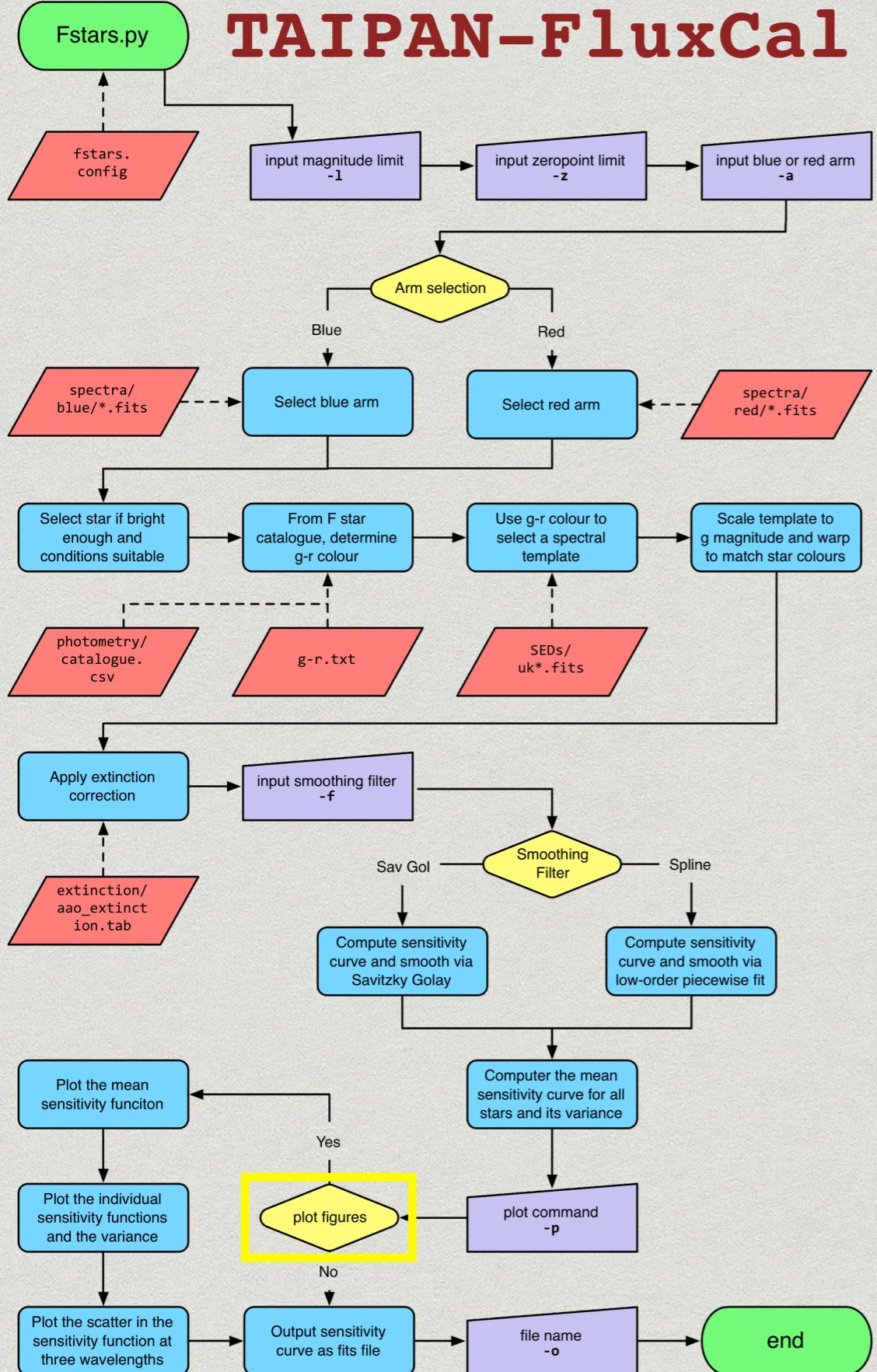
TAIPAN-FluxCal



Processes

- Select F stars within magnitude and zero-point thresholds
- Determine their g-r colours using the photometry catalogues
- Select their best match spectral template using g-r colours
- Warp the spectral template to match the broadband photometry
- Apply the extinction correction
- Compute the sensitivity curve (**spectrum/warped template**) and smooth it
- Compute and output the mean sensitivity curve

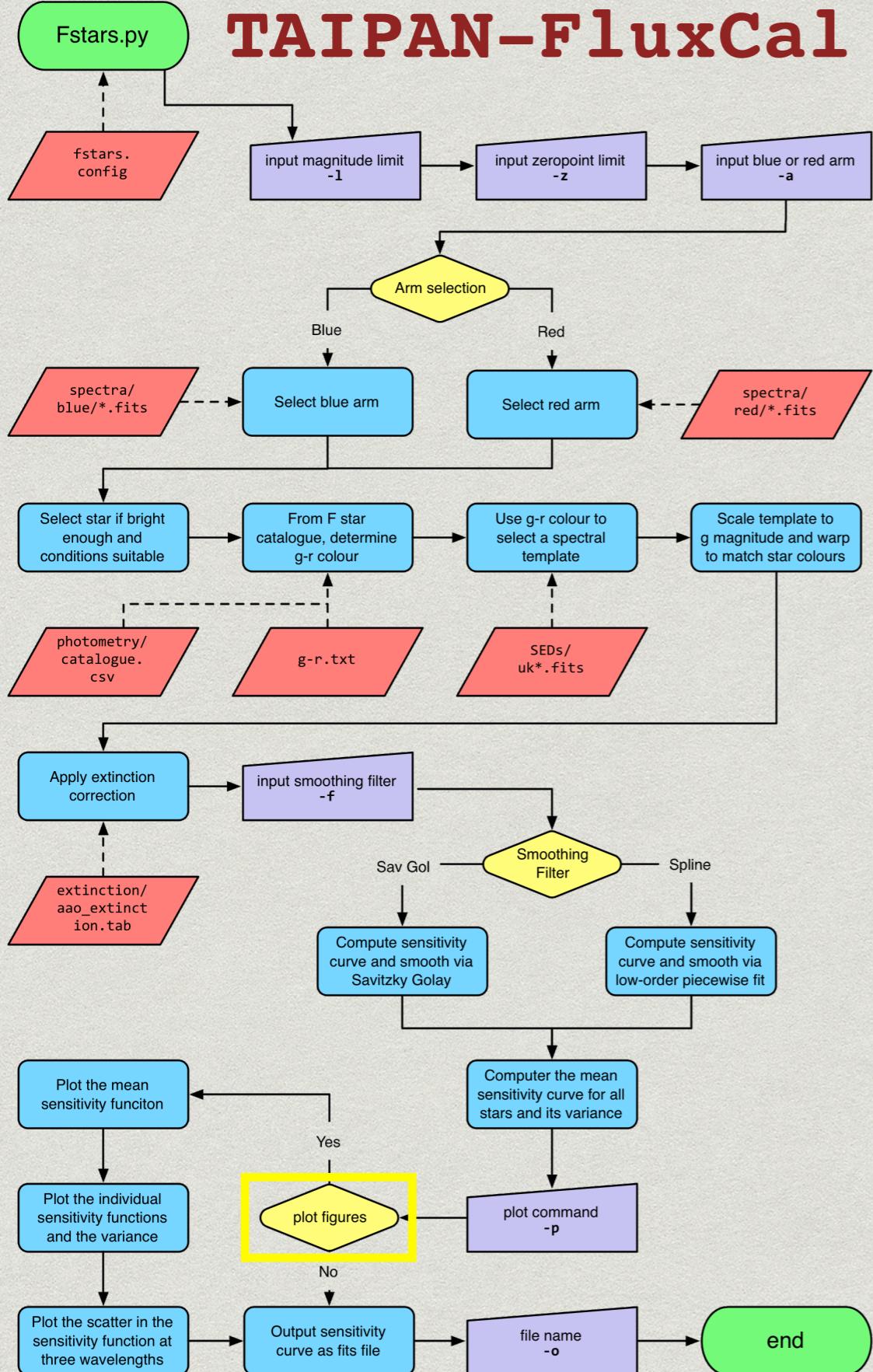
TAIPAN-FluxCal



Plots

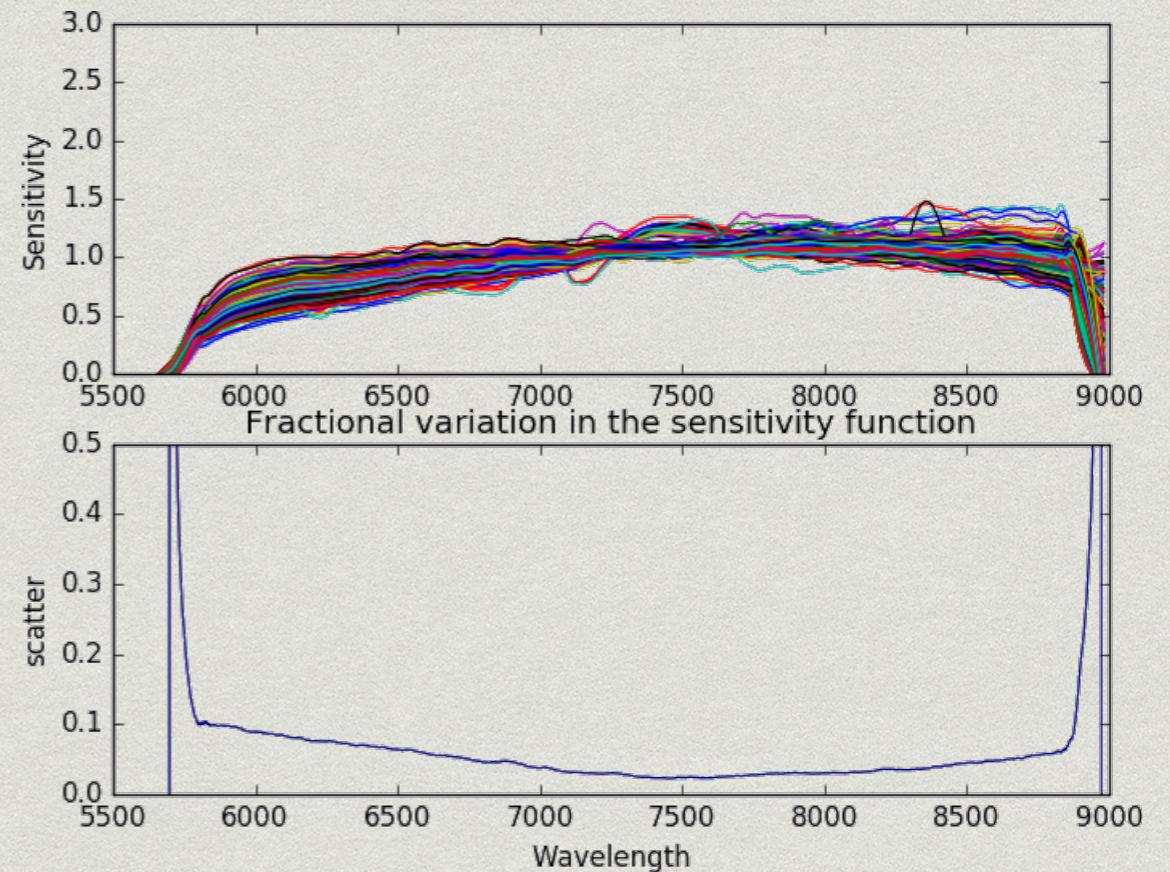
- The individual sensitivity functions and the variance
- The scatter in the sensitivity function at three wavelengths
- The mean sensitivity function

TAIPAN-FluxCal

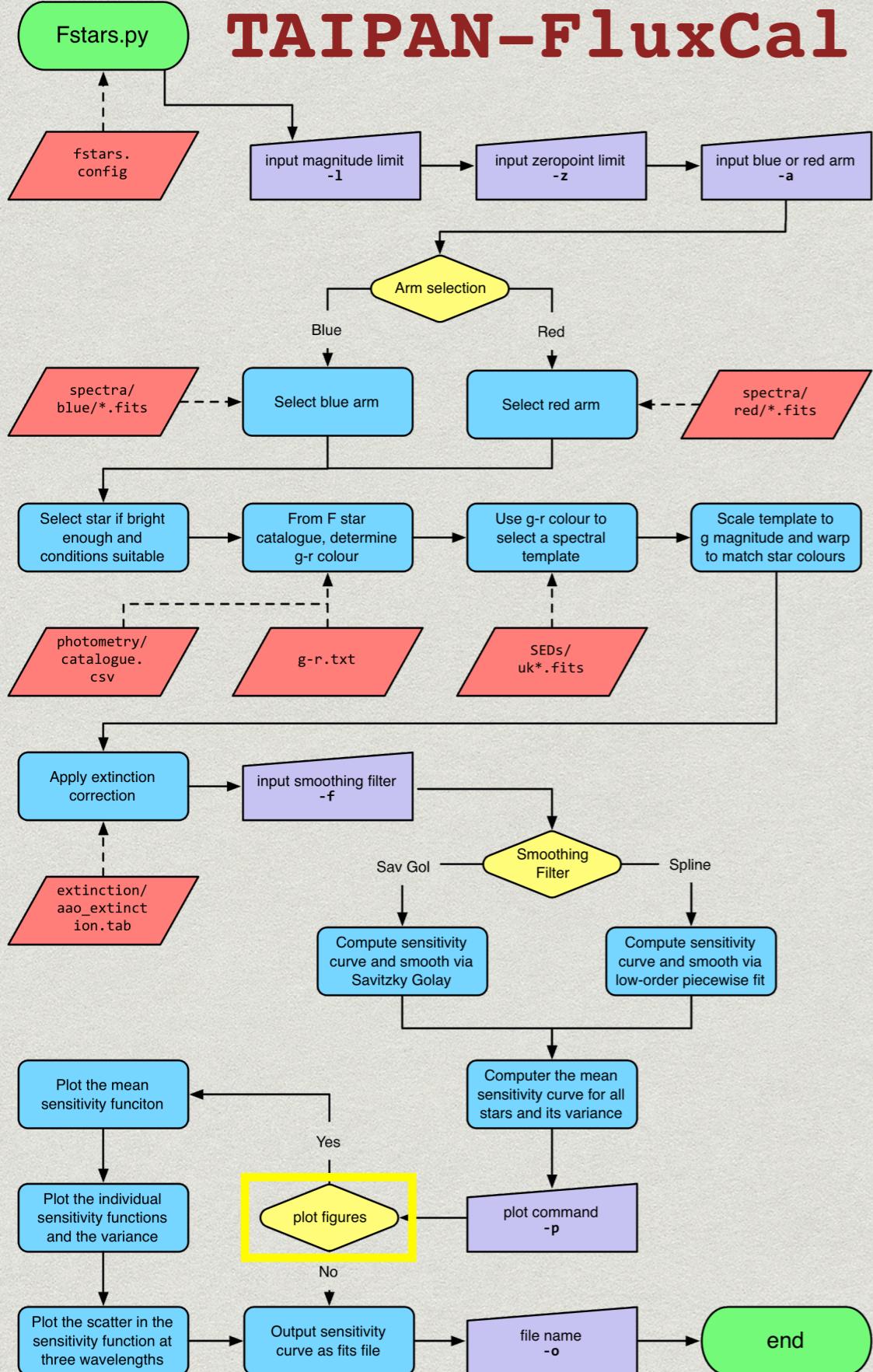


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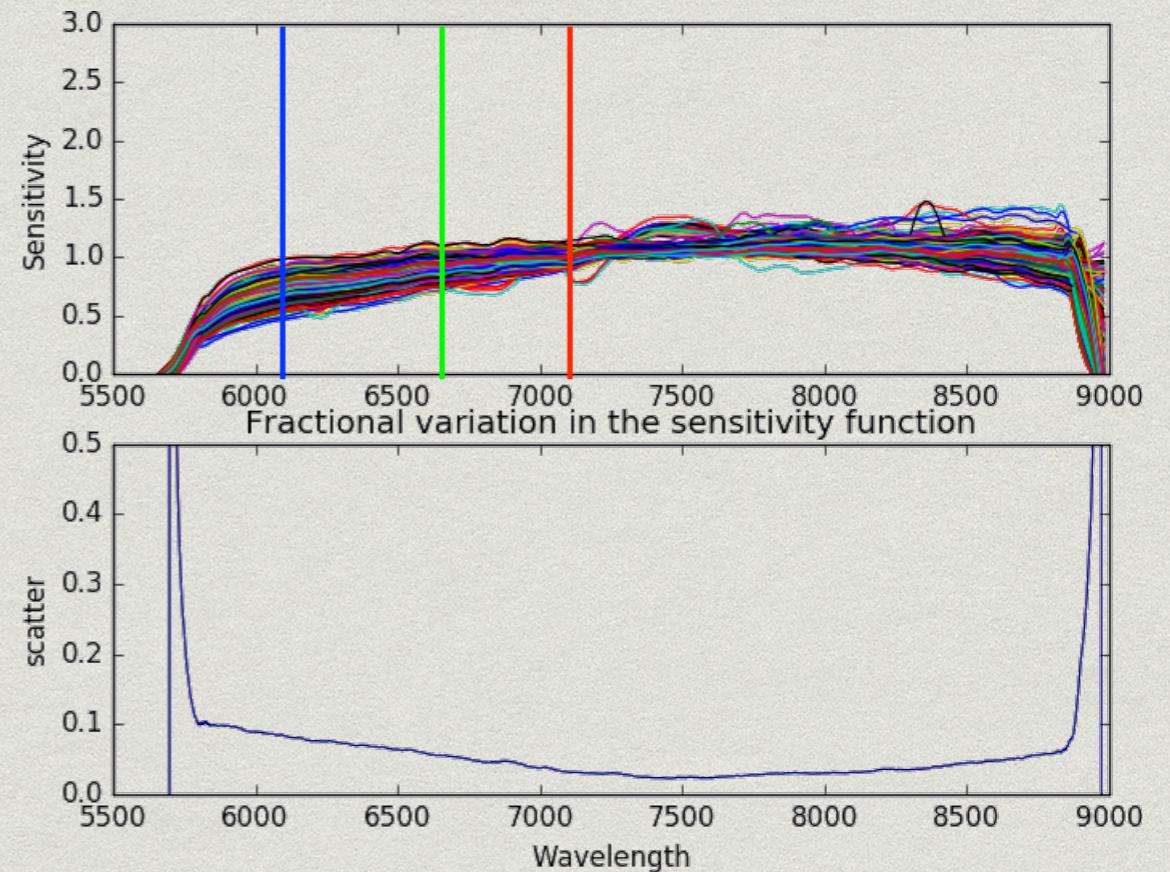


TAIPAN-FluxCal

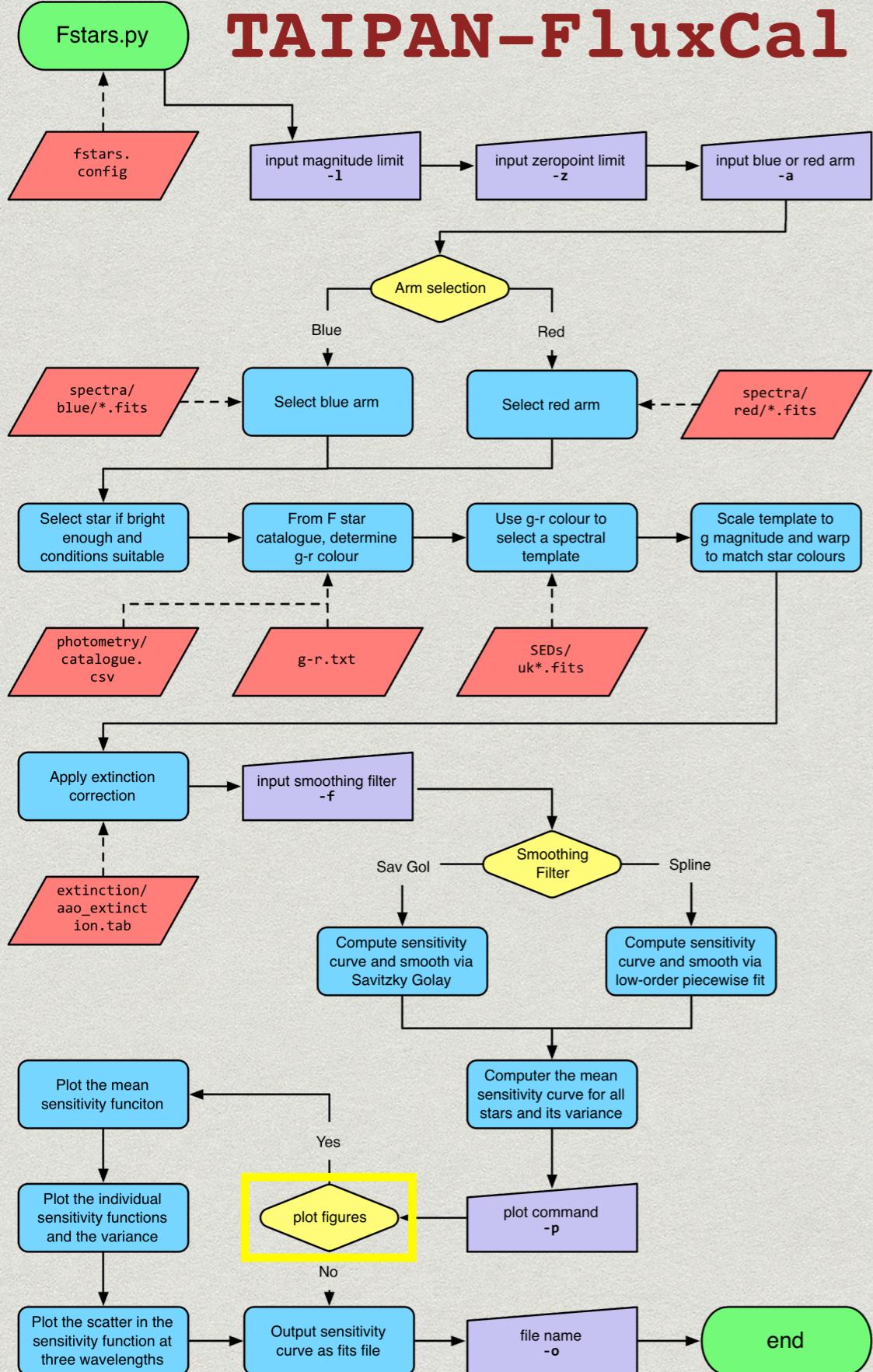


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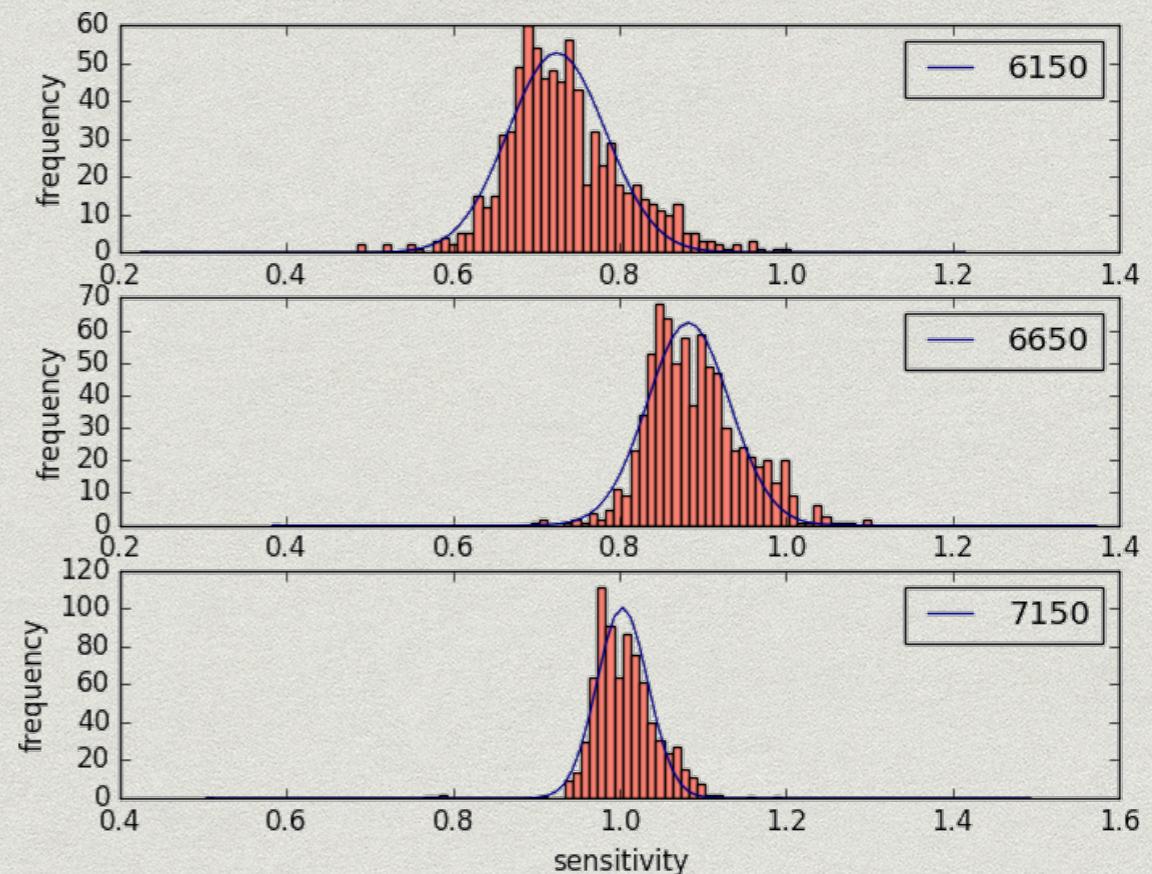


TAIPAN-FluxCal

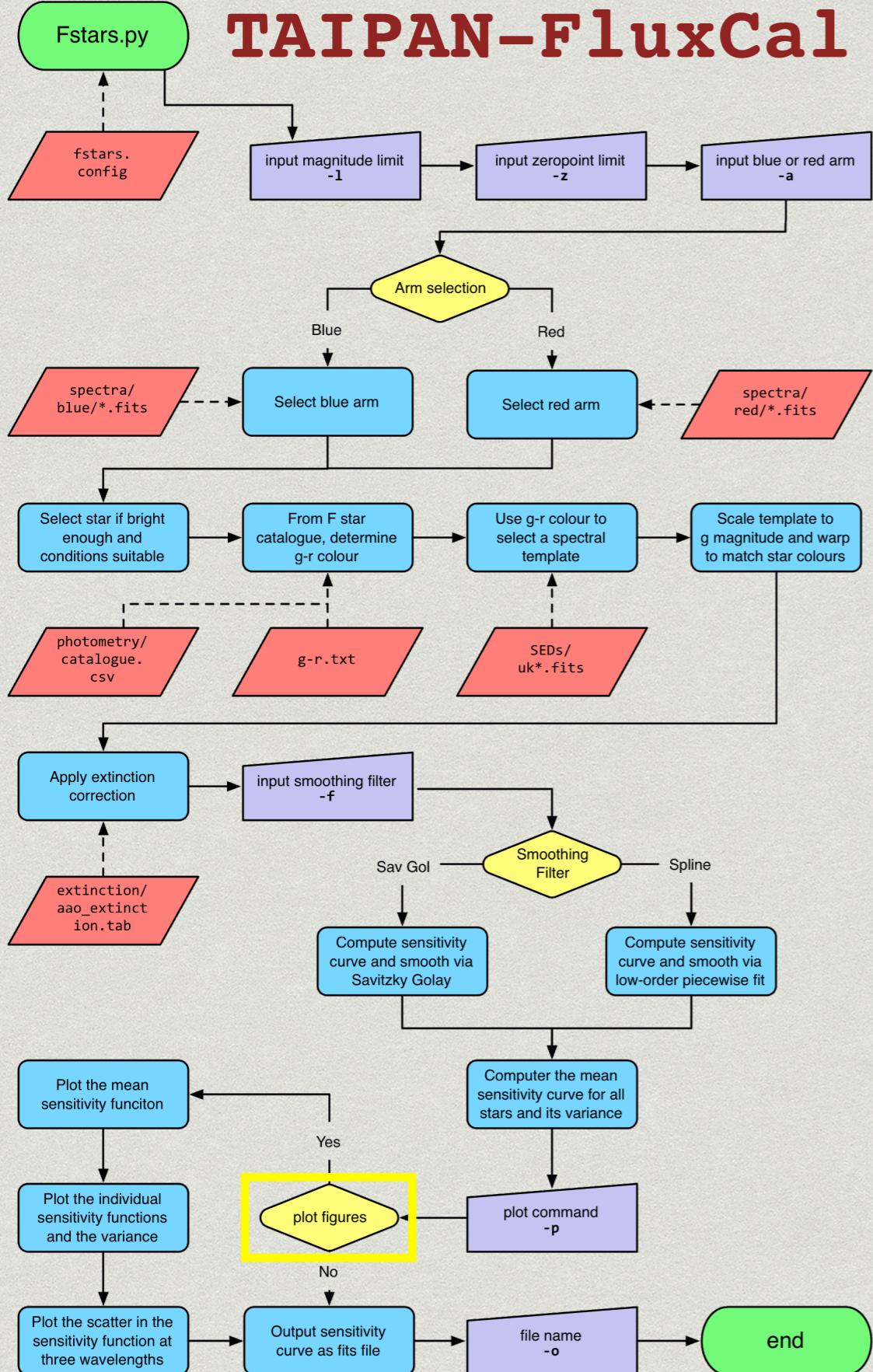


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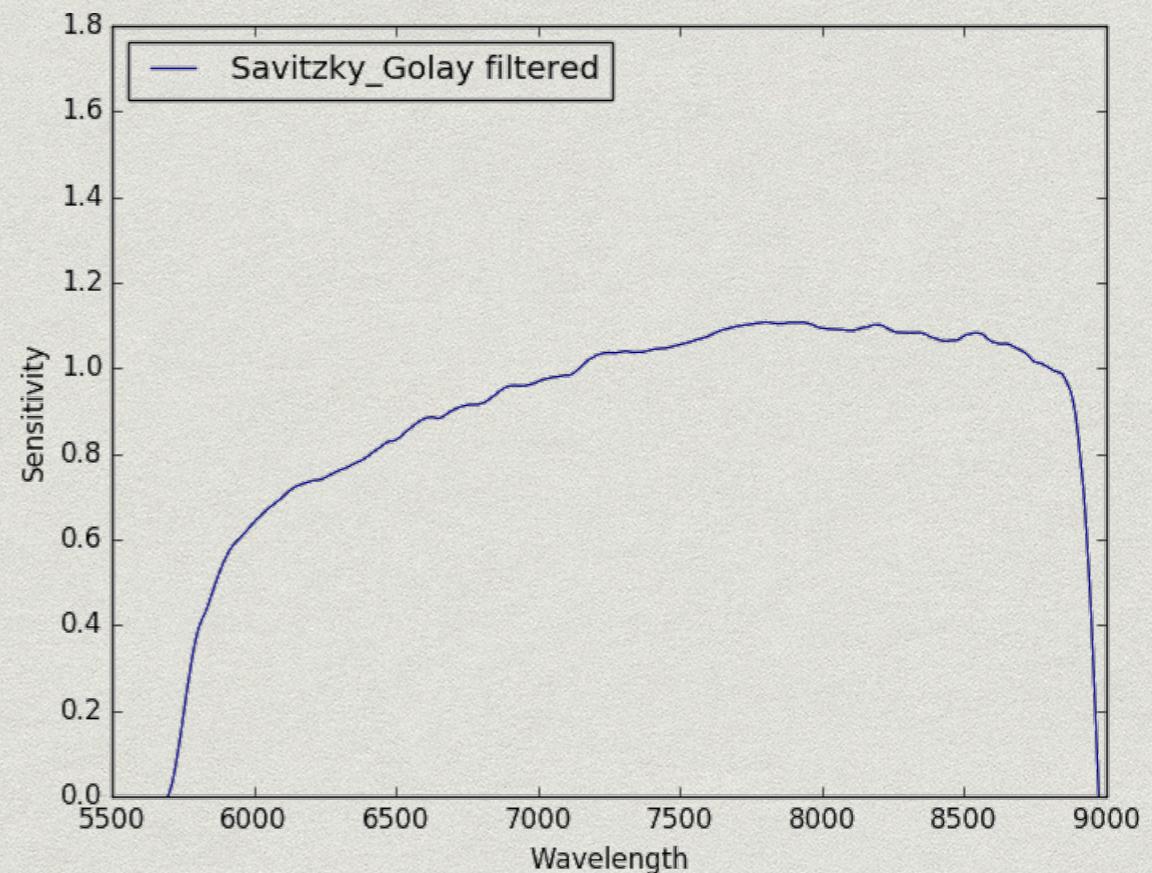


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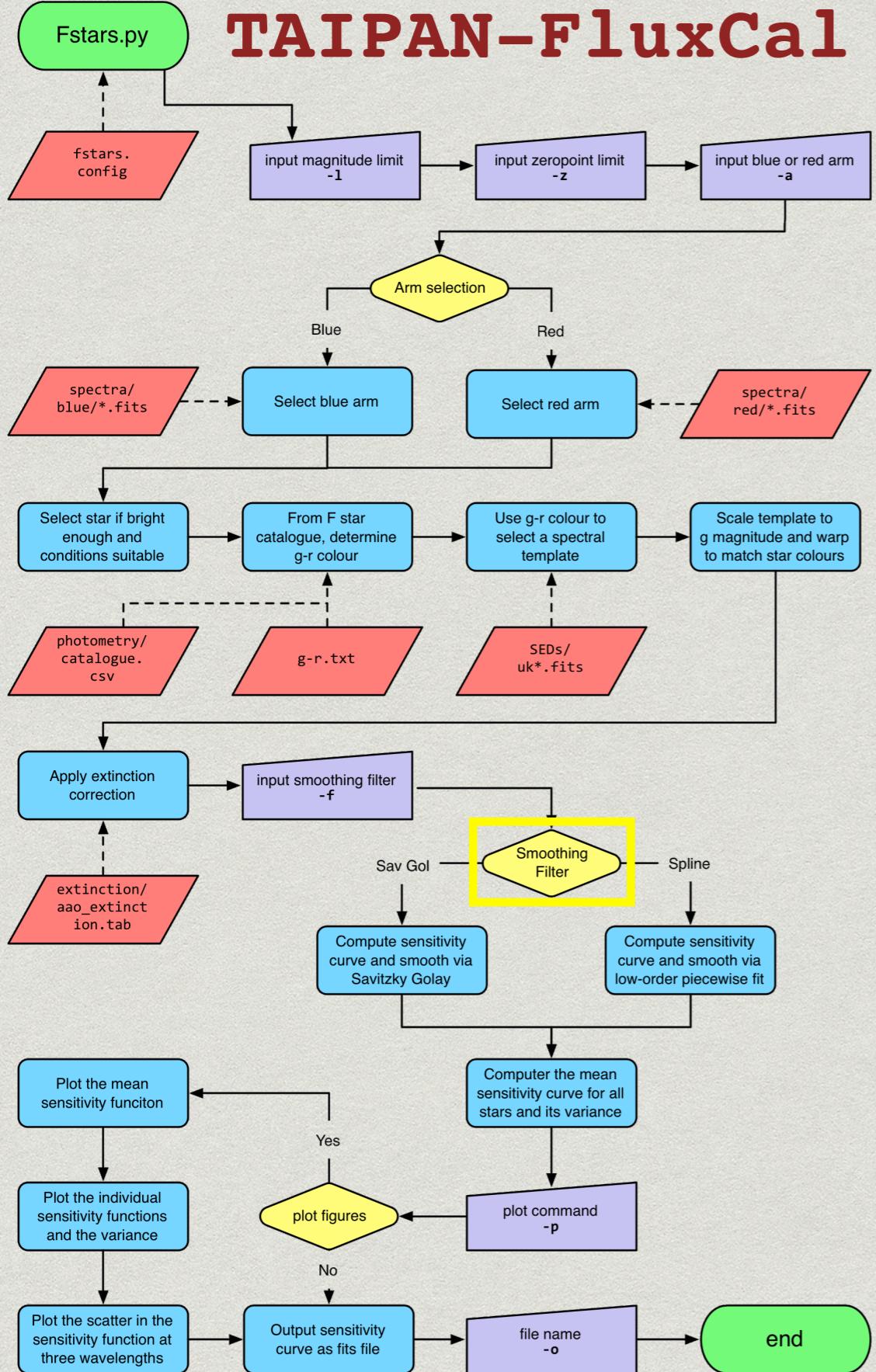


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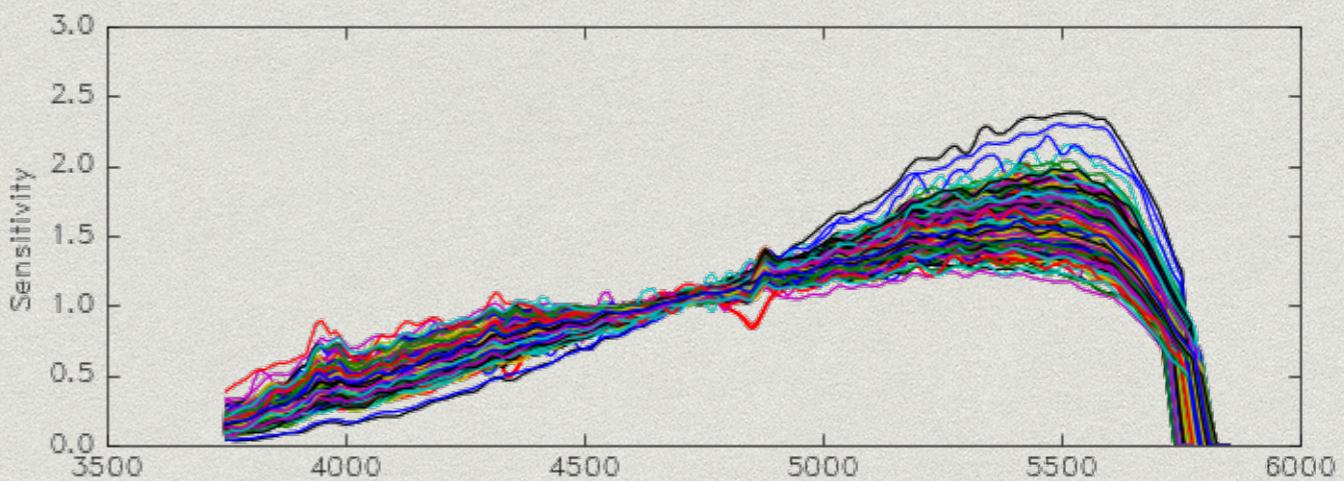


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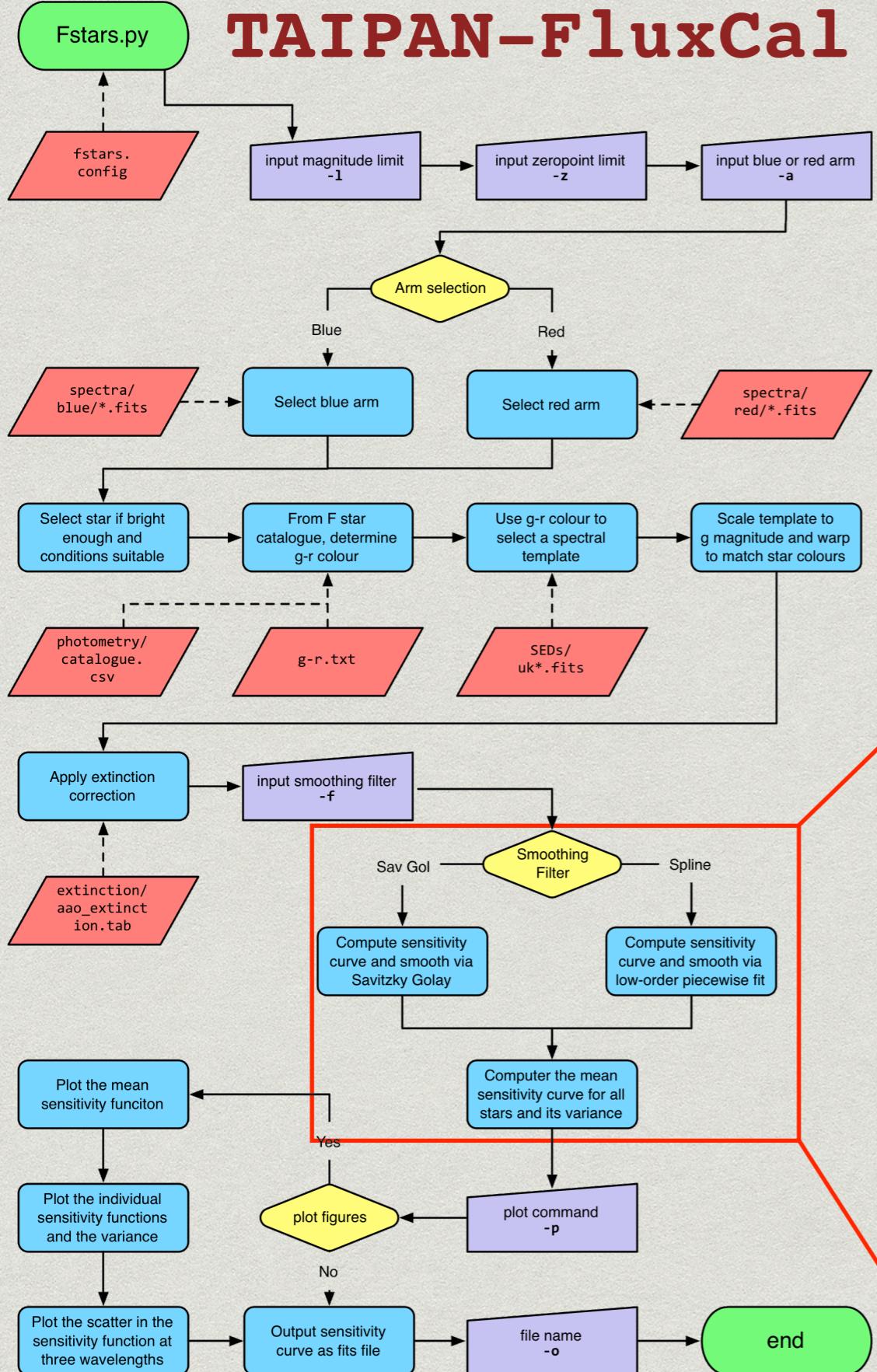


Smoothing Filter

- Originally written using a Savitzky-Golay smoothing algorithm
- Concerns over too many high order wiggles

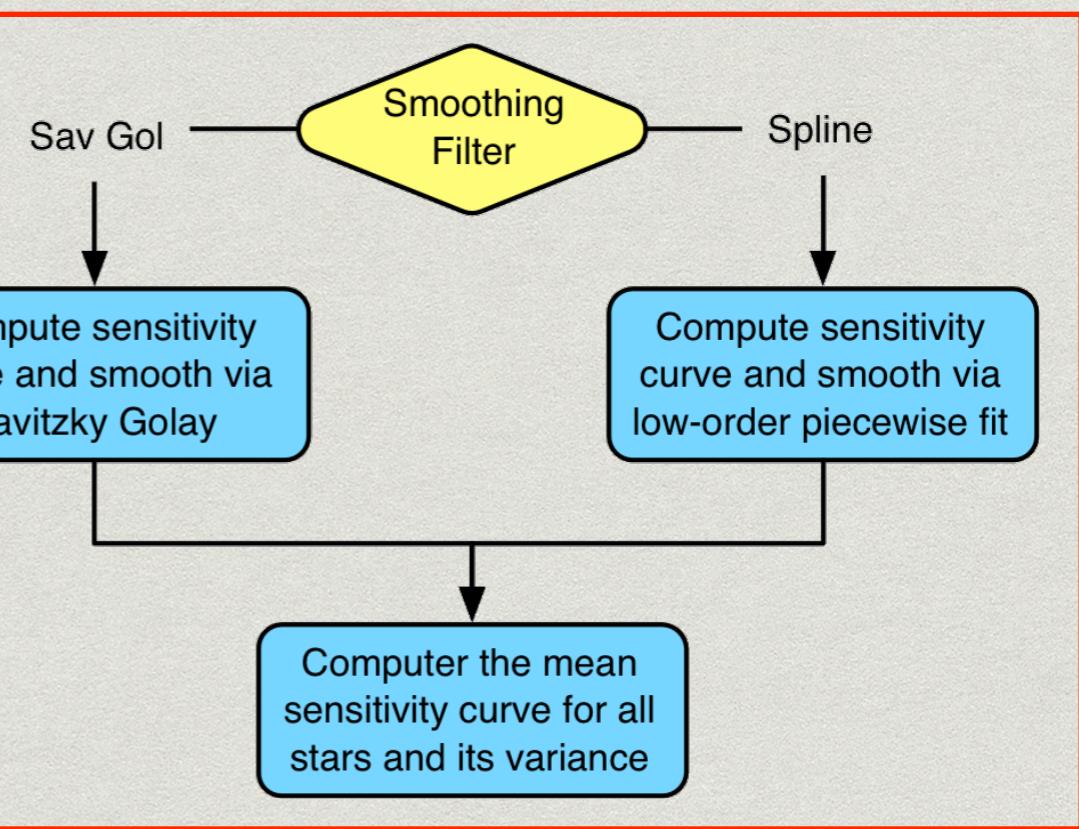


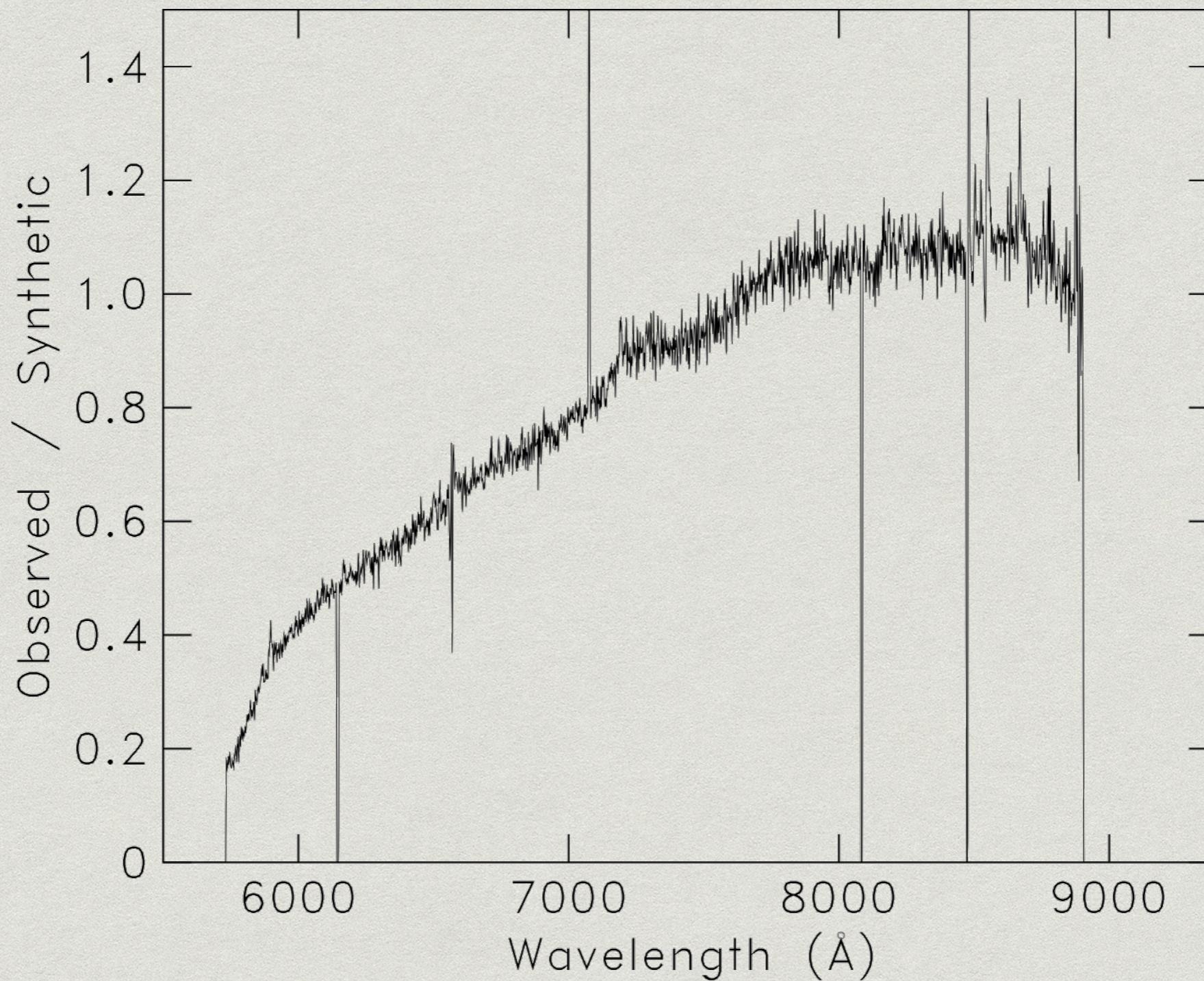
TAIPAN-FluxCal



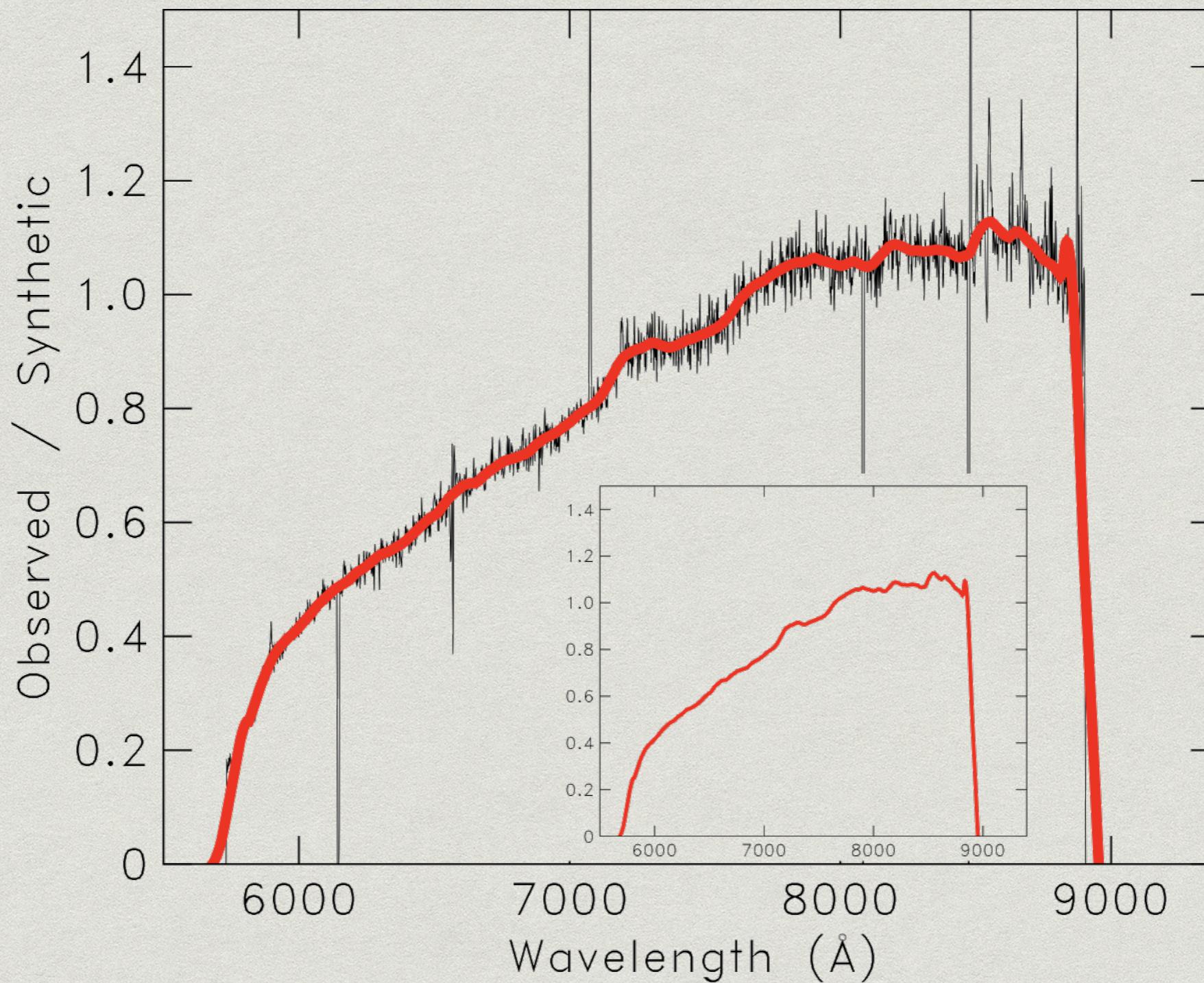
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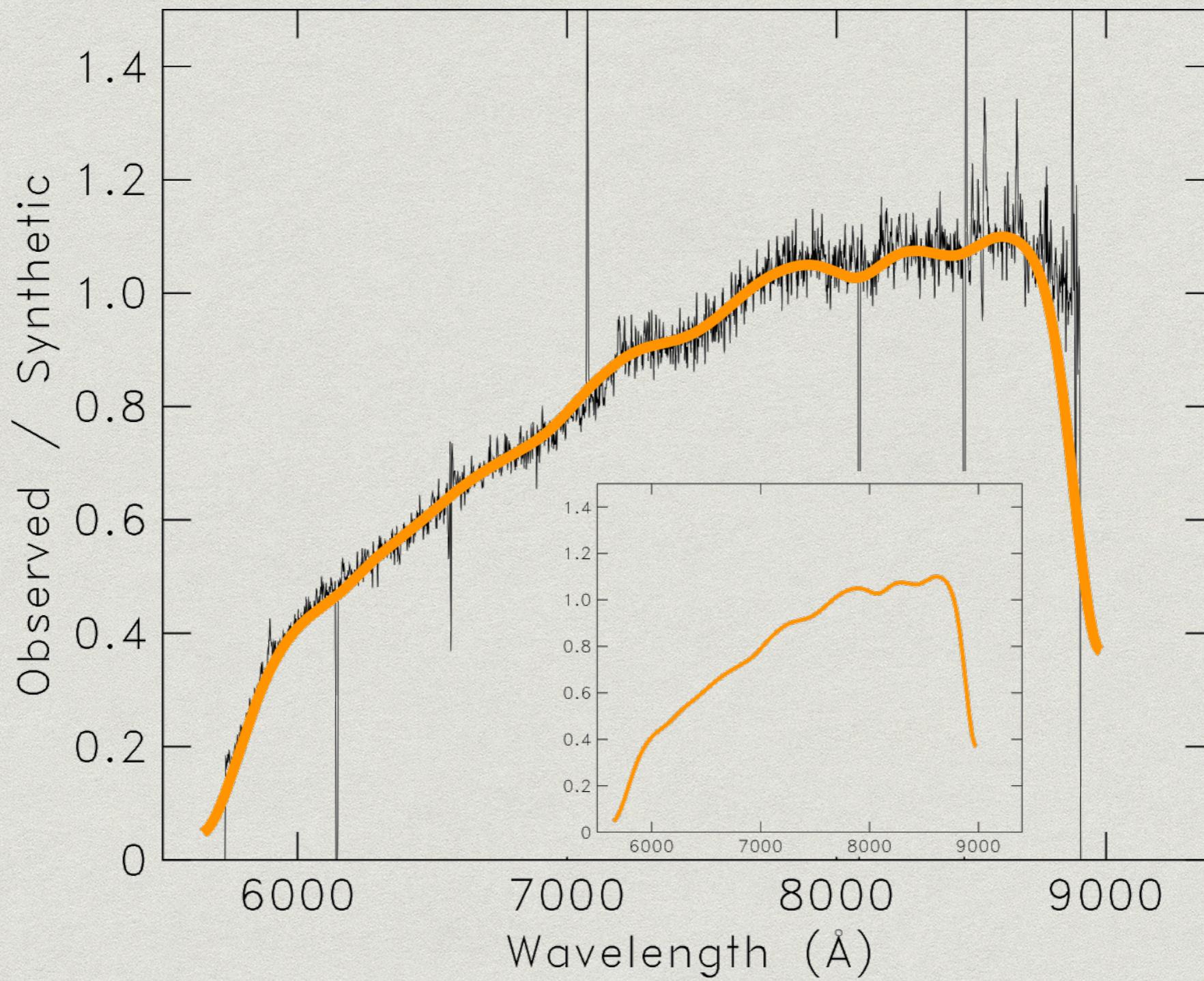




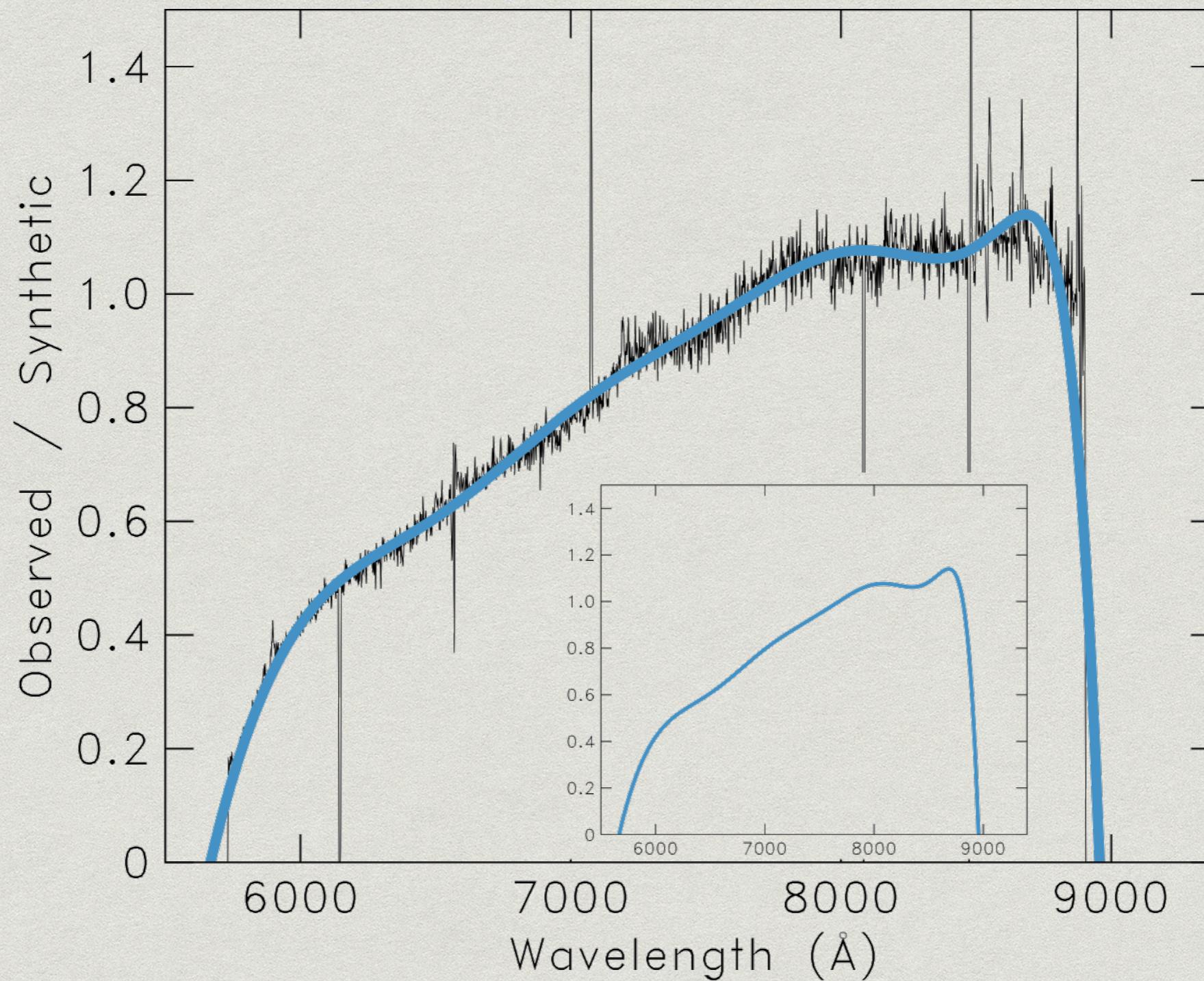
SAVITZKY-GOLAY



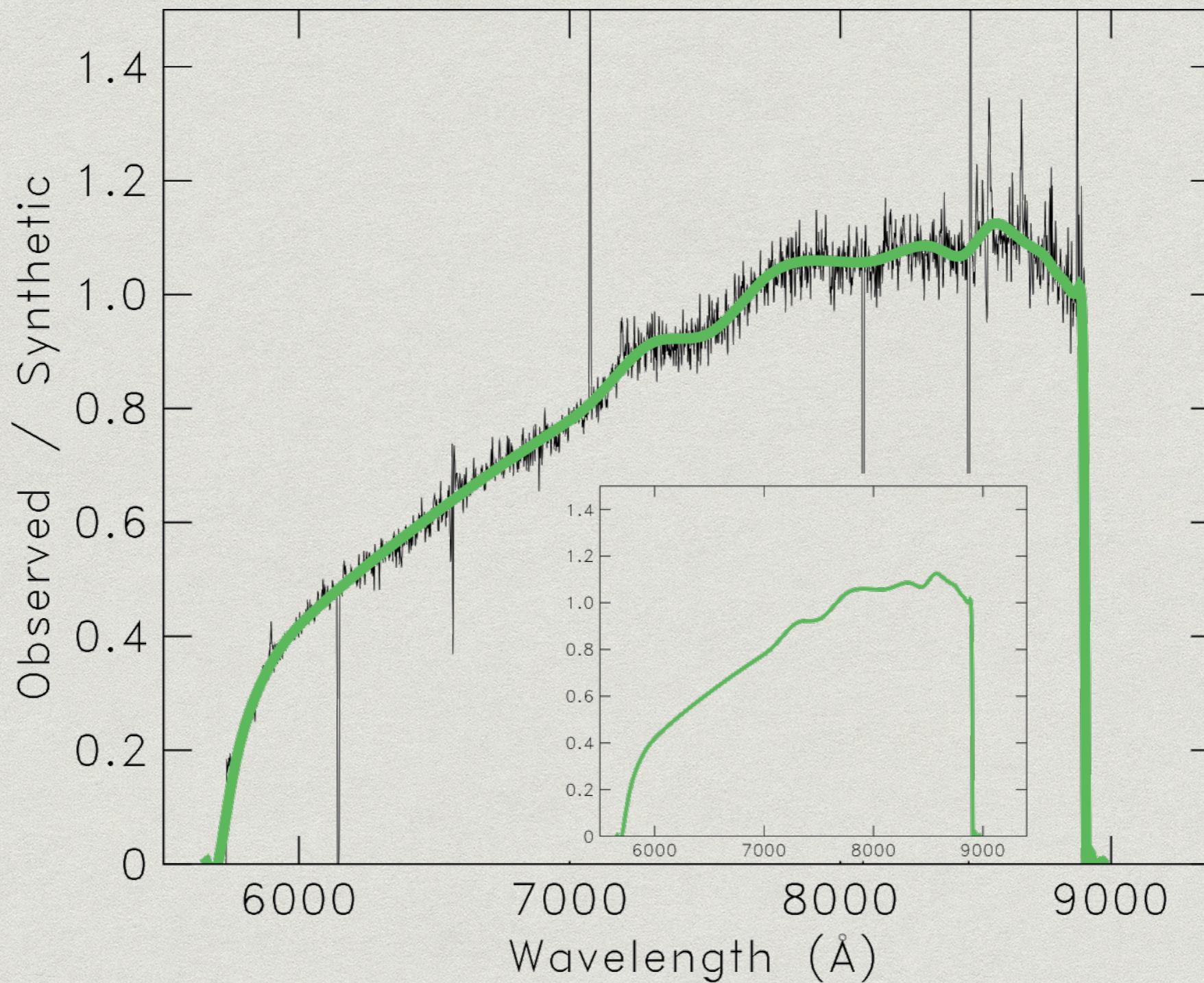
GAUSSIAN



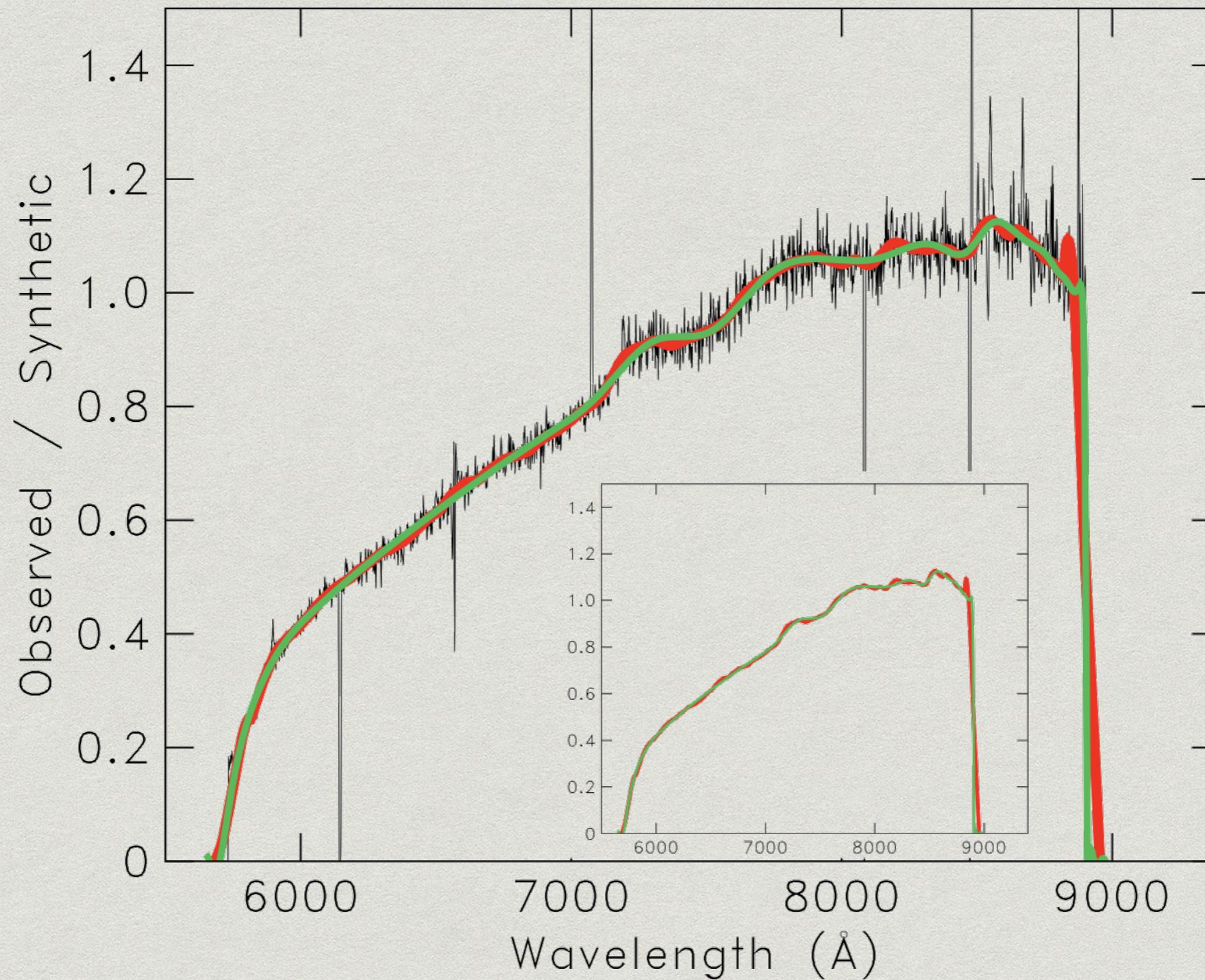
POLYNOMIAL



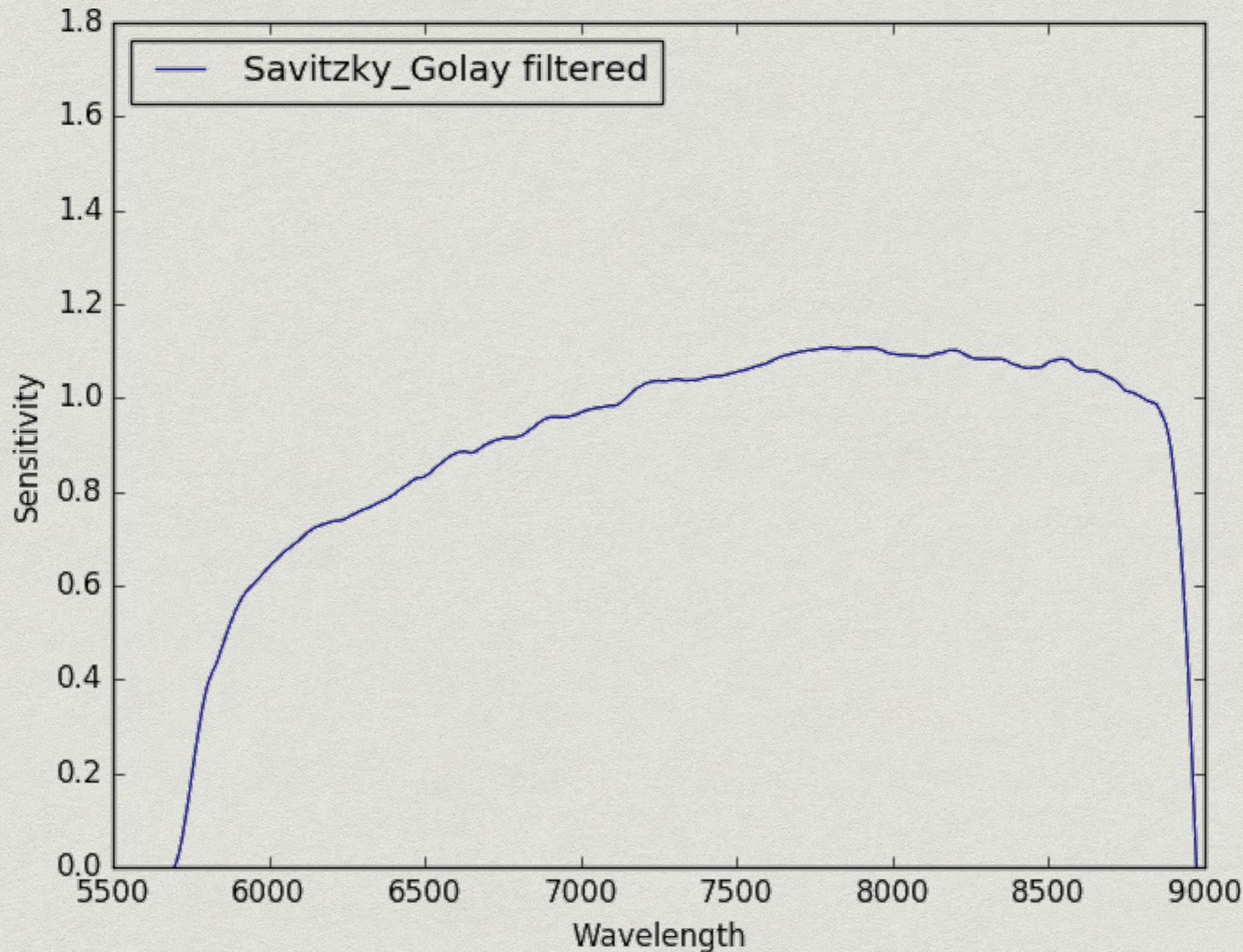
SPLINE INTERPOLATION



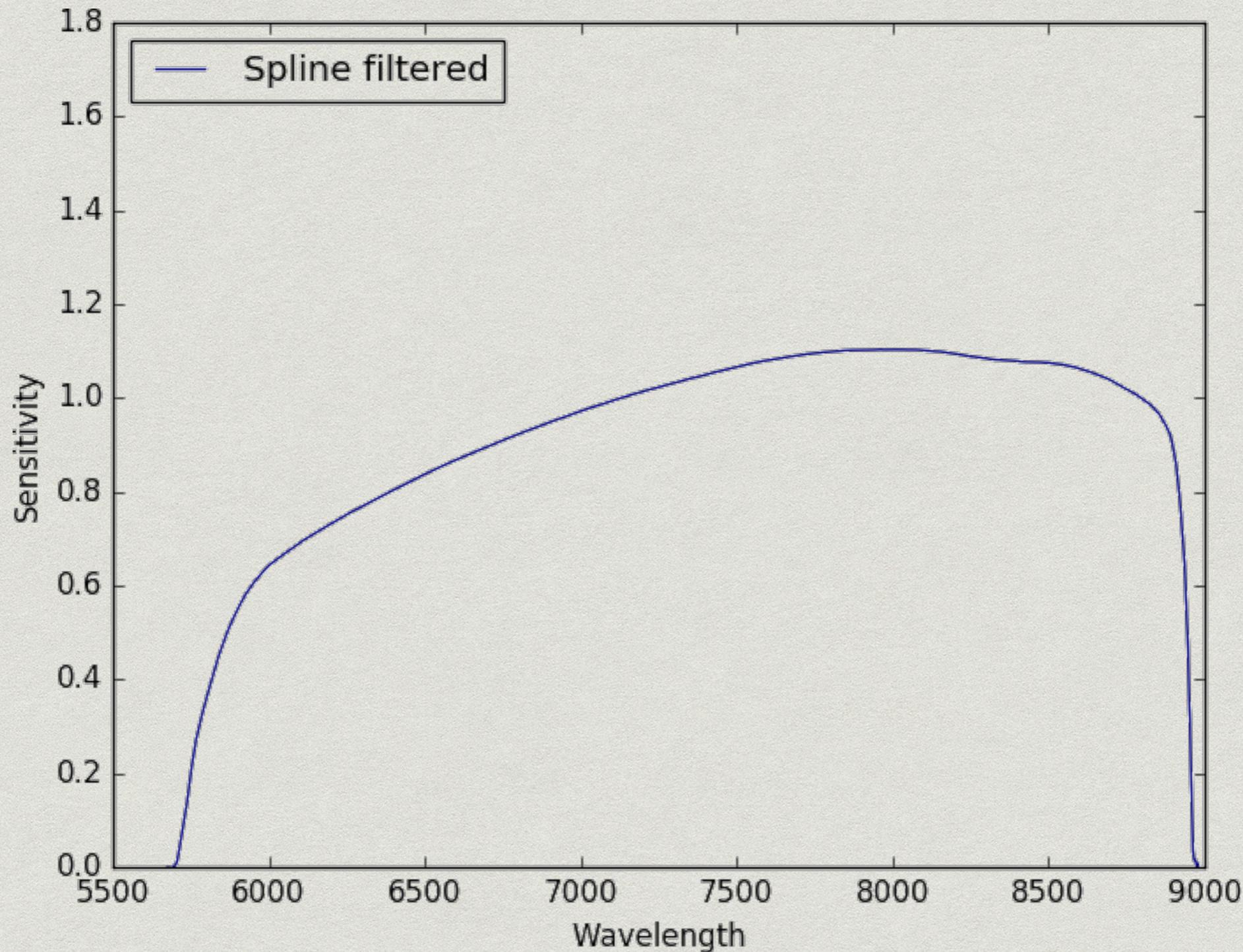
SAVITZKY–GOLAY vs. SPLINE INTERPOLATION



SAVITZKY-GOLAY

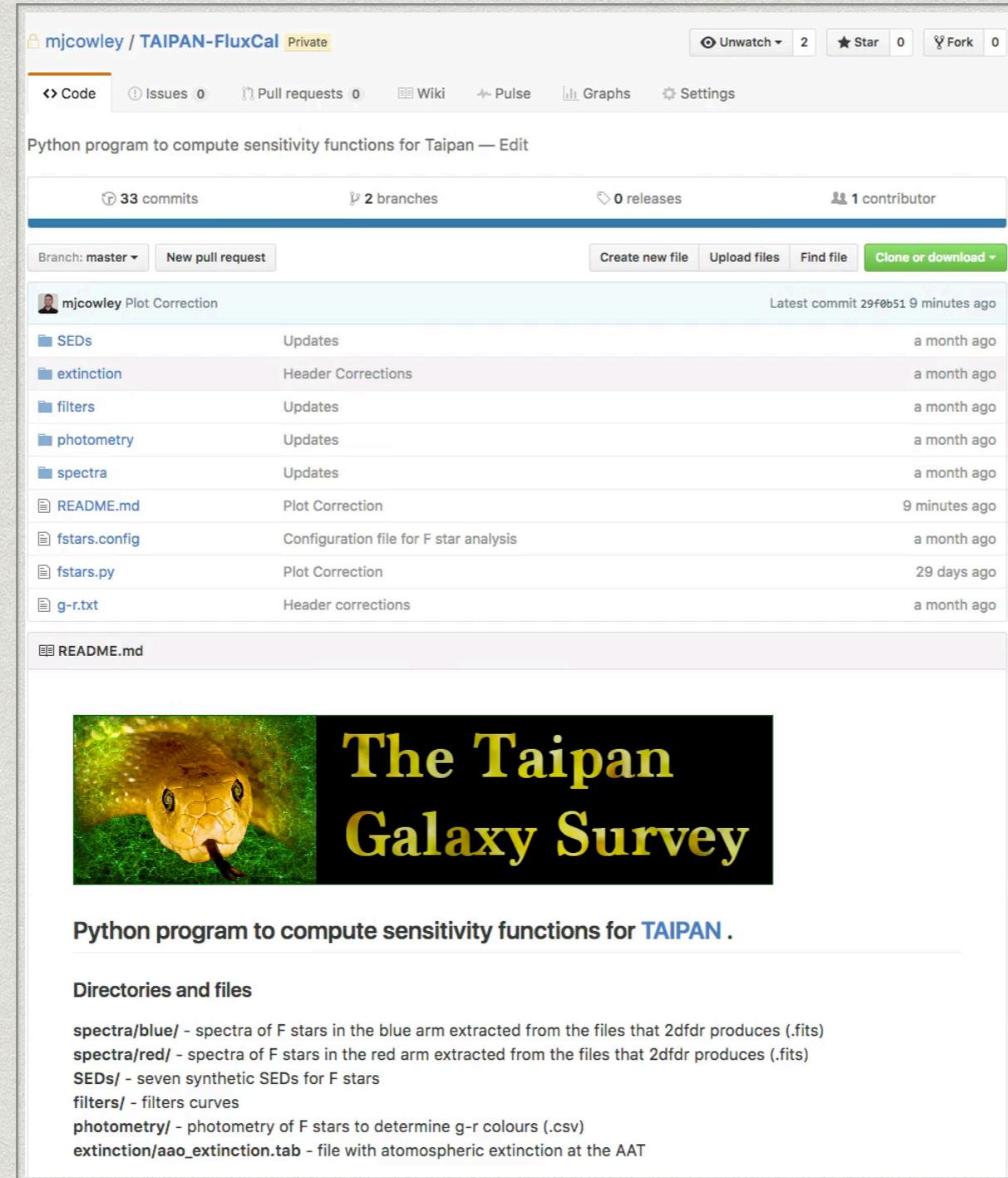


SPLINE INTERPOLATION



GITHUB REPOSITORY

<https://github.com/mjcowley/TAIPAN-FluxCal>



The screenshot shows the GitHub repository page for 'mjcowley / TAIPAN-FluxCal'. The repository is private, with 33 commits, 2 branches, 0 releases, and 1 contributor (mjcowl). The latest commit was 29f0b51, 9 minutes ago. The repository contains files for Plot Correction, including SEDs, extinction, filters, photometry, spectra, README.md, fstars.config, fstars.py, and g-r.txt. A banner image of a yellow snake with the text 'The Taipan Galaxy Survey' is displayed. The repository description is 'Python program to compute sensitivity functions for Taipan'. The 'Directories and files' section lists spectra/blue/, spectra/red/, SEDs/, filters/, photometry/, and extinction/aaoo_extinction.tab.

mjcowl / TAIPAN-FluxCal Private

Code Issues 0 Pull requests 0 Wiki Pulse Graphs Settings

Python program to compute sensitivity functions for Taipan — Edit

33 commits 2 branches 0 releases 1 contributor

Branch: master New pull request Create new file Upload files Find file Clone or download

mjcowl / Plot Correction Latest commit 29f0b51 9 minutes ago

File	Commit Message	Time Ago
SEDs	Updates	a month ago
extinction	Header Corrections	a month ago
filters	Updates	a month ago
photometry	Updates	a month ago
spectra	Updates	a month ago
README.md	Plot Correction	9 minutes ago
fstars.config	Configuration file for F star analysis	a month ago
fstars.py	Plot Correction	29 days ago
g-r.txt	Header corrections	a month ago

README.md

 The Taipan Galaxy Survey

Python program to compute sensitivity functions for TAIPAN .

Directories and files

spectra/blue/ - spectra of F stars in the blue arm extracted from the files that 2dfdr produces (.fits)
spectra/red/ - spectra of F stars in the red arm extracted from the files that 2dfdr produces (.fits)
SEDs/ - seven synthetic SEDs for F stars
filters/ - filters curves
photometry/ - photometry of F stars to determine g-r colours (.csv)
extinction/aaoo_extinction.tab - file with atmospheric extinction at the AAT