

IAF SPACE EDUCATION AND OUTREACH COMMITTEE (SEOC)

1. Introduction/Summary

The IAF Space Education and Outreach Committee (SEOC) promotes the development and delivery of quality learning and outreach opportunities for students, educators, and members of the IAF, and supports IAF activities focused on students and educators. To achieve these goals, we organize two symposia, a series of events, and an honors and awards programme annually.

2. Highlights

Science Communication is being revolutionized by the use of social media, with science communicators and content creators being the main source of education and outreach for many individuals. Another important trend is the rise of mentoring as a workforce development tool, with many programmes being developed within the space sector based on this concept. SEOC is observing these trends, with the aim of supporting these initiatives, and representing them within its technical symposia.

3. Future Outlook

SEOC is currently preparing for the 74th IAC, which will be held in Baku in 2023. Our call for papers for the Space Education and Outreach Symposium and the Student Competition has been updated with lessons learned from this year's IAC in Paris and is now available online. SEOC also plans to continue its honours and awards programme, contributions to the Next Generation Plenary and mentorship programmes at the IAF. SEOC Outreach is currently planning several outreach and public engagement activities to be held during the IAC as well.

With changes in the landscape of education and outreach, and a rise in using social media and arts in science communications, SEOC is exploring how to better update its technical symposia for IAC 2024.

Our aim is to position the symposia to not only attract scientists and engineers, but also K-12 educators and teachers.

4. Committee activities

Throughout 2022, SEOC supported various initiatives, such as the IAF Abstract Mentor Programme and IAF Launchpad Mentorship programme, with SEOC members acting as mentors in both programmes.

The SEOC worked throughout 2022 to plan for excellent support to the 73rd International Astronautical Congress (IAC), where we hosted two symposia:

- The Space Education and Outreach Symposium (E1) showcased over 144 papers (selected from over 300 submissions) in 12 sessions around various topics in space education and outreach, workforce development and culture
- The 50th Student Competition Symposium (E2) showcased 52 papers from around the world in 4 sessions, one of which was broadcast online as part of the Global Technical Symposium

Both symposia showed growth in the number of submissions over the last year, with submissions exceeding pre-Covid numbers.

- SEOC Honours and Awards continued its great work this year, by awarding the following three titles:
- The Frank J. Malina Astronautics Medal was awarded to Shinichi Nalasuka, Professor of Aeronautics and Astronautics at the University of Tokyo. This award recognizes an educator who has demonstrated excellence in taking the fullest advantage of the resources available to him/her to promote the student of astronautics and related space sciences. Professor Nalasuka was also a keynote speaker at the SEOC E1 Symposium.
- The Luigi G. Napolitano Award was awarded to Julia Briden. This award is presented annually to a young scientist (below 30 years of age) who contributed

significantly to the advancement of aerospace sciences and presents a paper on this contribution at the IAC.

- The IAF Student Awards recognize the best papers presented by students at the IAC in the undergraduate, graduate and student team categories.
 - » The Undergraduate Category 3AF Gold Award was awarded to Jorge Moreno from the Universidad Politécnica de Madrid, Spain for the paper 'Development of an Improved Random Positioning Machine to Simulate Organic Growth in Microgravity'
 - » The Undergraduate Category Hermann Oberth Silver – IFR was awarded to Sanmathi Priya Abiram Lakshmi Devi of Cornell University for the paper 'Harvesting Geothermal Energy on Mars for Future Settlement'
 - » The Graduate Category Hermann Oberth Gold – IFR and the British Interplanetary Society Prize for Best Technical Paper were awarded to Franco Maria Marchese and Claudio Rapisarda of Delft University of Technology for the paper 'Detailed Design and Verification of a Wave Spring Self-pressurized Tank for a Micro-resistojet Thruster'
 - » The Graduate Category 3AF Silver Award was awarded to Brendon Cavainolo of the University of Central Florida for the paper 'Simulating Melting-solidification of Lunar Regolith Particles Using Coupled CFD Methods'

- » The Hans von Muldau Team Award for the Best Team Project was awarded to the ISAE-SUPAERO team (represented by Timothée Simon) for the paper titled 'Preliminary design of lunar vehicle for astronauts transportation'.

SEOC members contributed to the selection of the IAF Emerging Space Leaders (ESL) Grantees and the IAF Young Space Leaders (YSL) Award programme as well. We are happy to see Ozan Kara of SEOC among the awardees of the YSL this year.

SEOC members (alongside the IAF WD-YPP and other committees) also supported the Next Generation Plenary (NGP) programme as steering committee members. The NGP this year organized the Next Generation Plenary 'AI4Space: Perspectives from the Next Generation', while also holding an additional panel at the International Student Zone titled 'Space and the Arts: From STEM to STEAM'. These efforts will continue in 2023.

SEOC Outreach team has relaunched its programmes, with plans in place for activities in 2023 for engaging the public and education and outreach as part of IAF events. SEOC members also contributed to the activities of the International Space Education Board, which held several events for students. Finally, SEOC saw one of its largest meetings at the IAC 2022 in Paris this year, with an overflowing room and many prospective members joining to learn more about our activities.