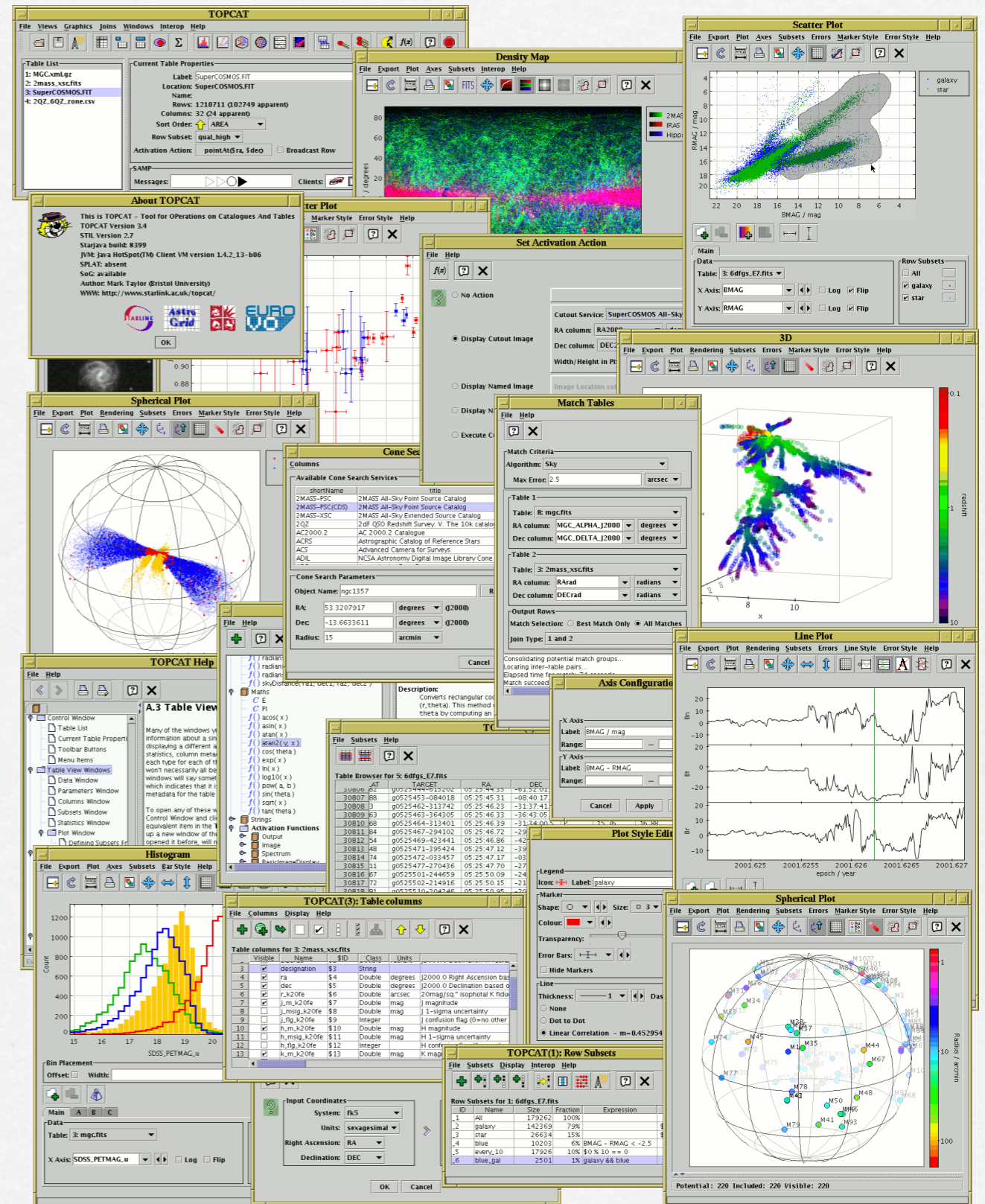


# Programa:

1. El Observatorio Virtual. Una visión general.
2. Datos teóricos en el Observatorio Virtual
3. Herramientas I: descubrimiento de datos (Aladín)
4. Herramientas II: manejo de catálogos / tablas (TOPCAT)



- Manejo muy eficiente de catalogos (proprios y de archivo)
- visualizador muy intuitivo





# cargando datos

The screenshot shows the TOPCAT software interface. The title bar reads "TOPCAT". The menu bar includes "File", "Views", "Graphics", "Joins", "Windows", "Interop", and "Help". The toolbar contains various icons for file operations, data manipulation, and visualization.

**Table List**

- 1: MGC.xml.gz
- 2: 2mass\_xsc.fits
- 3: SuperCOSMOS.FIT
- 4: 2QZ\_6QZ\_zone.csv

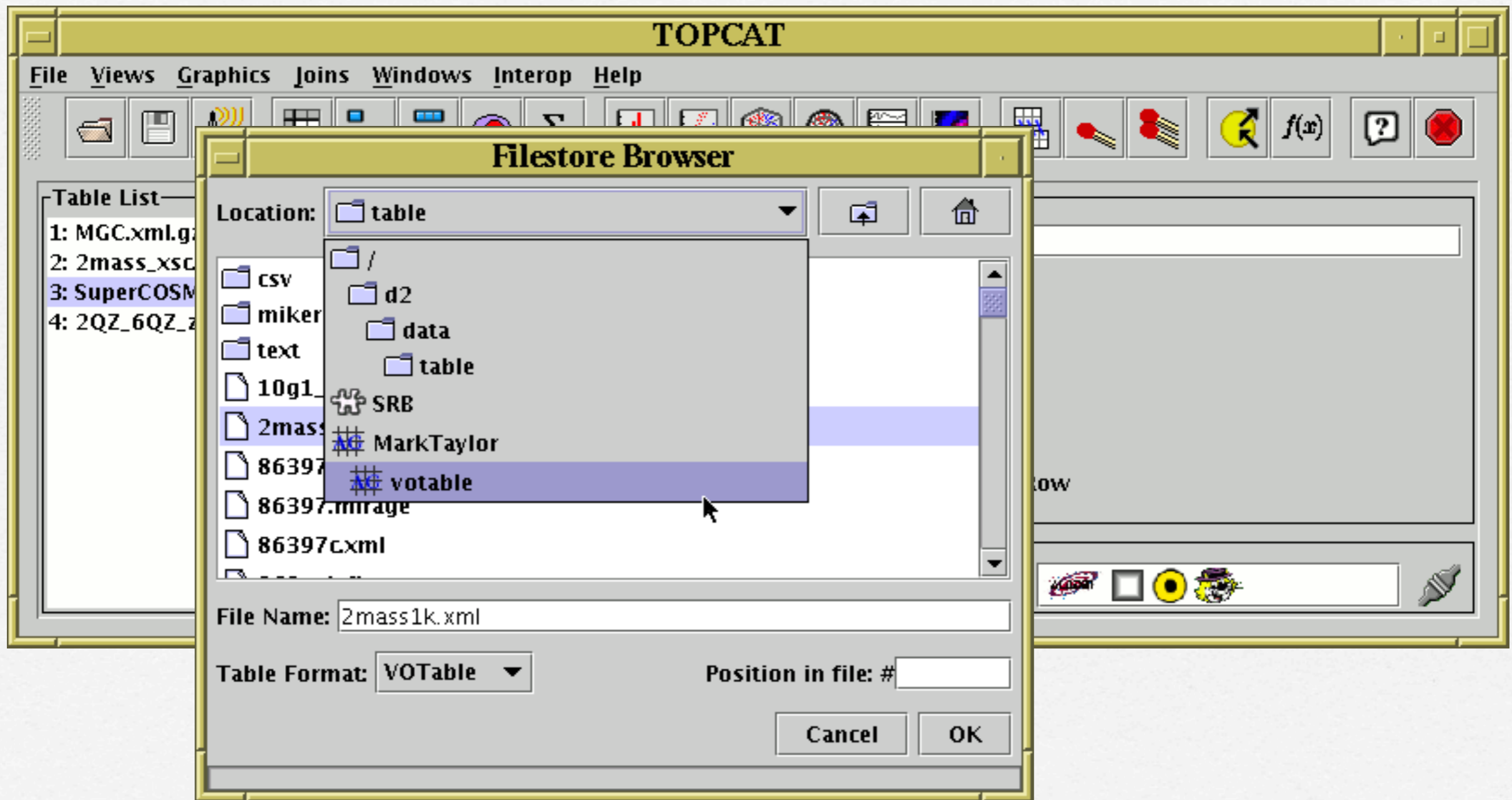
**Current Table Properties**

Label: SuperCOSMOS.FIT  
Location: SuperCOSMOS.FIT  
Name:  
Rows: 1210711 (102749 apparent)  
Columns: 32 (24 apparent)  
Sort Order: AREA  
Row Subset: qual\_high  
Activation Action: pointAt(\$ra, \$dec)  Broadcast Row

**SAMP**

Messages: Clients:

cargando datos





# cargando datos

**Filestore**

Location: table

- csv
- miker
- text
- 10g1
- 2mas
- 86397
- 86397.mirage
- 86397.xml

File Name: 2mass1k.xml

Table Format: VOTable

**Table List**

- 1: MGC.xml.g
- 2: 2mass\_xsc
- 3: SuperCOSM
- 4: 2QZ\_6QZ\_z

**Cone Search**

Columns

Available Cone Search Services

Registry: <http://registry.astrogrid.org/astrogrid-registry/services/Registry> Update

Keywords: SDSS QSO And

Cancel Query Submit Query

shortName	title	publisher
	DR3 QSO: SDSS Quasar Catalog (Release 3) (LEDAS)	LEDAS, University
AGNSDSSXMM	SDSS/XMM-Newton AGN Spectral Properties Catalog	NASA/GSFC HEASARC
J/A+A/434/475	Redshifts for X-ray selected AGNs (Kitsionas+, 2005)	CDS
J/A+A/478/701	Color excess of SDSS quasars with DLA systems (Vladilo...	CDS
J/AJ/121/2308	Sloan Digital Sky Survey quasar photometry (Richards+, ...	CDS
J/AJ/121/31	High-redshift quasars in SDSS (Fan+, 2001)	CDS
J/AJ/122/503	SDSS u*g*r*i*z* photometry and redshift of QSOs (And...	CDS
J/AJ/123/567	SDSS quasar catalog (Schneider+, 2002)	CDS
J/AJ/125/1711	Broad Absorption Line Quasars from SDSS (Reichard+, ...	CDS
J/AJ/126/2125	SDSS candidate type II quasars (Zakamska+, 2003)	CDS

AccessURL Description Version

<http://vizier.u-strasbg.fr/viz-bin/votable/-A?-source=J/AJ/121/2308&>

Cone Search Parameters

Object Name: ngc1357 Resolve

RA: 53.32079167 degrees (J2000)

Dec: -13.66336111 degrees (J2000)

Radius: 6 arcmin

Cancel OK

Manejando tablas y  
columnas.  
Metadatos

**TOPCAT(3): Table Browser**

File Subsets Help

Table Browser for 3: cover.xml

	Messier...	Right Ascension	Declination	Common N
4	51	202.43	47.22	Whirlpool Ga
5	53	198.18	18.18	
6	63	198.91	42.054	Sunflower Ga
7	64	194.13	21.7	Black Eye Ga
8	88	187.93	14.43	
9	90	189.15	13.18	
10	91	188.81	14.52	
11	94	192.65	41.133	
12	97	168.63	55.031	Owl Nebula
13	99	187.41	14.07	

**TOPCAT(3): Table columns**

File Columns Display Help

Table columns for 3: 2mass\_xsc.fits

	Visible	Name	\$ID	Class	Units	
3	<input checked="" type="checkbox"/>	designation	\$3	String		
4	<input checked="" type="checkbox"/>	ra	\$4	Double	degrees	J2000.0 Right Ascension bas
5	<input checked="" type="checkbox"/>	dec	\$5	Double	degrees	J2000.0 Declination based o
6	<input checked="" type="checkbox"/>	r_k20fe	\$6	Double	arcsec	20mag/sq." isophotal K fidu
7	<input checked="" type="checkbox"/>	j_m_k20fe	\$7	Double	mag	J magnitude
8	<input type="checkbox"/>	j_msig_k20fe	\$8	Double	mag	J 1-sigma uncertainty
9	<input type="checkbox"/>	j_flg_k20fe	\$9	Integer		J confusion flag (0=no other
10	<input checked="" type="checkbox"/>	h_m_k20fe	\$10	Double	mag	H magnitude
11	<input type="checkbox"/>	h_msig_k20fe	\$11	Double	mag	H 1-sigma uncertainty
12	<input type="checkbox"/>	h_flg_k20fe	\$12	Integer		H confusion flag (0=no other
13	<input checked="" type="checkbox"/>	k_m_k20fe	\$13	Double	mag	K magnitude



# Conjuntos y estadística básica

**TOPCAT(1): Row S**

File Subsets Display Interop Help

Row Subsets for 1: 6dfgs\_E7.fits

ID	Name	Size	Fraction	Expression	Col \$ID
_1	All	179262	100%		
_2	galaxy	142369	79%		\$12
_3	star	26634	15%		\$13
_4	blue	10203	6%	BMAG - RMAG < -2.5	
_5	every_10	17926	10%	\$0 % 10 == 0	
_6	blue_gal	2501	1%	galaxy && blue	

**TOPCAT(6): Row statistics**

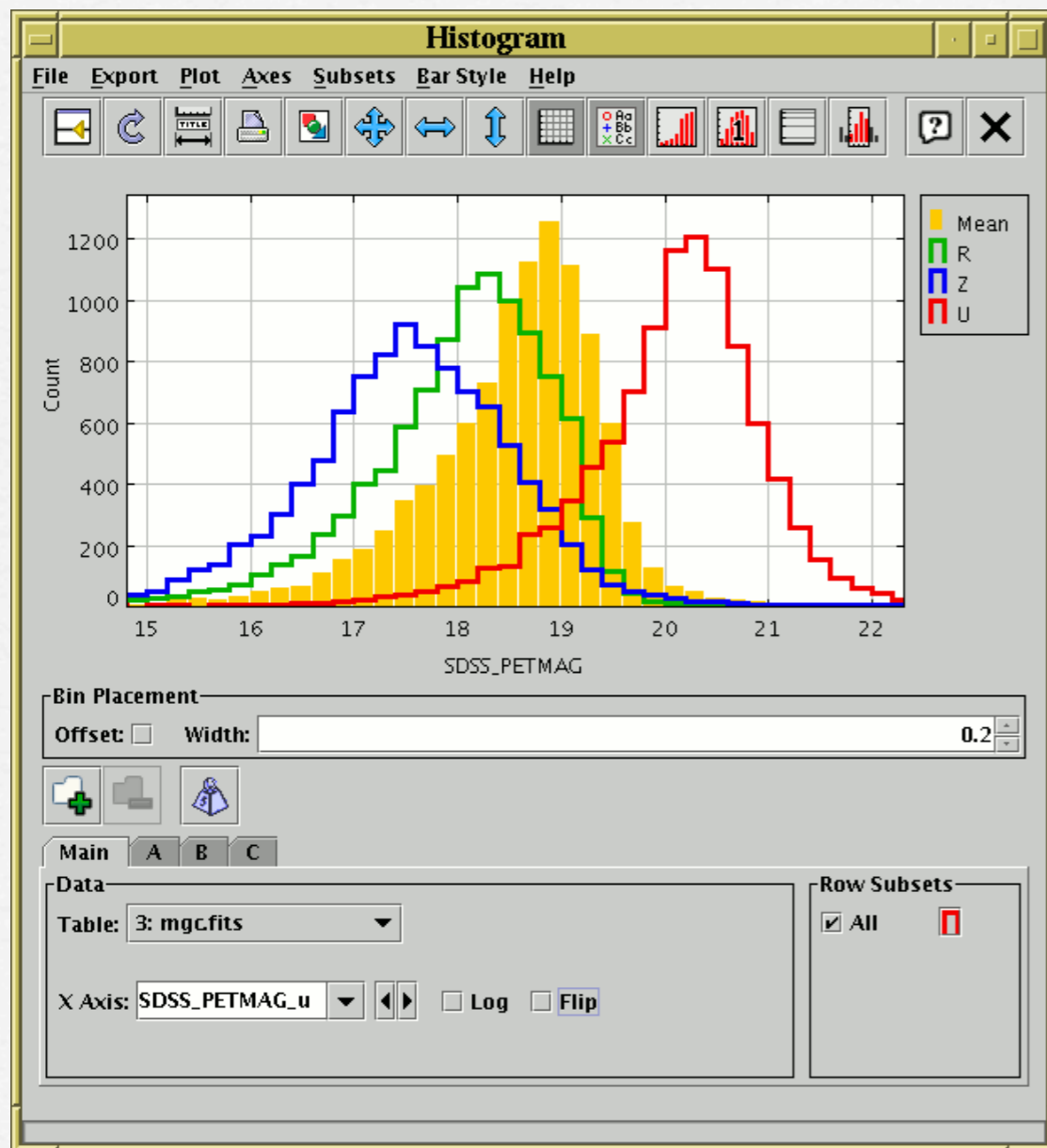
File Statistics Display Help

Row statistics for 6: qualfilter5rad.fits

Name	Mean	S.D.	Minimum	Maximum
area	427.97876	564.16803	43	16279
eccent	0.45603	0.183389	0.205	0.985
z	0.112846	0.037965	4.000000E-5	0.2667
qual	4.156123	0.58111	3	
z_helio	0.112824	0.037963	0.0001	0.26665
Dec (Deg)	-19.728537	15.691349	-72.015556	2.
bjtotalmag	18.544243	0.827817	0.	21.07
HubbleDist	483.624786	162.70694	0.171429	1143.
lumdist2	1.087456	0.029423	1.000031	1.206692

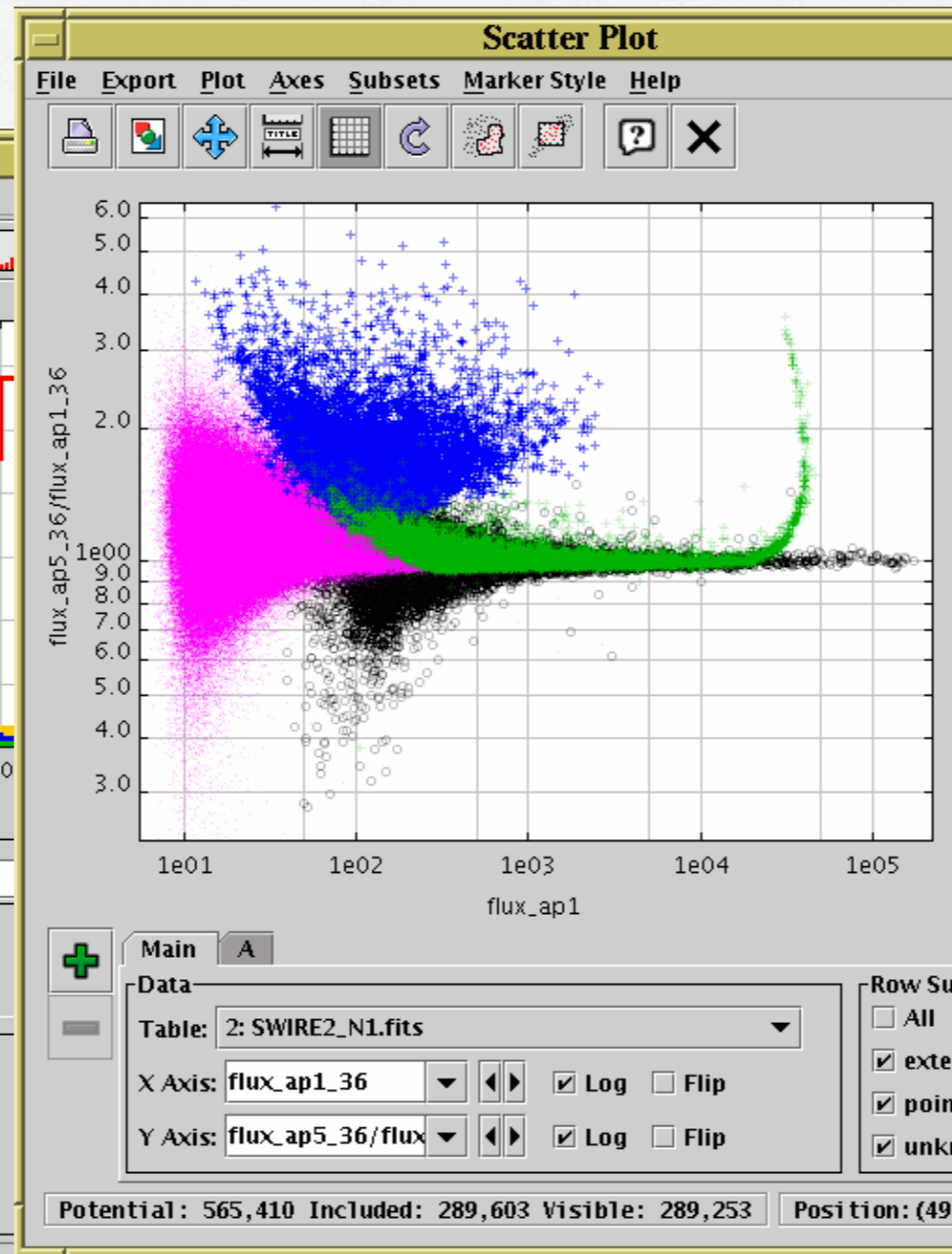
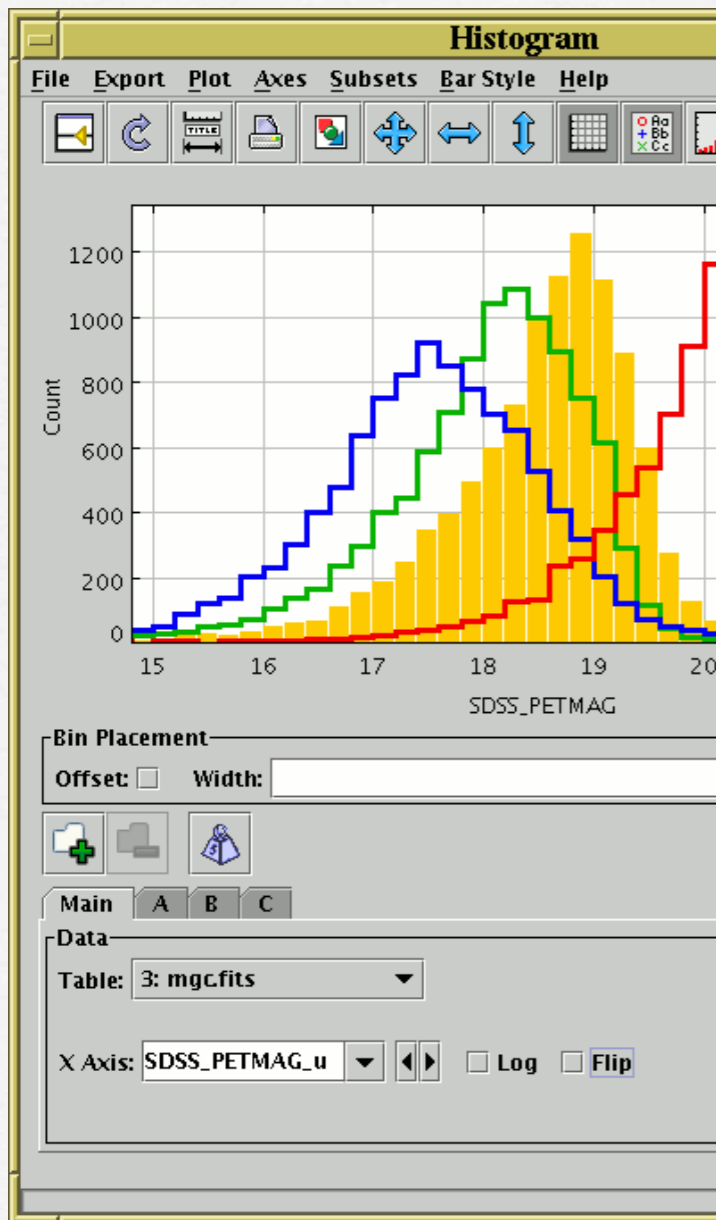
Subset for calculations: spiral

# Visualizaciones





# Visualizaciones



**Plot Style Editor**

Legend

Icon: + Label: All

Marker

Shape: + Size: 3

Colour: green

Transparency: 6

Hide Markers

Line

Thickness: 1 Dash: solid

None

Dot to Dot

Linear Correlation

Cancel OK

**Axis Configuration**

X Axis

Label: flux\_ap5\_36/flux\_ap1\_36

Range: -

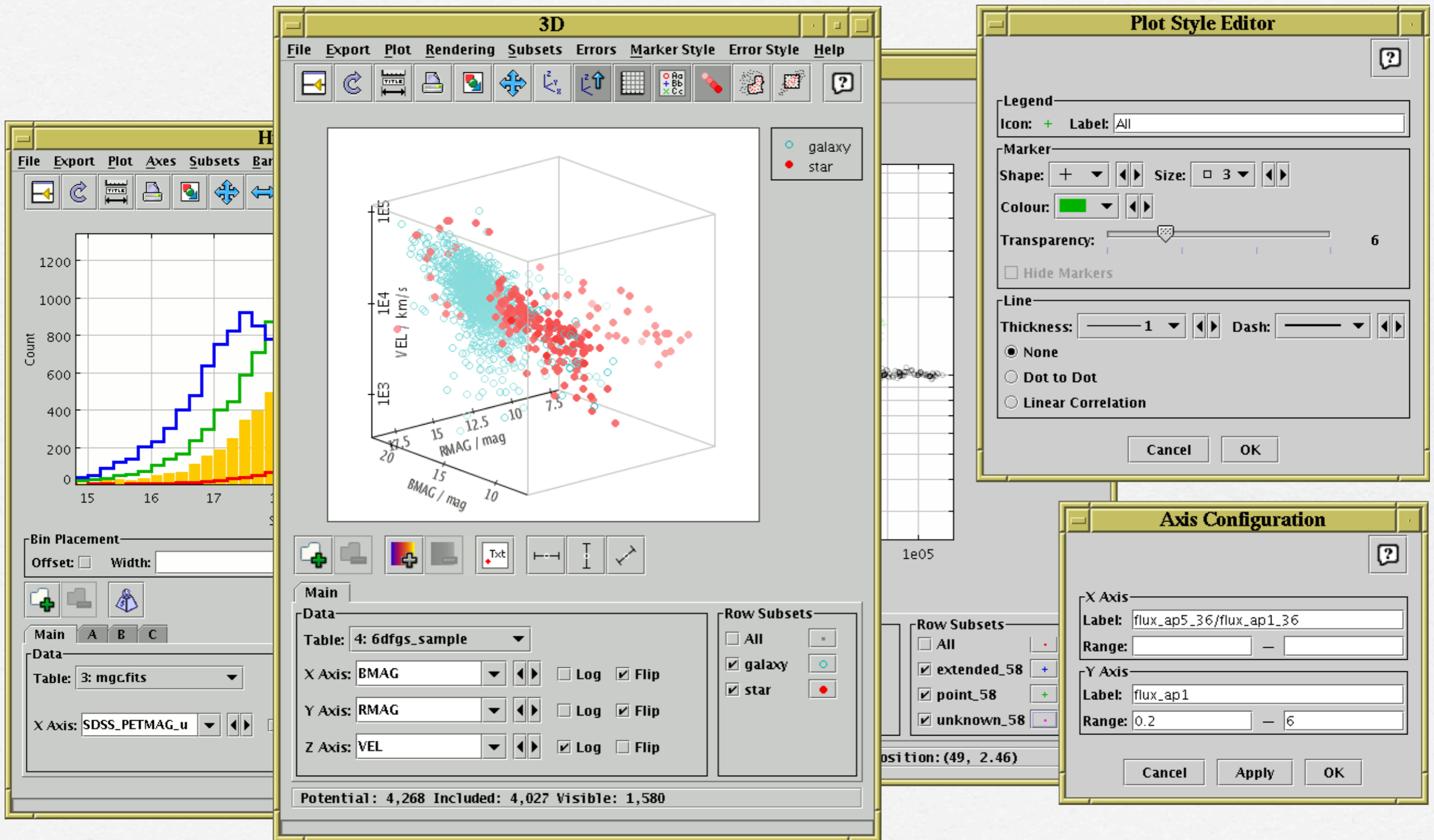
Y Axis

Label: flux\_ap1

Range: 0.2 - 6

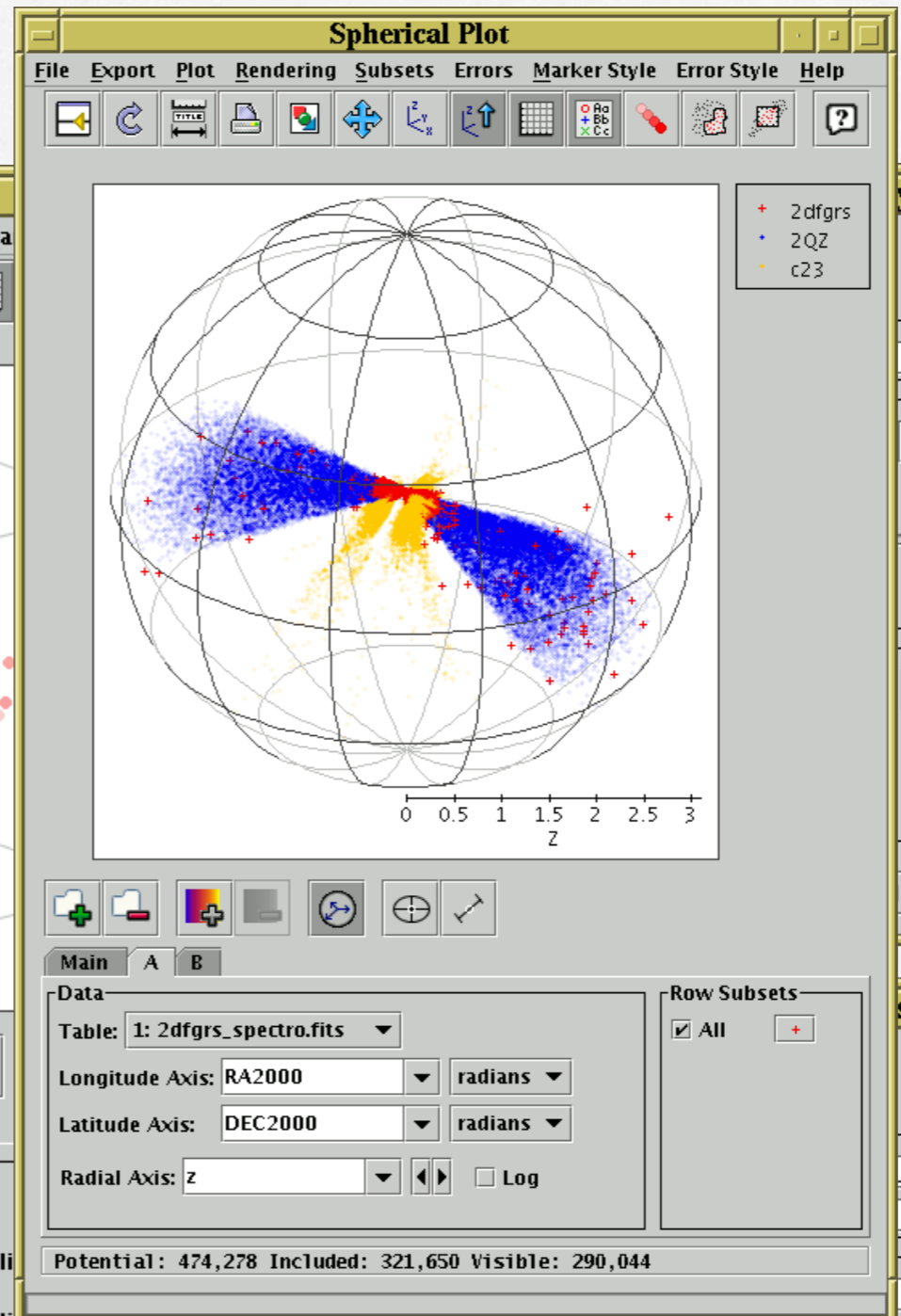
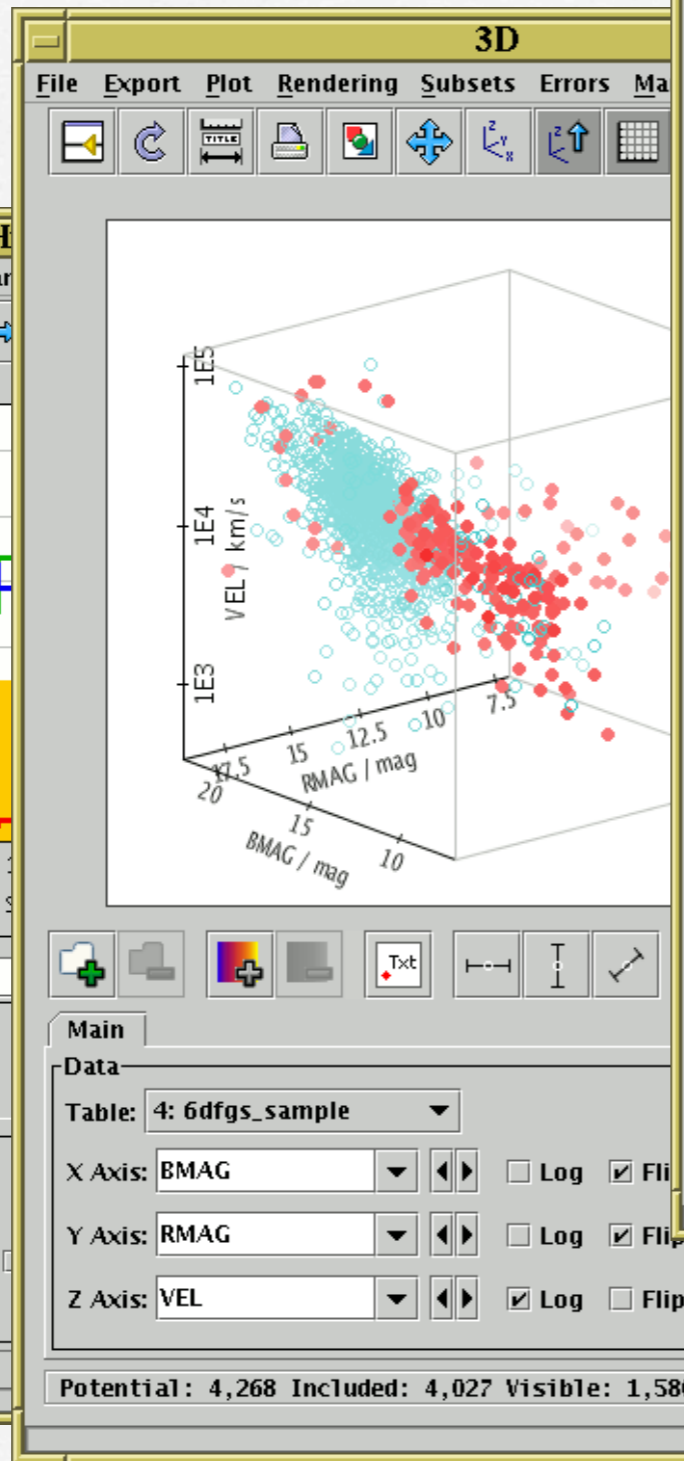
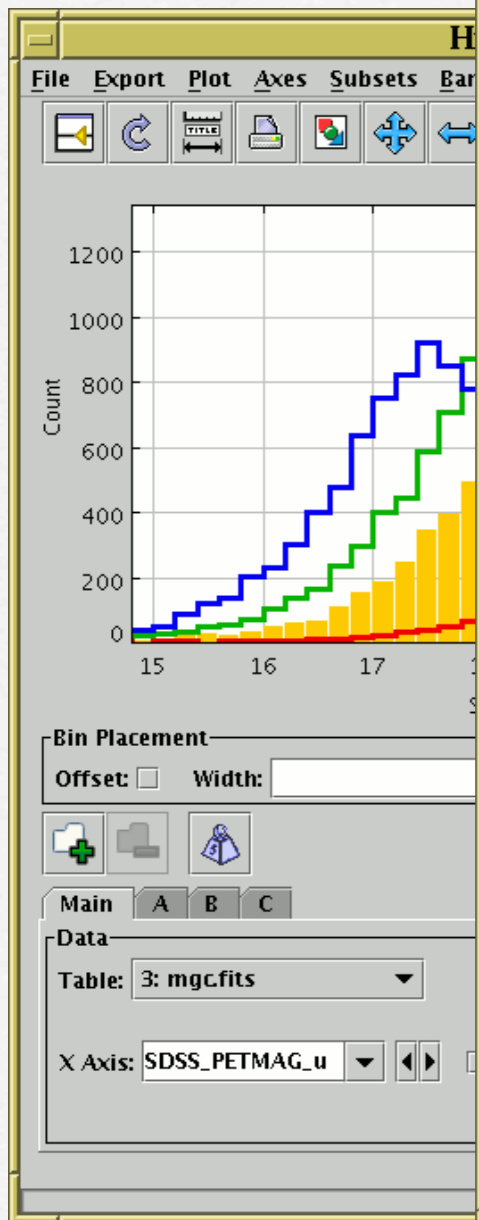
Cancel Apply OK

# Visualizaciones





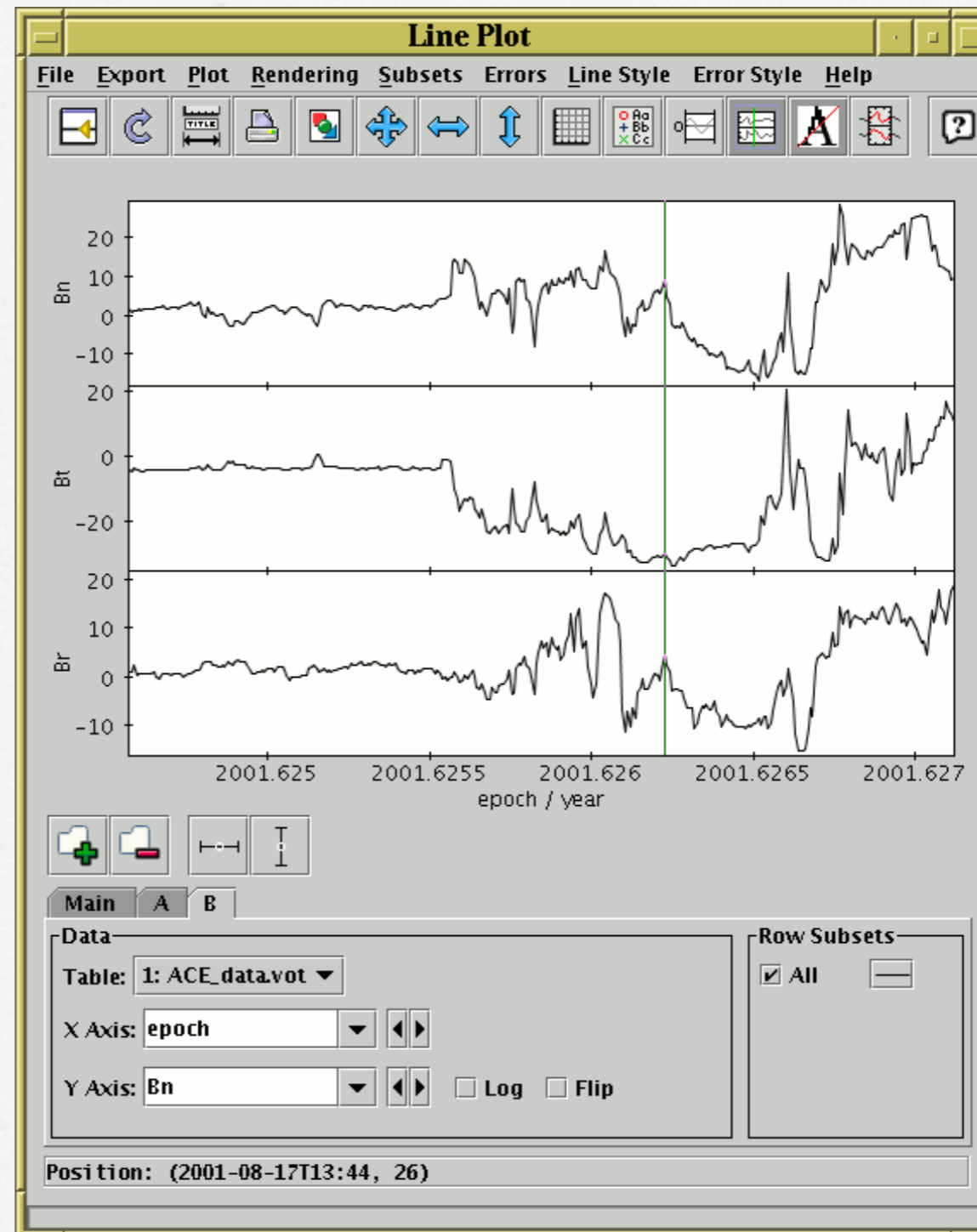
# Visualizaciones



Style Editor dialog box with a legend showing three series: 2dfgrs (red plus), 2QZ (blue dot), and c23 (yellow dot). The dialog includes a 'Dash' dropdown menu and an 'OK' button.

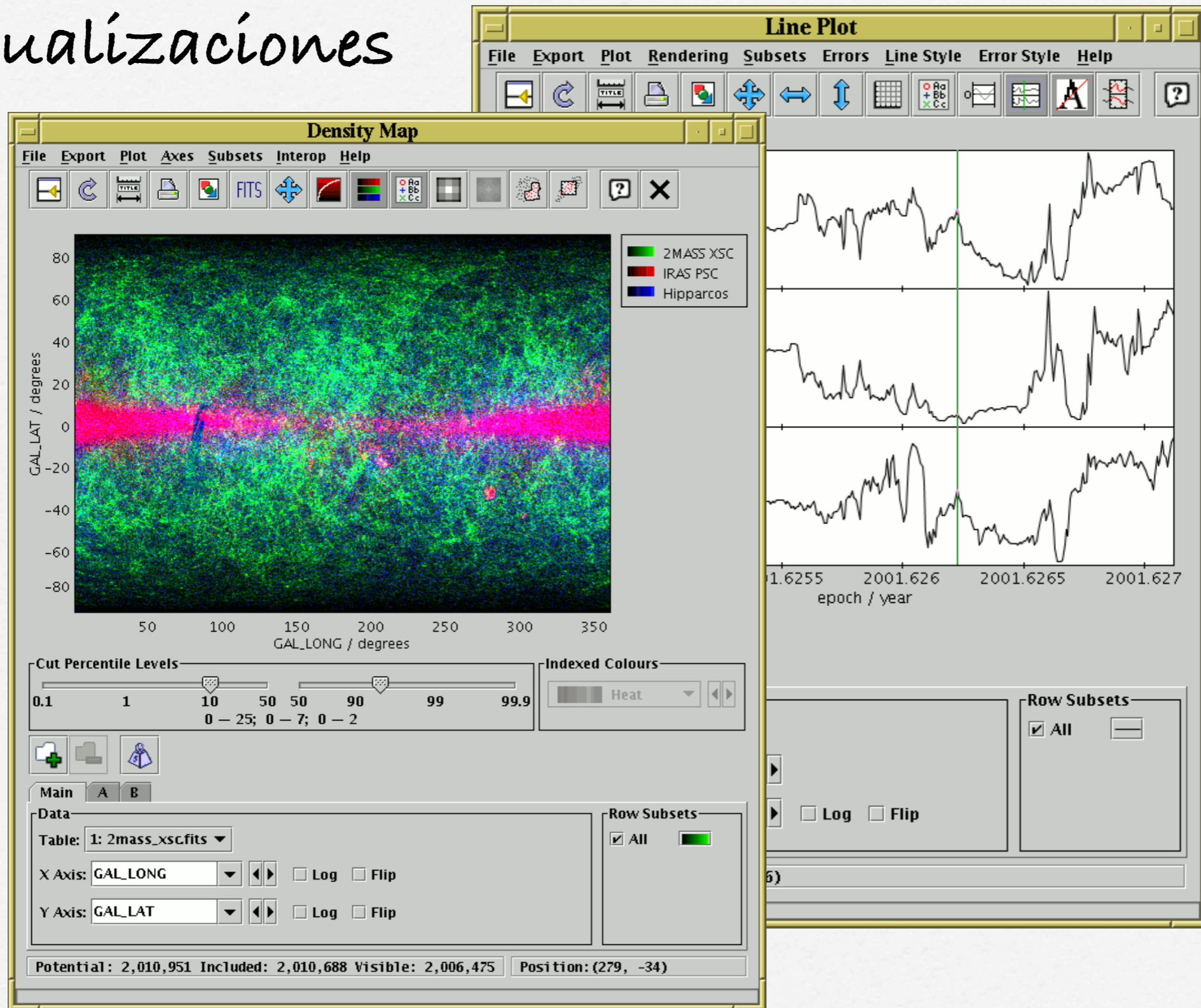
Configuration dialog box with a 'Range' input field set to 0.2 to 6. The dialog includes 'Cancel', 'Apply', and 'OK' buttons.

# Visualizaciones



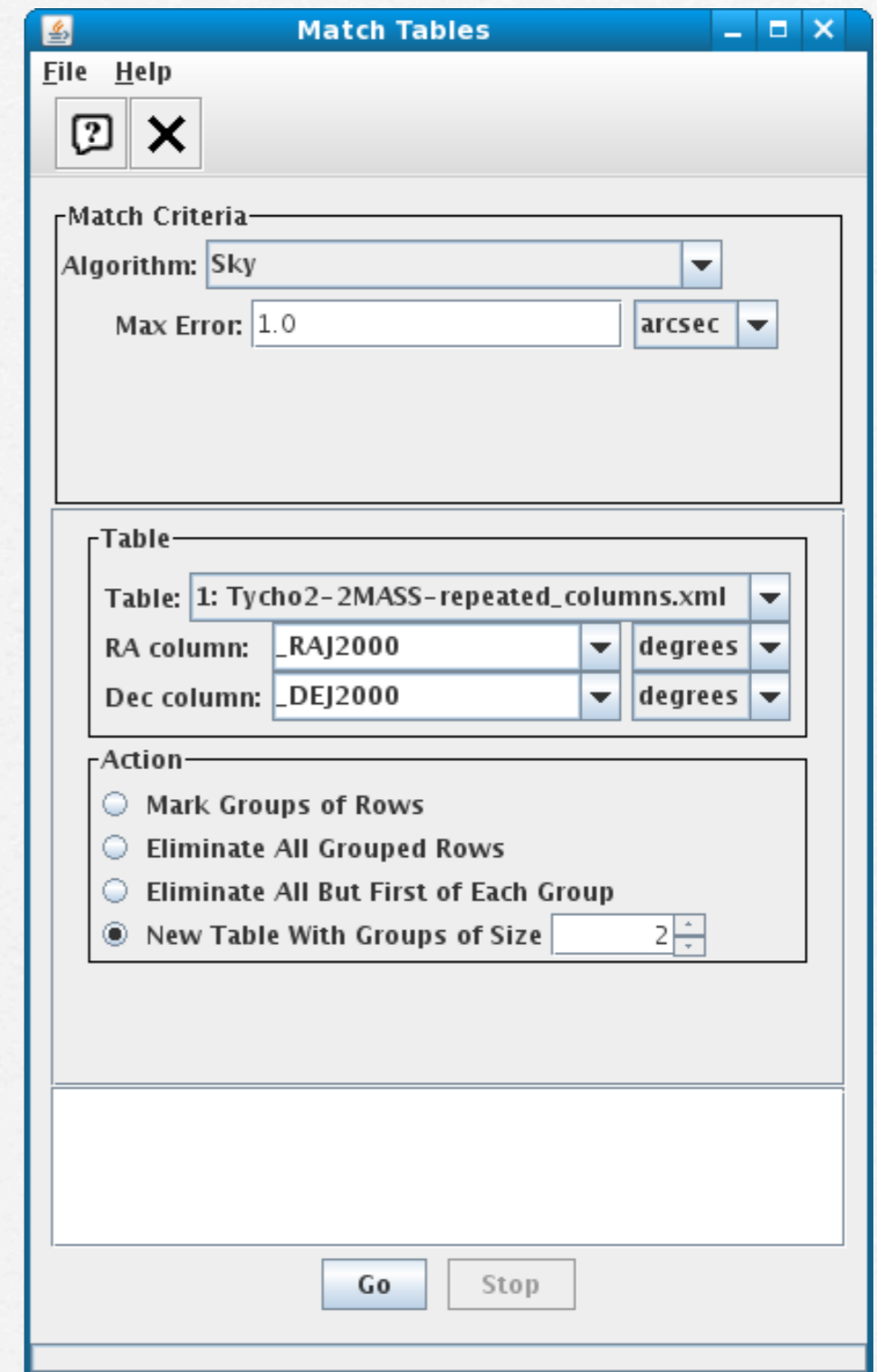
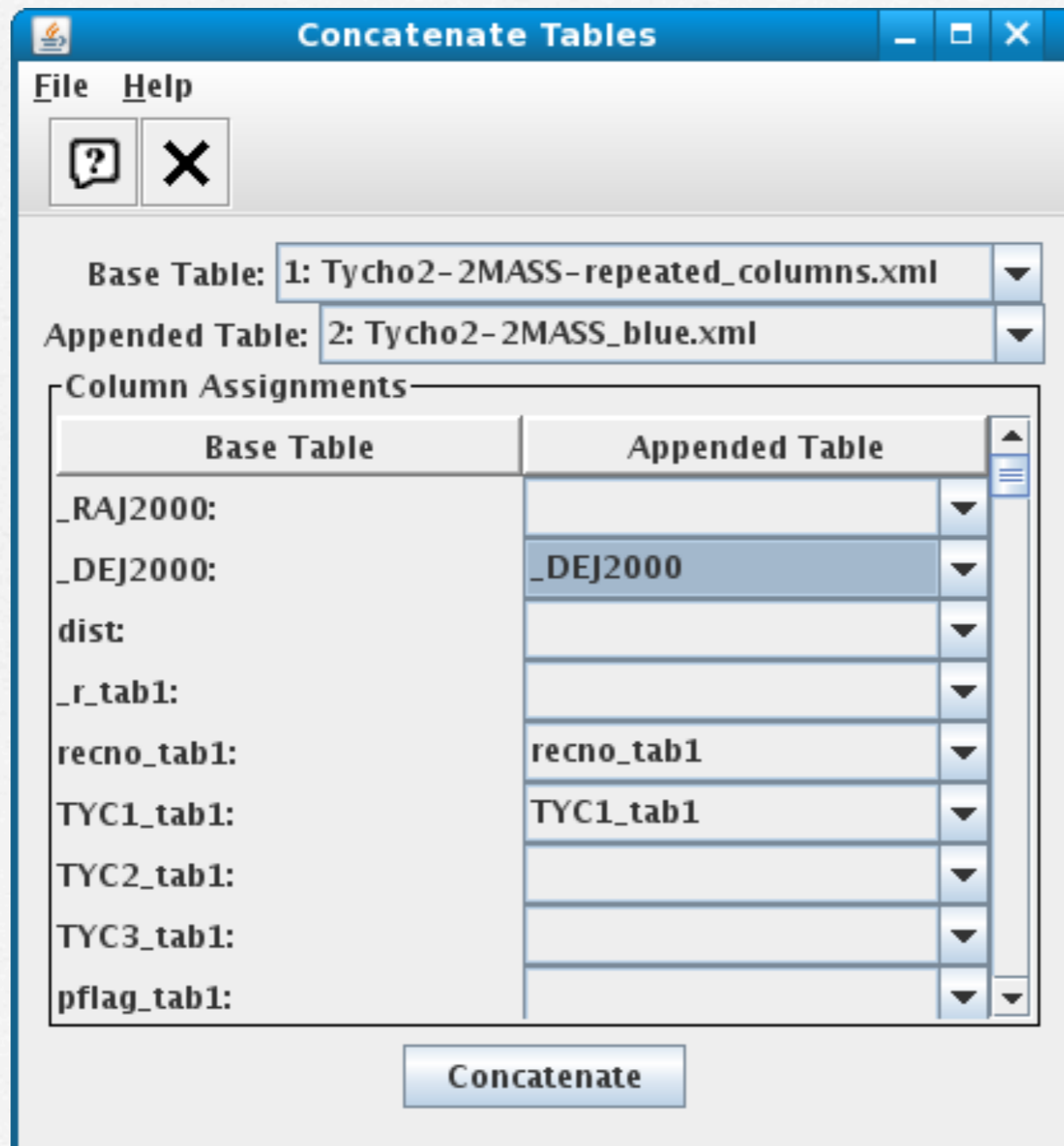


# Visualizaciones





# Cruces y concatenaciones





# Cruces y concatenaciones

**Concatenate Tables**

File Help

Base Table: 1: Tycho2-2MASS-repeated

Appended Table: 2: Tycho2-2MASS\_blue.xml

Column Assignments

Base Table	Appended
_RAJ2000:	
_DEJ2000:	_DEJ2000
dist:	
_r_tab1:	
recno_tab1:	recno_tab1
TYC1_tab1:	TYC1_tab1
TYC2_tab1:	
TYC3_tab1:	
pflag_tab1:	

Concatenate

**Match Tables**

File Help

Match Criteria

Algorithm: Sky

Max Error: 2.5 arcsec

Table 1

Table: 8: mgc.fits

RA column: MGC\_ALPHA\_J2000 degrees

Dec column: MGC\_DELTA\_J2000 degrees

Table 2

Table: 3: 2mass\_xsc.fits

RA column: RArad radians

Dec column: DECrad radians

Output Rows

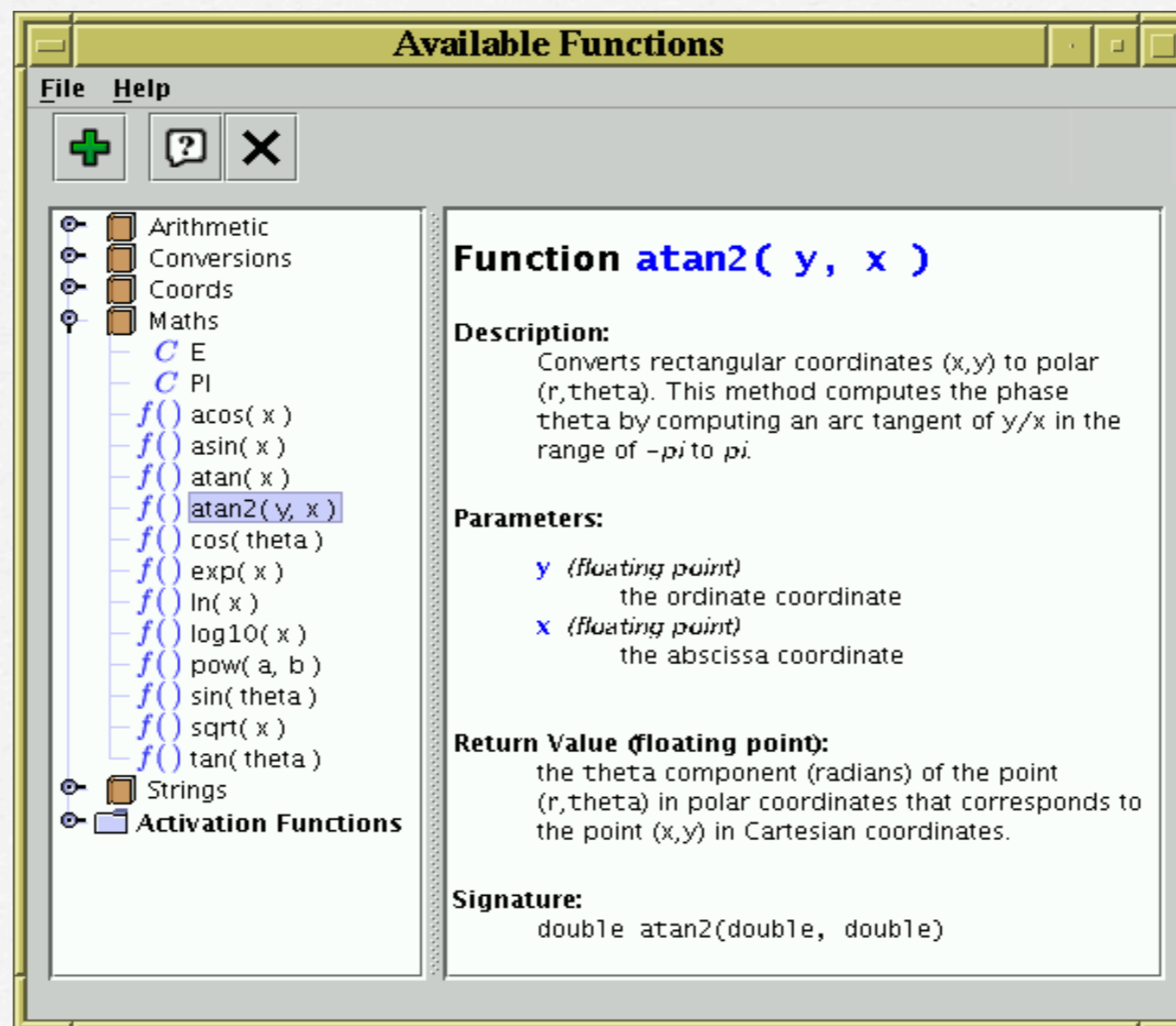
Match Selection:  Best Match Only  All Matches

Join Type: 1 and 2

Consolidating potential match groups...  
Locating inter-table pairs...  
Elapsed time for match: 74 seconds  
Match succeeded

Go Stop

# Operaciones entre columnas





# STILS syntax:

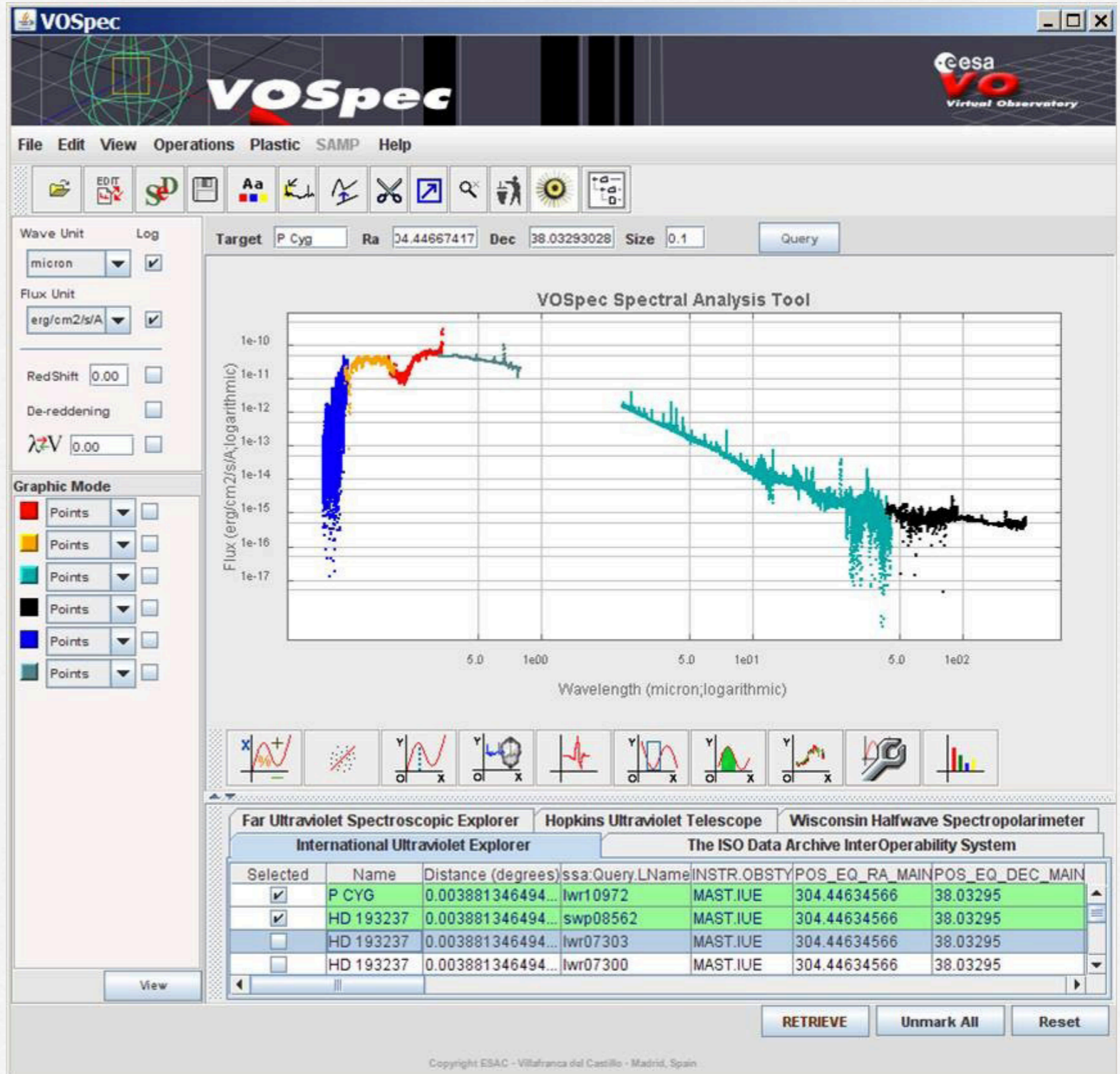
```
java -jar /path/stilts.jar <stilts-flags> <task-name> <task-args>
```

# Programa:

1. Herramientas III: manejos de espectros  
(VOSPEC, SPLAT)
2. Herramientas IV: fotometría multi-rango y análisis más sofisticado  
(VOSED y VOSA)
3. ¿Problemas con el caso de las Pleíades?



# VOSpec:





Introduce  
nombre o  
coordenadas  
y radio de  
búsqueda

VOSpec

eesa VO Virtual Observatory

File Edit View Operations Plastic SAMP Help

Wave Unit Log  
micron

Flux Unit  
Jy

RedShift 0.00

De-reddening

$\lambda-V$  0.00

Graphic Mode

View

Target AB Aur Ra 73.94101875 Dec 30.55119222 Size 0.01 Query

Spectra List

RETRIEVE Unmark All Reset

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### Server Selector

#### Query by Service

Green services are online and support params selected

- HyperLeda FITS Archive Simple Spectrum
- International Ultraviolet Explorer
- OMC: The INTEGRAL Optical Monitoring C
- SSA Service for Optical Spectroscopy in th
- SSA Service for zCOSMOS Bright Spectros
- ST-ECF Hubble Legacy Archive High-Level
- ST-ECF Hubble Space Telescope Spectra
- Spectrum interpolator for the ELODIE libra
- TBL Narval legacy
- The COROT PUBLIC AT LAEFF
- The ISO Data Archive InterOperability Sy
- Tubingen Echelle Spectra
- Ultraviolet photometry for IUE highly pr
- WDS-F02 DEEP spectra
- Wisconsin Halfwave Spectropolarimeter
- Wisconsin Ultraviolet Photo-Polarimeter

#### Query by params

Tree

- Query
  - TARGET.NAME AB Aur
  - Simple Query
    - POS 73.94101875,30.55119222
    - SIZE 0.01
  - Advanced Query
  - Service Specific Query
    - HyperLeda FITS Archive Simple Spectrum Data Access(HFA SSA)
    - International Ultraviolet Explorer
    - The ISO Data Archive InterOperability System

#### Query Outlook

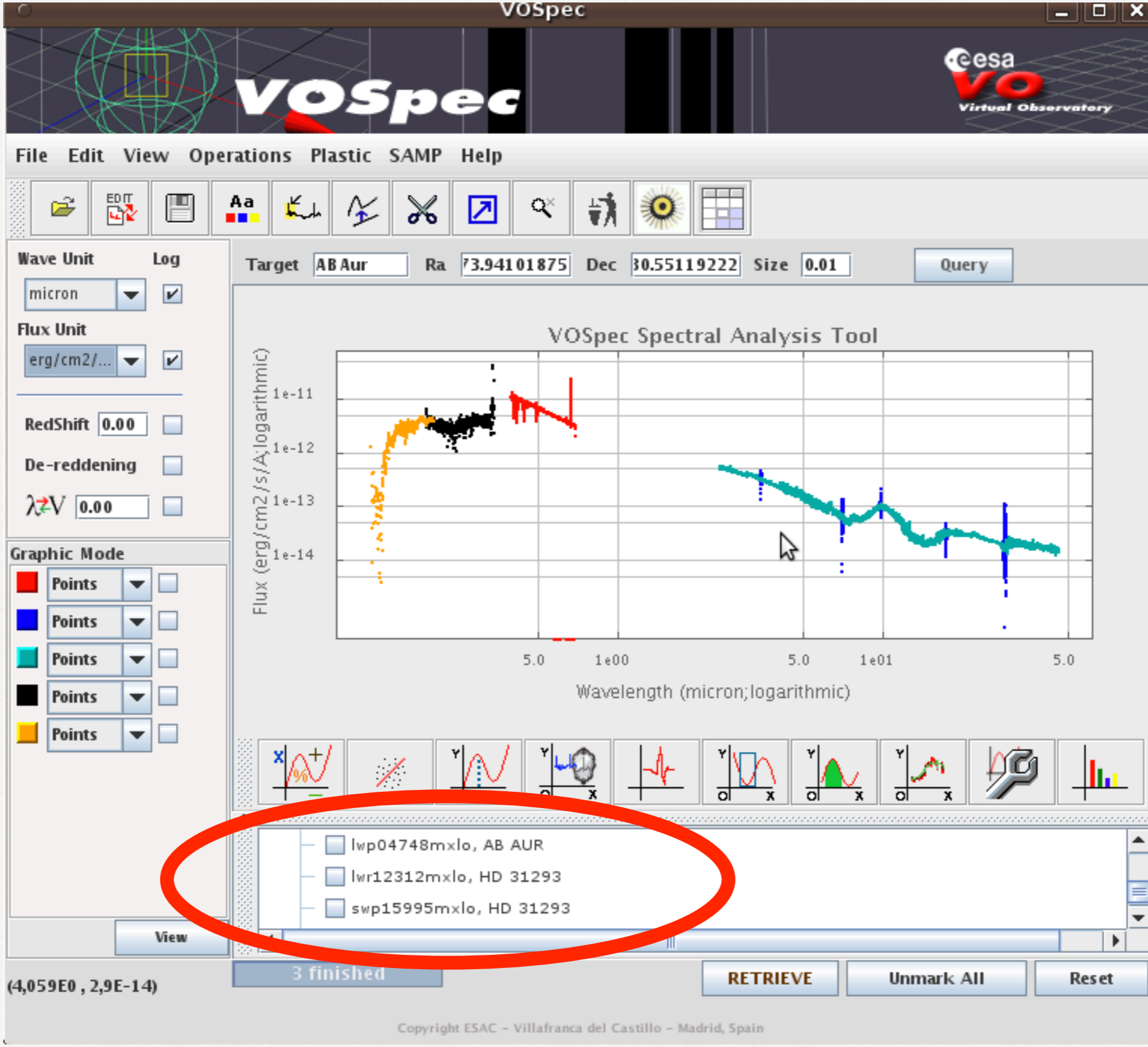
Refresh   Add SSA/TSA    Select All SSA

```
http://leda.univ-lyon1.fr/G.cgi?c=ssa&n=fassa&&F
-----
http://leda.univ-lyon1.fr/G.cgi?c=ssa&n=fassa&&F
http://archive.stsci.edu/ssap/search2.php?id=IUE
-----
http://leda.univ-lyon1.fr/G.cgi?c=ssa&n=fassa&&F
http://archive.stsci.edu/ssap/search2.php?id=IUE
```

#### Insert Param Value

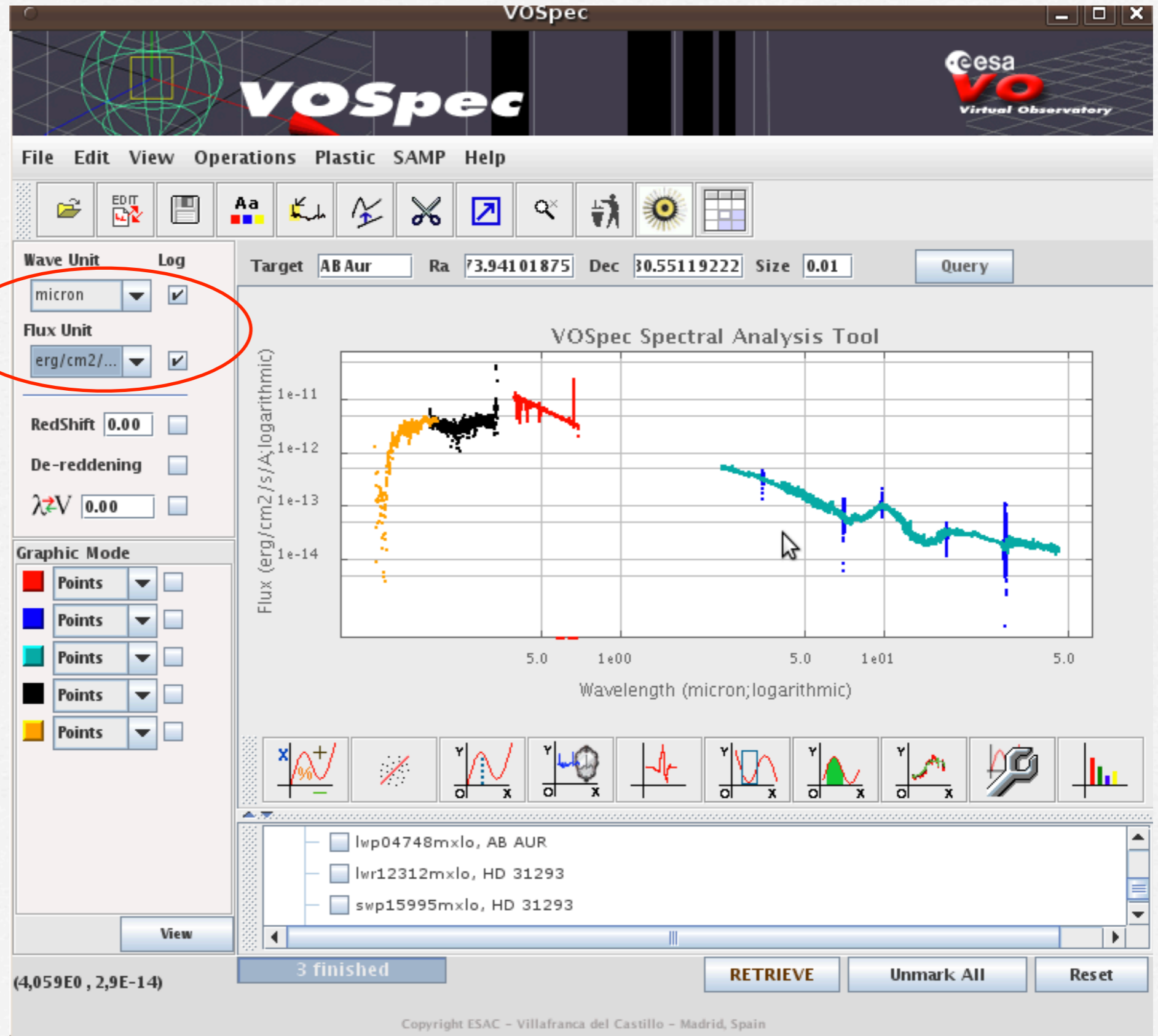
Point mouse on param label to see description

Text Param

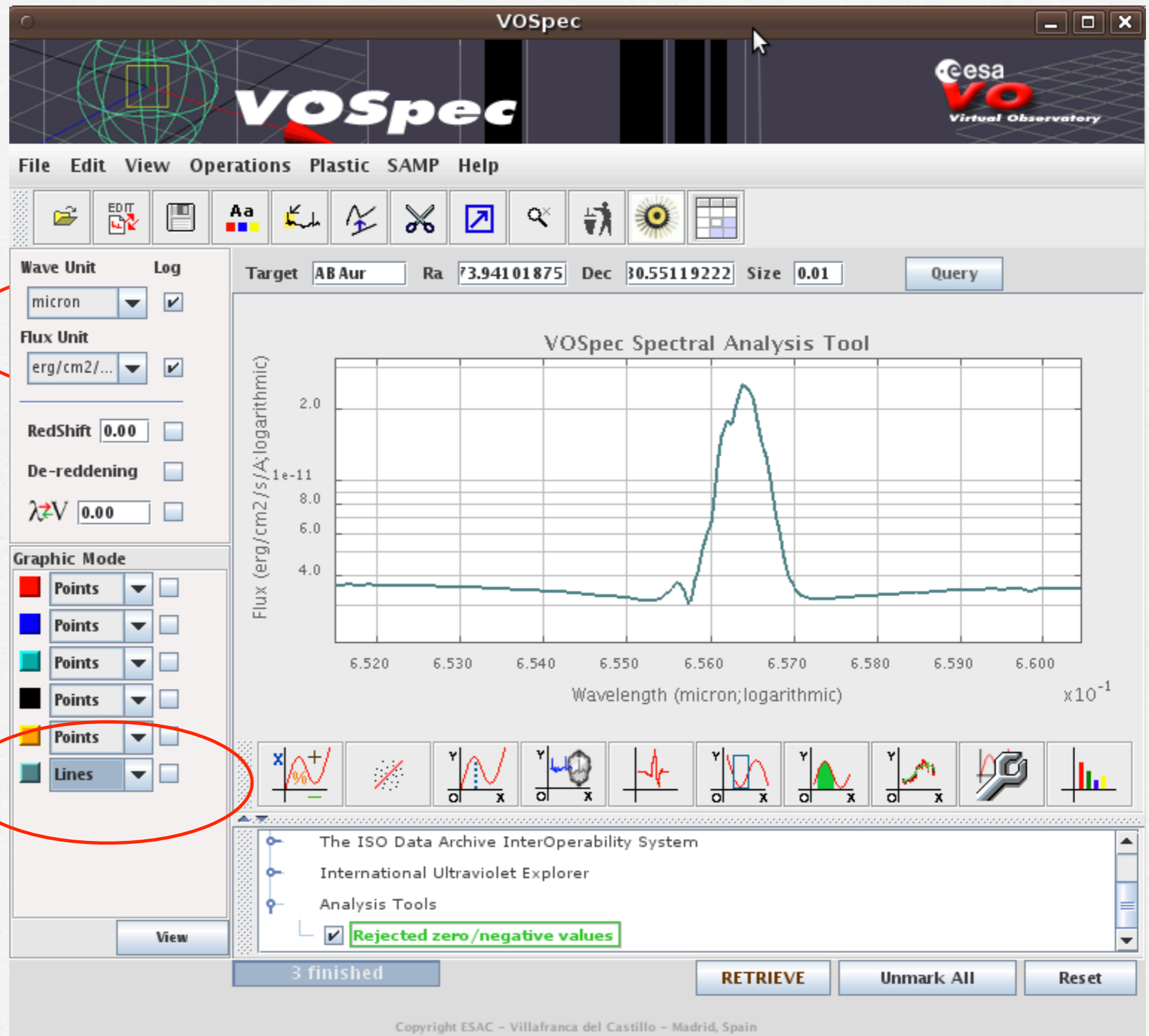




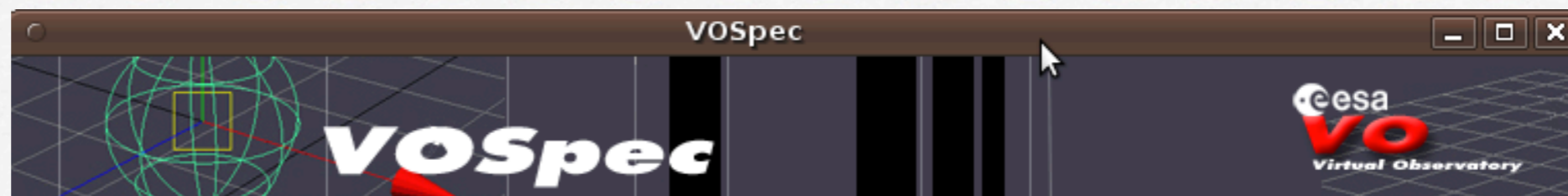
Análisis  
básico:



Análisis  
básico:







File Edit View Operations Plastic SAMP Help

### Analysis Window

Statistics Mirroring **Tuning** Bisector method

Equivalent Width

Flux

Wavelet Analysis

94101875 Dec 30.55119222 Size 0.01

Query

Average multivalued flux values

average

Increase/decrease spectrum resolution

re-binning

Number of wavelength positions

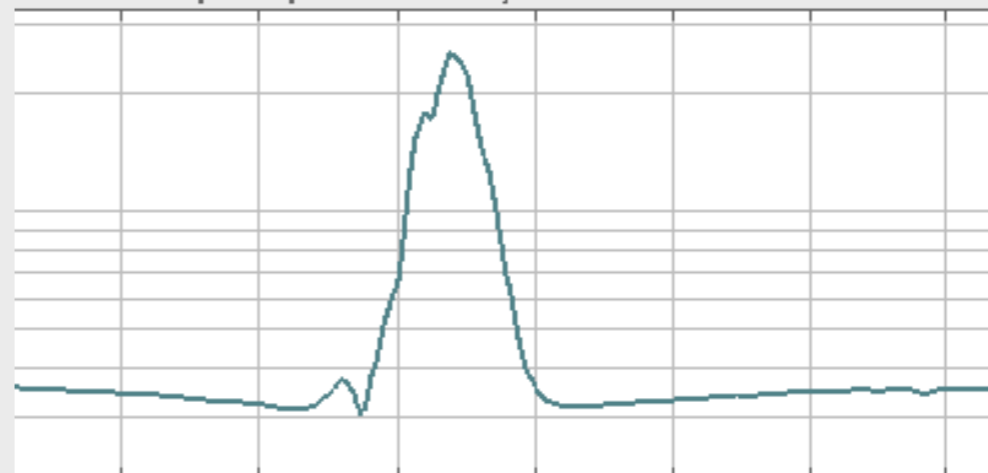
1000

Reject zero and negative flux values

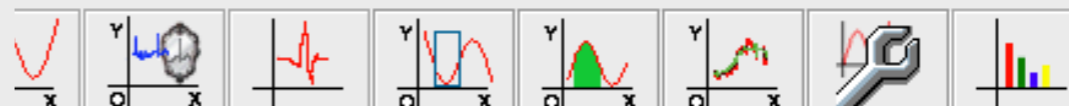
reject

Calculate

### VOSpec Spectral Analysis Tool



6.540 6.550 6.560 6.570 6.580 6.590 6.600  
Wavelength (micron; logarithmic) x10<sup>-1</sup>



International Ultraviolet Explorer

Analysis Tools

Rejected zero/negative values

View

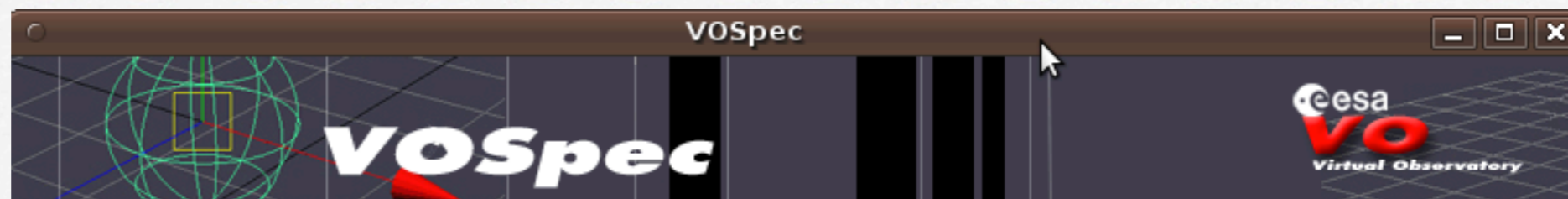
3 finished

RETRIEVE

Unmark All

Reset

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File Edit View Operations Plastic SAMP Help

### Analysis Window

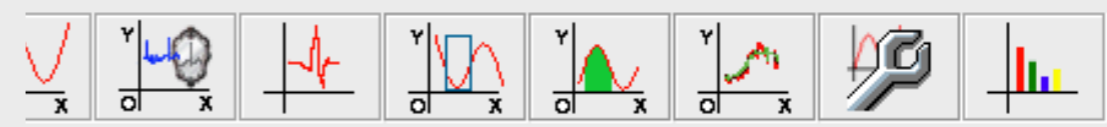
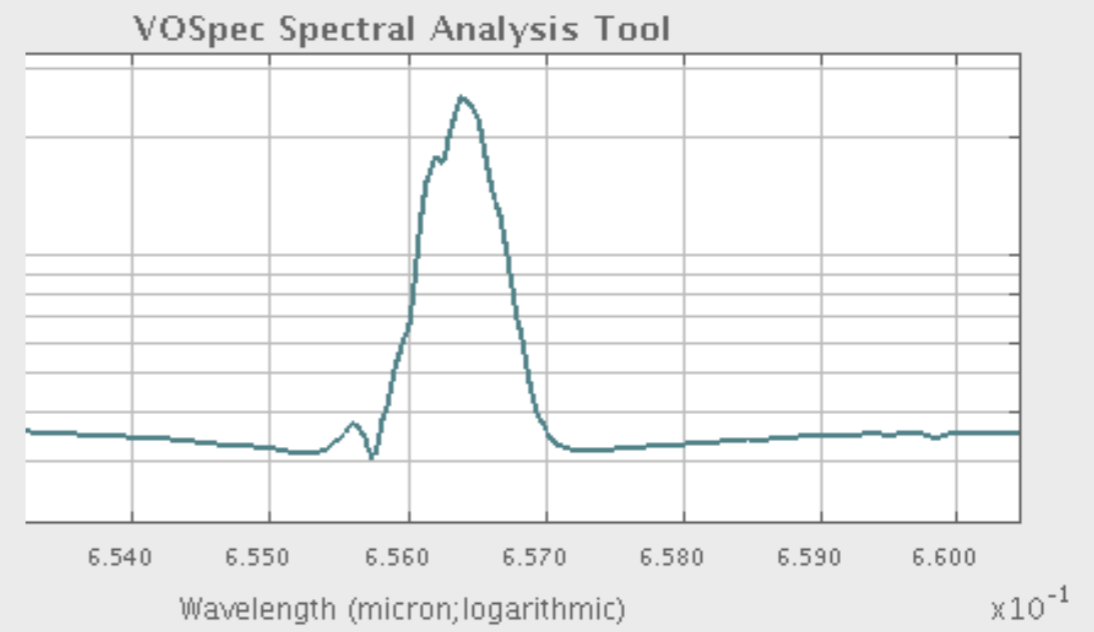
Statistics Mirroring Tuning Bisector method  
Equivalent Width Flux Wavelet Analysis

94101875 Dec 30.55119222 Size 0.01

Query

Equivalent width value  
-0.002871706059006218 micron

Calculate



International Ultraviolet Explorer

Analysis Tools

Rejected zero/negative values

View

3 finished

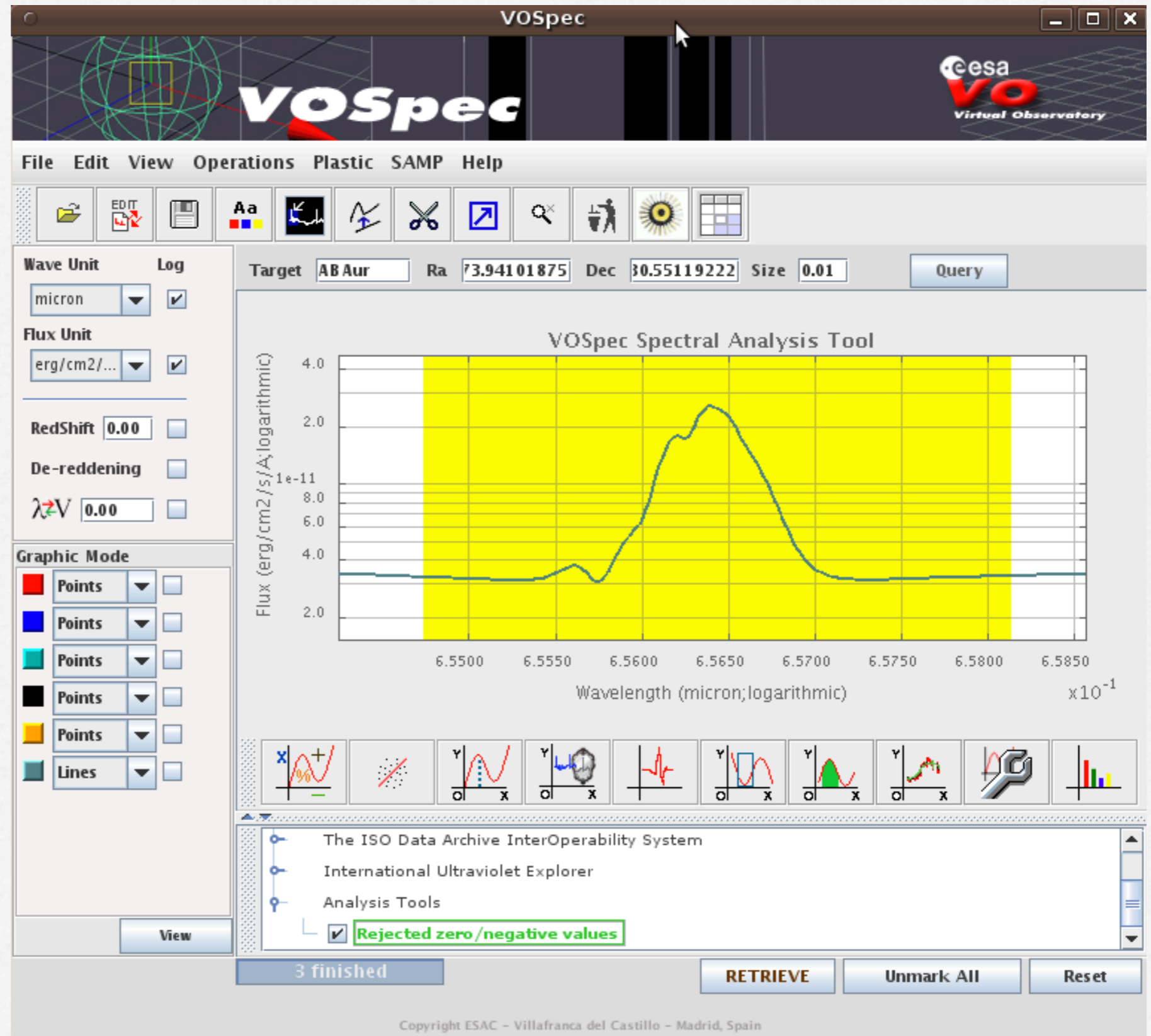
RETRIEVE

Unmark All

Reset



Identificación  
de líneas  
atómicas



### Slap Viewer

SLAP Viewer Copyright ESAC, Spain

Server Selector

- SLAP Services
  - IASD
  - VUV-LERMA-LUTH
  - NIST ATOMIC SPECTRA
    - <http://physics.nist.gov/cgi-bin/ASD/slap.pl?>
  - CIELO SLAP
  - CHIANTI SLAP
    - [http://msslxv.mssl.ucl.ac.uk:8080/chianti\\_slap/DALToolKitServlet?](http://msslxv.mssl.ucl.ac.uk:8080/chianti_slap/DALToolKitServlet?)

Select

Range of Search (m)

Wavelength Start  Wavelength End

Reset

Slap Services Output

**NIST ATOMIC SPECTRA**

Idm:Lin...	Idm:Lin...	Idm:Lin...	Idm:Lin...	Idm:Lin...	Idm:Lin...	Idm:Line...	Idm:Lin...
6.5691...	Si III 65...	Si	conf='3...	conf='3...		4.9787...	4.6763...
6.5694...	Cd II 6...	Cd			6.5694...		
6.5696...	W I 656...	W	term='...	conf='5...	6.5696...	7.9480...	4.9243...
6.5696...	Eu I 65...	Eu			6.5696...		
6.5698...	Gd II 6...	Gd			6.5698...		
6.5702...	Xe I 65...	Xe	conf='5...	conf='5...	6.5702...	2.0644...	1.7621...
6.5704...	Sc II 65...	Sc	conf='3...	conf='3...	6.5704...	1.4942...	1.1919...
6.5705...	C I 657...	C	conf='2...	conf='2...		1.7446...	1.4423...
6.5709...	Xe II 65...	Xe	conf='5...	conf='5...	6.5709...	2.5230...	2.2206...
6.5710...	Fe I 65...	Fe	conf='3...	conf='3...		1.0606...	7.5833...
6.5711...	Sc I 65...	Sc	conf='3...	conf='3...	6.5711...	8.1052...	5.0822...

Close

### VOSpec

esca VO Virtual Observatory

istic SAMP Help

Aur  Ra  Dec  Size

#### VOSpec Spectral Analysis Tool

Wavelength (micron; logarithmic)  $\times 10^{-1}$

the ISO Data Archive InterOperability System

International Ultraviolet Explorer

Analysis Tools

**Rejected zero/negative values**

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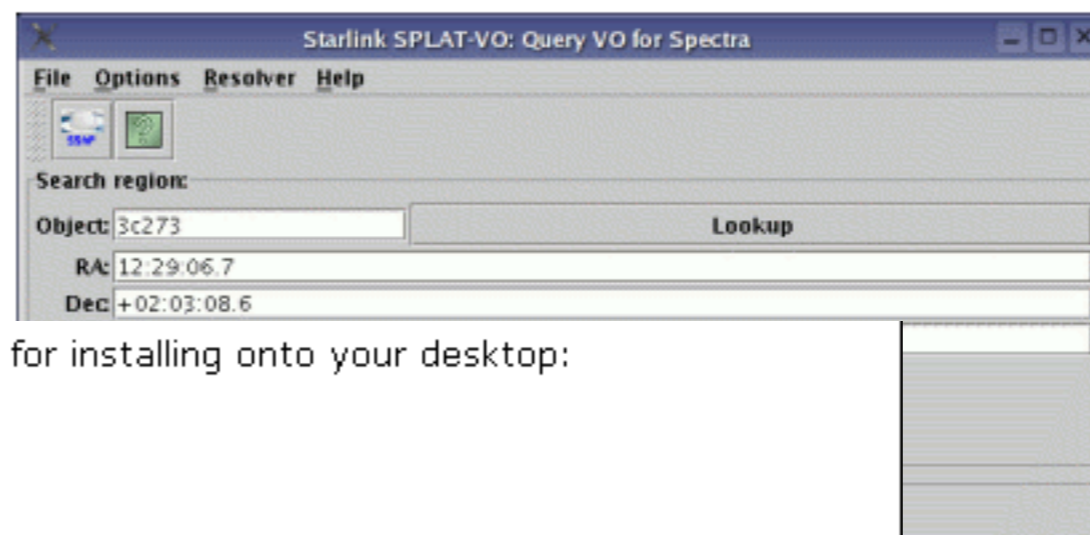
# SPLAT:

## Starlink SPLAT-VO



The **Starlink** Spectral Analysis Tool (**SPLAT**) has been upgraded to include a demonstration toolbox for querying, downloading and displaying spectra from the current generation of SSAP servers. This is now part of the official SPLAT release, which comes with **JAC Starlink**.

More recently SPLAT has been updated (by **Mark Taylor**) so that it can interoperate with other **PLASTIC** aware applications, such as **TOPCAT** and the SSAP support has been updated to around version 0.97 (pre-1). This version is available here.



This latest version of SPLAT is available as a download for installing onto your desktop:

[SPLAT-VO installer \(68Mb\)](#)

or as a webstart application:

[SPLAT-VO webstart](#)

Both versions will run using Linux (RH9+), Windows (XP), Mac OS X (10.3 ppc & 10.4 i386) and Solaris (8+). The installer is an executable jar file so you just need to run this using the command:

```
java -jar splat-vo.jar
```

After downloading it. If you install SPLAT-VO locally then it may integrate into your desktop or alternatively (for UNIX only) you can run it by executing the `splat` script located in the `<root>/bin/splat` directory.

Starlink SPLAT-VO: Select SSAP Servers

File Options Columns Help

Servers

shortName	title
ASTRID - CLASS0	Photometry of Class 0 sources
Allard, COND 2000	Allard, COND 2000
Allard, DUSTY 2000	Allard, DUSTY 2000
Allard, NextGen	Allard, NextGen
BeSS	Be Stars Spectra database
CDFS SSA	SSA Service for Optical Spectroscopy in the CDF-S
Coelho	Coelho Synthetic stellar library
Dalessio disk models	Dalessio disk models
ELODIE	ELODIE archive
ELODIE interpolator	Spectrum interpolator for the ELODIE library
EUVE	Extreme Ultraviolet Explorer Merged Spectra
FUSE	Far Ultraviolet Spectroscopic Explorer
FUSE SSA	Far Ultraviolet Spectroscopic Explorer SSA
GAVO TMAP-SSA	SSA Service for Optical Spectroscopy in the TMAP
HFA	HyperLeda Filtered Archive
HFA SSA	HyperLeda Filtered Archive SSA
HPOL	Wisconsin H-alpha Polarization
HST Spectra	Hubble Space Telescope Spectra
HST/FOS/SSAP	Hubble Space Telescope FOS/SSAP
HUT	Hopkins Ultra

SSAP Registry Query

Registry:

Query:

Cancel OK

Query registry Remove selected Delete all

Restore Save Close



Starlink SPLAT-VO: A Spectral Analysis Tool

File Edit View Options Operations Interop Help



Global list of spectra:

- HD061421 LL\_ELODIE HFA (MIGALE)
- HD61421
- HD61421
- HD 61421
- Procyon
- HD61421
- HD61421
- HD61421

Properties of current spectra:

Short name: HD61421  
 Full name: [http://archive.stsci.edu/pub/vospectra/stis/o6l5010j0\\_sx1\\_vo.fits](http://archive.stsci.edu/pub/vospectra/stis/o6l5010j0_sx1_vo.fits)  
 Format: TABLE

Columns: Coordinates Data Errors  
 WAVELENGTH FLUX SIGMA

Colour:   
 Composite: 100%  
 Line type: polyline  
 Line width: 1 Style: line  
 Point type: dot Size: 5.0  
 Error bars:   1 1

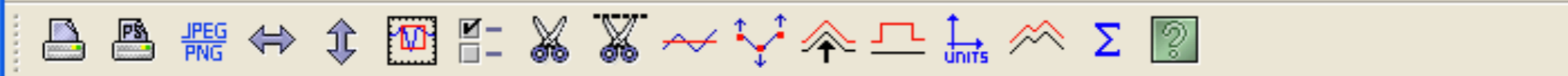
Views of current spectra:

View	Displayed
<plot1>	<input type="checkbox"/>
<plot10>	<input checked="" type="checkbox"/>



Starlink SPLAT-V0: <plot10>

File Analysis Edit Options Graphics Help

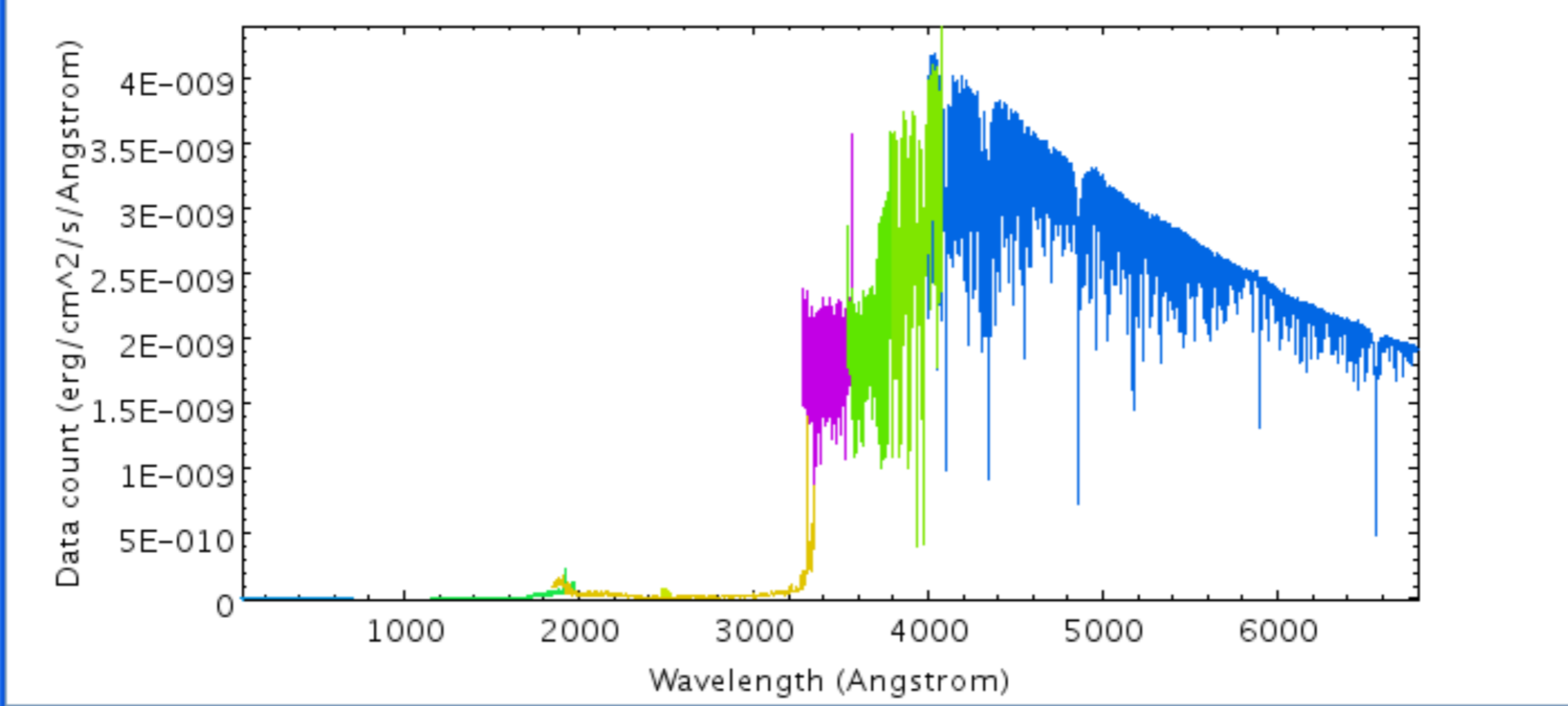


Displaying: HD061421 LL\_ELODIE HFA (MIGALE) Y limits (%): automatic  :V-hair

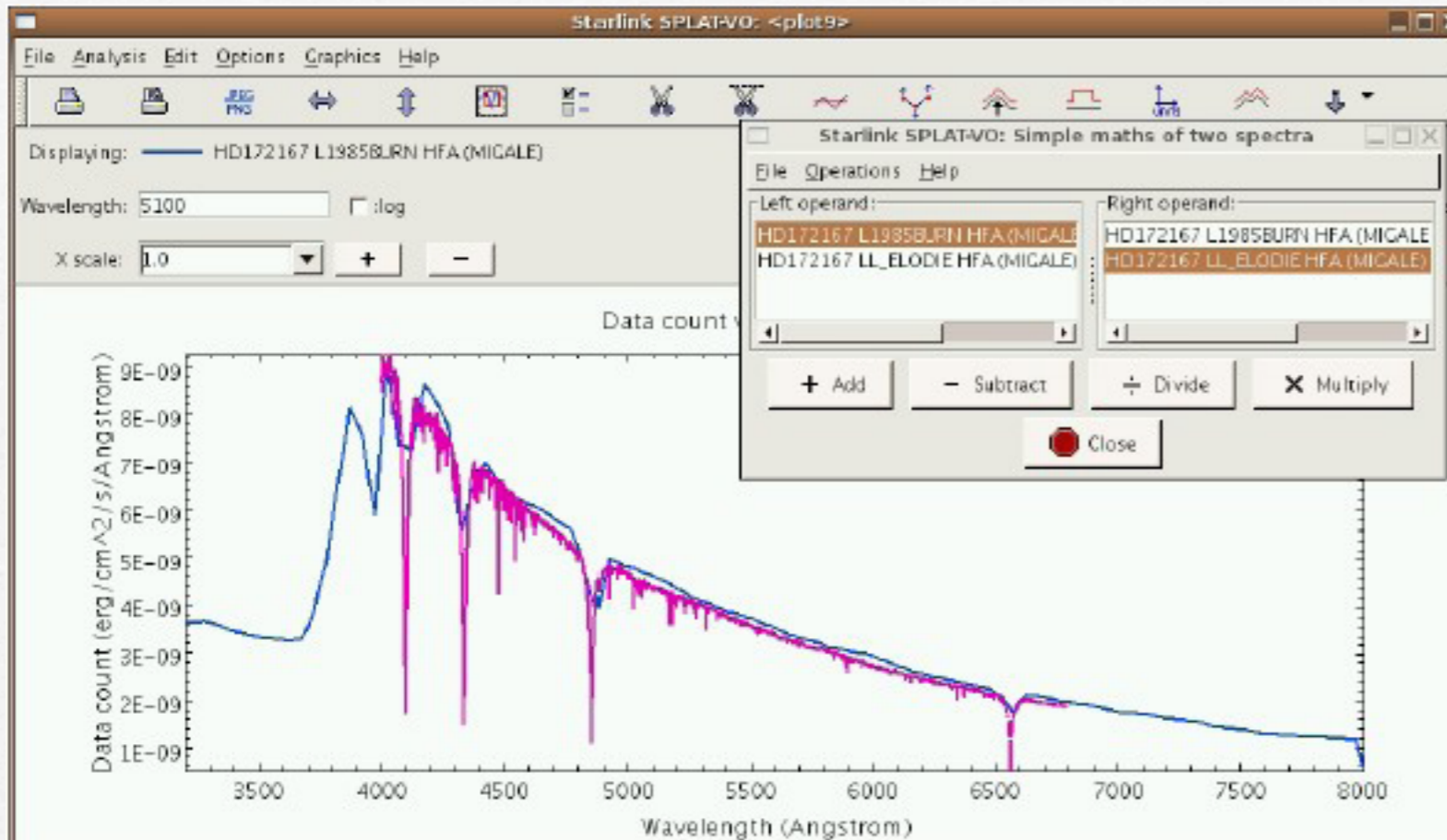
Wavelength: 4000  :log Data count: 3.846713E-009  :log  :Track free

X scale: 1.0   Y scale: 1.0

Data count versus Wavelength

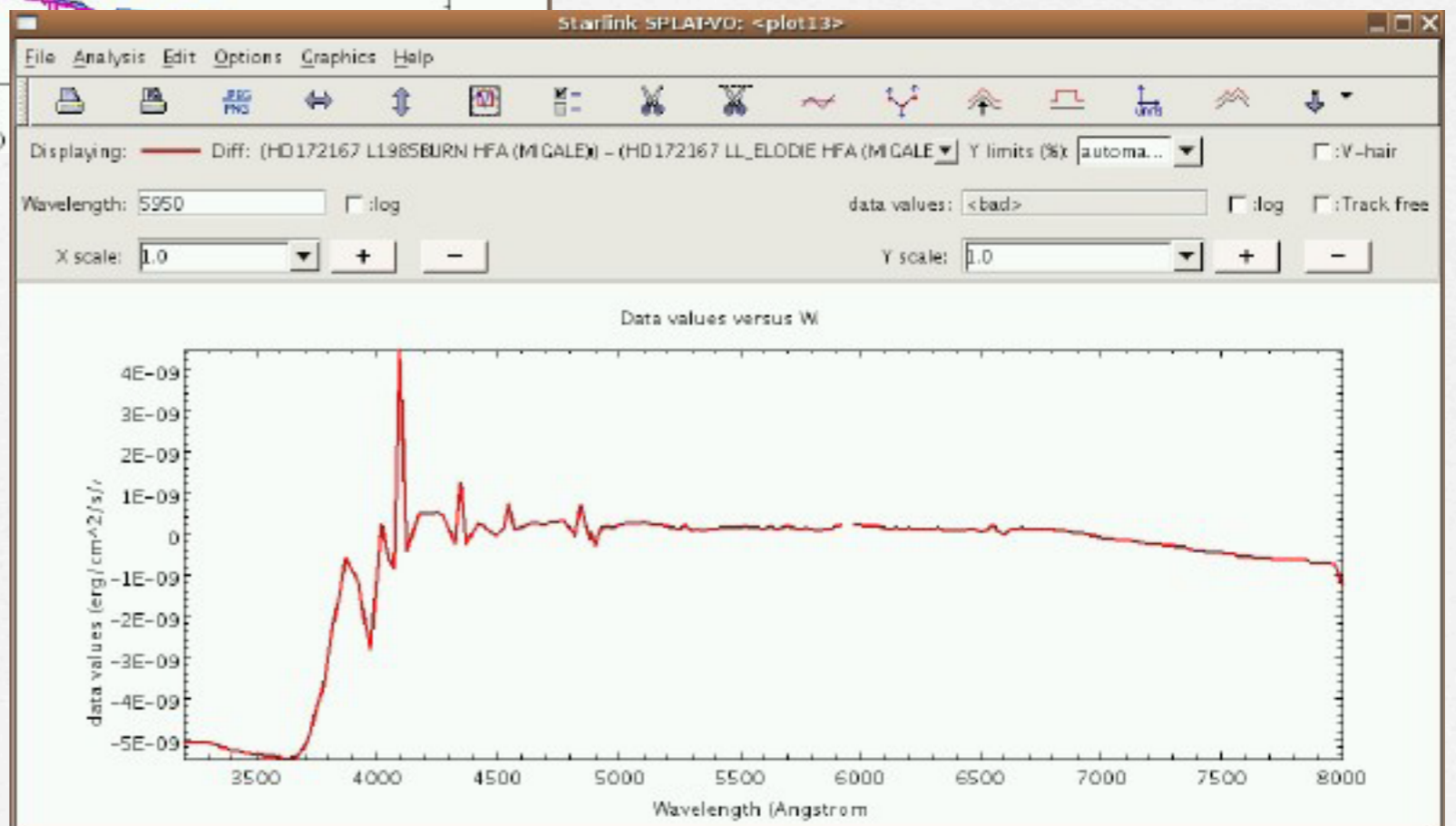
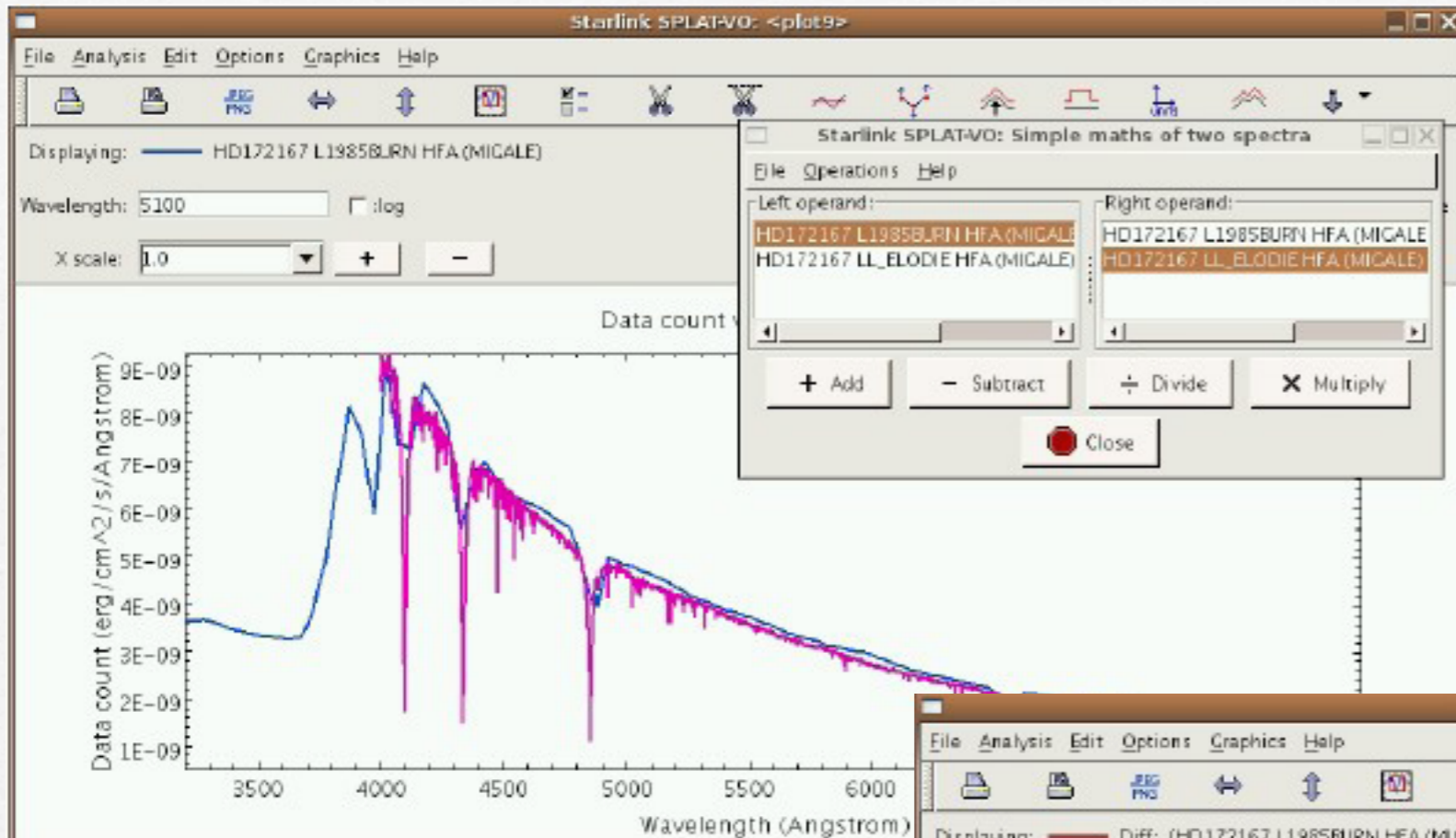






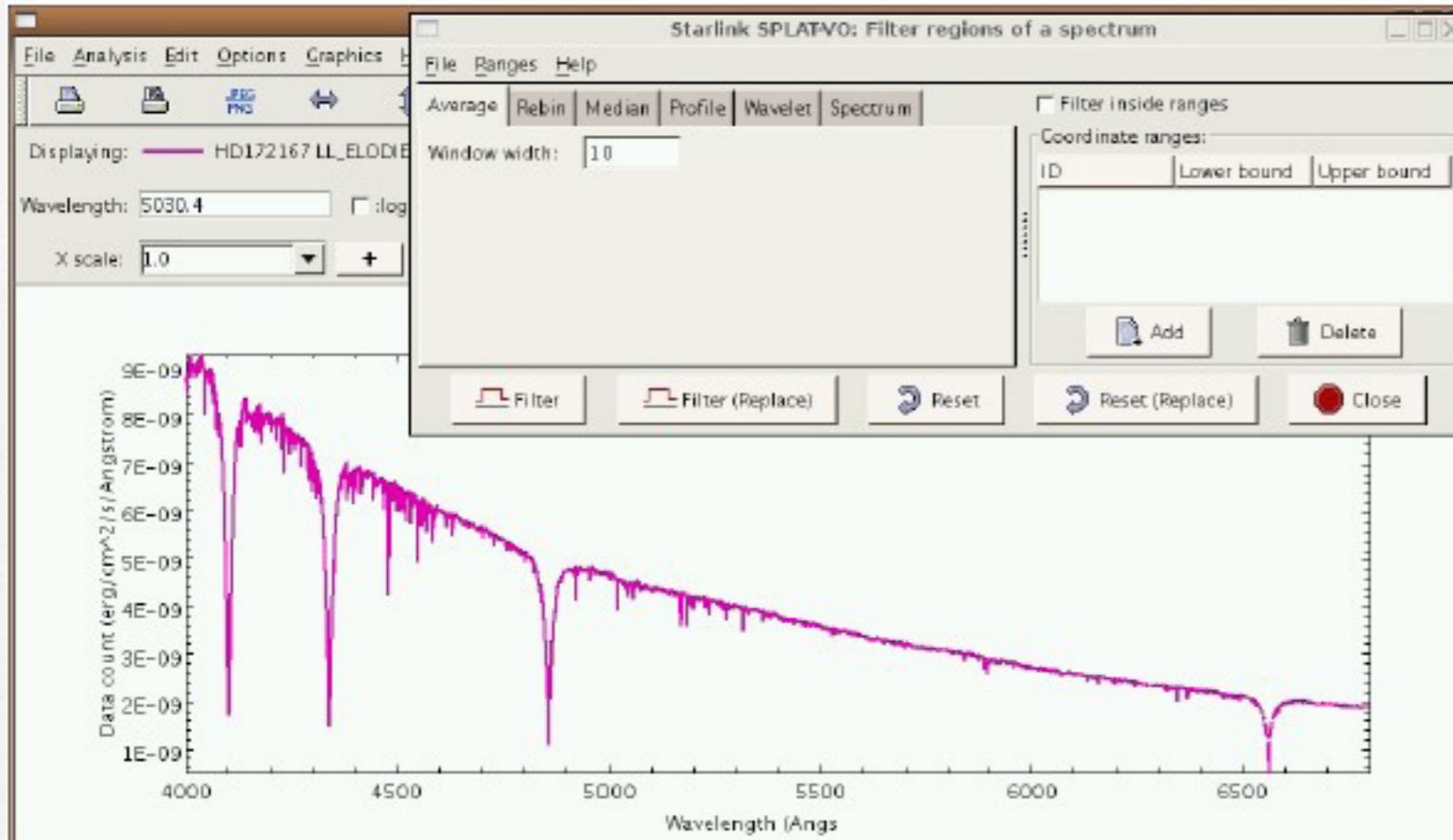
Operaciones  
aritméticas con  
spectros





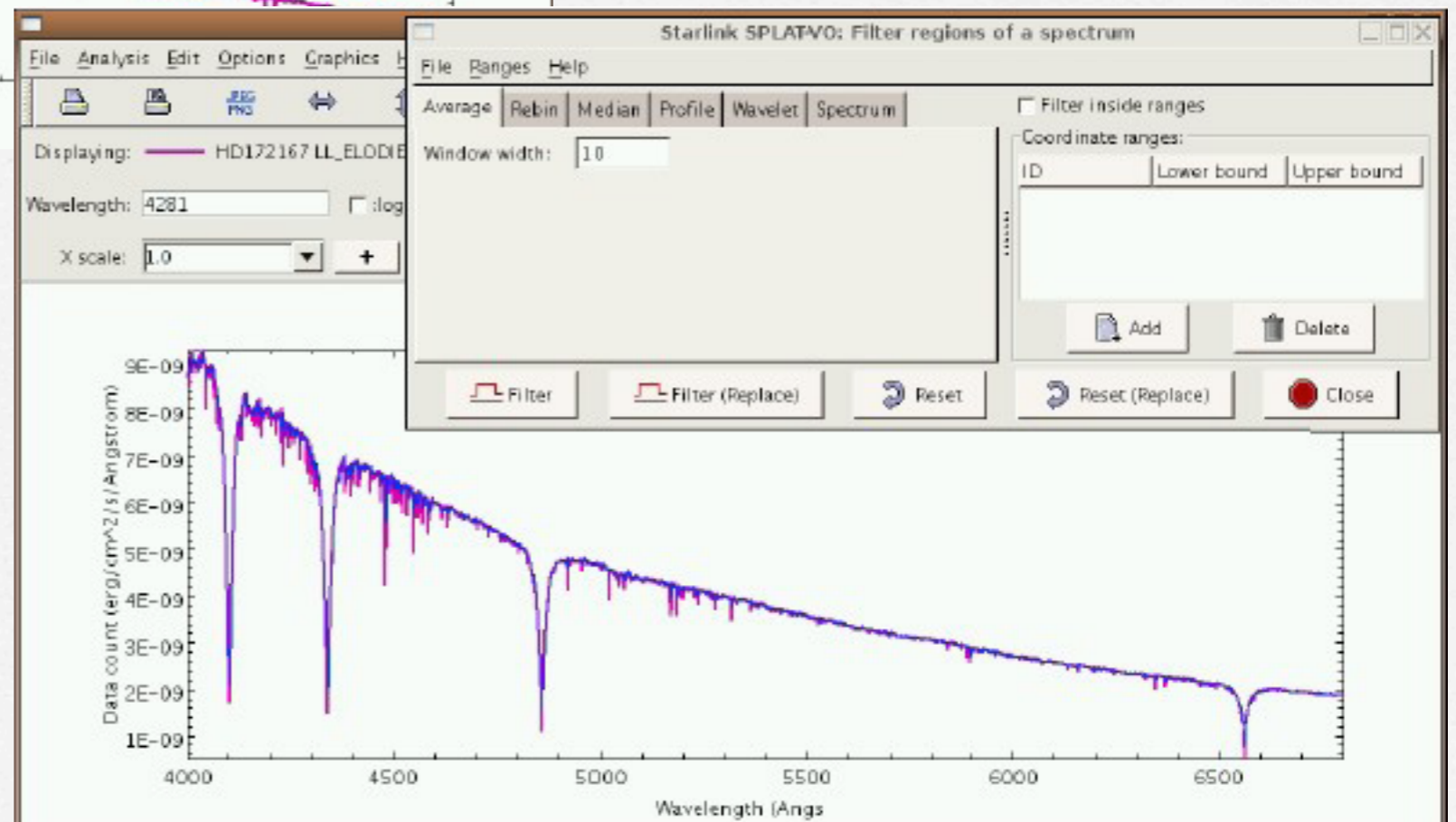
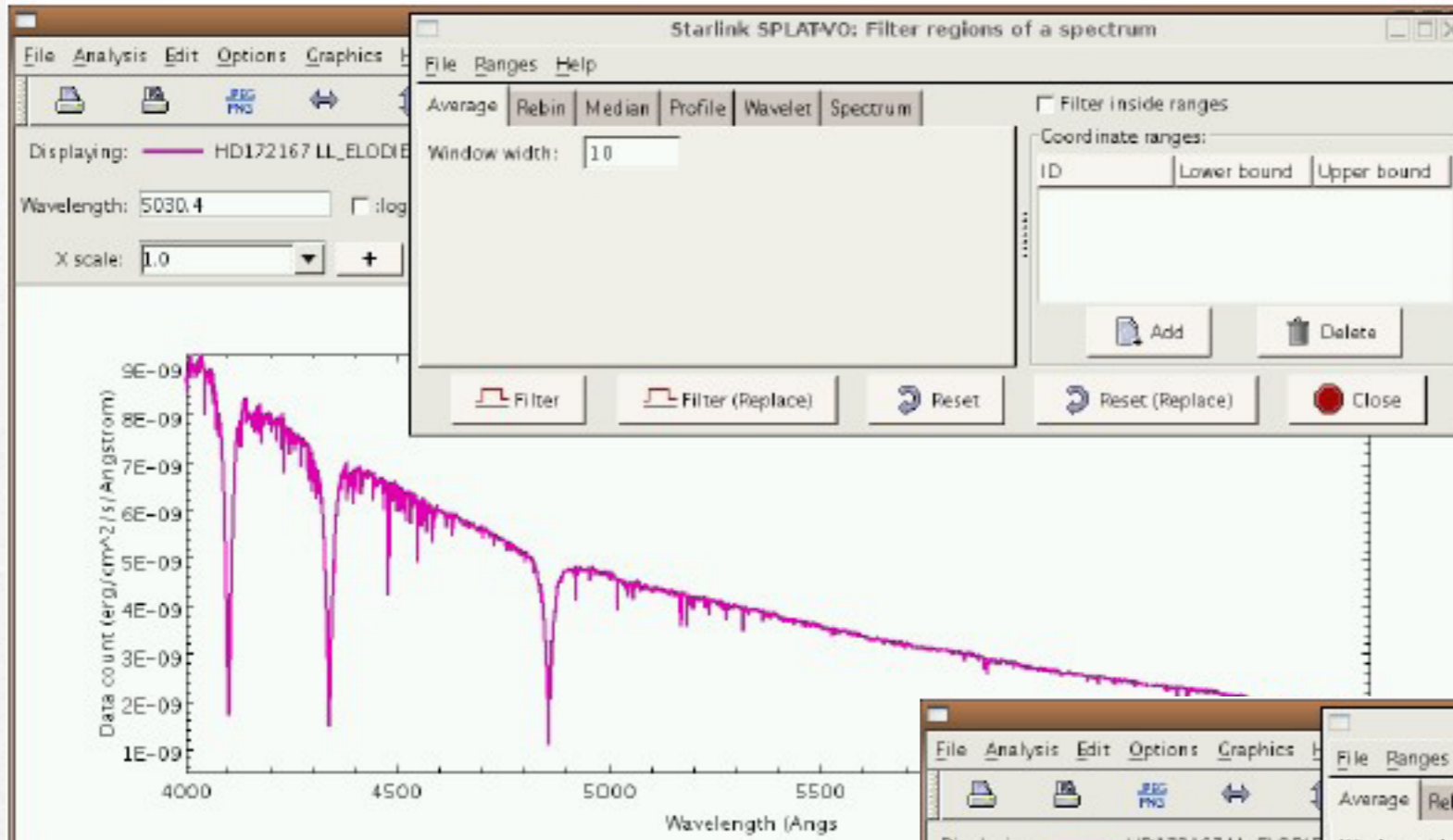
Operaciones  
aritméticas con  
spectros





Filtrados





Filtrados



# Ajuste de polinomios

