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

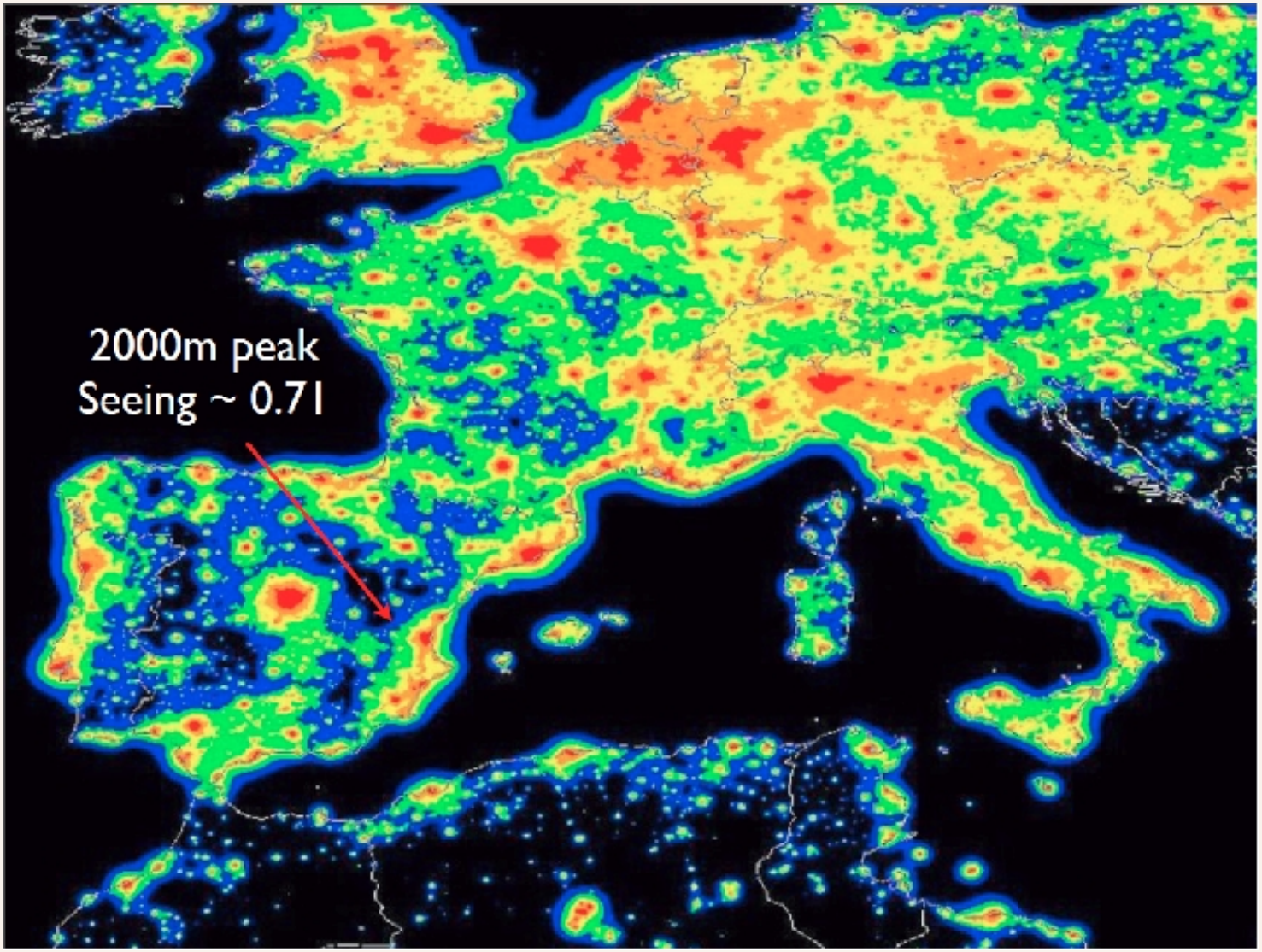
CEFCA was founded in 2008 for the construction, management, and scientific exploitation of the OAJ.

Observatorio **A**strofísico de **J**avalambre

CEFCA

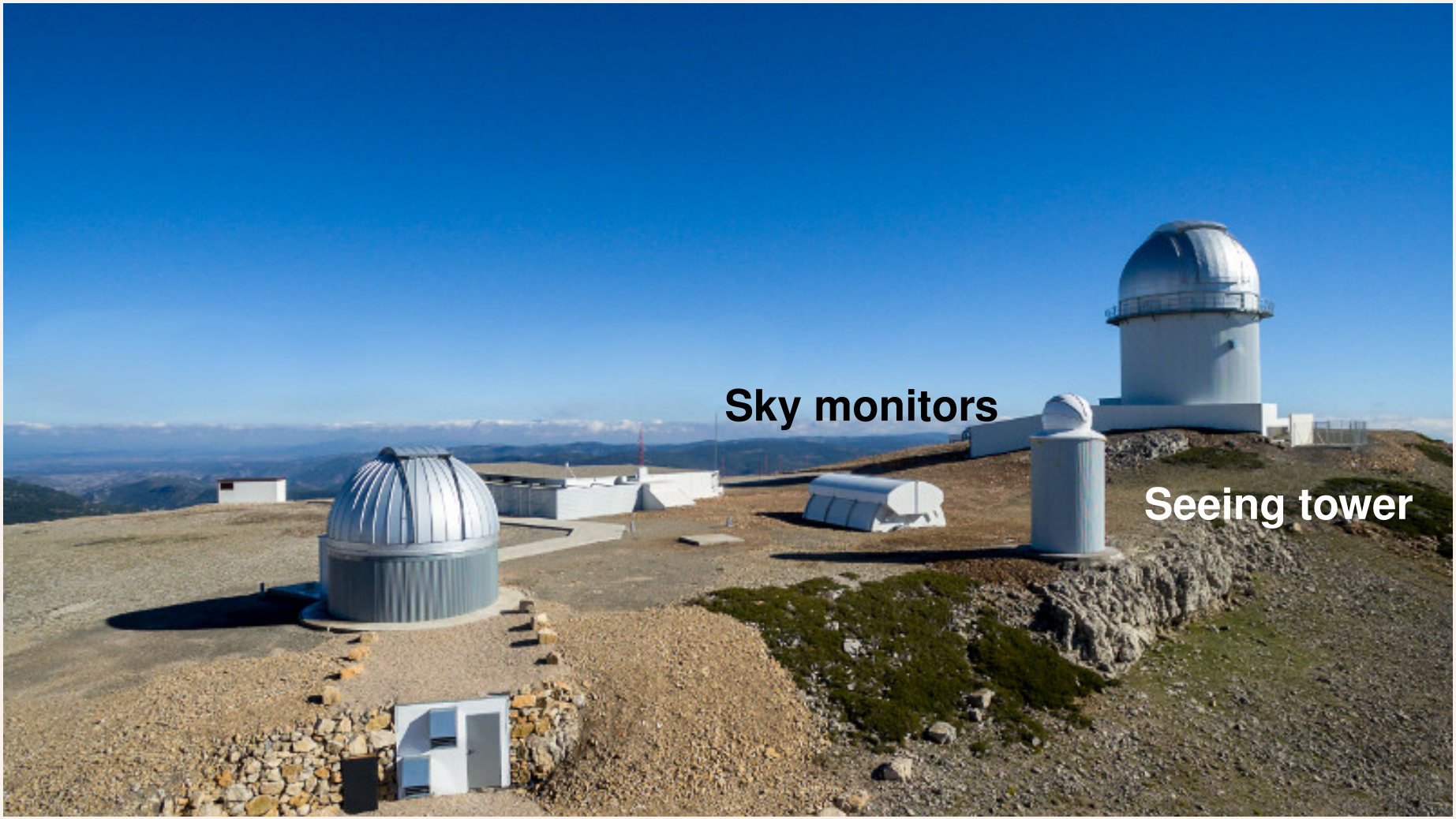
Centro de **E**studios de **F**ísica del **C**osmos de **A**ragón

OAJ : oajweb.cefca.es

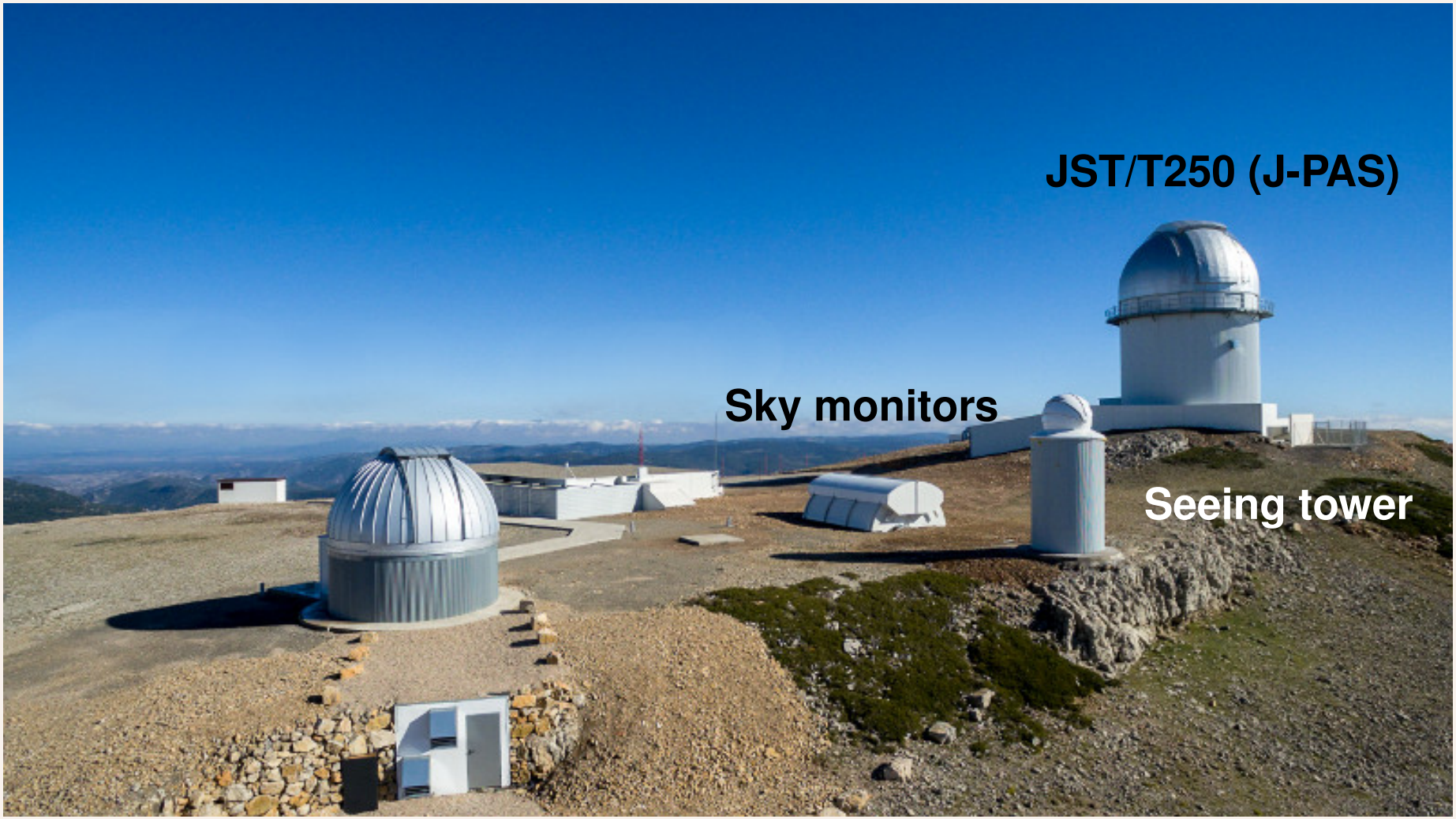


OAJ : oajweb.cefca.es

OAJ : oajweb.cefca.es

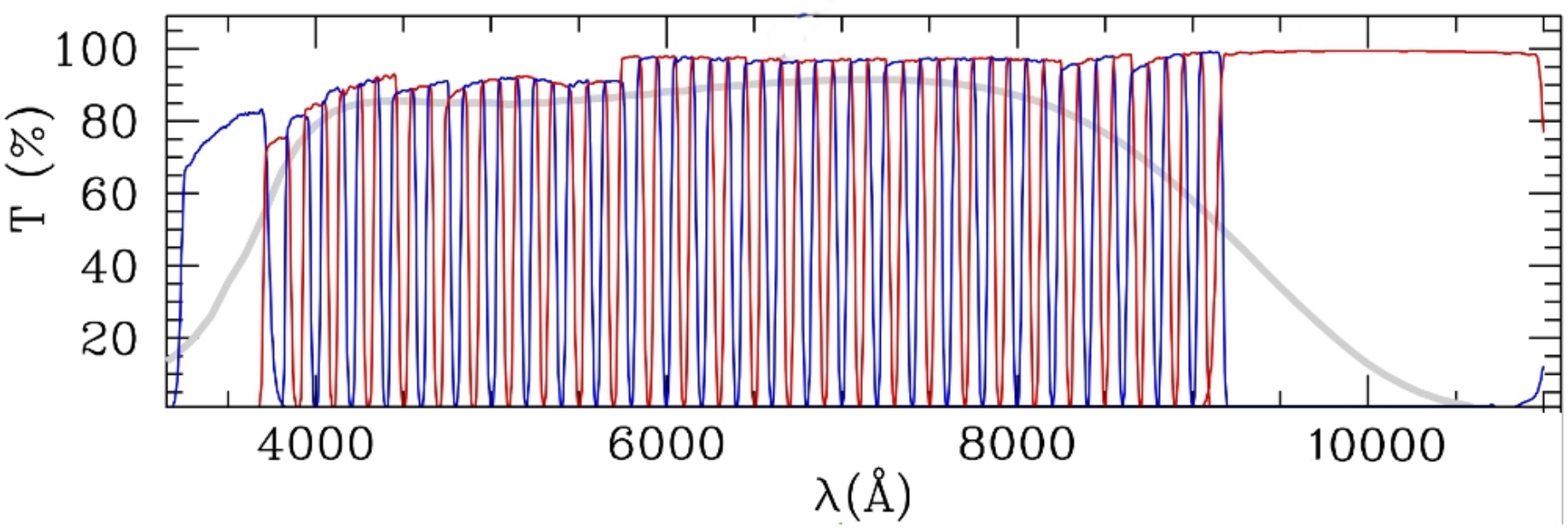


OAJ : oajweb.cefca.es



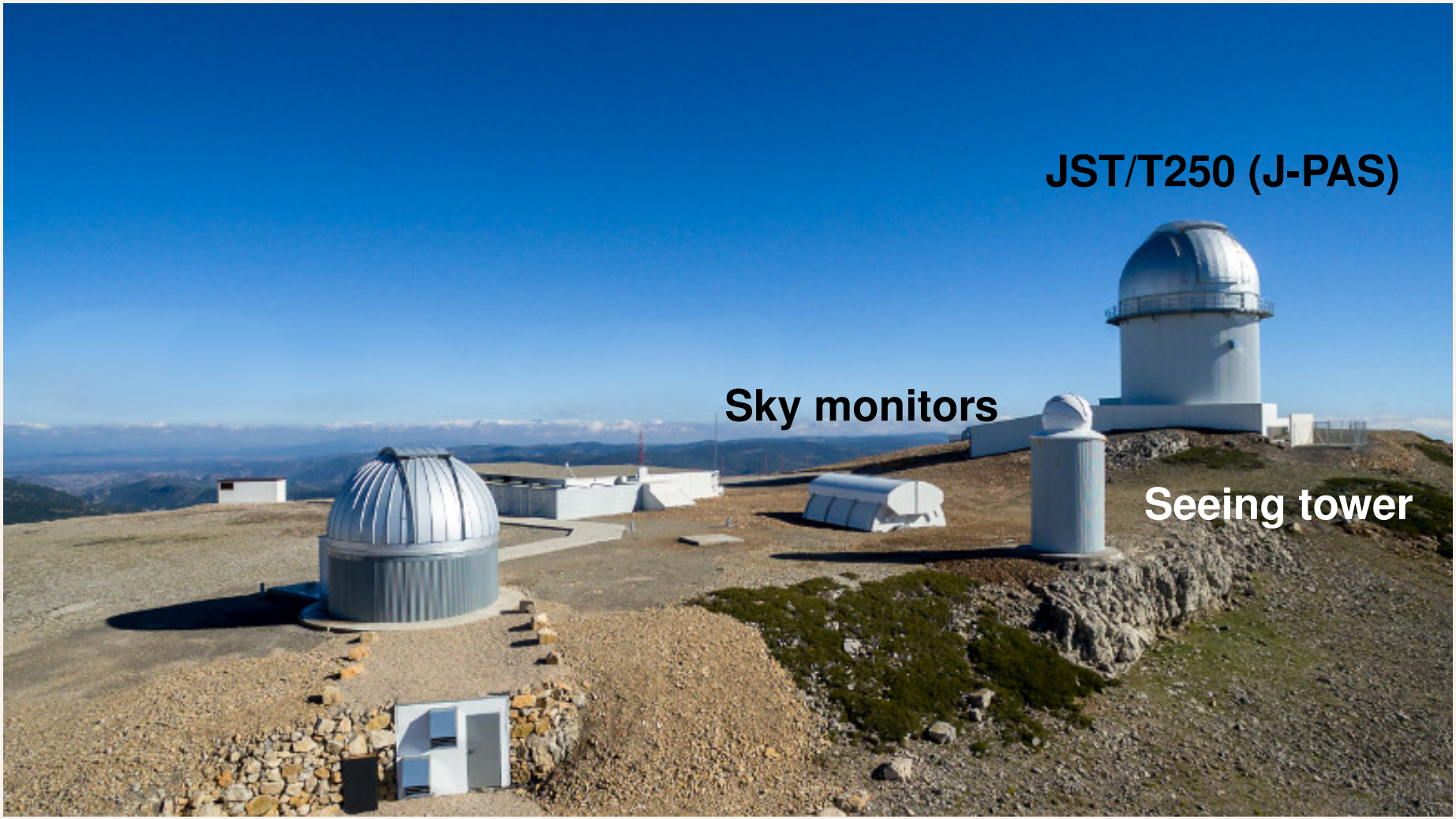
J-PAS : j-pas.org

Javalambre **P**hysics of the accelerating Universe **A**strophysical **S**urvey (Benítez+14)

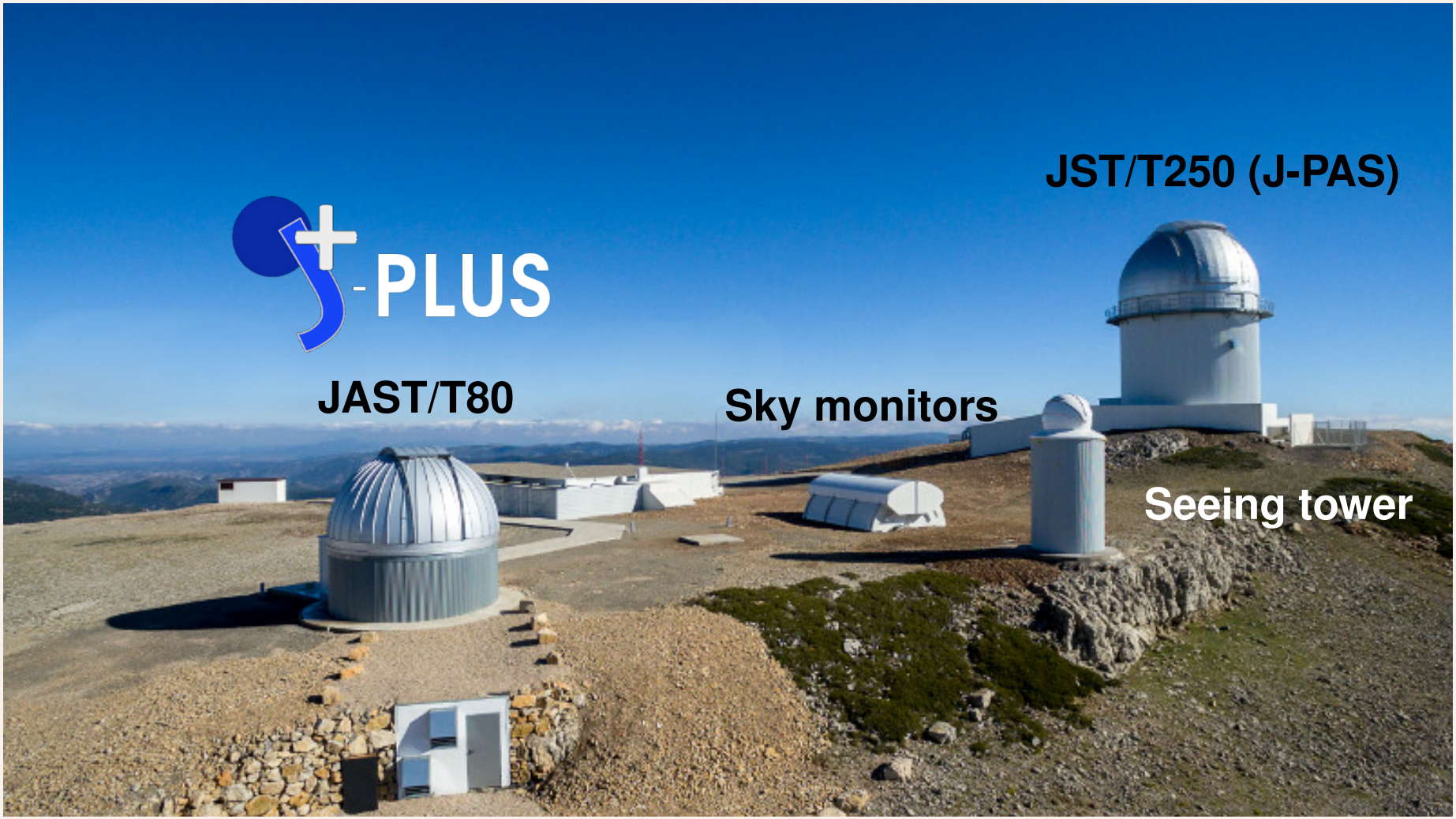


54 narrow-band ($\sim$ 130Å) + 2 medium-band filters + *ugr*
Low-resolution ($R \sim 50$) photo-spectra in 8,500 deg^2 with NB $\sim$ 22.5 (AB)
This translates to photo-zs with $\sigma_z/(1+z) \sim$ **1000 km/s**

OAJ : oajweb.cefca.es



OAJ : oajweb.cefca.es



T80Cam & JAST/T80

JAST/T80

M1 (∅) = 0.83 m

FoV = 3.14 deg^2

Effective collecting area = 0.44 m^2

Field corrector of 3 lenses

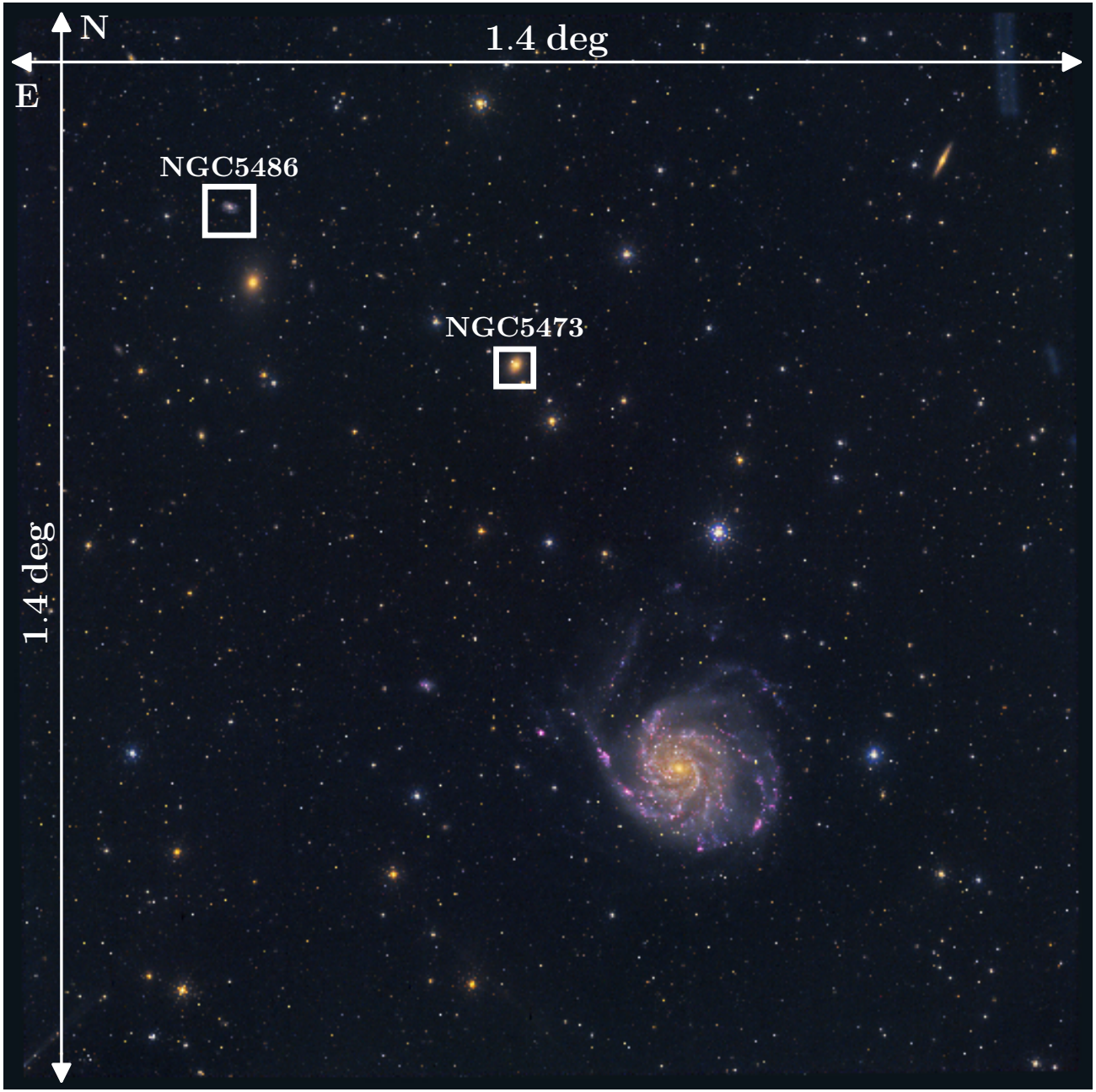
Mass of ∼2.500 kg

T80Cam

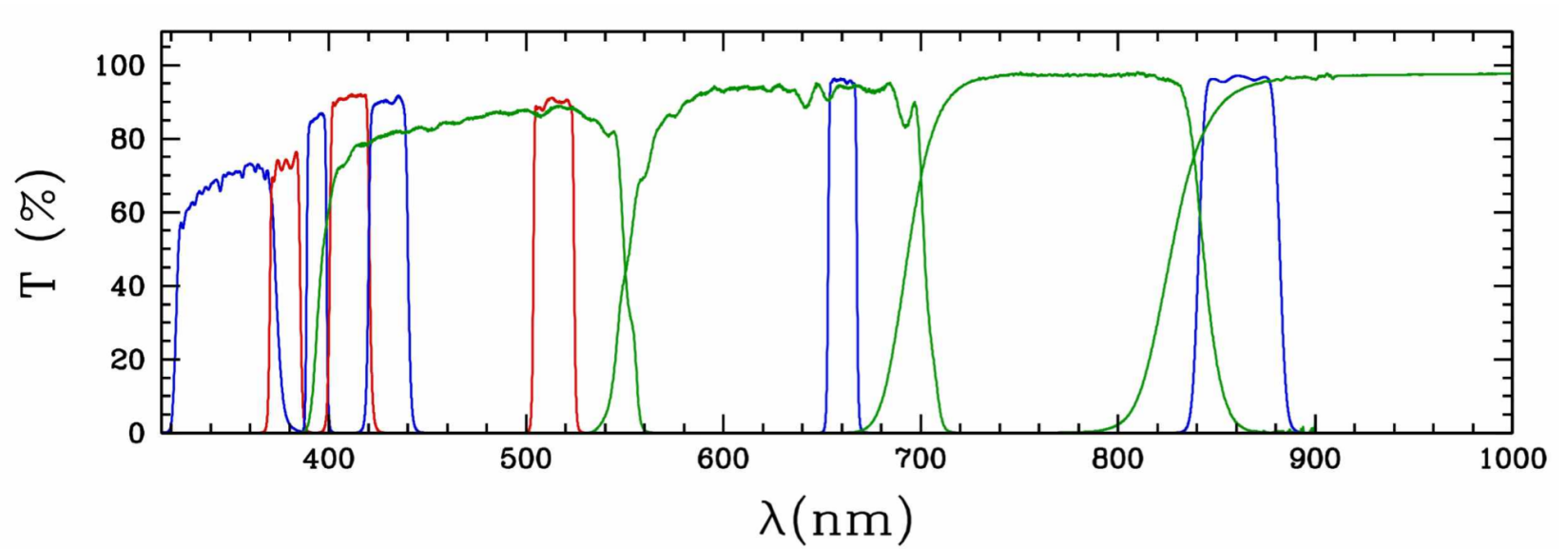
Detector: 9200 × 9200

Plate scale = 0.55″ per pixel

FoV = 2 deg^2


N
E
1.4 deg
1.4 deg
NGC5486
NGC5473

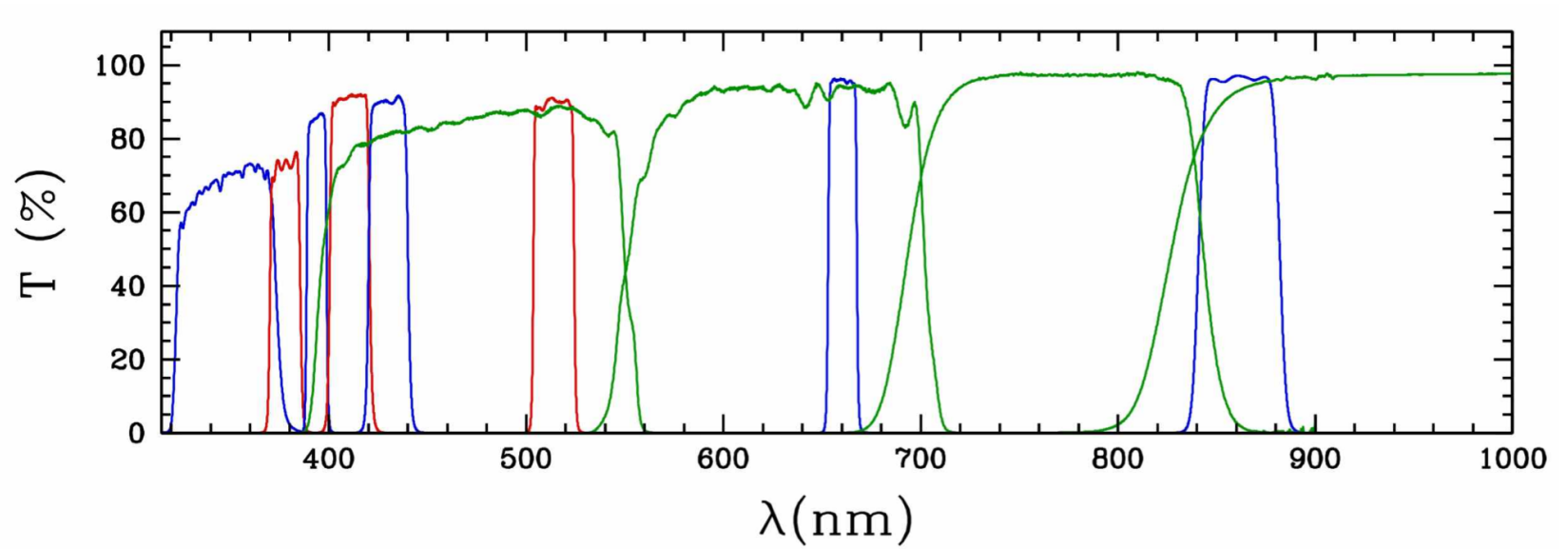
Filter System



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

Filter	λ (nm)	$\Delta\lambda$ (nm)	Note
*J*0378	378.5	16.8	[OII]
*J*0395	395.0	10.0	Ca H+K
*J*0410	410.0	20.0	Hδ
*J*0430	430.0	20.0	G-band
*J*0515	515.0	20.0	Mbg Triplet
*J*0660	660.0	14.5	Hα + [NII]
*J*0861	861.0	40.0	Ca Triplet

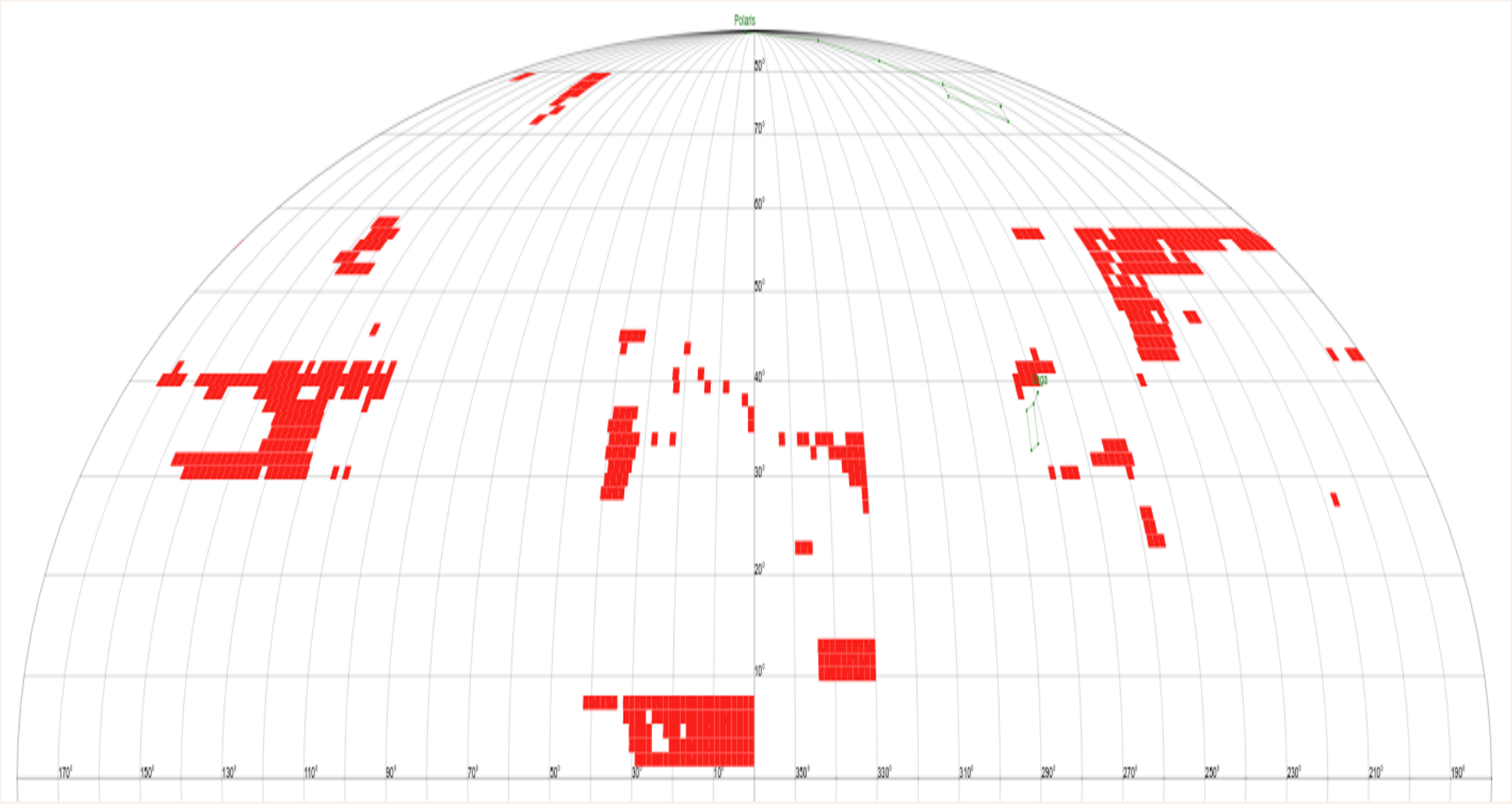
Filter System



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

Filter	λ (nm)	$\Delta\lambda$ (nm)	Note
*J*0378	378.5	16.8	[OII]
*J*0395	395.0	10.0	Ca H+K
*J*0410	410.0	20.0	Hδ
*J*0430	430.0	20.0	G-band
*J*0515	515.0	20.0	Mbg Triplet
*J*0660	660.0	14.5	Hα + [NII]
*J*0861	861.0	40.0	Ca Triplet

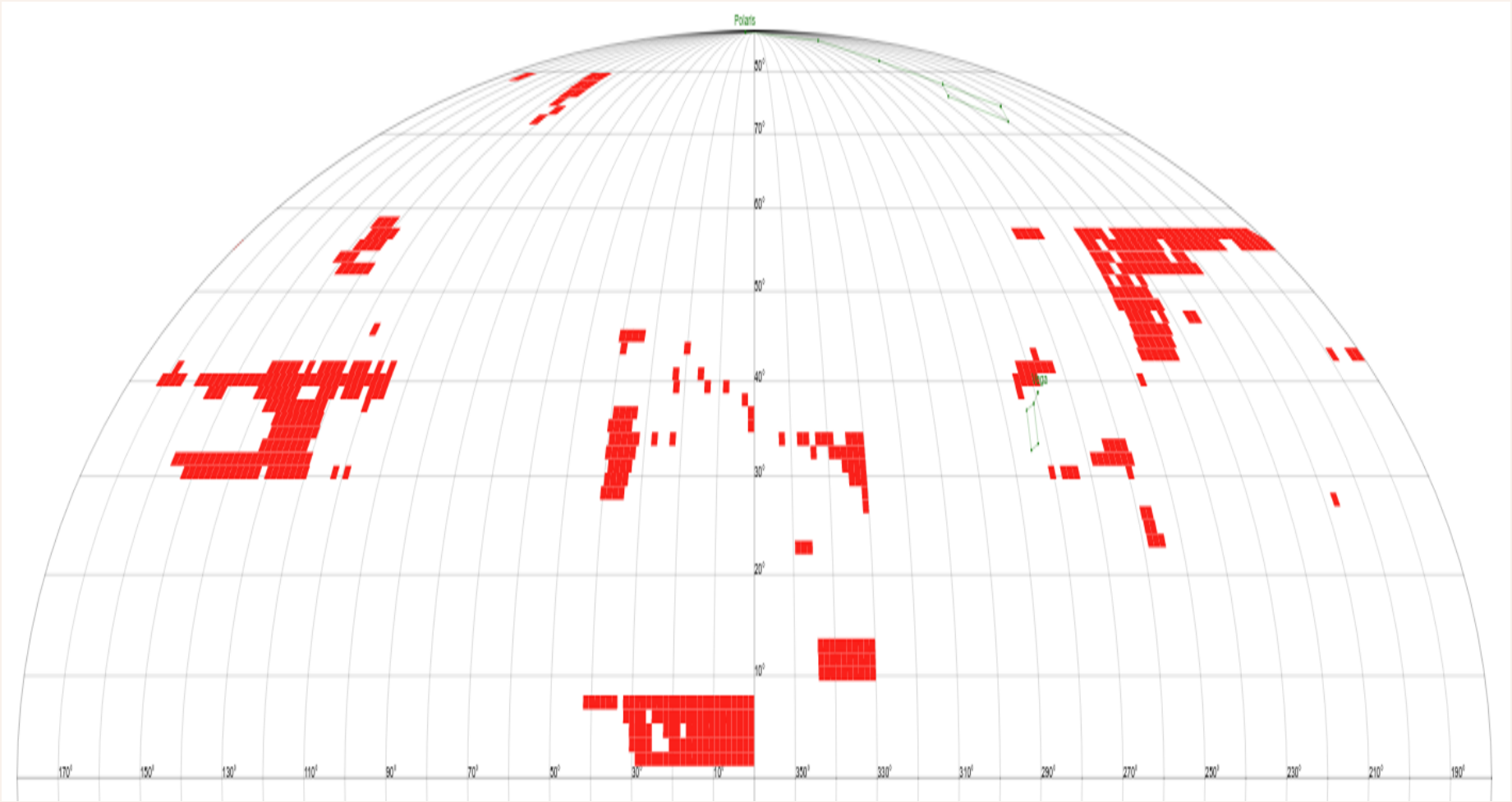
DR1 : Sky coverage



1022 deg^2 (511 tiles) observed and calibrated in 12 optical filters

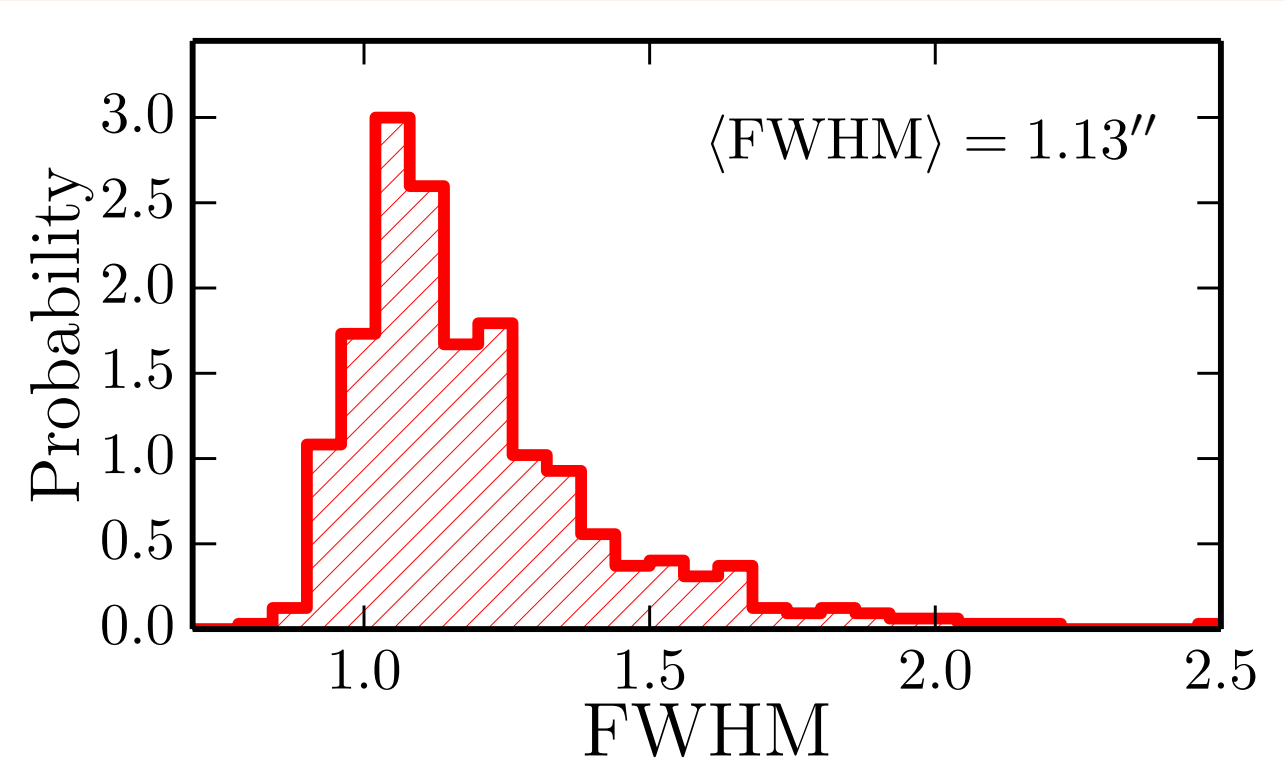
897.4 deg^2 after masking (low exposure + bright stars + artifacts) + overlap

DR1 : Sky coverage



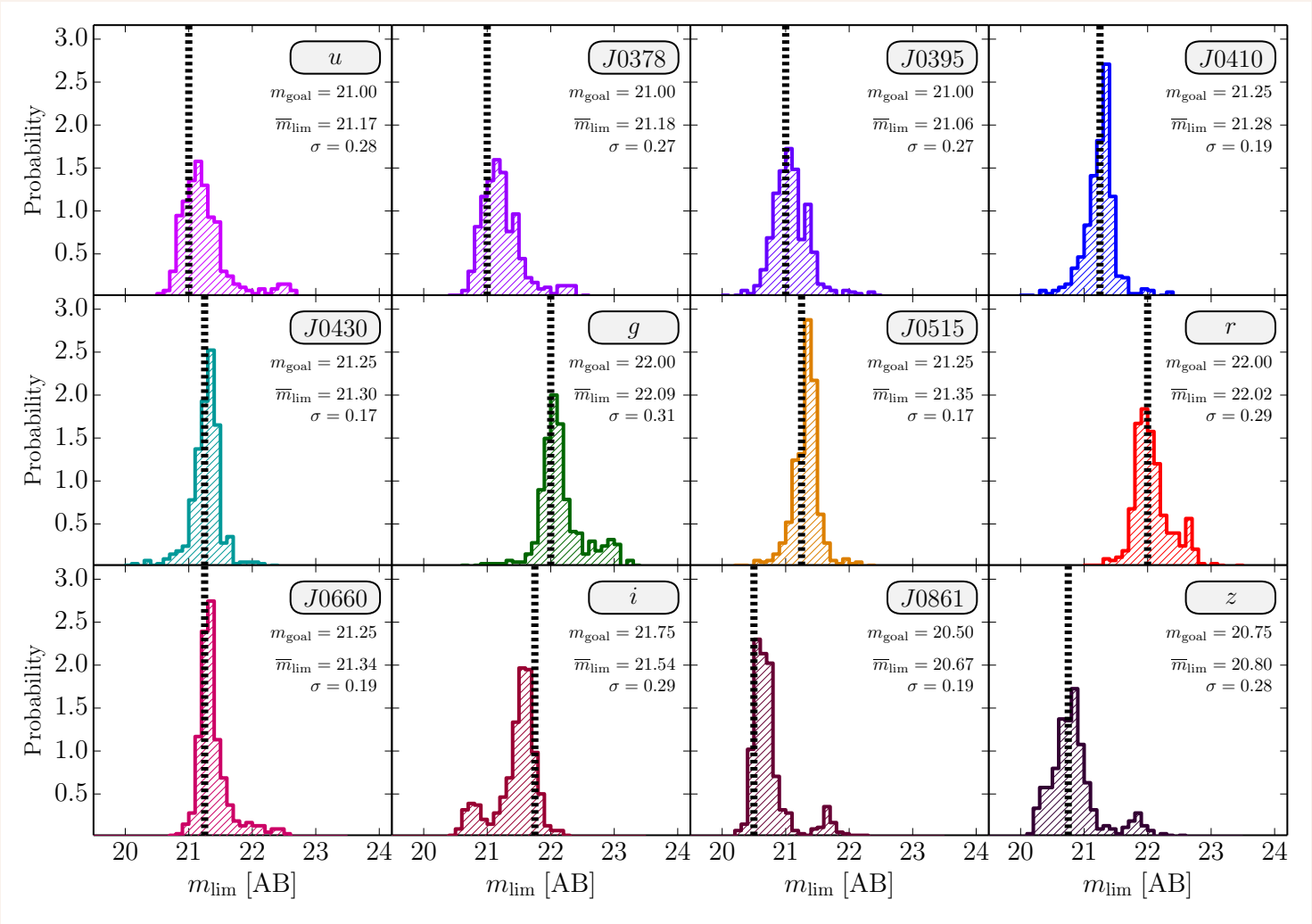
1022 deg^2 (511 tiles) observed and calibrated in 12 optical filters
897.4 deg^2 after masking (low exposure + bright stars + artifacts) + overlap

DR1 : FWHM distribution



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

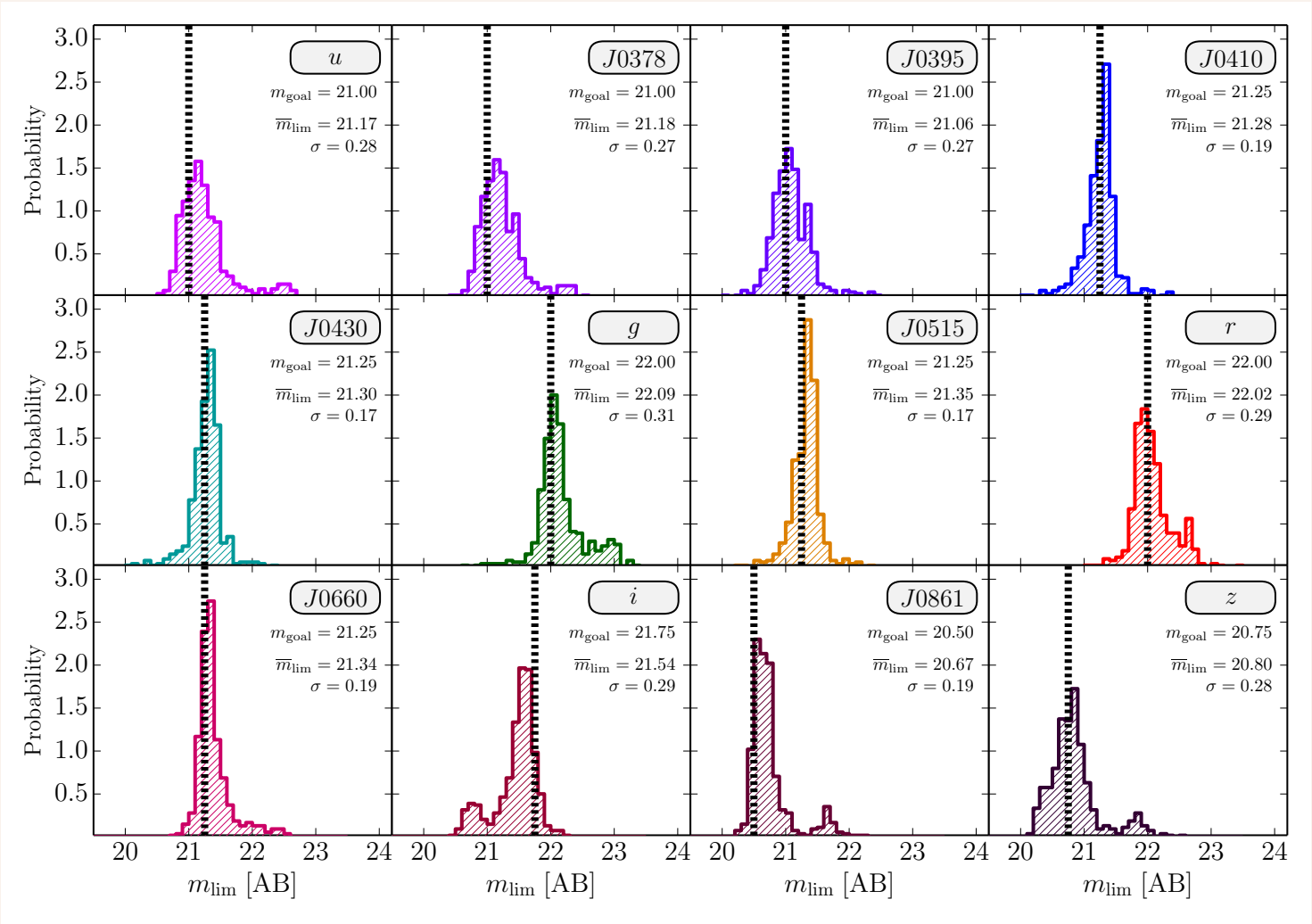
DR1 : Limiting magnitudes (3σ in 3 arcsec)



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

Absolute calibration at 2% level in the 12 filters

DR1 : Limiting magnitudes (3σ in 3 arcsec)



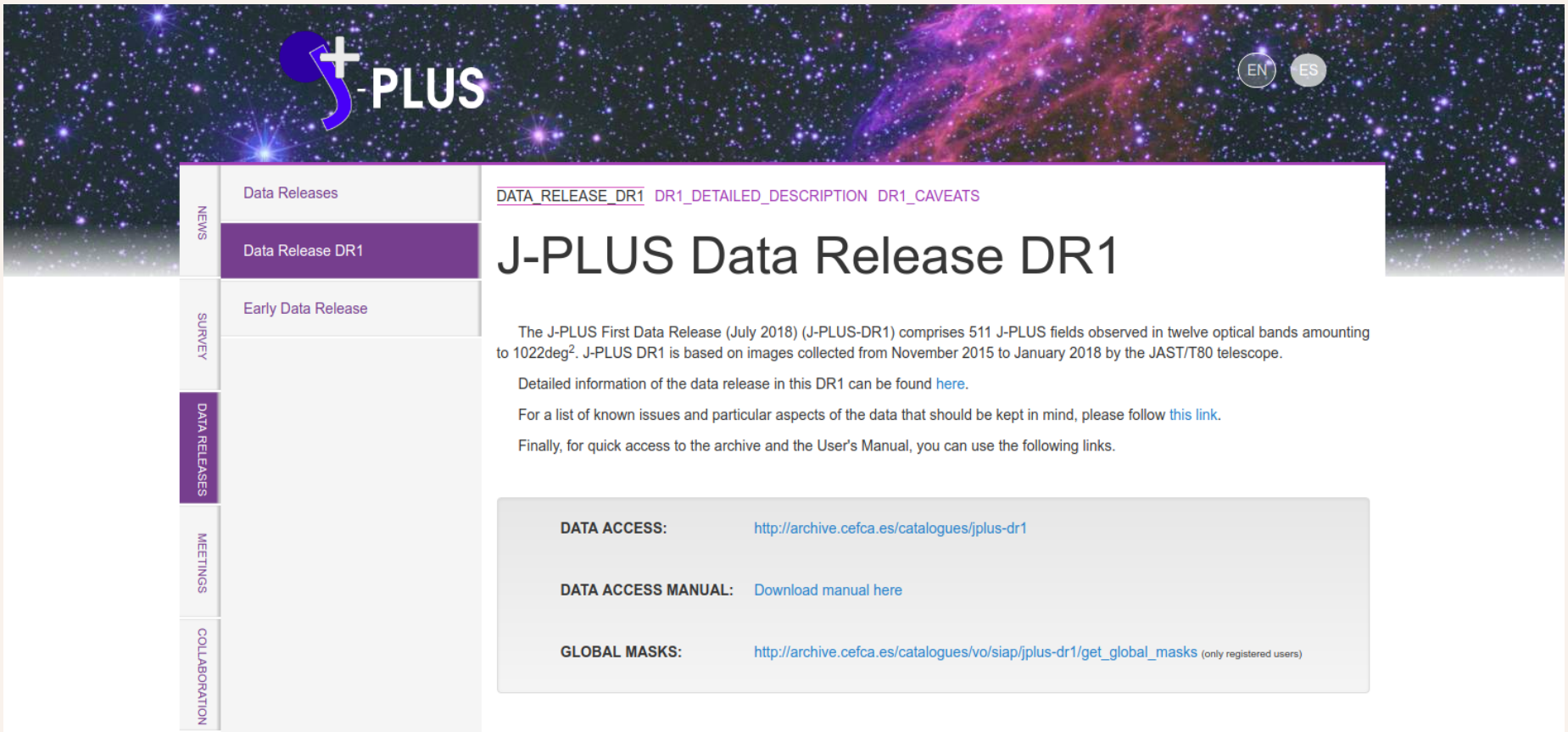
Filter	m_{lim}^{DR1}
u	21.2
*J*0378	21.2
*J*0395	21.1
*J*0410	21.3
*J*0430	21.3
g	22.1
*J*0515	21.3
r	22.0
*J*0660	21.3
i	21.5
*J*0861	20.7
z	20.8

Absolute calibration at 2% level in the 12 filters

DR1 : Data access

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

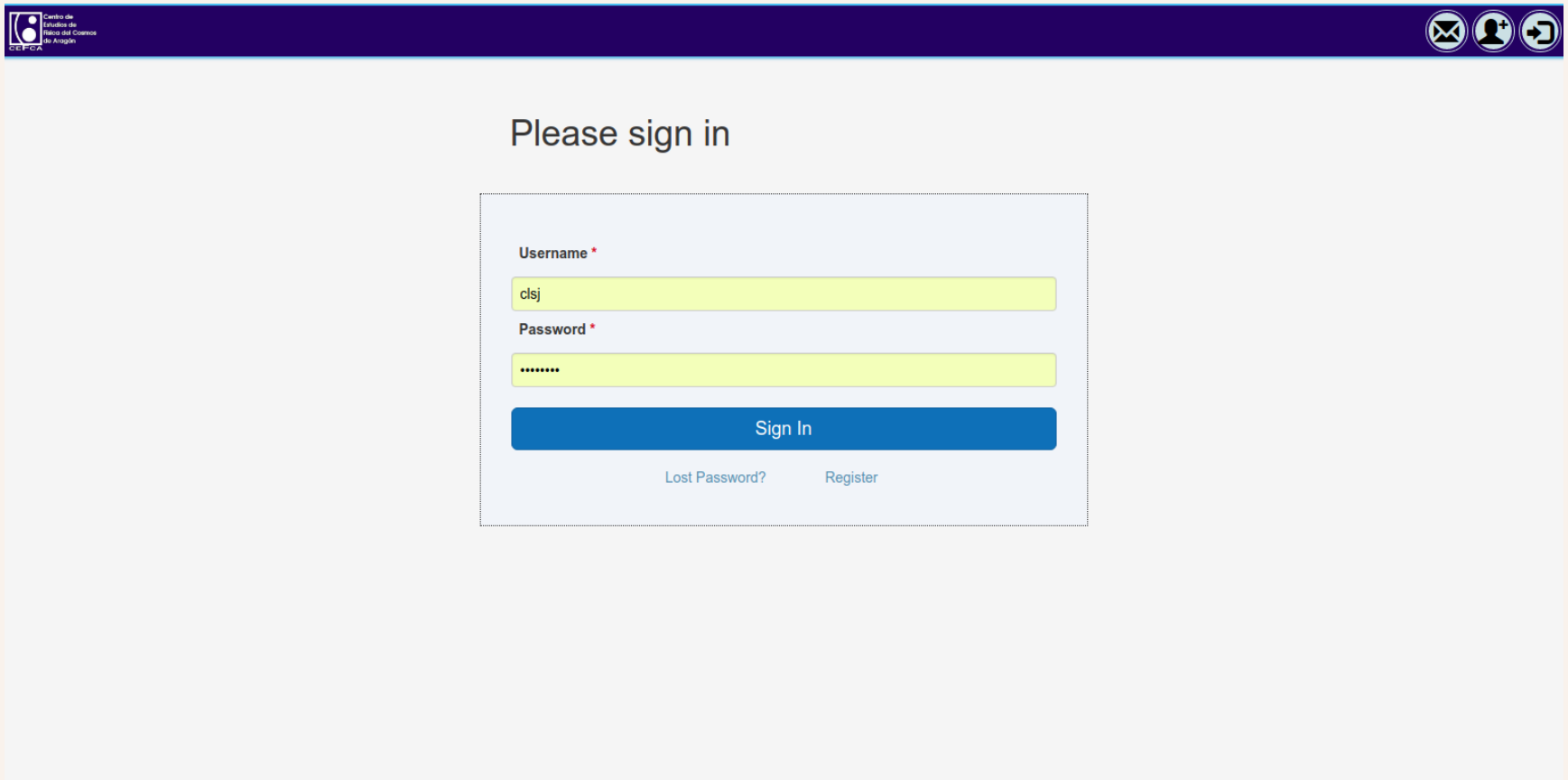
https://archive.cefca.es/catalogues/jplus-dr1



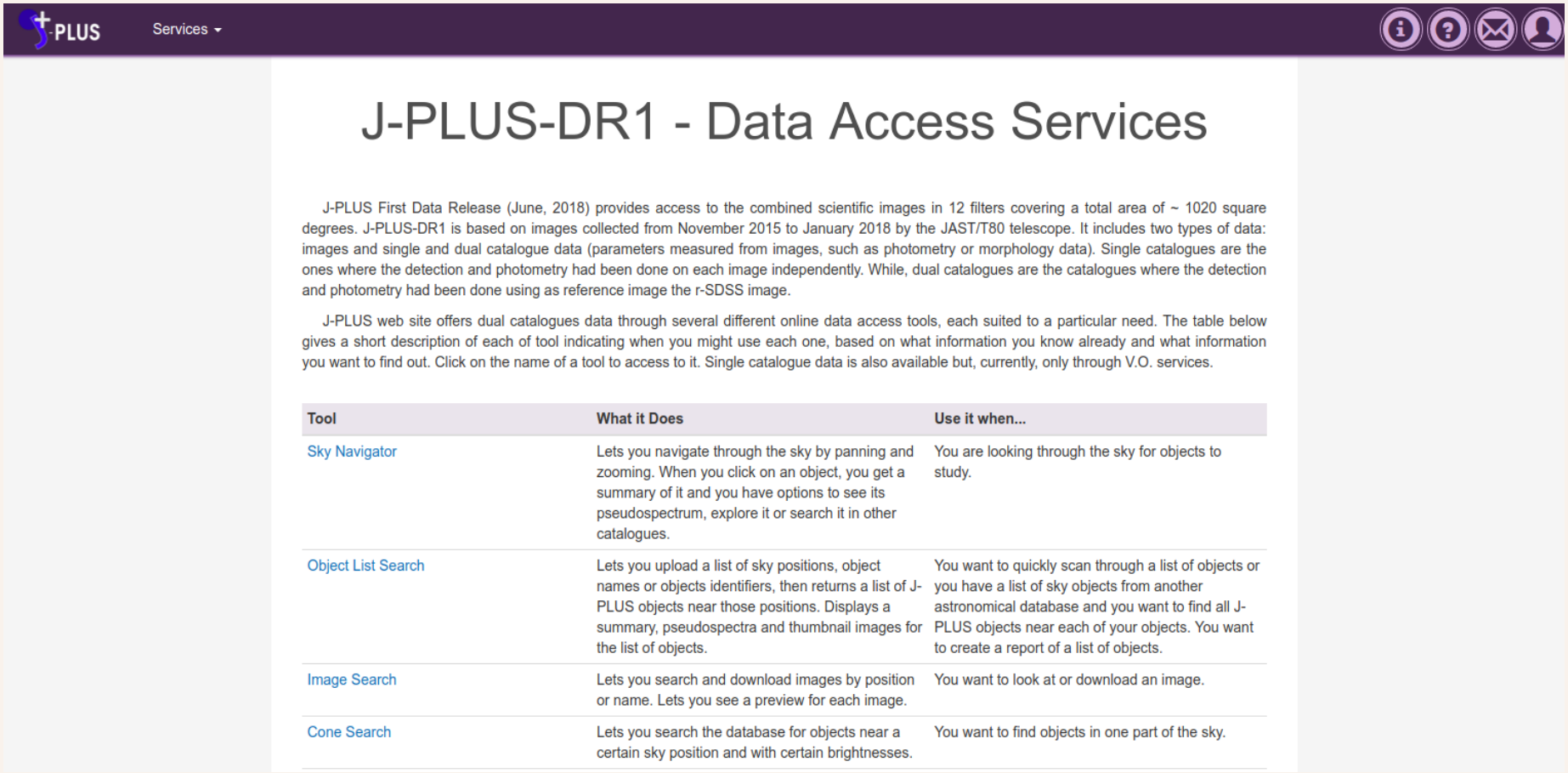
DR1 : Data access

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

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



DR1 : Data access



J-PLUS Services

J-PLUS-DR1 - Data Access Services

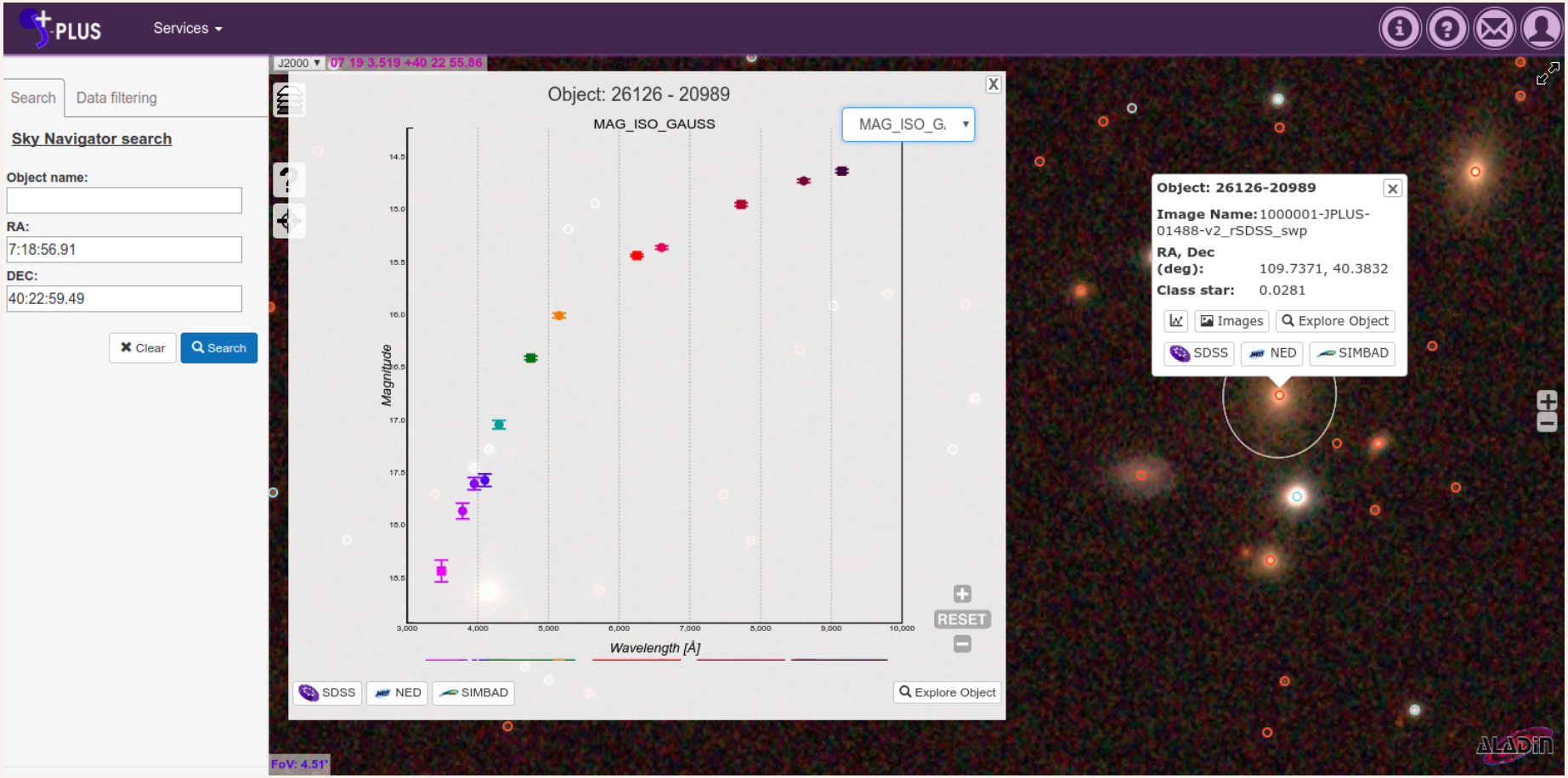
J-PLUS First Data Release (June, 2018) provides access to the combined scientific images in 12 filters covering a total area of ~ 1020 square degrees. J-PLUS-DR1 is based on images collected from November 2015 to January 2018 by the JAST/T80 telescope. It includes two types of data: images and single 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.

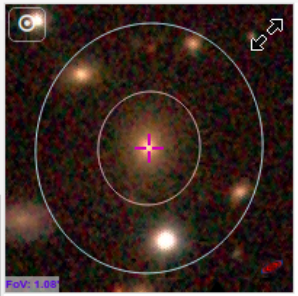
https://archive.cefca.es/catalogues/jplus-dr1

DR1 : Data access



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

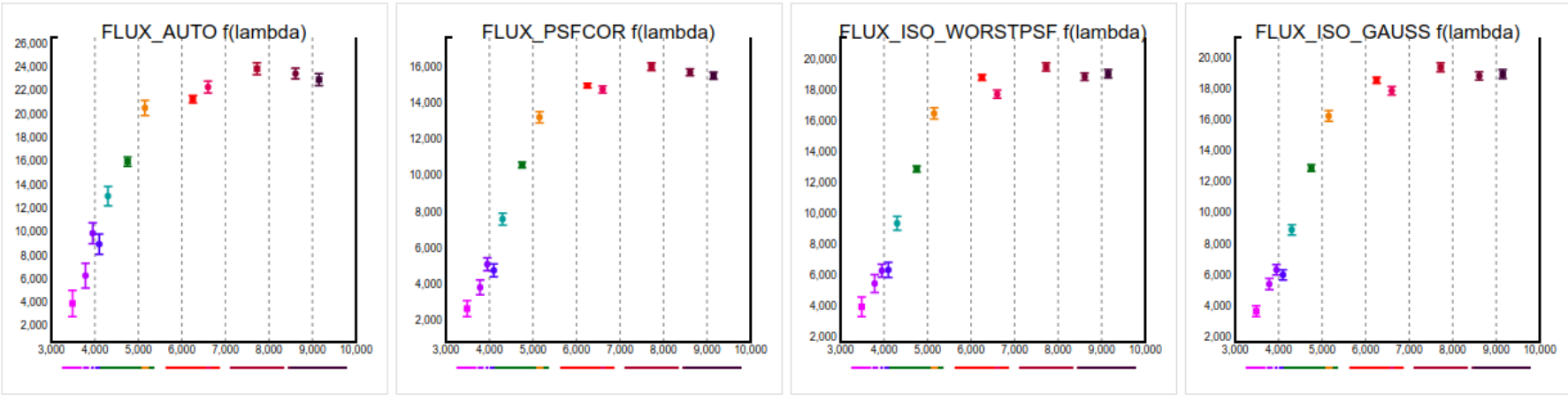
DR1 : Data access



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

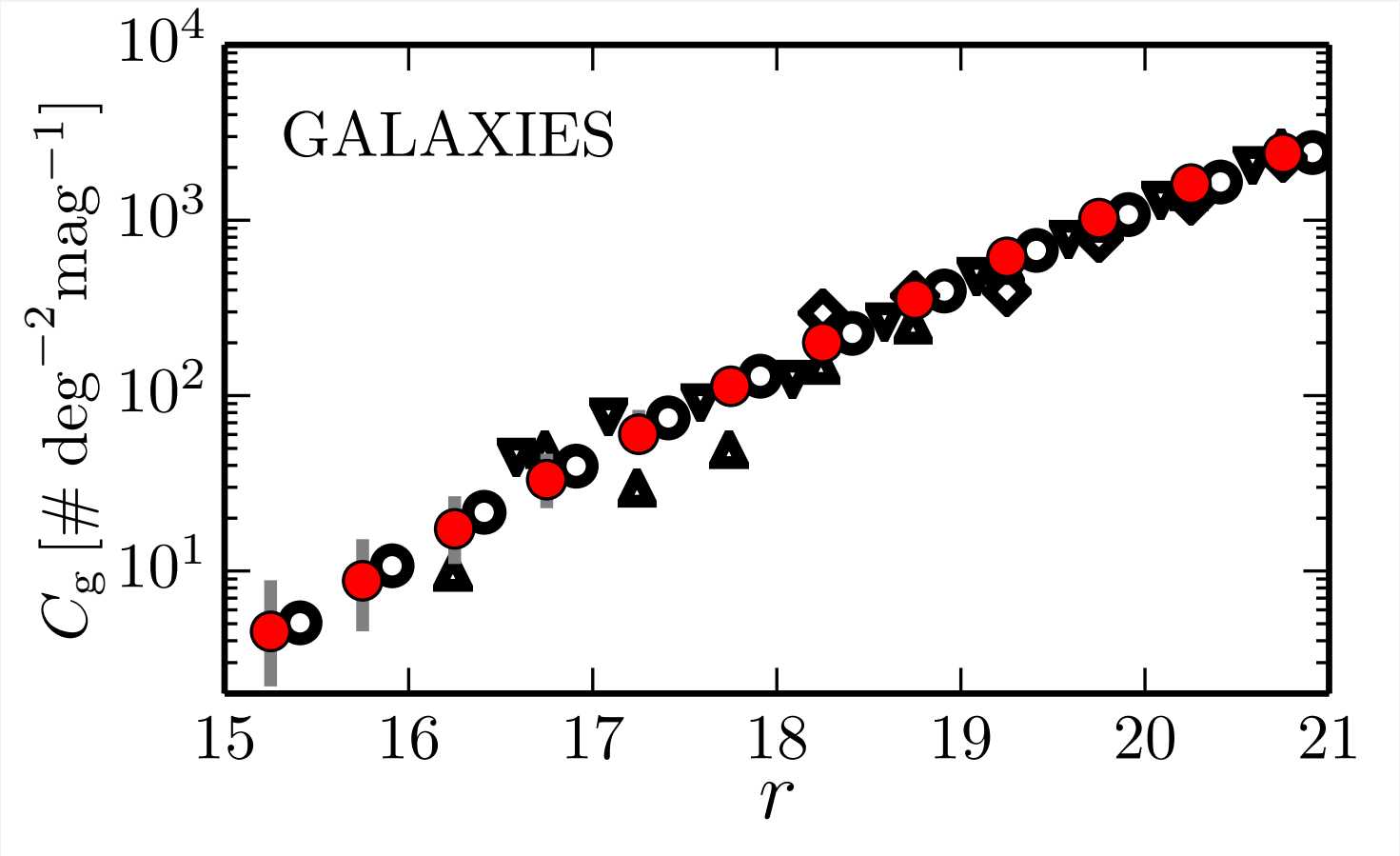
Download results | Transfer data | See in navigator | Images search | Search SDSS | Search NED | Search Simbad

Pseudo spectra



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

Galaxy number counts in J-PLUS DR1

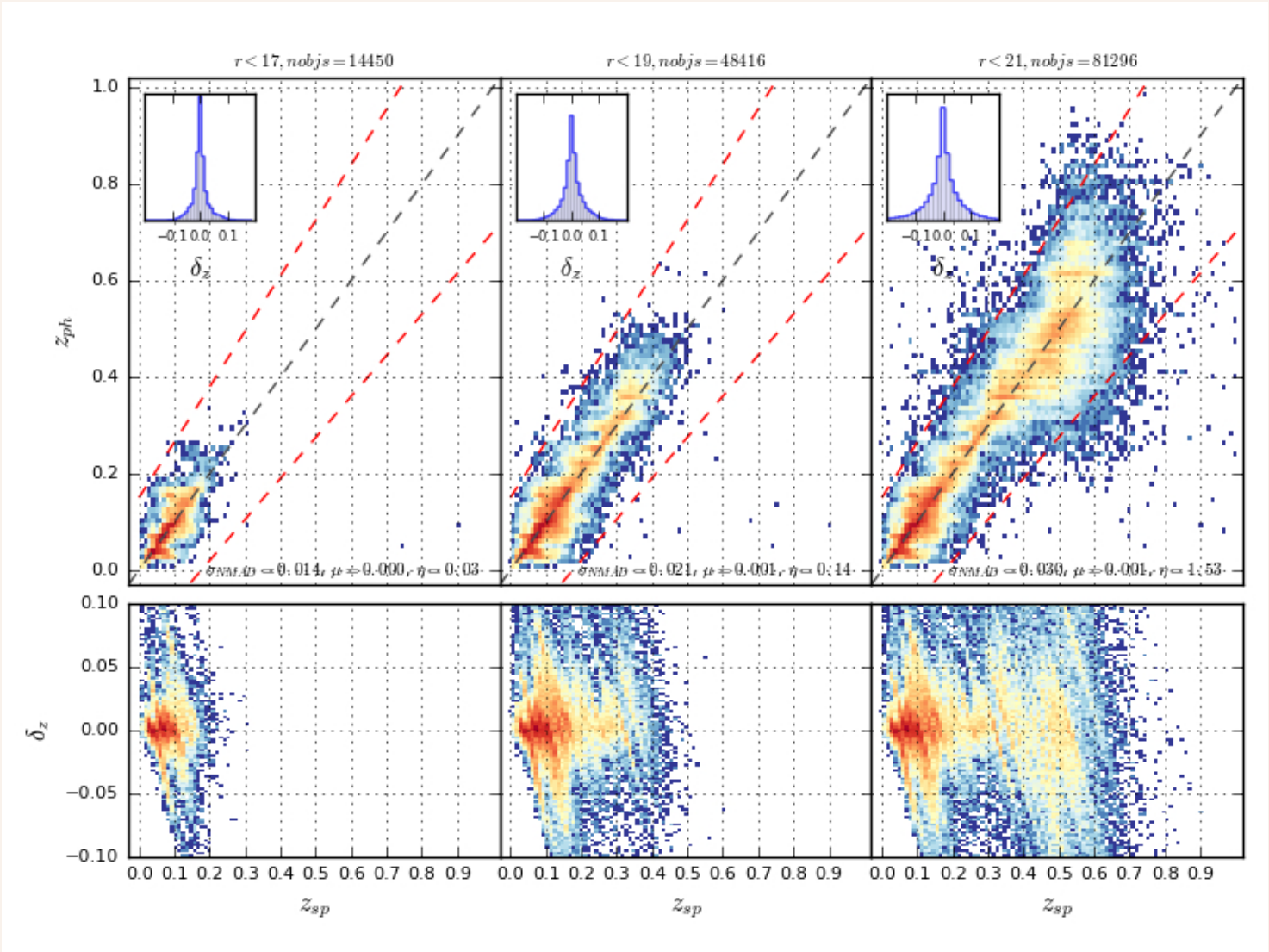


Yasuda+01
Kashikawa+04
Huang+01
Kümmel+01

J-PLUS

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)

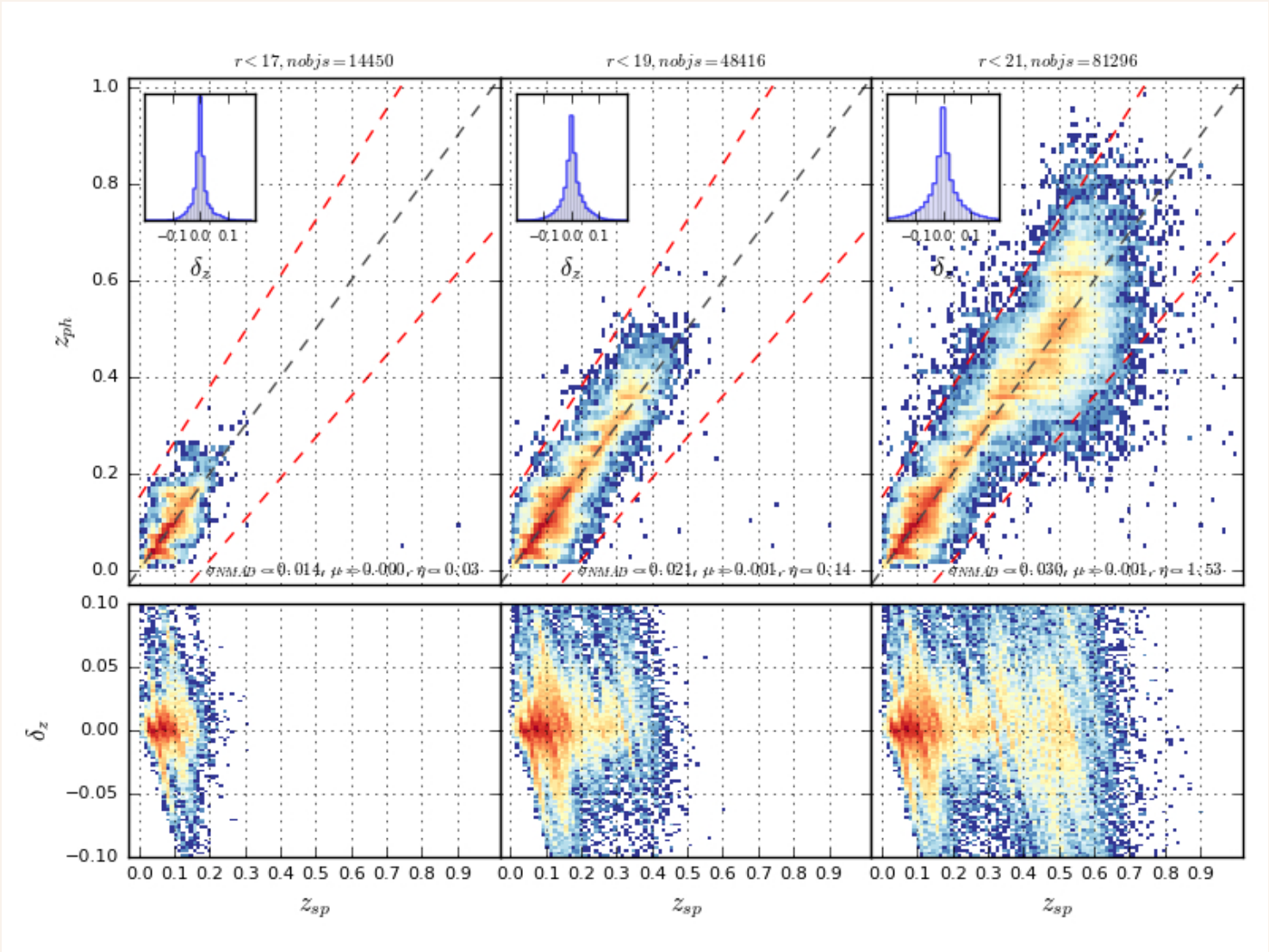
$r < 17$
$\sigma_{\mathrm{NMAD}} = 0.014$

$r < 19$
$\sigma_{\mathrm{NMAD}} = 0.021$

$r < 21$
$\sigma_{\mathrm{NMAD}} = 0.030$

LePhare (Arnouts+04, Ilbert+09)
TPZ (Carrasco Kind+13)

Photometric redshifts



BPZ2 (Benítez00, Molino+14)

$r < 17$

$\sigma_{NMAD} = 0.014$

$r < 19$

$\sigma_{NMAD} = 0.021$

$r < 21$

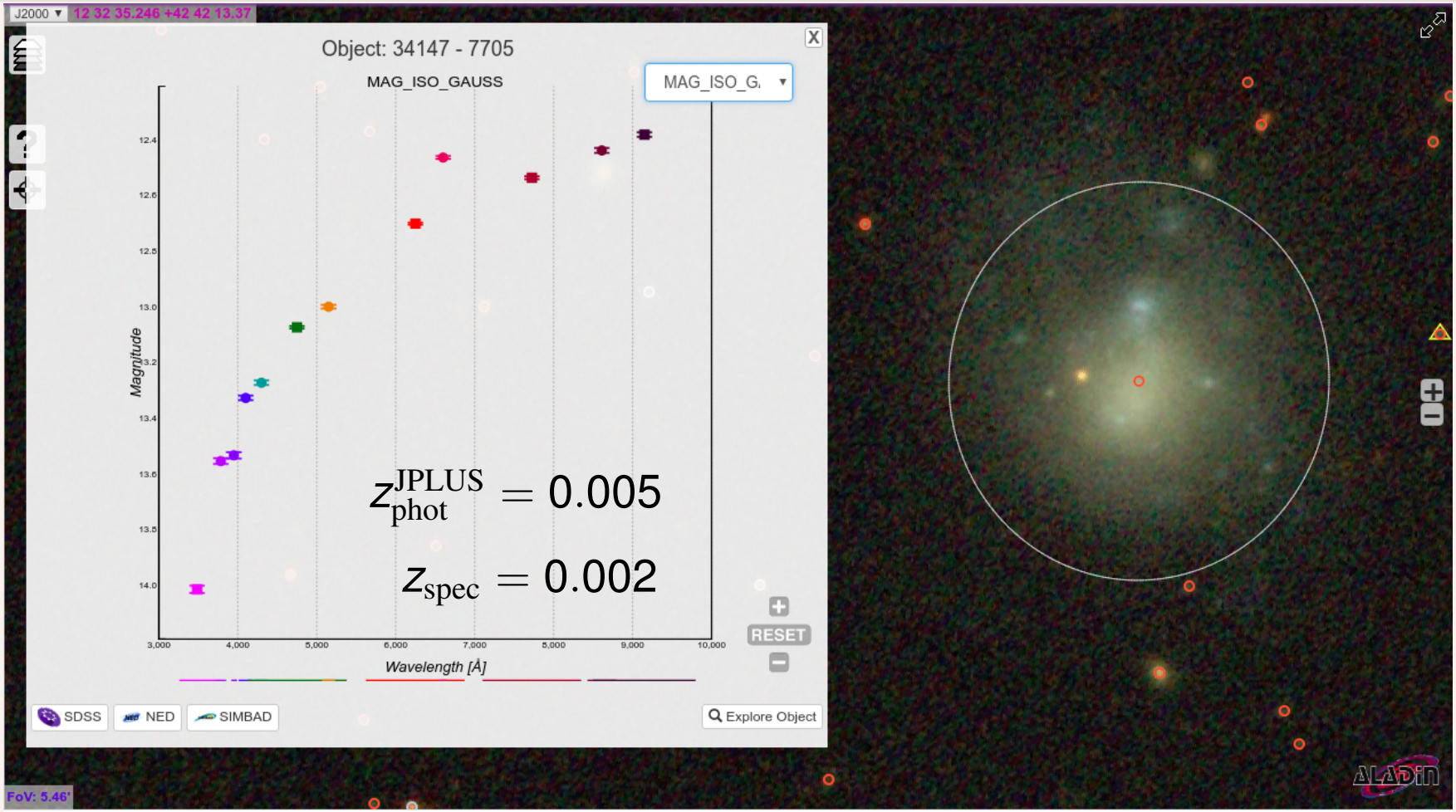
$\sigma_{NMAD} = 0.030$

LePhare (Arnouts+04, Ilbert+09)

TPZ (Carrasco Kind+13)

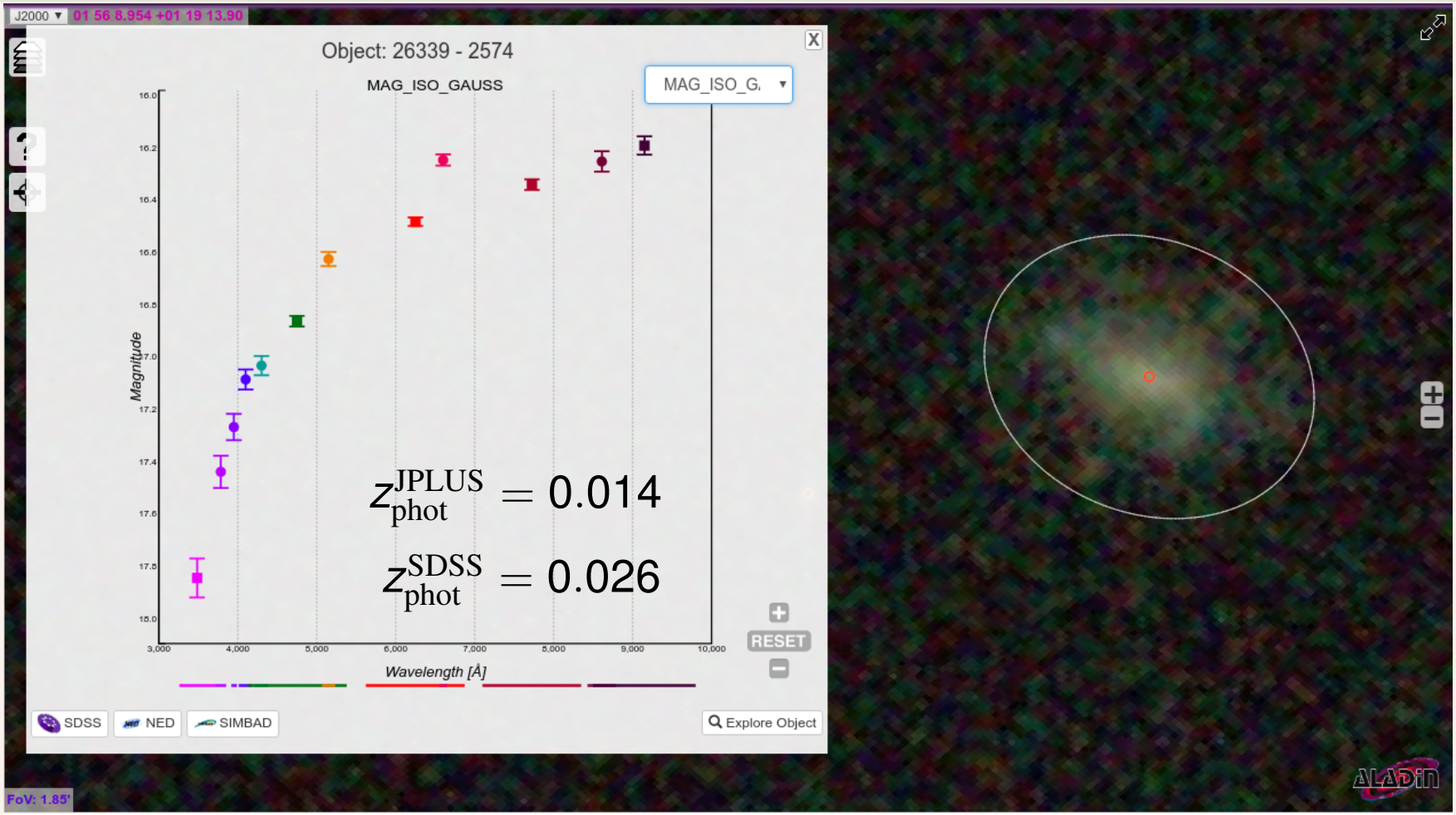
Hα at $z < 0.017$

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

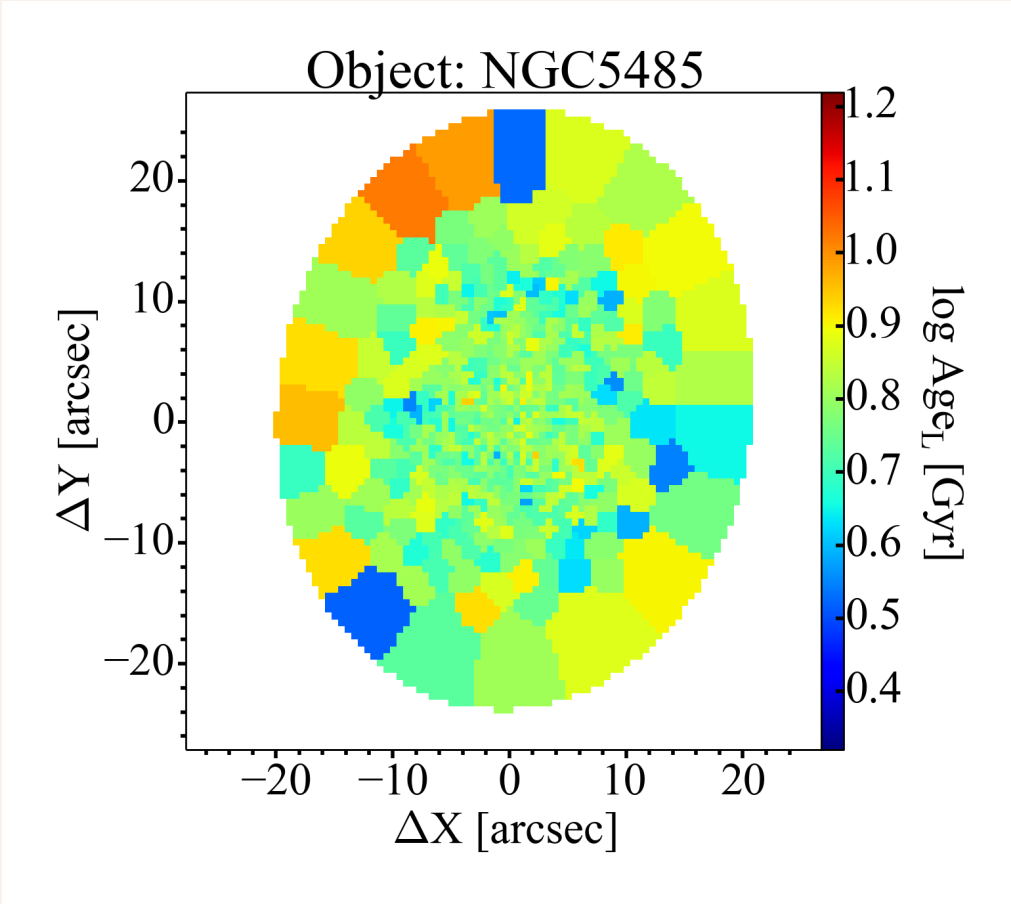


Hα at $z < 0.017$

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

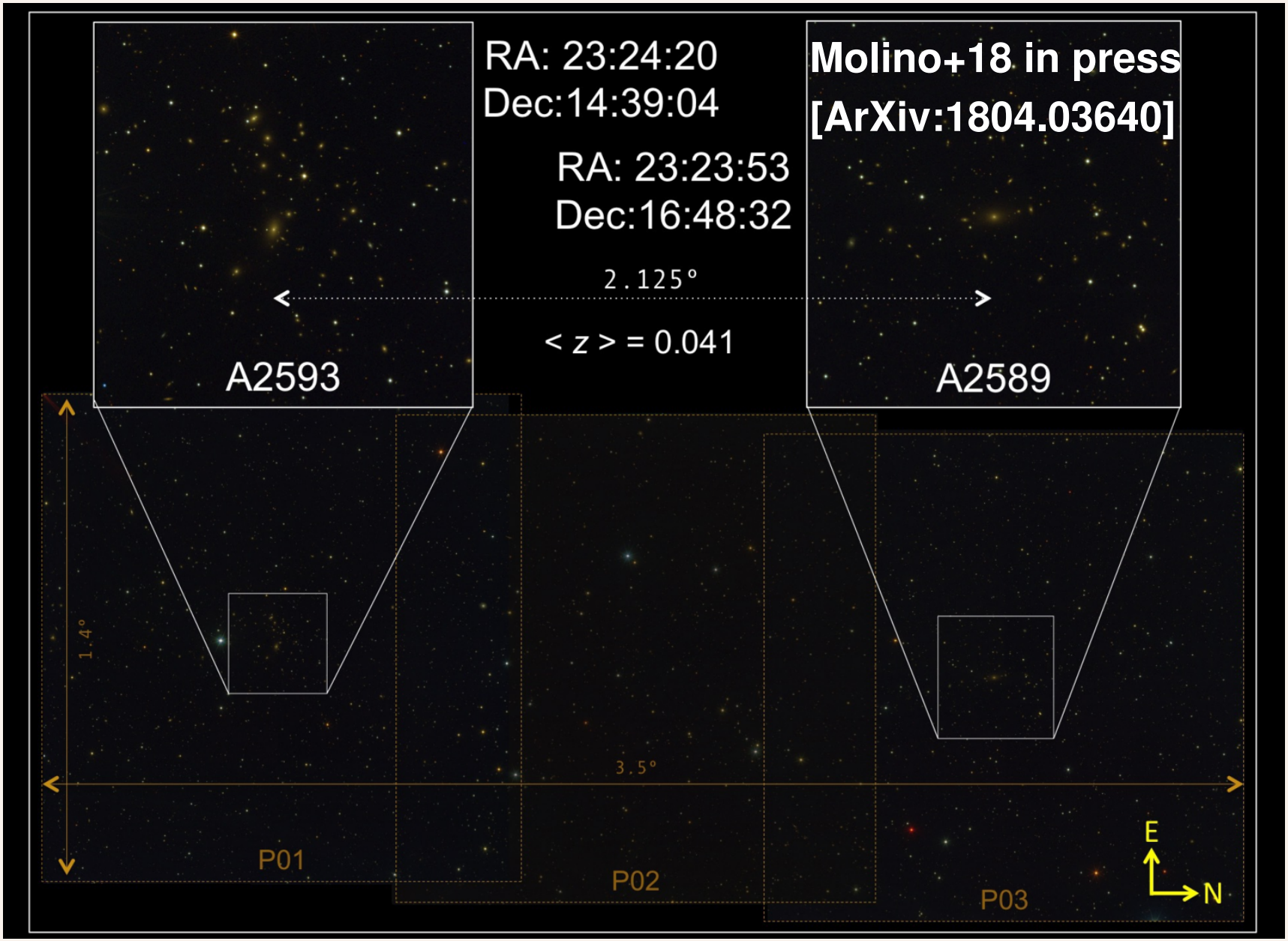


2D stellar populations

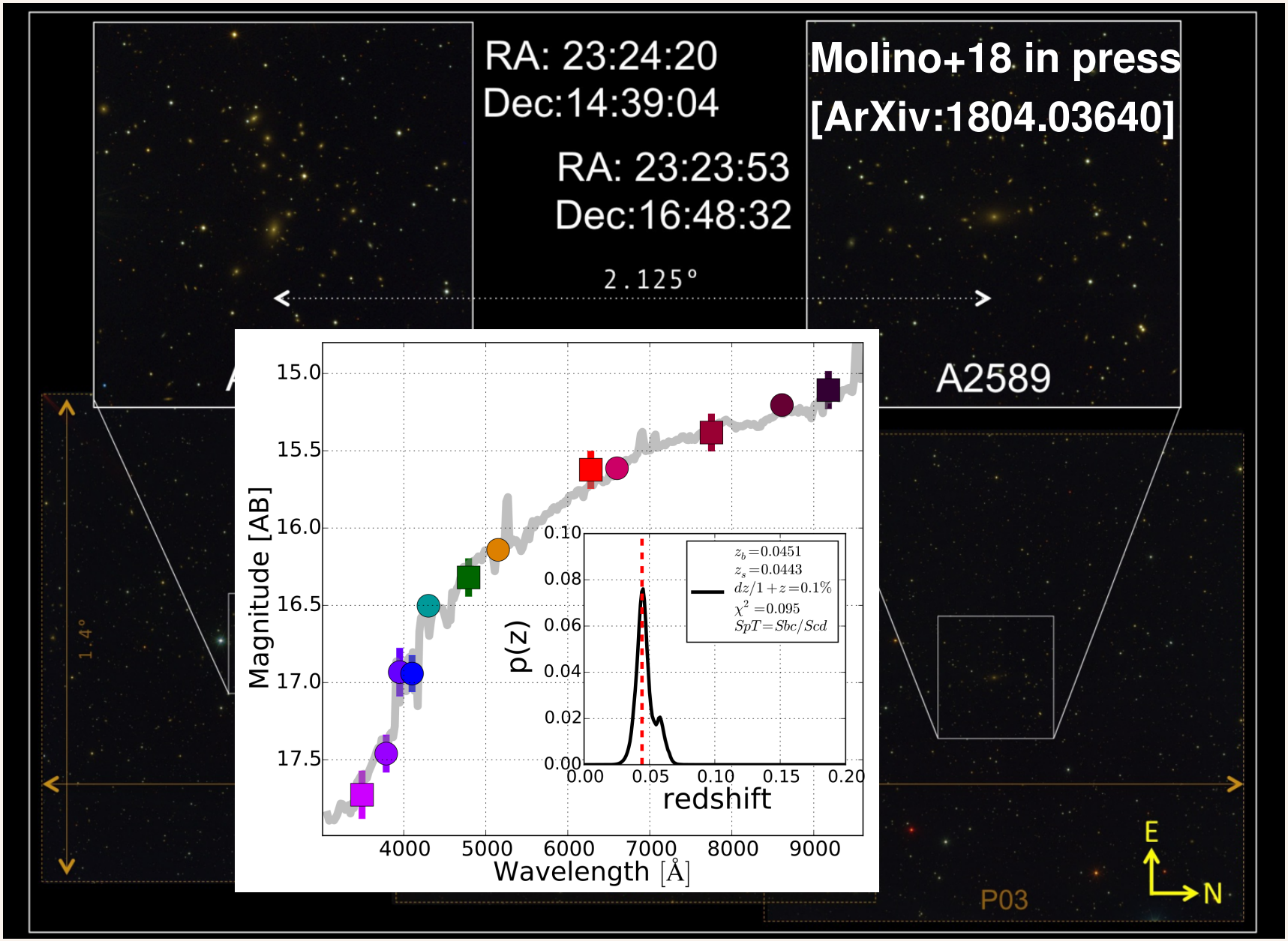


J-PLUS has five blue filters covering the 4000-break feature.
Study of 2D stellar populations in nearby galaxies
(Díaz-García+15; San Román+18ab, submitted [arXiv:1804.03727]).

Nearby clusters of galaxies



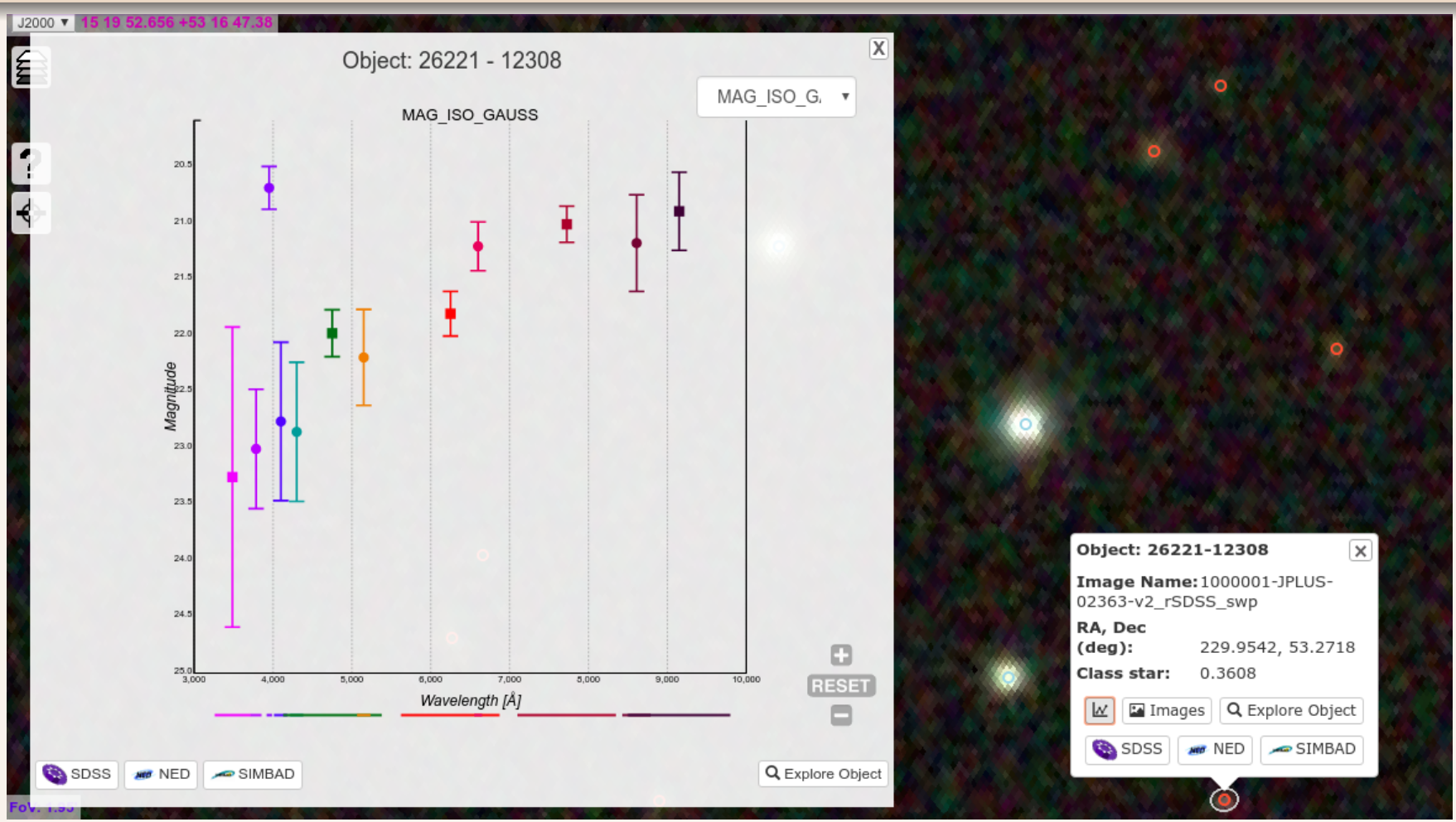
Nearby clusters of galaxies



Lyα emitters at $z \sim 2$

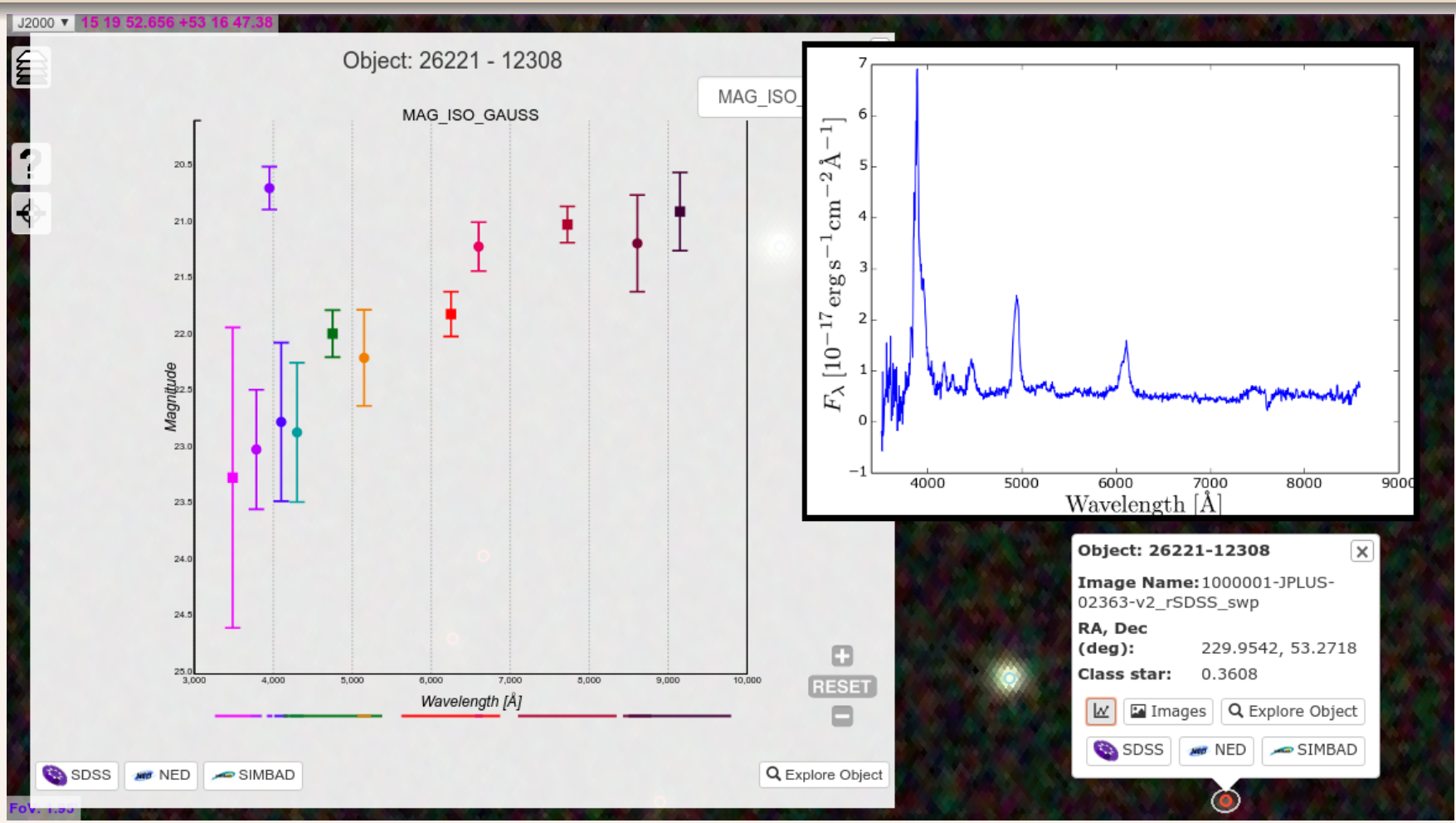
Spinoso+18 (in prep.) search for *J*0395 emitters: **632 candidates**.

Spectroscopic follow up of 21 sources with GTC :
80% emitters (75% $z \sim 2.25$ QSOs + 25% $z \sim 1.52$ QSOs)



Lyα emitters at $z \sim 2$

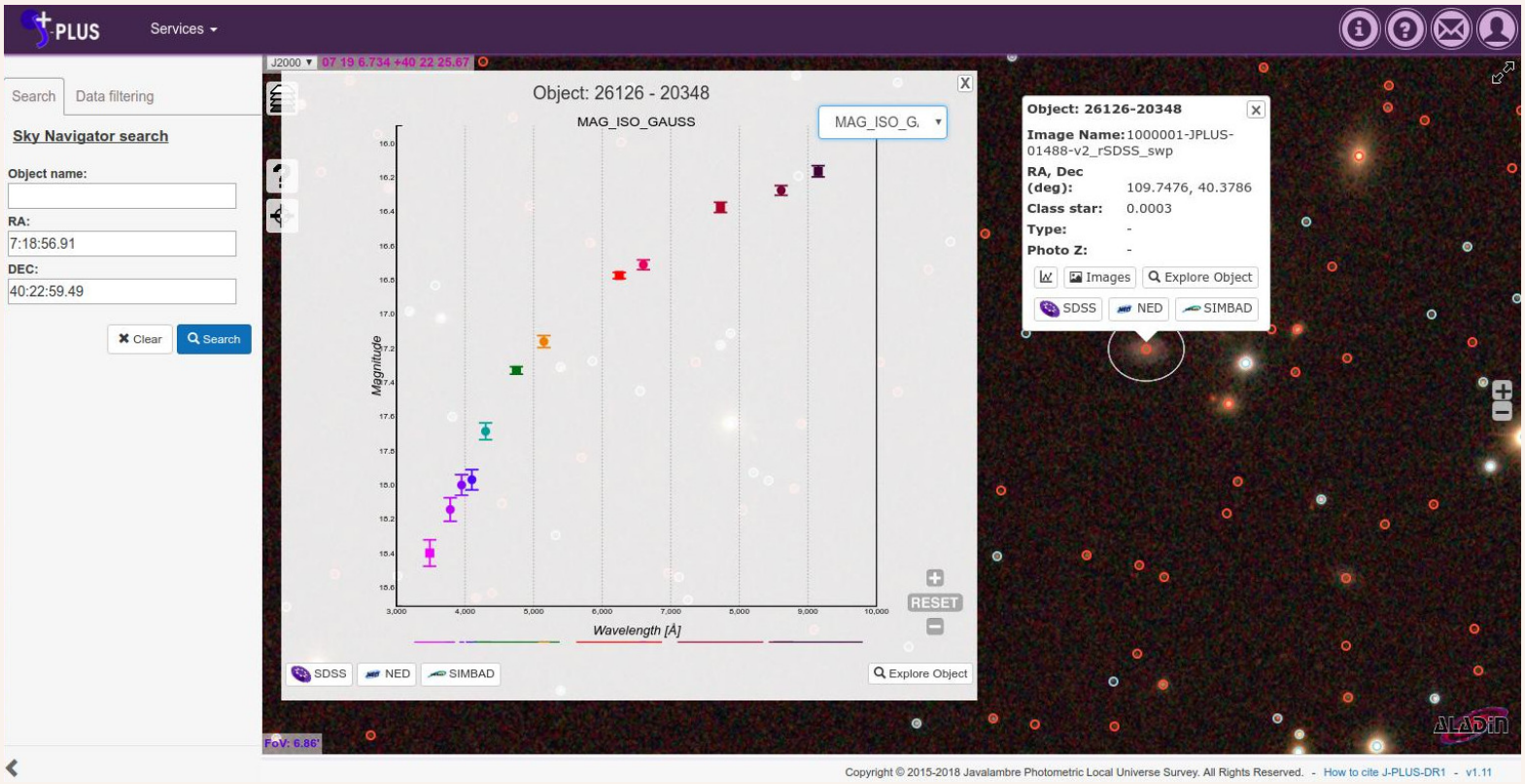
Spinoso+18 (in prep.) search for *J*0395 emitters: **632 candidates**.
Spectroscopic follow up of 21 sources with GTC :
80% emitters (75% $z \sim 2.25$ QSOs + 25% $z \sim 1.52$ QSOs)



Summary

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

1022 deg^2 with 12 optical filters
13.5M objects $\rightarrow$ 4.3M stars + 3M galaxies with $r \leq 21$
Cenarro et al. 2018, A&A, submitted [ArXiv: 1804.02667]



Summary

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

1022 deg^2 with 12 optical filters
13.5M objects $\rightarrow$ 4.3M stars + 3M galaxies with $r \leq 21$
Cenarro et al. 2018, A&A, submitted [ArXiv: 1804.02667]

J-PLUS DR1 vs Apertif $\sim$ 370 deg^2
J-PLUS & J-PAS vs Apertif $\sim$ 2200 deg^2