IAU Office of Astronomy for Education Center Italy

Activities and projects
2023

#astronomyforabetterworld

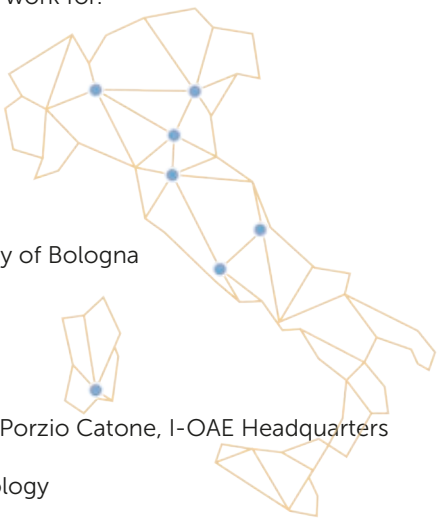
The IAU Office of Astronomy for Education Center Italy

The IAU Office of Astronomy for Education Center Italy (I-OAE) is part of the IAU Office of Astronomy for Education. I-OAE is a joint project of a consortium of Italian partners led and represented by Istituto Nazionale di Astrofisica (INAF, National Institute for Astrophysics), the International Astronomical Union (IAU) and the IAU Office of Astronomy for Education.

The Italian consortium is constituted by: INAF, the Italian Astronomical Society (SAIt) and the University of Rome Tor Vergata (ToV).

I-OAE HQ are hosted by the INAF - Rome Astronomical Observatory, in Monte Porzio Catone. Personnel is selected on a voluntary basis according to their interests and competence, in agreement with the Institutes they work for.

Research structures involved so far:



Milan
INAF - Astronomical Observatory of Brera
Padua
INAF - Astronomical Observatory of Padua
Bologna
INAF - Astrophysics and Space Science Observatory of Bologna
INAF - Institute of Radio Astronomy
Florence
INAF - Astronomical Observatory of Arcetri
Italian Astronomical Society Headquarters
Rome
INAF - Astronomical Observatory of Rome, Monte Porzio Catone, I-OAE Headquarters
INAF Headquarters, Rome
INAF - Institute for Space Astrophysics and Planetology
University of Rome Tor Vergata
Teramo
INAF - Astronomical Observatory of Abruzzo
Cagliari
INAF - Cagliari Astronomical Observatory

The International Astronomical Union

The International Astronomical Union (IAU) is the international astronomical organisation that brings together more than 12000 active professional astronomers from more than 100 countries worldwide. Founded in 1919, the IAU is the world's largest professional body for astronomers.
Its mission is to promote and safeguard astronomy in all its aspects, including research, communication, education and development, through international cooperation.
The IAU also serves as the internationally recognised authority for assigning designations to celestial bodies and the surface features on them.

About the IAU
https://www.iau.org/administration/about/

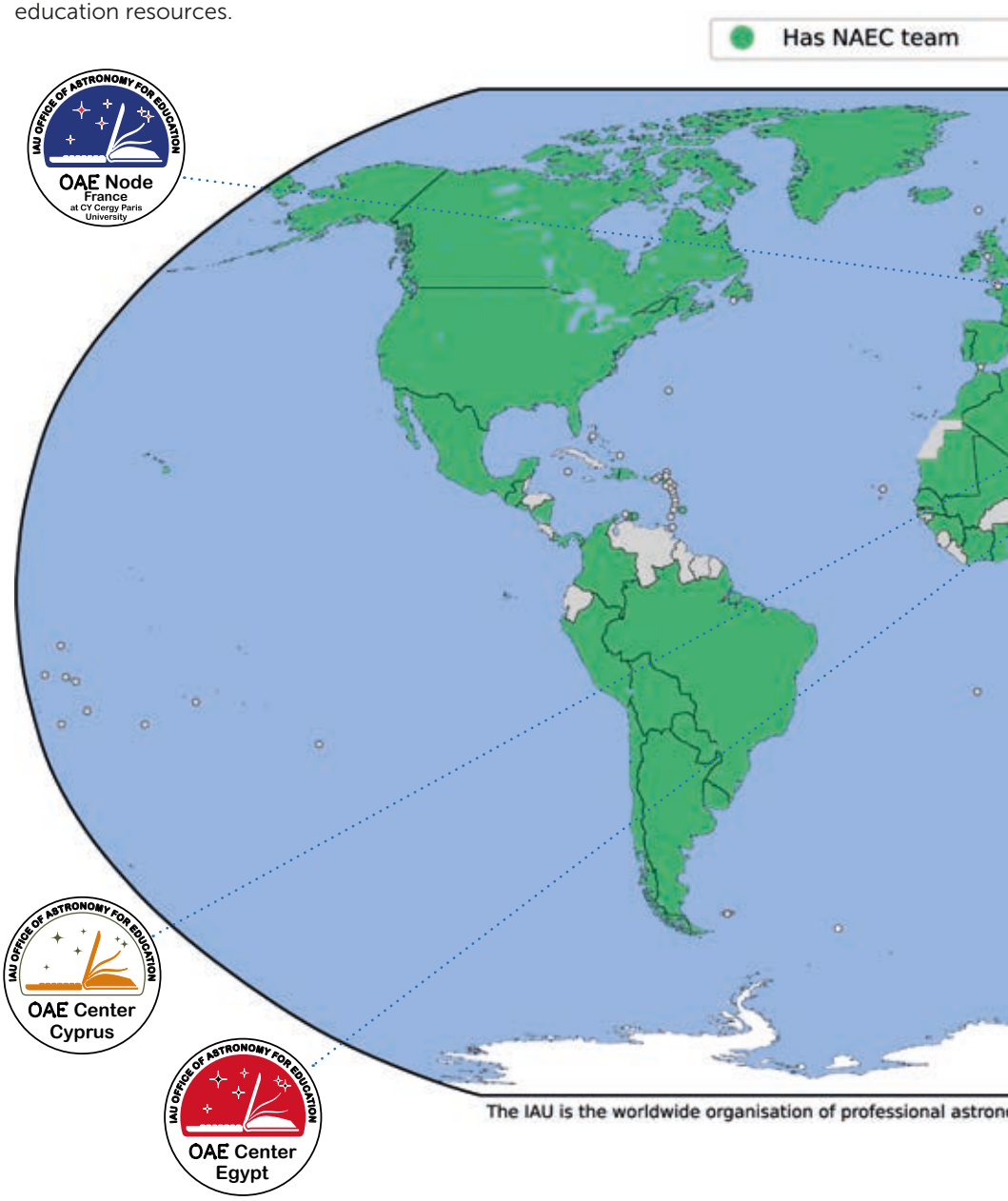
The Office of Astronomy for Education

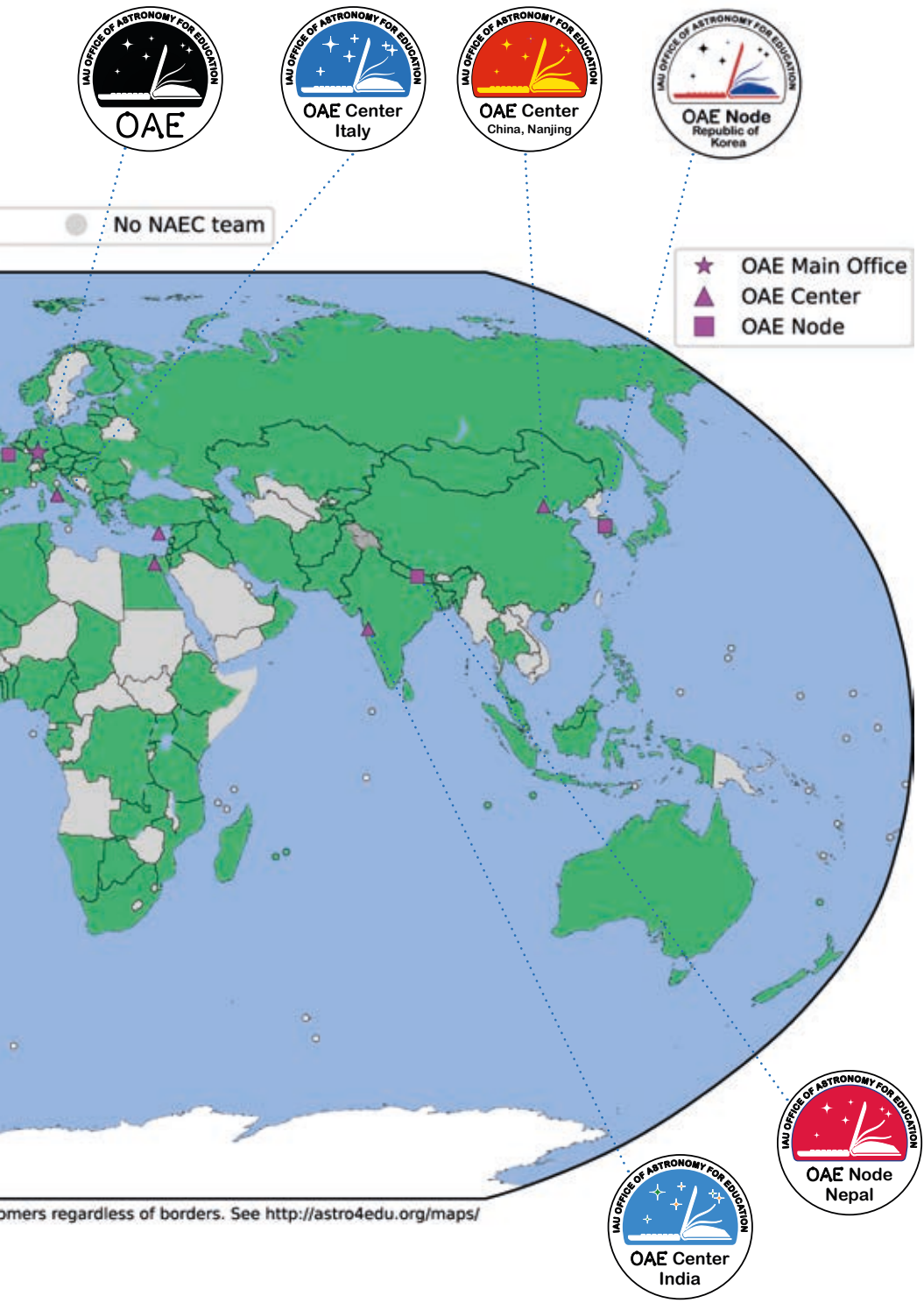
The IAU established its Office of Astronomy for Education (OAE) in December 2019.
OAE is at the forefront of efforts by the IAU to leverage astronomy for education, specifically in the areas of science, technology, engineering and mathematics.
The OAE's mission is to support and coordinate astronomy education by astronomy researchers and educators, aimed at primary or secondary schools worldwide.
The IAU Office of Astronomy for Education headquarters are hosted at Haus der Astronomie (HdA), managed by the Max Planck Institute for Astronomy. HdA's hosting of the OAE was made possible through the support of the German Klaus Tschira Foundation and Carl Zeiss Foundation.

You can follow the activities of the IAU OAE at its website http://astro4edu.org or on Twitter and Facebook under @astro4edu

NAECs, Centers Nodes map

The OAE main office in Heidelberg, its branch offices in China, Cyprus, Egypt, France, India, Italy, Korea and Nepal as well as a network of National Astronomy Education Coordinators (NAECs), support the compilation and translation of excellent astronomy education resources, help educators, astronomers and other stakeholders to get started in contributing to astronomy education, and support the creation of reliable and accessible education resources.




OAE
OAE Center
Italy
OAE Center
China, Nanjing
OAE Node
Republic of
Korea
No NAEC team
OAE Main Office
OAE Center
OAE Node
omers regardless of borders. See http://astro4edu.org/maps/
OAE Center
India
OAE Node
Nepal

Together again: our STEAM Med workshop in Ifrane

The wonderful environment of the Al Akhawayn University in Ifrane, Morocco, hosted the I-OAE in-presence projects in the framework of the I-OAE Office activities for the Mediterranean: the *STEAM Astronomy Regional Summer School* and the *STEAM-MED codesign*.
The events were specifically designed for the NAECs of the Mediterranean Countries and local teachers.

> Our Office of Astronomy for Education places astronomy, namely the relationship between ourselves and the Universe, at the service of the children's learning process.
>
> **STEFANO SANDRELLI, I-OAE MANAGER, INAF**

The activities were organized in two sections: a Mediterranean Regional School, with presentations and talks, and a two-day workshop for co-designing educational paths.
23 NAECs were engaged from 13 countries: Spain (3), Portugal (1), Italy (1), Slovenia (1), Bulgaria (1), Turkey (1), Syria (2), Lebanon (2), Palestine (2), Israeli (2), Egypt (2), Morocco (4), Mauritania (1).
The program was designed while respecting the sensitivity of the attending NAECs.

The events were held from June 21 to 27 at the Al Akhawayn University in Ifrane, Morocco, and financed by the Office of Astronomy Education Center Italy. Silvia Casu, Sara Ricciardi, Stefano Sandrelli (chair), Gloria Tirabassi, Stefania Varano, Alessandra Zanazzi were members of the Scientific and Steering Committee of the two workshops.

OAE Center Italy covered grants for travel and lodging for all attending NAECs and I-OAE members.

The final program can be found in the public website: https://sites.google.com/view/sam2s/home?authuser=0

The MIRTO/STEAM-Med Project

The *STEAM-Med Project*, including its *MIRTO* phase, focuses on creating a collaborative environment among Mediterranean countries. It involves establishing a network of NAECs, and hosting online round-tables. The project operates on a co-design, peer-to-peer approach, with participating NAECs designing and tailoring LIGHT-related activities. Several rounds of co-design were coordinated, involving representatives from different countries.

> The most important part of this project is the process itself, because what we really want is to stimulate the Med community, nurture it and generate space where people from the Med Area can work together in Astronomy Education.
>
> **SARA RICCIARDI, I-OAE DEPUTY, INAF**

The first in-person workshop was held in Lampedusa, Italy, in July 2022, and was attended by 23 national representatives from 14 Mediterranean countries.
Challenges include linguistic, cultural, religious, political, and educational diversities. The project's outputs, translated into multiple languages, include booklets in four languages (Arab, English, Italian, French), disseminated through eduINAF, with some activities already published on the astroEDU platform.

Playful and Game-Based Learning

I-OAE is striving to integrate *Playful Learning* (PL) and *Game-Based Learning* (GBL) into science education, championing the idea of scientific citizenship. In collaboration with the Game Science Research Center, we experiment with new ways of transforming science learning into an engaging, interactive experience and fostering a deeper understanding and appreciation.

> *Pixel* simulates the world of scientific research in Astrophysics and emphasizes the importance of studying celestial objects at increasingly higher resolutions.
>
> **STEFANIA VARANO, I-OAE OFFICER, INAF**

Our main GBL pilot project is *Pixel - Picture (of) the Universe*, a board game about astrophysics and resolution. We conducted a project in 5 Italian cities to evaluate the effectiveness of *Pixel* as a learning tool in STEM subjects for improving the participants' mindset about science and its processes. Regarding PL, we experimented with tinkering, a constructionist practice, exploring mainly in the context of formal education.

The 5th Shaw-IAU Workshop on Astronomy for Education

The *5th Shaw-IAU Workshop* on Astronomy for Education was held online from November 29 to December 1, 2023. The Workshop focussed on two themes: one special practical astronomy education topic and one scientific topic. The special topic is astronomy education outside the classroom, looking at how astronomy can be taught in diverse environments, such as science centers, planetaria and youth clubs. The scientific topic is planetary atmospheres, both in the solar system and exoplanets as well as our own Earth. The meeting was fully virtual.

THE ANNUAL SHAW PRIZE-IAU WORKSHOPS ON ASTRONOMY EDUCATION THAT OAE ORGANIZES ARE FUNDED BY THE SHAW PRIZE FOUNDATION.

Organized by OAE and supported by IAU and Shaw Prize Foundation, it was a joint effort among the Centers of Italy, China, India, Cyprus, and Egypt, and the Nodes of France, Republic of Korea, and Nepal.

The website of the workshop: https://astro4edu.org/shaw-iau/

Teacher Training Programme

The *Teacher Training Programme* (TTP) is a joint venture of OAE and I-OAE, under the coordination of Tshiamiso Makwela. The community was asked to submit proposals for financial support of up to 2 Keuros for an astronomy teacher training and professional development workshop.
The I-OAE confirmed the previous budget (primary school worldwide 10 Keuro) and added an extra budget to support Primary and Secondary school teachers in the Mediterranean (6 Keuro). Sara Ricciardi (primary school); Stefania Varano (lower secondary school); Stefano Sandrelli (upper secondary school) supported OAE in evaluating the proposals.

The OAE Multilingual Astronomical Glossary

The OAE *Multilingual Astronomical Glossary* is a project of OAE in collaboration with the IAU Office of Astronomy Outreach (OAO). The astronomical terms and definitions were chosen, written, and reviewed by a collective effort from the OAE, Centers, Nodes, the NAECs, and other volunteers. For the Italian version, we have "recruited" a dozen among researchers, outreach specialists, and secondary school teachers, who are helping us to choose the best possible definitions for school use. The whole glossary is released under a Creative Commons CC BY-4.0 license and should be credited to "IAU OAE".

astroEDU

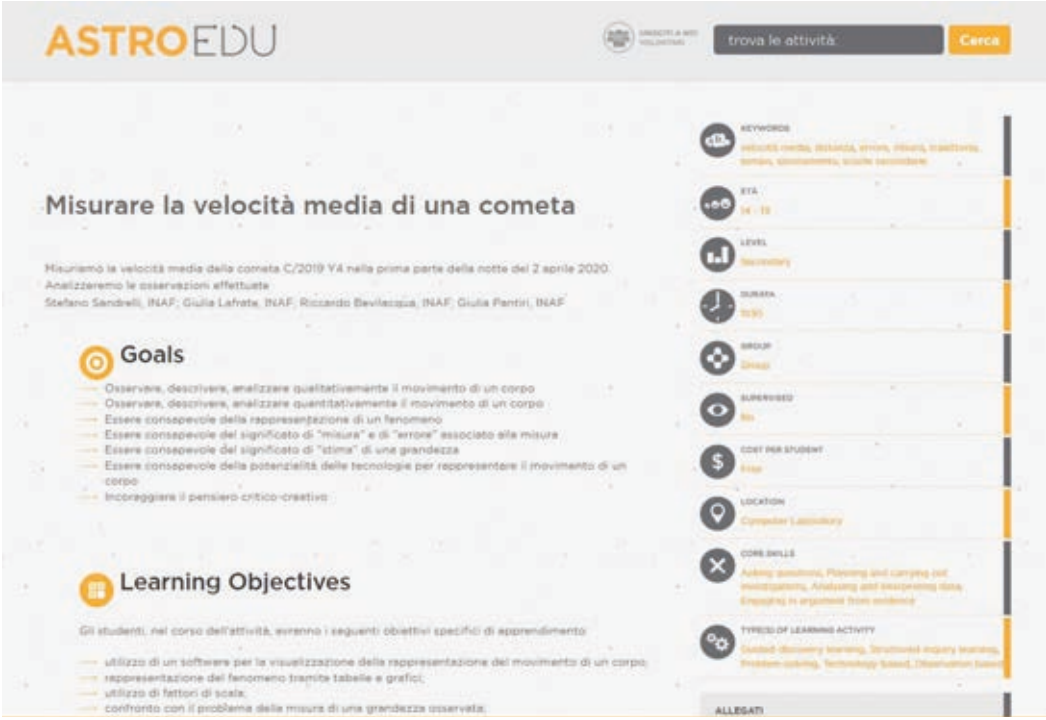
astroEDU is an open-access platform for educators worldwide to discover, review, distribute, improve and remix peer-reviewed education activities.
astroEDU is the best place where you can find science activities, particularly those related with astronomy, earth or space science.

> The *astroEDU* community is growing very fast. In the next few years, other editorial boards will join our family, so as to publish activities coming from all over the world and in different languages. Together, we will use Astronomy worldwide to engage the younger generation with science and the pleasure of discovery.
>
> **LIVIA GIACOMINI, *astroEDU* EDITOR-IN-CHIEF, I-OAE, INAF**

In order to guarantee the quality of the scientific content, educational implementation, and credibility, *astroEDU* activities undergo a double review - by a scientist and an educator.
astroEDU is a project of the International Astronomical Union within the framework of the IAU OAE.

astroEDU ITA

astroEDU ITA is the Italian version of the platform, managed by INAF and SAIt in the framework of the I-OAE.
Italian-speaking teachers, educators, and researchers can find in *astroEDU ITA* the best peer-reviewed educational activities focused on astronomy, Earth, or space science and can collaborate by submitting or reviewing them.



> *astroEDU ITA* is an exciting challenge: it is a free access environment where teachers, educators and researchers will be involved in spreading the love for astronomy through a collaborative process of creation, validation and use of different resources.

SILVIA CASU, *astroEDU ITA* EDITOR-IN-CHIEF, I-OAE, INAF

Time Machines

Time Machines - Macchine del Tempo is the first large exhibition created and produced by INAF. It opened on 25 November 2023 at Palazzo Esposizioni Roma, where it will be on display until 24 March 2024.
The exhibition is fully bilingual (Italian and English) and it has the patronage of IAU. Moreover, the educational content and formats have been developed with the support of the I-OAE.

The exhibition offers a journey backwards in time, through the images of planets, stars and galaxies as observed by the "time machines" of modern astrophysics. Due to the limit of light's speed, telescopes around the world and in outer space can only observe into the past of our cosmos, thus returning us a view of celestial bodies as they were hundreds, thousands, millions or billions of years ago. With a pop style and a distinctive Eighties flair, the exhibition aims at making the vast reaches of the Universe engaging to a large public through immersive images and sounds.

A key part of the project are the installations designed and produced in collaboration with I-OAE. They were specially developed for the younger audience, including an exhibit to explore the three-dimensional structure of constellations, and tactile tables to experience the Moon phases that are accessible to the blind and the vision-impaired community, as well as video explanations in Italian Sign Languages.

Education and Inclusion @ Time Machines

I-OAE is coordinating the design of the educational and inclusive activities targeted to students and the general public, that accompany and enrich the *Time Machines* exhibition, also in the framework of the second edition of the inclusive event *Punti di Vista (Viewpoints)*, that the Educational Department of Palazzo delle Esposizioni, Rome, is going to organize on 16-17 March 2024, overlapping the INAF exhibition.
The offer will include multi-sensory approaches and Sign-Language narration, in the framework of a dedicated space that will host brand-new inclusive exhibits and resources, which will afterward be included in the Italian version of the IAU *Inspiring Stars* exhibition.

> Astronomy inspires considerations about our past, present and future, and questions such as who we are and why we are here, playing a big part in the self- and diversity awareness process.
>
> **STEFANIA VARANO, I-OAE OFFICER, INAF**

The Universe in all senses

From June 9 to 11, the third edition of the *Astronomy Festival* was held in Castellaro Lagusello (Mantova, Italy). As the title suggests, all the activities were multi-sensory, so as to allow everyone to discover and enjoy astronomy, beyond any sensory limitations.
The hands-on workshops were developed by the PhD students from the University of Bologna, and they were led during the Festival by high-school students, trained by the Ph.D. students themselves, astronomers, and the Italian Union for the Blind and Visually Impaired.

> We are basically all blind to the sky. And there are so many incredible things up there. Everyone should have access to that beauty.
>
> **ANITA ZANELLA, I-OAE, INAF**

Telescope observations of the Sun, the night sky, and the sunrise from a natural park with an archeological site (accompanied by live music and the storytelling of an archeologist) were organised and appreciated by the public. The Festival has been visited by about 5000 people. The scenic and graphic design of the Festival was made by a professional architect and scenographer.

Universe World

Universe World is a bi-monthly column published on EduINAF to explore the constellation of science and astronomy public engagement projects around the globe. In every interview, an expert from a different country delves into a new topic, from science capital to storytelling, from astronomy for development to artificial intelligence, sharing lessons learnt and challenges overcome in a wide range of science outreach and educational projects.

Title: Milky Way Over Quiver Tree,
winner in the 2023 IAU OAE
Astrophotography Contest
Author: Jianfeng Dai, China
Credits: Jianfeng Dai/IAU OAE (CC BY 4.0)

This breathtaking scene was captured on June 17th, 2023, near Ketmanshoop, Namibia, using a smartphone. The majestic arc of the Milky Way creates a celestial bridge across the heavens, while the Large and Small Magellanic Clouds are seen towards the bottom of the image, as fuzzy clouds. Antares can be seen towards the top left of the image.

Title: Fire of the Sky,
winner in the 2023 IAU OAE
Astrophotography Contest
Author: Stephanie Ziyi Ye, China
Credits: Stephanie Ziyi Ye/IAU OAE
(CC BY 4.0)

Lofoten, Norway, on 28 March 2023 the sky was set ablaze by the aurora. The Northern (Southern) Lights, also known as aurorae, are natural light displays resulting from interactions between solar winds and Earth's magnetic fields. In Norse legends, they are often depicted as a heavenly fire.

Brochure compiled & edited by I-OAE
Graphic design: Laura Barbalini (INAF) and Arianna Papale
NAECs' map provided by Niall Deacon (OAE HQ)
Acknowledgments: Gwen Sanderson and Markus Pössel (OAE HQ)
for their kind revision and comments.

"Teaching astronomy takes both solid knowledge of the subject itself as well as educational skills, such as knowing appropriate methods and techniques for teaching."

Markus Poessel, OAE HQ Head

"We are not wrong if we say this is something really worth doing since it brings about change in society and can do it so significantly."

Juan Ángel Vaquerizo,
NAEC team - Spain, Centro de Astrobiología

"Evaluation is a continuous process that critically examines a program; it can improve program design and implementation, assess its achievements and improve upon its effectiveness. It helps teachers and learners to improve teaching and learning processes. Evaluation helps us to make evidence-based decisions."

Silvia Casu, I-OAE

Office of Astronomy for Education Center Italy members:
Stefano Sandrelli (Manager, INAF), Sara Ricciardi (Deputy, INAF), Livia Giacomini (Officer, INAF), Stefania Varano (Officer, INAF), Giuliana Giobbi (INAF), Gianluigi Filippelli (INAF), Gloria Tirabassi (INAF), Elisa Di Carlo (SAIt), Adriana Basile (SAIt, January-July), Licia Troisi (SAIt, January - November), Giuseppe Bono (TOV)

Volunteers:
Adriana Basile (from November), Caterina Boccato (INAF), Silvia Casu (INAF), Francesco D'Alessio (INAF), Riccardo Leoni (INAF), Claudia Mignone (INAF), Rachele Toniolo, Rosa Valiante (INAF), Alessandra Zanazzi (INAF), Anita Zanella (INAF)