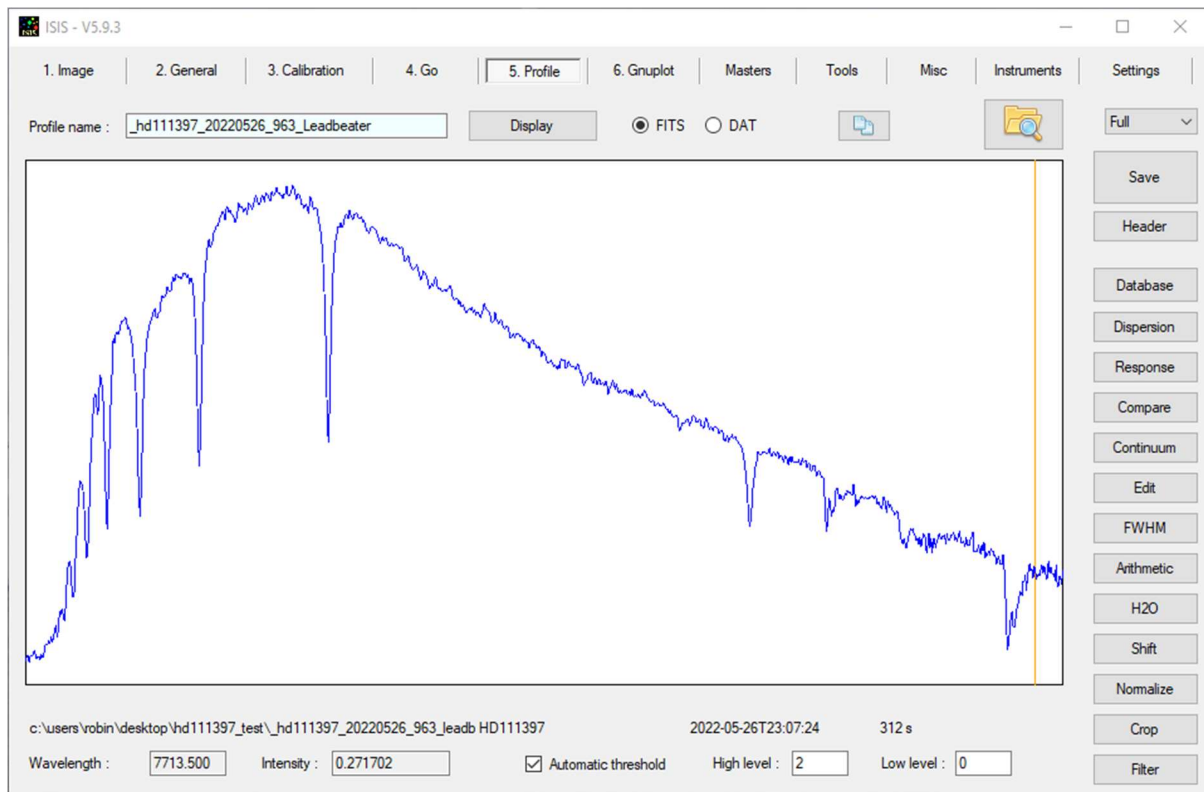
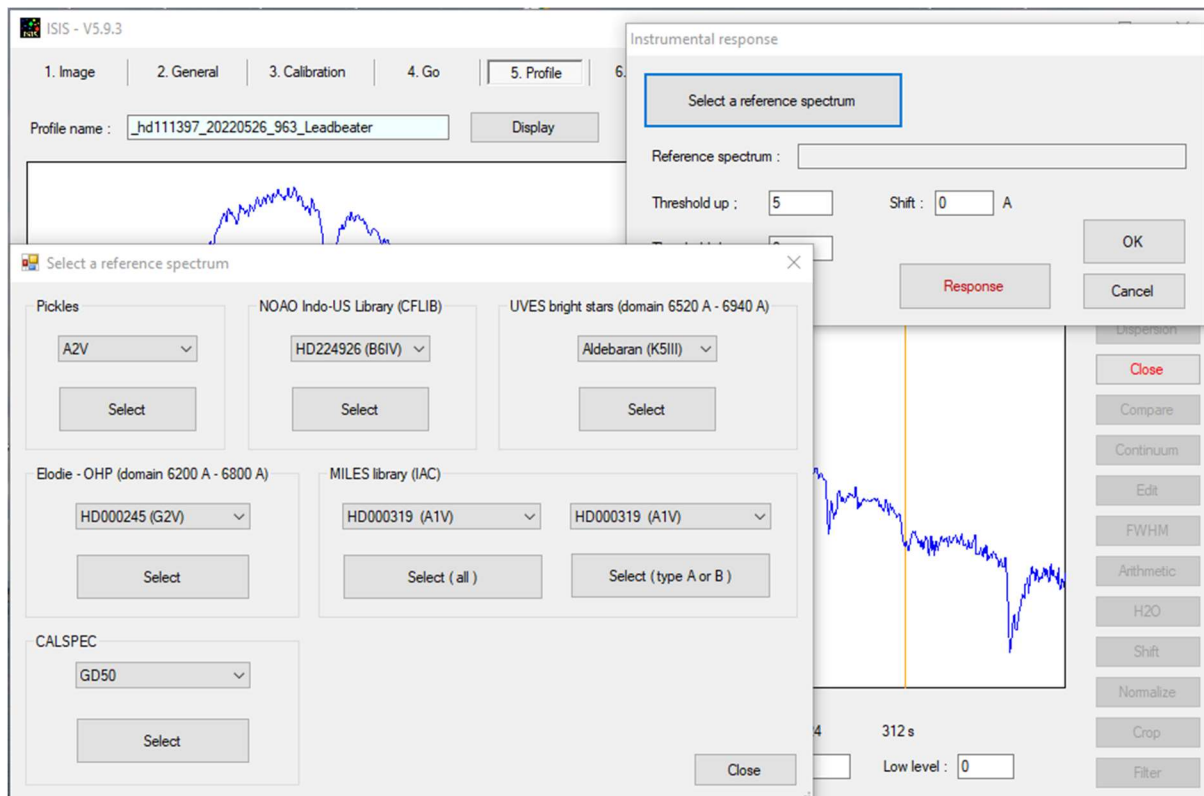


## How to produce a response curve (instrument+atmosphere) using ISIS

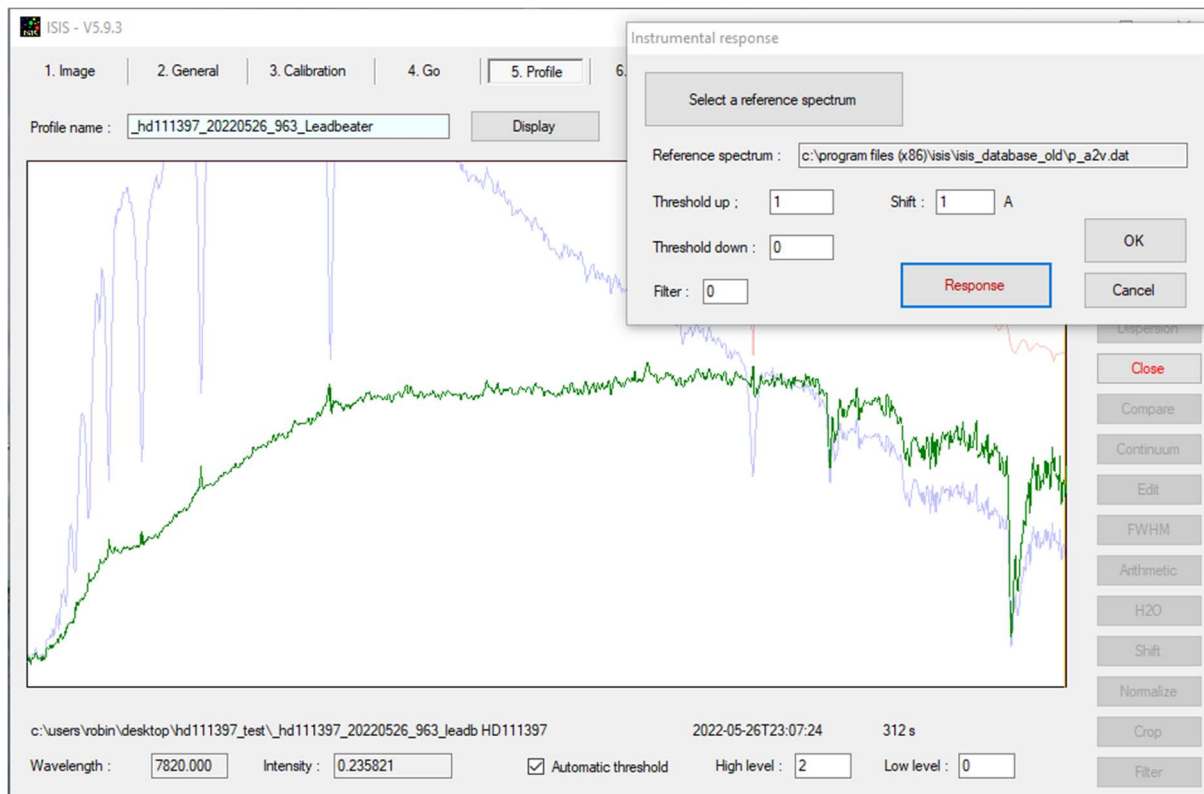
Produce a raw wavelength calibrated spectrum and display in the “profile” tab



Click the “Response” button and chose a reference star (Pickles A2v in this case) click “Select”

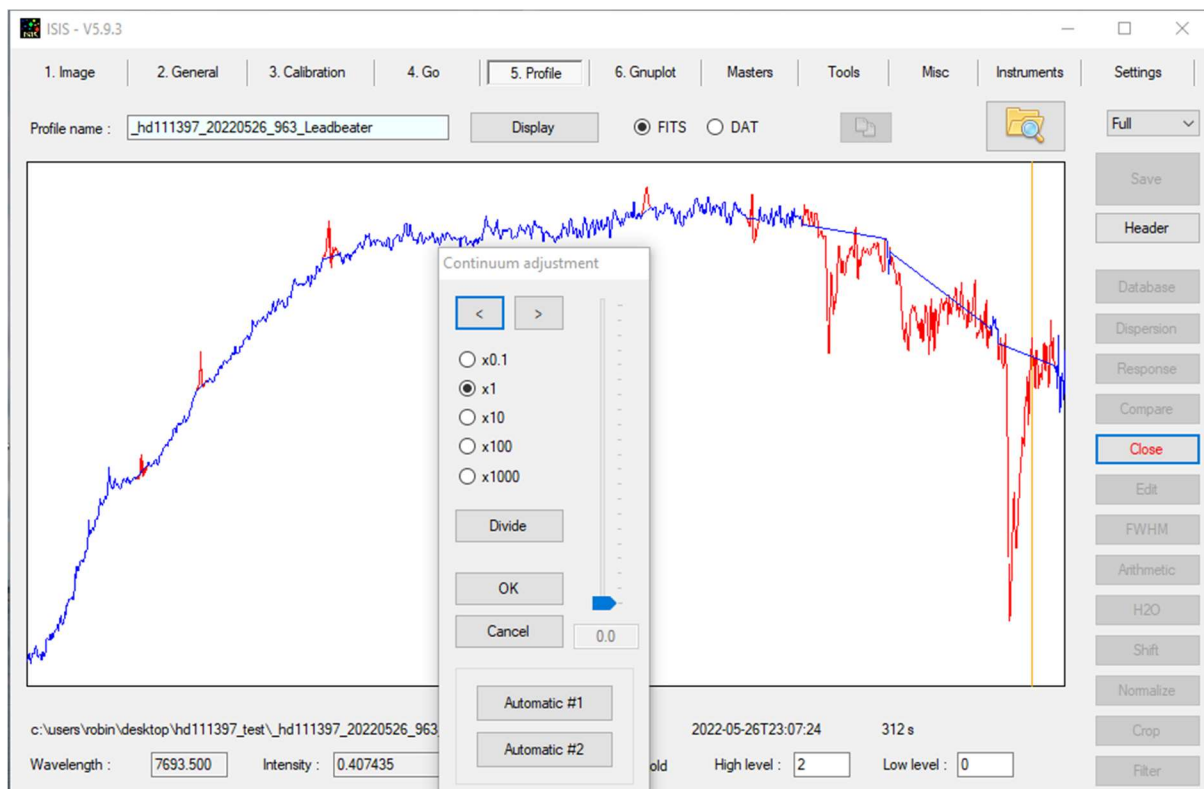


Click “response” to produce the raw response (green). (You can filter and/or offset the reference spectrum to give the best fit with minimum Balmer line division artifacts) Click “ok” when happy

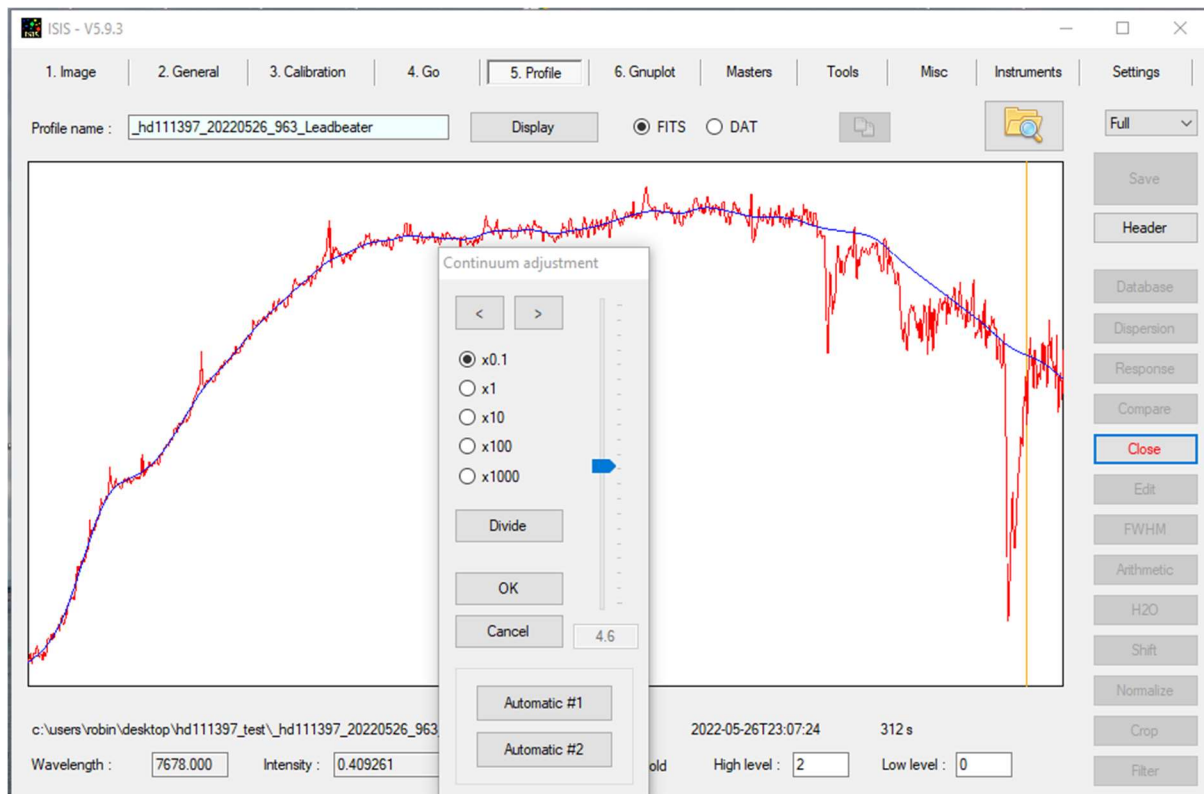


Use the “Continuum” function to clean up and smooth the raw response

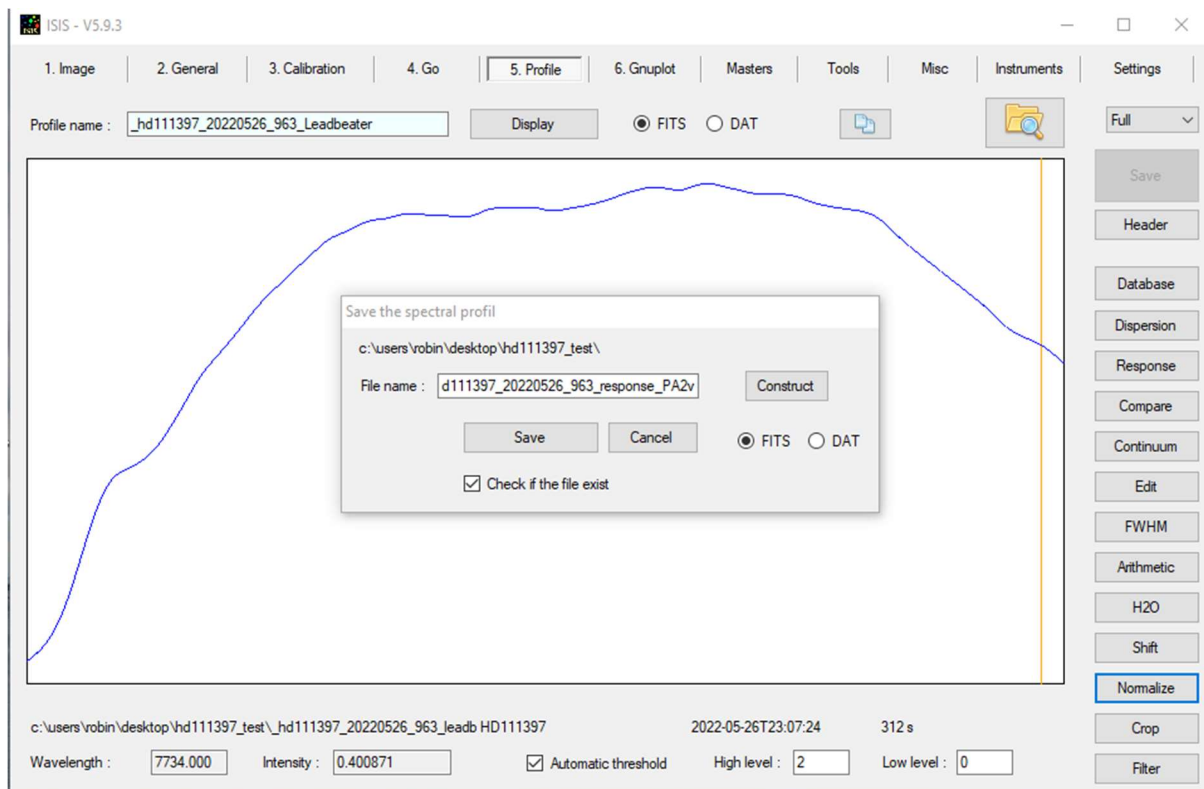
First crop the bad regions by double clicking either side of them (where the lines have not divided accurately and the Telluric Bands)



Then smooth the response using the radio buttons and slider. (Do not over-smooth! Aim to fit the curve well, particularly at the blue end but remove the noise)



Save the resulting response



## Re-process the spectrum using the response

ISIS - V5.9.3

1. Image | 2. General | 3. Calibration | 4. Go | 5. Profile | 6. Gnuplot | Masters | Tools | Misc | Instruments | Settings

Root name : **hd111397** ... Object : **HD111397** Auto Next

Images to process

Generic name : **hd111397\_** ... Number : **6** ...

Calibration : **hd111397\_lamp\_5520** ... ☒ Spectral calibration

Offset : **bias\_ATK428\_2bin\_20220407** ... Dark : **thermal\_ATK428\_2bin\_20220** ...

Flat : **flat\_ATK428\_2bin\_alpy600\_2022** ...

General parameters

Pixel size (microns) : **8.9** ... ☒ Fixed Y value for sequence

Cosmetic file : **cosmetic\_ATK428\_2bin\_20220407** ... ☐ Sky not removed

Instr. responsivity : **\_20220526\_963\_response\_PA2v** ... ☐ Wavelength registration

Wavelength shift (Å) : **0** ... ☐ Cosmic rays filter

☐ Heliocentric radial velocity correction ☐ Optimal binning

☐ Auto atmosphere AOD : **0.13** ... Rejection coef. : **50**

Atmo. transmission : ... ☐ Automatic air mass computing

Spectral calibration

☒ Predefined mode **ALPY 600 (calibration module)** ...

☐ Predefined dispersion equation (see "Dispersion" tool in "Profile" tab)

☐ File mode : **lines** (type xxx.lst)

Output

Instrument : **C11\_f5\_ALPY600\_ATK428** ...

Observatory : **THO\_robin@threehillsobservatory.co.uk** ...

Observer : **Leadbeater** ...

Hour shift : **0** ... R : **488**

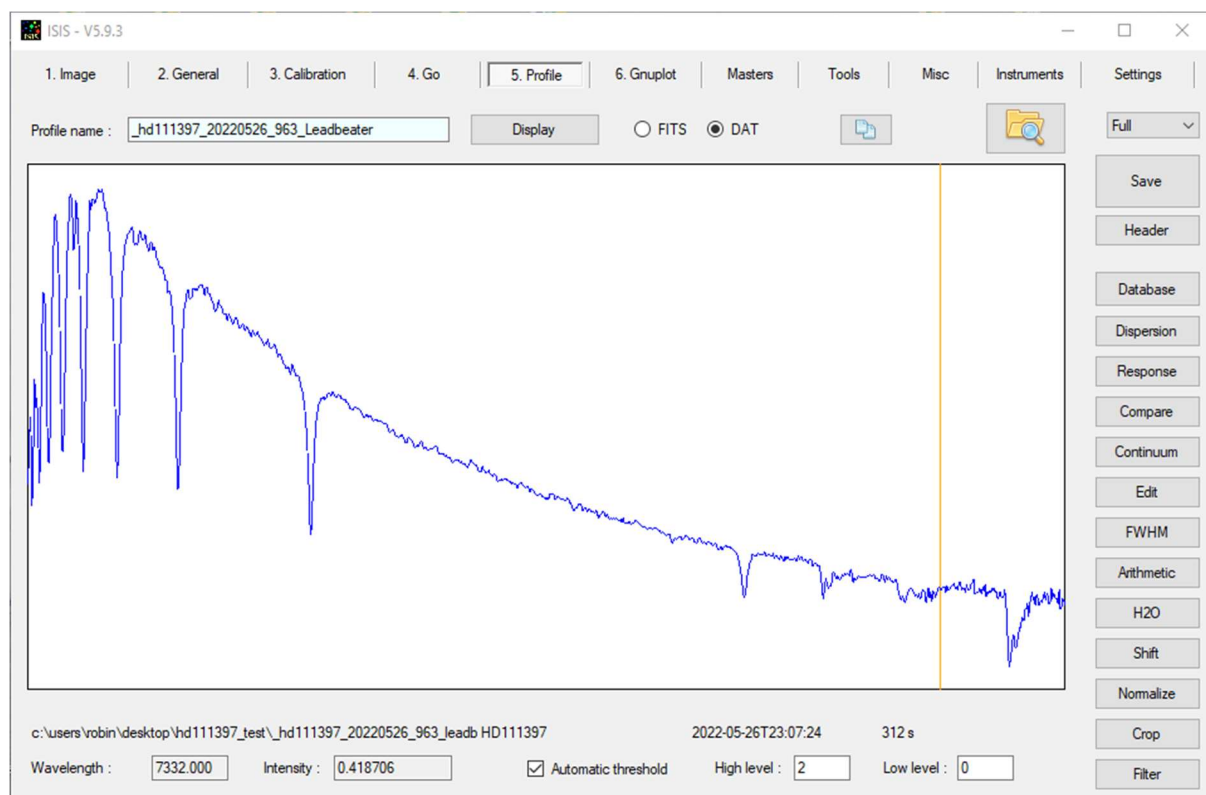
Files name prefix and suffix

Object suffix : ...

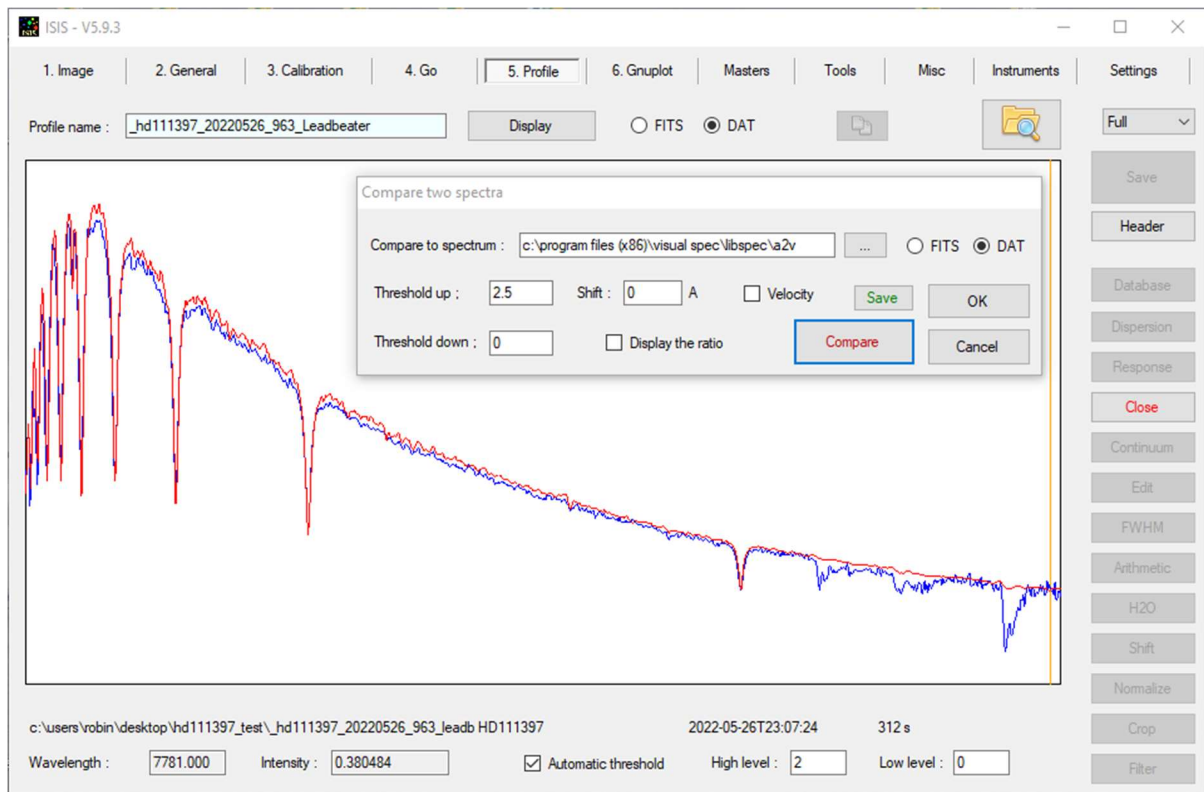
Calibration suffix : ...

Calibration prefix : ...

## To produce the response calibrated spectrum



Compare with the reference spectrum. (They should be ~ identical except for any difference in resolution and the Telluric bands in the measured spectrum. If they are not, check why and do the response again.)



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2022-09-22