

VOSED User's Guide

1. Introduction

VOSED is a tool developed in the framework of the Spanish VO to ease the generation of Spectral Energy Distributions (SEDs). VOSED is able to build SEDs gathering information from the spectroscopic services available in VO. These datasets can be complemented with photometric information from a number of Vizier Catalogues as well as with data provided by the user.

VOSED has two main working modes: single and multiple object. In the multiple object mode, the user can monitor the status of the query. Once it has finished, a compressed (.zip) file containing the SEDs in VOTable format is created. The SEDs can be uploaded in other VO tools (like, for instance, VOSpec) for further visualization and analysis.

2. Quick start guide

2.1. Single object mode

In the [VOSED main page](#), select “Single object search”. The search form for a single object appears. Enter your object name or coordinates, a search radius and, optionally, a redshift. Then select the spectra services to query. VOSED gives a list of the services registered in the EURO-VO Registry. Those services not working are presented in red color and deactivated.

SED Building Tool: Search Form

Object:

Examples: HD 142666, V* V1026 Sco, 18 27 45.79 +34 36 18.77

Redshift:

Data Services:

Spectroscopic Data

Search radius: (arcsec)

Wavelength range: - (Angstrom)

Resolution range: - (Angstrom)

Resolving power range: -

SNR range: -

Mark all

<input checked="" type="checkbox"/>	6dF DR3 Simple Spectra Access	http://wfaudata.roe.ac.uk/6d
<input checked="" type="checkbox"/>	AXIS-XMS Optical Spectra	http://venus.fca.unican.es/
<input checked="" type="checkbox"/>	Be Star Spectra SSAP	http://basebe.obspm.fr/cgi/
<input checked="" type="checkbox"/>	Be Stars Spectra database	http://basebe.obspm.fr/cgi/
<input checked="" type="checkbox"/>	CENCOS-VVDS_DEEP SSA (VVDS Deep survey)	http://lamwvs.oamp.fr/DAL/
<input checked="" type="checkbox"/>	ELODIE archive (Service not working)	http://atlas.obs-hp.fr/iodie/
<input checked="" type="checkbox"/>	ESO Spectrum Service	http://archive.eso.org/apsi/

If you scroll down the page, you will be able to select photometric services to query or even load your own spectra information from a file (section User's Data).



Once you commit the query, VOSED will ask different services to gather information about the object you entered. If a object name is provided, it consults SIMBAD to obtain general information about the object and its names. If enough photometry is found, the physical parameters of the object are automatically computed.

The image shows the 'SED Building Tool: Results' page. At the top, there are logos for SVO, VOSED, and funding agencies (astrid, Ministerio de Educación y Ciencia, INTA). Below the header is a table with 'Resolved Object' and 'Equivalent Names'.

Resolved Object		Equivalent Names			
Search Name	hd1.41569	HD 141569	BD-03 3833	CCDM J15500-0355A	CSI-03 3833.1
SIMBAD Name	hd1.41569	EM* CDS 887	GC 21274	GS C 05026-00042	HD 141569A
Type	pr*	HIC 77542	HIP 77542	IDS 15447-0337 A	IRAS 15473-0346
RA	237.49066	2MASS J15495775-0355162	PDS 398	PPM 198989	PSCz P15473-0346
DEC	-3.92116	SAO 1.40789	SKY# 28618	TD1 18598	TYC 5026-42-1
		uvby98 100141569 ABC	WDS J15500-0355A	YZ 93 5502	[DML87]382

Below the table is a section 'Products found matching your criteria' with a list of products and their counts. To the right is a table 'Stellar Physical Parameters' with columns for 'Calculated' and 'Adopted', each with 'Value' and 'Error' sub-columns.

	Calculated		Adopted	
	Value	Error	Value	Error
T_{eff} (IR)	8227	131	10206	
T_{eff} (Strömgren)	10206			
log g	4.07		4.0700	
M/H				
E(B-V)	0.0	0.0	0.0	0.0
Flags	021122			
Strömgren Dist. (pc)	168.2			
χ^2	0.059			

At the bottom, there are buttons for 'Display SED', 'Retrieve Marked Data', and 'Display Photometry'.

Then, spectra services are asked to obtain the available observations of the object and the found photometry is also gathered. All this information is presented in the results page.

ESO Spectrum Service ^

SSAP query: <http://archive.eso.org/apps/ssaserver/EsoProxySap?POS=237.4906609,-3.92115959&SIZE=0.001388888889&REQUEST=queryData>

Mark	Error	Title	Data link	RA (deg)	DEC (deg)	Coords (deg)
<input type="checkbox"/>	Not calibrated flux axis. Data not included in the SED.	UV_SFLX_190941_2005-03-25T08:42:33.383_BLUE437bl_1x1_04.fits	File	237.490594	-3.92121	237.490594 -3.92121

Far Ultraviolet Spectroscopic Explorer ^

SSAP query: <http://archive.stsci.edu/ssap/search2.php?id=FUSE&POS=237.4906609,-3.92115959&SIZE=0.001388888889&REQUEST=queryData>

Mark	Title	Data link	RA (deg)	DEC (deg)	Coords (deg)	Wave start (angstrom)	Wave stop (a
<input type="checkbox"/>	q31901010000wo4ttagfcal, HD141569	File	237.490417	-3.92111		900,000	1190.0

INES: The IUE Newly Extracted Spectra ^

SSAP query: <http://sdc.cab.inta-csic.es/ines/jsp/ssap.jsp?POS=237.4906609,-3.92115959&SIZE=0.001388888889&REQUEST=queryData>

Mark	Title	Data link	RA (deg)	DEC (deg)	Wave start (Angstrom)	Wave stop (Angstrom)
<input type="checkbox"/>	IUE/INES Spectrum: LWP12988RL, Target: HD 141569 A	File	237.4904	-3.921	1850	3350
<input type="checkbox"/>	IUE/INES Spectrum: LWP12988HL, Target: HD 141569 A	File	237.4904	-3.921	1850	3350
<input type="checkbox"/>	IUE/INES Spectrum: LWP20658RL, Target: HD 141569 A	File	237.4903	-3.9207	1850	3350
<input type="checkbox"/>	IUE/INES Spectrum: LWP20658HL, Target: HD 141569 A	File	237.4903	-3.9207	1850	3350
<input type="checkbox"/>	IUE/INES Spectrum: LWP30407RL, Target: HD 141569 A	File	237.4904	-3.9218	1850	3350
<input type="checkbox"/>	IUE/INES Spectrum: LWP30407HL, Target: HD 141569 A	File	237.4904	-3.9218	1850	3350
<input type="checkbox"/>	IUE/INES Spectrum: LWP30408LL, Target: HD 141569 A	File	237.4904	-3.9218	1850	3350
<input type="checkbox"/>	IUE/INES Spectrum: SWP32211LL, Target: HD 141569 A	File	237.4904	-3.921	1150	1980
<input type="checkbox"/>	IUE/INES Spectrum: SWP5430LL, Target: HD 141569 A	File	237.4904	-3.9218	1150	1980

The ISO Data Archive InterOperability System ^

SSAP query: <http://archives.esac.esa.int/ida/aij/sp/siap.jsp?imageType=spectrum&POS=237.4906609,-3.92115959&SIZE=0.001388888889>

Mark	Title	Data link	RA	DEC	Time start	Time stop
<input type="checkbox"/>	ISO PHT40 Spectrum Target: HD141569	File	237.49050000000003	-3.9213	1997-08-04 09:02:39.249	1997-08-04 09:06:35.249
<input type="checkbox"/>	ISO LWS01 Spectrum Target: HD 141569	File	237.490005	-3.92125	1997-08-04 08:01:27.249	1997-08-04 08:38:35.249
<input type="checkbox"/>	ISO SWS01 Spectrum Target: HD 141569	File	237.48999	-3.92125	1997-08-05 05:40:44.249	1997-08-05 06:12:36.249

Tycho2 ^

Mark	distance (arcmin)	(arcmin)	_RAJ2000 (deg)	_DEJ2000 (deg)	_r (deg)	TYC1	TYC2	TYC3	pmRA (mas/yr)	pmDE (mas/yr)
<input checked="" type="checkbox"/>	0.00384		237.490619	-3.921208	0.000001	5026	42	1	-18.3	-20.5

Stromgren ^

Mark	distance (arcmin)	(arcmin)	_RAJ2000 (deg)	_DEJ2000 (deg)	_r (deg)	LID	m_LID	Vmag (mag)	e_Vmag (mag)
<input checked="" type="checkbox"/>	0.04070		237.490	-3.921	0.0009	0100141569	ABC	7.152	0.028

2MASS (PSC) ^

Mark	distance (arcmin)	(arcmin)	_RAJ2000 (deg)	_DEJ2000 (deg)	_r (deg)	RAJ2000 (deg)	DEJ2000 (deg)	2MASS
<input checked="" type="checkbox"/>	0.00116		237.490646	-03.921172	0.000019	237.490646	-03.921172	15495775-0355162

Akari/IRC ^

Mark	distance (arcmin)	(arcmin)	_RAJ2000 (deg)	_DEJ2000 (deg)	_r (deg)	S09 (Jy)	e_S09 (Jy)	q_S09	S18 (Jy)	e_S18 (Jy)
<input checked="" type="checkbox"/>	0.00784		237.49054	-03.92121	0.000131	5.178e-01	1.04e-02	3	8.655e-01	1.08e-02

IRAS PSC ^

Mark	distance (arcmin)	(arcmin)	_RAJ2000 (deg)	_DEJ2000 (deg)	_r (deg)	IRAS	RA1950 ("h:m:s")	DE1950 ("d:m:s")	Flux
<input checked="" type="checkbox"/>	0.02770		237.4902	-3.9212	0.00044	15473-0346	15 47 20.1	-03 46 13	5

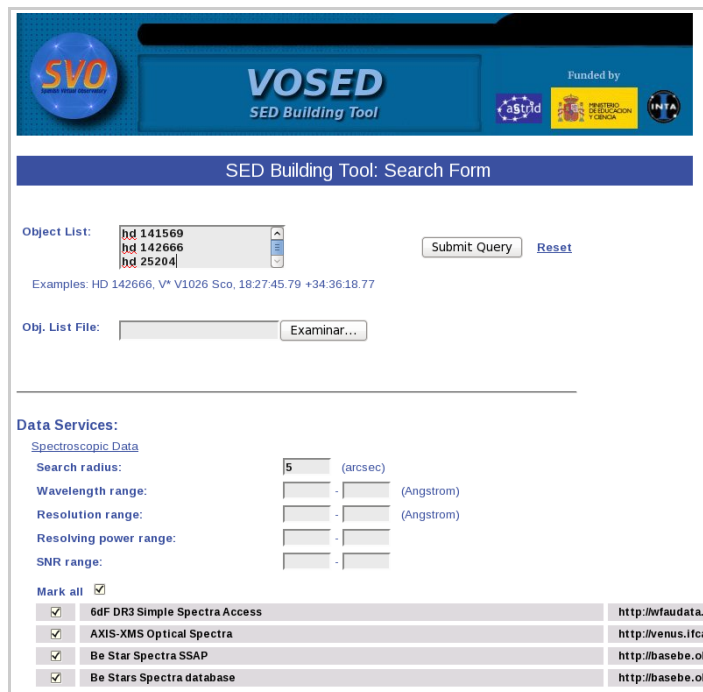
IRAS FSC ^

Mark	distance (arcmin)	(arcmin)	_RAJ2000 (deg)	_DEJ2000 (deg)	_r (deg)	IRAS	RA1950 ("h:m:s")	DE1950 ("d:m:s")	Flux
<input checked="" type="checkbox"/>	0.09815		237.4923	-3.9212	0.00165	F15473-0346	15 47 20.6	-03 46 13	5

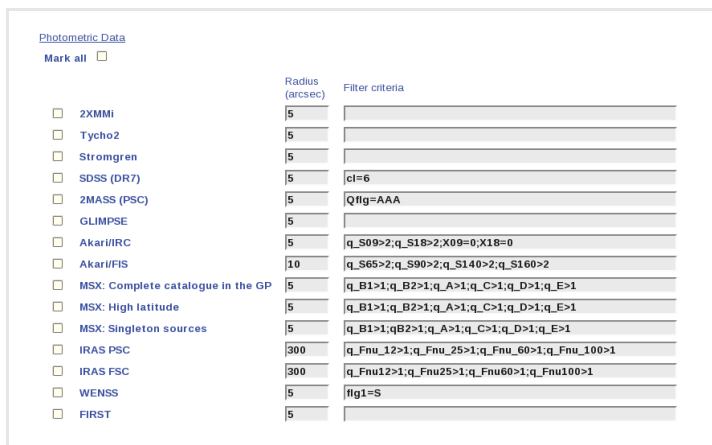
All the data products may be marked to form part of the SED. Once they have been selected, the SED can be sent to VOSpec or downloaded.

2.2. Multiple object mode

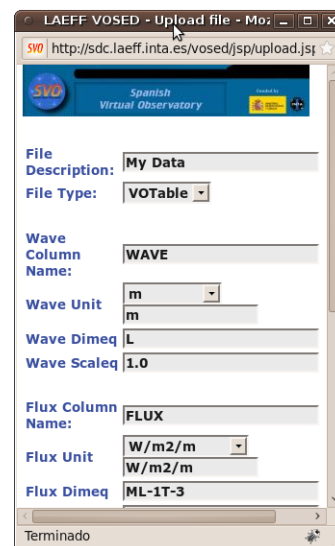
In the [VOSED main page](#), select "Multiple object search". The search form for multiple objects appears. You may enter a list of object names or coordinates in two ways: writing them directly in the "Object List" box or loading a text file with the information (the format of this text file will be explained in section 4). Then select the spectra services to query. VOSED gives a list of the services registered in the EURO-VO Registry. Those services not working are presented in red color and deactivated.



If you scroll down the page, you will be able to select photometric services to query or even load your own spectra information from a file (section User's Data).



	Radius (arcsec)	Filter criteria
<input type="checkbox"/> 2XMMI	5	
<input type="checkbox"/> Tycho2	5	
<input type="checkbox"/> Stromgren	5	
<input type="checkbox"/> SDSS (DR7)	5	cl=6
<input type="checkbox"/> 2MASS (PSC)	5	Qflg=AAA
<input type="checkbox"/> GLIMPSE	5	
<input type="checkbox"/> Akari/IRC	5	q_S09>2;q_S18>2;X09=0;X18=0
<input type="checkbox"/> Akari/FIS	10	q_S65>2;q_S90>2;q_S140>2;q_S160>2
<input type="checkbox"/> MSX: Complete catalogue in the GP	5	q_B1>1;q_B2>1;q_A>1;q_C>1;q_D>1;q_E>1
<input type="checkbox"/> MSX: High latitude	5	q_B1>1;q_B2>1;q_A>1;q_C>1;q_D>1;q_E>1
<input type="checkbox"/> MSX: Singleton sources	5	q_B1>1;q_B2>1;q_A>1;q_C>1;q_D>1;q_E>1
<input type="checkbox"/> IRAS PSC	300	q_Fnu_12>1;q_Fnu_25>1;q_Fnu_60>1;q_Fnu_100>1
<input type="checkbox"/> IRAS FSC	300	q_Fnu12>1;q_Fnu25>1;q_Fnu60>1;q_Fnu100>1
<input type="checkbox"/> WENSS	5	flg1=S
<input type="checkbox"/> FIRST	5	



Once the query is committed, VOSSED will ask different services to gather information about the object you entered. If a object name is provided, it consults SIMBAD to obtain general information about the object and its names. If enough photometry is found, the physical parameters of the object are automatically computed.

3. Single Object Mode

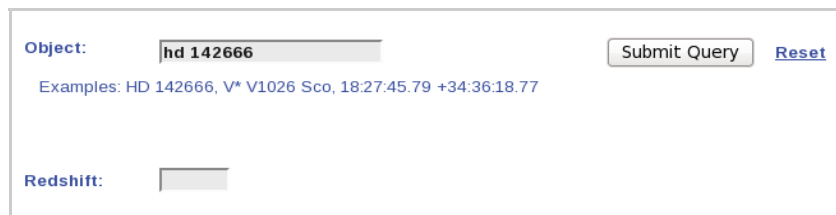
3.1. Input Form

Input form is divided into three main blocks:

- Object search parameters
- Data services
- Users data

3.1.1. Object search parameters

In this block, the object name or coordinates have to be provided. If object name is given, a automatic resolution is performed to obtain its coordinates and associated information. Most of the coordinates formats are accepted in case the coordinates are provided.



The screenshot shows a web form for object search. It features an 'Object:' label followed by a text input field containing 'hd 142666'. To the right of the input field are two buttons: 'Submit Query' and 'Reset'. Below the input field, there is a line of text providing examples: 'Examples: HD 142666, V* V1026 Sco, 18:27:45.79 +34:36:18.77'. At the bottom of the form, there is a 'Redshift:' label followed by an empty text input field.

Fig 1: Object search parameters.

A redshift may be given for the object. If redshift is given, the generated spectrum is automatically corrected.

3.1.2. Data Services

In this section the VO data sources that VOSED will ask are specified. Two main data sources are queried: VO spectra services and photometry services.

EURO-VO Registry is queried to obtain all the registered SSA services. The result is listed and a checkbox may be marked or unmarked to select the services to be queried. VOSED performs a service verification and failing services are marked in red and deactivated.

In the spectra section some parameters may be specified to tune the query. A search radius is necessary as the query to the services is based on coordinates. By default, a radius of 5 arcsec is given. The output of the services may be filtered by wavelength, resolution, resolving power and SNR.

Data Services:

[Spectroscopic Data](#)

Search radius: (arcsec)

Wavelength range: - (Angstrom)

Resolution range: - (Angstrom)

Resolving power range: -

SNR range: -

Mark all

<input checked="" type="checkbox"/>	6dF DR3 Simple Spectra Access
<input checked="" type="checkbox"/>	AXIS-XMS Optical Spectra
<input checked="" type="checkbox"/>	Be Star Spectra SSAP
<input checked="" type="checkbox"/>	Be Stars Spectra database
<input checked="" type="checkbox"/>	CENCOS-VVDS_DEEP SSA (VVDS Deep survey)
<input type="checkbox"/>	ELODIE archive (Service not working)
<input checked="" type="checkbox"/>	ESO Spectrum Service

Fig 2: Some of the found spectral services. Failing services in red.

A selection of photometry catalogs from VizieR are available to be consulted. The catalogs are queried independently and, for each of them, a different search radius may be specified. There is also the possibility to filter the photometric results by specifying criteria over their data columns. Default criteria are predefined for some of the catalogs. More information about the photometry catalogs available in VOSED may be found in “Appendix A”.

[Photometric Data](#)

Mark all

	Radius (arcsec)	Filter criteria
<input type="checkbox"/> 2XMMI	5	
<input type="checkbox"/> Tycho2	5	
<input type="checkbox"/> Stromgren	5	
<input type="checkbox"/> SDSS (DR7)	5	cl=6
<input type="checkbox"/> 2MASS (PSC)	5	Qflg=AAA
<input type="checkbox"/> GLIMPSE	5	
<input type="checkbox"/> Akari/IRC	5	q_S09>2;q_S18>2;X09=0;X18=0
<input type="checkbox"/> Akari/FIS	10	q_S65>2;q_S90>2;q_S140>2;q_S160>2
<input type="checkbox"/> MSX: Complete catalogue in the GP	5	q_B1>1;q_B2>1;q_A>1;q_C>1;q_D>1;q_E>1
<input type="checkbox"/> MSX: High latitude	5	q_B1>1;q_B2>1;q_A>1;q_C>1;q_D>1;q_E>1
<input type="checkbox"/> MSX: Singleton sources	5	q_B1>1;q_B2>1;q_A>1;q_C>1;q_D>1;q_E>1
<input type="checkbox"/> IRAS PSC	300	q_Fnu_12>1;q_Fnu_25>1;q_Fnu_60>1;q_Fnu_100>1
<input type="checkbox"/> IRAS FSC	300	q_Fnu12>1;q_Fnu25>1;q_Fnu60>1;q_Fnu100>1
<input type="checkbox"/> WENSS	5	flg1=S
<input type="checkbox"/> FIRST	5	

Fig 3: Available photometric catalogs. A search radius and filtering criteria may be specified independently.

3.1.3. User's Data

User may add custom data to be added to those found in the spectra services and photometric catalogs. To do so, push the “Load Local Data” dialog. A new window will appear to load a local file. The format of the file may be VOTable or ASCII. You only have to provide information about the columns corresponding to wavelength, flux and, optionally, flux error. Several options are available for units but you may specify your own if not listed between the predefined ones.

Fig 4: Load Local Data dialog.

Once the characteristics of the data are set, you may upload them and they will be used to build the final SED.

3.2. Output page

The output page is structured in two main blocks:

- General information.
- Found data and user's data details.

3.2.1. Object information

In the top of the results page, VOSED shows general information about the object. This information is divided into four blocks:

- **Object name resolution:** if a object name has been provided, VOSED performs a name resolution and shows information about its coordinates, object type (from SIMBAD) and equivalent names. If coordinates have been provided, this information is not available.

Resolved Object		Equivalent Names			
Search Name	hd 141569	HD 141569	BD-03 3833	CCDM J15500-0355A	CSI-03 3833 1
SIMBAD Name	hd 141569	EM* CDS 887	GC 21274	GSC 05026-00042	HD 141569A
Type	pr*	HIC 77542	HIP 77542	IDS 15447-0337 A	IRAS 15473-0346
RA	237.49062	2MASS J15495775-0355162	PDS 398	PPM 198989	SAO 140789
DEC	-3.92121	SKY# 28618	TD1 18598	TYC 5026-42-1	uvby98 100141569 ABC
		YZ 93 5502	[DML87] 382		

Fig 5: Object information.

- **Data available to build the SED:** a summary of the found data for the object is shown, containing information about the number of spectra available, the found photometry and, if it is the case, the uploaded user's data.

Products found matching your criteria	
POS = 237.49062 , -3.921211 SIZE = 0.001389	
INES: The IUE Newly Extracted Spectra	9
Infrared Space Observatory Simple Spectrum Data Access	3
ESO Science Archive Spectrum Service	3
Far Ultraviolet Spectroscopic Explorer	1
Stromgren photometry	1
2MASS (PSC) photometry	1
Tycho2 photometry	1
IRAS PSC photometry	1

Fig 6: Found data summary.

- **Stellar physical parameters:** if enough photometry is available, VOSED is able to perform a automatic stellar physical parameters calculation.

Stellar Physical Parameters				
	Calculated		Adopted	
	Value	Error	Value	Error
T _{eff} (IR)	8227	131	10206	
T _{eff} (Strömgren)	10206			
log g	4.07		4.070000	
M/H				
E(B-V)	0.0	0.0	0.0	0.0
Flags	021122			
Strömgren Dist. (pc)	168.2			
Chi ²	0.059			

Fig 7: Stellar physical parameters section.

3.2.2. Data details

Scrolling down the page, the detailed information of the found data is presented. Information about failing services is also provided.

Each data product (spectrum, photometry or user's data) has a checkbox that may be selected or deselected. The selected product will be used to be part of the generated SED.

3.3. Working with the SED

Having selected the desired products, the SED may be build and used. To download the generated SED, the “Retrieve Marked Data” button has to be clicked. A download dialog appears.

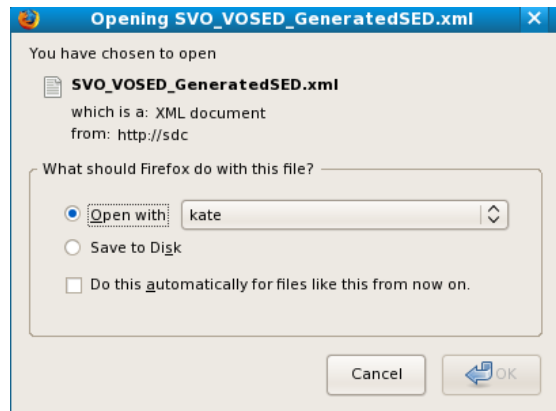


Fig 8: Download dialog

The generated SED may also be sent to VOSpec for visualization and analysis. To do so, the “Display SED” button has to be clicked. VOSpec is launched and the SED is available for use.

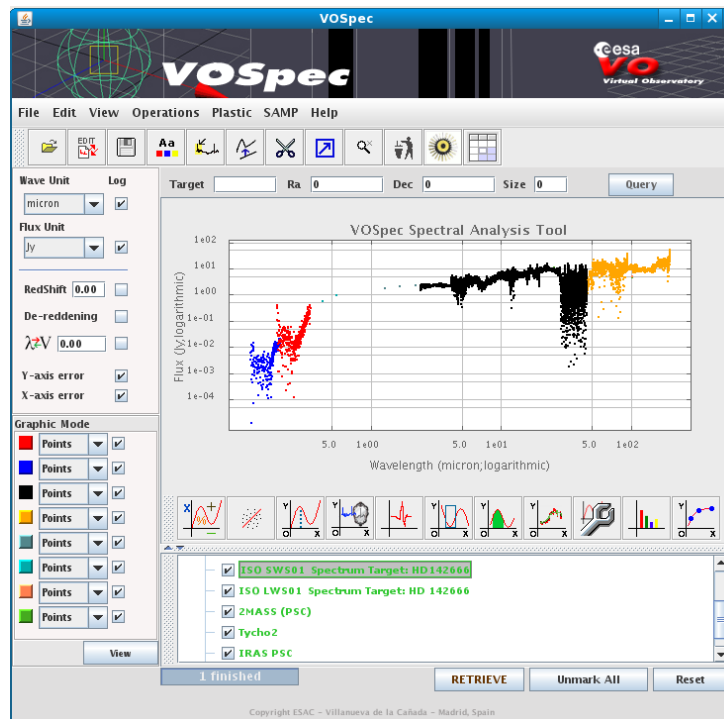


Fig 9: Generated SED loaded into VOSpec.

Note that, in order to display the loaded SED, you have to select it and push “RETRIEVE” in VOSpec.

It is also possible to analyze the photometry information by representing the obtained photometry over an image. To do so, the “Display photometry” option may be used. Aladin is opened and the photometry is represented over a 2MASS (J) image. A circle is drawn to represent the biggest search radius used for photometric catalogs.

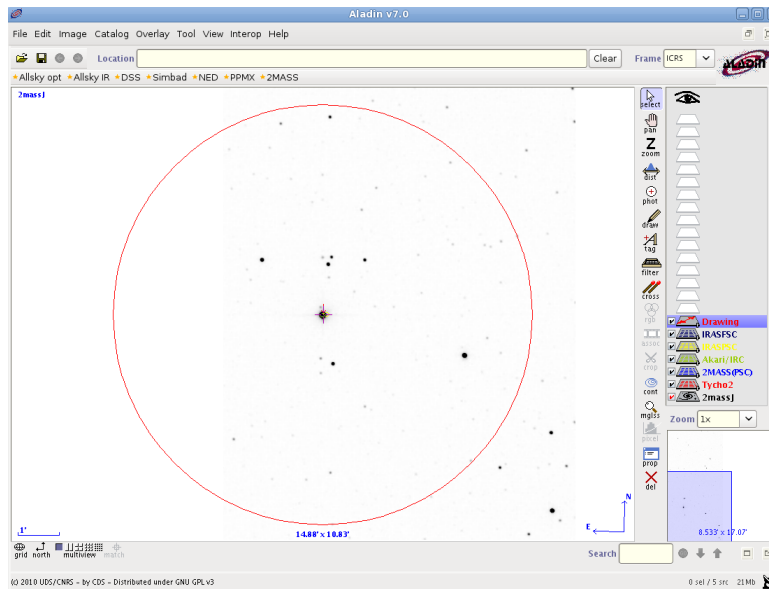


Fig 10: Photometry representation over a 2MASS J image.

4. Multiple Object Mode

VOSED may be used to build automatically the SEDs of a list of objects. In this section the procedure will be described.

4.1. Input Form

Input form is divided into two main blocks:

- Objects search parameters
- Data services

4.1.1. Object search parameters

A text area is available to enter a list of objects. The object name or coordinates have to be provided, one in each row. If object name is given, a automatic resolution is performed to obtain its coordinates and associated information. Most of the coordinates formats are accepted in case the coordinates are provided.

An ASCII file may be uploaded containing the list of objects. If it is the case, the redshift may

be specified for each object in the list. Specifying a redshift will make the system perform a redshift correction in the corresponding SED. The format of this file is explained in “Appendix B”.

A search radius is necessary as VO queries are based on regions of the sky. A radius of 5 arcsec is given by default. A redshift may be given for the object. If redshift is given, the generated spectrum is automatically corrected.

Fig 11: Multiple object search parameters

4.1.2. Data Services

In this section the VO data sources that VOSED will ask are specified. Two main data sources are queried: VO spectra services and photometry services.

EURO-VO Registry is queried to obtain all the registered SSA services. The result is listed and a checkbox may be marked or unmarked to select the services to be queried. VOSED performs a service verification and failing services are marked in red and deactivated.

In the spectra section some parameters may be specified to tune the query. A search radius is necessary as the query to the services is based on coordinates. By default, a radius of 5 arcsec is given. The output of the services may be filtered by wavelength, resolution, resolving power and SNR.

Fig 12: Some of the found spectral services. Failing services in red.

A selection of photometry catalogs from VizieR are available to be consulted. The catalogs are queried independently and, for each of them, a different search radius may be specified. There is also the possibility to filter the photometric results by specifying criteria over their

data columns. Default criteria are predefined for some of the catalogs. More information about the photometry catalogs available in VOSED may be found in “Apendix A”.

	Radius (arcsec)	Filter criteria
<input type="checkbox"/> 2XMMi	5	
<input type="checkbox"/> Tycho2	5	
<input type="checkbox"/> Stromgren	5	
<input type="checkbox"/> SDSS (DR7)	5	cl=6
<input type="checkbox"/> 2MASS (PSC)	5	Qflg=AAA
<input type="checkbox"/> GLIMPSE	5	
<input type="checkbox"/> Akari/IRC	5	q_S09>2;q_S18>2;X09=0;X18=0
<input type="checkbox"/> Akari/FIS	10	q_S65>2;q_S90>2;q_S140>2;q_S160>2
<input type="checkbox"/> MSX: Complete catalogue in the GP	5	q_B1>1;q_B2>1;q_A>1;q_C>1;q_D>1;q_E>1
<input type="checkbox"/> MSX: High latitude	5	q_B1>1;q_B2>1;q_A>1;q_C>1;q_D>1;q_E>1
<input type="checkbox"/> MSX: Singleton sources	5	q_B1>1;q_B2>1;q_A>1;q_C>1;q_D>1;q_E>1
<input type="checkbox"/> IRAS PSC	300	q_Fnu_12>1;q_Fnu_25>1;q_Fnu_60>1;q_Fnu_100>1
<input type="checkbox"/> IRAS FSC	300	q_Fnu12>1;q_Fnu25>1;q_Fnu60>1;q_Fnu100>1
<input type="checkbox"/> WENSS	5	flg1=S
<input type="checkbox"/> FIRST	5	

Fig 13: Available photometric catalogs. A search radius and filtering criteria may be specified independently.

4.2. Process Monitoring Page

The multiple object searches may take a long time, depending on the number of objects and the amount of services to consult.

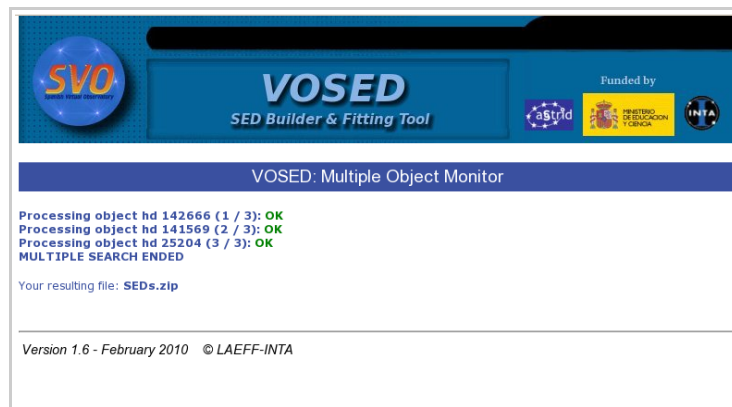


Fig 14: Process monitoring page

Once VOSED has finished building the SEDs for every object in the list, a link to a ZIP file containing the results is provided.

4.3. Output File

The content of the file generated by VOSED in the multiple object mode comprises:

- A VOTable file for each SED that VOSED has been able to construct automatically. The name of each SED file starts with “SED__” followed by the object name or coordinates plus the suffix “.xml”. White spaces in the object name are replaced by “_” character.

- A text file called “SEDGenerationLog_dataFound.txt” where details about the found data for each object are shown. Failing services and the returned error are also registered.
- A text file called “SEDGenerationLog_dataNotFound.txt”, where the information about the objects for which no data has been found is registered. If any error has been returned, it is also registered.

Appendix A: Photometry services

VOSED is able to query several photometric services from Vizier to complement the information obtained from the VO spectra services. Currently, the services VOSSED is able to query are:

Catalog	VizieR code
2XMMi	IX/40/xmm2is
Tycho 2	I/259
Strömgren	II/215
SDSS (DR7)	II/294
2Mass (PSC)	II/246
GLIMPSE	II/293
Akari/IRC	II/297
Akari/FIS	II/298
MSX: Complete catalogue in the GP	V/114
MSX: High latitude	V/114
MSX: Singleton sources	V/114
IRAS PSC	II/125
IRAS FSC	II/156A
WENSS	VIII/62
FIRST	VIII/71

Appendix B: Multiple object input file format

The input list of objects for the multiple object mode of VOSSED may be provided in a ASCII file. Each line of this file corresponds to one object, following the next format:

```
name_or_coordinates [ | redshift ]
```

An example of a typical file would be:

hd 142666
hd 24204 | 0.000059
vega | -0.000046
15 49 57.7489 -03 55 16.360
150.69983 1.09454 | 0.000033