

THE



SSE *

*SPACE SCIENCE EXPERIENCES

Beatriz González García on behalf of the CESAR Team



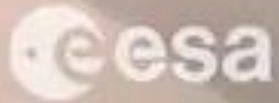
- ✓ Education Experiences (Primary, Secondary, vocational training and University)
- ✓ Adapted to the scholar CV (ES,UK) & Agenda 2030



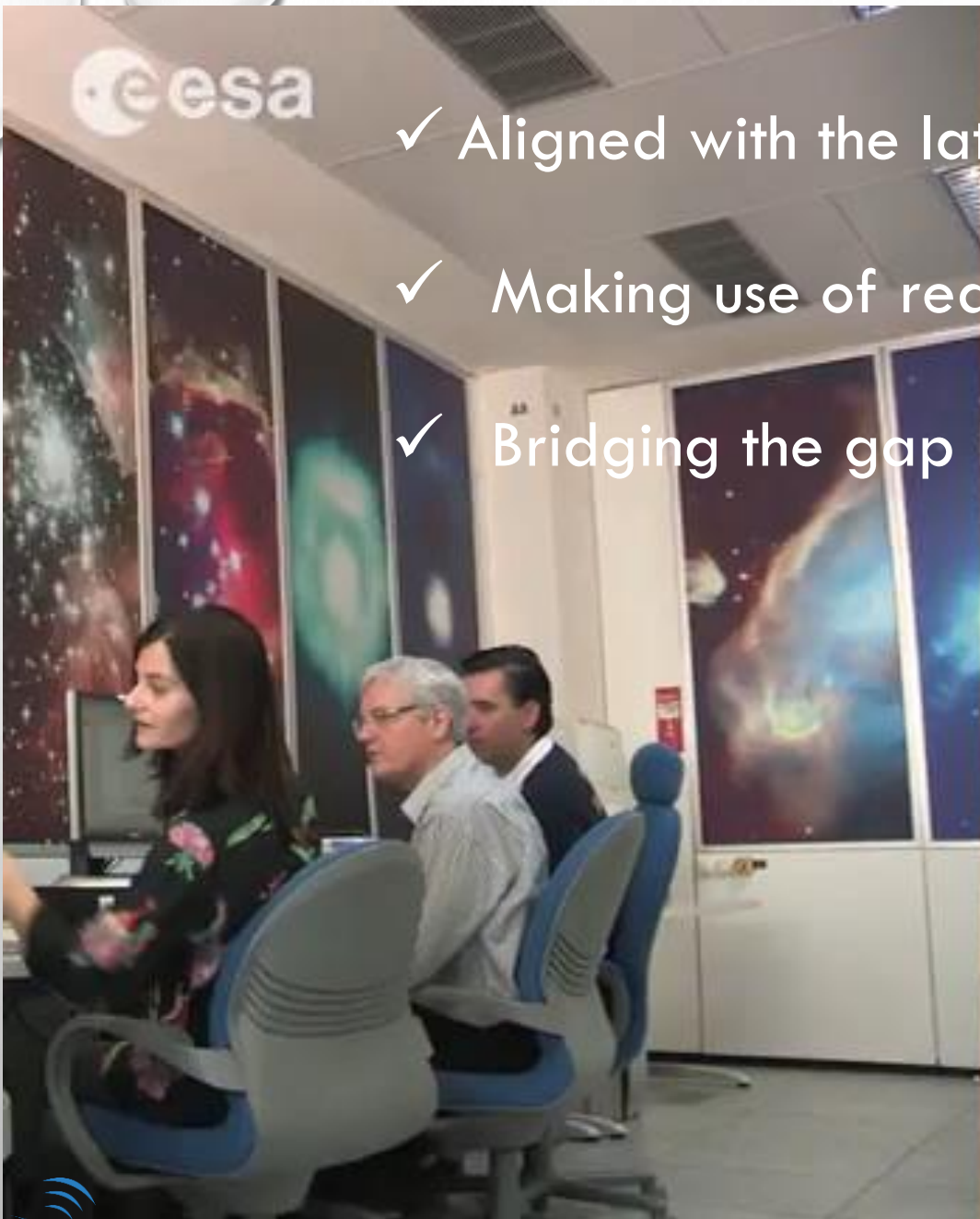
**AGENDA
2030**



Credit:<https://gcap.global/es/agenda-2030/>



- ✓ Aligned with the latest scientific research topics
- ✓ Making use of real scientific data
- ✓ Bridging the gap between students and professionals



Space Science Experiences

SSE (IN PERSON) @ ESAC



ONLINE SSE



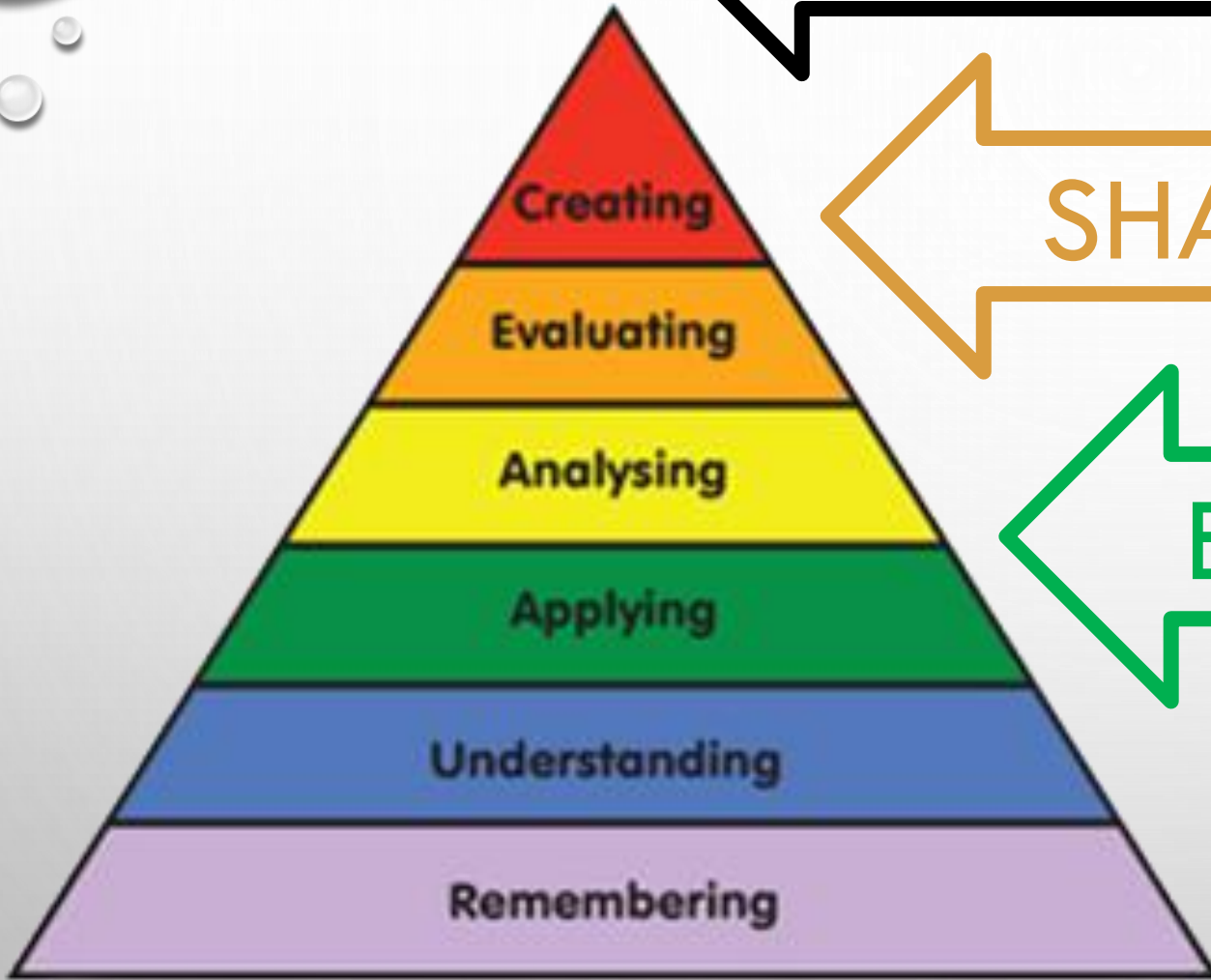
Credit: CESAR

SSE AWARDS

SHARE

EXECUTE

PREPARE



Credit: <http://mnsaa.org/>



SSE AWARDS

SSE (IN PERSON) @ ESAC



Credit: CESAR

SHARE

EXECUTE

PREPARE

SSE (IN PERSON) @ ESAC



Credit: CESAR

POSTER + FEEDBACK

HANDS-ON & TOUR

VIDEO + VIDEOCALL

AT ESAC

IN THE CLASSROOM

SSE (IN PERSON) @ ESAC



Credit: CESAR

POSTER + FEEDBACK

HANDS-ON & TOUR

VIDEO + VIDEOCALL

WITH CESAR SUPPORT

WITH LIMITED SUPPORT

SSE (IN PERSON) @ ESAC



Credit: CESAR

POSTER + FEEDBACK

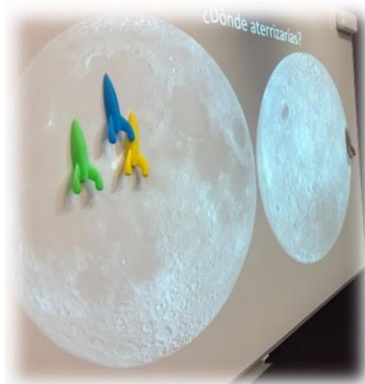
HANDS-ON & TOUR

VIDEO + VIDEOCALL



ESAC Tour

Credit: CESAR



Be a scientist for a day



SSE AWARDS

ONLINE SSE



Credit: CESAR

SHARE

EXECUTE

PREPARE

ONLINE SSE



Credit: CESAR

POSTER + FEEDBACK

HANDS-ON & TOUR

VIDEO + VIDEOCALL

AT ESAC

IN THE CLASSROOM

ONLINE SSE



Credit: CESAR

POSTER + FEEDBACK

HANDS-ON & TOUR

GUIDE + VIDEOCALL

WITH CESAR SUPPORT

WITH LIMITED SUPPORT

ONLINE SSE



Credit: CESAR

POSTER + FEEDBACK

HANDS-ON & TOUR

GUIDE + VIDEOCALL



ESAC virtual Tour

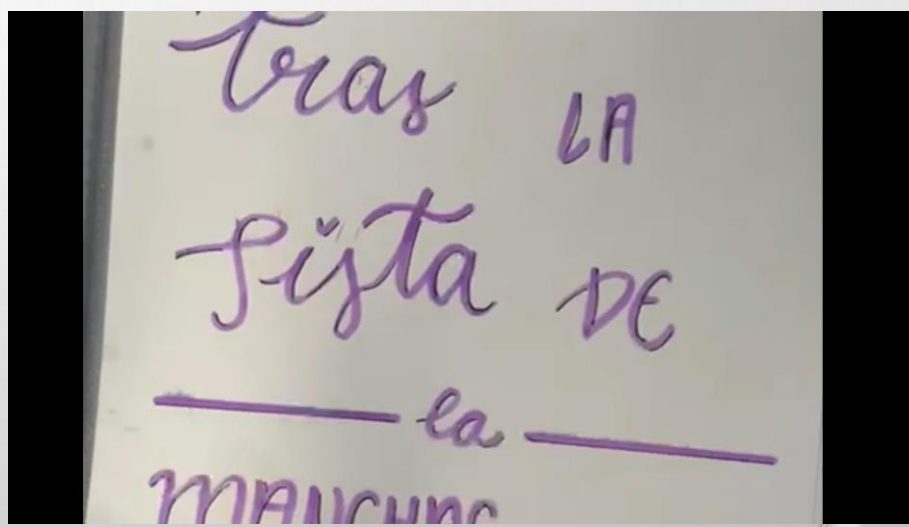
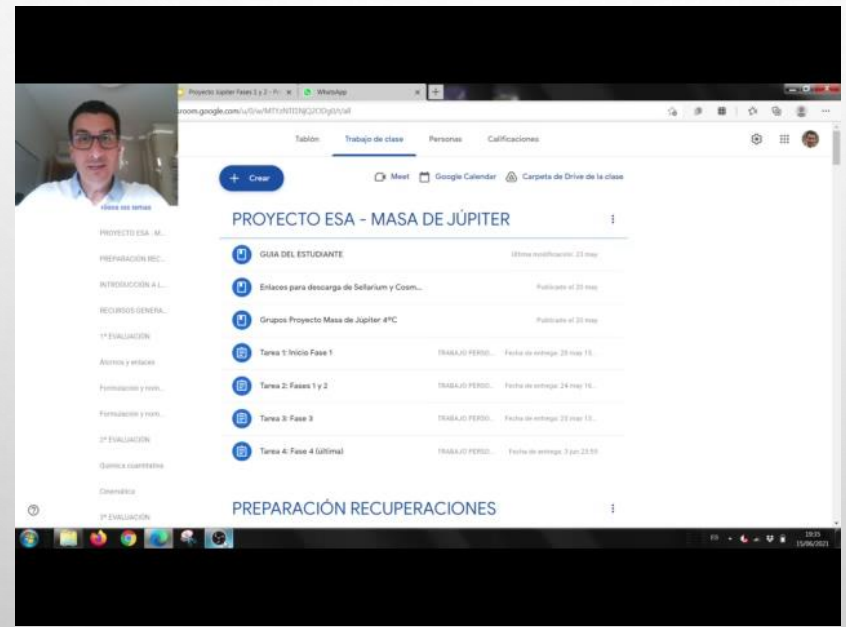
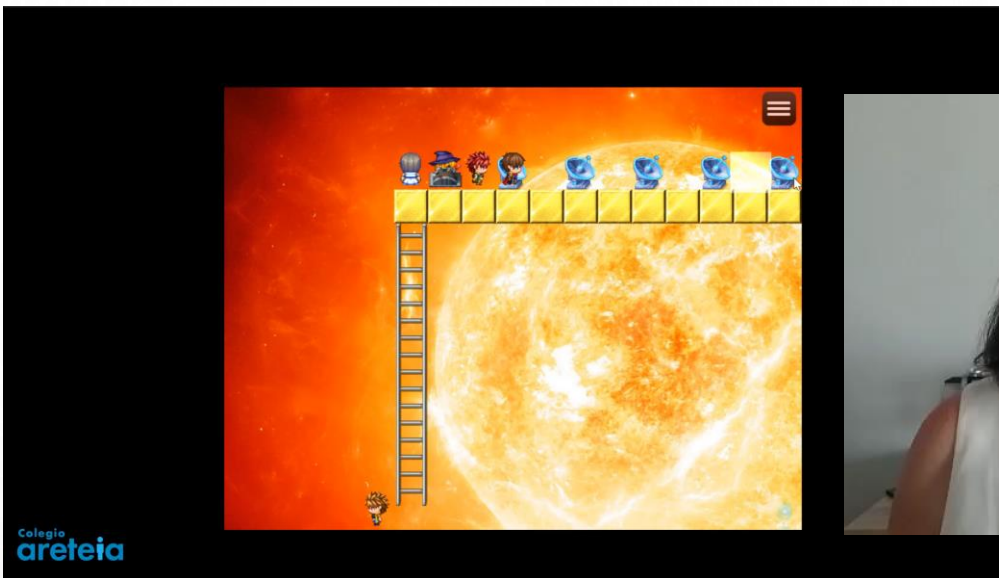
Credit: CESAR



Scientist for several days



3



Credit: CESAR





Credit: CESAR





CESAR

HOW CAN I ASK FOR AN SSE?



CESAR

EASY

<https://cesar.esa.int/>





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SPACE FOR ALL
GALILEO TEACHER TRAINING PROGRAM

THE EUROPEAN SPACE AGENCY AND THE GALILEO TEACHER TRAINING PROGRAM
JOIN HANDS AGAIN TO BRING CUTTING EDGE TRAINING OPPORTUNITIES

REGISTER

DATES
17-21 OCTOBER 2022

VENUE
ESAC - MADRID (SPAIN)
HYBRID COURSE

Galileo Teacher Training Program

The European Space Agency and the Galileo Teacher Training Program join hands again to bring cutting edge training opportunities to all interested tea

WHAT IS CESAR?

CESAR is an educational ESA initiative whose main objective is to engage secondary school students with the wonders of astronomy and, more generally, science and technology.

See our [For Educators section](#) to see what experiences we offer.

[Read more about CESAR](#)





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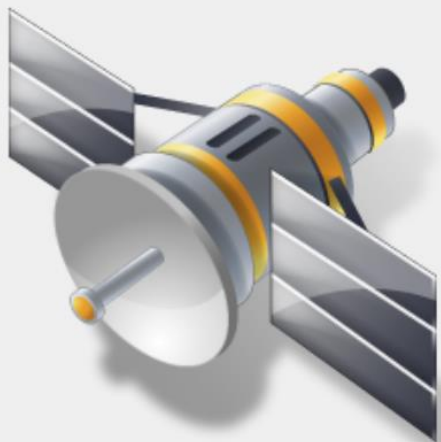
See our [For Educators section](#) to see what experiences we offer.

[Read more about CESAR](#)



For educators

SPACE SCIENCE EXPERIENCE



A complete school experience

TEACHER TRAINING



Space Science Course at ESAC

EDUCATIONAL EXCURSION



An educational experience at ESAC

Credit: CESAR

Space Science Experiences

SSE (IN PERSON) @ ESAC



ONLINE SSE



Credit: CESAR

Access to CESAR

Access form

* User 	<input type="text" value="marte.rojo"/>
* Password 	<input type="password" value="*****"/>
<input type="button" value="Login"/>	

AVAILABLE CESAR ACTIVITIES [Edit this section](#)

DO YOU NEED SOME HELP?

[CONTACT US IF YOU NEED FURTHER HELP](#)

Marte Rojo
Teacher from **nebulosa de Orion**
E-Mail: bgonzale@sciops.esa.int
Telephone: 1111111111111111
Login: **marte.rojo**

SPACE SCIENCE EXPERIENCE IN ESAC

The CESAR Team offers "Space Science Experiences in ESAC", which are unique experiences for 6–18-year-old students, starting and ending in the classroom and with a day at the European Space Astronomy Centre (ESAC, in Madrid) where the students will work as scientists and engineers, every Tuesday and Wednesday.



ONLINE SPACE SCIENCE EXPERIENCES



The CESAR Team offers "online Space Science Experiences", which are unique experiences for 6–18-year-old students, which will be completely executed in the classroom (at your speed). In these Experiences, students will work as scientists and engineers guided by their teachers who could count on with the support of the CESAR Team when needed, as well as have the chance of having their class guided for the 1h challenge (Phase 3), through video calls.



ONLINE SSE

TEACHERS TRAINING WORKSHOP

The CESAR Team offers several teacher workshops per year in hybrid and online mode. They can be classified into two main categories:

 Space Science Experience 

If you want to ask for a Space Science Experience (SSE) with the CESAR Team, with a visit (including a tour and a hands-on activity) in the European Space Astronomy Center, ESAC, in Villanueva del Castillo, fill the following form.

- 1. CHOOSE THE LANGUAGE DESIRED FOR YOUR SSE**
[Choose the language] ▾
- 2. CHOOSE THE AGE OF THE STUDENTS IN YOUR SSE**
NOTE: If there were different age ranges please explain this in the motivation letter.
[Years] ▾
- 3. CHOOSE THE EDUCATION LEVEL OF THE STUDENTS IN YOUR SSE**
NOTE: If there were several of different education levels please explain this in the motivation letter
[Choose the grade] ▾
- 4. CHOOSE THE SCIENTIFIC CHALLENGE TO BE SOLVED DURING YOUR SSE IN ESAC**
NOTE: [CLICK HERE TO SEE ALL THE ACTIVITIES DESCRIPTIONS](#)
[Choose Science Activity] ▾
- 5. BOOK A SESSION FOR YOUR VISIT TO ESAC**
Each session is expected to welcome 55 students at a time. To reach this number we recommend you bring more than one class from your school in the same session. If, on the contrary, you manage to have a bigger a group than 55 students we recommend opening two requests on the same day, for two sessions.
[Select the date and hour] ▾
NOTE: Please make sure of selecting a feasible day for your visit to ESAC, to prevent being penalized in future requests, in case your class couldn't come once accepted. As soon as open sessions get released or new ones get open, we will let you know.
- 6. WRITE A MOTIVATION LETTER**
This motivation letter should show the interest of your classroom in this SSE. This letter will be considered by the CESAR Team, especially in those case when several schools request a specific session.
- 7. INFORM ABOUT THE NUMBER OF STUDENTS COMING TO ESAC**

NOTE: The maximum occupancy per SSE is 55 students and 2-4 teachers. Those requests close to the maximum capacity will be positively evaluated.
Send this proposal and wait for confirmation. Due to the high rate of requests this selection process may take some time. The CESAR committee will aim to take the optimum solution.

[Send a new request](#)

Credit: CESAR



VIDEOS

**VIDEOCONFERENCE
WITH THE CESAR
TEAM**

& QUESTIONS

**TEACHER INFO
(name and IDs)
&
STUDENTS INFO (N)**

CONSENTS

Credit: CESAR



1. RECOMMENDED VIDEOS TO WATCH BEFORE THE VISIT ✓

[Enter the video section](#)

Did you see the recommended videos?

During the videoconference we may ask the students about the videos.

[Descarga el procedimiento para la videoconferencia](#)

2. BOOK YOUR VIDEOCONFERENCE WITH THE CESAR TEAM BEFORE THE VISIT ✓

During this video conference we will introduce you to the CESAR Team, we will clarify some new concepts that you may need to learn for the hands-on activity in ESAC as well as answer those 5 relevant questions for your class.

Please, choose the best time slot for having a video call of 30 min between your class and the CESAR Team.

Connection details	Date	Time
* Video conference session with the classroom (30 min):	Lunes, 10 de Octubre del 2022	10:30 <input type="button" value="v"/>
Other data		
* Contact number for the video conference	<input type="text" value="+34688033097"/>	
Additional information required for the video conference		
<input type="text"/>		
<input type="button" value="Send"/>		

NOTE: The Webex link for the videoconference will be available at your list of SSE request and through an email, only once your SSE is confirmed.

4. QUESTIONS FOR THE VIDEOCONFERENCE ✓

With the goal of making the best use of the time in the videocall, please provide the 5 questions considered more interesting for your students, related to the topic of your SSE, to be answered during the call.

Question 1

Question 2

Question 3

Question 4

Question 5

3. TEACHER AND STUDENT LIST FOR THE VISIT TO ESAC ✓

¡IMPORTANT! This information (number of attendees to ESAC and complete name and DNI of teachers only) should be sent to the ESAC Security Team. Please, double check that the information is correct and complete as no updates can be done on the platform once the session is confirmed.

Number of students:	<input type="text" value="55"/>
Number of teachers:	<input type="text" value="5"/>
Number of classes in this session	<input type="text" value="1"/>
List of teachers and students: Number of female/male students	List example: Profesores: Paco Garcia - DNI 123456789A Laura Gonzalez - DNI 12346888A Alumnos: 10 alumnas 20 alumnos
<input type="text" value="555"/>	
<input type="button" value="Send"/>	

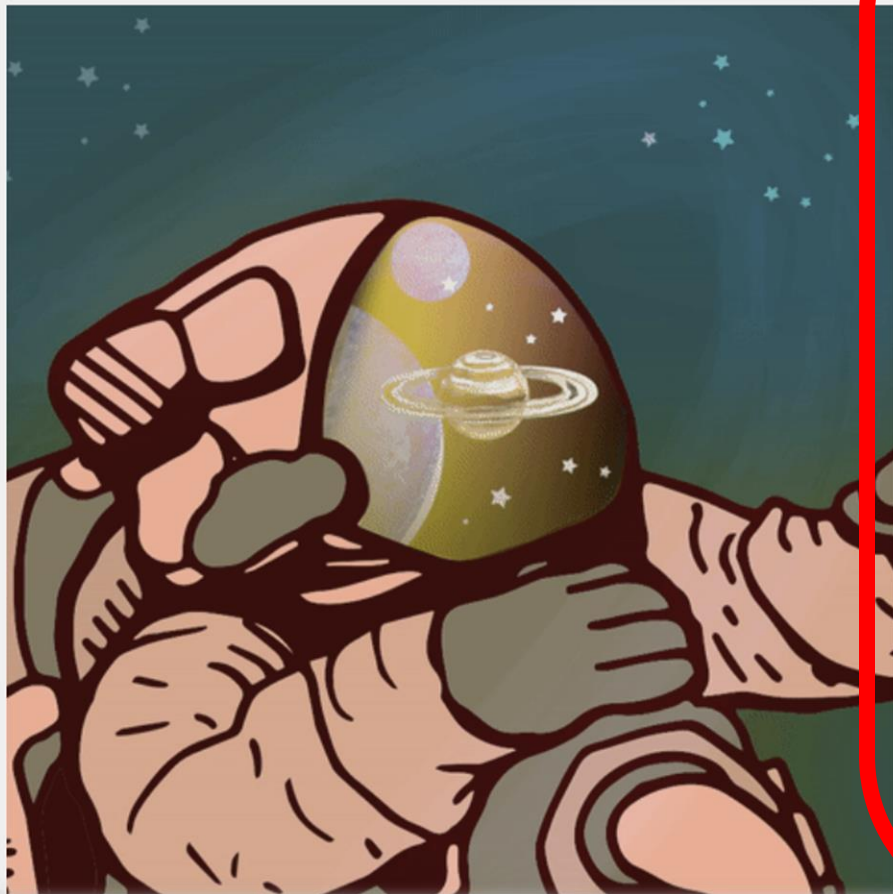
5. CONSENTS TO THE COLLECTION AND PROCESSING OF PERSONAL INFORMATION ✓

Credit: CESAR



Space Science Experiences

SSE (IN PERSON) @ ESAC



ONLINE SSE



Credit: CESAR

Access to CESAR

Access form

* User 	<input type="text" value="marterojo"/>
* Password 	<input type="password" value="*****"/>
<input type="button" value="Login"/>	

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SSE EN ESAC

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ONLINE SSE

TEACHERS TRAINING WORKSHOP

The CESAR Team offers several teacher workshops per year in hybrid and online mode. They can be classified into two main categories:



Dear Teacher,

Welcome to your online SSE!

In order to provide you with the best support possible please, fill in the following form. As soon as you complete your form, you will be able to start your Adventure.

You will be guiding your class through the Space Science Experience (SSE) but you will never be alone. The CESAR Team will support you during the whole process with students and teachers guides, video tutorials, quizzes and video calls (if desired).

If at some point, you have any question, do not hesitate to contact us at cesar.sse@sciops.esa.int

All the best
The CESAR Team

FILL THE INFORMATION RELATED TO YOUR SPACE SCIENCE EXPERIENCE

CHOOSE THE LANGUAGE FOR YOUR ONLINE SSE

[Choose the language] ▾

CHOOSE THE AGE RANGE OF YOUR STUDENTS

If your students ages do not match with any of these select "Other"

[Years] ▾

[Send a new request](#)

WRITE YOUR MOTIVATION TO TAKE THIS SSE (OPTIONAL)

Example: the kids are very interesting, is the topic of this year, there are different ages, etc.

CHOOSE THE SCIENTIFIC CHALLENGE TO SOLVE IN YOUR "ONLINE SSE"

[CLICK HERE TO CHECK THE STUDENTS MATERIAL PER SCIENTIFIC CHALLENGE](#)

[Choose Science Activity] ▾

NUMBER OF STUDENTS AT THE TIME IN THE "ONLINE SSE"

We recommend them to work in teams of (4-6) team members, each one with a specific role.

Credit: CESAR



WELCOME TO PHASE 1



Online Space Science Experience



PHASE 1 - GET PREPARE FOR THE SCIENTIFIC CHALLENGE

In this phase your students will get prepared for the challenge (to be done in phase 3). For this we provide you with these materials:

- **The science case:** a link, always accessible through all the Experience (at the bottom part of this web), with all the material for all the Phases (teacher and students guide, access to YouTube talks of experts to teachers, relevant videos, ...). Students will answer on the students guide.
- **The teachers guide:** Students guide with answers and extra material. Please, check at the section "Didactics"- "Summary of Activities" those Activities flagged as mandatory, per Phase.
- **An explanatory video of phase 1:** A YouTube video, watchable by students and teachers, explaining all the activities in phase 1.

MATERIALS FOR THE TEACHER



Scientific Case



Teachers guide



Phase 1 video

Credit: CESAR

SSEs TOOLS



TOOLS FOR THE SSEs

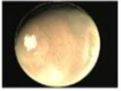


TOOLS FOR THE SSEs

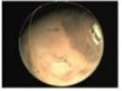
cesar.esa.int/tools/18.martian_year/index.php

Estaciones en Marte v0.7

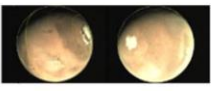
Paso: 1/5
Selecciona un conjunto de imágenes de Marte tomadas por la cámara VMC, a bordo de la misión Mars Express



Hemisferio Sur




Hemisferio Norte



Ambos Hemisferios

Tarea:
Selecciona un conjunto de imágenes de Marte del el Hemisferio **Sur** o **Norte**. Una vez que te es familiar identificar las estaciones en Marte, intenta repetir esta tarea usando ambos **hemisferios**.

Pistas:

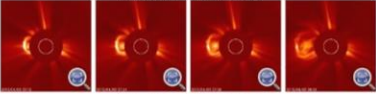
- El área circular blanca corresponde a un polo de Marte (norte o sur)
- El tamaño de los polos varía con la estación, como sucede en la Tierra
- Cada imagen tiene un número identificativo (YY-DOY) 

cesar.esa.int/tools/13.coronal_mass_ejections/index.php

Estudio de Eyecciones de Masa Coronal v1.0

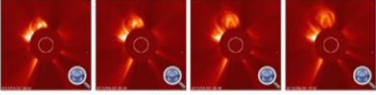
Paso: 1/4
Selecciona las imágenes

Opción 1 - 05-04-2013



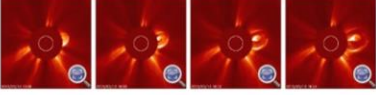
Elegir opción 1

Opción 2 - 25-04-2013



Elegir opción 2

Opción 3 - 13-05-2013



Elegir opción 3

Selecciona una de las tres opciones para explorar las imágenes del Sol del satélite SOHO. Las emplearás para calcular la velocidad de la Eyección de Masa Coronal.

Nota: puedes inspeccionar las imágenes con la lupa.

Credit: CESAR

sky.esa.int/?target=205.54841666666666&2028.3772777777777777&https=2MASS-color+JHK&fov=0.40402051087792695&coframe=02000&aci=full...

Messier 3 (Near-Infrared Image)

Messier 3 is a globular cluster of stars approximately 32,800 light-years away in the constellation of Canes Venatici. This cluster is one of the largest and brightest containing an estimated 500,000 stars.

Target List

Select Target List

- Bright nebulae
- Dark nebulae
- Globular clusters
- Open clusters
- Star formation regions
- Supernova remnants
- Supernovae black holes
- Brown dwarfs
- Brown dwarfs in multiple systems
- Closest exoplanetary systems
- CESAR ISM
- CESAR Galaxies
- CESAR Colours

cesar.esa.int/tools/14.differential_rotation/index.php

Estudio de la rotación diferencial del Sol v1.0

Paso: 1/4
Explora las imágenes del Sol tomadas por el telescopio solar CESAR

- Opción 1: Elige 4 imágenes en el calendario.
- Opción 2: Set de imágenes con manchas solares lejos del ecuador del Sol.
- Opción 3: Set de imágenes con manchas solares cerca del ecuador del Sol.



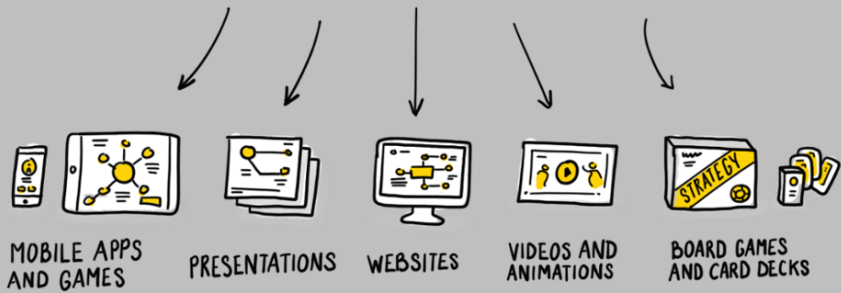
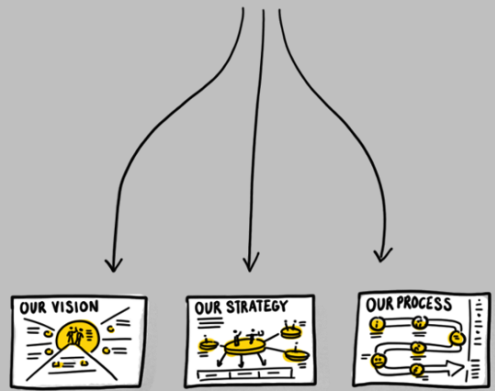
Tarea 1:
Selecciona una de las tres opciones para estudiar el cambio de posición de una mancha solar.

Notas:

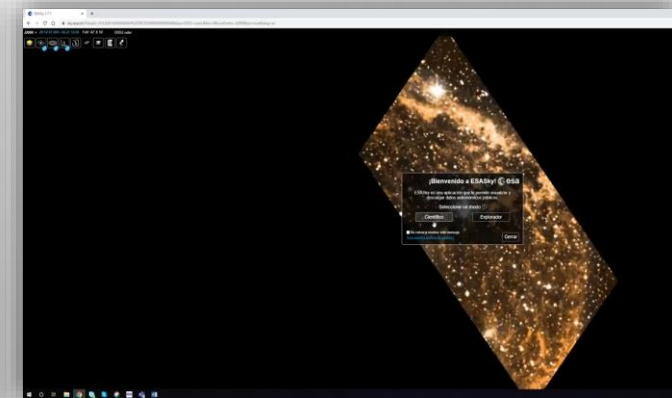
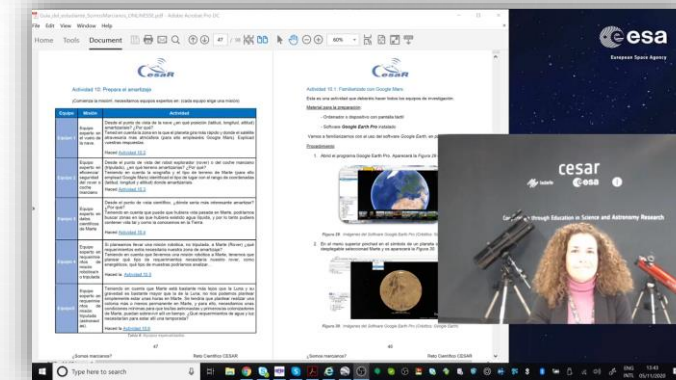
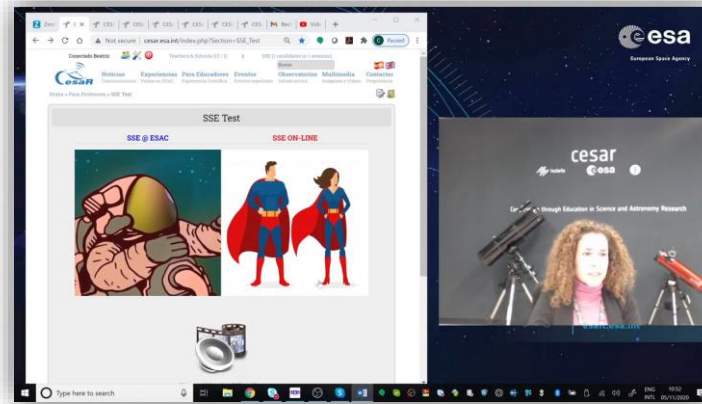
- No aparecen manchas solares en la superficie del Sol todos los días.
- La misma mancha solar debe aparecer en todas las imágenes que selecciones.
- Usa la lupa para ampliar las imágenes.

Continuar

ALIGNED



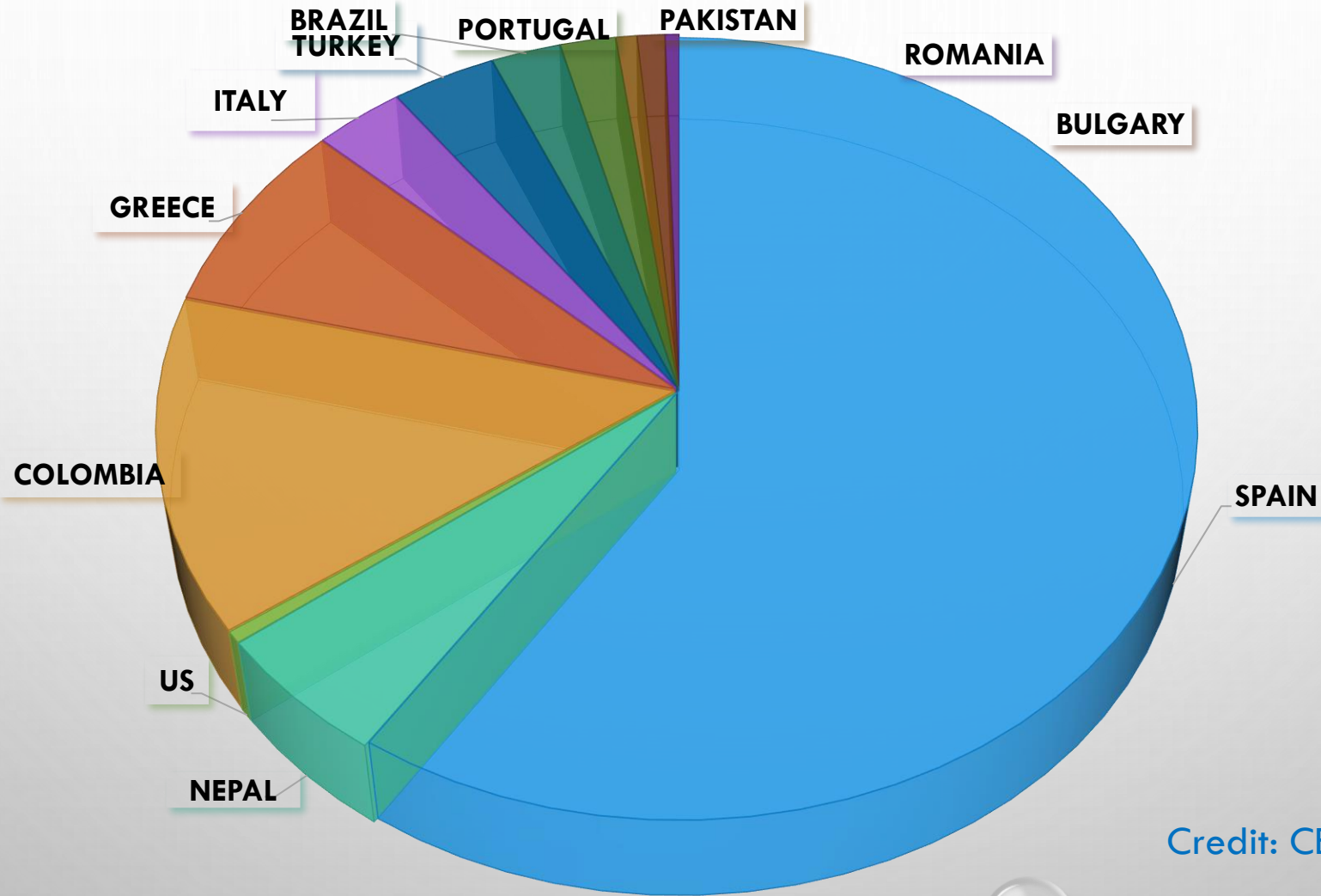
Credit: <https://flatland.agency/>



Credit: CESAR



% OF STUDENTS (PER COUNTRIES) ON AN ON-LINE SSE SCHOOL YEAR (2020-2021)



Credit: CESAR

LET'S GO ROCK
WITH
THE NUBALO TEAM



COSMIC EXPLORERS

J2000 09 45 38.754 -31 11 27.36 FoV: 12' X 6.2' DSS2 color

Sci. Mode En

Search...

Select Sky

- Soft X-ray XMM-Newton EPIC color
- Ultraviolet GALEX GR6 AIS color
- Optical DSS2 color
- Near-Infrared 2MASS color JHK
- Mid-Infrared ALLWISE color

NGC 2997

NGC 2997 is located approximately 25 million light-years away, in the constellation Antlia.

esa ALADIN

