

# ESERO Project Information Session – ESERO CZ call

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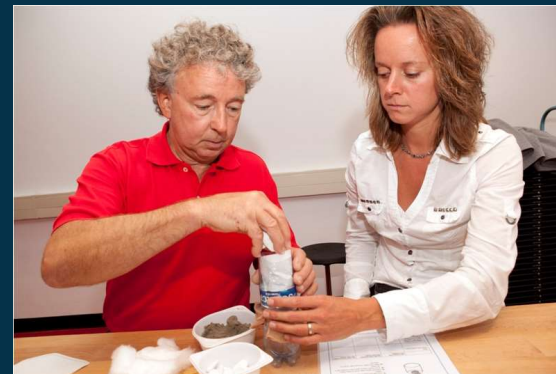
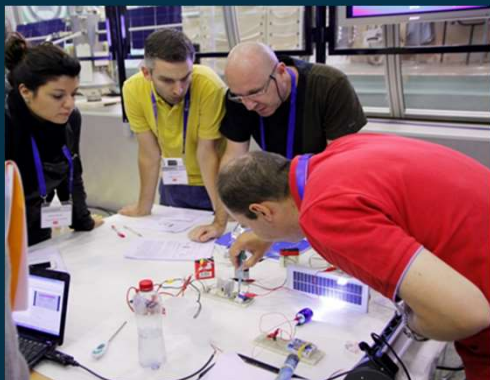


→ THE EUROPEAN SPACE AGENCY

## ESERO approach



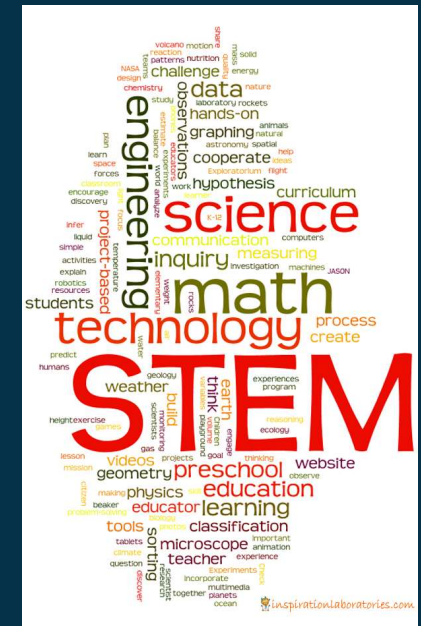
- Targeting teachers to reach students
- Accredited STEM teacher training
- Large scale reach in the country promoting collaboration rather than competition for higher geographical coverage and expertise offer
- Innovative STEM didactics (e.g. inquiry, project-based learning, learning by project, learning by design, etc.), contributing to change teaching practices
- Building partnerships and collaborations with relevant national entities
- Inspiring the next generation – high profile/high impact events



## ESERO impact on school education



- **Space context motivational and inspirational** for teachers and students
- **STEM curriculum focus:** Offer used to accomplish the yearly curriculum/learning objectives
- Students at the centre of the learning process (from *passive* to *active* learning), so **increasing the classroom interest, engagement and attainment**
- Development of students' **transversal skills and competences** – such as team work, critical thinking and communication, which are also part of today's national curricula
- Use of state-of-the-art scientific results, data and facilities - **bridging the gap between theoretical science taught at school and the real practice of science**
- Increased awareness and understanding of **STEM-related jobs and careers**, especially in the space sector
- **Cross-curricular approach**, through school projects etc



## Benefits from the ESERO network

- regular exchange of information with ESA
- regular ESERO workshops hosted by ESA
- cross-ESERO/ESA exchanges and trainings: facilitating exchange of best practices, know-how, expertise, didactic materials, etc
- cross fertilisation
- access to European level activities



# IMPLEMENTATION OF AN ESERO WORK DESCRIPTION

# Task 1 - ESERO Management

- ESERO Manager as the main contact point for ESA
- Definition of an annual activity plan
- Development and maintaining relations and cooperation with relevant space and education stakeholders
- Establishment of formal partnership with education experts, stakeholders and networks, as well as the national space sector
- Monitoring of education trends and curriculum developments; when applicable, contribution to evolution of national STEM curriculum
- Participation in meetings with ESA and the ESERO network - ESERO Steering Committee set-up
- Contractual deliverables: reports (twice a year) and yearly activity plans





## Task 2 - Teacher and Educator Training



- **Pre-service and in-service STEM teacher training**
- Training modules based on space-related classroom resources
- **Short/long teacher training courses for primary and secondary school teachers**
- Online and Face-to-face (also MOOCS)
- Officially accredited CPD whenever possible
- Presentation and promotion of ESA/ESERO/partners classroom materials
- Always link its STEM teacher training activities to space-related examples from ESA and national space missions and programmes
- Training of educators in non-formal/informal (extracurricular) education settings (including early-age education – 3-6 y/o).



# ESERO MOOC on Climate – recent example



Subjects Courses Using FutureLearn

Search on

Online Courses / Teaching

**NEW**

## Teaching Climate Change

Learn how to teach climate change to students aged 11-14 years old and engage them with the ESA Climate Detectives project.

[Join course for free](#)

Duration  
3 weeks

Weekly study  
3 hours

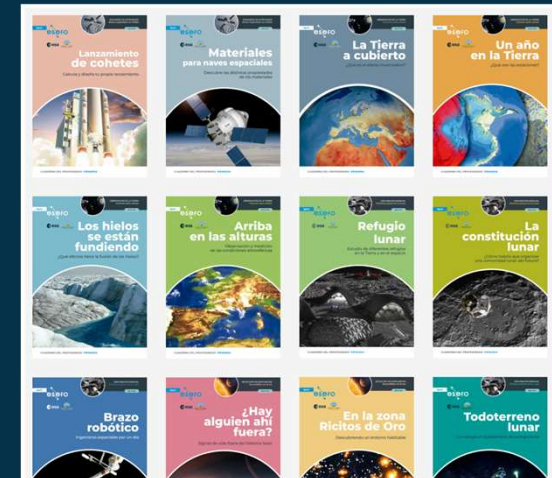
100% online  
Try this course for free





# Task 3 – Didactic resources and activities

- translation and adaptation of existing ones (in particular ESA/ESEROs existing resources)
- development of new innovative space-related STEM teaching and learning resources
- user friendly access to classroom resources (to widest possible number of teachers)
- organisation of national school projects and challenges on space related projects with a curricular basis and implementation of ESA European school projects at national level (Astro Pi, Mission X, Moon Camp, Climate Detectives and CanSat)





# An over-arching portfolio of didactics material and activities



Søg aktivitet

Nulstil søgning

Uddannelsesniveau

Alle

Fag

Alle

Varighed

Alle

### Undersøg udviklingen på jorden med Google Earth Timelapse

Undersøg satellitbilleder af jorden over en periode på 35 år med Google Earth Engines Timelapse

[Melletrin/ Udskoling/ Ungdomsuddannelse](#)

### Byg og test en robotarm

Byg og test en model af en robotarm og forstå, hvorfor en robotarm er et meget vigtigt værktøj, når man er ude i rummet.

### Alger i rummet

Alger er fremtidens rummad. I dette forsøg skal I producere alger og undersøge, hvordan man skaber de rigtige vækstbetingelser for dem.

Udskoling

### Få vand til at koge ved 50 grader

Vand koger ved 100 grader

France

EUROPEAN SPACE EDUCATION RESOURCE OFFICE  
A collaboration between ESA & national partners

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**ESERO France, toujours plus d'espace pour les professeurs et leurs élèves**  
Un programme éducatif de l'ESA coordonné en France par le CNES et ses partenaires

Manage services

FNG 20:57

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COVID-19 restrictions: [an update on our CPD and enrichment activities](#)

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Quick searches: [Tim Peake](#) [Principia](#) [Browse all](#)

**European Space Agency Resources – Secondary**  
53 RESOURCES

This collection contains a whole range of resources derived from ESA (European Space Agency) research. Many activities can be carried out as stand-alone lessons or mini projects in a STEM Club setting, as well as longer term student research projects ideal for EPQ purposes. There are many...

**ExoMars collection**  
12 RESOURCES

This collection of resources support learning about STEM subjects using the context of exploring Mars. Using the context of the ExoMars mission, activities link to areas of the curriculum including: science, D&T and computing. There are...

**James Webb Space Telescope – Secondary Resources**  
5 RESOURCES

This collection of resources has been written for design technology teachers to use primarily as part of the curriculum in lower secondary schools. The resources also include a guide to the James Webb Space Telescope, written for teachers and STEM Ambassadors.

All activities include...

**European Space Agency Resources – Primary**  
33 RESOURCES

The European Space Agency has been...

**Mission to the Moon**  
1 RESOURCE

This collection of practical activities, investigations and games is all based on current lunar research. It supports many aspects of...

**James Webb Space Telescope – Primary Resources**  
5 RESOURCES

The James Webb Space Telescope will...



# National ESERO website: one-stop shop for teachers, educators... and more



**Groepen en klassen**

**Po**  
☐ 1 (20) ☐ 2 (20) ☐ 3 (23) ☐ 4 (25)  
☐ 5 (27) ☐ 6 (27) ☐ 7 (40) ☐ 8 (40)

**Vmbo**  
☐ 1 (1) ☐ 2 (1) ☐ 3 (0) ☐ 4 (0)

**Havo**  
☐ 1 (62) ☐ 2 (62) ☐ 3 (0) ☐ 4 (1)  
☐ 5 (1)

**Vwo**  
☐ 1 (62) ☐ 2 (63) ☐ 3 (2) ☐ 4 (1)  
☐ 5 (2) ☐ 6 (2)

**Vakken**

**Lesduur**

**Vorbereiding**

**Werkvorm**

**Materiaalkosten**

## Lesmateriaal

Van planeten tot raketten en satellieten. ESERO heeft meer dan 150 lessen over aansprekende onderwerpen binnen ruimtevaart en sterrenkunde.

**Lesenserie**

**De atmosfeer van Mars**

Wat zou er gebeuren als je op Mars rondloopt zonder bescherming? Leerlingen onderzoeken in deze les met twee proefjes waarom de atmosfeer belangrijk is voor het menselijk lichaam.

Po 7 - 8

**Les**

**Satellieten en Aardobservatie**

NLT-module over hoe we de metingen van satellieten kunnen gebruiken om processen op aarde in kaart te brengen. De module gaat zowel over hoe de satellieten meten als hoe we de data kunnen gebruiken.

Vwo 5 - 6

**Lesenserie**

**Hoe bescherm je een satelliet in de ruimte?**

Test engineer Charlotte Powels laat zien hoe zijn alle materialen testen voordat ze ruimte ingaan.

Havo 1 - 2, Vwo 1 - 2

**Lesenserie**

**Hoe verbouw je voedsel op Mars?**

Wetenschapper Angelo Vermeulen vertelt hoe we het produceren van voedsel op Mars zouden kunnen aanpakken. Een gesloten ecosysteem is de oplossing.

Havo 1 - 2, Vwo 1 - 2

**Les**

**Kijken naar luchtvervuiling**

In deze les werken de leerlingen met de satellietmetingen van stikstofdioxide.

Vwo 2 - 3

**Les**

**Nederland gezien vanaf boven**

Met het Satellietdataportaal kun je veranderingen in het landschap goed monitoren.

Vmbo 1 - 2, Havo 1 - 2, Vwo 1 - 2

**Lesenserie**

**Robots op Mars - een mensrobot**

**Lesenserie**

**Robots op Mars - een robot in**

**Les**

**Hoe werkt een zonnepaneel?**

Organised by school year, curriculum topic etc.

Benefiting from actual space activities and news, as much as possible



# International projects

- Multidisciplinary school projects
- Recurring every school year!
- Tailored at national level to the national needs



→ MISSION X

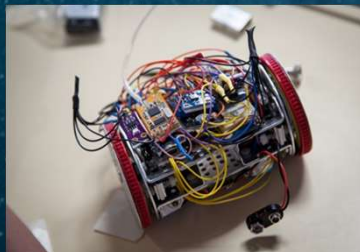
TRAIN LIKE AN ASTRONAUT



ASTRO PI



→ CANSAT



CLIMATE DETECTIVES



→ MOON CAMP



## Task 4 - Promotion and Inspiration Activities



- Identify opportunities to **promote the ESERO offer towards teachers and education stakeholders**, for example through **teacher conferences**, science fairs, space weeks etc., educational events, ...
- Organisation of **dedicated ESERO Teacher conferences** - opportunity for teachers to:
  - Learn about ESERO classroom resources and activities
  - increase awareness about ESA, the national space sector & careers
- identify ways to **link all its promotion and inspiration activities to ESA and national space ambitions and programmes**
- **ESERO project website and social media**





## LARGE SCALE EVENTS INSPIRATIONAL EDUCATION EVENTS

Mars Day (<https://marsday.org.uk/>)

186,714 people registered for Mars Day -  
100,000 actually watched on the day.

<https://marsday.org.uk/sessions-and-stars-2022/>

Additionally, 31 events held by partners  
throughout Mars Week, with a total of  
28,857 people taking part.



# WORLD SPACE WEEK NATIONAL ACTIVITIES

**Space goes to School 2021** (8th edition) 650 teachers, 9350 students (34 experts from space academia and industry)

**Lunar Camp** for students: On October 8 and 9, ESERO Portugal held a Lunar Camp at a secondary school in Gondomar. Attended by Minister of education.

Participation in the **3rd Shaw-IAU Workshop on Astronomy for Education**. Short 3-minute pre-recorded talk on “The educational and scientific importance of CanSat school project”.

**Total numbers: 9450 Students + 650 teachers**



## Task 5 - Engagement with space industry and academia



- Collaborations with national industry and academia regarding role modelling/career and knowledge sharing, with a special focus on real practice of science.
- “ESERO - Space goes to School” : ESERO facilitates lectures of experts from space industry and academia in schools.
- Opportunities to seek in-kind or in cash support by national space industry and/or academia for ad-hoc activities, such as school projects (e.g. Cansat mentoring, expert consulting, Cansat launch opportunities, etc.).
- Collaborate with industry and academia to get support in the development of classroom materials and kits, concerning scientific/technical expertise and know how, and real practice of science.

## ESERO Ireland (www.esero.ie)

### ESERO Ireland Space Careers Roadshow for Space Week 2021: “Women in Space”

Special “Space Week” edition of newsletters for primary teachers

- Classroom resources published for Space Week: Several activities for teachers and students, in partnership with the Blackrock Castle Observatory:

<http://www.spaceweek.ie/for-organisers/for-teachers/space-speaker-in-your-classroom/>

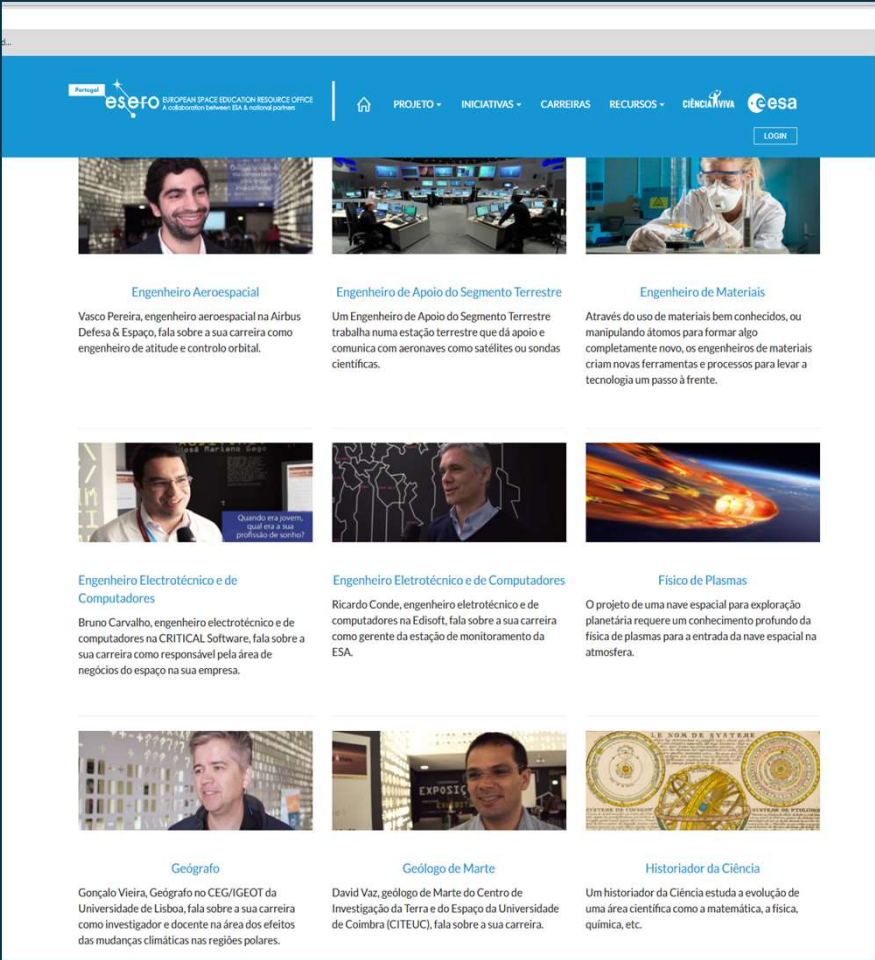
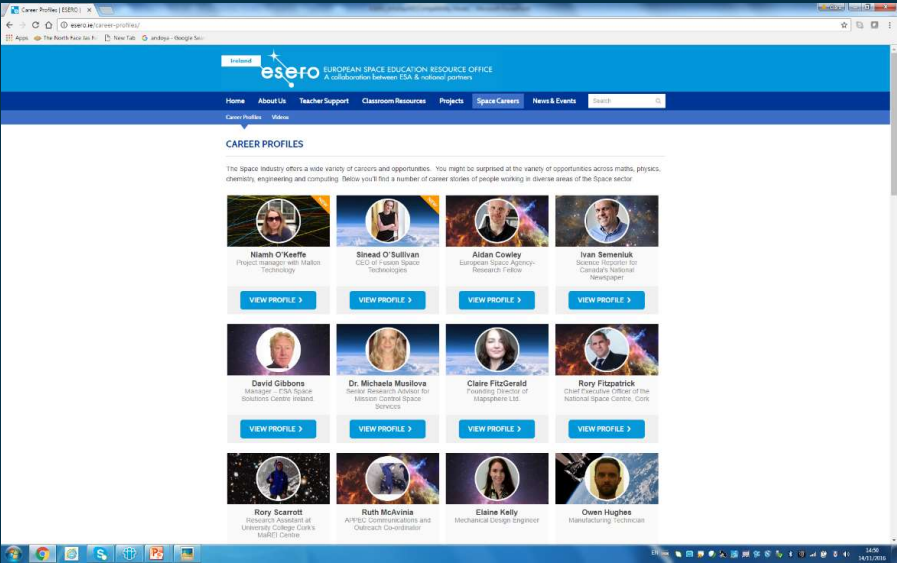
<http://www.spaceweek.ie/events/eseros-space-goes-to-school/>

Total numbers: 92,030 Students + 3031 teachers

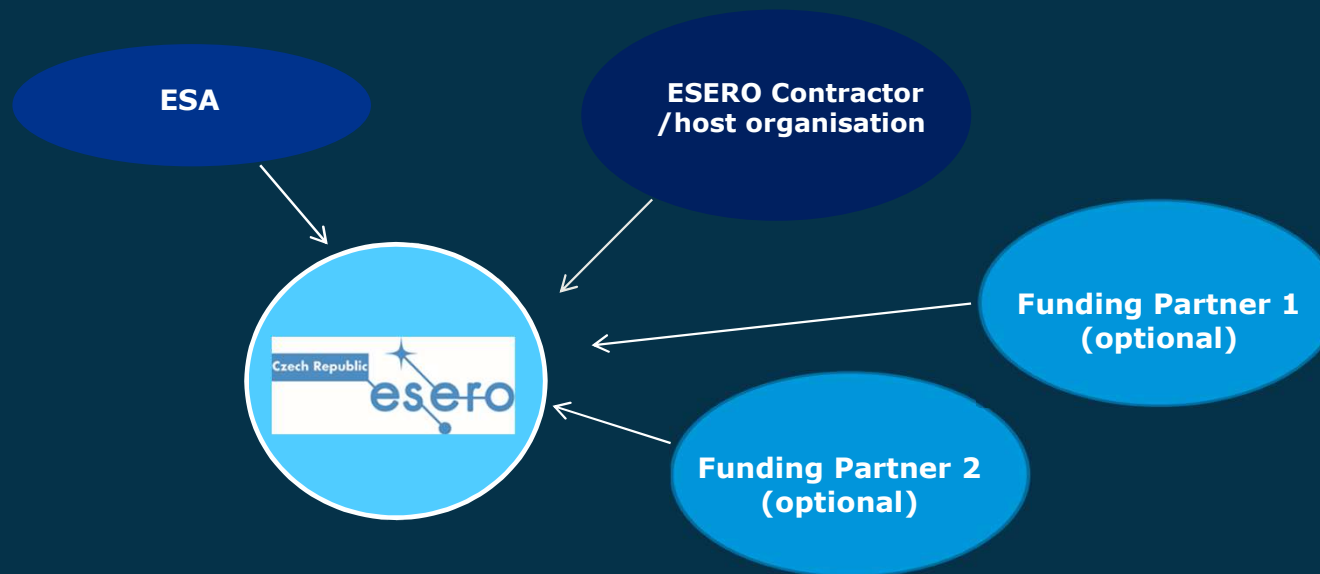




# Space careers: ESERO Ireland and ESERO Portugal dedicated sections



# Funding ESERO CZ project



**Funding: =< 50% ESA (cash) + >= 50% from National Host Organisation +  
National Funding partners (cash and/or in-kind)**



# Funding scheme

The overall (ESA + national) funding goes to the ESERO leading organization, which then redistributes it to the other operational partners clearly identified in the approved proposal to ESA



## Different models across ESEROs

**ESERO Germany:** The consortium is led by the Geomatics Research Group of the Ruhr-University of Bochum and further includes the Remote Sensing Research Group of University of Bonn (UoB); the Zeiss Planetarium Bochum; the Bochum Observatory; the Hausdorff Centre for Mathematics (UoB); the Physics Institute (UoB); the Argelander-Institute of Astronomy (UoB); the Institute of Physics Education at Cologne University; and zdi.NRW. ESERO Germany is co-funded by ESA and the members of the consortium, and managed in collaboration with DLR.

**ESERO Spain:** Based in Science Centre Parque de las Ciencias, Granada, ESERO Spain is funded nationally by the Parque de las Ciencias Consortium, the Andalucía Education Council of Junta de Andalucía, as well as partners in other Spanish regions, such as: Xunta de Galicia, Department d'Ensenyament Generalitat de Catalunya, Centro Astronomico Aragón, Comunidad de Madrid, Generalitat Valenciana, and many others.

**ESERO UK:** based at the National STEM Learning Centre in York, it is operated by STEM Learning Ltd. Besides ESA, key funding partners include the Department for Education in England (DfE), Science and Technologies Facilities Council (STFC) and the UK Space Agency (UKSA).

**ESERO Netherlands:** based at the Nemo Science Learning Centre in Amsterdam, it is co-funded by ESA and the Netherlands Space Office (NSO).



**Thank you!**



**<https://www.esa.int/Education>**

**<https://www.esa.int/Education/esero>**