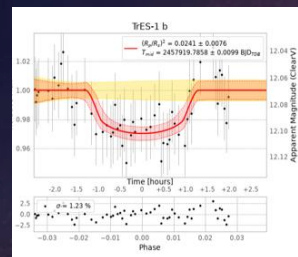
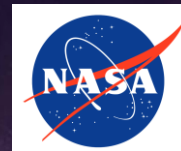


Fotometría de Exoplanetas con

EXOTIC

Manoli Seco Mansito - **URANIA**



Mi carrera como astrónoma aficionada



EXOPLANET
WATCH

Wishing you clear skies, Watchers!

April 2024 Newsletter

Community

Watcher of the Month



Manoli Seco
Grandmother
Canary Islands

"The Universe fascinates me..."

Adding a little of my time towards the great discovery of life outside the solar system...

I'm just a normal person grateful for being able to take part in something so amazing."

<https://www.icontact-archive.com/>

Life in Space (feb 2023)



(1) <https://www.asimof.it/life-in-space-la-mostra-space-adventure-si-sposta-a-tenerife-dal-17-dicembre-fino-a-fine-marzo>

Estrellas y Mitos (marzo 2023)



<https://turismo.aytolaguna.es/mitos-y-estrellas/>



<https://www.aytolaguna.es/actualidad/noticias/Turismo-de-La-Laguna-presenta-la-segunda-edicion-del-curso-de-introduccion-a-la-astronomia-Estrellas-y-Mitos/>

Ciencia ciudadana



<https://www.zooniverse.org/>

Exoplanet Watch

When exoplanets pass between us and their stars, the stars' light dims just a bit. Scientists call the passage of a planet in front of its star a transit. Join Exoplanet Watch and use your own telescope to track these transits and gather data on how they dim their stars.

No telescope? No problem! You can use our data checkout system to request data from an exoplanet observation to analyze yourself.

You don't have to be a rocket scientist or an astrophysicist to study distant worlds. The project will teach you what you need to know to collect important data on exoplanets.

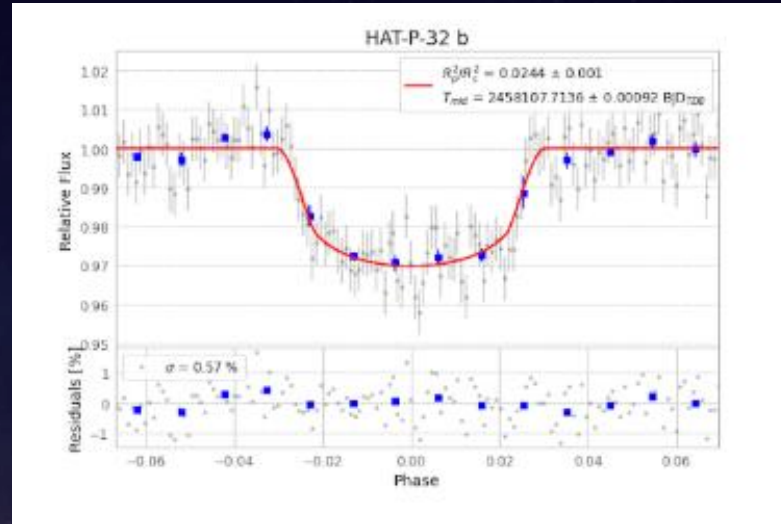
Go to Project Website ➔

[Exoplanet Watch - NASA Science](#)

EXOPLANET WATCH



EXOTIC



<https://science.nasa.gov/citizen-science/exoplanet-watch/how-to-contribute/how-to-observe/>

If You Do Not Have Your Own Telescope

Exoplanet Watch — How to Contribute

Request an Exoplanet Observation

Exoplanet Watch partners with the MicroObservatory's DIY Planet Search to obtain robotic telescope observations of transiting exoplanets for Exoplanet Watch participants who do not have their own telescope.

MicroObservatory, managed by the Center for Astrophysics | Harvard & Smithsonian, is generously sharing 10 years of archived transiting exoplanet observations with us so that you can participate in Exoplanet Watch.

Data Checkout

Enter your email address to request a dataset.

Email address

☐

I'm not a robot

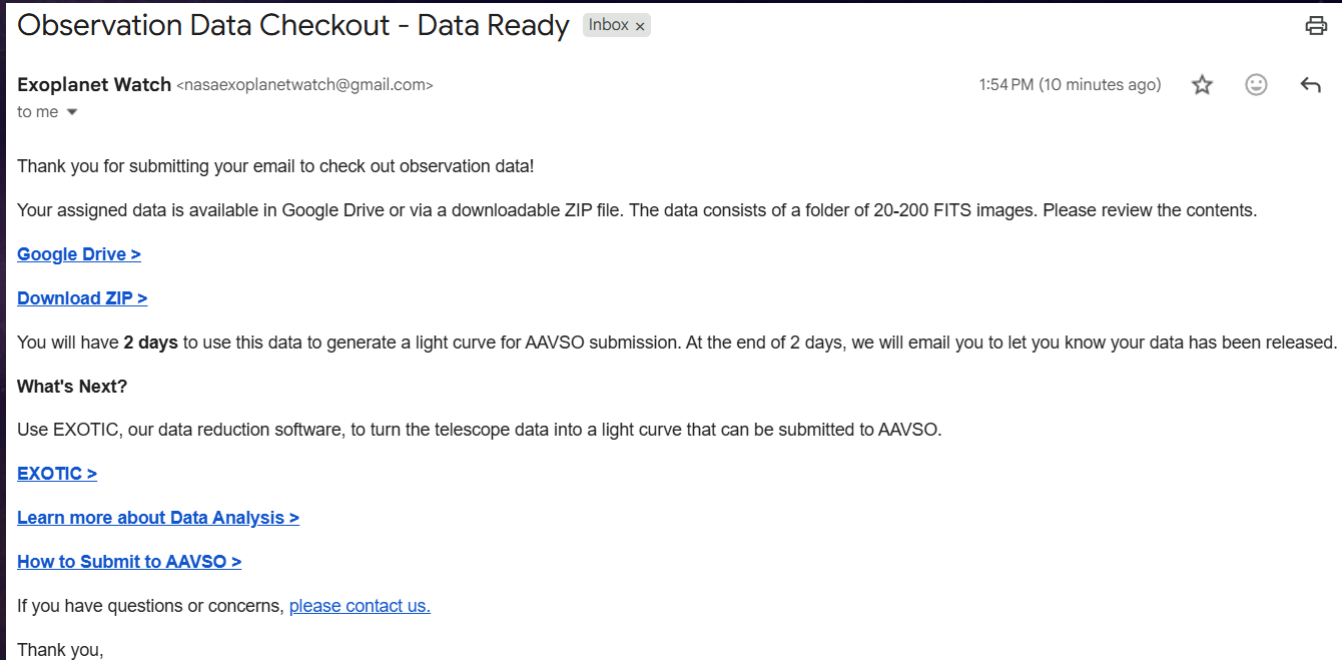


Complete the verification before submitting your request.

SUBMIT

[Data Checkout - NASA Science](#)

email con imágenes



Pedir más de un set de imágenes

Data Checkout

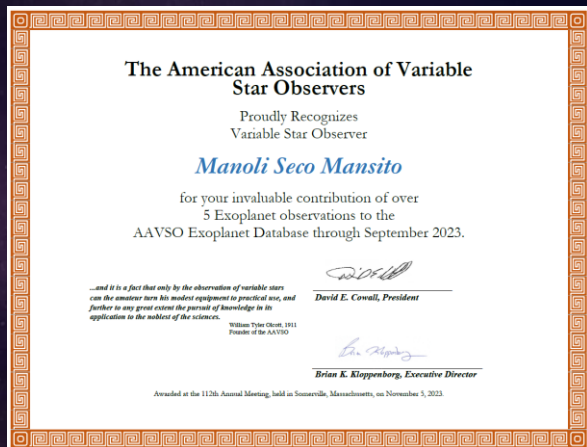
You already have a checkout

You already have a checkout. Please complete it before requesting another.

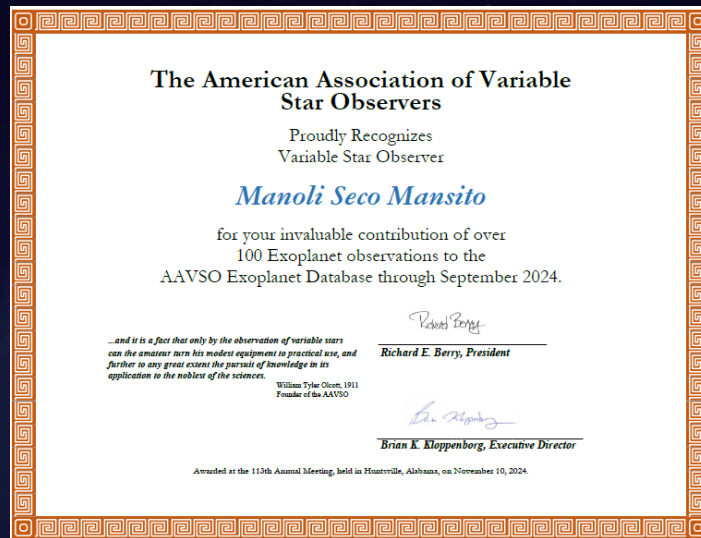
Please check your email, including your spam folder, for details.

[Return to Data Checkout](#)

Certificados de AAVSO



2023 – 5 observations



2024 – más de 100 observations

Estudiante profesional



Astronomía virtual



Physics, astronomy and planetary science

SG[Spain] 2024



<https://spacegeneration.org/sgspain-2024-home>

Grupo URANIA (19 dic 2024)



EUROPLANET
TELESCOPE NETWORK



URANIA –SABADELL TEAM

USERS OF THE EUROPLANET TELESCOPE NETWORK



Antelm
Ginard



Florence
Libotte



Florenci
Carretero



Gemma
Domènech



Joan M.
González



Josep M.
Vilalta



Mercè
Correa



Trinidad
Poyato



Xavier
Bros



Manoli
Seco



Comunidades



Grupo URANIA



PREGUNTAS ??

¿Cuántas personas aquí ...

tienen sus propios telescopios?

han hecho fotometría de exoplanetas?

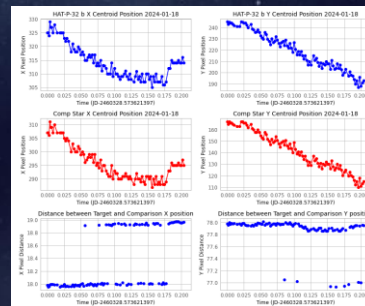
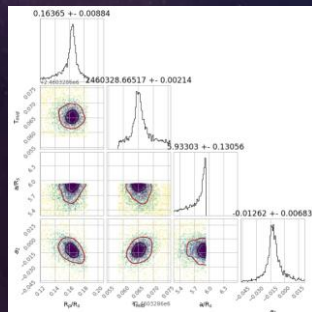
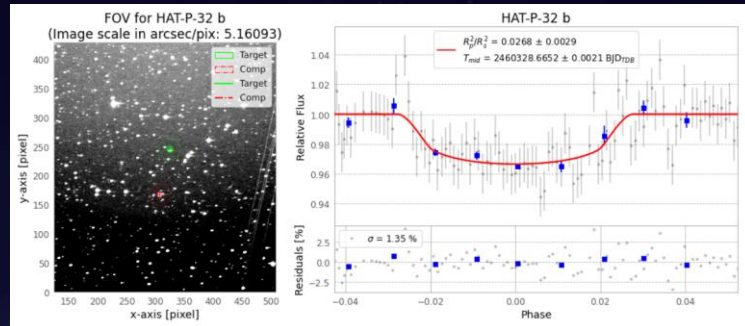
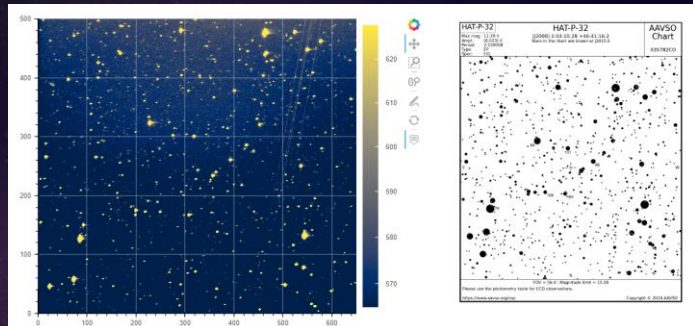
no han hecho nunca una fotometría?

conocen EXOTIC?

han hecho fotometría con EXOTIC?

quieren hacer una fotometría ahora?

EXOTIC



¿Por dónde empezamos?

¿Qué necesitamos?

Cuenta de email

Google Drive

Imágenes de exoplanetas

EXOTIC

¿Dónde conseguimos las imágenes?

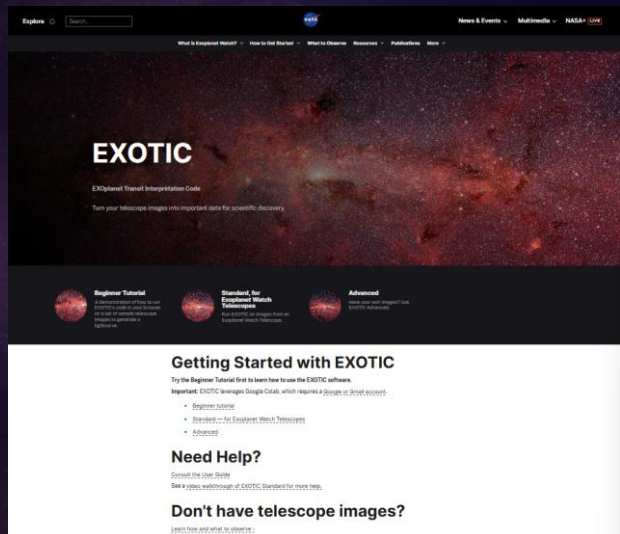
De observaciones propias ... si tienen telescopios

De NASA – Exoplanet Watch

<https://science.nasa.gov/citizen-science/exoplanet-watch/exotic/>

Del email que nos han mandado

¿Dónde conseguimos las imágenes?



Don't have telescope images?

[Learn how and what to observe](#)

If You Have Your Own Telescope

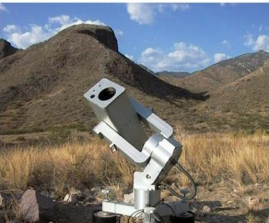
(If Not, Skip to the Next Section)

The exact setup can vary, but in general a 4" or larger telescope with tripod, tracking mount, camera, and control software/hardware are needed for Exoplanet Watch observations. For more specific details, check out the following resources and come discuss options in our [Astrobar](#) channel!

- [Exoplanet Watch Observer's Manual](#)
 - This manual is designed as a resource to instruct both beginning and advanced observers on how to begin participating with Exoplanet Watch by making observations of transiting exoplanets.
 - This document covers the basic ideas and processes behind exoplanet photometry, walks through the required equipment as well as recommended observing systems, details the data acquisition process as well as potential pitfalls and issues one may encounter, and finally explains the data reduction process in which your observations are turned into light curves of the exoplanet you observed.
- [A Practical Guide to Exoplanet Observing](#)
 - Observing exoplanets may take some practice, but anyone can do it! Here's an introduction to observing an exoplanet with your own telescope.
 - This guide by Dennis Conti gives you a great look into "best practice" when observing exoplanets.
- [What to Observe](#)
 - We'll show you how to pick targets and plan your own exoplanet observations. You can look up which exoplanets will be visible at or near your location using the [Swoomless Transit Finder](#). We list exoplanets that will be visible in different regions of the world. We also have observing campaigns related to upcoming missions, so that you can help professional astronomers use time more efficiently, freeing up time for other astronomers to make observations.

If You Do Not Have Your Own Telescope

(or if it is light polluted or cloudy where you live)



No Telescope? No Problem

You can now request data from one of our robotic telescopes if you do not have your own telescope or live in a cloudy location. Our [data checkout system](#) is the easiest, quickest way to get data directly in your email inbox.

In addition, below, we list some additional resources that are currently, or will soon be, available for observing or processing existing data from observations that have already been made.

← Data checkout system →

Request an Exoplanet Observation

<https://science.nasa.gov/citizen-science/exoplanet-watch/exotic/>

Email con imágenes

Data Checkout

Enter your email address to request a dataset.

Email address

☐ I'm not a robot



Complete the verification before submitting your request.

SUBMIT

Data Checkout

Thank you

Your checkout is ready.

Please check your email, including your spam folder, for details.

[Return to Data Checkout](#)

Observation Data Checkout - Data Ready

Inbox x



Exoplanet Watch <nasaexoplanetwatch@gmail.com>
to me ▾

2:13 PM (0 minutes ago)



Thank you for submitting your email to check out observation data!

Your assigned data is available in Google Drive or via a downloadable ZIP file. The data consists of a folder of 20-200 FITS images. Please review the contents.

[Google Drive >](#)

[Download ZIP >](#)

You will have **2 days** to use this data to generate a light curve for AAVSO submission. At the end of 2 days, we will email you to let you know your data has been released.

What's Next?

Use EXOTIC, our data reduction software, to turn the telescope data into a light curve that can be submitted to AAVSO.

[EXOTIC >](#)

[Learn more about Data Analysis >](#)

¿Qué hacemos con las imágenes?

IMÁGENES SUMINISTRADAS POR EXOPLANET WATCH

📁 darks	04/10/2026 11:04
🌐 MOBS_Cecilia_TRES-1_2017-06-14T21_00_56.86...	25/10/2023 00:54
🌐 MOBS_Cecilia_TRES-1_2017-06-14T21_00_56.86...	25/10/2023 00:54
🌐 MOBS_Cecilia_TRES-1_2017-06-14T21_00_56.86...	25/10/2023 00:54
🌐 MOBS_Cecilia_TRES-1_2017-06-14T21_00_56.86...	25/10/2023 00:54
🌐 MOBS_Cecilia_TRES-1_2017-06-14T21_00_56.86...	25/10/2023 00:54
🌐 MOBS_Cecilia_TRES-1_2017-06-14T21_00_56.86...	25/10/2023 00:53
🌐 MOBS_Cecilia_TRES-1_2017-06-14T21_00_56.86...	25/10/2023 00:54
🌐 MOBS_Cecilia_TRES-1_2017-06-14T21_00_56.86...	25/10/2023 00:53
🌐 MOBS_Cecilia_TRES-1_2017-06-14T21_00_56.86...	25/10/2023 00:54
🌐 MOBS_Cecilia_TRES-1_2017-06-14T21_00_56.86...	25/10/2023 00:53
🌐 MOBS_Cecilia_TRES-1_2017-06-14T21_00_56.86...	25/10/2023 00:54

Imágenes del TRES-1b

IMÁGENES PROPIAS

📁 BIAS	13/09/2026 15:00	File folder
📁 DARKS	13/09/2026 15:00	File folder
📁 FLATS	13/09/2026 15:00	File folder
🌐 K2_113b_R_200s_2026-09-12T21_58_38Z_00001	13/09/2026 03:49	FITS File
🌐 K2_113b_R_200s_2026-09-12T21_58_38Z_00002	13/09/2026 03:48	FITS File
🌐 K2_113b_R_200s_2026-09-12T21_58_38Z_00003	13/09/2026 03:49	FITS File
🌐 K2_113b_R_200s_2026-09-12T21_58_38Z_00004	13/09/2026 03:49	FITS File
🌐 K2_113b_R_200s_2026-09-12T21_58_38Z_00005	13/09/2026 03:49	FITS File
🌐 K2_113b_R_200s_2026-09-12T21_58_38Z_00006	13/09/2026 03:49	FITS File
🌐 K2_113b_R_200s_2026-09-12T21_58_38Z_00007	13/09/2026 03:49	FITS File
🌐 K2_113b_R_200s_2026-09-12T21_58_38Z_00008	13/09/2026 03:49	FITS File

Imágenes del K2-113b

- ✓  Google Drive (G:)
- ✓  My Drive
- ✓  EXOTIC
 - >  K2-113b
 - >  TRES-1b

¿Cómo sabemos qué exoplaneta es?



README.txt



MOBS_Cecilia_TRES-1_2017-06-14T21_00_56.868-0700_fb87e03e64362d7e0b85c81539219661_TRES-1170615100312...



MOBS_Cecilia_TRES-1_2017-06-14T21_00_56.868-0700_fb87e03e64362d7e0b85c81539219661_TRES-1170615100012...

MOBS = MicroObservatory

Cecilia = El nombre del telescopio

TRES-1 = El nombre de la estrella observada

2017-06-14 = La fecha de la observación

README.TXT

```
README.txt
File Edit View H1 B I S A
Thank you for checking out data from Exoplanet Watch. You will have two weeks from the date you
received your confirmation email to use this data to generate a light curve for AAVSO submission.
You will receive an email notification at the end of the two weeks when your data checkout expires.

What's Next?

1) Learn more about data analysis
   - https://exoplanets.nasa.gov/exoplanet-watch/how-to-contribute/how-to-analyze-your-data/

2) Inspect your FITS images + read the file headers using the software: SAOImageDS9
   - https://sites.google.com/cfa.harvard.edu/saoinageds9

3) Use EXOTIC, our data reduction software, to turn the telescope data into a light curve
   - https://exoplanets.nasa.gov/exoplanet-watch/exotic/welcome/

4) Upload your light curve to AAVSO
   - https://exoplanets.nasa.gov/exoplanet-watch/how-to-contribute/how-to-submit-your-data/
   - Light curves from AAVSO will be published on weekly basis here:
     https://exoplanets.nasa.gov/exoplanet-watch/results/

5) Share your light curve with the Exoplanet Watch community on Slack
   - Post your light curve on the data-upload channel: uo1-ets.slack.com

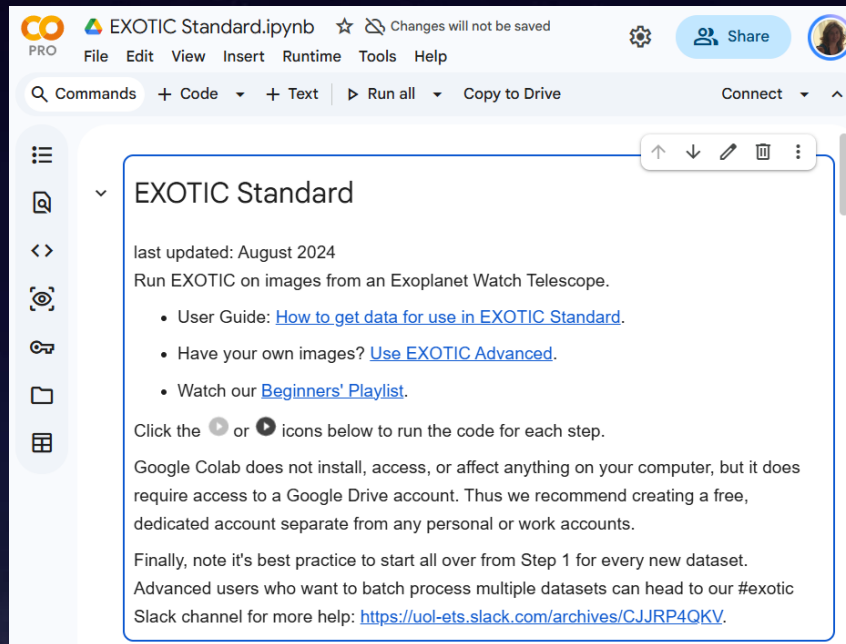
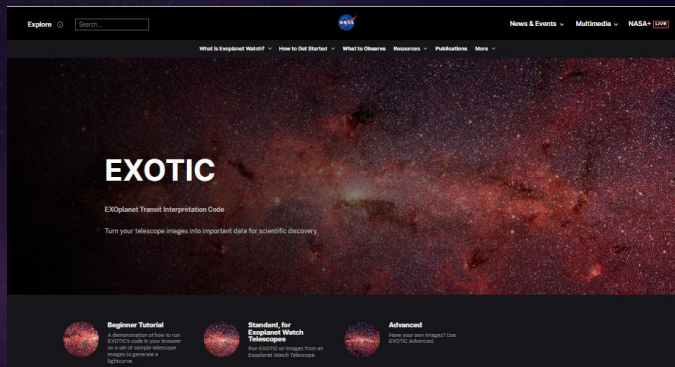
Here are a few parameters from your dataset to help you get started with building an inits file for
EXOTIC:

RA          : 286.18513      (19:04.74 Right Ascension)
DEC         : 36.658908     (+36:39.53 Declination)
OBJECT      : TRES-1 b      (Name of object observed)
FILTER      : Clear         (Photometric Filter)
OBSERVAT    : Whipple Observatory (Observatory name)
LATITUDE    : 31.68         (Local latitude)
LONGITUDE   : 110.88        (Local longitude)
WEATHER     : 99.18         (Estimated sky conditions: 0-100 = poor to excellent,
= -1 if no data)
HEIGHT      : 1268.0        ((Local elevation above sea level, in meters))
```

OBJECT: **TRES-1 b**

RA	: 286.18513	(19:04.74 Right Ascension)
DEC	: 36.658908	(+36:39.53 Declination)
OBJECT	: TRES-1 b	(Name of object observed)
FILTER	: Clear	(Photometric Filter)
OBSERVAT	: Whipple Observatory	(Observatory name)
LATITUDE	: 31.68	(Local latitude)
LONGITUDE	: 110.88	(Local longitude)
WEATHER	: 99.18	(Estimated sky conditions: 0-100 = poor to excellent,
= -1 if no data)		
HEIGHT	: 1268.0	((Local elevation above sea level, in meters))

Fotometría con EXOTIC Standard



<https://science.nasa.gov/citizen-science/exoplanet-watch/exotic/>

Paso 1: Reconoce el Drive de Google donde se encuentran las imágenes y carga EXOTIC

Step 1: Mount Google Drive and Load EXOTIC

🕒 *Estimated time: ~2-5 minutes*

This step will:

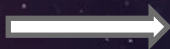
- Connect to your Google Drive to access your .FITS or .FITS.gz images
- Import required EXOTIC libraries

Important: there will be two popups you must agree to.

- First popup** is titled "Warning: This notebook was not authored by Google." Click "File" or you can go up to "File" and save your own copy (just remember to check back page)
- Second popup** is asking for permission to access your Google Drive files. Click "Continue"

 Mount Google Drive and Load EXOTIC libraries

▶ [Show code](#)



Mensajes

1

Warning: This notebook was not authored by Google

This notebook was authored by nasaexoplanetwatchexotic@gmail.com. It may request access to your data stored with Google, or read data and credentials from other sessions. Please review the source code before executing this notebook. Please contact the creator of this notebook at nasaexoplanetwatchexotic@gmail.com with any additional questions.

Cancel [Run anyway](#)

2

Permit this notebook to access your Google Drive files?

This notebook is requesting access to your Google Drive files. Granting access to Google Drive will permit code executed in the notebook to modify files in your Google Drive. Make sure to review notebook code prior to allowing this access.

No thanks [Connect to Google Drive](#)

3

 Sign in with Google



You're signing back in to Google Drive for desktop

 @gmail.com

[Cancel](#) [Continue](#)

Review Google Drive for desktop's [Privacy Policy](#) and [Terms of Service](#) to understand how Google Drive for desktop will process and protect your data.

To make changes at any time, go to your [Google Account](#).

Learn more about [Sign in with Google](#).

4

 Sign in with Google



Google Drive for desktop wants access to your Google Account

 @gmail.com

[Cancel](#) [Continue](#)

Google Drive for desktop already has some access

See the [9 services](#) that Google Drive for desktop has some access to.

Make sure you trust Google Drive for desktop

Review Google Drive for desktop's [Privacy Policy](#) and [Terms of Service](#) to understand how Google Drive for desktop will process and protect your data.

To make changes at any time, go to your [Google Account](#).

Learn how Google helps you [share data safely](#).

Errores

 Mount Google Drive and Load EXOTIC libraries

 [Show code](#)

START: Mounting Google Drive
Attention: Be sure to "Permit this notebook to access your Google Drive files" if prompted.
DONE: Mounting Google Drive
START: Importing necessary software libraries
Loading styles, please wait, this takes a few minutes...

- Styles loaded, importing libraries...
- (1/5) Bokeh.io
- (2/5) EXOTIC (This will take up to a minute, please wait...)

Restart session

WARNING: The following packages were previously imported in this runtime:
[_distutils_hack]

You must restart the runtime in order to use newly installed versions.

Restarting will lose all runtime state, including local variables.

Cancel

[Restart session](#)

Your session crashed for an unknown reason. [View runtime logs](#) 

Loading styles, please wait, this takes a few minutes...

- Styles loaded, importing libraries...
- (1/5) Bokeh.io
- (2/5) EXOTIC (This will take up to a minute, please wait...)
- (3/5) NASAExoplanetArchive, Astropy, Utils
- (4/5) Matlab, SciPy
- (5/5) Google Utils

DONE: Mounting Google Drive and loading libraries. You may move on to the next step.

Paso 2: Cargar las imágenes del telescopio - Ubicación de las imágenes

Step 2: Load Telescope Images

 Estimated time: 1 minute

This step will:

- Prompt you to type in the path to your .FITS or .FITS.gz files on Google Drive
- Prompt you to type in your AAVSO Observer code, if you have one.
- Prompt you to type in your exoplanet, aka "Object Name" in the readme.txt file you received.

For more information:

- [How do I upload .FITS images to Google Drive and determine the path?](#)
- [How do I request an AAVSO Observer code?](#)

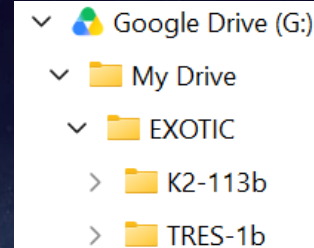
Note: an AAVSO Observer Code is only required if you want to submit your data to the AAVSO database (recommended). For those processing data for yourself or other databases, you may skip that input.

Load telescope images

-  Enter the Google Drive filepath here (case sensitive, and avoid special characters like parentheses), e.g. "EXOTIC/HAT-P-32b_20171220-quick"

Google_Drive_Filepath

Insert text here



=

 Load telescope images

 Enter the Google Drive filepath here (case sensitive, and avoid special characters like parentheses), e.g. "EXOTIC/HAT-P-32b_20171220-quick"

Google_Drive_Filepath

EXOTIC/TRES-1b

Código de AAVSO del Observador

Optional: Enter AAVSO observer codes here (there can be multiple Secondary Observer Codes). If you don't enter it here, you'll need to manually edit the resulting TXT file for uploading to AAVSO.

Primary_Observer_Code

Secondary_Observer_Code

Nombre del EXOPLANETA

Enter the exoplanet name. See the "OBJECT" in the README.txt that came with your data, e.g. "HAT-P-32 b"

OBJECT_Name

Insert text here



Enter the exoplanet name. See the "OBJECT" in the README.txt that came with your data, e.g. "HAT-P-32 b"

OBJECT_Name

TRES-1 b

Then press  to the left (or shift-return).

[Show code](#)



 Load telescope images

 Enter the Google Drive filepath

Google_Drive_Filepath

EXOTIC/TRES-1b

DONE: Download planetary parameters. You may move on to the next step.

Limpieza de imágenes (Opcional)

Clean images (optional)

- ▶ This optional step allows you to visually inspect every image in your dataset to then manually remove any bad images (e.g., due to clouds).

Note: This step can take some time to run as it takes ~1 second to load each image. If you run into issues, remember that EXOTIC Standard is meant to run just one dataset each time. Try going to Runtime > Disconnect and Delete Runtime, and start over for each new dataset. Report issues to our [#exotic Slack Channel](#) (link above).

Imágenes vistas por SAOImage ds9

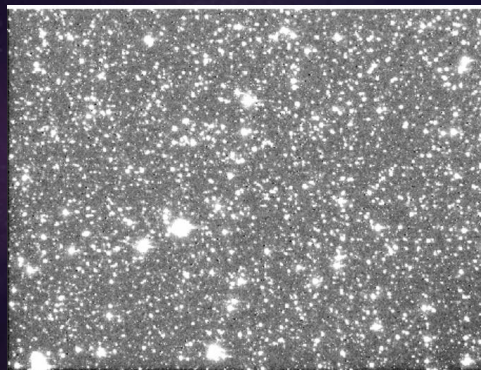
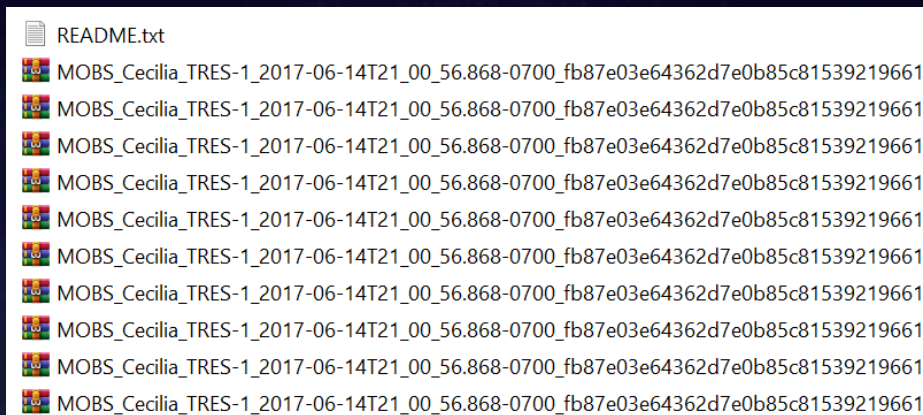
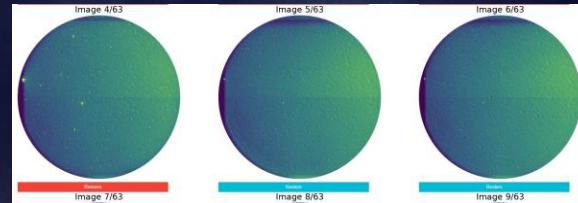
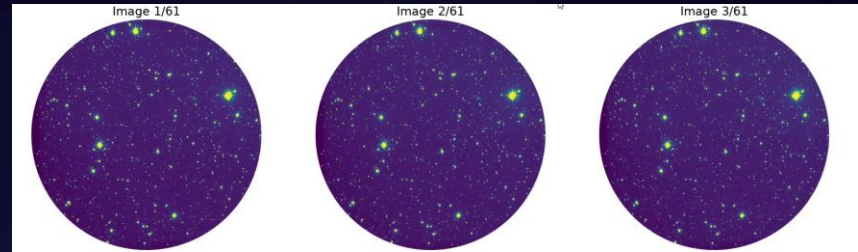
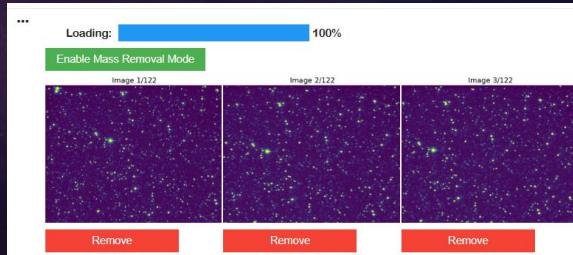


Imagen de TRES-1 b

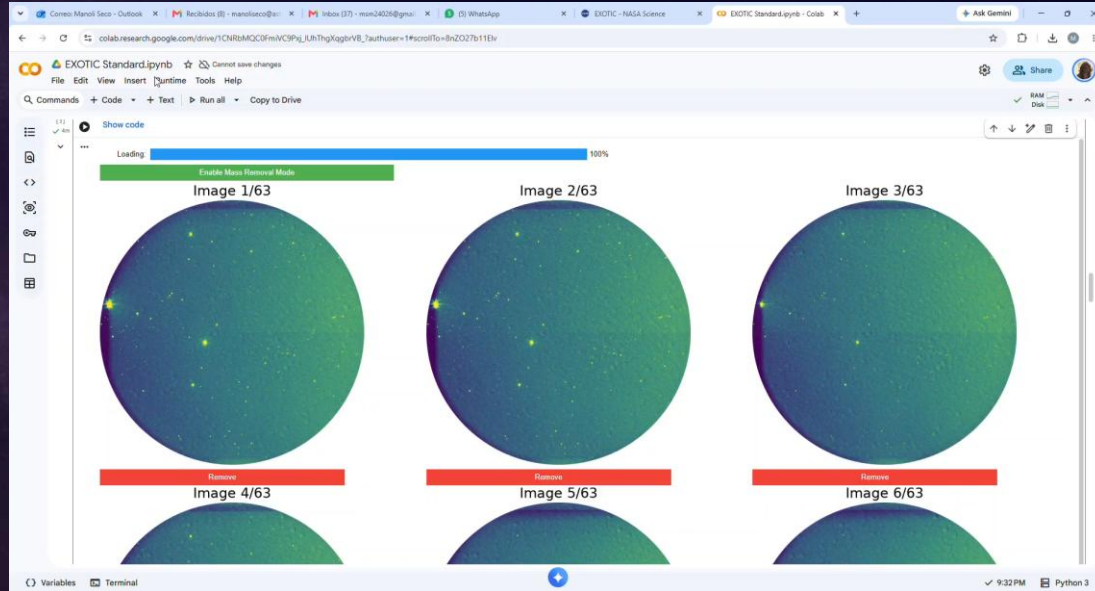


126 Imágenes de TRES-1 b

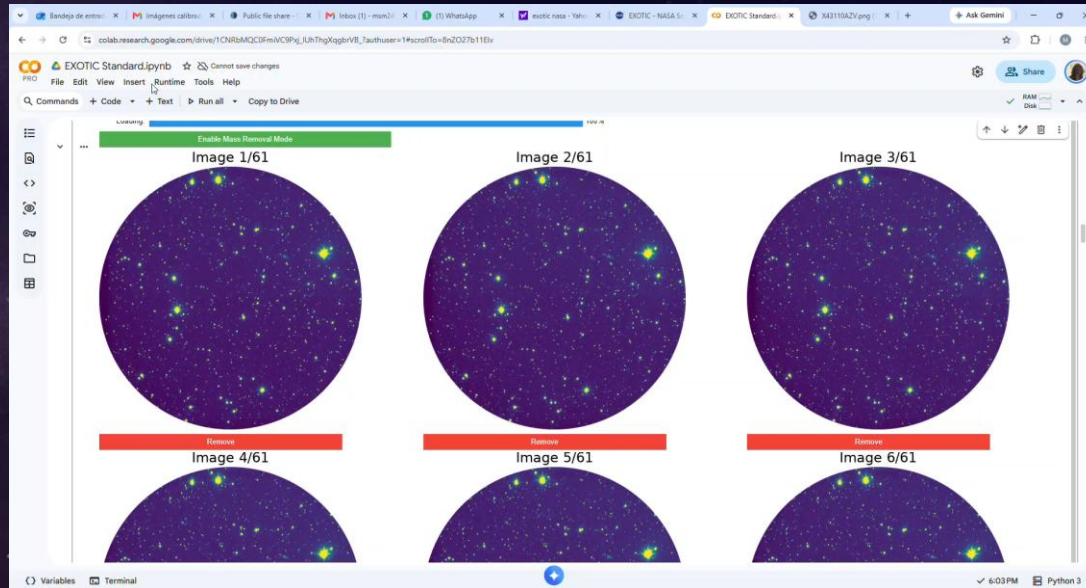
Limpieza de imágenes en EXOTIC Standard



Video 1 – eliminando imágenes



Video 2 – eliminando imágenes



Paso 3: Identificar el objeto y las estrellas de comparación ...

Step 3: Identify target star and comparison stars

 Estimated time: 3 minutes

This step will:

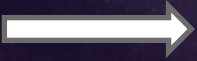
- a. Enter your telescope specifications (typically "MicroObservatory" for Standard users).
- b. Enter your target host star (omit the "b" or other trailing letter from your object name in Step 2).
- c. Ask you to identify coordinates for your target star and comparison stars

For more information:

- [How do I get a starchart image URL?](#)
- [How do I identify coordinates for my target and comparison stars?](#)

... en la imagen del telescopio

2



Identify target and comparison stars in a telescope image



Select your telescope (e.g., "Cecilia" is from the MicroObservatory)

Telescope

MicroObservatory

Enter your star name, remembering to omit the "b" or other trailing letter, e.g., HAT-P-32 b is the exoplanet, **HAT-P-32** is the star.

Star

TRES-1

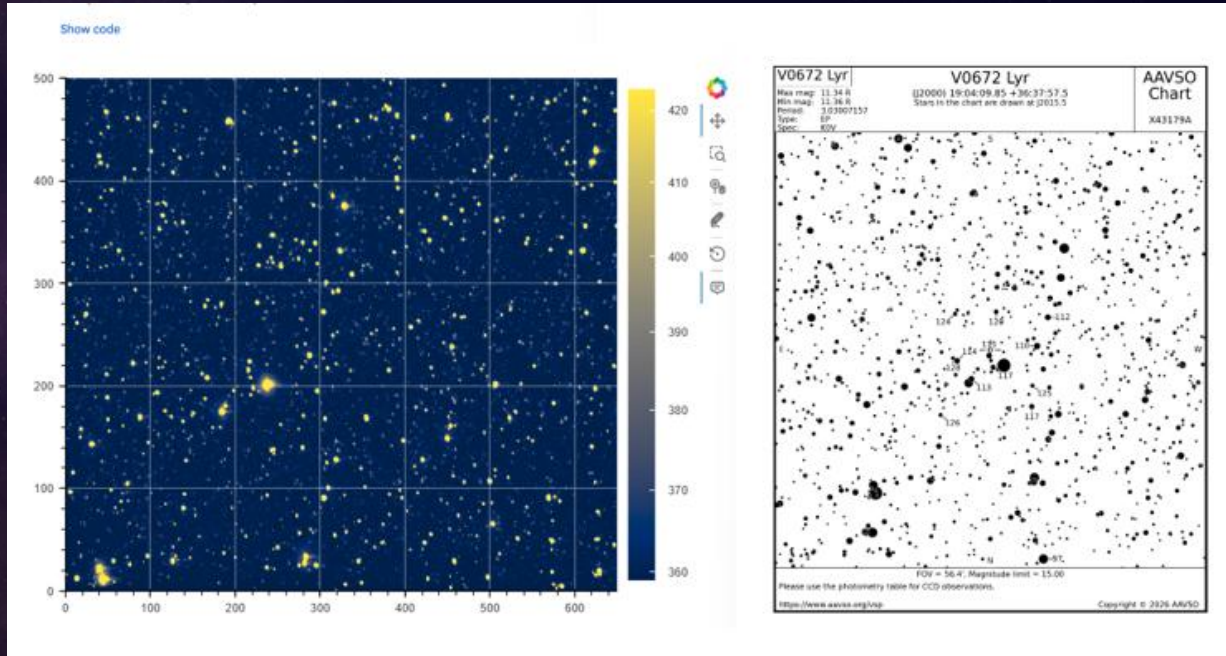
Then press  to the left (or shift-return).

[Show code](#)

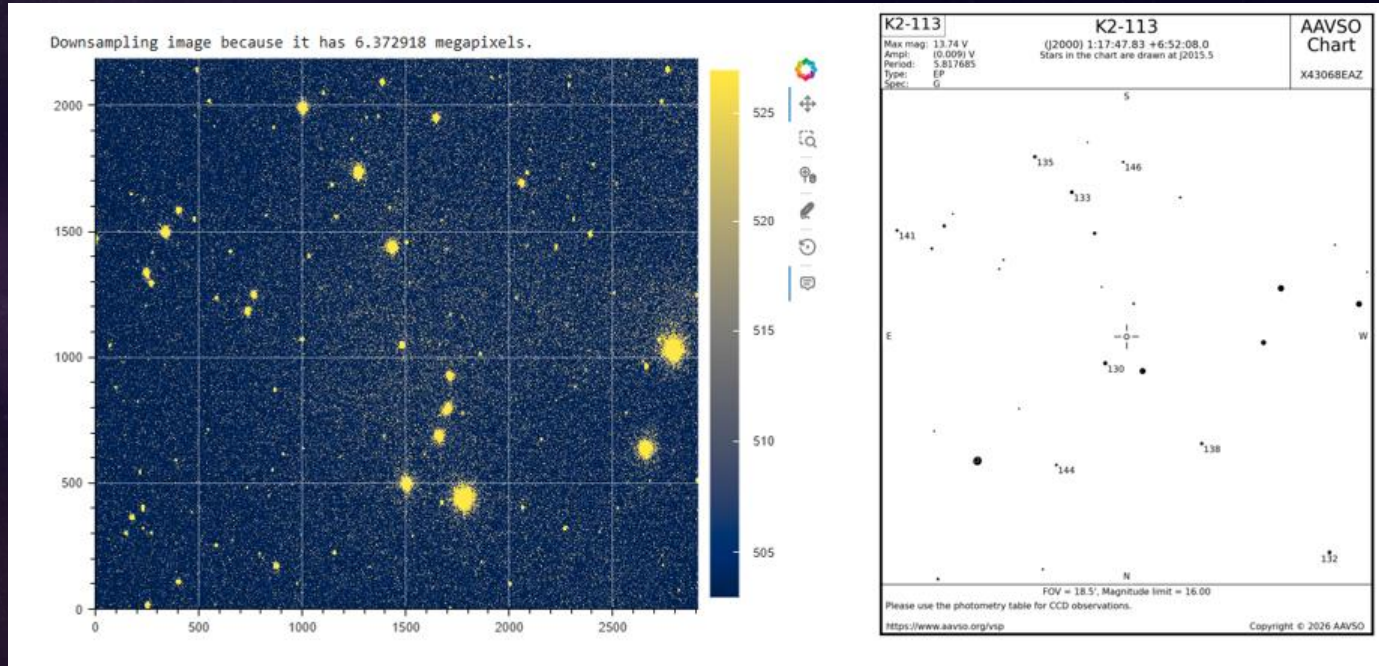
1



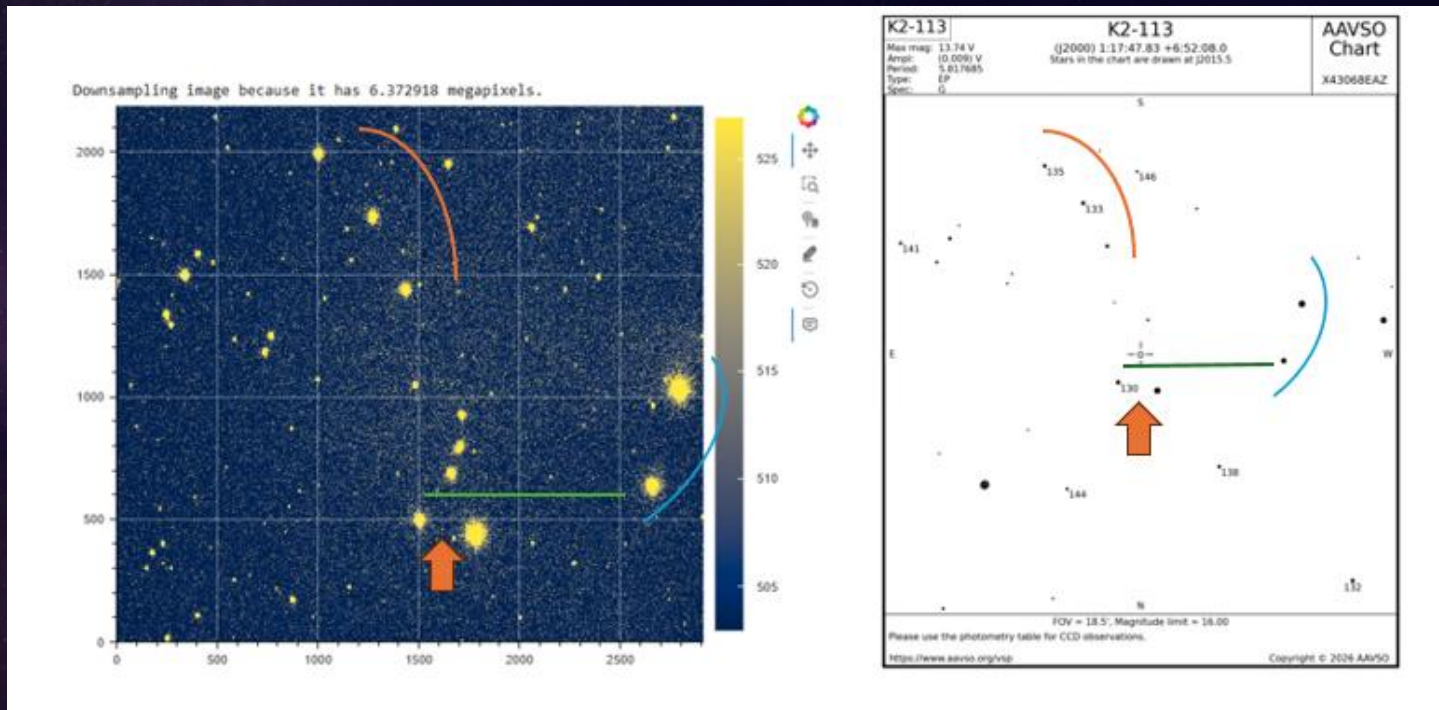
¿Dónde está TRES-1 ?



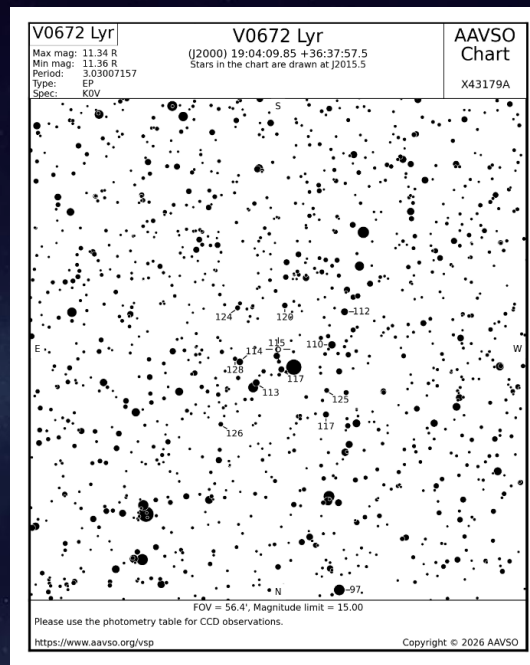
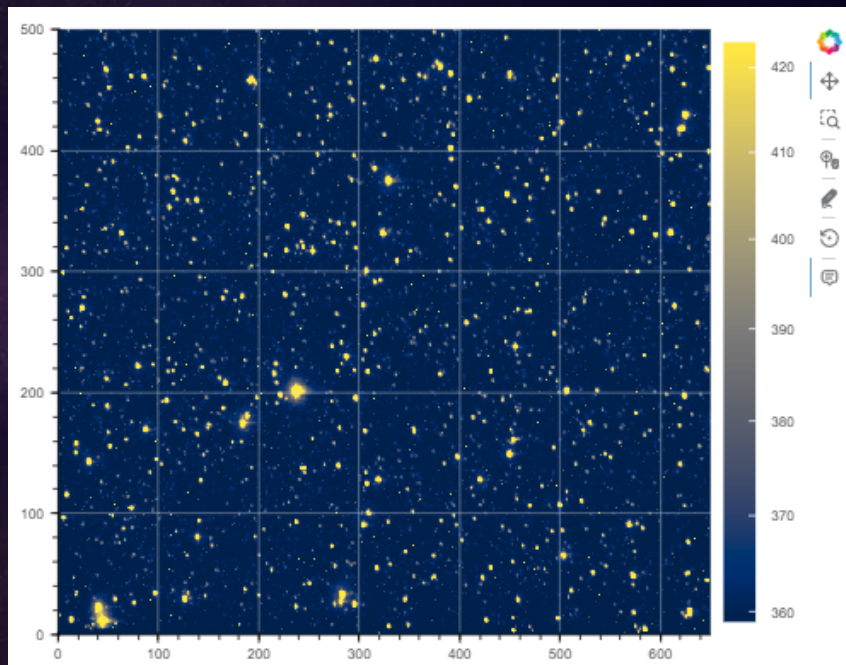
Práctica 1 – K2-113



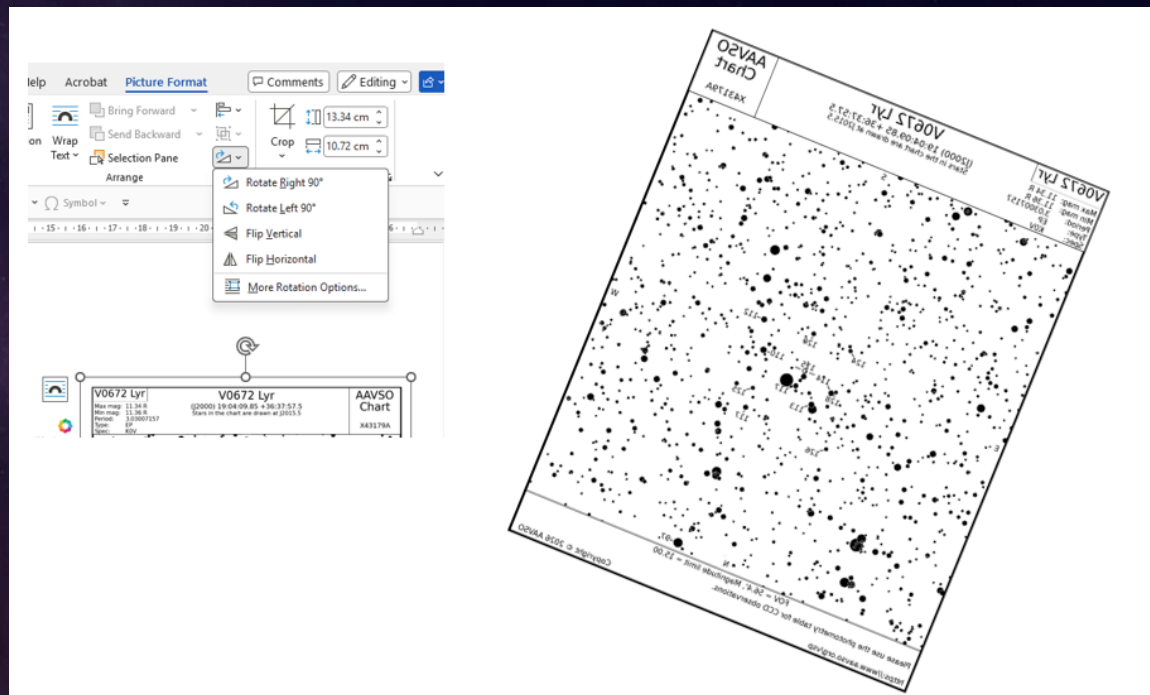
Reconociendo patrones K2-113



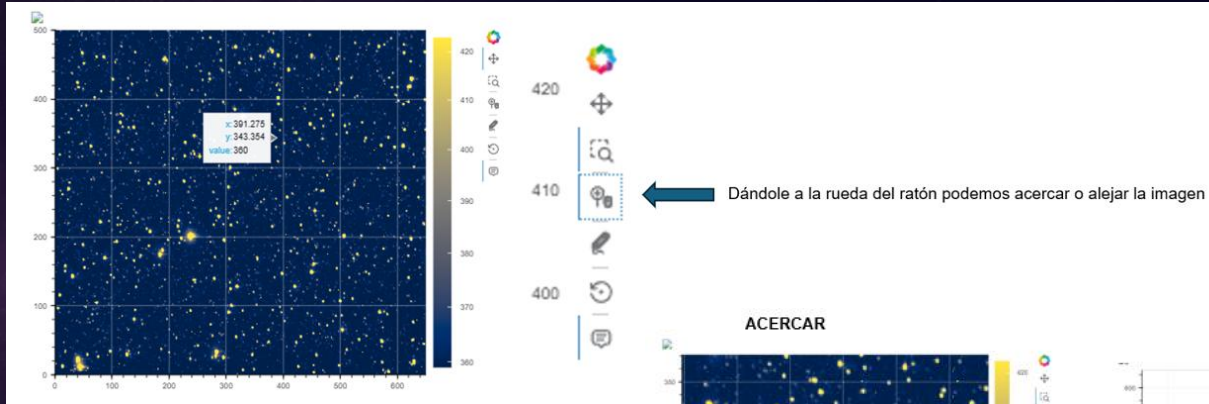
Práctica 2 – TRES-1



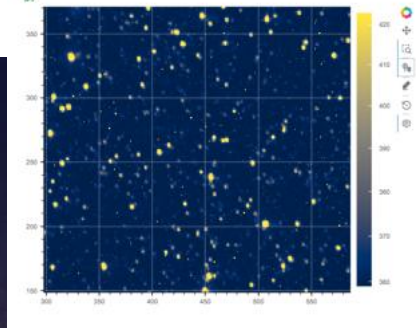
Herramientas 1



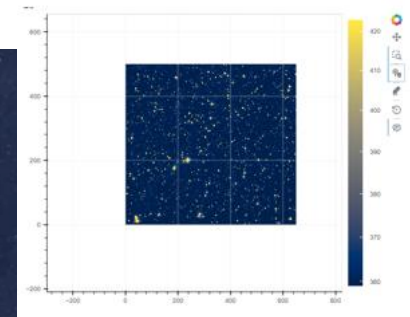
Más herramientas



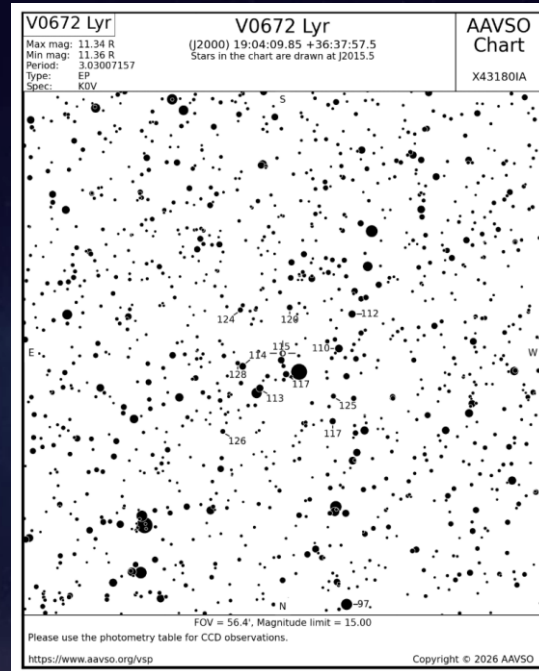
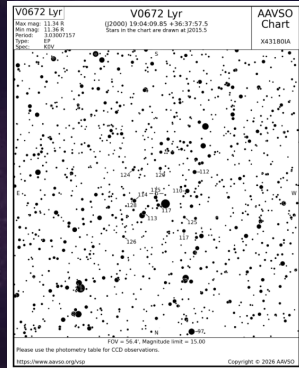
ACERCAR



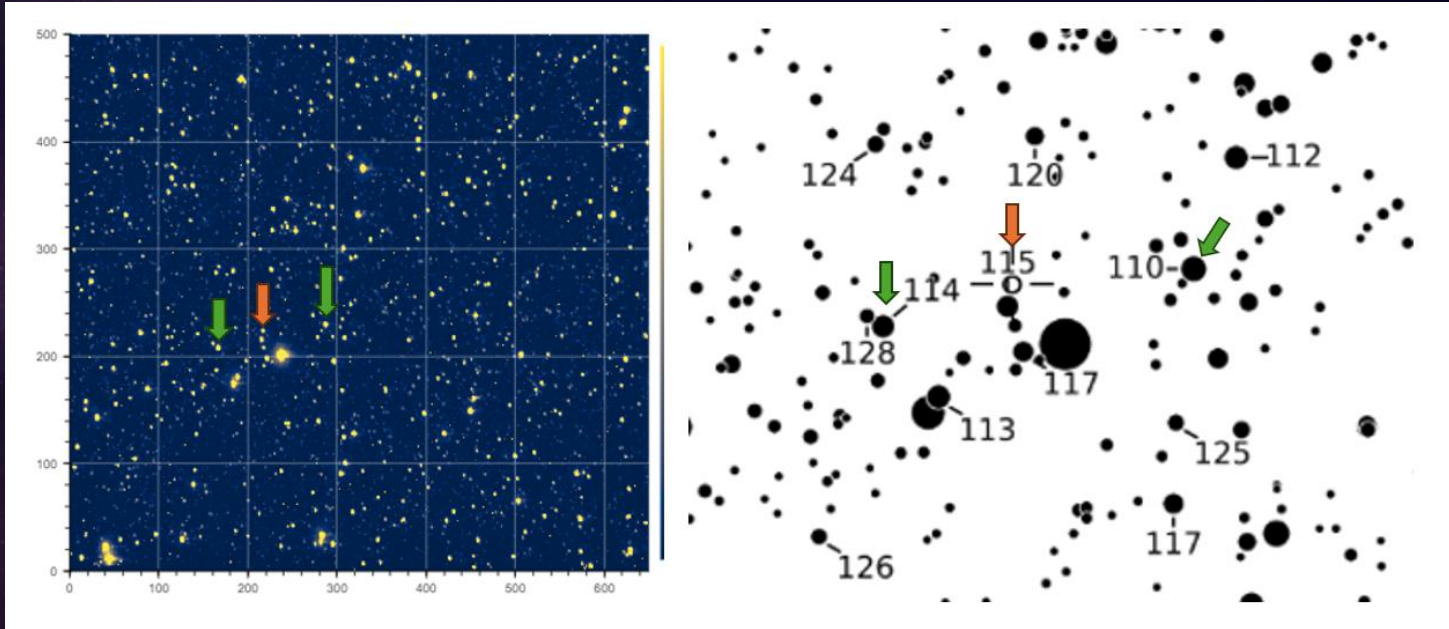
ALEJAR



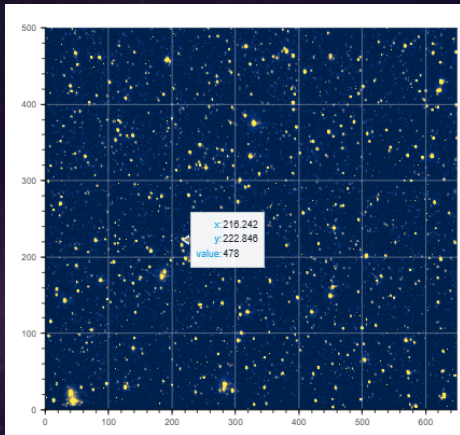
Herramienta 3



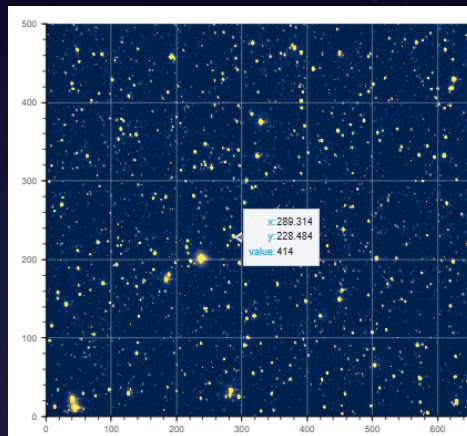
Seleccionando las estrellas



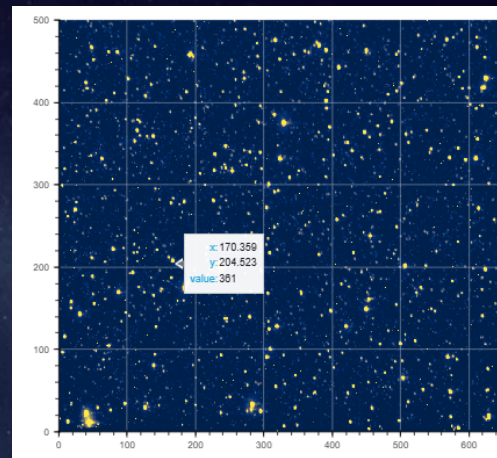
Coordenadas



TRES-1
[216,222]



Comp 1
[289,228]



Comp 2
[170,204]

Introduciendo las coordenadas

Enter coordinates for target star - in the format [424,286] - and press return: [216,222]

Data Entry 2 of 2: Enter coordinates for at least two comparison stars.

1. In the right image, find the stars *with numbers* that represent suggested comparison stars.
2. On the left image, *find and roll over each comparison star with your mouse* and note the coordinates.
3. Put the X and Y coordinates in the box below in the format [[x1,y1],[x2,y2]] and press return.

Note: if there are no comparison stars identified in your field, please select ~3-5 stars that are relatively close to your target star and that are as bright, if not brighter, than your target star.

Enter coordinates for the comparison stars - in the format [[326,365],[416,343]] - and press return: [[289,228],[170,204]]

Paso 4: Ejecutar EXOTIC -> la curva de luz

Step 4: Run EXOTIC to generate a lightcurve

 Estimated time: ~5-60 minutes depending on the size of your dataset (typically for MicroObservatory datasets, the runtime is around 15 minutes)

This step will:

- Run EXOTIC to generate an exoplanet transit lightcurve, both TXT data file and PNG images.
- EXOTIC 4.0 and above will also generate "photometry" (variable star observations).
- Successful results will automatically go into your Google Drive (the "output" folder). You can download them at any time, then upload to AAVSO (recommended) or use them however you wish.

Note: EXOTIC 4.2 and beyond will typically **not ask for any more input** after you start the program, except for errors and other issues.



Run EXOTIC to analyze telescope images



Show code



Corrección de coordenadas

TARGET

Enter coordinates for target star - in the format [424,286] - and press return:

Comparación

Enter coordinates for the comparison stars - in the format [[326,365],[416,343]] - and press return: [289,228],[359,195]]

Try again, your syntax is not quite right: [289,228],[359,195]] needs to look more like [[326,365],[416,343]]

Enter coordinates for the comparison stars - in the format [[326,365],[416,343]] - and press return: [[326,365],[416,343]]

CORRECCION DE EXOTIC

[23:18] Warning: The Y Pixel Coordinate entered does not match the target's Declination.

[23:18] Your input pixel coordinates: [216, 215]

[23:18] EXOTIC's calculated pixel coordinates: [216.39825867100313, 223.5628879301878]

Would you like to re-enter the pixel coordinates? (y/n):

Según EXOTIC [216,215]

[23:18] Warning: The Y Pixel Coordinate entered does not match the target's Declination.

[23:18] Your input pixel coordinates: [216, 215]

[23:18] EXOTIC's calculated pixel coordinates: [216.39825867100313, 223.5628879301878]

Would you like to re-enter the pixel coordinates? (y/n): y

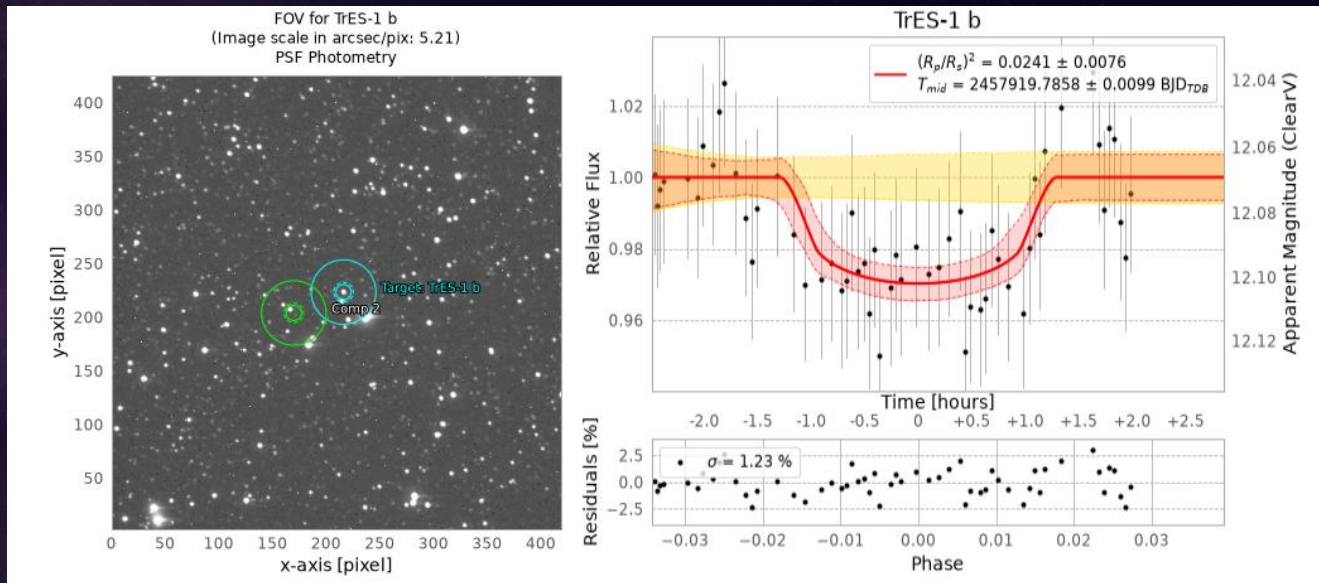
Here are the suggested pixel coordinates: X Pixel: 216.39825867100313 Y Pixel: 223.5628879301878

Would you like to use these? (y/n):

Lo que hace EXOTIC por nosotros

- Corrige las coordenadas del TARGET
- Elimina las estrellas variables seleccionadas como comparación
- Añade estrellas de comparación si están en AAVSO
- Elige la apertura
- Elige la mejor estrella de comparación entre todas las seleccionadas
- Produce una curva de luz, en caso de existir.

Resultado



Certificado

Optional: Generate Participation Certificate

Note: Entering your name is optional. If left empty, the certificate will use your observer code(s).

Your_Name

Insert text here

[Show code](#)

Your_Name

Manoli Seco Mansito


NASA'S UNIVERSE OF
LEARNING



CERTIFICATE
OF PARTICIPATION

NASA's Universe of Learning is proud to present this certificate to

Manoli Seco

In acknowledgement of participating in
NASA's Exoplanet Watch

On this day, October 05, 2026
for analyzing data for exoplanet TRES-1 b


**EXOPLANET
WATCH**

Exploring our place in space and time
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AGRADECIMIENTOS

Mónica Alonso

Gaia Lacedelli

Gemma Doménech

NASA y la Comunidad de EXOPLANET Watch

Grupo URANIA

Mercè Correa

Agrupación Astronómica Sabadell