

EUROPEAN SPACE CAMP

ANNUAL REPORT

2021



“The sky is not the limit - it’s where the fun begins”

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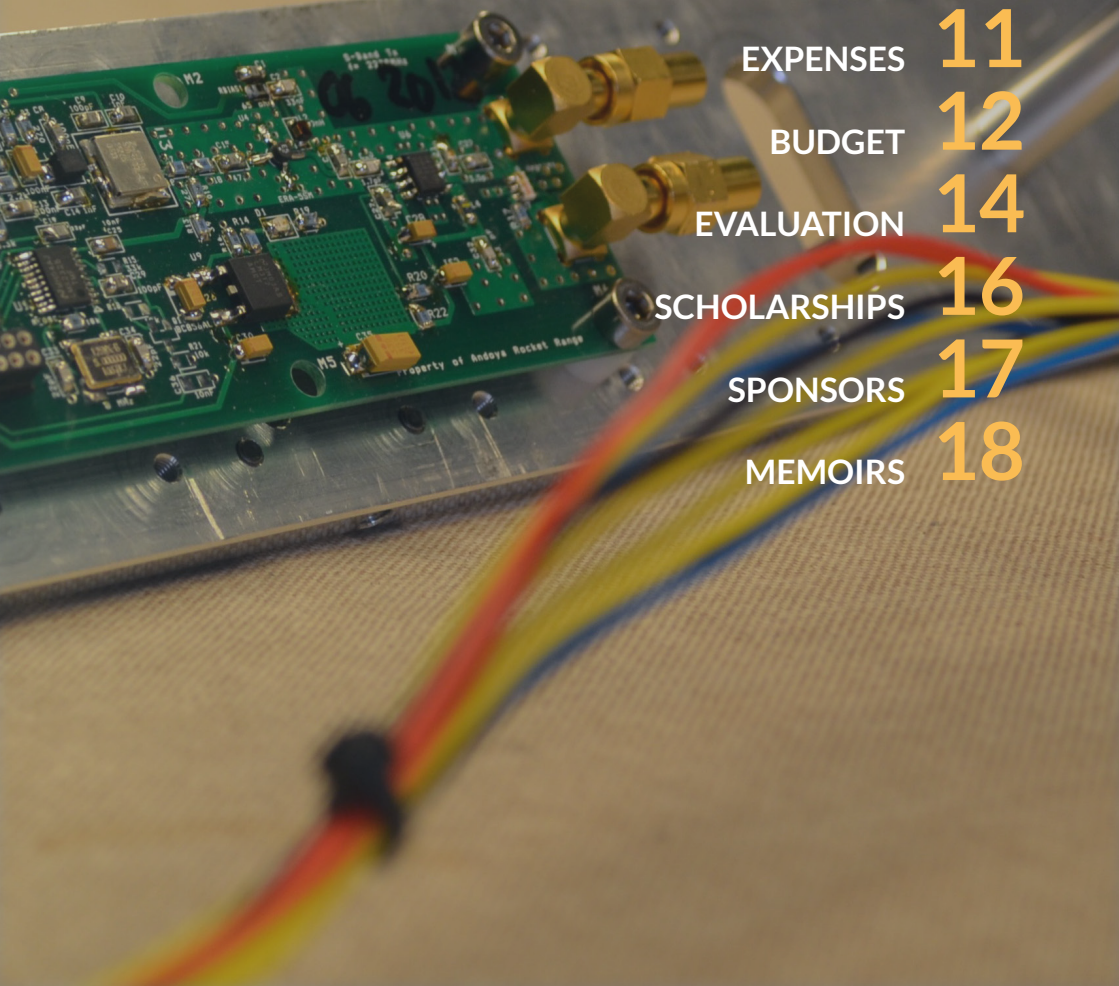
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OVERVIEW

For the first time in our 25 year history European Space Camp was hosted online in 2021. Determined to make the online version as close to the real experience as possible the team had a record number of meetings to create new course materials, packages, activities and lectures. As a result, European Space Camp as a whole was redesigned in under a year.

Decades worth of contacts were used to puzzle the online camp together. To make the content as engaging as possible we worked with Andøya Space Education and their staff to create a good schedule and formats for lectures. A pre-course was also created for the first time, making it possible for the participants to prepare themselves on the coding and physics they would face during camp. In addition, in order to recreate the rocket campaign, the team sent out 20 packages with water rockets and sensors to participants all over Europe. In the end it all came together, resulting in the first ever online European Space Camp.

With a click of a button European Space Camp 2021 started. Even though seeing 20 participants on a screen was strange, it only took minutes for the first laughs to start and for bonds to start forming. The next four days were spent introducing lecturers to the participants, coordinating group work, hosting coding workshops and having social activities in the evenings. By the end of the week, water rockets were launched and data was collected and presented by groups on the last day.

As always, saying goodbye left tears in our eyes and memories for life. I myself feel honoured to have been able to take part in this and to have worked with an incredible team of people to pull it off.

With this behind us we are looking forward to camp in 2022 knowing we can handle whatever comes our way. In addition, as the building of Andøya Spaceport now has started, we consider our work more important than ever. The Norwegian Space Sector has a bright future that requires bright minds to fill its work force. We consider European Space Camp the starting point of guiding these minds in this direction.

Lastly, I would like to give a special thanks to our sponsors and collaborators who stood for the entire financing of this year's camp. Without you the camp would not have been possible. Also a big thanks to our scholarship providers for your understanding and cooperation during these times. With your support we are looking forward to ESC 2022!

Anne Svindland Nijdam
Head of Team Space Camp



ORGANISERS

European Space Camp was first organised in 1996. It started out as a Nordic camp, but quickly evolved into an international event, with participants having represented 34 countries and 6 continents. The camp's primary purpose has always been to promote science, both as a field of study and a line of work. To achieve this we focus on three things: theory, practice and social activities. Many of our previous participants go on to study science, engineering and medicine. European Space Camp is organised by the organisation European Space Camp and Andøya Space Education in co-operation with Andøya Space and the Norwegian Space Agency.

European Space Camp

European Space Camp, formerly known as Forbundet Unge Forskere (Norwegian Association of Young Scientists), is the organisation responsible for the overall planning of the camp. European Space Camp is a non-profit organisation that works to promote interest in science among young people.



Andøya Space Education

Andøya Space Education is a subsidiary of Andøya Space. Its main purpose is to increase national recruitment to space-related subjects. Its role is becoming increasingly relevant in Norway, where the space industry is steadily growing and in need of fresh talent. Andøya Space Education initiates, develops and organises several educational courses and events for youths, students and teachers. Its main responsibility in organising European Space Camp is to handle the scientific and academic part of the camp.

Andøya Space

Andøya Space is located at Andøya in northern Norway, and is the northernmost permanent rocket range in the world with decades of experience in launching sounding rockets for atmospheric research. Andøya Space supports sounding rockets and balloon operations both at Andøya and Svalbard. The space center also has advanced facilities for ground based scientific experiments using LIDARs and radars.





TEAM SPACE CAMP

Team Space Camp in cooperation with Andøya Space Education is responsible for the overall planning of the camp and consists exclusively of past participants of ESC. By selecting previous participants we ensure steady recruitment as well as creating a team of motivated people who understand how the camp functions and how it can be further developed and improved. The entire team works together on a voluntary basis to organise each year's camp.



The Team of 2021: Inge Eide Johnsen, Tiia Tikkala, Anna Krajewski, Anne Svindland Nijdam, Gaute Holen, Lucia Carai and Anders Mørk.

The team's main responsibilities include: sourcing sponsors, managing the camp's finances, selecting high calibre participants, organising exciting social activities during the camp, maintaining our website, managing public relations, recruiting new team members and, of course, ensuring that each camp runs smoothly and is an enjoyable experience for every participant.

The members of Team Space Camp are all students of science and technology and work on European Space Camp in their spare time throughout the year. The Team gathers twice a year for workshops over a couple of days, where they prepare for the upcoming camp and share inspiration and creativity to make every camp as successful as possible.

Team Space Camp 2021 consisted of Gaute Holen (head), Anders Mørk, Anna Krajewski, Anne Svindland Nijdam, Inge Eide Johnsen, Lucia Carai and Tiia Tikkala. The team is delighted to welcome Lukass Kellijs as our new trainee for Team Space Camp 2022.



PARTICIPANTS

European Space Camp 2021 gathered 19 participants with common interests in science, space and technology from 8 countries around the world: Germany, Switzerland, Sweden, Poland, the United Kingdom, Spain, Latvia and Norway.



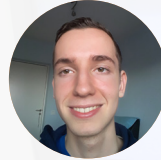
Wiebke Marie Schubert
Germany



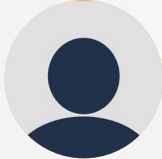
Felix Arenhövel
Germany



Jona Pfenniger
Switzerland



Eddie Profaska Dzankic
Sweden



Bartłomiej Leks
Poland



Władysław Sowul
Poland



Lorina Stroda
Germany



Isaac Hall
United Kingdom



Nuran Kobies
Spain



Ashley Tan
United Kingdom



Elizabeth Wilson
United Kingdom



Aija Monika Vainina
Latvia



Lukass Roberts Kellijs
Latvia



Nikolai Zemliansky
Norway



Irene Sandvik Qvale
Norway



Andrea Miccoli Løvaas
Norway



Ragnhild Enger
Norway



Marius A. Hegnes Daleng
Norway



Iris Matre
Norway

FINANCING

FINANCING (in NOK)	Financial Support	Other ⁽¹⁾	Total Support
Andøya Space	24 000	0	24 000
GARD AS	10 000	0	10 000
UNIS - The University Centre in Svalbard	5 000	0	0
University of Oslo	10 000	0	10 000
Team ESC ⁽²⁾	0	525 000	525 000
	0	3 500	0
SUM FINANCING	49 000	528 500	577 500

⁽¹⁾ By other support, we mean support that we receive in the form of free services or services at a reduced fee.

⁽²⁾ Typically Team Space Camp puts down approximately 3500 hours valued at NOK 150.

SPONSOR CONTRIBUTIONS FROM 2020 ⁽³⁾

Norsk Romsenter

Kongsberg

Nammo Raufoss AS

Forsvarets forskningsinstitutt (FFI)

Samfunnsutbytte / SpareBank 1 SMN

Astronomisk Ungdom

Universitetet i Stavanger

⁽³⁾ For use in 2021 due to postponement of camp.

Note: Finances look very different from normal years, as camp 2021 was held online. Given that camp was held online, scholarship organisations were not required to pay in 2021. Some payments were kept from 2020, others were postponed to 2022.

EXPENSES

EXPENSES (in NOK)	Budget 2021	Accounting 2021
Course materials	4 200	0
Balloon operation (balloon, payload, operation)	5 000	0
Rocket campaign (rocket, payload, safety notifications, operation)	181 467	38 415 ⁽¹⁾
Lodging and all meals for students, lecturers and Team	234 500	0
Travel expenses, lecturers and group leaders	10 000	0
Transportation at Andøya (students and Team)	13 500	0
External lecturers	17 500	0
Scientific assistance	15 440	0
Other expenses NAROM (unforeseen expenses, social events, insurance)	29 757	0
European Space Camp jackets	30 000	41 372
Equipment	500	0
Team expenses	5 000	1 729
Travel expenses, Team	50 000	35 668 ⁽²⁾
Office expenses (Internet connection, stationary, bank fees, Space Camp DVDs and annual reports)	3 000	2 136
Postage	1 500	2 508 ⁽³⁾
Marketing	1 000	0
Other expenses Team (including unforeseen expenses)	1 000	0
SUM EXPENSES	603 364	121 828

Given that camp was held online, expenses in 2021 look quite different.

⁽¹⁾ This is all the money spent on equipment, electronics, packages for the online version of the camp.

⁽²⁾ The team still travelled for workshops and to Andøya to prepare the online camp.

⁽³⁾ Higher postage expenses as packages were sent to participants.

BUDGET

EXPENSES

Budget 2022 (in NOK)

Course materials	4 200
Balloon operation (balloon, payload, operation)	6 000
Rocket campaign (rocket, payload, safety notifications, operation)	184 050
Lodging and all meals for students, lecturers and Team	237 300
Travel expenses, lecturers and group leaders	15 000
Transportation at Andøya (students and team)	8 500
External lecturers	17 500
Support for education activities	16 121
Other expenses Andøya Space Education (unforeseen expenses, social events, insurance, whale safari)	30 101
ESC jackets	30 000
Equipment	500
Team expenses	5 000
Travel expenses, Team	50 000
Office expenses	3 000
Postage	1 500
Marketing	1 000
Other expenses Team	1 000
SUM	610 772



European Space Camp (ESC) is a nonprofit organisation, with the aim of organising and running European Space Camp each year within budget. Any leftover funds are collected in a contingency fund and reserved for future camps in case of a shortfall in funding or unexpected extra costs. After European Space Camp 2020 had to be cancelled due to Covid-19, European Space Camp 2021 was held online due to the continuing pandemic.

This led not only to a significant change in the organisation but also the costs associated with the financing of camp. There was a reduction of expenses due to participants not staying in Andøya, but expenses of equipment and postage rose, as a bulk of the camp activities now consisted in participants manipulating electronics they received in packages. Scholarship organisations were not invoiced for their participants' online participation.

This coming period is a vital period for European Space Camp to regain its pre-pandemic momentum. With the cost of European Space Camp increasing year on year, controlling costs and protecting sponsorship revenues is of prime importance for Team Space Camp and the importance of all of the sponsors and scholarship agreements we currently have remains high. We continue to seek to further diversify sponsorship into Europe and internationally. We are extremely grateful to our current sponsors, scholarship organisations and collaborating partners. Their continual support of the work and vision of European Space Camp has been crucial to the ongoing success and growing reputation of ESC and in the current context also for its return to normality.

EVALUATION

European Space Camp 2021 was a great success, as shown by the strong positive feedback in the evaluation completed by the participants at the end of the camp. The positive feedback extended to every part of the camp, including the quality and content of lectures, the variety of social activities, and the numerous practical learning activities, such as the launch of the water rocket.

Criteria	Average Percentage Rated 'Good' & 'Excellent'
Professional Content	96
Pedagogical Presentation	88
Relevance to the Course	97

Lectures and lecturers were evaluated on the criteria of professional content, pedagogical presentation and relevance to the course, with the average percentage of 'good' and 'excellent' ratings across all lectures above 85% for every criterion.

Some comments made by participants were:

"I think Nigel had a great lecture, which was very interesting and relevant since he talked about many good possibilities and opportunities for us later on where we can work with ESA, which I definitely will be checking out."

"I really enjoyed Yngvilds lecture. It was one of my favourites because it was clearly structured, with good pictures / animations, and very engaging."

"Sophie presented a really professional lecture and her pedagogical skills were excellent! Therefore this was one of the most interesting lectures I have ever been to."

"My favorite lecture, Sophie and Rannveig gave very insightful information into starting a career in and navigating the space industry as well as just essential life advice. Amazing!"

"José gave a very interesting presentation. I loved his enthusiasm, learned new things about the atmosphere and balloons and their use in science."

Activities	Average Percentage Rated 'Good' & 'Excellent'
Opening Ceremony	88
Icebreakers	94
Virtual Camp Tour	88
GPS Quest	100
Closing	88

Despite the camp occurring online, participants continue to enjoy the informative, social, and educational activities organised for them as demonstrated by their ratings and comments:

"Thank you for showing us the Andøya Space Center - it was great to see it as we weren't able to be there in person! <3"

"It was really cool to be able to see all the different departments and installations of Andøya Space Center, and also really impressive to see it directly on camera."

"Fun ideas, I enjoyed it a lot!"

Category	Average Percentage Rated 'Good' & 'Excellent'
Precourse	87
Water Rocket	94
Team	94
General	100

Participants' assessment of the camp overall strongly endorsed ESC, again displayed through their ratings and comments:

"Space Camp is a great opportunity to meet nerdy people with the same interests. Building a rocket is really fun and it was an honour to meet the lecturers. It is also a way to get to know the space field with further opportunities. Choosing Discord, zoom and the other platform was a great choice to give us the network, the lectures, and the perspectives."

"I really enjoyed being at ESC, it was a wonderful time, I learned a lot and it was nice to meet so many people with similar interests."

"I had a lot of fun in the preparation and the launch of the water rocket. It was a great alternative to the student rocket at Andøya."

As shown by the evaluation, the overall feedback from the participants was exceptionally positive. The comments and data suggest that despite a small minority of participants having criticism of isolated aspects of the camp, practically all participants rated the camp "excellent" overall. Team Space Camp will be analysing the results from the evaluation to identify areas of improvement, making European Space Camp 2022 and beyond even greater experiences based on the success of previous camps.

SCHOLARSHIPS



Polish
Children's
Fund



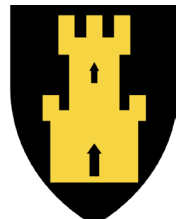
SCHWEIZER JUGEND FORSCHT
LA SCIENCE APPELLE LES JEUN
SCIENZA E GIOVENTÙ
SCIENZA E GIUVNETETGNA



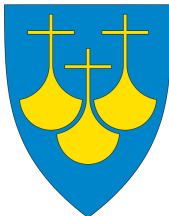
Vestland
County



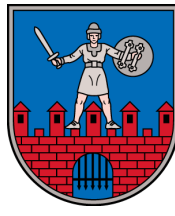
Rogaland County



Troms and Finnmark County



Møre og Romsdal
County



Cēsis Municipality



Nordland County

SPONSORS



KONGSBERG



MEMOIRS

Lukass Kellijs | Participant 2021

I remember waiting in anticipation for the start of European Space Camp 2021, partly because I had mixed up the time zones and had gotten ready an hour early. I was a little skeptical of such a camp successfully occurring online, but, as I can safely say now, it was amazing! And I'm incredibly thankful to Team Space Camp.

It was my first time participating in such an international camp, and I even felt a little overwhelmed talking with so many unique participants from all over the world.

Still, meeting and interacting with all these amazing people was most definitely my favorite part of the camp.



Me sharing my experience after the camp



Searching for a rocket launch site in Riga

In the first meeting, we had the official opening where I first saw the contagious smiles of Team Space Camp. Next, in our first “ice-breaking” activity Team Space Camp had made a virtual copy of the Andøya Space complex where we could open a video meeting and chat about anything and everything.

My second most favorite part was the lectures. Just the same day, we had an insightful presentation from Nigel Savage who coordinates all the aspects of ESA Academy programs that involve hands-on gravity-related research, and learned how to start a career at the European Space Agency. Not to

mention many other fascinating lectures, where we learned about rocket physics, climate change monitoring from space, space safety, Mars exploration, scientific air balloons, and even got a tour of the Andøya Space Center from the people working there.

In the middle of all these lectures, we also had our main camp task – to launch our water rocket, which Team Space camp had sent us before the camp, collect flight data, separate into teams, and analyze the data to create a scientific study about our own chosen topic.

Fortunately, I performed the launch together with another participant from my country – a good friend of mine - Monika.

We had great fun searching for a suitable launch site, trying out different bicycle pumps and different water pressures, until, through trial and error, we finally unlocked the secret combination to a great launch. Then, together with our other team member Lizzie, we presented our detailed study about rocket apogee detection methods using data obtained during the launches.

European Space Camp 2021 gave me the ability to meet brilliant and amazing people from all around the world, who all share a love for Space, while obtaining an incredible amount of knowledge and practical skills that I'm certain will be useful for my further journey in the field of space science. It's an experience that I am very thankful for and which I will never forget.



Me and Monika with our water rocket

