



# ANNUAL REPORT EUROPEAN SPACE CAMP 2014



# Content

03	Overview	12	Evaluation
05	Organisers	14	Scholarships
06	Team Space Camp	15	Sponsors
08	Financing 2014	16	Memoirs
09	Expenses 2014	20	Participants 2014
10	Budget 2015	22	Press clippings

# Overview

"The best week of my life" was the general consensus amongst participants after the closing ceremony of European Space Camp 2014.

The newly opened Spaceship Aurora was an exciting addition to both Andøya Space Center and to the European Space Camp programme. For the first time, participants had the opportunity to navigate a virtual trip to space and conduct research in a team, making the European Space Camp experience even more special than in previous years.

We were also delighted to welcome Charles Simonyi, a two-time visitor to the International Space Station, to European Space Camp this year. Participants were enthralled by his photos and anecdotes, and the chance to ask questions about space and his preparations was an invaluable one.

It takes a huge amount of effort from a lot of people, both volunteers and professionals, to ensure the successful running of ESC and we are extremely grateful to our sponsors and scholarship organisations, who have all contributed in making ESC 2014 the wonderful success that it has been.

We are very fortunate to have the Norwegian Centre for Space-related Education (NAROM) as a partner - they have the necessary expertise to ensure that the academic level of European Space Camp remains incredibly high, and their experience in organising camps and other educational activities has proved invaluable.

Meanwhile, over one hundred and fifty applications for just four international scholarship seats at European Space Camp 2014 reiterates the excellent health of the camp and its global reach. Also, it was a pleasure to welcome Evelyn Livermore from Kongsberg Gruppen to conduct a guest lecture at ESC. High-profile sponsors such as Kongsberg Gruppen demonstrate the excellent reputation and brand identity of ESC.

European Space Camp 2014 was a truly memorable camp for a variety of reasons. It was a pleasure to be involved in a camp with such a fantastic group of participants and to know that we have encouraged another generation of young scientists to pursue space-related activities in the future.



FRIDA VESTNES  
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 30 countries and 4 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 the Norwegian Centre for Space-related Education in co-operation with Andøya Space Center and the Norwegian Space Centre.

## 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.



**EUROPEAN  
SPACE CAMP**



**NAROM**



**ANDØYA SPACE CENTER**

## National Centre for Space-related Education (NAROM)

NAROM is a subsidiary of Andøya Space Center. 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. NAROM 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 Center (ASC)

Andøya Space Center 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. ASC 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 is responsible for the overall planning of the camp and consists exclusively of past participants at 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'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 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 2014 consisted of Frida Vestnes (head), Maria Råken, Rohan Sheth, Christoffer Vikebø Nesse, Didrik Sten Ingebrigtsen, Ingrid Marie Kjelseth and Rannveig Marie Færgestad. The team is delighted to welcome Eoghan Gilleran as our new trainee for Team Space Camp 2015.



*"The sky is not the limit,  
it's where the fun begins!"*



# Financing 2014

<b>FINANCING (in NOK)</b>	<b>Financial Support</b>	<b>Other <sup>(1)</sup></b>	<b>Total Support</b>
Andøy municipality	5 000	0	5 000
Andøya Space Center (ASC)	25 000	0	25 000
ASC Rocket Campaign	0	24 287	24 287
Nammo Raufoss AS	15 000	0	15 000
Kongsberg Surveillance	50 000	0	50 000
Norwegian Space Centre	90 000	0	90 000
NTNU	4 000	0	4 000
Scholarship fees	230 000	0	230 000
STM	5 000	0	5 000
NAROM	0	250 000	250 000
Team ESC	0	525 000 <sup>(2)</sup>	525 000
Universitetet i Tromsø (UiT)	10 000	0	10 000
Fugro Sattelite Positioning AS	15 000	0	15 000
University of Svalbard	10 000	0	10 000
Tekna	10 000	0	10 000
Nordea Bank AS	5 000	0	5 000
Institute of Physics, University of Oslo	10 000	0	10 000
Forsvarets forskningsinstitutt (FFI)	10 000	0	10 000
Bank interests	4 575	0	4 575
<b>SUM FINANCING</b>	<b>498 575</b>	<b>775 000</b>	<b>1 297 862</b>

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

<sup>(2)</sup> Team European Space Camp contributed with approximately 3500 hours valued at NOK 150 per hour.

# Expenses 2014

<b>EXPENCES (in NOK)</b>	<b>Budget 2014</b>	<b>Accounting 2014</b>
Course materials	3 800	3 750
Balloon operation	5 225	5 225
Rocket campaign	98 213	98 213
Lodging and all meals for students, lecturers and Team	223 680	207 670
Travel expenses, lecturers and group leaders	14 000	12 350
Transportation at Andøya (students and Team)	10 000	7 610
External lectures	12 000	12 000
Scientific assistance	13 305	11 806
Other expenses NAROM <sup>(3)</sup>	25 485	25 096
Puffin safari	12 000	12 000
ESC jackets	17 000	12 035
Equipment	1 600	1 200
Team expenses	6 000	6 091
Travel expenses, Team	42 000	32 309
Office expenses (1)	10 000	11 007
Postage	3 000	2 383
Other expenses Team (including unforeseen expenses)	1 500	0
Transfer to contingency fund	0	37 830
<b>SUM</b>	<b>498 808</b>	<b>498 575</b>

<sup>(3)</sup> Unforeseen expenses, events and insurance

# Budget 2015

<b>EXPENCES</b>	<b>Budget 2015 (in NOK)</b>
Course materials	3 700
Balloon operation	5 338
Rocket campaign	125 950
Lodging and all meals for students, lecturers and Team	203 840
Travel expenses, lecturers and group leaders	14 000
Transportation at Andøya (students and Team)	10 000
External lectures	12 000
Scientific assistance	13 124
Other expenses NAROM <sup>(4)</sup>	46 641
Puffin safari	12 000
ESC jackets	17 000
Equipment	1 600
Team expenses	6 200
Travel expenses, Team	42 000
Office expenses (1)	11 200
Postage	3 000
Other expenses Team (including unforeseen expenses)	1 500
<b>SUM</b>	<b>529 093</b>

<sup>(4)</sup> Unforeseen expenses, events and insurance

European Space Camp (ESC) is a not-for-profit organization, with the aim of organizing and running European Space Camp each year within budget, with any leftover funds put into a contingency fund to be used for future camps in case of a shortfall in funding or unexpected extra costs.

European Space Camp 2014 was successfully conducted as per the budget, with virtually all costs in line with expectations. In addition, we were fortunate enough to be able to add NOK 37 830 to the contingency fund for future camps.

With the cost of European Space Camp increasing year on year, controlling costs and protecting sponsorship revenues were both of prime importance for European Space Camp 2014.

When European Space Camp was held for the very first time, during the summer of 1996, the camp was one of several projects administrated by the Norwegian Association of Young Scientists (FUF).

A few years back, the ESC was the sole remaining active project of FUF. As a result, the FUF committee decided to downscale its operations, changing its name in the process to reflect this. Now known only as the ESC, they amalgamated the remaining funds and assets, in accordance with regulations, to support the newly redefined organisation. This will be kept as a contingency in case of future lack of funding.

New additions to our sponsors were Tekna and Nordea who were invaluable, helping us overcome our higher costs. We are also fortunate enough to have received further support from the Kongsberg Group, as the Kongsberg Space and Surveillance division also provided us with funding this year.

Looking forward to ESC 2015, we are seeking 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 burgeoning reputation of ESC.

# Evaluation

European Space Camp 2014 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 activities and the stay at Andøya Space Center, including the accommodation, food and location.

Criteria	Average Percentage Rated 'Good' & 'Excellent'
Professional Content	94
Pedagogical Presentation	87
Relevance to the Course	89

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:

*"A very academically beneficial presentation! It was an immense pleasure to have them!"*

*"This was an extremely well taught lecture and was very interesting. The lecturer was very engaging with the audience and it was genuinely really fun to be taught by them"*

*"I found this series of presentations to be extremely helpful and illuminating. The level of content was accessible yet still interesting, and I really enjoyed the lectures."*

Activities	Average Percentage Rated 'Good' & 'Excellent'
Opening Ceremony	97
ALOMAR Tour	80
Sea Safari	84
GPS Quest	100
Engineering Challenges	93

Some comments made by participants were:

*"One of the best moments of the camp" (Creating a dance routine)*

*"Loved it!" (Swimming in the Arctic Ocean)*

*"A great practical activity applying our rocket knowledge to a basic model." (Paper Rocket Building)*

*"The eagles and variety of wildlife was incredible." ( Sea Safari)*

*"This was the best night during the week" (ESC Show)*

Category	Average Percentage Rated 'Good' & 'Excellent'
Location of camp	100
Accommodation	92
Team	94
General	100

Some comments made by participants were:

*"ASC is the best place to locate ESC in my opinion"*

*"Feeling that you are constantly expanding the horizon of your understanding is a super feeling!"*

*"The academic level was perfect! I love how we all managed to learn more even though we had very different starting grounds"*

*"I have really loved every day of the space camp. It has definitely been one of the best weeks of my life! I have gained so much knowledge and met the coolest and nicest people of all Europe! The only negative thing I have to say would be that it all went so fast..."*

*"Best week of my life"*

As shown by the evaluation, the overall feedback from the participants was extremely positive. The comments and data suggest that despite a small minority of participants having criticism of isolated aspects of the camp, virtually 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 2015 and beyond even greater experiences based on the success of previous camps.

# Scholarships

We are extremely grateful to all our scholarship organisations for their continued support of European Space Camp. Between them they contribute approximately NOK 230,000, which is vital for the continued success of the camp.



European Space Agency



Gymnasium Carolinum



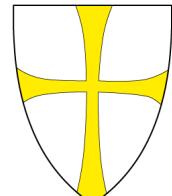
Polish Children's Fund



Procentia



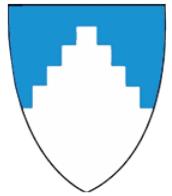
Hordaland County



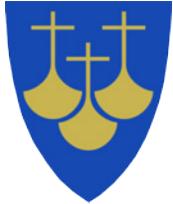
Nord-Trøndelag County



Nordland County



Akershus County



Møre og Romsdal County



Sør-Trøndelag County



Rogaland County



Troms County



Norwegian University of Science and Technology

NTNU



SCHWEIZER JUGEND FORSCHT  
Schweizer Jugend Forscht

# Sponsors

We would like to thank the following sponsors for supporting us financially in 2014: Norwegian Space Centre, Kongsberg Space and Surveillance, Nammo, Fugro, The University Centre in Svalbard, University of Tromsø, The Norwegian University of Science and Technology (NTNU), University of Oslo, STM, Tekna, Forsvarets forskningsinstitutt, Nordea and Andøy municipality.



**Norsk Romcenter**  
NORWEGIAN SPACE CENTRE



**KONGSBERG**



**NAMMO**  
NTNU  
Norwegian University of Science and Technology



**FFI** Forsvarets  
forskningsinstitutt  
Norwegian Defence Research Establishment

**Nordea**

# Memoirs from a participant

EOGHAN GILLERAN | ESC PARTICIPANT 2014

A week at European Space Camp is spent on top of the world, both literally and emotionally. 25 young adults from around the globe, united by our passion for science and space, were gathered among the stunning landscape of the northwest Norwegian coast. After a week of superb lectures from some of Europe's top scientists, working on and launching our own student rocket, and having an absolute blast we returned home, tearful to depart but inspired by what everyone agreed had been the best week in our lives.

I arrived in Oslo Airport both nervous and excited. Before we had even reached Andøya friendships were already growing between the participants. Despite being jetlagged we could not wait to see what was in store for the

week. We were met in Andenes by the enthusiastic and smiling Team Space Camp before being whisked away to what I now believe is one of my favourite locations on the entire planet, the Andøya Space Centre.

We spent the afternoon playing volleyball surrounded by the most amazing scenery while the remainder of the participants arrived. Our curiosity got the better of some of us as we tested how cold the sea really was with what turned out to be a very, very quick swim. We played some very entertaining name games in order to break the ice, which was not too difficult to do considering how unbelievably close the whole group had already become. We finished the evening off with the engineering challenge of returning an egg safely to earth. Some eggnauts



were sacrificed but by now, with our bellies full of pizza and our heads full of hopes for the week, we were ready to take on whatever was thrown at us.

We started the next morning with some outdoor exercise to help wake us up. After the official opening by a representative from the Norwegian parliament, we learned some more about the camp and the space centre's history. During lunch we spotted a helicopter after landing, leading to rumours, secrets and guesswork as to who might have been on board. We were all astounded when we retuned to the lecture theatre to find Charles Simonyi, once head of Microsoft's application software group that developed Microsoft Office and two-time space tourist waiting to address us. He spoke about many aspects of his flights, the training, Soyuz flights and time aboard the International Space Station. He encouraged everyone who could to take a parabolic flight. Needless to say we were all star struck.

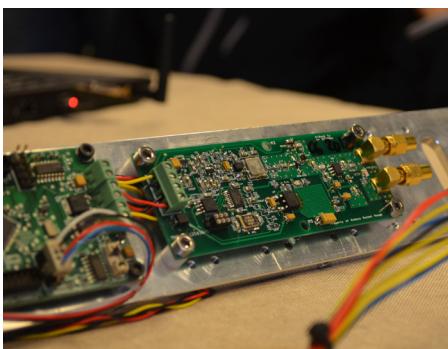
After some more lectures on Rocketry, Aerodynamics and Stability, we set off on our mountain walk to the ALOMAR observatory at the top. Thanks to the near perfect weather we had an astounding view for miles around us. We were then treated to a tour of the observatory from its resident researchers before returning back down the mountain.

From there out we set into somewhat of a routine, if the best week of your life can be described as such. Activities each morning and breakfast, lunch and dinner were all had with a spectacular view of the Norwegian Sea.



We were split up into five different groups that each worked on different aspects of the rocket launch; Design, Instrumentation, Assembly, Telemetry and Physics. I worked in the Rocket System Design Group where we created a computer design of the rocket, simulated its flight under certain conditions and predicted how it would behave when we launched it.

During the week we were lucky enough to receive lectures on topics such as the Big Bang, the worlds energy situation, humanity's exploration of mars, the Aurora, weather balloons, Norwegian



space activities and solar weather. Our saga of eggnaut destruction also continued with new engineering challenges such as transporting a subject from two metres away over an obstacle. It wasn't all work and no play though, we had a GPS hunt, regular swims in the sea, which got more adventurous and enjoyable as they progressed, model rocket building, and a sea safari, which was unforgettable.

The biggest day was of course launch day. Each group gave pre-launch presentations on their work and calculations. We were then given a run through of normal launch operations; this was when the adrenaline started. Those who had positions during launch then took their posts and the others assembled at the observation site. I was pad-supervisor during launch, which entailed overseeing the rocket's transportation to the launch pad, installation, and finally the literal pushing of the big red button to launch the rocket. The last part was done from behind a two metre thick concrete wall. Feeling rather like the Wile E. Coyote I monitored the countdown clock, my heart rate increasing, waiting until the final second to ignite the motor sitting underneath the payload some of us had worked all week on.

The launch was a great success, despite a stray fishing vessel causing a minor delay our payload rocketed skywards with a roar that made us all proud. Afterwards we analysed the data the telemetry team had received back from the rockets payload and compared it to our original predictions. From this we calculated the height it had achieved, its rate of spin, etc.

During one of our group work sessions the Norwegians took it upon themselves to explain "Koselig" to me. The translation of this word to English caused much debating and discussion. Eventually we settled on "The feeling of cosiness and warmth and general happiness from being with people and friends. It's like Christmas but you can have it in summer, it's like summer evenings on the beach with blankets on your knees or hot chocolate in the mountains. It's like cozy but it's not cozy, it's the warmth deep down inside." The Norwegians thought this was hilarious and it caused lots of laughing. Due to the fact the ESC is practically the epitome of koseliness we felt obliged to christen our rocket 'The Koselig'.

Using all the superlatives and cheesy or clichéd phrases in the world probably still wouldn't capture how brilliant ESC is. All of the lectures, engineering challenges and group work have given me a newfound passion for maths and physics and inspired me to pursue my third level studies in the aerospace engineering area. Many other participants also plan



on pursuing areas of engineering and physics with interests kindled at ESC. Added to my passion for science I have also gained a taste for Brown Cheese, and learned never to microwave it under disapproving Norwegian eyes.

ESC is a once in a lifetime adventure; the team and participants are bonded concretely together through an extreme passion for science and the sticky mess that is the result of microwaving Brown Cheese. I will never forget ESC. I would like to express my sincere thanks to all involved for such a fantastic week, spent on top of the world.



# Participants 2014

European Space Camp 2014 gathered 25 participants with common interests in science, space and technology from 8 countries around the world: Germany, Poland, Norway, India, Ireland, United Kingdom, Switzerland and Romania.



Tejaswar Thiagarajan  
Norway      Andreas Ferstad  
Norway

Elsa Tschopp  
Switzerland

Camilla Huke  
Norway

Anna L. Rekdal  
Norway



# Press clippings

European Space Camp was widely covered in the Norwegian media, with many participants eagerly sharing their experiences with local newspapers. European Space Camp was also covered by NRK Radio Kveldsåpent (30.7.2014): <http://radio.nrk.no/serie/kveldsapent/DMPA03015014/30-07-2014>



## Braker løs fredag

ANDØY: Stortingsrepresentant Sivert Bjørnstad besøker Andoya Space Center for å føretak åpningen av European Space Camp 2014 fredag morgen.

Bladet Vesterålen(29.7.14): <http://www.blv.no/lokalsider/andoy/article7500563.ece>



Sakaal Times(Pune, India), 30.7.2014



## - Raketter har alltid fascinert meg

**RÝPUSL** Jon Kristian Rakstang (18) er en av de få utvalgte som får delta på European Space Camp på Andøya.

**RÝPUSL** Jon Kristian Rakstang (18) er en av de få utvalgte som får delta på European Space Camp. Kun 24 personer fra Europa får delta.

27.AUGUST 2014 AV KETIL KRISTWANSEN KATEGORI: BYAVISA KULUSU STIKKORD: EUROPEAN SPACE CAMP FOKUS RAKETTER SPACE CAMP

Byavisa(7.8.14): <http://byavisa.no/2014/08/07/raketter-har-alltid-fascinert-meg/>



## Til Andøya for å lage rakett

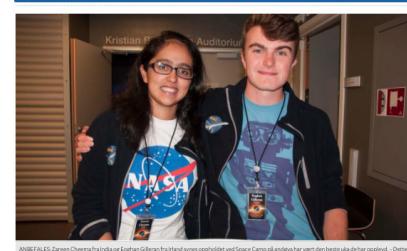
Bergens Tidende (2.7.2014): <http://www.bt.no/nyheter/lokalt/Til-Andoya-for-a-lage-rakett-3149732.html>



## Om tre uker reiser Andreas på romfartsleir

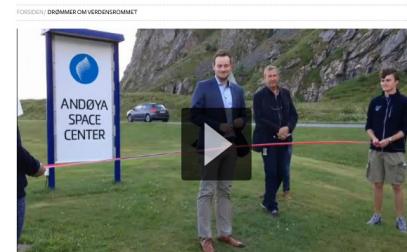
Sammen med 20 andre smarte hoder skal Andreas Opsahl Ferstad (16) fra Ås bygge raketts på Andøya.

Østlandets Blad (14.7.14): <http://www.oblad.no/nyheter/om-tre-uker-reiser-andreas-pa-romfartsleir-1.8506185>



## Super camp på Andenes

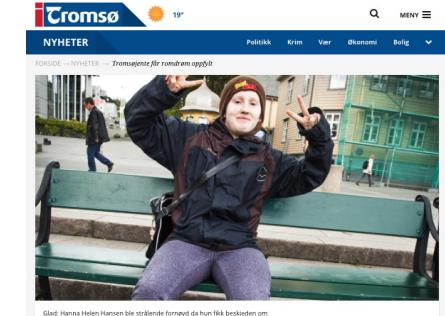
Andøyposten (6.8.2014): <http://www.vol.no/andøy-posten/article9993041.ece>



## Drømmer om verdensrommet

Egham Gilleran fra Irland og Zareen Cheema fra India drømmer begge om å bli astronautter. Nå drør de på Space Camp ved Andøya Space Center.

Andøyposten(1.8.2014): <http://www.vol.no/andøy-posten/article9978238.ece>



## Tromsøjente får romdrøm oppfylt

iTromsø(4.7.14): <http://www.itromsø.no/nyheter/article9886960.ece>



## Meråkerbygg med på "Space Camp"

torsdag, 01 juli 2014 07:56 Skrevet av Nettredaksjonen



Stjørdals-Nytt(1.7.14): <http://www.s-n.no/index.php/meraker/item/6533-merakerbygg-med-pa-space-camp>

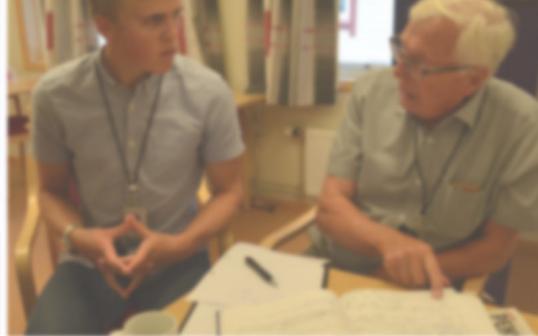


## Solvor skal bygge rakett

Sine Marie Larsen

Publisert 06.07.2014 kl 15:44 Oppdatert 06.07.2014 kl 15:44

Stjørdals Blad (6.7.14): <http://www.bladet.no/nyheter/article7458502.ece>



Designed by Rannveig Marie Færgest

Concept Art by Maria Råken

© Team Space Camp 2014