

## MAST: Barbara A. Mikulski Archive for Space Telescopes

The MAST Portal lets you search multiple collections of astronomical datasets all in one place. Use this tool to find astronomical data, publications, and images.

**Note:** This site uses cookies in order to monitor feature usage, track user preferences, and provide authentication for some services. By using this site you consent to the use of cookies for such purposes.

### What's New

JWST Instrument metadata have changed. Now, the complete configuration is specified; for example, an Observation previously labeled "MIRI" might now be labeled "MIRI/IMAGE." This update brings JWST metadata in line with HST and allows for greater specificity in your search. See the [JWST Instrument Names](#) page for a full list of configurations.

Data from [FIMS-SPEAR](#), a joint Korean-US UV satellite, are now available in MAST. In addition to its invaluable spectral maps of the UV sky, FIMS-SPEAR has paved the way for us to ingest new cubesat, balloon, and small-rocket missions. Stay tuned as we add more of these missions to our collection!

You can now [access the PLATO MAST Catalog](#) using the API or catalog search form.

### Data Retrieval Notes

- MAST FTP:** Starting October 25 2021, the MAST FTP server archive.stsci.edu will no longer support unencrypted FTP connections. Only encrypted FTPS will be supported. Read more about this change and some related FAQ on the [MAST FTP Service page](#).
- Auth.MAST Authentication:** New authentication mechanism for accessing exclusive access data via cURL or Astroquery. Please visit <https://auth.mast.stsci.edu> for authentication needs or view the [tutorial video](#).
- Access MAST Programmatically:** with [Astroquery](#) or the [general API](#).

### Release Notes

[MAST Portal software release notes](#).

### Upload Targets Quick Start:

### Currently available data collections:

- MAST Observations: Millions of observations from JWST, Hubble, Kepler, GALEX, IUE, FUSE, and more.
- Virtual Observatory: Search thousands of astronomical data archives from around the world for images, spectra, and catalogs.
- Hubble Source Catalog: A master catalog with a hundred million measurements of objects in Hubble images.
- MAST Catalogs: Access to catalog data such as Gaia and TESS Input Catalog, with more coming soon.

**Featured tutorial:** Using Auth.MAST, MAST's authorization token system.



See all video tutorials on the [MAST YouTube channel](#).

Select a collection... and enter target: anonymous

**MAST Advanced Search**

Search Export Table Records Found: 19,908

**Applied Filters**

Clear All ☒ Observation Type: science ☒ Mission: JWST ☒ Provenance Name: CALJWST ☒ Instrument: NIRCAM/IMAGE ☒ Product Type: image ☒ Data Rights: PUBLIC

**Columns** ☒ **Filters**

Defaults Hide All

Filter Columns:

Object Name or Position ☒  
 Observation Type ☒  
 Mission ☒  
 Provenance Name ☒  
 Instrument ☒  
 Project ☒  
 Filters ☒  
 Waveband ☐  
 Target Name ☒  
 Target Classification ☐  
 Sequence Number ☐  
 Observation ID ☐  
 RA ☒  
 Dec ☒  
 Proposal ID ☒  
 Principal Investigator ☐  
 Product Type ☒  
 Calibration Level ☐  
 Start Time ☒  
 End Time ☐

**Object Name or Position**

☒ Enter object name or RA and Dec to cone search

[Show Examples...](#)

No cone search performed.

Try [webbtelescope.org/images](http://webbtelescope.org/images) for inspiration!

**Observation Type**

☒ ☒ Enter text here or choose from below

Name	Quantity
<input checked="" type="checkbox"/> science	(150,872,816 Total)
<input type="checkbox"/> calibration	(981,567 Total)

**Mission**

☒ Enter text here or choose from below

Name	Quantity
<input type="checkbox"/> HISP	(142,733,270 Total)
<input type="checkbox"/> SPITZER_SHA	(3,073,080 Total)
<input type="checkbox"/> TESS	(1,379,476 Total)
<input type="checkbox"/> HST	(1,295,012 Total)
<input type="checkbox"/> PS1	(998,018 Total)

Show 17 More

**Provenance Name**

☒ Enter text here or choose from below

Name	Quantity
<input type="checkbox"/> QLP	(62,773,409 Total)
<input type="checkbox"/> GSFC-ELEANOR-LITE	(39,271,936 Total)
<input type="checkbox"/> TGCL	(16,335,794 Total)
<input type="checkbox"/> TASOC	(11,080,238 Total)
<input type="checkbox"/> TESS-SPOC	(9,599,294 Total)

Show 113 More

**Instrument**

☒ Enter text here or choose from below

Name	Quantity
<input type="checkbox"/> Photometer	(137,063,589 Total)
<input type="checkbox"/> Kepler	(2,849,857 Total)
<input type="checkbox"/> IRAC	(2,470,294 Total)
<input type="checkbox"/> GPC1	(998,018 Total)
<input type="checkbox"/> IRS	(480,821 Total)

Show 122 More

**Project**

☒ Enter text here or choose from below

Name	Quantity
<input type="checkbox"/> TESS	(142,228,134 Total)
<input type="checkbox"/> K2	(1,768,321 Total)
<input type="checkbox"/> PS1	(998,018 Total)
<input type="checkbox"/> HST	(996,106 Total)
<input type="checkbox"/> Kepler	(941,711 Total)

Show 71 More

**Filters**

☒ Enter text here or choose from below

Name	Quantity
<input type="checkbox"/> TESS	(142,228,277 Total)
<input type="checkbox"/> KEPLER	(2,850,659 Total)
<input type="checkbox"/> IRAC2	(1,322,495 Total)
<input type="checkbox"/> IRAC1	(840,861 Total)
<input type="checkbox"/> IRS-SL	(207,199 Total)

Show 681 More

**Target Name**

☒ Enter text here

This column must be searched via the text box at the top of this panel

**RA**

☒ ☒

**Dec**

☒ ☒

**Proposal ID**

☒ Enter text here

This column must be searched via the text box at the top of this panel

**Product Type**

☒ ☒ Enter text here or choose from below

Name	Quantity
<input type="checkbox"/> timeseries	(144,968,966 Total)

## Select the following filters:

- Observation type: science
- Mission: JWST
- Provenance Name:
  - CALJWST (JWST)
- Instrument:
  - NIRCAM/IMAGE
- Product Type: image
- Data Rights: PUBLIC

Select a collection... and enter target:

anonymous

### MAST Advanced Search

Records Found: 19,908



Finished? Hit "Search"

#### Applied Filters

Clear All ☒ Observation Type: science ☒ Mission: JWST ☒ Provenance Name: CALJWST ☒ Instrument: NIRCAM/IMAGE ☒ Product Type: image ☒ Data Rights: PUBLIC

#### Columns

- Defaults Hide All
- Filter Columns:
- ☒ Object Name or Position
  - ☒ Observation Type
  - ☒ Mission
  - ☒ Provenance Name
  - ☒ Instrument
  - ☒ Project
  - ☒ Filters
  - ☐ Waveband
  - ☒ Target Name
  - ☐ Target Classification
  - ☐ Sequence Number
  - ☐ Observation ID
  - ☒ RA
  - ☒ Dec
  - ☒ Proposal ID
  - ☐ Principal Investigator
  - ☒ Product Type
  - ☐ Calibration Level
  - ☒ Start Time
  - ☐ End Time

#### Filters

##### Object Name or Position

☒ Enter object name or RA and Dec to cone search

[Show Examples...](#)

No cone search performed.

##### Instrument

☒ Enter text here or choose from below

Name	Quantity
<input type="checkbox"/> Photometer	(137,063,589 Total)
<input type="checkbox"/> Kepler	(2,849,857 Total)
<input type="checkbox"/> IRAC	(2,470,294 Total)
<input type="checkbox"/> GPC1	(998,018 Total)
<input type="checkbox"/> IRS	(480,821 Total)

Show 122 More



##### Observation Type

☒ Enter text here or choose from below

Name	Quantity
<input checked="" type="checkbox"/> science	(150,872,816 Total)
<input type="checkbox"/> calibration	(981,567 Total)

##### Project

☒ Enter text here or choose from below

Name	Quantity
<input type="checkbox"/> TESS	(142,228,134 Total)
<input type="checkbox"/> K2	(1,768,321 Total)
<input type="checkbox"/> PS1	(998,018 Total)
<input type="checkbox"/> HST	(996,106 Total)
<input type="checkbox"/> Kepler	(941,711 Total)

Show 71 More



##### Mission

☒ Enter text here or choose from below

Name	Quantity
<input type="checkbox"/> HLSF	(142,733,270 Total)
<input type="checkbox"/> SPITZER_SHA	(3,073,080 Total)
<input type="checkbox"/> TESS	(1,379,476 Total)
<input type="checkbox"/> HST	(1,295,012 Total)
<input type="checkbox"/> PS1	(998,018 Total)

Show 17 More

##### Filters

☒ Enter text here or choose from below

Name	Quantity
<input type="checkbox"/> TESS	(142,228,277 Total)
<input type="checkbox"/> KEPLER	(2,850,659 Total)
<input type="checkbox"/> IRAC2	(1,322,495 Total)
<input type="checkbox"/> IRAC1	(840,861 Total)
<input type="checkbox"/> IRS-SL	(207,199 Total)

Show 681 More

##### Proposal ID

☒ Enter text here

This column must be searched via the text box at the top of this panel

##### Provenance Name

☒ Enter text here or choose from below

Name	Quantity
<input type="checkbox"/> QLP	(62,773,409 Total)
<input type="checkbox"/> GSFC-ELEANOR-LITE	(39,271,936 Total)
<input type="checkbox"/> TGLC	(16,335,794 Total)
<input type="checkbox"/> TASOC	(11,080,238 Total)
<input type="checkbox"/> TESS-SPOC	(9,599,294 Total)

Show 113 More

##### Target Name

☒ Enter text here

This column must be searched via the text box at the top of this panel

##### Product Type

☒ Enter text here or choose from below

Name	Quantity
<input type="checkbox"/> timeseries	(144,968,966 Total)

anonymous  
Login...  
Account Info...

The screenshot displays the AstroView software interface. The top toolbar contains various icons for file operations and viewing. The left sidebar shows filter categories: Keyword/Text Filter, Filters (listing F360M, F335M, F200W, F300M), Target Classification (listing Spiral galaxies, Galaxy), Data URL, and objID1. The main table lists observations with columns: Actions, Preview, Observation T..., Mission, Provenance Name, Instrument, Project, Filters, Waveband, Target Name, and Target Classification. The table contains four rows of data for NGC-3627. Red annotations highlight specific elements: 'Show preview' points to the 'Show Preview' checkbox in the top right; 'Select these boxes' points to checkboxes in the first column of the table; 'Filters should be unique' points to the 'Filters' column.

Actions	Preview	Observation T...	Mission	Provenance Name	Instrument	Project	Filters	Waveband	Target Name	Target Classification
<input type="checkbox"/>		science	JWST	CALJWST	NIRCAM/IMA...	JWST	F300M	Infrared	NGC-3627	Galaxy, Spiral
<input type="checkbox"/>		science	JWST	CALJWST	NIRCAM/IMA...	JWST	F200W	Infrared	NGC-3627	Galaxy, Spiral
<input type="checkbox"/>		science	JWST	CALJWST	NIRCAM/IMA...	JWST	F335M	Infrared	NGC-3627	Galaxy, Spiral
<input type="checkbox"/>		science	JWST	CALJWST	NIRCAM/IMA...	JWST	F360M	Infrared	NGC-3627	Galaxy, Spiral



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mast.stsci.edu

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Select a collection...  
MAST Observations by Object Name or RA/Dec

and enter target:  
Enter object name or RA and Dec to cone search

anonymous  
Login...

Download Manager

Download BasketDownload History

Remove Selected

Remove All

Displaying 3 of 19018 Total Files

1.95 GB Selected / 50 GB Max

Retrieve References

Download

Batch Retrieval

?

Filters

Clear Filters

Recommended Products

Uncheck Minimum Recommended Products to see all files. [Learn more.](#)

Minimum Recommended Products

(3 of 15)

Product Category

AUXILIARY

(0 of 16875)

SCIENCE

(3 of 918)

PREVIEW

(0 of 915)

INFO

(0 of 310)

Extension

fits

(3 of 17790)

jpg

(0 of 915)

csv

(0 of 155)

json

(0 of 155)

ersv

(0 of 31)

Group

GS-TRACK

(0 of 7296)

GS-FG

(0 of 7296)

GS-ID

(0 of 760)

GS-ACQ2

(0 of 684)

GS-ACQ1

(0 of 684)

Files

Mission > Observation > File

	Files	Actions	File Size	Product Type	Batch	Description	Project	Product Group
📁 JWST	3							
📁 jw02107-o029_t011_nircam_clear-f2...	1							
📁 jw02107-o029_t011_nircam_clear-f3...	1							
📁 jw02107-o029_t011_nircam_clear-f3...	1							

Details

Summary

Select an observation or file to view details

There should be 3 files total

Select all your images and click download!

Select "science" and "fits"

325324069 (1 of 1)

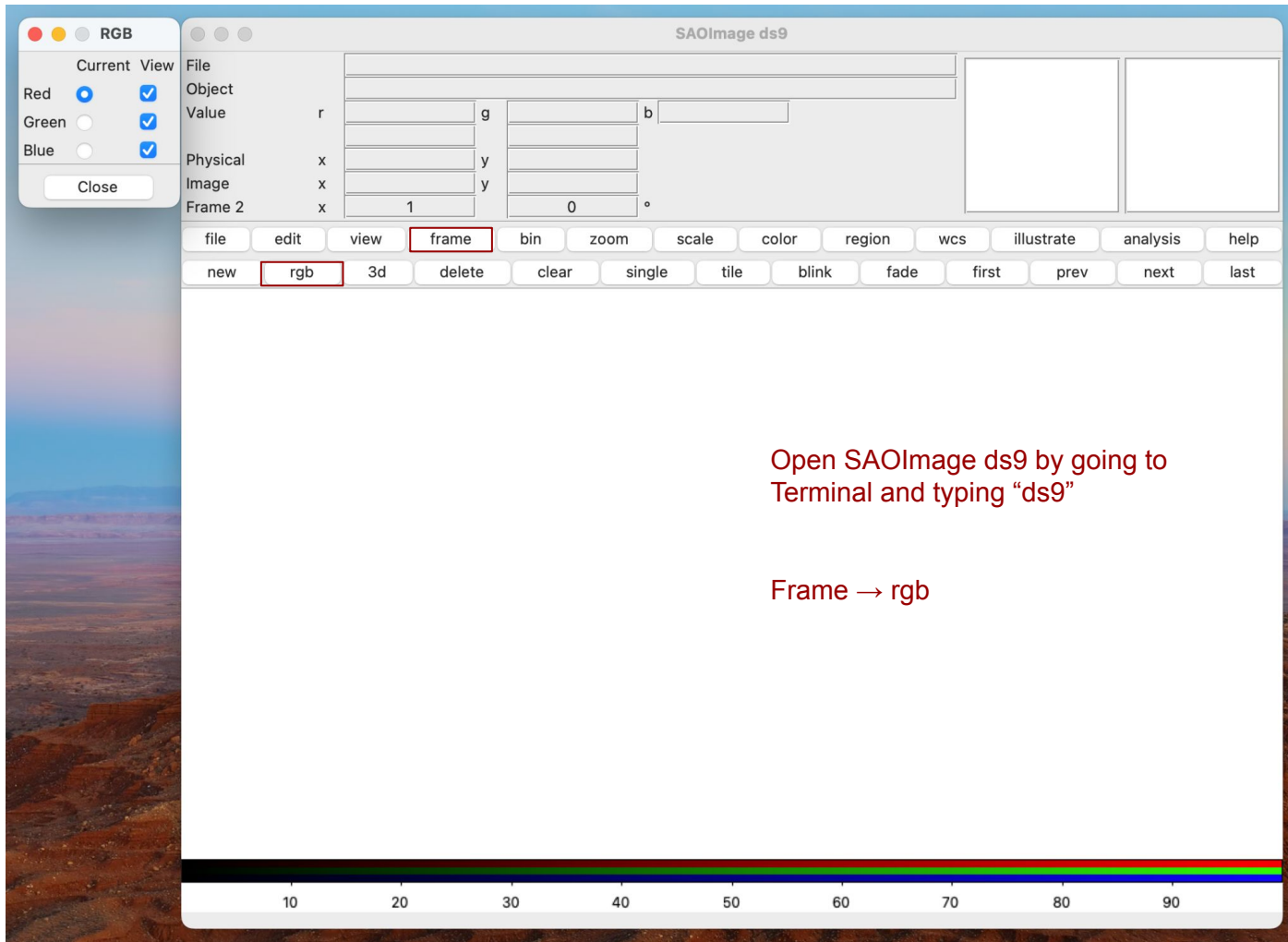
325324399 (1 of 1)

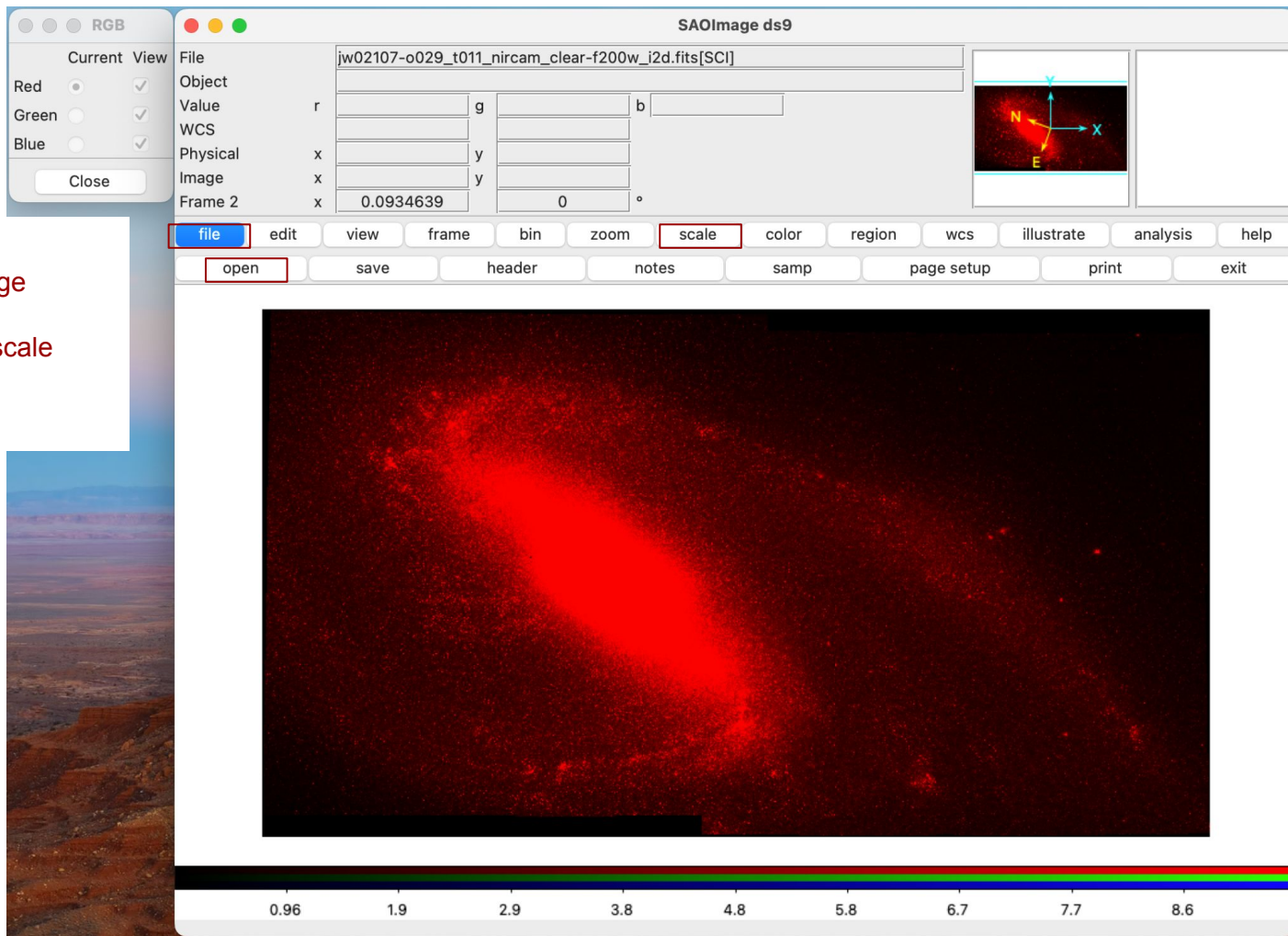
# Make sure the images have downloaded

On Firefox, look for the button by the search bar to allow downloads/pop-ups from the website.

The file should save to downloads as a .zip file.

Then, open your file manager and unzip the folder.

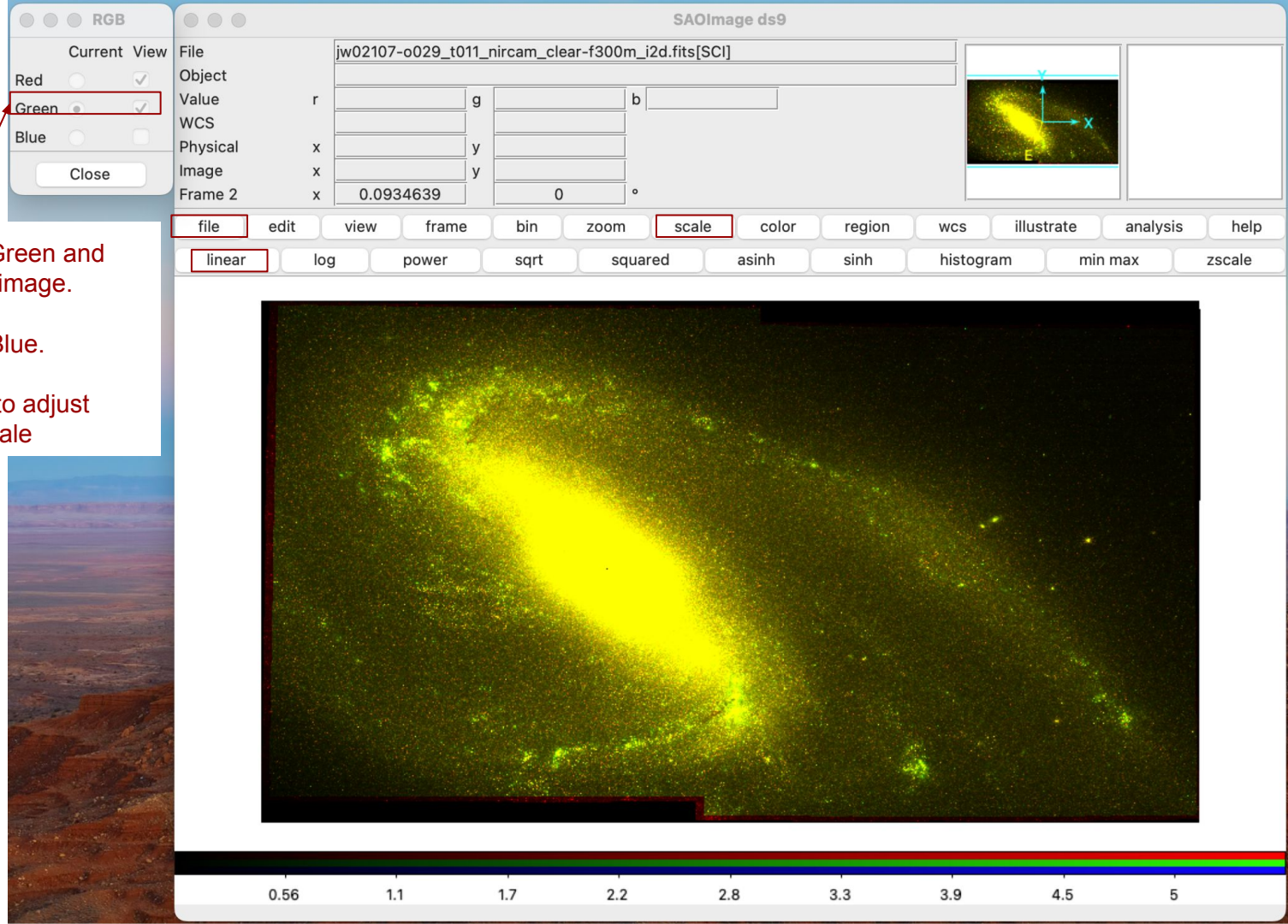




File → open  
Select your image

Then, scale→zscale

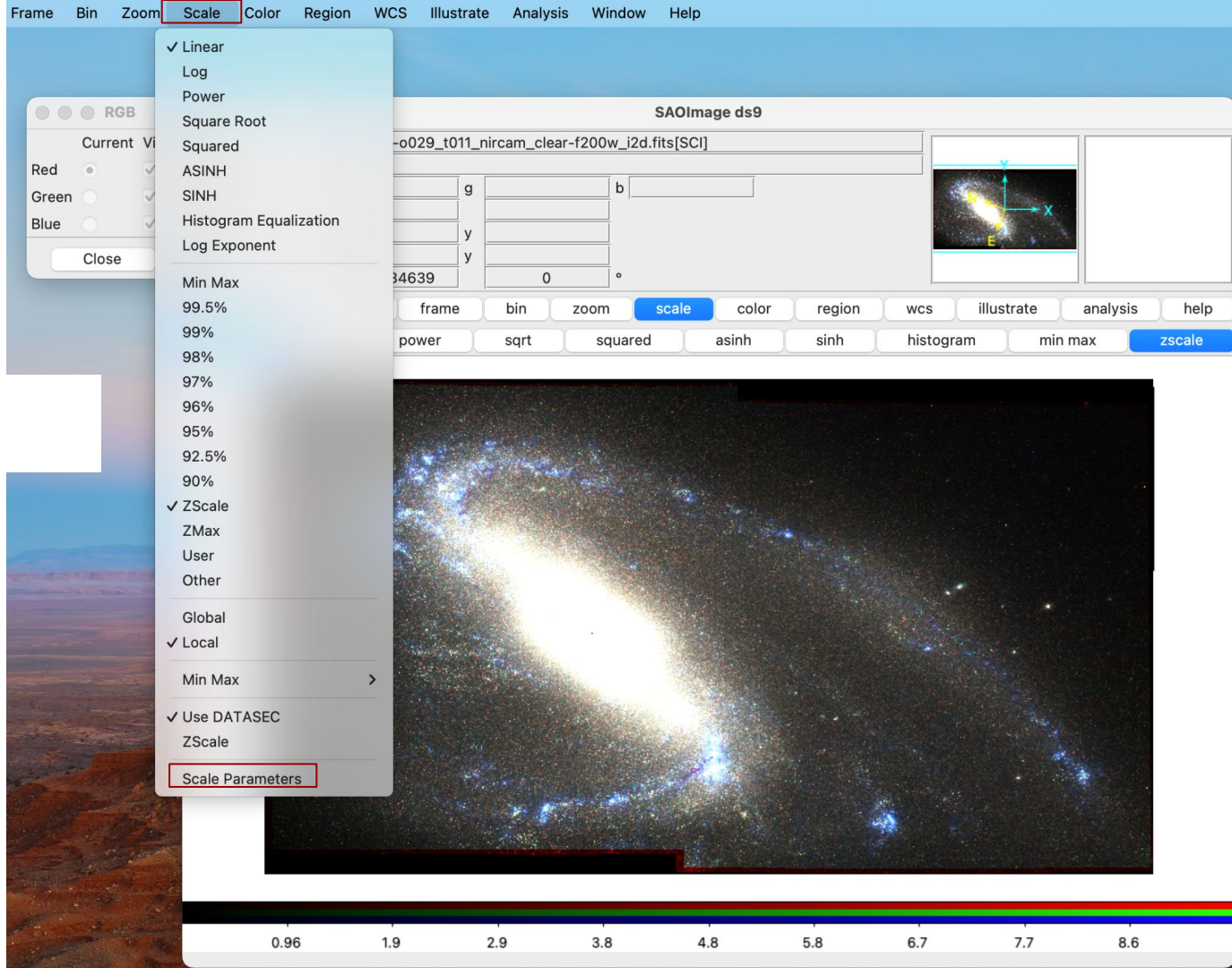




Change to Green and open green image.

Repeat for Blue.

Remember to adjust scale → zscale

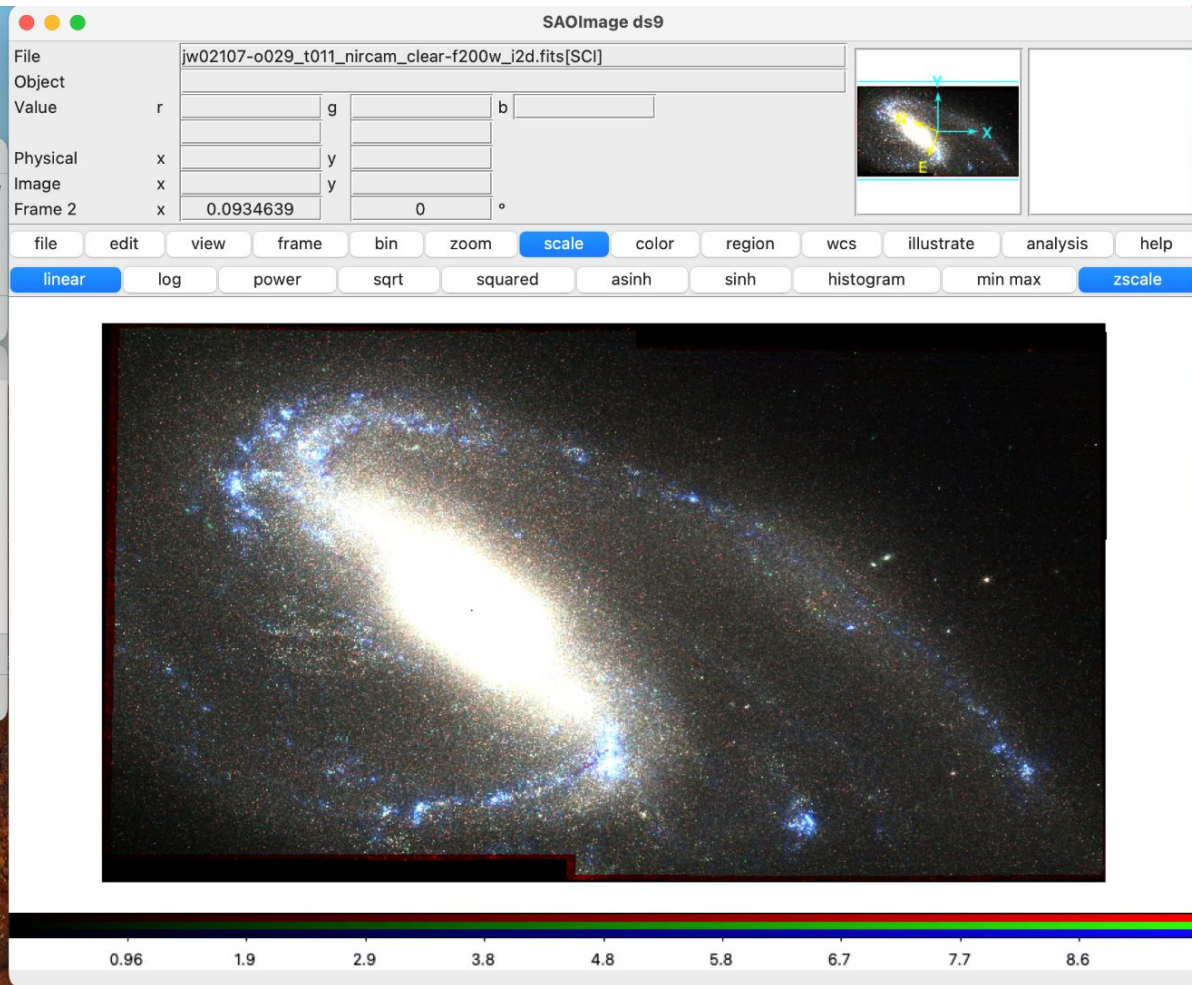
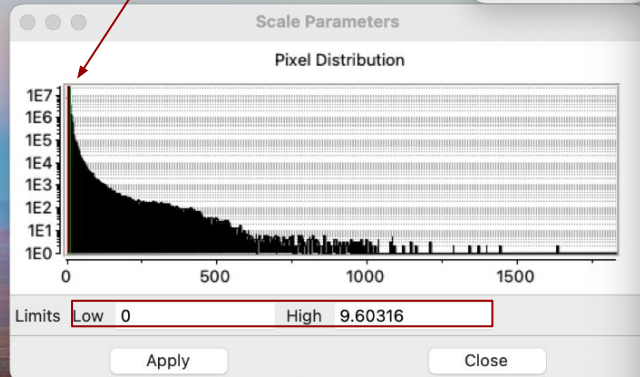
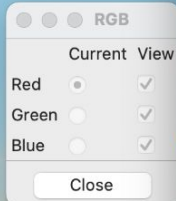


Scale → Scale  
Parameters



Adjust high (green line) and low (red line) until the image looks beautiful :)

Green and red lines  
(hard to see)



Pro tip: hover mouse over the background of the image to see values of r, g, and b. Set low limit to be close to those values.

RGB

Current View

Red

☐

☒

Green

☐

☒

Blue

☐

☒

Close

SAOImage ds9

File

Object

Value

FK5

Physical

Image

Frame 2

jw02107-o029\_t011\_nircam\_clear-f200w\_i2d.fits[SCI]

r

0.291888

g

0.106287

b

0.166341

$\alpha$

11:20:08.3275

$\delta$

+12:57:56.925

x

7082.72

y

4144.49

x

7082.72

y

4144.49

x

0.0934639

0

$^{\circ}$

file

edit

view

frame

bin

zoom

scale

color

region

wcs

illustrate

analysis

help

linear

log

power

sqrt

squared

asinh

sinh

histogram

min max

zscale

1

2

3

4

5

6

7

8

9

Pixel Distribution

1E7

1E6

1E5

1E4

1E3

1E2

1E1

1E0

0

500

1000

1500

Limits Low 0 High 10

Apply

Close

Scale Parameters

Pixel Distribution

1E7

1E6

1E5

1E4

1E3

1E2

1E1

1E0

0

500

1000

1500

Limits Low 0 High 10

Apply

Close

RGB values

Hover mouse here

