



Javalambre Photometric Local Universe Survey DATA RELEASE 1

Carlos López-Sanjuan
on behalf of the J-PLUS collaboration



Centro de Estudio de Física del Cosmos de Aragón

HI absorption / Dwingeloo / 30th August 2018

Funding agencies :



Where is CEFCA?



Where is CEFCA?



Where is CEFCA?



What is CEFCA? www.cefca.es

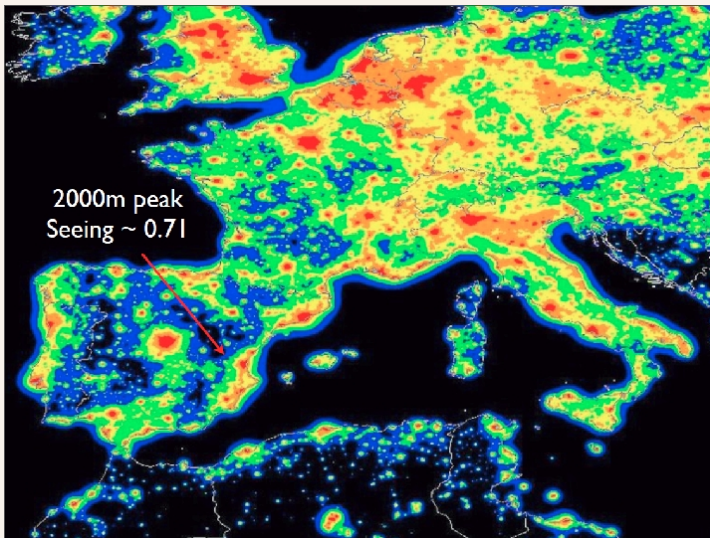


Centro de Estudios de Física del Cosmos de Aragón

CEFCA was founded in 2008 for the construction, management, and scientific exploitation of the OAJ.

**Observatorio
Astrofísico de
Javalambre**

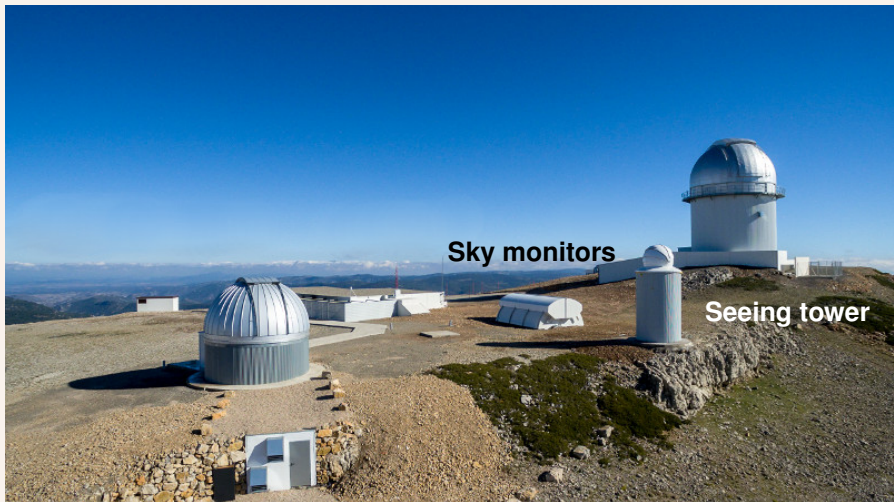
OAJ : oajweb.cefca.es



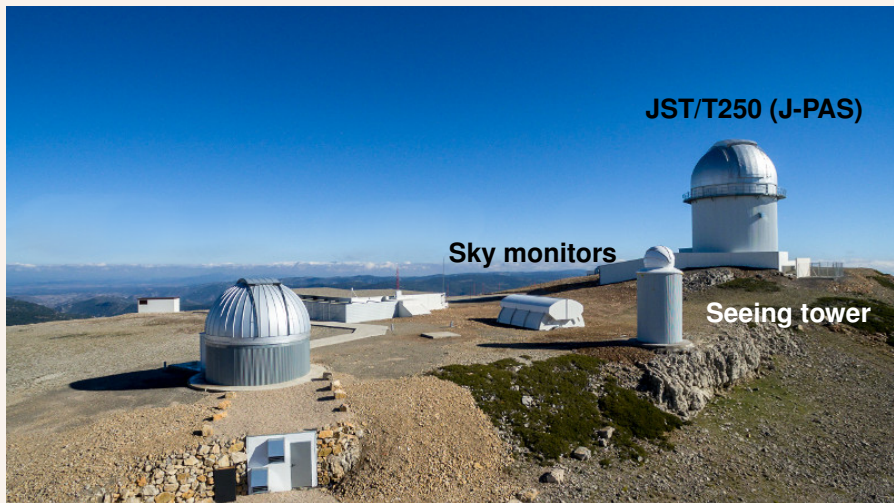
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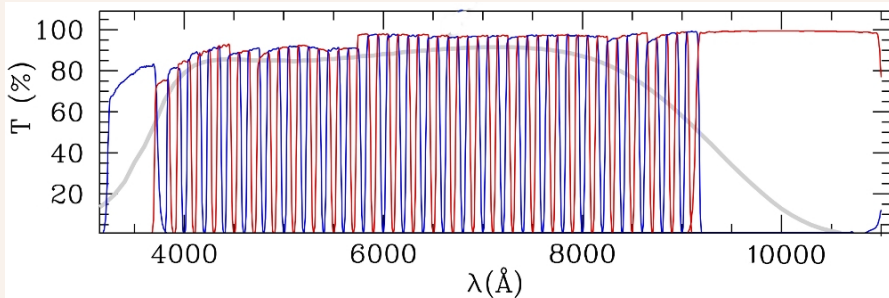


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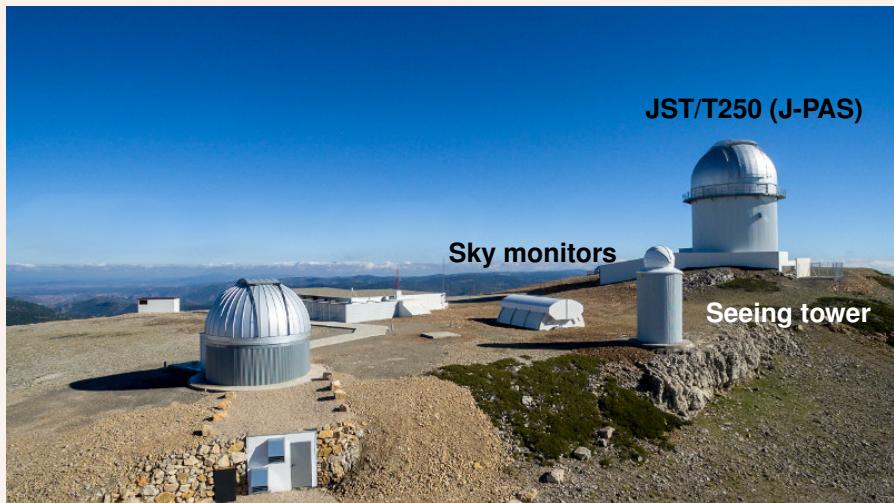
J-PAS : j-pas.org

Javalambre Physics of the accelerating Universe Astrophysical Survey (Benítez+14)



54 narrow-band ($\sim 130\text{\AA}$) + **2 medium-band filters** + *ugr*
Low-resolution ($R \sim 50$) photo-spectra in $8,500 \text{ deg}^2$ with NB ~ 22.5 (AB)
This translates to photo-zs with $\sigma_z/(1+z) \sim \mathbf{1000 \text{ km/s}}$

OAJ : oajweb.cefca.es



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T80Cam & JAST/T80



JAST/T80

M1 (\varnothing) = 0.83 m

FoV = 3.14 deg²

Effective collecting area = 0.44 m²

Field corrector of 3 lenses

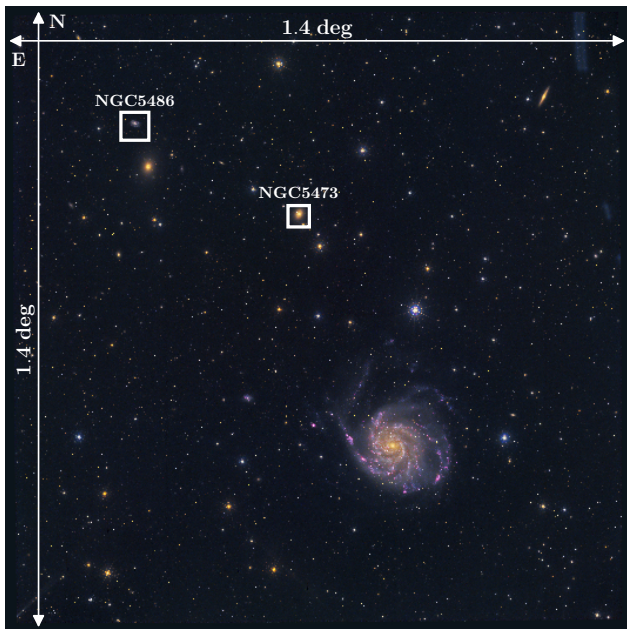
Mass of ~2.500 kg

T80Cam

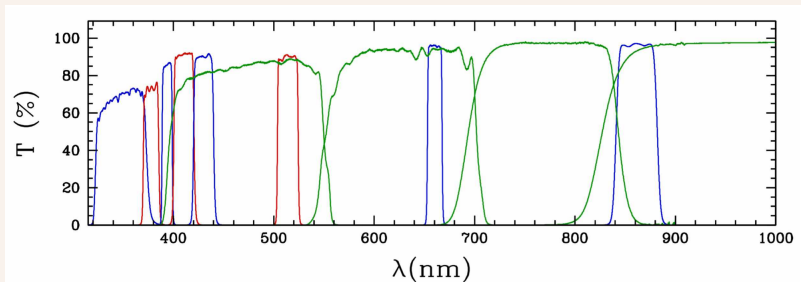
Detector: 9200 × 9200

Plate scale = 0.55'' per pixel

FoV = 2 deg²



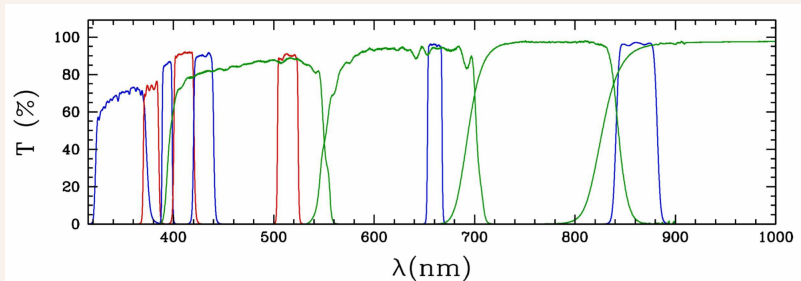
Filter System



Filter	λ (nm)	$\Delta\lambda$ (nm)	Note
<i>u</i>	348.5	50.8	
<i>g</i>	483.0	140.9	SDSS
<i>r</i>	625.4	138.8	SDSS
<i>i</i>	766.8	153.5	SDSS
<i>z</i>	911.4	140.9	SDSS

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J0378	378.5	16.8	[OII]
J0395	395.0	10.0	Ca H+K
J0410	410.0	20.0	H δ
J0430	430.0	20.0	G-band
J0515	515.0	20.0	Mbg Triplet
J0660	660.0	14.5	H α + [NII]
J0861	861.0	40.0	Ca Triplet

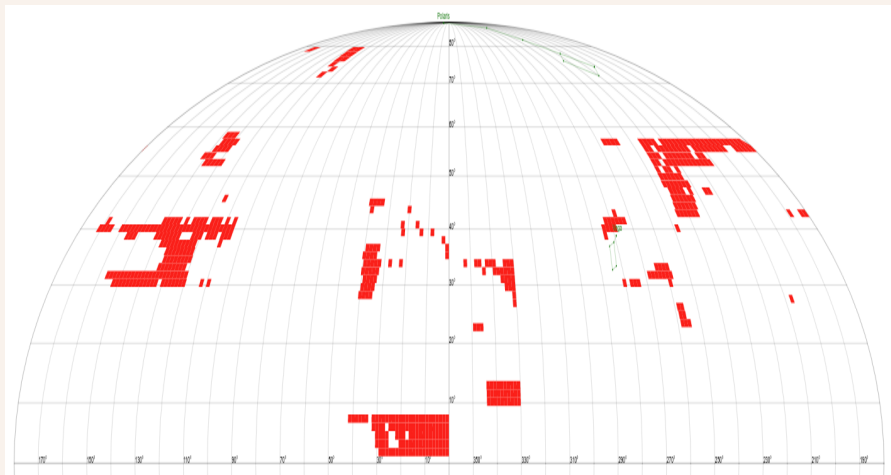
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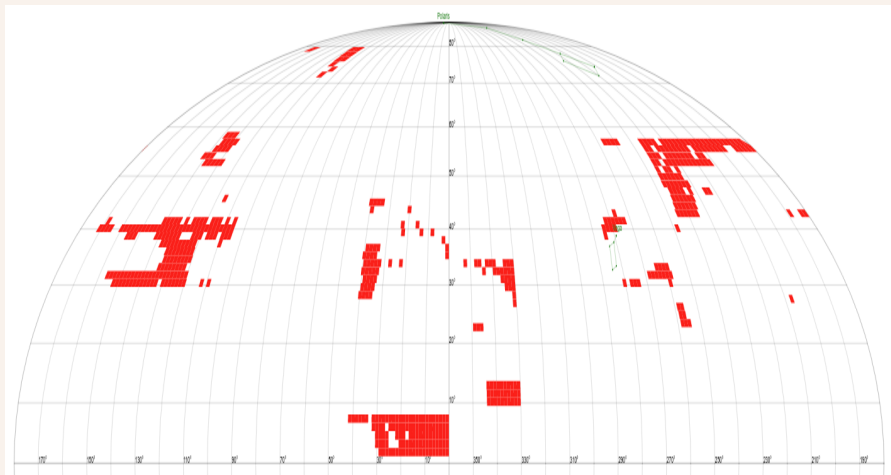
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DR1 : Sky coverage



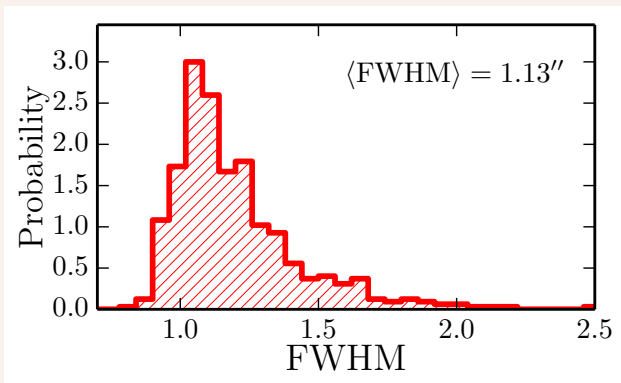
1022 deg² (511 tiles) observed and calibrated in 12 optical filters
897.4 deg² after masking (low exposure + bright stars + artifacts) + overlap

DR1 : Sky coverage

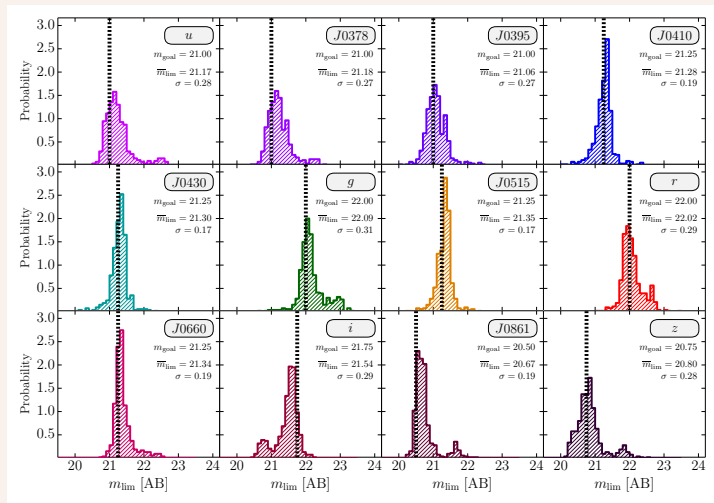


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DR1 : FWHM distribution

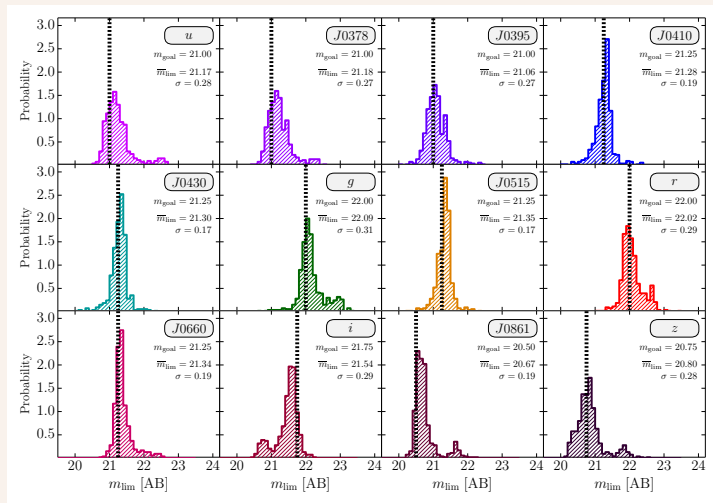


Median FWHM of 1.13 arcsec (2 pixels of 0.55'')

DR1 : Limiting magnitudes (3σ in 3 arcsec)

Filter	$m_{\text{lim}}^{\text{DR1}}$
<i>u</i>	21.2
J0378	21.2
J0395	21.1
J0410	21.3
J0430	21.3
<i>g</i>	22.1
J0515	21.3
<i>r</i>	22.0
J0660	21.3
<i>i</i>	21.5
J0861	20.7
<i>z</i>	20.8

Absolute
calibration at
2% level in
the 12 filters

DR1 : Limiting magnitudes (3σ in 3 arcsec)

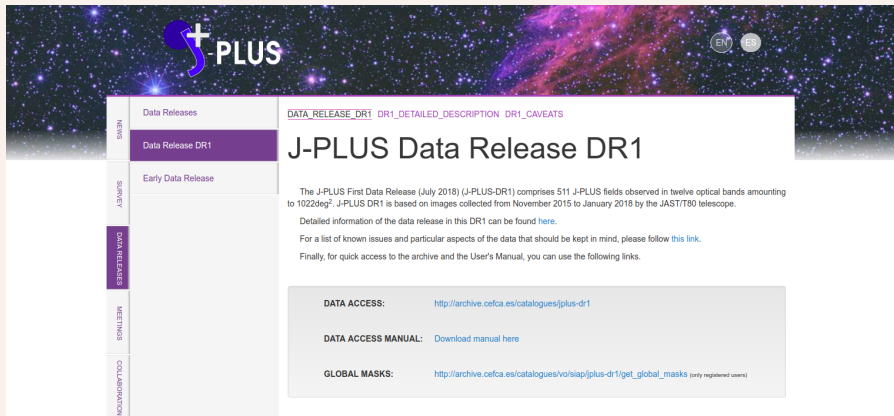
Filter	$m_{\text{lim}}^{\text{DR1}}$
<i>u</i>	21.2
J0378	21.2
J0395	21.1
J0410	21.3
J0430	21.3
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Absolute calibration at 2% level in the 12 filters

DR1 : Data access

http://www.j-plus.es/datareleases/data_release_dr1

<https://archive.cefca.es/catalogues/jplus-dr1>



The screenshot shows the J-PLUS Data Release DR1 webpage. The header features the J-PLUS logo and navigation links for EN and ES. The main content area is titled "J-PLUS Data Release DR1" and includes a sidebar with navigation options: NEWS, DATA RELEASES (highlighted), MEETINGS, and COLLABORATION. The main text describes the J-PLUS First Data Release (July 2018) (J-PLUS-DR1) and provides links for data access, manual, and global masks.

J-PLUS

EN ES

NEWS

Data Releases

Data Release DR1

Early Data Release

SURVEY

DATA RELEASES

MEETINGS

COLLABORATION

[DATA_RELEASE_DR1](#) [DR1_DETAILED_DESCRIPTION](#) [DR1_CAVEATS](#)

J-PLUS Data Release DR1

The J-PLUS First Data Release (July 2018) (J-PLUS-DR1) comprises 511 J-PLUS fields observed in twelve optical bands amounting to 1022deg². J-PLUS DR1 is based on images collected from November 2015 to January 2018 by the JAST/T80 telescope.

Detailed information of the data release in this DR1 can be found [here](#).

For a list of known issues and particular aspects of the data that should be kept in mind, please follow [this link](#).

Finally, for quick access to the archive and the User's Manual, you can use the following links.

DATA ACCESS: <http://archive.cefca.es/catalogues/jplus-dr1>

DATA ACCESS MANUAL: [Download manual here](#)

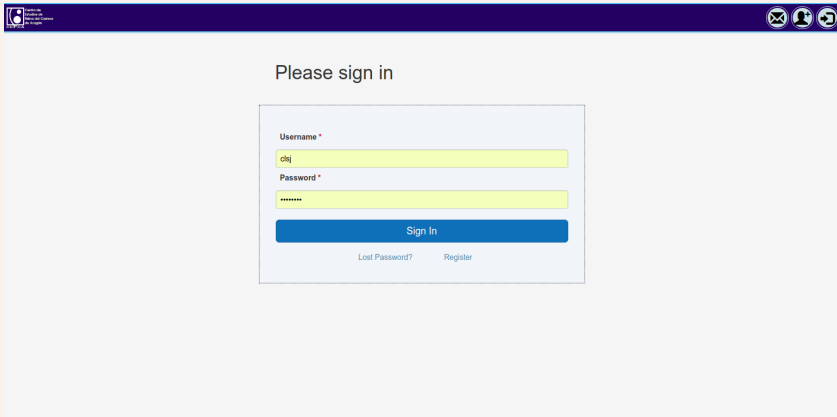
GLOBAL MASKS: http://archive.cefca.es/catalogues/vo/siap/jplus-dr1/get_global_masks (only registered users)

DR1 : Data access



http://www.j-plus.es/datareleases/data_release_dr1

<https://archive.cefca.es/catalogues/jplus-dr1>

A screenshot of a web browser window showing a sign-in page. The browser's address bar is dark blue and contains the URL 'http://www.j-plus.es/datareleases/data_release_dr1'. The page content is white with a blue header bar. The main heading is 'Please sign in'. Below it is a light blue box containing a sign-in form. The form has two input fields: 'Username *' with the value 'clj' and 'Password *' with masked characters '*****'. A blue 'Sign In' button is below the fields. At the bottom of the form are two links: 'Lost Password?' and 'Register'.

Please sign in

Username *

clj

Password *

Sign In

[Lost Password?](#) [Register](#)

DR1 : Data access



Services ▾



J-PLUS-DR1 - Data Access Services

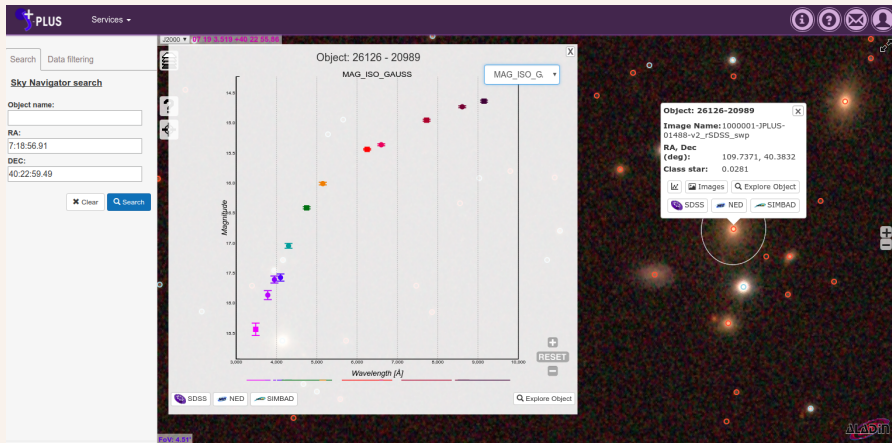
J-PLUS First Data Release (June, 2018) provides access to the combined scientific images in 12 filters covering a total area of ~ 1020 square degrees. J-PLUS-DR1 is based on images collected from November 2015 to January 2018 by the JAST/T80 telescope. It includes two types of data: images and single and dual catalogue data (parameters measured from images, such as photometry or morphology data). Single catalogues are the ones where the detection and photometry had been done on each image independently. While, dual catalogues are the catalogues where the detection and photometry had been done using as reference image the r-SDSS image.

J-PLUS web site offers dual catalogues data through several different online data access tools, each suited to a particular need. The table below gives a short description of each of tool indicating when you might use each one, based on what information you know already and what information you want to find out. Click on the name of a tool to access to it. Single catalogue data is also available but, currently, only through V.O. services.

Tool	What it Does	Use it when...
Sky Navigator	Lets you navigate through the sky by panning and zooming. When you click on an object, you get a summary of it and you have options to see its pseudospectrum, explore it or search it in other catalogues.	You are looking through the sky for objects to study.
Object List Search	Lets you upload a list of sky positions, object names or objects identifiers, then returns a list of J-PLUS objects near those positions. Displays a summary, pseudospectra and thumbnail images for the list of objects.	You want to quickly scan through a list of objects or you have a list of sky objects from another astronomical database and you want to find all J-PLUS objects near each of your objects. You want to create a report of a list of objects.
Image Search	Lets you search and download images by position or name. Lets you see a preview for each image.	You want to look at or download an image.
Cone Search	Lets you search the database for objects near a certain sky position and with certain brightnesses.	You want to find objects in one part of the sky.

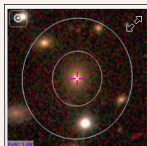
<https://archive.cefca.es/catalogues/jplus-dr1>

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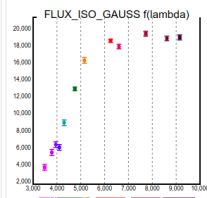
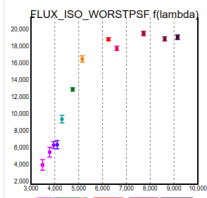
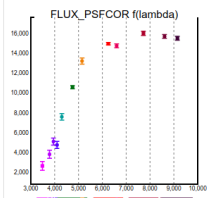
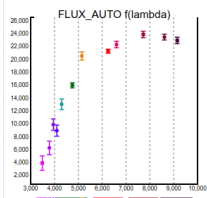
DR1 : Data access



Object ID (Image ID-Object Number)		26126-20989	
RA (h:m:s)	7:18:56.91	PhotoZ BPZ	
RA (deg)	109.7371	PhotoZ Min. BPZ	
Dec (d:m:s)	40:22:59.52	PhotoZ Max. BPZ	
Dec (deg)	40.3832	Odds BPZ	
Class Star (1: star; 0: galaxy)	0.03 (GALAXY)	FWHM (arcsec)	2.81

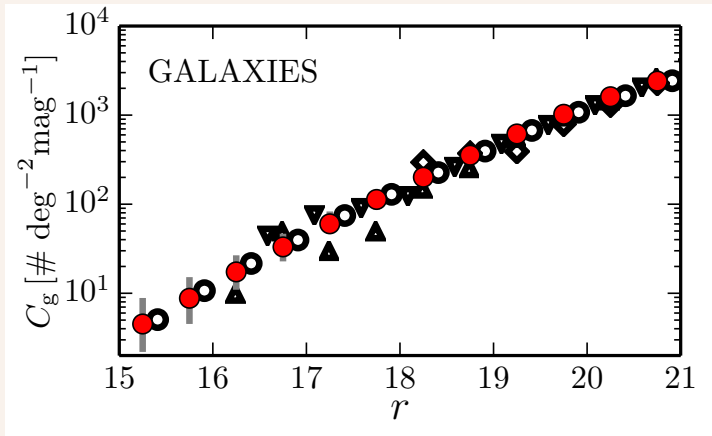
[Download results](#)
[Transfer data](#)
[See in navigator](#)
[Images search](#)
[Search SDSS](#)
[Search NED](#)
[Search Simbad](#)

Pseudo spectra



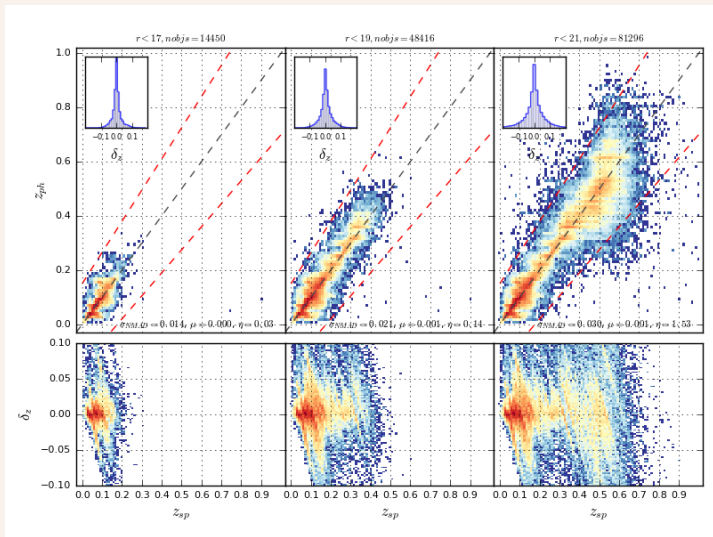
<https://archive.cefca.es/catalogues/jplus-dr1>

Galaxy number counts in J-PLUS DR1



J-PLUS DR1 comprises ~ 3 million galaxies with $r \leq 21$.
Nice agreement with number counts in the literature (López-Sanjuan+18a)

Photometric redshifts



BPZ2

(Benítez00,
Molino+14)

$r < 17$

$\sigma_{\text{NMAD}} = 0.014$

$r < 19$

$\sigma_{\text{NMAD}} = 0.021$

$r < 21$

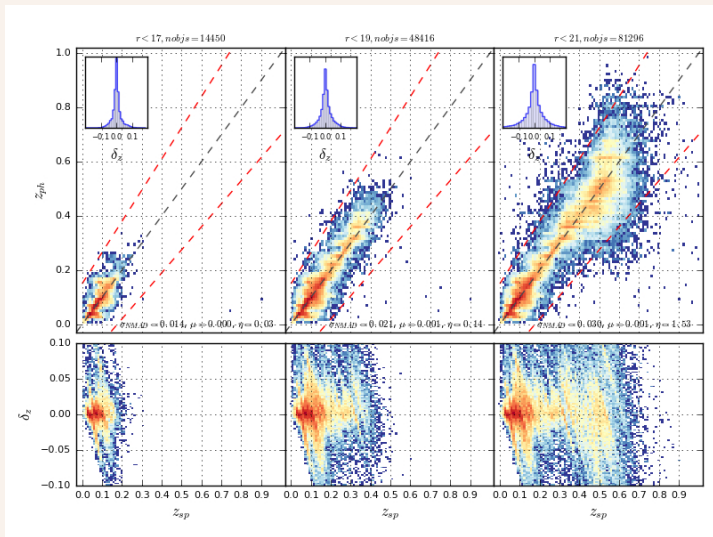
$\sigma_{\text{NMAD}} = 0.030$

LePhare

(Arnouts+04,
Ilbert+09)

TPZ (Carrasco
Kind+13)

Photometric redshifts



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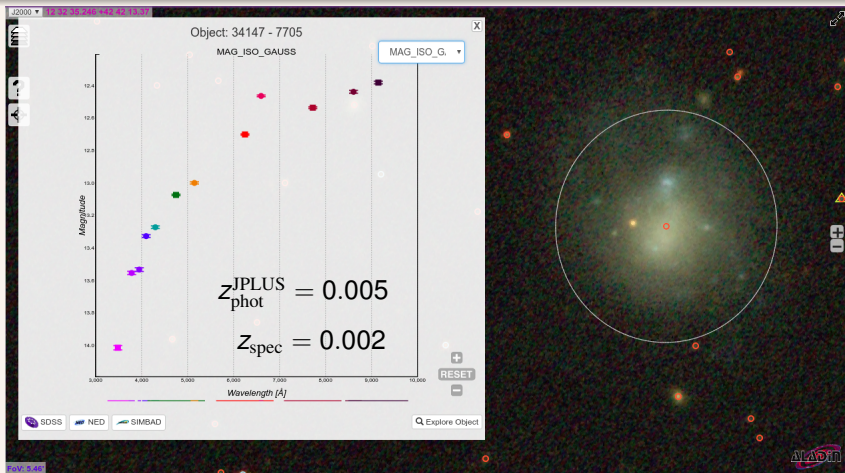
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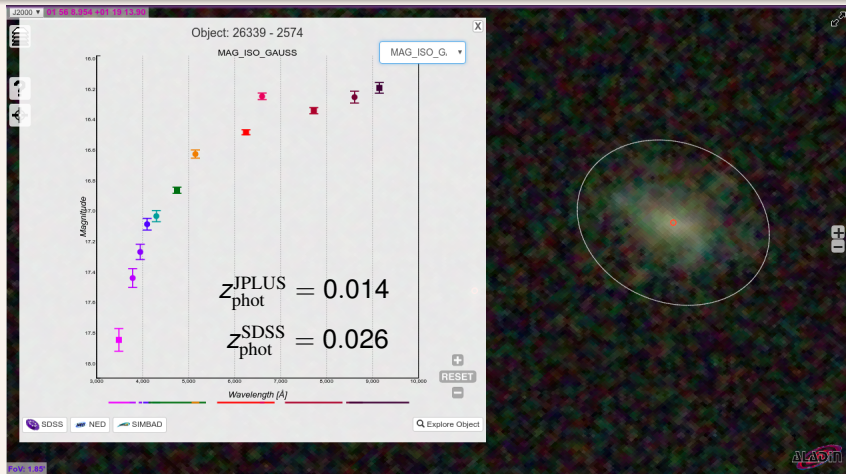
H α at $z < 0.017$ 

Vilella-Rojo+18 (in prep.) search for H α emitters at $z < 0.017$
 490 local galaxies with known redshift
 + 165 located at $z < 0.017$ thanks to J-PLUS data

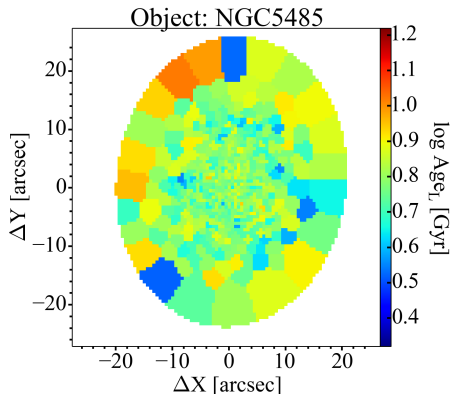


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2D stellar populations

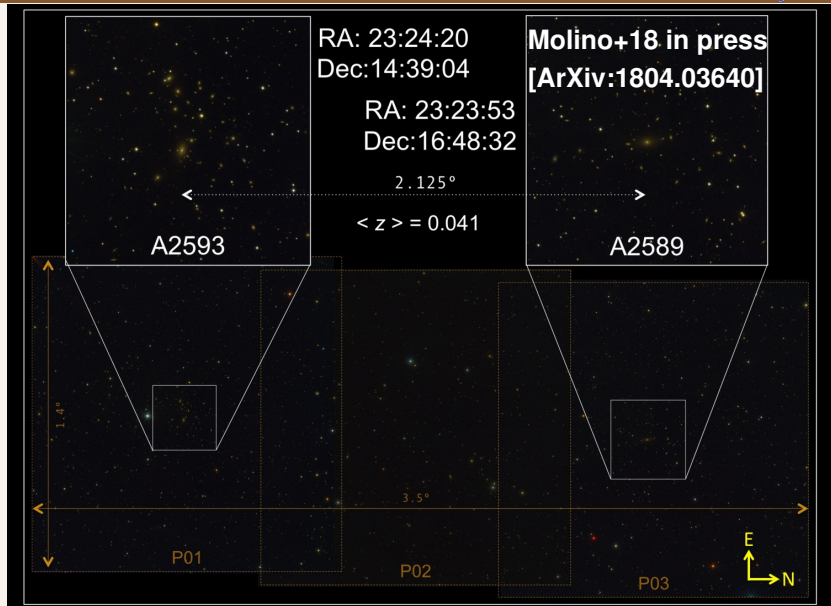


J-PLUS has five blue filters covering the 4000-break feature.

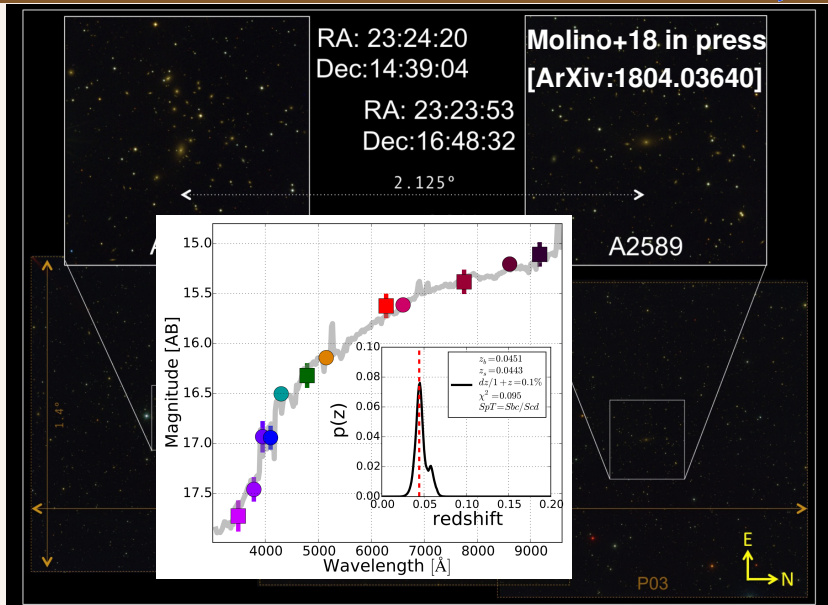
Study of 2D stellar populations in nearby galaxies

(Díaz-García+15; San Román+18ab, submitted [arXiv:1804.03727]).

Nearby clusters of galaxies

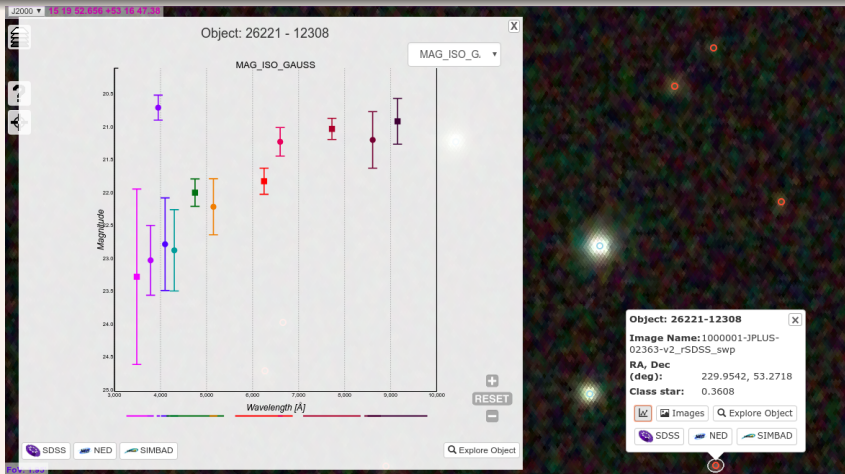


Nearby clusters of galaxies



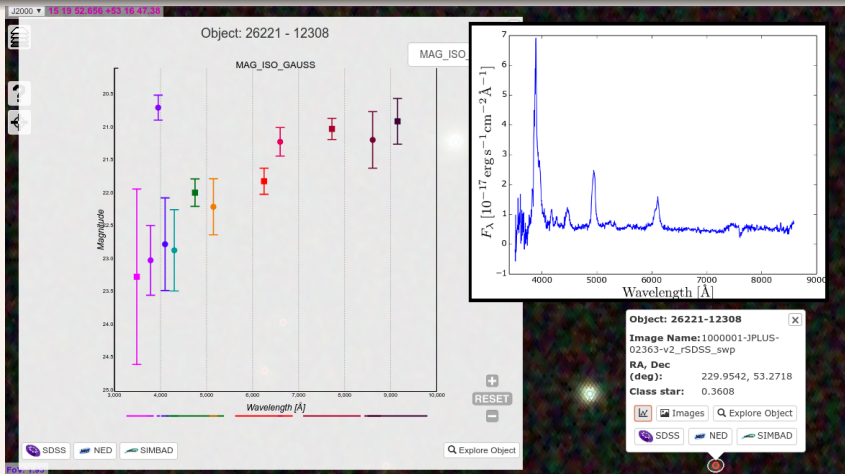
Ly α emitters at $z \sim 2$

Spinoso+18 (in prep.) search for J0395 emitters: **632 candidates**.
 Spectroscopic follow up of 21 sources with GTC :
 80% emitters (75% $z \sim 2.25$ QSOs + 25% $z \sim 1.52$ QSOs)



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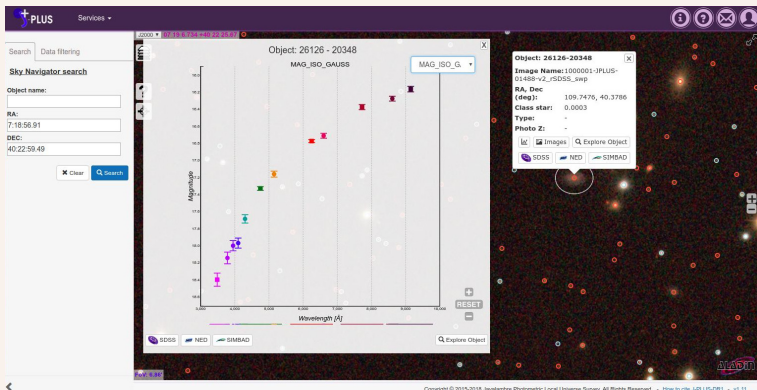
Summary

<https://archive.cefca.es/catalogues/jplus-dr1>

1022 deg² with 12 optical filters

13.5M objects → 4.3M stars + 3M galaxies with $r \leq 21$

Cenarro et al. 2018, A&A, submitted [ArXiv: 1804.02667]



Summary

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J-PLUS DR1 vs Apertif ~ 370 deg²
J-PLUS & J-PAS vs Apertif ~ 2200 deg²