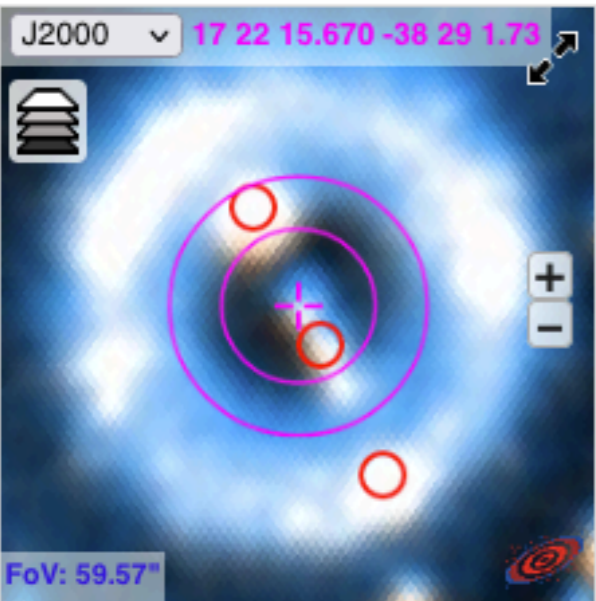


# Data Central support for Hector

NGC6337 [↗](#)

J2000 ▼ 17 22 15.670 -38 29 1.73



FoV: 59.57"

$\_r = 19.14''; r = 14.11 \pm 0.04 \text{ mag}$

**BADCLASS: 4**  
bmiszalski

Select an option...


✓ 0    ☆ 1    ★ 2

⚙ 3    ⚙ 4    🎯 5

🚫 6    ⚠ 7    ⚙ 8

Bundle:  Small    Large


SkyMapper    SDSS



**HECTOR**  
Galaxy Survey

Hector observation log webapp

Dr Brent Miszalski  
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data  central



MACQUARIE  
University

# Overview

- 2dFdr automation: Pipeline as A Web Service (PAWS)
- Target Selection Application
- Observing Log Application (Kate Sheng, Data Central)
- Upgraded TAP Service



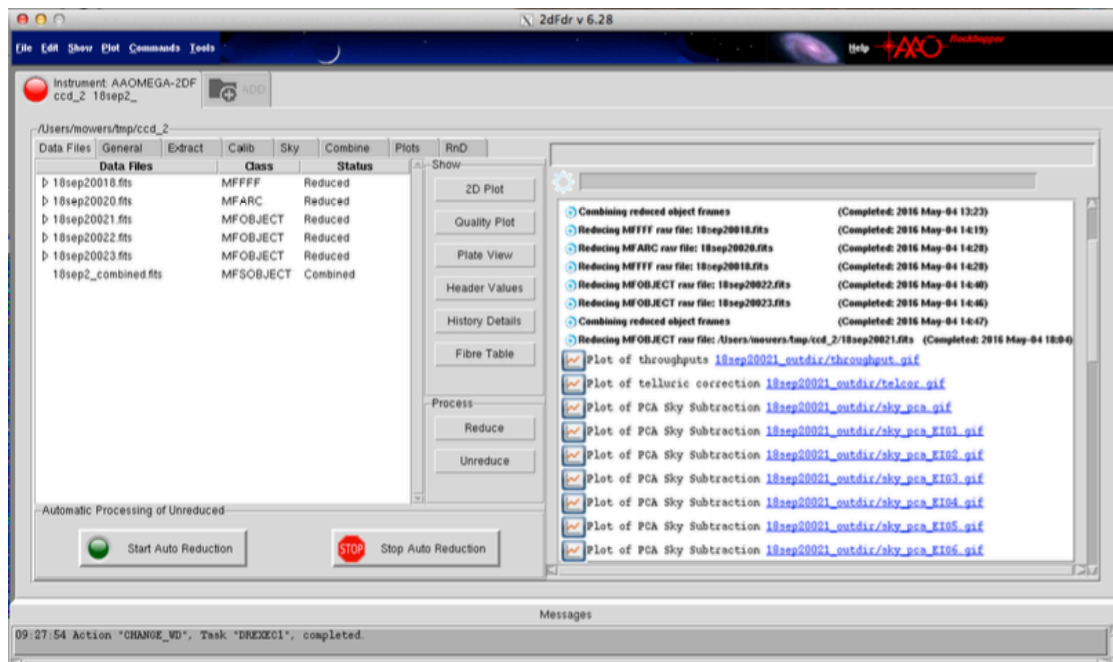
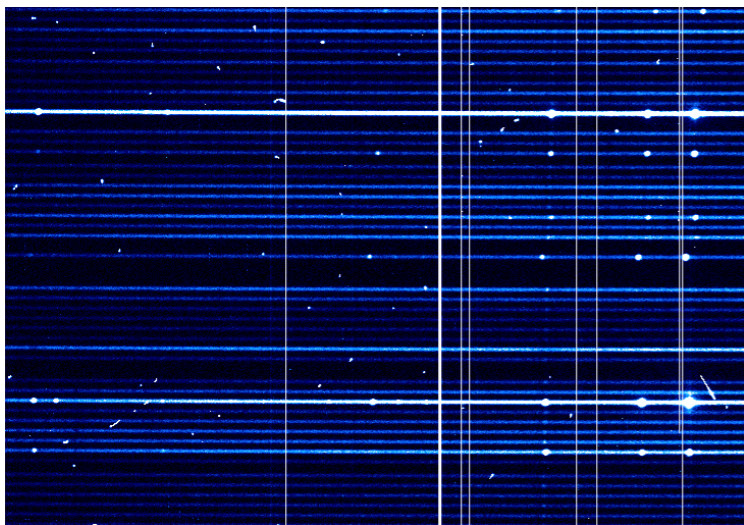
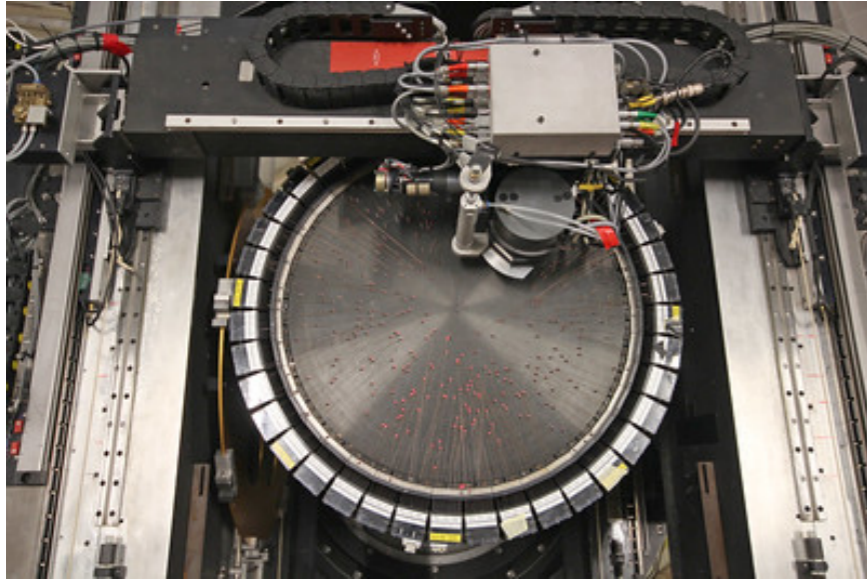
**Other topics covered in recent Data Central workshop:**

<https://docs.datacentral.org.au/blog/odc-workshop-2022-program/>

# Part I: Pipeline as A Web Service (PAWS)



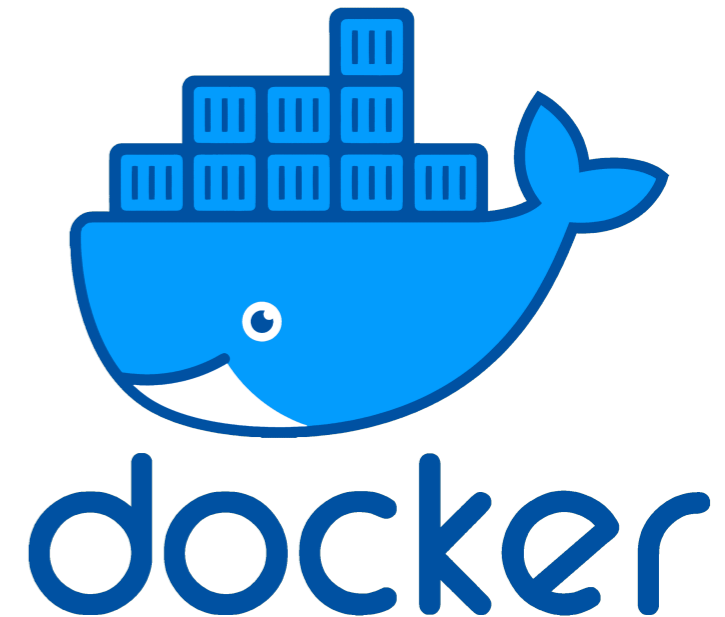
# 2dF data reduction



- Data reduction traditionally involves 2 steps:
  - Copy data during observing run or download from AAT archive
  - Reduce data with 2dFdr software
- This approach can be problematic:
  - Difficulties installing 2dFdr (unusual dependencies)
  - Downloading and organising large numbers of observations
  - Scripting possible via command line (aaorun) commands, but these do not scale well for multiprocessing usage. Multiple concurrent 2dFdr processes can crash for obscure reasons.
- We offer On Demand reductions for 2dF-AAOmega data:
  - No need to download data
  - No need to install 2dFdr

# 2dFdr Pipeline as A Web Service (PAWS)

- 2dFdr installed inside Docker image.
- Run 2dFdr commands off Docker container using Python web service, docker-py and celery (asynchronous task manager).
- **Robust:** Problematic 2dFdr commands that fail are automatically restarted by celery.
- **Fast:** e.g. reduce 960 science exposures in 48 minutes.
- **Current status:** 2dF+AAOmega reductions (beta). Proprietary data reduction supported.
- **Future plans:** Support other 2dF modes (Hermes, KOALA, etc). Adapt PAWS system to ESO pipelines (e.g. FORS, UVES, X-shooter, etc).
- **Possible Future Plans:**
  - Reduce archived 2dF observations and make available via SSA service
  - Live reductions of spectra as they are taken off the telescope.
  - Quick staging of reduced spectra (e.g. transient follow-up).



# Workflow Overview

- Users do not have to select calibrations (ARC, FLAT, BIAS, DARK)
- Nearby calibrations queried: Use pandas to gather all info from AAT archive (indexed by date)
- Select calibrations closest in time to science observations
- Data grouped according to 2dF plate, grating, camera setup (camang+gratang), field (night + configure .fld name)
- Some basic 2dFdr parameters may be specified
- May still be bugs - please help test if you can at [beta.datacentral.org.au](http://beta.datacentral.org.au)

# 2dFdr PAWS Screenshots

## New AAT archive query results

Request reductions  
with 2dFdr PAWS!

1/60 selected.

Download Files

 Reduce With 2dFdr PAWS

||| COLUMNS  FILTERS  DENSITY  EXPORT

fibre_table	ndf_class	targets	OBJECT	EXPOSED	obs_date
<a href="#">VIEW</a>	MFFFF	<a href="#">VIEW</a>	Fibre Flat Field - Quartz_20_2	4	2008-05-29
<a href="#">VIEW</a>	MFARC	<a href="#">VIEW</a>	ARC - FeAr_1 FeAr_2 CuAr_1 CuAr_2 CuHe_1 CuNe_1	30	2008-05-29
<a href="#">VIEW</a>	MFOBJECT	<a href="#">VIEW</a>	S18 MISZALSKI	1800	2008-05-29

## Select your 2dFdr PAWS parameters

Request ID: 8e5bc086-911f-48b3-9e40-4f35dab7c4b9

A subset of 2dFdr parameters may be specified.

The default parameters are sufficient for most users.

Changing the defaults may increase the time needed to complete the reductions.

An email notification will be sent upon submission of this request and at completion.

**BIAS**  Reduce BIAS frames in reductions  
(instead of using overscan of science frames)

**DARK**  Reduce DARK frames in reductions

**COSMIC**

Method of Cosmic Ray Rejection

**SKYSCR**  Secondary wavelength calibration from skylines

**PCASKY**  Use PCA after normal sky subtraction

**TELCOR**  Correct for telluric absorption

**RWSS**  Include spectra without sky subtraction in the rwss extension

**Email**

Notifications will be sent to this address

**Make it so!**

# 2dFdr Parameters

**Once reductions are  
requested, user  
redirected to this page**

**Custom reduction task  
manager developed for  
2dFdr PAWS**



# Email notification

Data Central: 2dfdr PAWS reductions Inbox x



noreply@datacentral.org.au

Tue, 5 Apr, 10:19 (3 days ago)



to me ▾

Dear Brent Miszalski,

The 2dFdr Pipeline As a Web Service (PAWS) has started to reduce your data.

You may check the status of the reductions [here](#).

Another email will be sent to you upon completion.

Best regards,

Data Central and 2dFdr PAWS 🐾

Data Central, AAO North Ryde, Sydney,



**Sent:**  
◆ At job start  
◆ At job completion



noreply@datacentral.org.au

Tue, 5 Apr, 10:23 (3 days ago)



to me ▾

Dear Brent Miszalski,

The 2dFdr Pipeline As a Web Service (PAWS) has successfully reduced your data.

You may download the data products from [here](#).

Best regards,

Data Central and 2dFdr PAWS 🐾

Data Central, AAO North Ryde, Sydney, Australia




## Users can keep track of the status of their 2dFdr requests

## List of reduction jobs

data central bmiszalski Requests Docs Logout

### Recent 2dFdr PAWS requests

*Brent Miszalski, you have 5 requests in the last 7 days.*

Request ID	Status	Nfiles	Requested (Sydney)
<a href="#">5594b0a8-1689-4e4b-b3da-6d3e1ae8baf0</a>	✓ Finished	6	2022-04-05T10:18:40
<a href="#">374a25f4-9e5d-4628-ba01-7b09a8e51477</a>	✓ Finished	1	2022-04-01T12:40:25
<a href="#">969d4942-c38b-4669-8080-56ea1d30e7cb</a>	✓ Finished	1	2022-04-01T12:27:00
<a href="#">619b0075-7aa8-4a76-a064-a16690111517</a>	✓ Finished	1	2022-04-01T10:12:47
<a href="#">8e5bc086-911f-48b3-9e40-4f35dab7c4b9</a>	 Initialised	1	2022-04-01T09:54:33

**Custom reduction task manager developed for 2dFdr PAWS**

# Status page of request

data central bmiszalski Requests Docs Logout

## Status of 2dFdr PAWS request

Request ID: 5594b0a8-1689-4e4b-b3da-6d3e1ae8baf0

Current status:  Finished

Your data were successfully reduced.  
You may interactively view the reduced spectra [via the 2dF Explorer.](#)  
The following download options are available:

- Reduced files
- Reduced and raw files
- All files

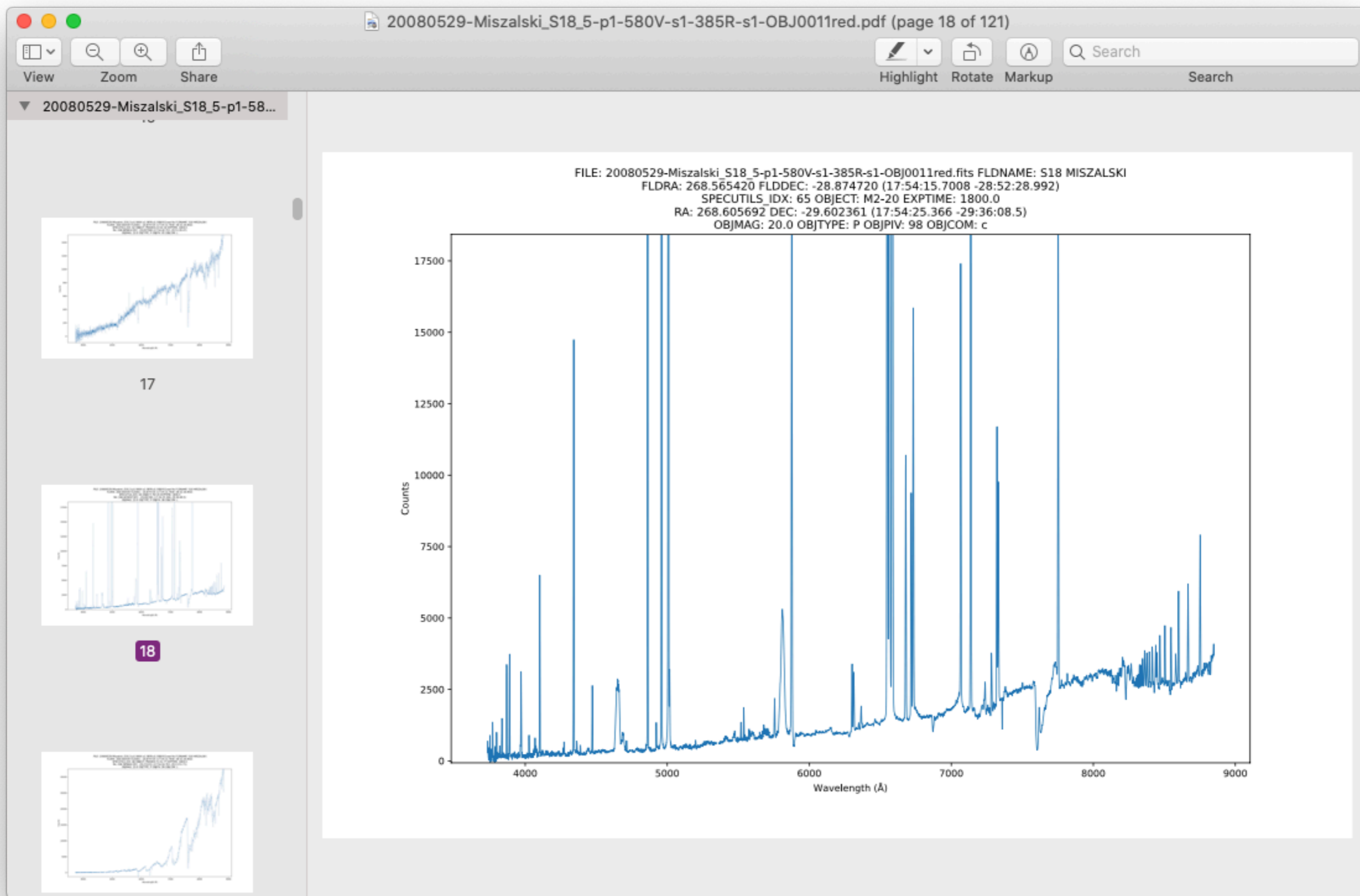
All of the above downloads include:

- Log file output of the executed 2dFdr (aaorun) commands.
- Generated pdf files that plot each spectrum of each data product.

- Users can download their data
  - Reduced files only
  - Reduced and raw files
  - Everything
- Log files and plots of spectra are included
- Users may also explore the data products interactively

**Custom reduction task  
manager developed for  
2dFdr PAWS**

# Generated PDFs of all reduced spectra



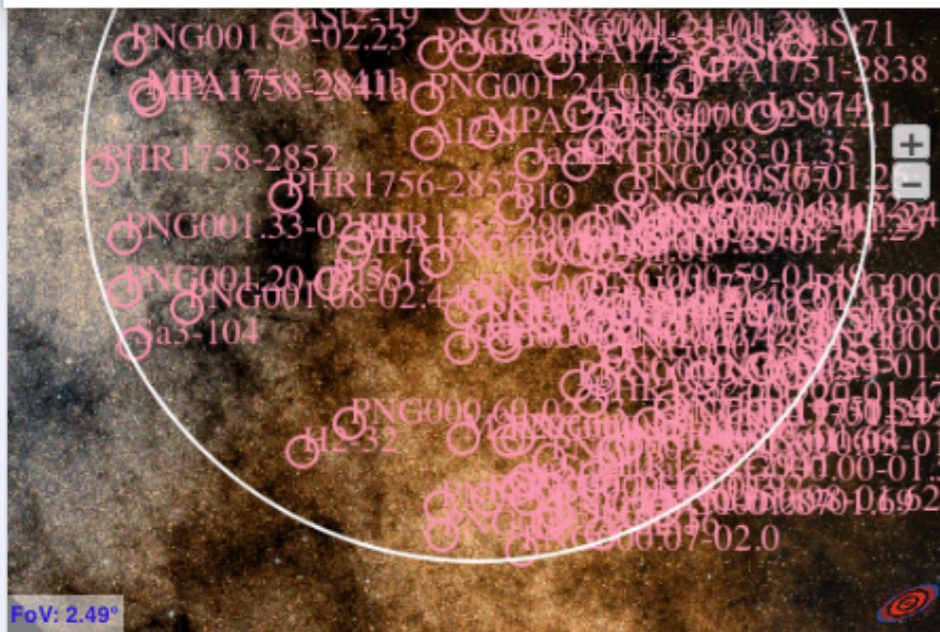
# 2dF Explorer

## Explore 2dFdr data products

Request ID: 5594b0a8-1689-4e4b-b3da-6d3e1ae8baf0

Select a data product to explore

- ✓ 1/385R/s1/20080529-Miszalski\_S18\_5-p1/OBJ0011red.fits
- 1/385R/s1/20080529-Miszalski\_S18\_5-p1/OBJ0012red.fits
- 1/385R/s1/20080529-Miszalski\_S18\_5-p1/OBJ0013red.fits
- 1/385R/s1/20080529-Miszalski\_S18\_5-p1/combined\_red.fits
- 1/580V/s1/20080529-Miszalski\_S18\_5-p1/OBJ0011red.fits
- 1/580V/s1/20080529-Miszalski\_S18\_5-p1/OBJ0012red.fits
- 1/580V/s1/20080529-Miszalski\_S18\_5-p1/OBJ0013red.fits
- 1/580V/s1/20080529-Miszalski\_S18\_5-p1/combined\_red.fits
- 1/spliced/20080529-Miszalski\_S18\_5-p1-580V-s1-385R-s1-OBJ0011red.fits
- 1/spliced/20080529-Miszalski\_S18\_5-p1-580V-s1-385R-s1-OBJ0012red.fits
- 1/spliced/20080529-Miszalski\_S18\_5-p1-580V-s1-385R-s1-OBJ0013red.fits
- 1/spliced/20080529-Miszalski\_S18\_5-p1-580V-s1-385R-s1-combined\_red.fits



## Summary

**Field:** S18 MISZALSKI (17:54:15.7008 -28:52:28.992) **Exp:** 1800s 

**Target:** Click a target in Aladin lite to view its spectrum below

**Users can select which data products they want to explore**

**2dF field position displayed in Aladin Lite**

# 2dF Explorer

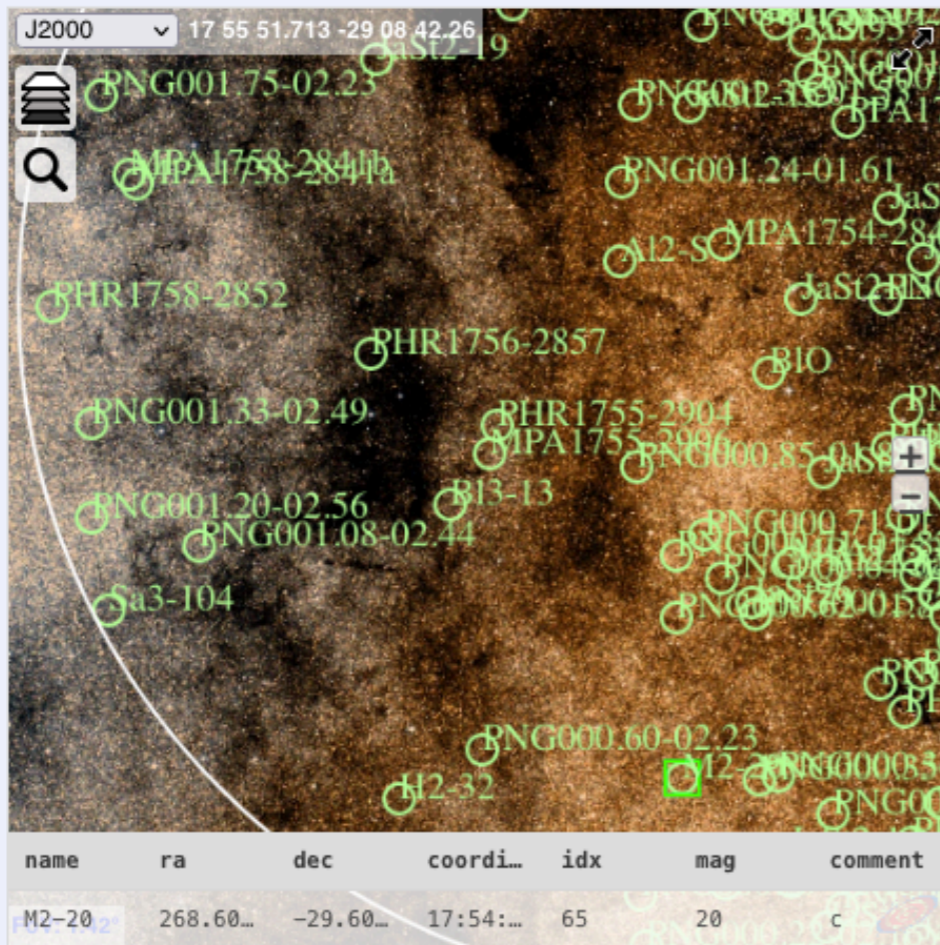
## Explore 2dFdr data products

Request ID: 5594b0a8-1689-4e4b-b3da-6d3e1ae8baf0

Select a data product to explore

1/spliced/20080529-Miszalski\_S18\_5-p1-580V-s1-385R-s1-combined\_re

Show Labels



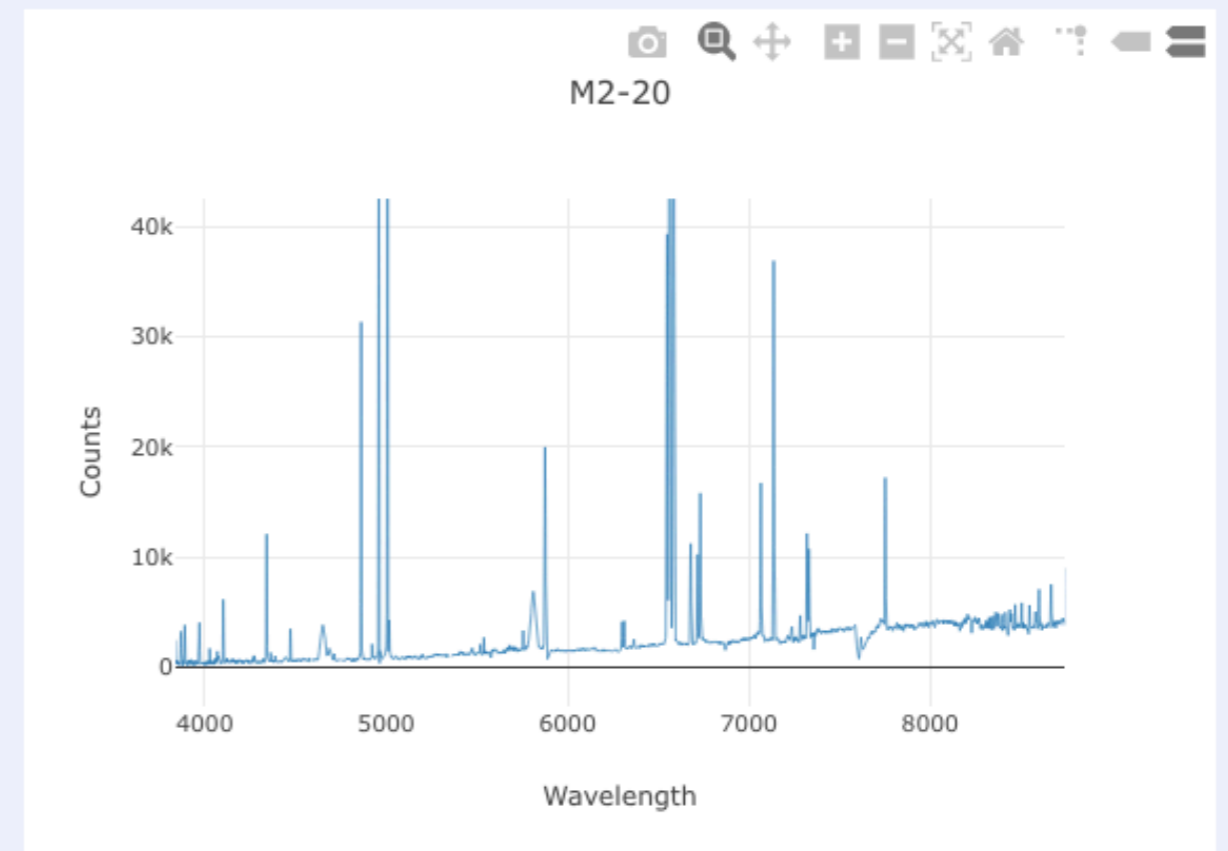
## Interactive display of spectra with plotly.js (zoom, screenshot, etc)

### Summary

Field: S18 MISZALSKI (17:54:15.7008 -28:52:28.992) Exp: 2100s

Target: M2-20 (17:54:25.366 -29:36:08.5) DAS: \*

Magnitude: 20 Comment: c



**Users can click on individual fibre positions to LOAD the observed spectra**

# Summary

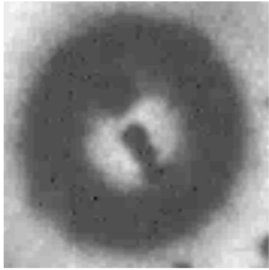
- Currently available for 2dF-AAOmega data only
- Possible to adapt to other instruments (e.g. Hector)
  - Requires additional funding and resource planning
  - Not a quick job. Additional coding and testing necessary.
- Current limitations:
  - Accessed via AAT archive (alternative: API access necessary to reduce large data volumes e.g. reduce an observing run's worth of data in one go )
  - Proprietary data access strictly tied to LENS proposals (alternative: API Token)
  - Single 2dFdr version (alternative: multiple versions available, e.g. regression testing data reduction algorithms)

# **Part II: Target Selection Application**



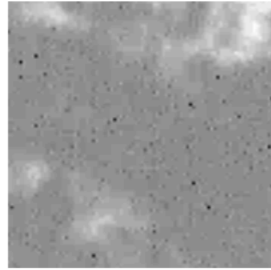
# Traditional approach

17 22 15.6 -38 29 1



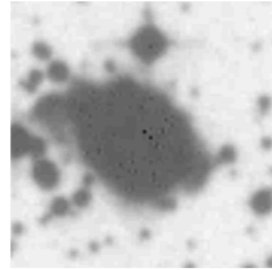
UKST J 00001.fits

13 33 32.8 -65 58 27



UKST J 00002.fits

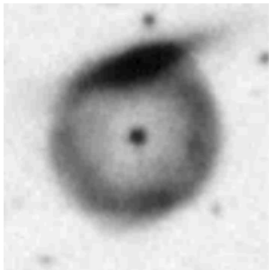
17 20 46.2 -51 45 15



UKST J 00003.fits

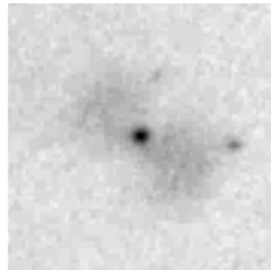
## SuperCOSMOS Sky Survey (UKST J)

20 31 33.2 -07 5 18



UKST J 00004.fits

5 45 58.2 +02 21 6



UKST J 00005.fits

UKST J not extracted

**Upload CSV with coordinates**  
**Batch download of image**  
**thumbnails (postscript)**

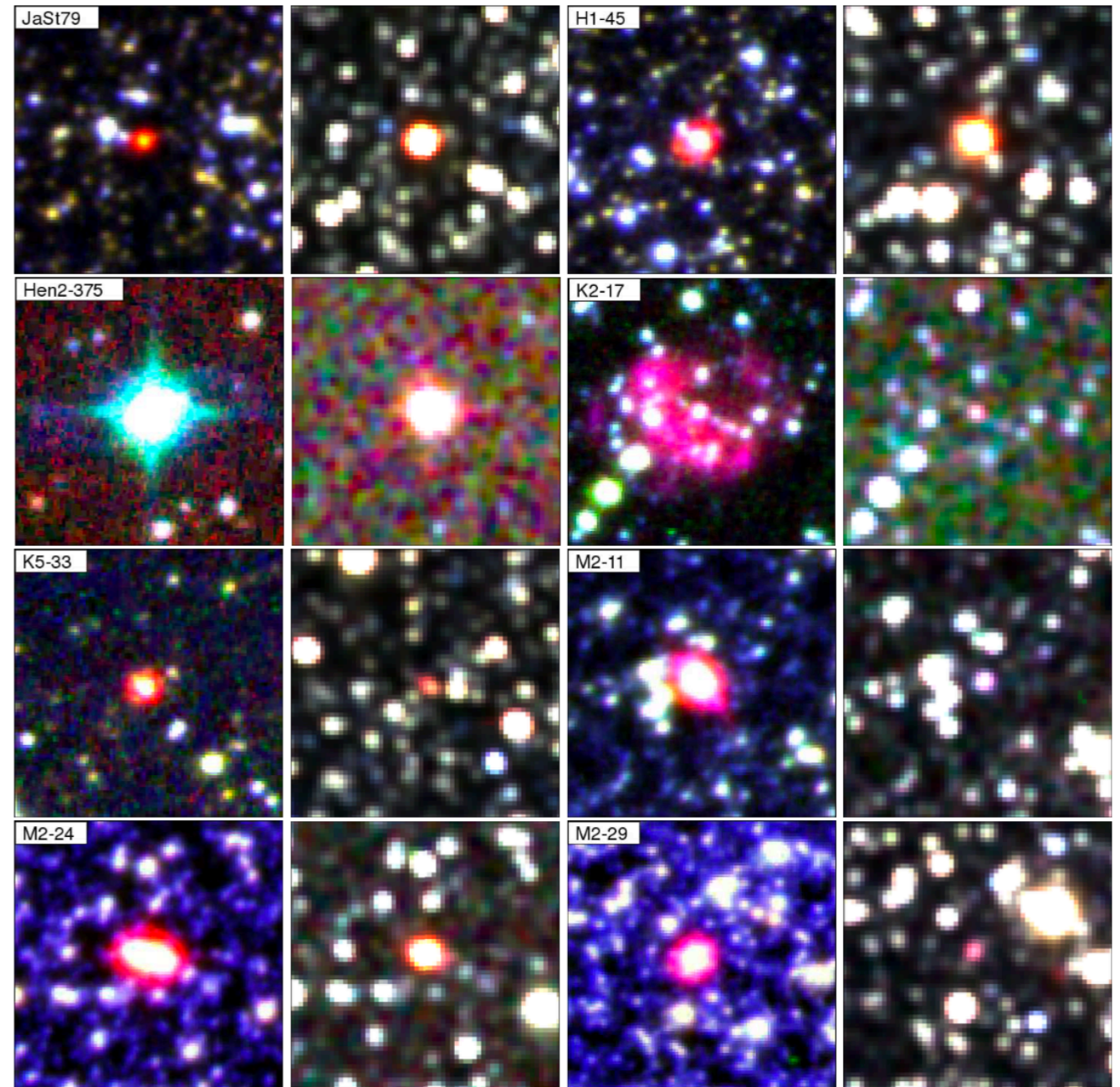
**Print to paper**

UKST J not extracted

UKST J not extracted

**SHS**  
**Halpaha, SR**  
**SSS Bj**

**2MASS**  
**J, H, Ks**



**Scripts to download data and**  
**create colour-composite thumbnails**  
**(Miszalski+2013, MNRAS, 432, 3186)**

**A static web page, PDF or**  
**a simple web application**

# Overview

- **Target lists:** Import CSV into MongoDB database. User can classify targets and export results.
- **Aladin Lite:** Images and catalogues (**loaded asynchronously**) per target. Display instrument footprints.
- **Static images:** Can be displayed instead of Aladin Lite.
- **Filter catalogues:** Radius and magnitude cuts using pandas. Mouseover to view.

data central

Choose a file... No file selected Load File  Overwrite

sample\_list.csv Load Download Delete

Prev Next 1-8 of 8 All 10

NGC6337 [↗](#)

J2000 17 22 15.670 -38 29 1.73

FoV: 59.57"

$r = 19.14''$ ;  $r = 14.11 \pm 0.04$  mag

BADCLASS: 4

bmiszalski

Select an option...

✓ 0  ☆ 1  ★ 2

⚙ 3  ⚙ 4  ⚙ 5

⚡ 6  ⚠ 7  ⚙ 8

Bundle:  Small  Large

SkyMapper  SDSS

NGC5189 [↗](#)

J2000 13 33 32.880 -65 58 27

FoV: 59.57"

$r = 25.58''$ ;  $r = 13.06 \pm 0.0$

BADCLASS: 0

Select an option...

✓ 0  ☆ 1  ★ 2

⚙ 3  ⚙ 4  ⚙ 5

⚡ 6  ⚠ 7  ⚙ 8

Bundle:  Small  Large

SkyMapper  SDSS

data central

Choose a file... No file selected Load File  Overwrite H1.csv

9711354901594 [↗](#)

Decination / deg -29.645 -29.65 -29.655

Right Ascension / deg 9.68 9.675 9.67 9.665

BADCLASS: 0

Select an option...

✓ 0  ☆ 1  ★ 2

⚙ 3  ⚙ 4  ⚙ 5

⚡ 6  ⚠ 7  ⚙ 8

Bundle:  Small  Large

SkyMapper  SDSS

9711288404905 [↗](#)

Decination / deg -29.37 -29.375 -29.38

Right Ascension / deg 9.745 9.74 9.735

BADCLASS: 0

Select an option...

✓ 0  ☆ 1  ★ 2

⚙ 3  ⚙ 4  ⚙ 5

⚡ 6  ⚠ 7  ⚙ 8

Bundle:  Small  Large

SkyMapper  SDSS

# Controls

Choose CSV file

Load selected file

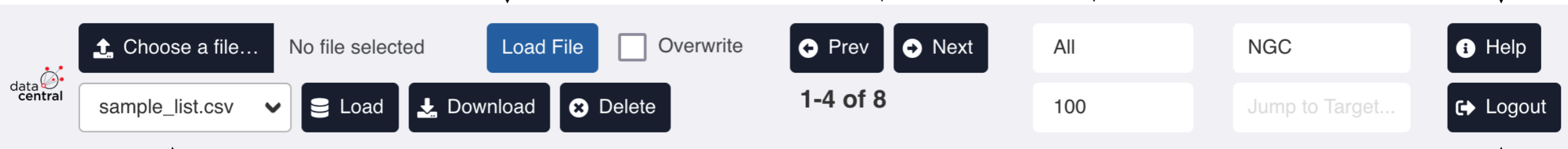
Overwrite file if already in DB

Classification filter  
(All, Unclassified, > 0, 1, 2, 3, 4, 5, 6, 7, 8)

Target name filter

Online help (modal)

Page Navigation



List of CSV files available in MongoDB database

Download CSV of selected database (includes user classifications)

Delete selected database

Target numbers displayed (Range of N Total)

Targets per page (1, 2, 3, 4, 5, 10, 15, 20, 30, 50, 100, 200)

Jump to target (resume at target of interest)

Logout (Data Central CAS server)

Load file from database

Link to target page  
(shareable URL)

Current classification  
and username  
of classifier

Label to remind user  
of class meaning  
(e.g. 4 - Large Galaxy)

Target name

Aladin Lite

NGC6337 

**BADCLASS: 5**

bmiszalski

Select an option...

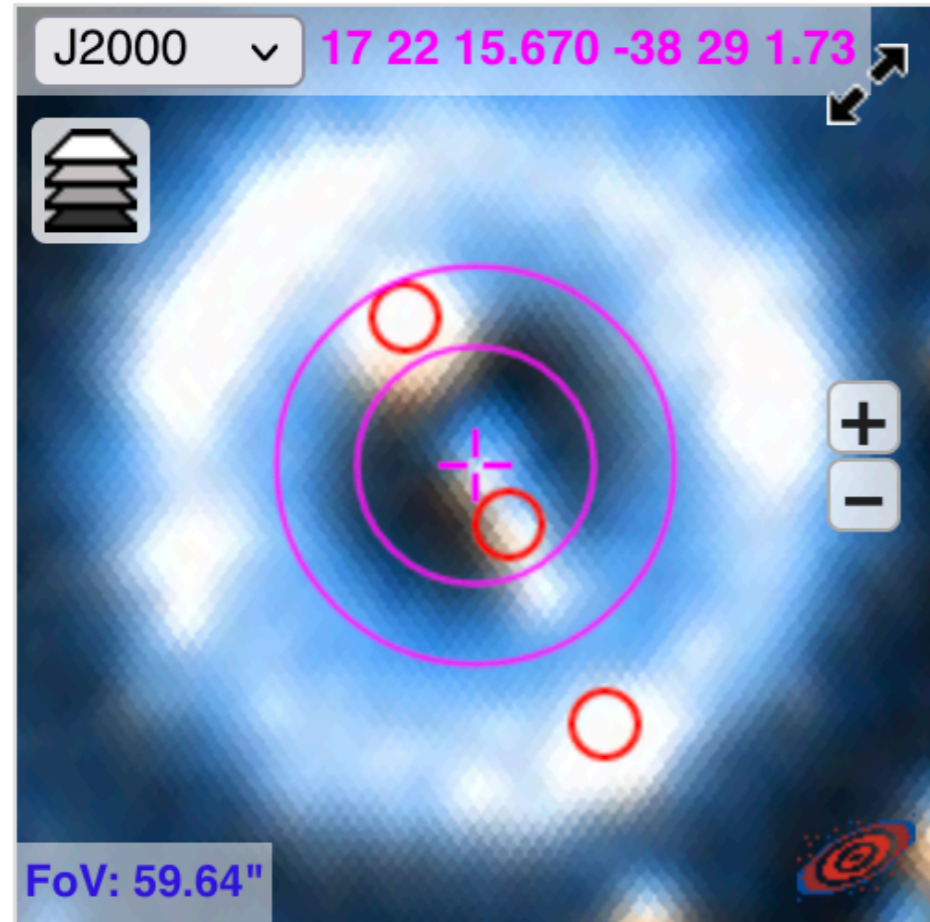
0   1   2

3   4   5

6   7   8

Bundle:  Small  Large

SkyMapper  SDSS



$\_r = 4.51''$ ;  $r = 15.51 \pm 0.02$  mag

Label to display  
radial distance (arcsec) and  
magnitude of catalogued targets  
(updated on mouseover of target)

Toggle on/off  
Instrument footprints and  
loaded catalogues

Radio buttons  
to classify target

# Navigation

The image displays a grid of six target cards, each representing a different astronomical object. Each card includes a thumbnail image of the target, a control panel with various options and settings, and a magnifying glass icon. The NGC5189 card is highlighted with a red border.

**NGC5189** (highlighted):  
J2000: 13 33 32.880 -65 58 27.04  
FoV: 59.64"  
BADCLASS: 7  
bmiszalski  
Select an option...  
0 1 2  
3 4 5  
6 7 8  
Bundle: Small Large  
SkyMapper SDSS

**NGC6326**:  
J2000: 17 20 48.352 -51 45 15.17  
FoV: 59.64"  
BADCLASS: 7  
bmiszalski  
Select an option...  
0 1 2  
3 4 5  
6 7 8  
Bundle: Small Large  
SkyMapper SDSS

**Te11**:  
J2000: 05 45 58.264 +02 21 6.41  
FoV: 59.64"  
BADCLASS: 0  
bmiszalski  
Select an option...  
0 1 2  
3 4 5  
6 7 8  
Bundle: Small Large  
SkyMapper SDSS

**NGC7008**:  
J2000: 21 00 32.818 +54 32 35.35  
FoV: 59.64"  
BADCLASS: 0  
bmiszalski  
Select an option...  
0 1 2  
3 4 5  
6 7 8  
Bundle: Small Large  
SkyMapper SDSS

- **Mouseover target of interest:** Active target (background shading)
- **Use 0-8 keys:** classification of active target
- **Use Left/Right keys:** Navigate to Prev/Next page of targets.
- **Number of targets per page:** 1 for keyboard only operation, or up to many per page...

# Up to a few hundred per page

Targets fill page and adjust when window resized

data central pnc.csv Load File Overwrite Prev Next All Filter Target... Help 101-200 of 200 100 Jump to Target... Logout

Choose a file... pnc.csv Load Download Delete

<b>004.1-03.8</b> <p>J2000 <input type="text" value="18 16 12.321 -27 16 36.55"/></p> <p>004.1-03.8</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<b>004.2-03.2</b> <p>J2000 <input type="text" value="18 08 1.476 -26 54 0.75"/></p> <p>004.2-03.2</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<b>004.2-04.3</b> <p>J2000 <input type="text" value="18 12 24.713 -27 38 54.55"/></p> <p>004.2-04.3</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<b>004.2-05.9</b> <p>J2000 <input type="text" value="18 18 18.721 -28 08 5.45"/></p> <p>004.2-05.9</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>
<b>004.3+01.8</b> <p>J2000 <input type="text" value="17 48 34.331 -23 18 36.55"/></p> <p>004.3+01.8</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<b>004.3-02.6</b> <p>J2000 <input type="text" value="18 05 17.059 -28 29 41.75"/></p> <p>004.3-02.6</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<b>004.6+06.0</b> <p>J2000 <input type="text" value="17 53 57.758 -29 34 17.55"/></p> <p>004.6+06.0</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<b>004.7-11.8</b> <p>J2000 <input type="text" value="18 44 13.409 -30 18 26.55"/></p> <p>004.7-11.8</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>
<b>004.8+02.0</b> <p>J2000 <input type="text" value="17 48 34.331 -23 42 54.75"/></p> <p>004.8+02.0</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<b>004.8-05.0</b> <p>J2000 <input type="text" value="18 16 11.489 -27 14 57.05"/></p> <p>004.8-05.0</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<b>004.8-22.7</b> <p>J2000 <input type="text" value="18 32 7.051 -24 12 53.45"/></p> <p>004.8-22.7</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<b>004.9+04.9</b> <p>J2000 <input type="text" value="17 58 28.319 -23 08 26.55"/></p> <p>004.9+04.9</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>
<b>004.9-04.9</b> <p>J2000 <input type="text" value="18 16 17.384 -27 04 32.65"/></p> <p>004.9-04.9</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<b>005.0+03.0</b> <p>J2000 <input type="text" value="17 45 36.920 -23 02 26.55"/></p> <p>005.0+03.0</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<b>005.0+04.4</b> <p>J2000 <input type="text" value="17 48 13.053 -23 15 17.55"/></p> <p>005.0+04.4</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>	<b>005.0-03.9</b> <p>J2000 <input type="text" value="18 12 23.557 -26 33 54.55"/></p> <p>005.0-03.9</p> <p><b>BADCLASS: 0</b> default Select an option... <input checked="" type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 Bundle: <input checked="" type="checkbox"/> Small <input checked="" type="checkbox"/> Large <input checked="" type="checkbox"/> SkyMapper <input type="checkbox"/> SDSS</p>

# Jump to target

Enter target name  
=> Navigate to its position  
(resume classification from last target of interest)

data central

Choose a file... No file selected Load File  Overwrite

188-200 of 200

Prev Next

All Filter Target... 100

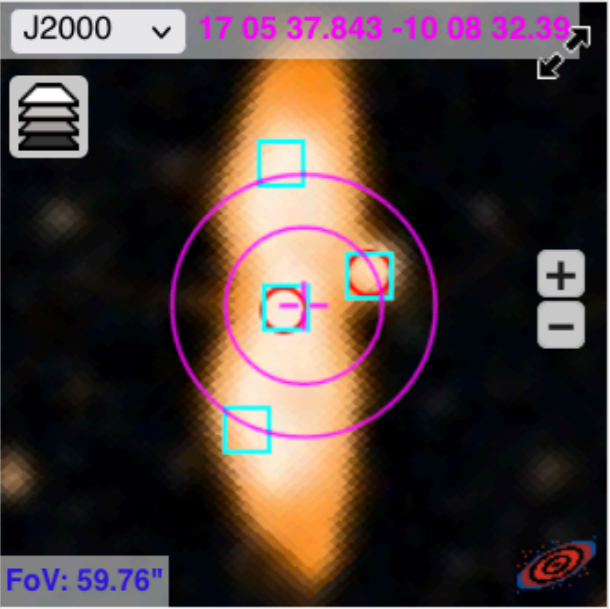
010.8+18.0

Help Logout

pne.csv Load Download Delete

### 010.8+18.0 [↗](#)

J2000



FoV: 59.76"

**BADCLASS: 0**  
default

Select an option...

0  ★ 1  ★ 2

⚙️ 3  ⚙️ 4  🎯 5


🚫 6  ⚠️ 7  ⚙️ 8

Bundle:  Small  Large

SkyMapper  SDSS

### 010.8-01.8 [↗](#)

J2000



FoV: 59.76"

**BADCLASS: 0**  
default

Select an option...

0  ★ 1  ★ 2

⚙️ 3  ⚙️ 4  🎯 5

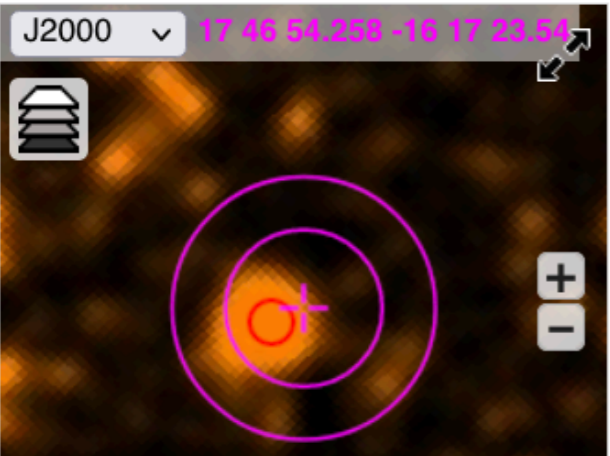
🚫 6  ⚠️ 7  ⚙️ 8

Bundle:  Small  Large

SkyMapper  SDSS

### 011.0+06.2 [↗](#)

J2000



FoV: 59.76"

**BADCLASS: 0**  
default

Select an option...

0  ★ 1  ★ 2

⚙️ 3  ⚙️ 4  🎯 5

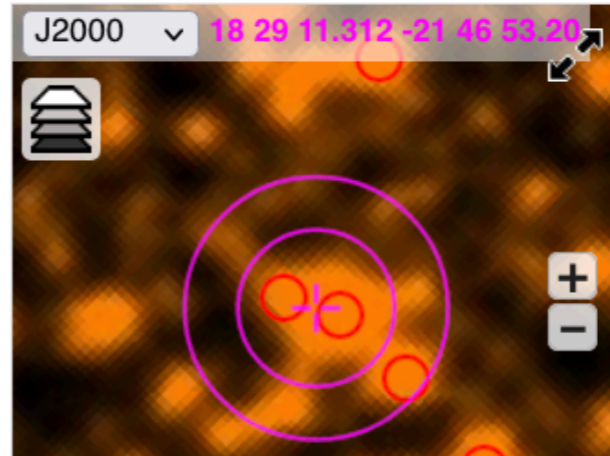
🚫 6  ⚠️ 7  ⚙️ 8

Bundle:  Small  Large

SkyMapper  SDSS

### 011.0-05.1 [↗](#)

J2000



FoV: 59.76"

**BADCLASS: 0**  
default

Select an option...

0  ★ 1  ★ 2

⚙️ 3  ⚙️ 4  🎯 5

🚫 6  ⚠️ 7  ⚙️ 8

Bundle:  Small  Large

SkyMapper  SDSS

# Filtering on target name

Uses pandas.Series.str.contains  
(can also support regex, if needed)

data central

Choose a file... No file selected Load File  Overwrite

sample\_list.csv Load Download Delete

Prev Next 1-4 of 8

All NGC

100 Jump to Target... Help Logout

### NGC6337

J2000 17 22 15.670 -38 29 1.73

FoV: 59.64"

**BADCLASS: 4**  
bmiszalski

Select an option...

✓ 0  ☆ 1  ★ 2

⚙ 3  ⚙ 4  ⚙ 5

⚡ 6  ⚠ 7  ⚙ 8

Bundle:  Small  Large

SkyMapper  SDSS

### NGC5189

J2000 13 33 32.880 -65 58 27.04

FoV: 59.64"

**BADCLASS: 7**  
bmiszalski

Select an option...

✓ 0  ☆ 1  ★ 2

⚙ 3  ⚙ 4  ⚙ 5

⚡ 6  ⚠ 7  ⚙ 8

Bundle:  Small  Large

SkyMapper  SDSS

### NGC6326

J2000 17 20 46.352 -31 45 15.17

FoV: 59.64"

**BADCLASS: 0**  
bmiszalski

Select an option...

✓ 0  ☆ 1  ★ 2

⚙ 3  ⚙ 4  ⚙ 5

⚡ 6  ⚠ 7  ⚙ 8

Bundle:  Small  Large

SkyMapper  SDSS

### NGC7008

J2000 21 00 32.818 +54 32 35.35

FoV: 59.64"

**BADCLASS: 0**  
bmiszalski

Select an option...

✓ 0  ☆ 1  ★ 2

⚙ 3  ⚙ 4  ⚙ 5

⚡ 6  ⚠ 7  ⚙ 8

Bundle:  Small  Large

SkyMapper  SDSS



# Help dialog

Provides answers to common questions  
Reminds users of classification scheme

## Hector Target Selector Help

### Input File Format

You can load a new list of target coordinates with each line in the following format:

```
#This is a comment.  
Target,RA,DEC
```

An example with coordinates in decimal degrees:

```
000.0-06.8,273.3251257,-32.3286112  
000.1+02.6,263.8973961,-27.4009405  
000.1+04.3,262.3485294,-26.4339467  
000.1+17.2,250.9556354,-18.9425272
```

An example with coordinates in sexagesimal format:

```
NGC6337,17:22:15.67,-38:29:01.73  
NGC5189,13:33:32.88,-65:58:27.04  
NGC6326,17 20 46.252, -51 45 15.17
```

The format must follow the following rules:

- The filename must end with '.csv' or '.txt'
- Each target name must be unique
- There must be only 3 columns
- RA/DEC may be either decimal degrees or sexagesimal format
- Sexagesimal coordinates may include ':' or ' ' (space) as separators
- Lines starting with '#' (comments) and blank lines are ignored
- Columns must be in the order: target, ra, dec
- The column order cannot be specified otherwise

Ok

## Hector Target Selector Help

have entered, you should try clearing these filters.

### BADCLASS Categories

Each target may be assigned one of the following BADCLASS flags:

- ✓ 0  
The target is Ok.
- ★ 1  
Bright star nearby. Acceptable stars must be fainter than 16th mag (if radius < 15.5 arcsec) or 15th mag (if radius < 31.0 arcsec).
- ★ 2  
The object is a star.
- ⚙️ 3  
A subcomponent of a galaxy.
- ⚙️ 4  
A very large, low redshift galaxy.
- 🎯 5  
Galaxy needs to be recentred.
- 🚫 6  
Poor redshift.
- ⚠️ 7  
Other problems.
- ⚙️ 8  
A smaller component of a close pair of galaxies, where the other component is outside the hexabundle radius.

Ok

# Part III: Observing Log Application

Kate Sheng

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**HECTOR**  
Galaxy Survey

Hector observation log webapp

<https://obslog.datacentral.org.au/>

# Webapp

Target

[Check Detail](#)

Star

[Check Detail](#)

Tile

[Check Detail](#)

Finalproduct


[Check Detail](#)

Logs

[Check Detail](#)

- Record observation logs
- Query logs and runs and get related Targets, Stars, Tiles and etc

# Record

 **HECTOR**  
Galaxy Survey

Home Databases ▾ API

Target

Add new row Save new row Get Selected Rows Download CSV export file Add new Date

Id	Galaxy ID	RA	DEC
<input type="checkbox"/> 1	<a href="#">2365612119800198203</a>	99.0	99.99

- Can record:
  - Target
  - Star
  - Tile
  - Observation logs and runs

# Query

Tile - T-765097170198886214-12-13-1988-10-04

RA - 12.0 DEC - 13.0 Date - 1988-10-04 QC\_Pass - True

A ( target )	<a href="#">2365612119800198203</a>
B ( target )	<a href="#">2365612119800198203</a>
C ( target )	<a href="#">2365612119800198203</a>
D ( target )	<a href="#">2365612119800198203</a>
E ( target )	<a href="#">2365612119800198203</a>
F ( target )	<a href="#">2365612119800198203</a>
G ( target )	<a href="#">2365612119800198203</a>
H ( star )	<a href="#">2450762830765291367</a>
I ( target )	<a href="#">2365612119800198203</a>
J ( target )	<a href="#">2365612119800198203</a>
K ( target )	<a href="#">2365612119800198203</a>
L ( target )	<a href="#">2365612119800198203</a>
M ( target )	<a href="#">2365612119800198203</a>
N ( target )	<a href="#">2365612119800198203</a>

- Query logs and runs and get related Targets, Stars, Tiles

# Download

Add new row

Save new row

Get Selected Rows

Download CSV export file

Id

Tile ID

RA

1

[T-765097170198886214-12-13-1988-10-0](#)

12.0

- Export csv file

# API

- Query from API endpoint



**HECTOR**  
Galaxy Survey

Home Databases ▾ API

Method

List



API Endpoint

Target



Send Request

API query is: /api/target



# **Part IV: Upgraded TAP Service**

# Upgraded TAP Service



- Details: see <https://docs.datacentral.org.au/reference/services/tap-service/>
- Tap service: <https://datacentral.org.au/vo/dev-tap>
- Supports table uploads for joins/cross-match
- SAMI DR3 ingested.  
**What catalogues do you want to see?**
- Can turn votables or Data Central catalogue metadata into TAP tables.

Table Access Protocol (TAP) Query

Select Service Use Service Resume Job Running Jobs

Metadata

Find:

Name  Descrip

noirlab\_test2."36\_ls\_dr9"

sami\_dr3 (14)

- sami\_dr3.CubeObs
- sami\_dr3.DensityCatDR3
- sami\_dr3.EmissionLine1compDR3
- sami\_dr3.FstarCatClusters
- sami\_dr3.FstarCatGAMA
- sami\_dr3.IndexAperturesDR3
- sami\_dr3.InputCatClustersDR3
- sami\_dr3.InputCatFiller
- sami\_dr3.InputCatGAMADR3
- sami\_dr3.MGEPhotomUnregDR3

Service  Schema  Table  Columns  FKeys  Hints

Name	Type	Unit	Indexed	Description
CUBEIDPUB	VARCHAR		<input type="checkbox"/>	Public unique cube ID for data release
CUBEID	VARCHAR		<input type="checkbox"/>	Internal unique cube ID
CUBENAME	VARCHAR		<input type="checkbox"/>	Internal unique cube name for blue cube
CATID	VARCHAR		<input type="checkbox"/>	SAMI Galaxy ID
CUBEFWHM	REAL	arcsec	<input type="checkbox"/>	FWHM of PSF in cube
CUBETEXP	REAL	sec	<input type="checkbox"/>	Total exposure time for cube
MEANTRANS	REAL		<input type="checkbox"/>	Mean transmission for cube
ISBEST	BOOLEAN		<input type="checkbox"/>	Flag to indicate best repeat
CATSOURCE	INTEGER		<input type="checkbox"/>	Flag to identify input source catalogue
WARNSTAR	INTEGER		<input type="checkbox"/>	Flag to indicate that object is a calibration
WARNFILL	INTEGER		<input type="checkbox"/>	Flag to indicate that object is from a filler
WARNZ	INTEGER		<input type="checkbox"/>	Flag to indicate potential error in input ca
WARNMULT	INTEGER		<input type="checkbox"/>	Flag to indicate multiple objects within IFL
WARNAKPC	INTEGER		<input type="checkbox"/>	Flag to indicate 3kpc aperture spectra ar
WARNADE	INTEGER		<input type="checkbox"/>	Flag to indicate Sersic Be aperture spectr

Service Capabilities

Query Language: ADQL-2.0 Max Rows: [dropdown] Uploads: 10Mrow/

ADQL Text

Mode: Synchronous

Examples

Run Query

**Questions?**

**Need help accessing a  
particular dataset or service?**

**Please get in touch!**