



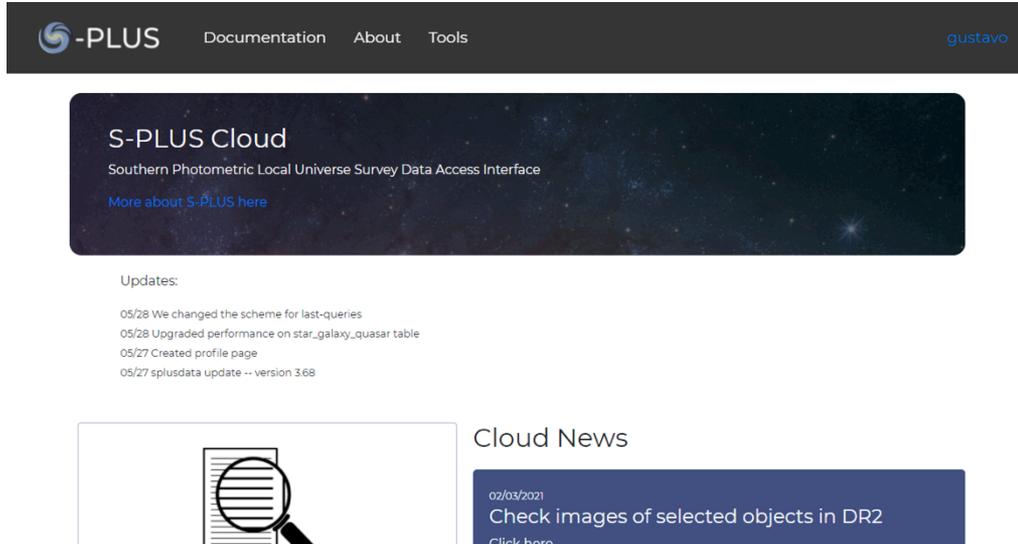
Gustavo Bernard Schwarz

splus data access

- Anyone can register.
 - Access the data/catalogs
 - Get FITS
 - Get colored images

- <https://splus.cloud/register>

website: <https://splus.cloud>



The screenshot shows the S-PLUS Cloud website. At the top, there is a dark navigation bar with the S-PLUS logo on the left and the name 'gustavo' on the right. Below the navigation bar, the main content area has a dark background with a starry sky pattern. It features the title 'S-PLUS Cloud' and the subtitle 'Southern Photometric Local Universe Survey Data Access Interface'. A link 'More about S-PLUS here' is provided. Underneath, there is an 'Updates:' section with a list of recent changes: '05/28 We changed the scheme for last-queries', '05/28 Upgraded performance on star_galaxy_quasar table', '05/27 Created profile page', and '05/27 splusdata update -- version 3.68'. At the bottom, there is a 'Cloud News' section with a magnifying glass icon over a document and a blue box containing the date '02/03/2021' and the text 'Check images of selected objects in DR2' with a 'Click here' link.

python package



splusdata

01/06/2021 - version 3.71

<https://splus.cloud/documentation/python>

Querying catalogs

Website Catalog Tool

The screenshot shows the ADQL Query interface. At the top, there are tabs for 'Query' and 'Results'. Below this, there are links for 'Examples HERE' and 'Access internal data'. A section titled 'Last queries on profile' is empty. The main area is divided into three columns: 'Schema', 'Table', and 'Column'. The 'Schema' column has a dropdown menu with 'dri' selected. The 'Table' column has a dropdown menu with 'all_dri' selected. The 'Column' column has a dropdown menu with 'A' selected. Below these columns is a text input field for the ADQL query, containing the number '1'. To the right of the input field are links for 'Add example to query editor', 'Cone Search', 'Upload VOTable Crossmatch', and 'Joining all tables'. At the bottom, there are dropdown menus for 'Format' (set to 'votable') and 'Execution Mode' (set to 'Sync'), followed by an 'Upload Table' button and a file selection area. A 'Submit' button is at the bottom left.

ADQL (Astronomical Data Query Language)

Execution jobs
Upload tables

Python function query()

```
import plusdata  
conn = plusdata.connect('login', 'password')
```

```
conn.query('select id, ra, dec from dr2.detection_image where ra + dec > 200')
```

- plusdata login is credential from plus cloud website.
- Query is made the same way as the website.

ADQL tutorial:

<https://plus.cloud/documentation/query>

Getting FITS cuts

Website “get cuts” section:

FITS image cut by coordinates
Insert RA and DEC in degrees and Radius in pixels

WEIGHT IMAGE [Upload CSV Table](#)

RA

DEC

Diameter in Pixels

- RA and DEC (degrees),
- image size in pixels
- Band selected or ALL bands at once
- Weight Image

Python function
`get_cut()`

```
hdu = conn.get_cut(RA, DEC, Size, Band)
```

```
hdu = conn.get_cut(0.4, 0.7, 1500, 'R')
```

- Returns a FITS astropy object.

Python function
`get_cut_weight()`

```
hdu = conn.get_cut_weight(RA, DEC, Size, Band)
```

FITS image - whole field

11k X 11k

Website “get tile” section:

FITS image from whole tile

Get 11000x11000 pixels FITS. Insert Field name.

WEIGHT IMAGE

R

Request

- Field name
- Band

Python function

get_field()

```
hdu = conn.get_field(Field_name, band)

hdu = conn.get_field('STRIPE82-0002', 'R')
```

Getting colored images (lupton)

Website “get colored images” section:

Colored Image

[Lupton et al. \(2004\)](#) describe an algorithm for producing red-green-blue composite images from three separate high-dynamic range arrays. Stretch represents the linear stretch of the image. Q represents the asinh softening parameter.

[Upload CSV table](#)

RA DEC

Radius in Pixels

Red Green Blue
1 R G

Stretch Q
3 8

[Check also a colored image made with the 12 bands Here](#)

- RA and DEC (degrees) and image size in pixels

Python function get_img()

```
img = conn.get_img(RA, DEC, Size, R_color, G_color, B_color, stretch, Q, radius)

img = conn.get_img(43.3559, -0.2322, 200, R="I", G="R", B="G", stretch=0.5, Q=5, radius = 200)
```

- Returns a PIL Image object.

Choose which band goes into each color
RGB of the image

Getting twelve band images

Website “image from 12 bands” section inside “get colored” image section:

Get image from 12 bands
Maximum of 1000 pixels

RA DEC

R
R, I, F861, Z

G
G, F515, F660

B
U, F378, F395, F410, F430

Noise Saturation
0.15 0.15

Radius in Pixels

- RA and DEC (degrees) and image size in pixels

Python function twelve_band_img()

```
img = conn.twelve_band_img(RA, DEC, radius, noise=0.15, saturation=0.15)  
  
img = conn.twelve_band_img(43.3559, -0.2322, radius=2000, noise=0.15, saturation=0.15)
```

- Returns a PIL Image object.

Choose which combination of bands goes into each color RGB of the image



Integration with topcat



<https://splus.cloud/public-TAP/tap>

- Useful to work with tables
- Cross matches
- Querying data
- Plotting
- Astronomical features in general

splusdata tutorial with practical examples!

- Getting catalogs, querying, uploading tables
- Getting multiple images from a list
- TOPCAT examples
- Website examples
- And more!

https://deeptime.com/project/S-PLUS-Meeting-1-3-June-2021-i5mav_NUQgO148flhCC31A/%2FTutorial.ipynb/#00031-4c4795cc-59fc-4eef-ad69-2145b7acfe86



splus.cloud

<https://splus.cloud/documentation>



splusdata python package

<https://splus.cloud/documentation/python>

Member (collaborator) section

- Team Policies
- Active Projects
 - Old projects and new projects are here
- All new projects must be submitted through plus cloud

Active Projects

Create Project



Thank you!

- Any problems, bugs, malfunction, lags or suggestions are very welcome.
- Also if you need any help.

Contact me at

gustavo.b.schwarz@gmail.com