SPACE EDUCATION INTERNATIONAL WORKSHOP
18-22 OCTOBER 2016, LEIDEN, THE NETHERLANDS

The Space Education International Workshop is organised by the European Space Agency, the Space Awareness project, and the Galileo Teacher Training Programme.

TUESDAY 18 OCTOBER AT UTOPA

Chaired by Pedro Russo, Leiden University

Time	Programme	Speaker
13:30-14:00	Welcome coffee and registration at Utopa *Venue: Hooglandsekerkgracht 17B* *2312 HS Leiden*	-
14:00-14:30	Opening talk UNAWE 10 years anniversary	George Miley, (Leiden Observatory)
14:30-14:40	Space Awareness, inspiring the next generation of space explorers	Jorge Rivero Gonzalez (Leiden Observatory)
14:40-15:00	European Space Agency	Rebecca Barnes (HE Space Operations for ESA)
15:00-15:20	Galileo Teacher Training Programme	Rosa Doran (NUCLIO)
15:20-15:45	Ice breaker activity	Rosa Doran (NUCLIO)
16:30-17:15	Tour of the Old Observatory (1/2) *Venue: Sterrenwachtlaan 11*	Group activity
17:15-18:00	Tour of the Old Observatory (2/2) *Venue: Sterrenwachtlaan 11*	Group activity

19:00	Welcome dinner *Venue: Oudt Leyden http://www.oudtleyden.nl/en/* *Steenstraat 49, Leiden, Netherlands*

WEDNESDAY 19 OCTOBER AT UTOPA

Chaired by Milena Ratajczak, New Space Foundation and University of Wroclaw

9:30-10:30	Intercultural education on the example of the Space Awareness Islamic Heritage Kit *Conference room*	Cecilia Scorza (House of Astronomy)
10:30–11:00	Coffee Break	
11:00-12:30	*Conference room* Welcome and presentation by our host, Nina von der Assen (Utopa) Short presentations by workshop participants: • Measure the height of lunar craters with salsa J Frederic Borgnon, mathematics teacher in secondary school, member of "Astronomy in school", Voiron, France. • Kodak rockets Marina Reis Silva, physics and chemistry teacher, Escola Secundária Jerónimo Emiliano de Andrade, Portugal. • Mission: From primary school to Space Balint Mihaela Elena, primary school teacher/science teacher, Discovery Kids Primary School, Ramnicu- Valcea, Romania. • Meet the Solar System Gülhanım Dursun, primary school teacher, Şenlik Primary School, Ankara, Turkey. • Andøya Space Center: A unique framework for teaching Alexander Biebricher, Norwegian Centre for Space-related Education, physicist/teacher. • Space education at an art school Dorina Marin, primary teacher/educational counsellor, National College of Art" Octav Bancila" Iasi. Romania. • Astronomy in my school(s), Nikolaos Nerantzis, physicist in secondary special education, Greece. • Destination Discovery Sotira Trifourki, Director, Artemis Space/Cyprus Space Office. • The messier object Aleix Roig Mateu, teacher of science and headteacher in primary education, Escola GEM, Spain. • Rosetta Strato Mission Charity Campaign, Ryan Laird, Design & Data GmbH	

12:30 -14:00	Lunch	
14:00-15:30	Parallel discussion sessions	
	• Space girl & space Boy *Conference room*	Cátia Cardoso, Adelina Machado, (Ciência Viva / ESERO Portugal), Evita Tasiopoulou (European Schoolnet)
	• Rosetta mission: legacy for education and science • *Copernicus 01*	Rebecca Barnes (HE Space Operations for ESA)
	• Let´s talk about gender balance and inclusion through Space *Computer needed* *Galileo 02*	Sara Anjos (NUCLIO), Ramasamy Venugopal (IAU-OAD)
	• Art and science building literacy in inquiring minds *ExoMars 03*	Rosa Doran (NUCLIO) Eletheria Tsourlidaki (Ellinogermaniki Agogi)
15:30-16:00	Coffee break	
16:00-17:30	Parallel workshops 1	
	• Navigation through the ages: a history of discoveries *Conference room*	Sara Anjos (NUCLIO)
	• Through the "eyes" of a satellite *Computer needed* *Copernicus 01*	Cátia Cardoso, Adelina Machado (Ciência Viva / ESERO Portugal)
	• Down2Earth – simulating asteroid and comet impacts *Computer needed* *Galileo 02*	Paul Roche, Sophie Bartlett (Faulkes Telescope Project)

	• Teaching with Inquiry *ExoMars 03*	Eleftheria Tsourlidaki (Ellinogermaniki Agogi)

THURSDAY 20 OCTOBER AT ESA/ESTEC

Chaired by Rebecca Barnes, HE Space operations for ESA

7.40	Meet outside Ibis hotel near Leiden Central Station	
7:45	Bus to ESA/ESTEC	
8:30	Registration at ESTEC Gate (ID required)	
9:00 -10:00	Introduction to ESA and ESA education *Erasmus Auditorium*	Monica Talevi (ESA)
10:00-11:00	The once and future Moon *Erasmus Auditorium*	James Carpenter (ESA)
11:00-11:15	Coffee Break	
11:15-12:30	Parallel workshops 2	
	• Taste in space *Multimedia library*	ESA Education Team
	• Martian soil and looking for evidence of microorganisms *Erasmus High Bay*	ESA Education Team
	• Orbits: Marble-ous ellipses *Computer needed* *Erasmus High Bay*	ESA Education Team
12:30-13:00	Lunar exploration web documentary *Erasmus Auditorium*	Massimo Sabbatini (ESA)
13:00-14:30	Lunch	
14:30-17:00	Tour of ESTEC *Meeting in Erasmus Auditorium*	Group activity

17:00	Return bus to Leiden

FRIDAY 21 OCTOBER AT UTOPA

Chaired by Joseph Roche, Trinity College Dublin

9:30 - 10:30	Gaia: Surveying a billion stars with a billion pixels *Conference room*	Jos de Bruijne (ESA)
10:30 – 11:00	Coffee break	
11:00 - 12:15	15 minute presentations *Conference room*	
	• New space resources from the Ecsite Space Group	Carmen Fenllosa (Ecsite) Jose Gordillo (Ciudad de las Artes y las CIencias)
	• Scientix – the importance of collaboration in STEM education	Adina Nistor (European Schoolnet)
	• Big Ideas of science and interdisciplinary learning	Eleftheria Tsourlidaki (Ellinogermaniki Agogi)
	• Highlights in astronomy and astrophysics	Dellia-Raissa Fortu (Colegiul National August Treboniu Laurian)
	• Tabletarium - Space	Alex Prokop (ESERO Czech Republic)
12:15 – 12:30	Climate change: Public Outreach and Education *Conference room*	Harald Lesch (University of Munich)
12:30 – 14:00	Lunch	
14:00 – 15:30	Parallel workshops 3	
	• Space Awareness: Our wonderful Universe *Conference room*	Eleftheria Tsourlidaki (Ellinogermaniki Agogi)
	• Mars as the abode of life	Anu Ojha

	Copernicus 01	(UK National Space Academy)
	• Space Awareness: Islamic heritage in astronomy *Galileo 02*	Cecilia Scorza (House of Astronomy)
	• Observing the Sun from your classroom *Computer needed* *ExoMars 03*	Abel de Burgos Sierra (ESA)
15:30-16:00	Coffee break and Science Fair *Cafeteria*	
16:00-17:30	Parallel workshops 4	
	• Teaching Space Awareness Using a Visual Thinking Strategy (VTS) Approach *Conference room*	Stephen Pompea (NOAO)
	• Space scoop: Astronomy news service for kids *Copernicus 01*	Edward Gomez, Sarah Roberts (LCO and University of Cardiff)
	• Astro Academy Principia *Galileo 02*	Anu Ojha (UK National Space Academy)
	• Astro Party *ExoMars 03*	Ivo Jokin (ESERO Bulgaria)
17:30-18:30	Science Fair	Exhibition of projects by participants
20:00	2016 – A Big Year in Space for ESA *Venue: Academy Building, Rapenburg 73, 2311 GJ, Leiden*	Mark McCaughrean (ESA)

SATURDAY 22 OCTOBER AT LEIDEN OLD OBSERVATORY

Chaired by Edward Gomez, Las Cumbres Observatory

9:30-10:30	Space as Inspiration: from children to policy-makers	Claus Madsen (ESO)
10:30-11:00	Coffee break	

11:00-12:30	Parallel workshops 5	
	• Scientix – involving teachers in STEM projects *Conference room*	Adina Nistor (European Schoolnet)
	• Space Awareness: the Climate Box *Copernicus 01*	Markus Nielbock (House of Astronomy)
	• Star in a box: Simulating exoplanets *Computer needed* *Galileo 02*	Rebecca Barnes (HE Space Operations for ESA)
	• Go-lab: Black Holes *Computer needed* *ExoMars 03*	Rosa Doran (NUCLIO)
12:30-14:00	Lunch	
14:00-15:30	Parallel workshops 6	
	• Hunting black holes in the variable X-ray sky (high schools) *Computer needed* *Conference room*	Stefano Sandrelli (Istituto Nazionale di Astrofisica)
	• Rosetta Time Capsule *Copernicus 01*	Wendy van den Putten (NEMO Science Centre)
	• Astronomy and Astrology *Computer needed* *Galileo 02*	Rosa Doran (NUCLIO)
	• High-energy particles from space in the physics classroom *ExoMars 03*	Julia Woithe (CERN)
15:30-16:00	Coffee break	
16:00-17:00	Closing session, exchanges, and discussions *Conference room*	Pedro Russo (Leiden Observatory)

Session abstracts

WEDNESDAY 19 OCTOBER AT UTOPA

9:30-10:30 – Plenary talk

Intercultural education on the example of the Space Awareness Islamic Heritage Kit

Cecilia Scorza (House of Astronomy)
Conference room

In this talk I will review the methodologies on science education research that take into account multicultural aspects in science teaching. On the example of the Space Awareness Islam Heritage Kit I will explain why the cultural and historical aspects are the best suitable elements to build a bridge between the Islamic World and modern space sciences and astronomy, and what can we learn from the Islamic Golden Ages.

11:00-12:30 - Short presentations
Conference room

Measure the height of lunar craters with salsa J
Frederic Borgnon
Mathematics teacher in secondary school, member of "Astronomy in school", France.

A work in astronomy with students, using lunar photography and Salsa J software developed by EU. Hands on Universe Project.

Kodak Rockets
Marina Reis Silva
Physics and chemistry teacher, Escola Secundária Jerónimo Emiliano de Andrade, Portugal.

Rockets are an effective way to teach physics and chemistry and have fun!

Mission: From primary school to Space
Balint Mihaela Elena
Primary school teacher/science teacher, Discovery Kids Primary School, Ramnicu- Valcea, Romania.

Space Awareness activities developed with 7 years old students.

Meet the Solar System
Gülhanım Dursun
Primary school teacher, Şenlik Primary School, Ankara, Turkey.

Students meet the Solar System by using ICT and dramatization.

Andøya Space Center: A unique framework for teaching
Alexander Biebricher
Norwegian Centre for Space-related Education, physicist/teacher.

Imagine a bunch of teachers being thrown into the middle of a full-blown operative space centre with the remark: “Go ahead. Feel free to use the equipment. Teach!”

Space education at an art school
Dorina Marin
Primary teacher/educational counsellor, National College of Art ”Octav Bancila” Iasi. Romania.

There is nothing more beautiful than the Universe reflected in the children's soul.

Astronomy in my school(s)

Nikolaos Nerantzis
Physicist in secondary special education, Greece.

Integrating Astronomy for typical development students and students of any kind of difficulties.

Destination Discovery
Sotira Trifourki
Director, Artemis Space/Cyprus Space Office.

Destination Discovery is an education initiative that allows young people to access space exploration through building HABs (High Altitude Balloon Experiments) and designing experiments for CubeSats that will be incorporated into the Xplorasat programme, a fleet of CubeSats that are being developed by a European consortium of Universities and schools.

The messier object
Aleix Roig Mateu
Teacher of science and headteacher in primary education, Escola GEM, Spain.

With the students in the 6th year of primary education we do research on the messier objects. We take an image with a telescope of one of the objects and process it.

Rosetta Strato Mission Charity Campaign
Ryan Laird
Design & Data GmbH

We want to continue Rosetta's legacy by sharing her "heroic" story, using the Rosetta plush toy as an interactive teaching resource to educate underprivileged school children around the world in astronomy and space sciences.

WEDNESDAY 19 OCTOBER AT UTOPA

14:00-15:30 - Parallel discussion sessions

Space girl & space boy
Cátia Cardoso, Adelina Machado (Ciência Viva / ESERO Portugal)
Evita Tasiopoulou, (European Schoolnet)
Conference room

We live in a high tech world, full of gadgets, smartphones and applications. We need that the boys and girls of today become the future generation of engineers and scientists. Space is no different! In this workshop we will present some of the opportunities for space STEM jobs.

Rosetta mission: legacy for education and science
Rebecca Barnes (HE Space Operations for ESA)
Copernicus 01

On 30 September 2016, ESA's historic Rosetta mission concluded as planned, with the controlled impact onto the comet it had been investigating for more than two years. Rosetta was the first spacecraft to orbit a comet, and the first to deploy a lander, Philae, to the surface of a comet. Now that the mission itself has come to an end what is its legacy? Did you follow the Rosetta mission and did it make any impact in your classroom? Do you think it has influenced and inspired your students? What does the Rosetta mission mean to you? Join the discussion to share your thoughts, ideas and experiences.

Let´s talk about gender balance and inclusion through space
Sara Anjos (NUCLIO),
Ramasamy Venugopal (IAU-OAD)
Computer needed
Galileo 02

We will discuss diversity and gender balance through Space related activities on a holistic approach, and how the vastness and beauty of the Universe and of our place within it provides a special perspective that can help broaden the mind and stimulate a sense of global citizenship, encouraging tolerance. Keep attention to the tips!

Art and science building literacy in inquiring minds
Rosa Doran (NUCLIO)
Eleftheria Tsourlidaki (Ellinogermaniki Agogi)
ExoMars 03

Starting from small pieces of art we can build interdisciplinary experiences and fun science activities. Come find out how!

14:00-15:30 - Parallel workshops 1

Navigation through the ages: a history of discoveries
Sara Anjos (NUCLIO)
Conference room

We will learn more about the history of navigation and the tools and terms used since early times. By doing so, we will know a little bit more about ourselves, about the world we live in and about the future of space exploration.

Through the "eyes" of a satellite
Cátia Cardoso, Adelina Machado (Ciência Viva / ESERO Portugal)
Computer needed
Copernicus 01

Our eyes only see a very small portion of the electromagnetic spectrum, satellites have special instruments that "see" in different wavelengths. We will understand how they work.

Down2Earth – simulating asteroid and comet impacts
Paul Roche, Sophie Bartlett (Faulkes Telescope Project)
Computer needed
Galileo 02

The meteor explosion over Chelyabinsk in February 2013 highlighted the potential threat of impacts from fragments of ice (comets), iron and stone (asteroids) with Earth. This workshop will cover the "Down to Earth" project, an education programme that uses the science of asteroids, comets, impacts and meteorites to help teach fundamental physics concepts such as kinetic energy.

Collaboration with ESA has allowed an update to the multi-lingual "Impact Calculator" website app, to also include the Moon and Mars, which will be used in this workshop. Further links with the surface of Mars will also be explored, providing a connection to ESA missions such as ExoMars Trace Gas Orbiter and Schiaparelli lander (due to reach Mars in mid-October 2016).

We will also look at how schools can access astronomical data (and even request their own observations) of asteroids and comets using the Faulkes Telescope Project, including tracking Near Earth Asteroids and comet 67/P, the target of the Rosetta mission.

Teaching with inquiry
Eleftheria Tsourlidaki (Ellinogermaniki Agogi)
ExoMars 03

In this workshop participants will be introduced to the inquiry based learning approach. The session will include an introduction on how to design inquiry-based activities as well as examples that combine games with inquiry.

THURSDAY 20 OCTOBER AT ESA/ESTEC

9:00-11:00 - Plenary talks

Introduction to ESA and the ESA education programme
Monica Talevi (ESA)
Erasmus Auditorium

The once and future Moon
James Carpenter (ESA)
Erasmus Auditorium

A new era in Moon exploration is beginning. It is changing our perceptions, creating new opportunities and opening up space as never before.

The Moon is somewhere we will go together to discover and to create a shared story of the human species; its origins, its uniqueness, its ability to overcome, and its future. This will be something we do together, not in competition as in the past but through peaceful international cooperation; building on the experience of the International Space Station. We will explore the origins of life on our planet and our place in the Universe. We will develop new technologies and will learn to live away from Earth, preparing ourselves for the next steps of our shared journey beyond.

11:15-12:30 - Parallel workshops 2

Taste in space
ESA Education team
Multimedia library

Going on any kind of long journey requires that we eat and drink at some point in time. For astronauts, all of their food and drink need to be carried to the International Space Station (ISS). Eating is an important part of crew morale and the one communal time when the astronauts share a meal and talk with each other. Space food is more than just fuel – it also needs to taste good! In this workshop a range of activities, aimed at students aged 8-12 years old, introduces 4 out of 5 basic tastes, and how our senses of smell, sight, and taste affect the flavour and intensity of what we taste.

Martian soil and looking for evidence of microorganisms
ESA Education team
High Bay

This workshop introduces experiments, aimed at students aged 9 – 14 years old, to study 3 'Martian' soil samples. The investigations link to the identification of key criteria for life; recognising that life can adapt to, and exist in, extreme environments. It also introduces an activity to look for evidence of life in 3 soil samples. Observations will be made that some microorganisms produce dioxide if suitable nutrients are provided.

Orbits: Marble-ous ellipses
ESA Education team
Computer needed
High Bay

This workshop uses marbles and rulers to learn about Kepler's Laws. An elliptical board is used to obtain speed and distance measurements for an object in an elliptical orbit, and learn how gravity affects (or changes) the speed of a planet or a satellite in an elliptical orbit. This activity is aimed at students' ages 14-19 years old.

12:30-13:00 - Plenary talk

Lunar exploration web documentary
Massimo Sabbatini (ESA)
Erasmus Auditorium

ESA's Interactive guide to the Moon is a newly developed interactive documentary. It is an on-line resource that covers, in a factual way, the Why, How and When of lunar exploration. It is meant for a wide audience and it is easy to use.

FRIDAY 21 OCTOBER AT UTOPA

9:30-10:30 - Plenary talk

Gaia: Surveying a billion stars with a billion pixels
Jos de Bruijne (ESA)
Conference room

Gaia, launched in 2013, is the second space astrometry mission of the European Space Agency, following up on the success of the Hipparcos mission (1989). With a focal plane containing more than 100 CCD detectors and almost a billion pixels, Gaia is currently surveying the sky and repeatedly observes the brightest 1,000 million objects during its 5-year lifetime. Gaia's primary science goal is to unravel the kinematical, dynamical, and chemical structure and evolution of our galaxy, the Milky Way. In addition, Gaia's data will touch many other areas of research, for instance stellar physics, solar-system bodies, fundamental physics, and extra-solar planets. This talk addresses the science fundamentals and objectives of the mission and provides some examples of how the Gaia data will revolutionise astronomy.

11:00-12:15 – 15 minute presentations
Conference room

New Space resources from the Ecsite Space group
Carmen Fenllosa (Ecsite)
Jose Gordillo (Ciudad de las Artes y las CIencias)

The Ecsite Space Group aims at improving and extending communication about space by helping specialized science centres and space professionals to work together with non-specialists and develop collaborative projects and events. The resources we will present, built by the Ecsite Space group, will focus on the Rosetta mission, The International Space Station and Exobiology.

Scientix - the importance of collaboration in STEM education
Adina Nistor (European Schoolnet)

Scientix, the community for science education in Europe has been around for over 6 years. The presentation will provide an overview of the Scientix main activities aimed at strengthening the collaboration between various stakeholders in science education.

Big Ideas of Science and Interdisciplinary Learning
Eleftheria Tsourlidaki (Ellinogermaniki Agogi)

Learn about the Big Ideas of Science and how they can be used to promote interdisciplinary learning. The presentation will include examples of interdisciplinary activities and how the Big Ideas of Science can be embedded in school curricula.

Highlights in astronomy and astrophysics
Dellia-Raissa Fortu (Colegiul National August Treboniu Laurian)

The latest aspects of astronomy and astrophysics for high school teachers.

Tabletarium - Space
Alex Prokop (ESERO Czech Republic)

Tabletarium is comprehensive programme of Scientica Agency Ltd. (Czech company developing interactive forms of education) and the Faculty of Science of the Charles University in Prague, and the Czech Technical University aimed at implementation of multimedia tablets in promotion and teaching STEM with emphasis on Space related themes.

12:15-12:30 - Plenary talk

Climate change: Public Outreach and Education
Harald Lesch (University of Munich)
Conference room

14:00-15:30 - Parallel workshops 3

Space Awareness: Our wonderful Universe
Eleftheria Tsourlidaki (Ellinogermaniki Agogi)
Conference room

Discover activities that aim to spark students' interest in science and technology. The activities that will be presented focus on space-related topics and the exploration of our Universe.

Mars as the abode of life
Anu Ojha (UK National Space Academy)
Copernicus 01

In the 400 years since the astronomical telescope was first pointed skywards, no planet has so caught humanity's imagination as Mars. Since 1965, spacecraft flybys, orbiters and

landers – most recently the ExoMars Schiaparelli mission - have revealed a fascinating world – one that is presently more lunar than Earthlike and yet with overwhelming evidence that points to a warmer, wetter past.

This workshop will explore how our understanding about the Red Planet has developed over the centuries and includes lots of hands-on experiments and digital resources illustrating the consequences of Mars' surface conditions on unprotected human explorers and demonstrations of how and why the planet lost its atmosphere and became the contradictory world we see today. Did life ever arise on Mars? Is it still there now? How will we detect it? Could it be related to life here on Earth and could Mars become a future home – or perhaps refuge - for humanity? Secondary school science level (mainly physics, some chemistry)

Space Awareness Islamic heritage in astronomy
Cecilia Scorza (House of Astronomy)
Galileo 02

The main part of the Space Awareness Islam Heritage Kit is centered on the contribution made by Islamic scholars in the development of modern astronomy and space sciences. During this workshop the participants will discover and explore via hand-on activities the work of two women (Mariam al-Astrolabiya, Fatima al-Fihri) and two men (al-Sufi and al-Haytham) in the important fields of measuring the sky, communicating knowledge, mapping the sky and theory development.

Observing the Sun from your classroom
Abel de Burgos Sierra (ESA)
Computer needed
ExoMars 03

Do you want to observe the Universe from your classroom? Have you ever looked at our star, the Sun, with a telescope? The CESAR initiative offers you the possibility to follow the path of astronomers like Galileo Galilei and Newton and observe celestial objects. Accompany us on our way to unravel the secrets of the Universe. Doing science has never been so accessible to students. Find out about the CESAR project and how to use it. As well as a practical exercise observing the Sun online.

16:00-17:30 - Parallel workshops 4

Teaching Space Awareness Using a Visual Thinking Strategy (VTS) Approach
Stephen Pompea (NOAO)
Conference room

This workshop will allow participants to practice a VTS approach to space awareness. Visual literacy and spatial reasoning skills are key qualities useful in approaching both art and science images. VTS encourages a deep appreciation of the mystery of images and encourages a highly participatory approach to astronomy. The techniques can be used with primary students to adults.

Space Scoop: astronomy news service for kids
Edward Gomez, Sarah Roberts (LCO and University of Cardiff)
Copernicus 01

Space Scoop is a space news service for people (not just kids) with a reading age between 8-10 years. We take astronomy press releases and make them approachable for that reading age. Space Scoop is available over 20 language, thanks to our translation partners. Find out more, how you can use Space Scoop in the classroom and how you can be involved.

Astro Academy Principia
Anu Ojha (UK National Space Academy)
Galileo 02

In 1687, Sir Isaac Newton transformed our understanding of the laws of nature through publication of the Principia – and more than three centuries later, British ESA astronaut Tim Peake's six-month mission to the ISS was named Principia to honour Newton's genius and insight.

The UK National Space Academy programme led the development, construction, flight qualification and procedures for a unique set of in-flight physics and chemistry experimental demonstrations conducted in space by Tim – "Astro Academy: Principia". The full programme includes

- Orbital experiments conducted on the International Space Station,
- Dynamic analyses of the results
- Ground-based analogue experiments for students and teachers
- A suite of further space science and education guides.

In this session attendees will be familiarised with the programme including the opportunity to perform their own dynamic analysis of Tim's experiments as well as try the accompanying hands-on experiments for ground-based students and teachers.
Secondary school physics level (some chemistry)

Astro party
Ivo Jokin (ESERO Bulgaria)
ExoMars 03

Participants will be familiar with the innovative event using inquiry based education - organizing and conducting Astro party-which speakers to invite, what appliances available materials to develop, roundtable sharing of best practices by teachers themselves "by teachers for teachers "observation session with telescopes opportunities for participation of teachers and students in various projects.

20:00 – Keynote talk
Academy Building, Rapenburg 73, 2311GJ, Leiden

2016 – A Big Year in Space for ESA
Mark McCaughrean (ESA)

A keynote talk by Mark McCaughrean featuring the latest European Space Agency missions: Rosetta, Gaia, Lisa Pathfinder and ExoMars.

Mark McCaughrean is Senior Science Advisor in the Directorate of Science at the European Space Agency. He is also responsible for communicating results from ESA's astronomy, heliophysics, planetary, and fundamental physics missions to the scientific community and wider general public. Following a PhD from the University of Edinburgh (UK), he worked in Washington DC, Tucson, Heidelberg, Bonn, Potsdam, and Exeter, before joining ESA in 2009. His personal scientific research involves observational studies of the formation of stars and their planetary systems, and he is also an Interdisciplinary Scientist for the NASA/ESA/CSA James Webb Space Telescope.

SATURDAY 22 OCTOBER AT LEIDEN OLD OBSERVATORY

9:30-10:30 - Plenary talk

Space as Inspiration: from children to policy-makers
Claus Madsen (ESO)
Conference room

From 'Star Wars' to Proxima Centauri B - The sky has been the source of wonder and inspiration throughout history – from the folklore tales of many indigenous people on the origin of the world to President Kennedy's famous statement: "We choose to go to the Moon and do the other things, not because they are easy, but because they are hard". The fascination of space still serves as a powerful vehicle for mobilising human interest, engagement and entrepreneurism and the talk will present a variety of aspects of this phenomenon.

11:00-12:30 - Parallel workshops 5

Scientix - Involving teachers in STEM projects
Adina Nistor (European Schoolnet)
Conference room

During the workshop, we will explore with participants the mutual benefits and opportunities opened by the collaboration between teachers and STEM projects.

Space Awareness: the Climate Box
Markus Nielbock (House of Astronomy)
Copernicus 01

The climate change is one of the biggest challenges of mankind. With the educational kit of the Climate Box, we want to raise awareness for its causes and consequences, and

highlight where Earth observing programmes like Europe's Copernicus help monitoring and analysing it.

Star in a box: Simulating exoplanets
Rebecca Barnes (HE Space Operations for ESA)
Computer needed
Galileo 02

During this workshop, the transit of an exoplanet in front of its parent star will be simulated using a "star in a box" and a light curve plotted of the transit. The activity will be put in the context of ESA's Gaia mission that is expect to discover thousands of exoplanets by the time it completes its survey of the sky.

Go-Lab: Black holes
Rosa Doran (NUCLIO)
Computer needed
ExoMars 03

During this workshop we introduce a research project were students are invited to build a light curve of a black hole candidate. Students will be using existent images of a black hole candidate and will understand how scientists are measuring the orbit and other characteristics of this mysterious objects. The last stage of this project invites students to explore new black hole candidates and/or other compact objects. The project uses Salsa J as the imageing processing software and Go-lab and the inquiry platform were the scenario is built.

11:00-12:30 - Parallel workshops 5

Hunting for Black Holes in the variable X-ray sky
Stefano Sandrelli (Istituto Nazionale di Astrofisica)
Computer needed
Conference room

Hunting for Black Holes is live role playing-like inquiry based activity. Students must look for black hole candidates in the real ESA XMM-Newton satellite data provided by the EU funded project EXTraS.

Rosetta time capsule: journey through space
Wendy van den Putte (NEMO Science Centre)
Copernicus 01

Ten years it took ESA spacecraft Rosetta to reach its destination: 67p/Churyumov-Gerasimenko. For almost two years it followed the comet during its travel to and away from the Sun. The world watched as Philae landed on the comet. In this workshop we will explore how to bring this story to the classroom, looking at several aspects of the mission: the journey, the research and the results.

Astronomy and Astrology
Rosa Doran (NUCLIO)
Computer needed
Galileo 02

Targeting misconceptions is a very powerful way to introduce important concepts. Astrology is a very recurrent topic and targeting the lack of use of scientific valuable background is the aim of this exercise that invites students to use an inquiry based platform to explore the topic. During the last stage of the exercise students are invited to use a robotic telescope to explore a specific region in the sky.

High-energy particles from space in the physics classroom
Julia Woithe (CERN)
ExoMars 03

The Earth is constantly bombarded by high-energy cosmic particles coming e.g. from supernovae. They produce showers of secondary particles when they interact with the molecules in the atmosphere. With particle detectors like cloud chambers or pixel detectors we can measure the properties of the secondary particles reaching the surface of the Earth and understand their contribution to natural radiation.

PARTICIPANTS LIST

	Last name	First name	Country
1.	Anghel	Cristina Iulia	Romania
2.	Anjos	Sara	Portugal
3.	Argyri	Panagiota	Greece
4.	Balint	Mihaela Elena	Romania
5.	Barnes	Rebecca	Netherlands
6.	Bartlett	Sophie	United Kingdom
7.	Bertesteanu	Cornelia	Romania
8.	Biebricher	Alexander	Norway
9.	Blom	Kunie	Netherlands
10.	Boiko	Anastasiya	Belgium
11.	Borgnon	Frederic	France
12.	Bragason	Saevar Helgi	Iceland
13.	Cardinot	Adriana	Ireland
14.	Cardinot	Marcos	Ireland
15.	Cardoso	Cátia	Portugal
16.	Christodoulidou	Marialena	Cyprus
17.	Correia	Nelson	Portugal
18.	Cossaer	Nadine	Belgium
19.	Cunha	Carlos	Portugal
20.	Damianou	Theodora	Sweden

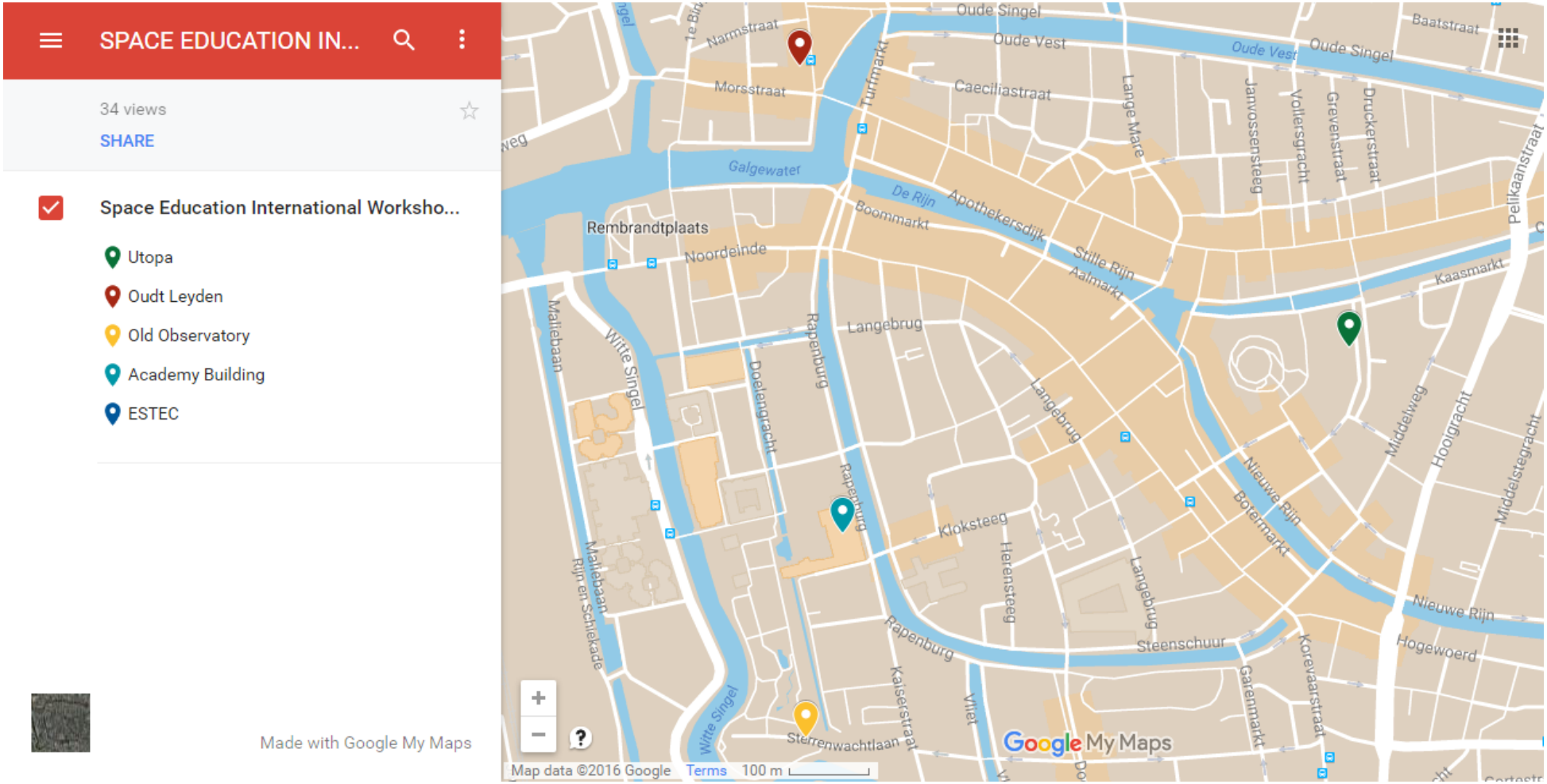
21.	de Burgos Sierra	Abel	Spain
22.	De Laere	Frederik	Belgium
23.	DeWit	Jen	United Kingdom
24.	Doran	Rosa	Portugal
25.	Dukadinova	Kremena	Bulgaria
26.	Dursun	Gülhanım	Turkey
27.	Eistrup	Christian	Netherlands
28.	Emam	Mohamed	Other
29.	Fenollosa	Carmen	Belgium
30.	Fernandes	Vitor	Portugal
31.	Ferrara	Laura	Italy
32.	Filep	Doina Otília	Hungary
33.	Fortu	Dellia-Raissa	Romania
34.	Fosgaard Lund	Emil	Denmark
35.	Gaiotto	Cristina	Italy
36.	Ginoudi	Athina	Greece
37.	Godinho	Isabel	Portugal
38.	Golcea	Sandu mirel	Romania
39.	Gomez	Edward	United Kingdom
40.	Gómez-Caminero Pemartin	Sonia	Spain
41.	Gordillo	José Antonio	Portugal
42.	Gunova	Vanya	Bulgaria
43.	Heinrich	Ro	Netherlands
44.	Jokin	Ivo	Bulgaria

45.	Kalkan	Mirkan	Turkey
46.	Kasampa	Ioanna	Greece
47.	Kooiman	Frans	Netherlands
48.	Laird	Ryan	Germany
49.	Lavrih	Rado	Slovenia
50.	Lesch	Harald	Germany
51.	Londhe	Vikram	India
52.	Loughman	Rosaleen	Ireland
53.	Machado	Maria Adelina	Portugal
54.	Marin	Dorina	Romania
55.	Markowicz	Ryszard	Poland
56.	Melcu	Cornelia	Romania
57.	Merlini	Anna Elisabetta	Italy
58.	Musmeci	Mario	Italy
59.	Nerantzis	Nikolaos	Greece
60.	Nielbock	Markus	Germany
61.	Nijman	Iris	Netherlands
62.	Nistor	Adina	Belgium
63.	Ojha	Anu	United Kingdom
64.	Olivotto	Cristina	Netherlands
65.	Ortiz Gil	Amelia	Spain
66.	Oubella	Mohammed	France
67.	Palacios Salto	Rosa Maria	Spain
68.	Papandreou	Christos	Greece

69.	Pereira	Carla	Portugal
70.	Pérez Pérez	Melquíades	Spain
71.	Piccolo	Fulvia	Italy
72.	Pires	Elisabete	Portugal
73.	Poig Mateu	Aleix	Spain
74.	Pop	Virgiliu	Romania
75.	Preclík	Jan	Czech Republic
76.	Prokop	Alex	Czech Republic
77.	Ramos	Maria Teresa	Portugal
78.	Ratajczak	Milena	Poland
79.	Retrê	João	Portugal
80.	Rivero	Jorge	Netherlands
81.	Roberts	Sarah Eve	United Kingdom
82.	Roche	Joseph	Ireland
83.	Roche	Paul	United Kingdom
84.	Russo	Pedro	Netherlands
85.	Sabbatini	Massimo	Netherlands
86.	Santopadre	Laura	Italy
87.	Sarrantonio	Arturo	Italy
88.	Schrama	Tobias	Netherlands
89.	Schrier	Wouter	Netherlands
90.	Scorza	Cecilia	Germany
91.	Silva	Marina	Portugal
92.	Skolnik	Vojtech	Czech Republic

93.	Sluis	Jan	Netherlands
94.	Smate	Ilze	Latvia
95.	Smet	Gert	Belgium
96.	Stojanovic	Ivan	Serbia
97.	Strijker	Margreet	Netherlands
98.	Tasiopoulou	Evita	Belgium
99.	Thorne	Martin	United Kingdom
100.	Tieman	Frans	Netherlands
101.	Trifourki	Sotira	United Kingdom
102.	Tsourlidaki	Eleftheria	Greece
103.	Turk	Cumhur	Turkey
104.	Tyndall	Amy	United Kingdom
105.	van den Putte	Wendy	Netherlands
106.	Venugopal	Ramasamy	South Africa
107.	Weizman	Ayelet	Israel
108.	Witmus	Angelo	Netherlands
109.	Woithe	Julia	Switzerland
110.	Zabumba	Dário	Portugal
111.	Zanazzi	Alessandra	Italy
112.	Zurita i Món	Sílvia	Spain

VENUES MAP



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