

# Prototype de distribution de données radio amateur RadioJOVE

B. Cecconi, R. Savalle, P. Le Sidaner  
+ équipe RadioJOVE (USA)



# RadioJOVE

**RadioJOVE** is an educational and public outreach project developed in the USA that introduces low frequency radioastronomy concepts to students and teachers, but also the **amateur radio community** as well as the general public. The participants are building their own radio telescope, using a kit sold by the Radio JOVE team. This instrument can observe the sky at frequencies around 20 and 30 MHz. The users can share their observations on an archive web site, and on a mailing list. About 1000 kits have been shipped to date.

Radio-JOVE web site: <http://radiojove.gsfc.nasa.gov>

Radio-JOVE data Archive : <http://radiojove.org/cgi-bin/calendar/calendar.cgi>

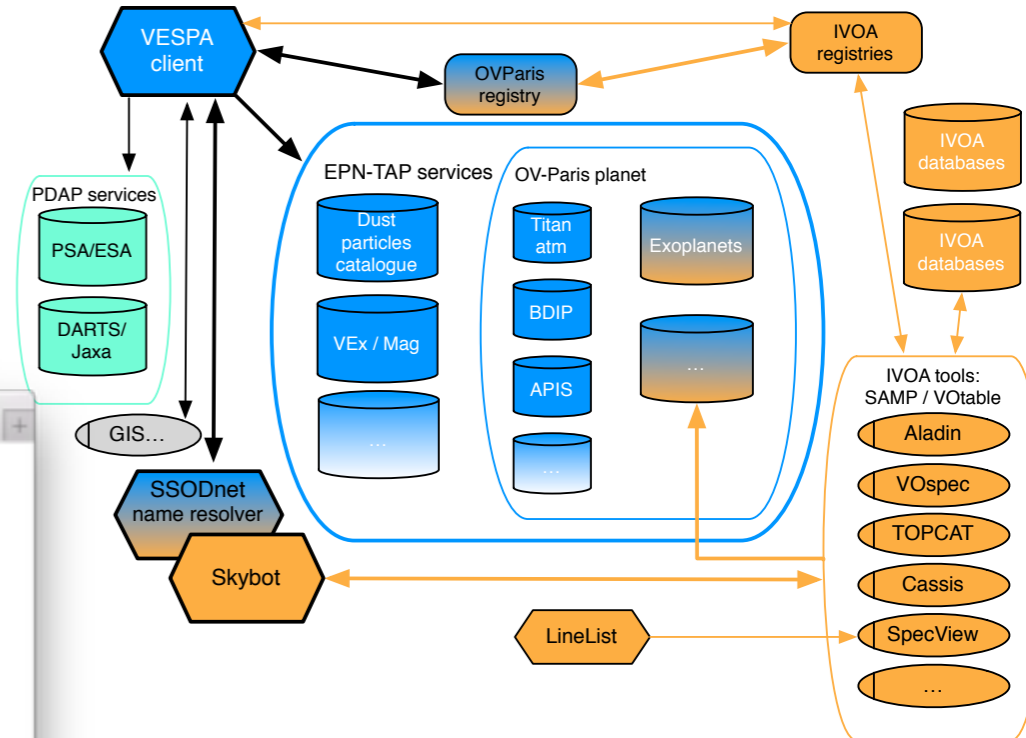
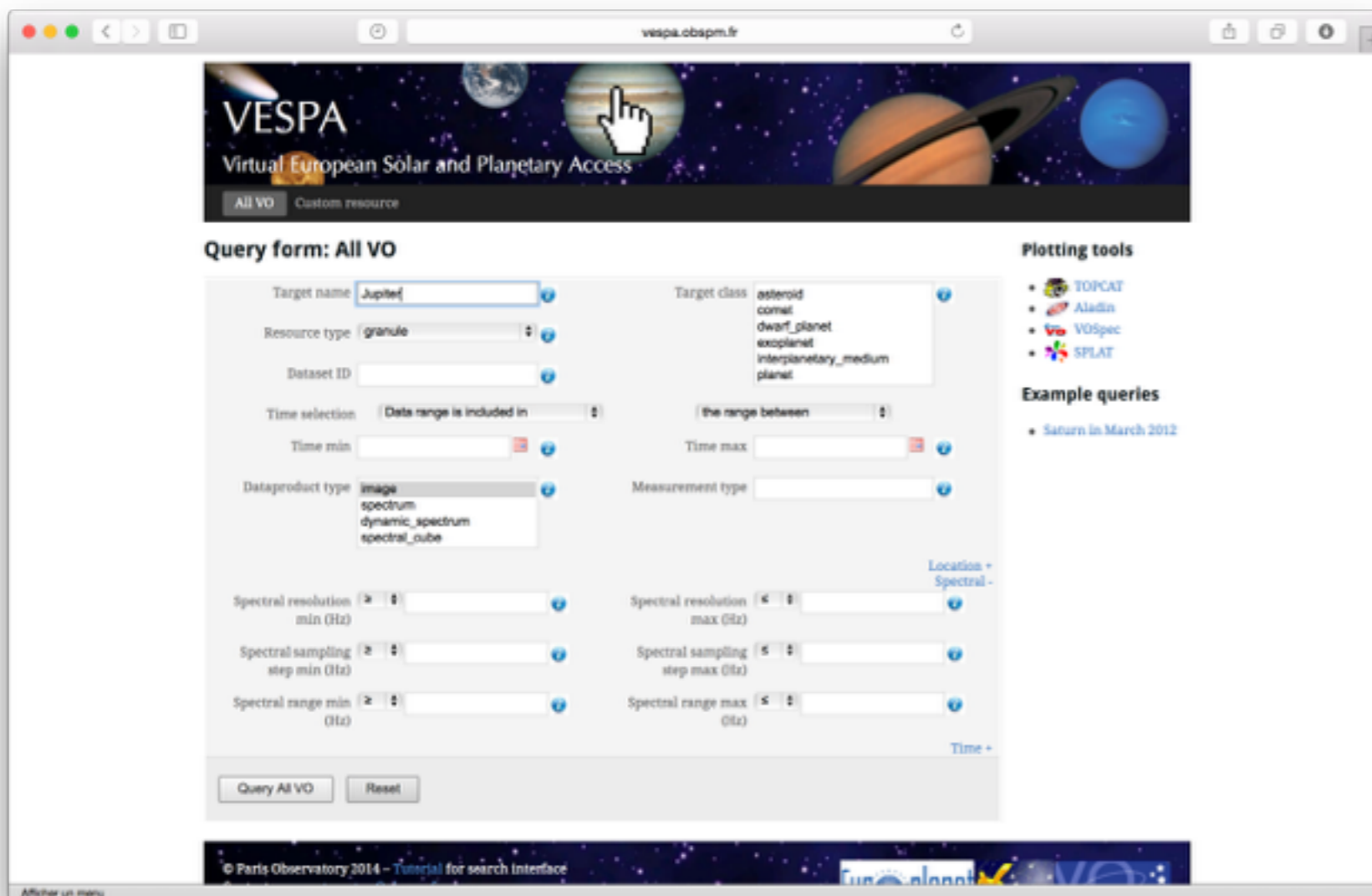
Two types of receivers are used in the RadioJOVE project: the classical single frequency radio kit (tuned around 20 Mhz), and wide band analyzers covering a typical range of 15 to 40 MHz. There are many narrow-band analyzers and a few wide-band ones. The interest of the wide band data is scientifically obvious, as it directly compares with professional radio instruments such as the Nançay Decameter Array (France), the Iitate Radio Observatory (Japan), the LWA (USA) or LOFAR (Europe). The narrow-band data can also be used, but an assessment of the data usability should be done.



# Europlanet / VESPA

**VESPA** (Virtual European Solar and Planetary Access) is an planetary science virtual observatory infrastructure based on IVOA (International Virtual Observatory Alliance) and IPDA (International Planetary Data Alliance) standards.

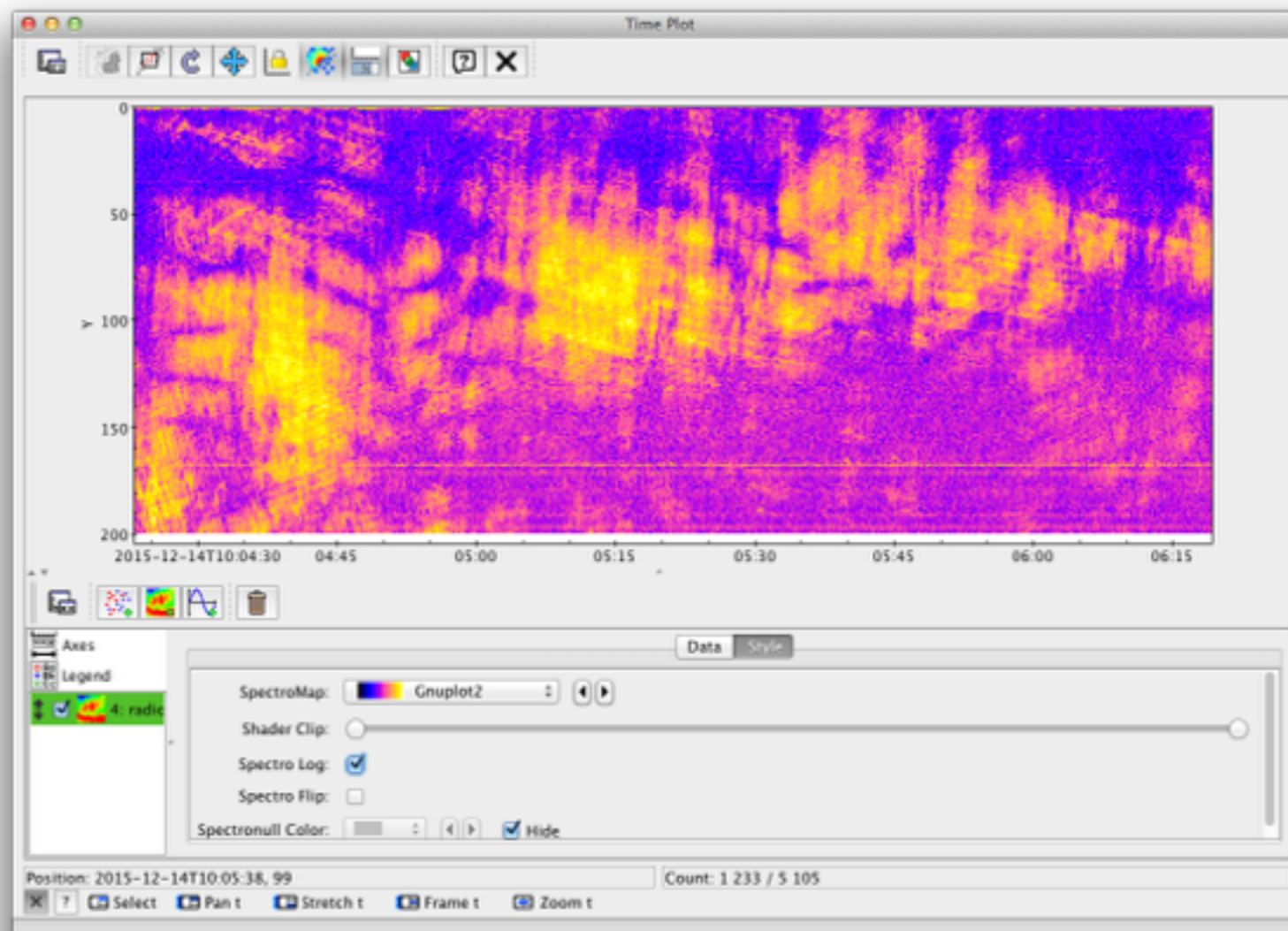
- Access Protocol = EPN-TAP with standard keyword/values/units
- e.g.: target\_name = IAU standard name, spectral range in Hz, temporal range in julian days, temporal resolution in seconds...
- Query interface: <http://vespa.obspm.fr>
- Documentation: <http://voparis-europlanet.obspm.fr/EPN2020.html>



# RadioJOVE in VESPA

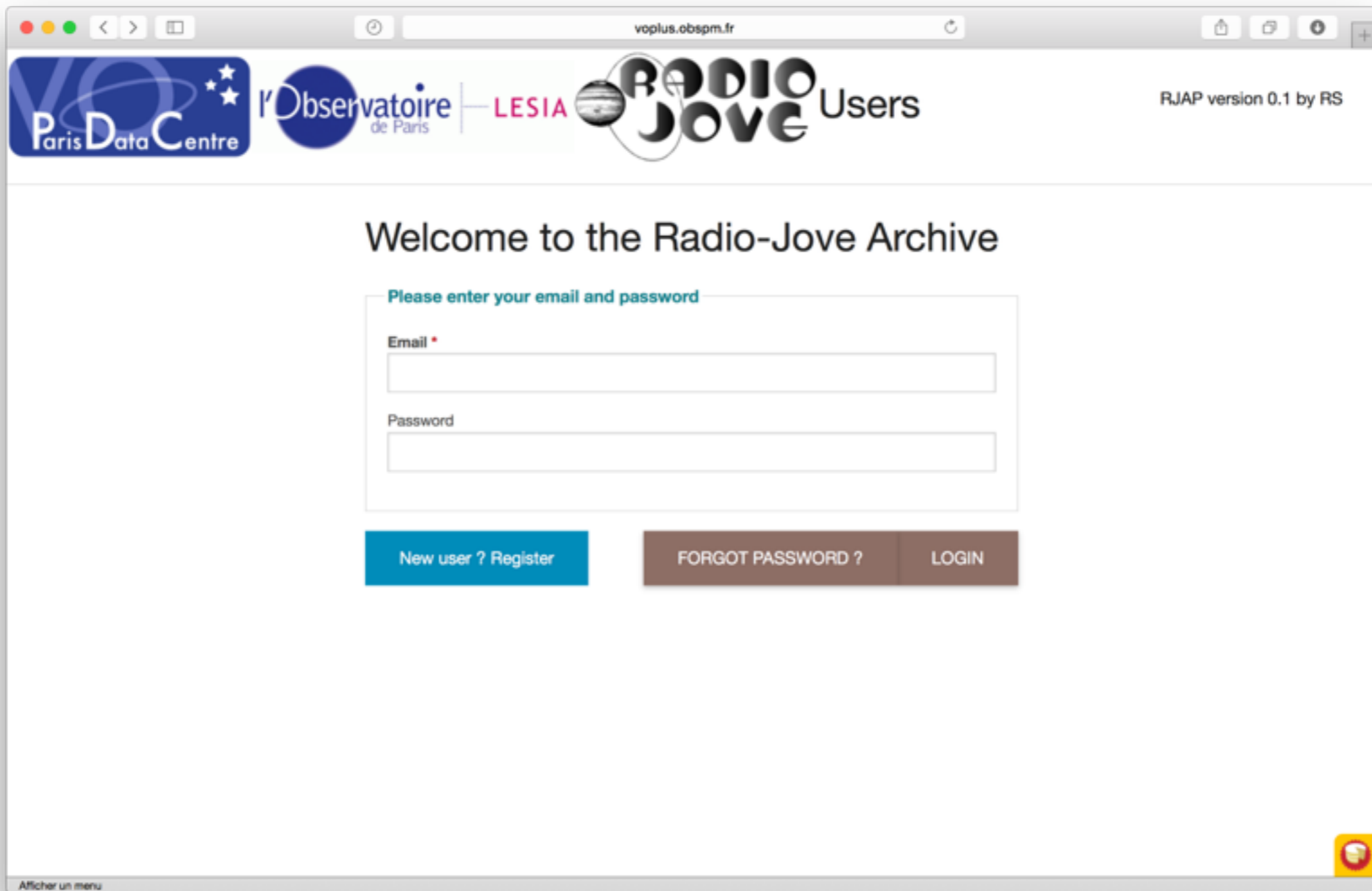
The RadioJOVE data is currently provided in various formats that are not directly usable by the scientific community. Most of the shared data is distributed as screen shots. The narrow-band data providers are usually sharing data files in WAV or MP3 formats. These data format don't include any metadata, which makes it very difficult to define the provenance and relevance of the data. The wide-band data providers are using the direct output binary format from the RadioSkyPipe software.

The VOParis team has built a data format translator that produces **CDF files**, including additional metadata. Those CDF files are ISTP compliant (required for HPDE and SPDF interoperability), PDS4 compliant (required for PDS archiving) and VESPA compliant. These CDF files can be loaded into plotting software for rapid data display. Here an example of data loaded in TOPCAT (an IVOA tool):



# RadioJOVE in VESPA

RadioJOVE Archive Login Page



The image shows a web browser window displaying the login page for the RadioJOVE Archive. The browser's address bar shows the URL `voplus.obspm.fr`. The page header includes logos for Paris Data Centre, l'Observatoire de Paris, LESIA, and RadioJOVE Users, along with the text "RJAP version 0.1 by RS". The main content area features a heading "Welcome to the Radio-Jove Archive" and a login form with the instruction "Please enter your email and password". The form contains two input fields: "Email" and "Password". Below the form are three buttons: "New user ? Register" (blue), "FORGOT PASSWORD ?" (brown), and "LOGIN" (brown). A small yellow icon is visible in the bottom right corner of the page content.

Paris Data Centre l'Observatoire de Paris LESIA RADIO JOVE Users RJAP version 0.1 by RS

## Welcome to the Radio-Jove Archive

Please enter your email and password

Email \*

Password

New user ? Register FORGOT PASSWORD ? LOGIN

Afficher un menu

# RadioJOVE in VESPA

Logged-in as a data provider

Paris Data Centre | Observatoire de Paris | LESIA | RADIO JOVE Observations | API version 0.1 by RS | Logout

Welcome cecconi@obsprm.fr - your role is: provider

### New Observation

	Id	Source	Instrument	Date Start	Date Stop	Created	Modified	Actions
Instruments								
Sources	6	Jupiter	Meudon test radiojove setup	2015-01-01 00:00:00	2016-12-31 23:59:00	2015-05-22 08:24:16	2015-05-22 08:24:26	View Edit Delete
Observations	3	Jupiter	AJ4CO DPS	2015-02-15 01:20:00	2015-02-15 10:30:00	2015-05-21 16:01:51	2015-05-21 16:01:51	View Edit Delete
Softwares								
File Types								
File Statuses								
Files								

< previous next >

1 of 1

Afficher un menu

# RadioJOVE in VESPA

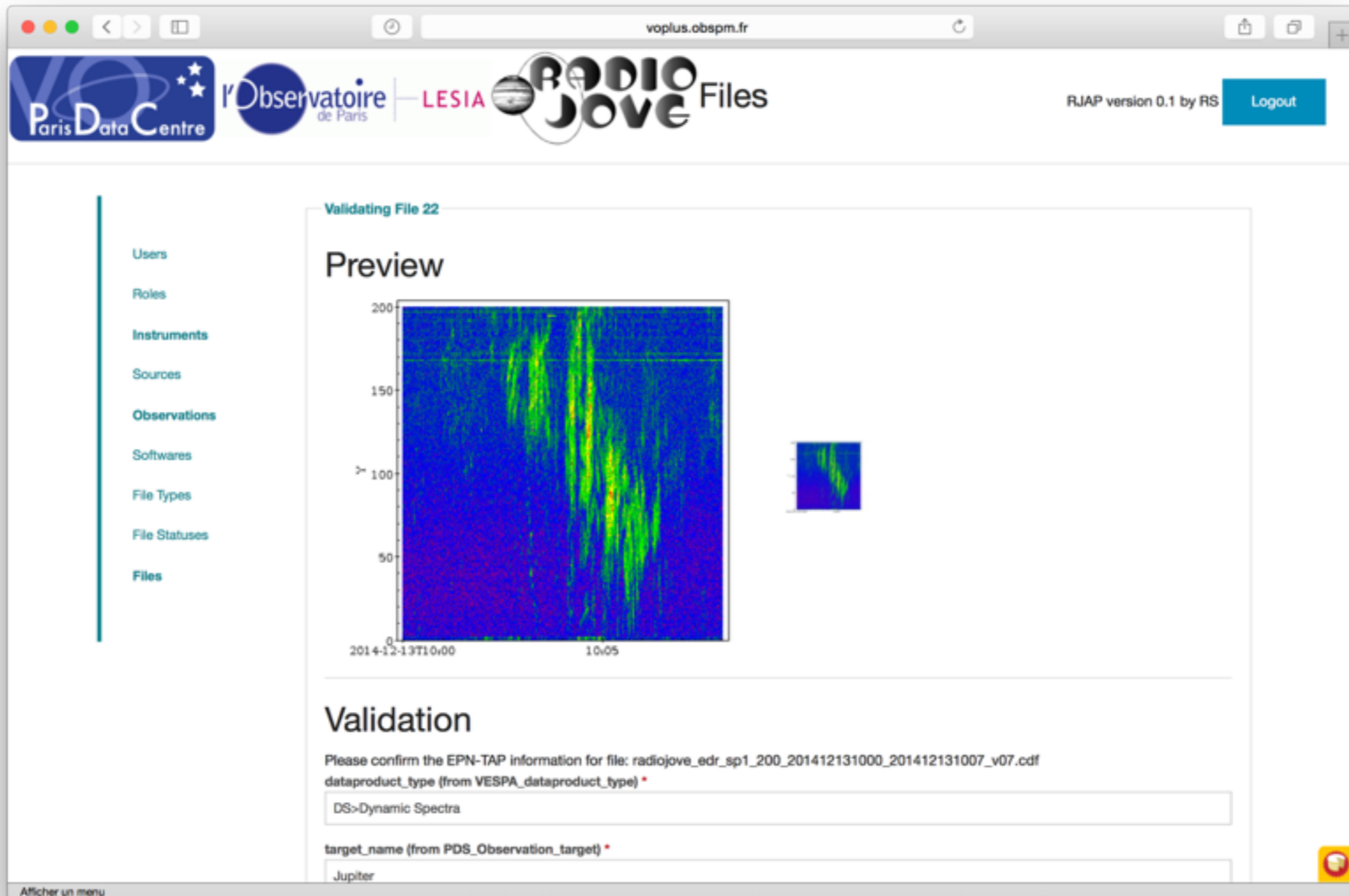
Logged-in as a data validator

The screenshot shows the VESPA web interface. At the top, there are logos for Paris Data Centre, Observatoire de Paris, LESIA, and RadioJOVE Observations. The URL is voplus.obspm.fr. A welcome message for user baptiste.cecconi@obspm.fr is displayed. A sidebar on the left contains navigation links: Users, Roles, Instruments, Sources, Observations, Softwares, File Types, File Statuses, and Files. The main content area shows a table of observations with columns: Id, User, Source, Instrument, Date Start, Date Stop, Created, Modified, and Actions. There are four rows of observation data. At the bottom, there are navigation links for '< previous' and 'next >' and a page indicator '1 of 1'.

Id	User	Source	Instrument	Date Start	Date Stop	Created	Modified	Actions
6	cecconi@obspm.fr	Jupiter	Meudon test radiojove setup	2015-01-01 00:00:00	2016-12-31 23:59:00	2015-05-22 08:24:16	2015-05-22 08:24:26	View Edit Delete
5	renaud.savalle@obspm.fr		rsavalle test instrument	2015-05-21 21:51:00	2015-05-21 21:51:00	2015-05-21 21:51:32	2015-05-21 21:51:32	View Edit Delete
3	cecconi@obspm.fr	Jupiter	AJ4CO DPS	2015-02-15 01:20:00	2015-02-15 10:30:00	2015-05-21 16:01:51	2015-05-21 16:01:51	View Edit Delete
1	renaud.savalle@obspm.fr		test instrument of RS	2015-05-19 14:30:00	2015-05-19 14:30:00	2015-05-19 14:30:35	2015-05-19 14:30:35	View Edit Delete

# RadioJOVE in VESPA

Logged-in as a data validator



The screenshot shows a web browser window at `voplus.obspm.fr`. The page header includes logos for Paris Data Centre, l'Observatoire de Paris, LESIA, and RadioJOVE Files. A "Logout" button is visible in the top right corner, along with the text "RJAP version 0.1 by RS".

The main content area is titled "Validating File 22" and features a "Preview" section. The preview displays a dynamic spectrum plot with a y-axis labeled "Y" ranging from 0 to 200 and an x-axis showing time from 2014-12-13T10:00 to 10:05. The plot shows a series of vertical, slightly curved spectral lines in green and yellow against a dark blue background. A smaller thumbnail version of the plot is shown to the right.

Below the preview is a "Validation" section. It contains the following text and form fields:

- Please confirm the EPN-TAP information for file: `radiojove_edr_sp1_200_201412131000_201412131007_v07.cdf`
- `dataprodukt_type (from VESPA_dataprodukt_type) *`
- 
- `target_name (from PDS_Observation_target) *`
- 

A small "Afficher un menu" link is located at the bottom left of the page.



# RadioJOVE in VESPA

Search RadioJOVE in VESPA

The screenshot shows a web browser window with the URL `voparis-europlanet-dev.obspm.fr`. The page features a header with the VESPA logo and the text "Virtual European Solar and Planetary Access". Below the header, there are three tabs: "All VO", "Custom resource" (which is selected), and "Direct Query".

The main content area is titled "Query form: custom resource" and contains several input fields and dropdown menus:

- Resource URL:** `http://voparis-cdpp.obspm.fr/`
- Target name:** (empty text input)
- Resource type:** `granule`
- Dataset ID:** (empty text input)
- Time selection:** `Data range is included in`
- Time min:** (empty text input)
- Dataproduct type:** `image`, `spectrum`, `dynamic_spectrum`, `spectral_cube`
- Schema name:** `radiojove`
- Target class:** `asteroid`, `comet`, `dwarf_planet`, `exoplanet`, `interplanetary_medium`, `planet`
- Measurement type:** (empty text input)
- the range between:** (empty text input)
- Time max:** (empty text input)

On the right side, there is a "Plotting tools" section with a list of icons and labels: TOPCAT, Aladin, VOSpec, and SPLAT. Below that is an "Example queries" section with a link: "Saturn in March 2012".

At the bottom of the form, there are two buttons: "Query this resource" and "Reset".

The footer of the page includes the text "© Paris Observatory 2014 - Tutorial for search interface" and logos for "europlanet" and "VESPA".

# RadioJOVE in VESPA

RadioJOVE data archive in VESPA: detailed view

The screenshot displays the VESPA (Virtual European Solar and Planetary Access) web interface. The browser address bar shows 'voparis-europlanet-dev.obspm.fr'. The header features the VESPA logo and navigation options: 'All VO', 'Custom resource', and 'Direct Query'. The main content area is titled 'Results in service radiojove' and includes a search bar, a table of results, and various tool options.

**Results in service radiojove**

Show  entries      Search:       Show / hide columns      Select all      Deselect all      Full Text

dataproduct_type	target_name	time_min (d)	time_max (d)	access_url
TS>Time Series	Jupiter	2014-02-01T17...	2014-02-01T17...	14-radiojove_edr_ts1_201402011725_201402011725...
DS>Dynamic Spe...	Jupiter	2015-02-15T01...	2015-02-15T10...	13-radiojove_edr_sp2_300_201502150120_20150215...
TS>Time Series	Jupiter	2014-02-01T17...	2014-02-01T17...	2-radiojove_edr_ts1_201402011725_201402011725...
DS>Dynamic Spe...	Jupiter	2013-01-30T19...	2013-01-30T19...	4-radiojove_edr_sp1_400_201301301953_201301301...
TS>Time Series	Jupiter	2014-02-01T17...	2014-02-01T17...	3-radiojove_edr_ts1_201402011725_201402011725...
DS>Dynamic Spe...	Jupiter	2013-01-30T19...	2013-01-30T19...	5-radiojove_edr_sp1_400_201301301953_201301301...

Showing 1 to 6 of 6 entries      First    Previous    1    Next    Last

SAMP selection as       SAMP VOtable selection      SAMP all VOtable

**Plotting tools**

- TOPCAT
- Aladin
- VOSpec
- SPLAT

**Example queries**

- Saturn in March 2012

**SELECTED DATA**

No data selected

**PREVIEW**

© Paris Observatory 2014 – Tutorial for search interface  
Contact : support.epntap@obspm.fr  
Layout based on YAMk

