

Nuevo Observatorio Virtual Argentino



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CONICET



2do. Taller de Herramientas para Observatorios Virtuales
Argentina - 20 de Noviembre del 2013

Tercer Charla NOVA

- Visualizando Espectros en NOVA
- Cómo subir datos a NOVA
- El futuro de NOVA

Ahora vamos a ver...



Protocolos

SSAP

Espectros

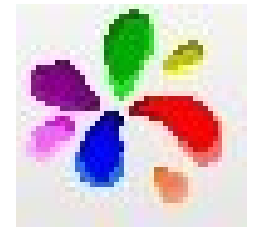
Software



Web-Online



TOPCAT



Splat-VO

Access to NOVA's Data Center

To access NOVA information online just select the  or  icon of the Resource of interest or access using an Astronomical Software (recommended). Check out the section: [Supported Astronomical Software](#)

ICATE Multispectral observations Online

ICATE Multispectral observations SSAP

The spectroscopic data available at ICATE, represents 45 years of observations, including photographic plates and digital detectors. This information will be offered to national and international users, very useful for all kind of studies, specially on spectral variations along time. Nowadays the 1987 Data Base is stored in CD's and DVD's with a limited lifetime. Before this date the information is stored in photographic plates which endangers its conservation. The preservation of this material is urgently needed, to avoid any possibility of loosing it. The project foresees to give the information to all the national and international astronomic community.

ICATE spectroscopic observations Online

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Very Large Array (VLA) Observations at IAFE

These are the VLA observations produced by researchers at the Argentine Institute for Astronomy and Space Physics (IAFE). The Very Large Array (VLA) has been an extraordinarily productive scientific instrument. Astronomers from around the World use it to study a wide variety of objects, from our solar system up to the edges of the known Universe, billions of light-years from the Earth.

VV Survey Data for Tile B214

Band merged JHKs catalogue for first epoch data from CASU v1.3

VV Survey Data for Tile B228

Band merged JHKs catalogue for first epoch data from CASU v1.3

VV Survey Data for Tile B242

Band merged JHKs catalogue for first epoch data from CASU v1.3

VV Survey Data for Tile B253



TOPCAT

SAMP

TOPCAT

Graphics Joins Windows VO Interop Help

TOPCAT(1): Table Browser

Table Li
1: NOVA

File Subsets Help

Table Browser for 1: NOVA result

	accref	owner	embargo	mime	acssize	ssa dstyle	ssa cr...
1	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc04	M
2	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc13	M
3	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc09	M
4	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc17	M
5	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc14	M
6	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc08	M
7	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc19	M
8	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc02	M
9	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc01	M
10	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc18	M
11	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc06	M
12	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc10	M
13	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc11	M
14	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc05	M
15	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc12	M
16	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc07	M
17	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc16	M

SAMP

Messages:

Clients:

71 / 859 M

The screenshot displays the TOPCAT software interface. The title bar shows the application name 'TOPCAT'. The menu bar includes 'Menu', 'Views', 'Graphics', 'Joins', 'Windows', 'VO', 'Interop', and 'Help'. The toolbar contains various icons for file operations, data manipulation, and visualization. The main window is divided into two panes: 'Table List' and 'Current Table Properties'.

Table List:

- 1: SSA

Current Table Properties:

- Label: SSA
- Location: SSA
- Name: result
- Rows: 6
- Columns: 23
- Sort Order: ↑
- Row Subset: All
- Activation Action: (no action)
- Broadcast Row:

The screenshot shows the TOPCAT software interface. On the left, the 'Table List' pane shows a table named '1: NOVA result'. The main window displays the 'Current Table Properties' for this table. A dialog box titled 'Set Activation Action' is open, allowing the user to configure the action for a specific column. The dialog has three radio button options: 'No Action', 'Display Cutout Image', and 'View URL as Spectrum'. The 'View URL as Spectrum' option is selected. The configuration for this option includes:

- Cutout Service:** SuperCOSMOS All-Sky Blue
- RA column:** (empty) degrees
- Dec column:** (empty) degrees
- Width/Height in Pixels:** 100 (0.67 arcsec)
- Image Location column:** (empty)
- Image Format:** FITS
- Image Viewer:** Basic viewer (internal)
- Spectrum Location column:** accref
- Spectrum Viewer:** splat

A red rectangular box highlights the 'View URL as Spectrum' radio button and the 'Spectrum Location column' and 'Spectrum Viewer' settings.



TOPCAT

TOPCAT

Physics Joins Windows VO Interop Help

TOPCAT(1): Table Browser

Table Li
1: NOVA

File Subsets Help

Table Browser for 1: NOVA result

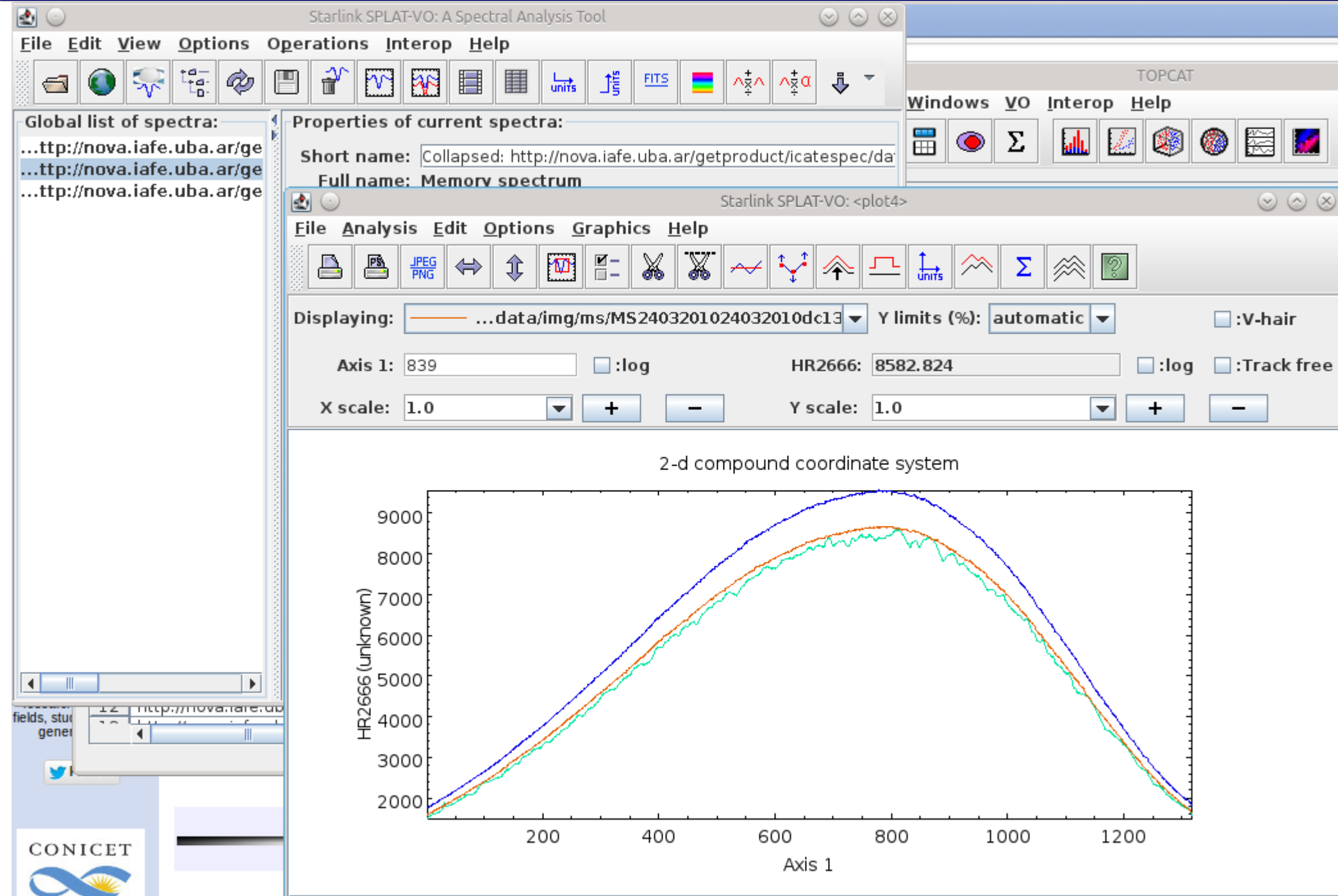
	accref	owner	embargo	mime	accsize	ssa dstitle	ssa cr...
1	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc04	M
2	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc13	M
3	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc09	M
4	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc17	M
5	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc14	M
6	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc08	M
7	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc19	M
8	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc02	M
9	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc01	M
10	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc18	M
11	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc06	M
12	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc10	M
13	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc11	M
14	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc05	M
15	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc12	M
16	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc07	M
17	http://nova.iafe.uba.ar/getproduct/icatespec/...			image/fits	262080	MS2403201024032010dc16	M

71 / 859 M

SAMP

Messages:

Clients: NOVA



VO Tables

- Es un archivo XML que contiene información y datos del Recurso
- Formato Especificado por IVOA
- Se puede importar en varias herramientas

Nuevo Observatorio Virtual Argentino

Resources Home

VO Tools

NOVA is the Argentina's Virtual Observatory. It provides astronomical information online.

Astronomical Institutions of Argentina in NOVA

- CASLEO
- FCAGLP
- ICATE
- IAFE
- IALP
- IAR
- IATE
- OAC

This is public information and it could be used by astronomy researchers, researchers of other fields, students and the

researchers of other fields, students and the

[Resources](#) > [ICATE Multispectral observations Online](#) > Query

ICATE Multispectral observations Online

Object [\[?char expr.\]](#)

Common name of object observed.

Table Sort by Limit to items.

Output format

- HTML
- HTML
- FITS table
- Text (with Tabs)
- VOTable**
- tar

```
<VOTABLE version="1.2" xmlns="http://www.ivoa.net/xml/VOTable/v1.2"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.ivoa.net/xml/VOTable/v1.2
http://vo.ari.uni-heidelberg.de/docs/schemata/VOTable-1.2.xsd"
xmlns:ssa="http://www.ivoa.net/xml/DalSsap/v1.0"><DESCRIPTION> The spectroscopic data
available at ICATE, represents 45 years of
observations, including photographic plates and digital detectors.
This informa ...</DESCRIPTION><RESOURCE type="results"><DESCRIPTION> The spectroscopic
data available at ICATE ... </DESCRIPTION><INFO name="SERVICE_PROTOCOL"
value="1.04">SSAP</INFO><INFO name="QUERY_STATUS" value="OK"></INFO><TABLE
name="result"><GROUP utype="stc:CatalogEntryLocation"><PARAM arraysizes="*"
datatype="char" name="CoordFlavor" utype="stc:AstroCoordSystem.SpaceFrame.CoordFlavor"
value="SPHERICAL"/><PARAM arraysizes="*" datatype="char" name="CoordRefFrame"
utype="stc:AstroCoordSystem.SpaceFrame.CoordRefFrame" value="ICRS"/><PARAM
arraysizes="*" datatype="char" name="URI" utype="stc:DataModel.URI"
value="http://www.ivoa.net/xml/STC/stc-v1.30.xsd"/><FIELDref ref="location_ra"
utype="stc:AstroCoords.Position2D.Value2.C1"/><FIELDref ref="location_dec"
utype="stc:AstroCoords.Position2D.Value2.C2"/></GROUP><GROUP
utype="stc:CatalogEntryLocation"><PARAM arraysizes="*" datatype="char"
name="CoordFlavor" utype="stc:AstroCoordSystem.SpaceFrame.CoordFlavor"
value="SPHERICAL"/><PARAM arraysizes="*" datatype="char" name="CoordRefFrame"
utype="stc:AstroCoordSystem.SpaceFrame.CoordRefFrame" value="ICRS"/><PARAM
arraysizes="*" datatype="char" name="TimeScale"
utype="stc:AstroCoordSystem.TimeFrame.TimeScale" value="TT"/><PARAM arraysizes="*"
datatype="char" name="URI" utype="stc:DataModel.URI"
value="http://www.ivoa.net/xml/STC/stc-v1.30.xsd"/><FIELDref ref="ssa_specend"
utype="stc:AstroCoordArea.SpectralInterval.HiLimit"/><FIELDref ref="ssa_specstart"
utype="stc:AstroCoordArea.SpectralInterval.LoLimit"/><FIELDref ref="ssa_aperture"
utype="stc:AstroCoords.Position2D.Size2Radius"/><FIELDref ref="ssa_location"
utype="stc:AstroCoords.Position2D.Value2"/> .....
```



- Librería Python con funciones específicas para la Astronomía.
- Reune PyFITS, PyWCS, vo y asciitable

```
>>> from astropy.io import fits
>>> hdulist = fits.open('data.fits')

>>> from astropy import units as u
>>> from astropy import coordinates as coord
>>> coord.ICRSCoordinates(ra=10.68458, dec=41.26917,
unit=(u.degree, u.degree))
<ICRSCoordinates RA=10.68458 deg, Dec=41.26917 deg>
```

Más Información: <http://astropy.org>

Page Contents

VOTable XML handling
(astro.py.io.votable)

- Introduction
- Getting Started
 - Reading a VOTable file
 - Building a new table from scratch
 - Outputting a VOTable file
- Using **io.votable**
 - Standard compliance
 - Pedantic mode
 - Missing values
 - Datatype mappings
 - Examining field types
 - Converting to/from an **astro.py.table.Table**
 - Performance considerations
- See Also
- Reference/API
 - astro.py.io.votable Module
 - Functions
 - astro.py.io.votable.tree Module
 - Classes
 - astro.py.io.votable.converters Module
 - Functions
 - Classes
 - astro.py.io.votable.util Module

VOTable XML handling (astro.py.io.votable)

Introduction

The **astro.py.io.votable** subpackage converts VOTable XML files to and from Numpy record arrays.

Getting Started

Reading a VOTable file

To read in a VOTable file, pass a file path to **parse**:

```
from astro.py.io.votable import parse
votable = parse("votable.xml")
```

votable is a **VOTableFile** object, which can be used to retrieve and manipulate the data and save it back out to disk.

VOTable files are made up of nested RESOURCE elements, each of which may contain one or more TABLE elements.

The TABLE elements contain the arrays of data.

To get at the TABLE elements, one can write a loop over the resources in the VOTABLE file:

```
for resource in votable.resources:
    for table in resource.tables:
        # ... do something with the table ...
    pass
```

However, if the nested structure of the resources is not important, one can use **iter_tables** to return a flat list of all

Accediendo a Datos de NOVA con Aladin

- Aladin tiene varias formas de acceder a los datos de un OV



Server selector

Menu Others Allsky File all-VO Watch FoV... Tools...

Image servers

Aladin images SkyView UKIDSS Sloan DSS... VLA... Archives... Others...

VO discovery tool ?

Target (ICRS, name) m11 Grab coord

Radius 14'

Servers Images Catalogs Spectra Detailed list...

- UKIDSS
 - + K
- Multimission Archive at STScI (MAST)
 - + F547M
 - + Info frame
- + LEDA Hypercat
- Canadian Astronomical Data Center (CADC)
 - + 1420 cont
 - + F550M
 - + r.MP9601
 - + g.MP9401
 - + u.MP9301
- V0-Paris MAMA Atlas
 - + Bj (IIIa-J/GG395)
 - + R (103a-E/Red-Plex-24)
- Aladin
 - SERC
 - + V-DSS1
 - + ER-DSS2
 - + SR-DSS2
 - + SR-MAMA
 - + I-MAMA
 - 2MASS
 - + H
 - + J
 - + K
 - DENIS
 - + I
 - + J

Catalog servers

All vizieR Surveys Missions SIMBAD NED SkyBot Others..

Press it to stop the processing => Stop it

Reset Clear SUBMIT Close ?

NOVA está implementado utilizando el framework:

GAVO DaCHs

Desarrollado por Markus Demleitener

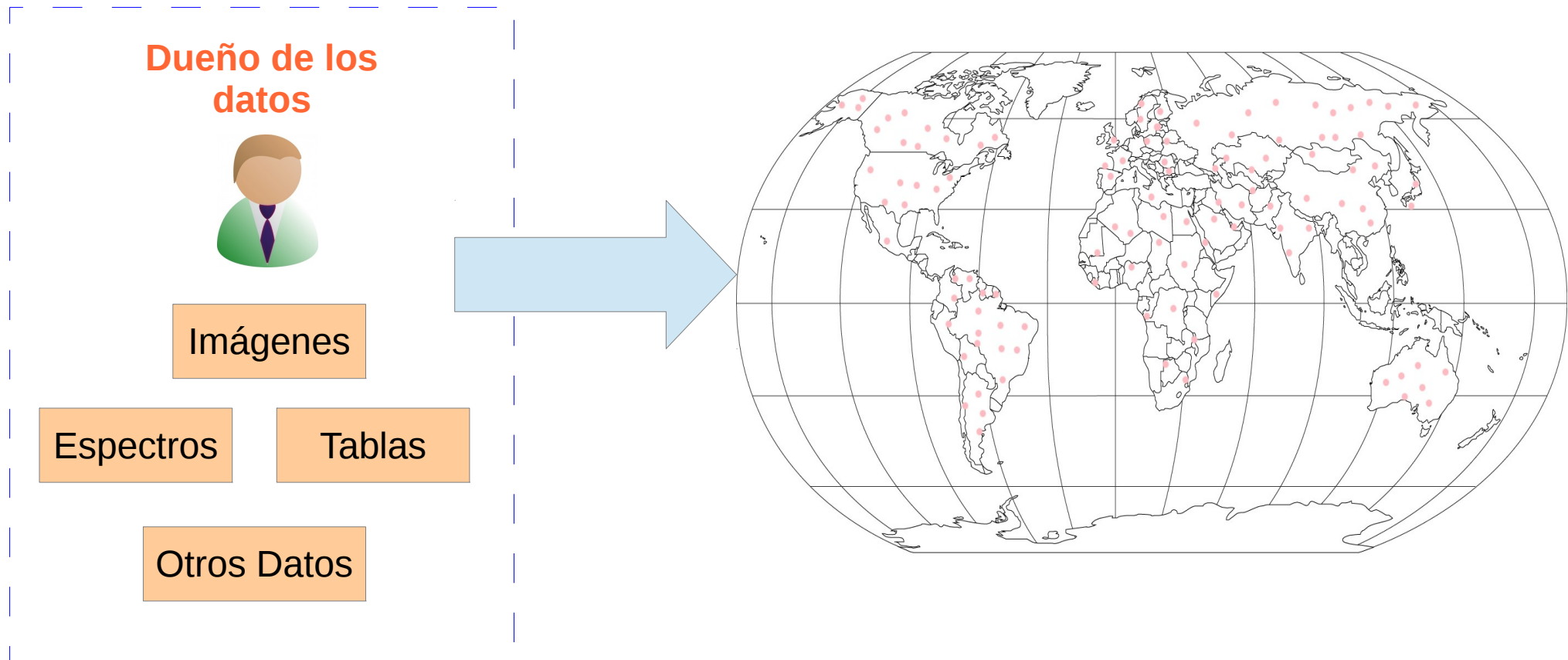
Ofrece un servidor Web, base de Datos, interfaz web y la implementación de protocolos para hacer posible la implementación de un Observatorio Virtual.

Utilizando las tecnologías:

- Python
- Base de Datos - PostgreSQL
- Astropy

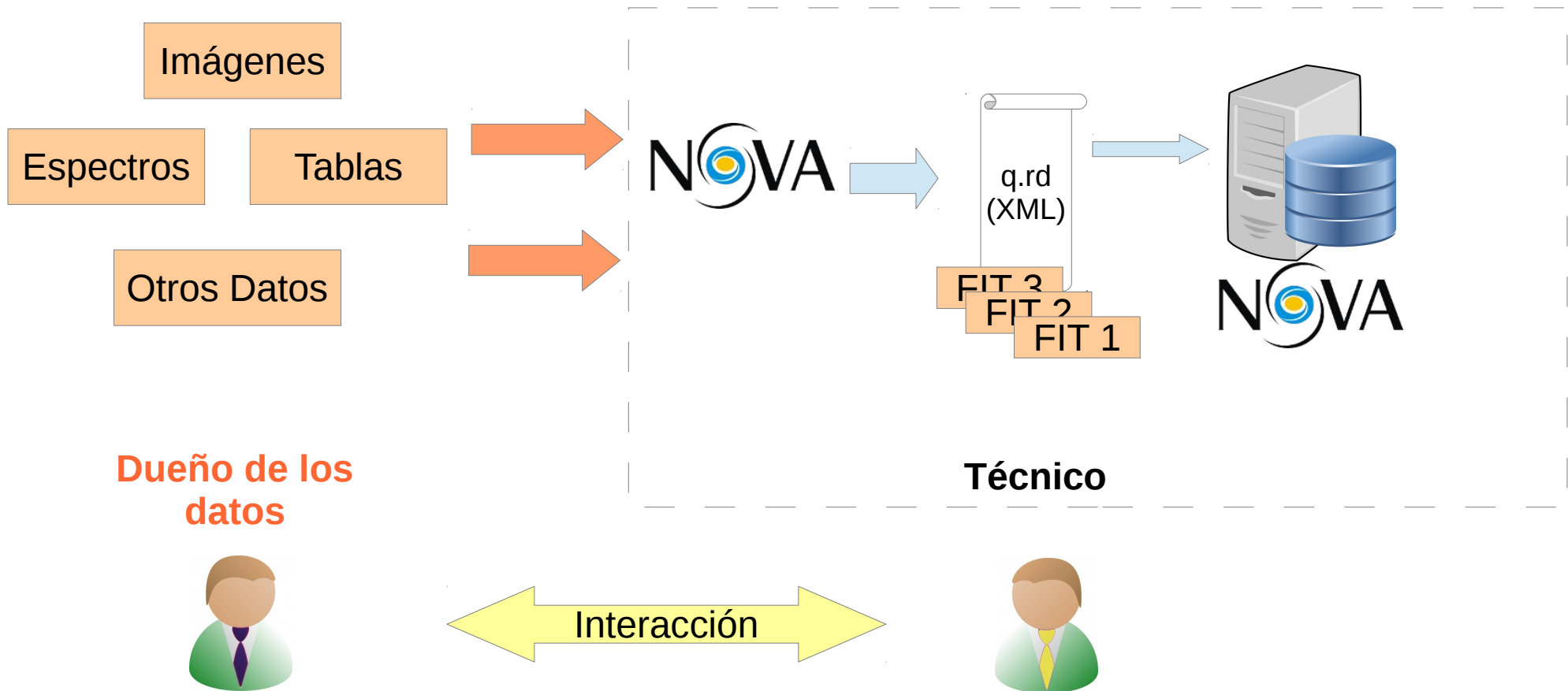
Permite implementar VO que cumplan con las especificaciones de IVOA





¿Qué tiene que hacer el dueño de los datos una vez que esté listo para compartir sus datos?

Esquema para la subida de Datos actual





Dueño de los datos

Suministra:

Título y Descripción del Recurso

ICATE Multispectral observations SSAP

The spectroscopic data available at ICATE, represents 45 years of observations, including photographic plates and digital detectors. This information will be offered to national and international users, very useful for all kind of studies, specially on spectral variations along time. Nowadays the 1987 Data Base is stored in CD`s and DVD`s with a limited lifetime. Before this date the information is stored in photographic plates which endangers its conservation. The preservation of this material is urgently needed, to avoid any possibility of loosing it. The project foresees to give the information to all the national and international astronomic community.

Parámetros de Búsqueda (opcional)

Columnas de los Datos (sólo para tablas)

Datos (archivos fits/csv)

```
<?xml version="1.0" encoding="ISO-8859-1"?><resource schema="vvvsurvey">
  <meta name="title">VVV Survey Data</meta>
  <meta name="creationDate">2013-10-08T14:00:00Z</meta>
  <meta name="copyright">Free to use</meta>
  <meta name="creator.name">Sebastian Gurovich</meta>

  <meta name="subject">Photometry Survey data</meta>

  <meta name="content.type">Survey</meta>
  <meta name="content.type">Catalog</meta>
```



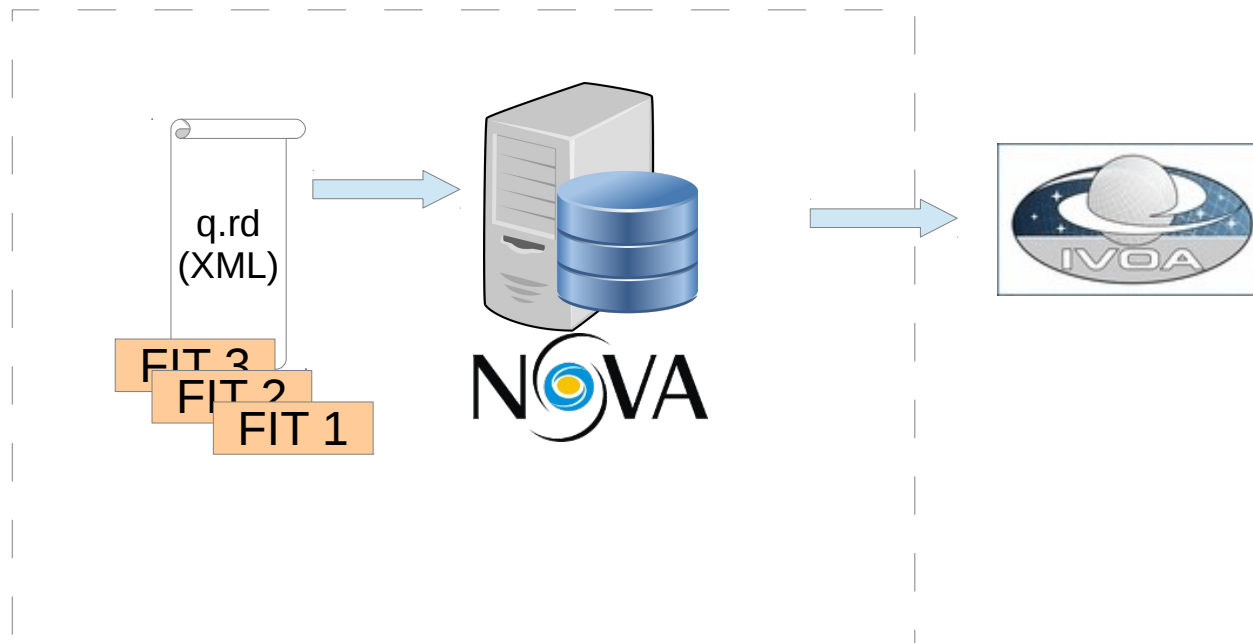
Dueño de los datos

Técnico

```
<table id="b253" onDisk="True" adql="True">
  <meta name="descripton">Data for b253</meta>
  <column name="ra_h" ucd="pos.eq.ra" unit="deg" description="J2000"/>
  <column name="dec_h" ucd="pos.eq.dec" unit="deg" description="J2000"/>
  <column name="ra_j" ucd="pos.eq.ra" unit="deg" description="J2000"/>
  <column name="dec_j" ucd="pos.eq.dec" unit="deg" description="J2000"/>
  <column name="ra_k" ucd="pos.eq.ra" unit="deg" description="J2000"/>
  <column name="dec_k" ucd="pos.eq.dec" unit="deg" description="J2000"/>
  <column name="mag_h" ucd="phot.mag" unit="mag" description="H-band mag"/>
  <column name="mag_j" ucd="phot.mag" unit="mag" description="J-band mag"/>
  <column name="mag_k" ucd="phot.mag" unit="mag" description="Ks-band mag"/>
  <column name="magerr_h" ucd="phot.mag" unit="mag" description="H-band mag"/>
  <column name="magerr_j" ucd="phot.mag" unit="mag" description="J-band mag"/>
  <column name="magerr_k" ucd="phot.mag" unit="mag" description="Ks-band mag"/>
```



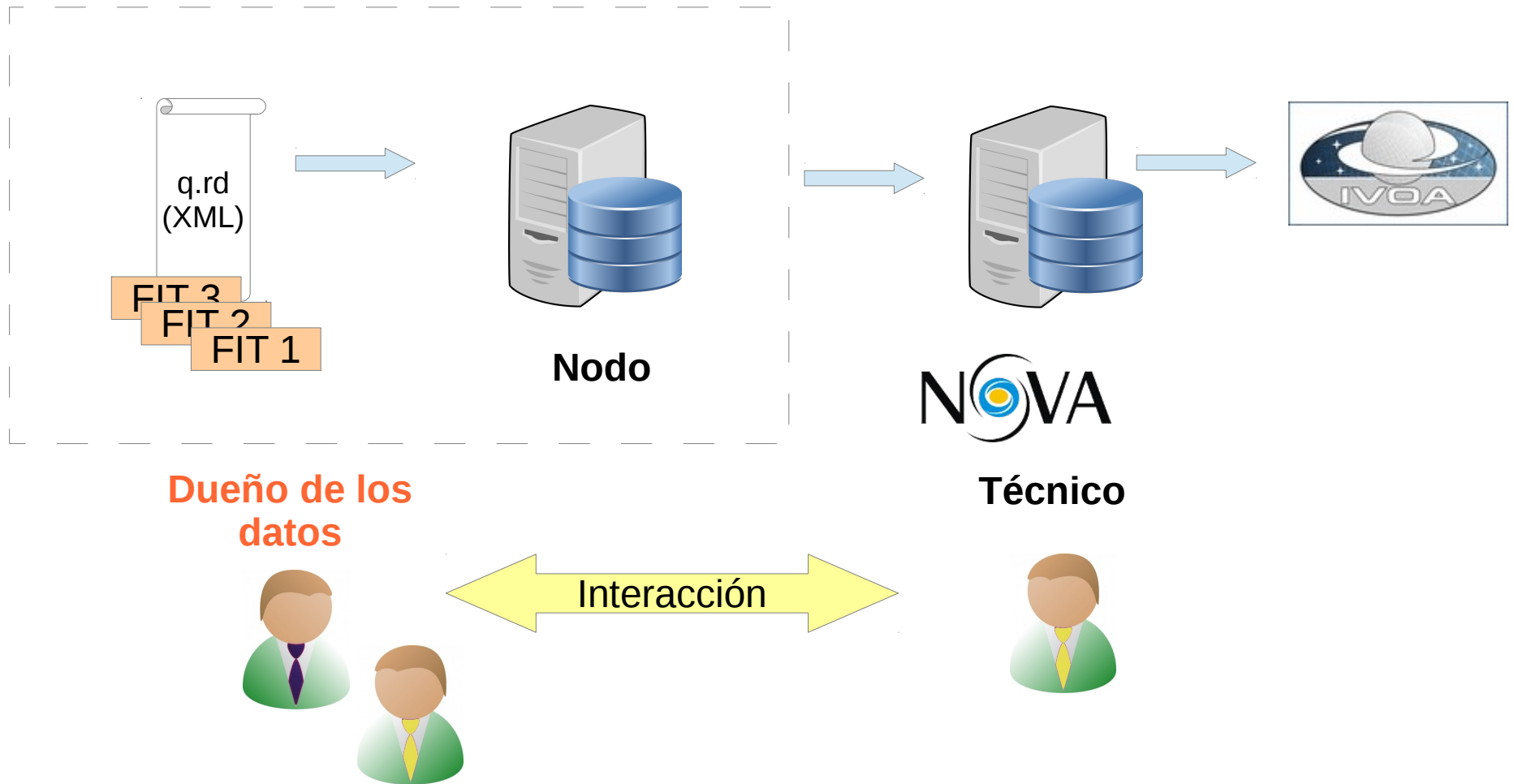
Subida de Datos – usando RD



Técnico



Se podrían pensar otros esquemas de trabajo.



¿Qué se vio durante las tres presentaciones?

Dueño de los datos



Cómo subir
datos a NOVA

Usuario de los datos



- Herramientas acceso Datos NOVA
- ¿Qué hay en la web de NOVA?

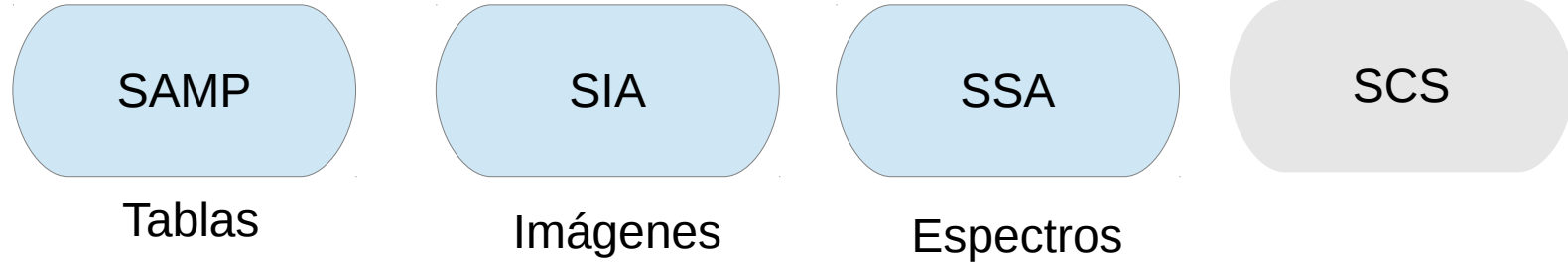
Técnico



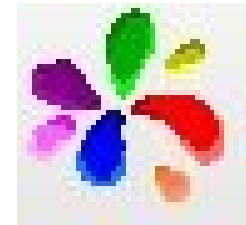
- Tecnología detrás de NOVA
- Importancia Astroinformática

Para NOVA y todos los Observatorios Virtuales

Protocolos

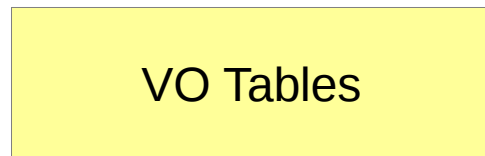


Software



Splat-VO

Formato Datos



<http://nova.conicet.gov.ar>



Home

Resources

Events

About

Welcome to NOVA's Data Center




NOVA Argentina's Virtual Observatory: VO Software, Tools and Astronomical Information online.



This is public information and could be used by **astronomy researchers**, **researchers** of other fields, **students** and the **general public**.

[Supported Astronomical Software](#) [Go to NOVA Data Center](#)

Access to NOVA's Data Center

To access NOVA information online just select the  or  icon of the Resource of interest or access using an Astronomical Software (recommended). Check out the section: [Supported Astronomical Software](#)



 ICATE Multispectral observations Online  

 ICATE Multispectral observations SSAP 

The astronomical data available at ICATE represents 45 years of observations, including photometric plates and digital

Astronomy Software - Tools for access to NOVA

OnLine

To access NOVA information online just select the  or  icon of the Resource of interest in the [Data Center Section](#) below.

ADQL

ADQL is the **Astronomical Data Query Language**, an extension of a subset of the Standard Query Language SQL. Its purpose is to give you a formal language to specify what data you are interested in.

[Tables Available for ADQL Access NOVA using ADQL](#)

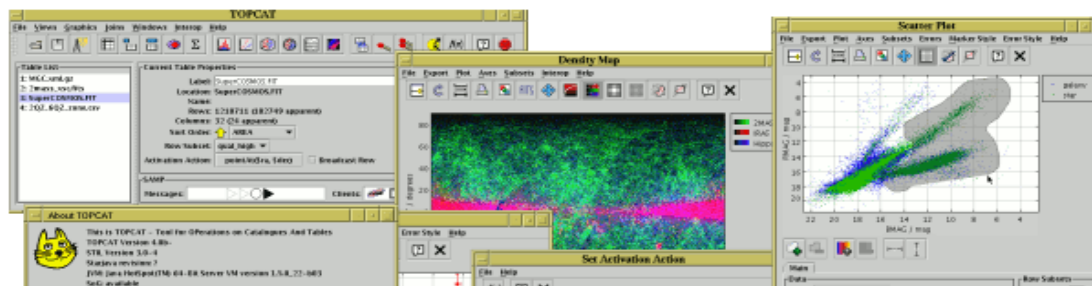
TAP

The table access protocol (TAP) defines a service protocol for accessing general table data, including astronomical catalogs as well as general database tables. The result of a TAP query is another table, normally returned as a VOTable.

[Tables Available Access NOVA using TAP Queries](#)

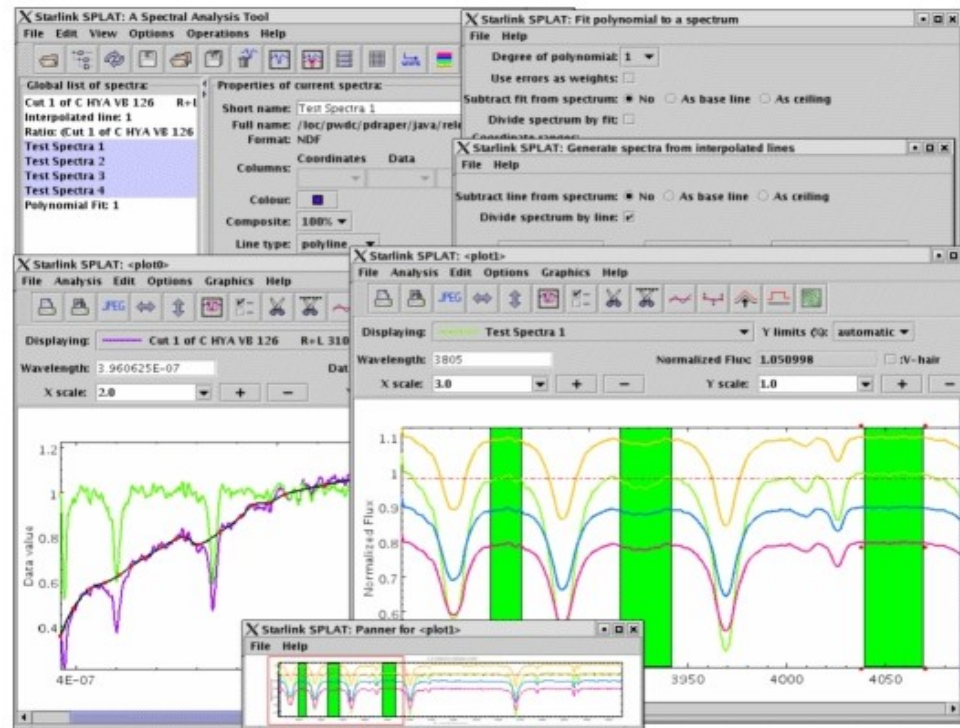
TopCat

TOPCAT is an interactive graphical viewer and editor for tabular data. Its aim is to provide most of the facilities that astronomers need for analysis and manipulation of source catalogues and other tables, though it can be used for non-astronomical data as well. It understands a number of different astronomically important formats (including FITS, VOTable and CDF) and more formats can be added.



Splat-VO

SPLAT - Spectral Analysis Tool is a graphical tool for displaying, comparing, modifying and analysing astronomical spectra stored in NDF, FITS and TEXT files as well as the new NDX format. SPLAT is now part of the STARJAVA collection. It can read in many spectra at the same time and then display these as line plots. Each display window, of which there can be many, can be used to view one or several spectra at the same time.



[Download Splat-VO](#)

[More VO Software at IVOA - click here](#)



Dueño de los datos



Colaborando con Datos a NOVA
Brindado ideas, sugerencias,
cursos

Usuario de los datos



Probando las Herramientas VO
Participando en cursos
Proponiendo necesidades e ideas



Técnico



Soporte
Desarrollando software para astronomía

Comunidad Astronómica Internacional



Comunidad Astronómica Argentina



¿Preguntas?