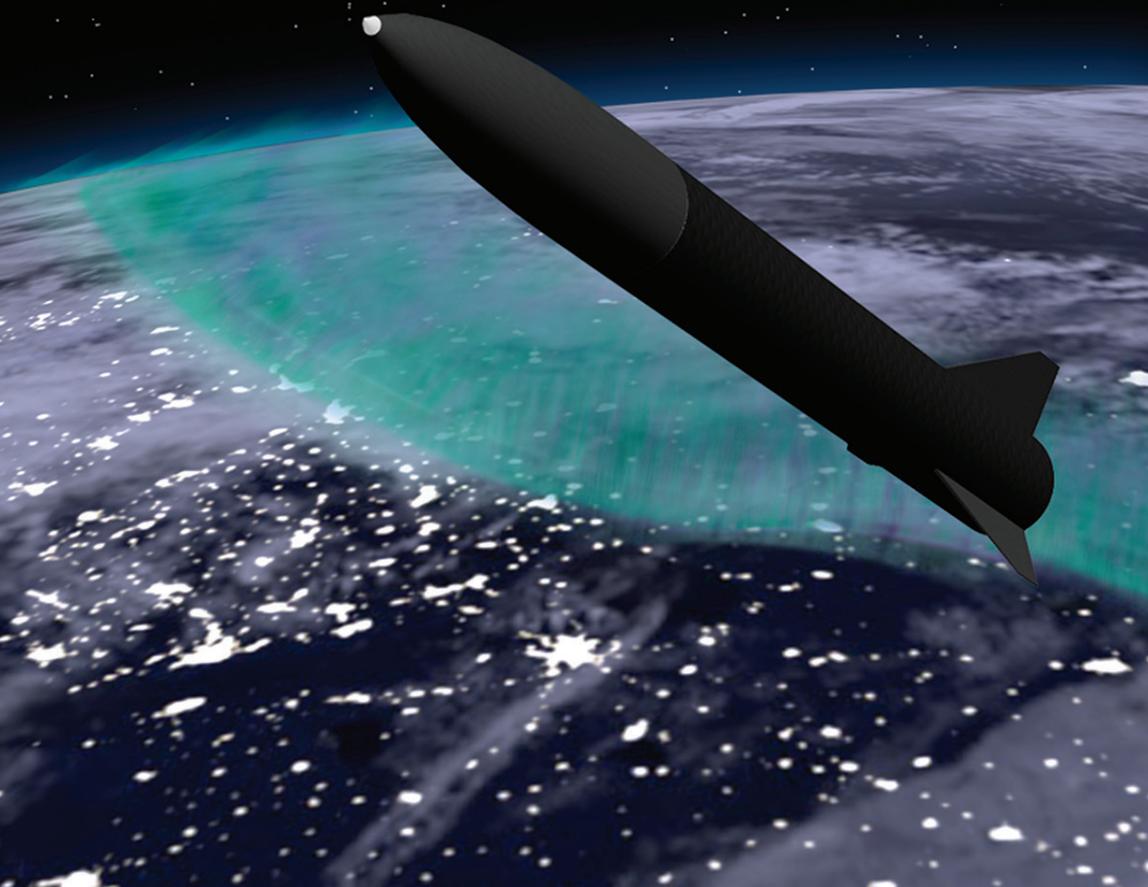


EUROPEAN SPACE CAMP ANNUAL REPORT 2013



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OVERVIEW

With more applications than ever before and greater newspaper coverage than in previous years, European Space Camp 2013 demonstrated the growth in reputation of ESC, whilst recognising its success in encouraging young students to pursue science, technology and engineering subjects at university.

This year's programme differed from that of previous years due to a move from our usual accommodation at the rocket range to Skarsteinsdalen, with a large-scale rocket campaign being held simultaneously at ARR. Despite some disruption to the usual schedule, it meant that the participants got to watch the exciting launch of WADIS-1.

European Space Camp continues to grow outside of Norway, with two new international scholarship agreements signed, and a Swiss textbook manufacturer printing 200,000 textbooks containing a page about ESC in a section about space. Looking forward, we hope that the experience gained from this year's camp will stand us in good stead for ESC 2014.

In addition, the opening of 'Spaceship Aurora' at the rocket range in time for ESC 2014 is sure to be an exciting addition to the programme, providing participants with the experience of boarding a virtual spaceship and taking control of a virtual mission into outer space.

It takes a huge amount of effort from a lot of people, both volunteers and professionals, to ensure the successful running of ESC. 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 ESC remains incredibly high, and their experience in organising camps has proved invaluable. We are also extremely grateful to our sponsors and scholarship organisations, who have all contributed in making ESC 2013 the wonderful success that it has been.



FRIDA VESTNES

Head of Team Space Camp



ORGANISERS

European Space Camp was first organised in 1996. It started out as a Nordic camp, but has quickly evolved into an international event, with participants having represented 24 countries and 4 continents. The camp's main 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. Our alumni record shows that many of our previous participants go on to study science, engineering and medicine. European Space Camp is organised by the Norwegian Association of Young Scientists and the Norwegian Centre for Space-related Education in co-operation with Andøya Rocket Range and the Norwegian Space Centre.

Andøya Rocket Range

Andøya Rocket Range is a non-military rocket range with decades of experience in launching sounding rockets for atmospheric research. The range also has advanced facilities for ground-based experiments using LIDARs and radars.



National Centre for Space-related Education (NAROM)

NAROM is a subsidiary of Andøya Rocket Range. 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 organises several 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.

Norwegian Association of Young Scientists

The Norwegian Association of Young Scientists (Forbundet Unge Forskere) is a non-profit organisation that works to promote an interest for science among young people. The association currently organises solely European Space Camp, but has previously organised other camps like CyberCamp and BioMedCamp.



TEAM SPACE CAMP

Team Space Camp 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. 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, maintaining our website, recruiting new team members and, of course, ensuring that each camp is an enjoyable and memorable experience for every participant.

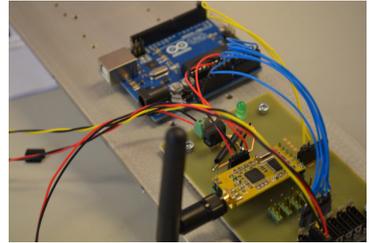
Team Space Camp 2013 consisted of Frida Vestnes (head), Kjetil Aasen, Maria Råken, Rohan Sheth, Christoffer Vikebø Nesse and Didrik Sten Ingebrigtsen. The team is delighted to welcome Rannveig Marie Fergestad and Ingrid Marie Kjelseth as our new trainees for Team Space Camp 2014.

All of the team members work on European Space Camp in their spare time. Two times a year, the Team gathers for workshops over a couple of days, where they discuss and share inspiration and creativity to make every camp the best one there is.

***”The sky is not the limit,
it’s where the fun begins!”***



“I think it was a great camp, both socially and educationally. One of the best weeks of my life.”



“Amazing landscape, professional staff, great learning environment.”

FINANCING 2013

FINANCING (in NOK)	Financial support	Other support⁽¹⁾	Total support
Andøy municipality	5 000	0	5 000
Andøya Rocket Range (ARR)	30 000	0	30 000
ARR Rocket campaign	24 287	0	24 287
Fugro Seastar AS	15 000	0	15 000
Høgskolen i Narvik	5 000	0	5 000
Telenor Satellite Service	10 000	0	10 000
Nammo Raufoss AS	15 000	0	15 000
Norspace	5 000	0	5 000
FUF	0	525 000 ⁽²⁾	525 000
NAROM	0	250 000	250 000
Kongsberg Spacetec	10 000	0	10 000
Norwegian Space Centre	90 000	0	90 000
NTNU	4 000	0	4 000
Scholarship fees	234 054	0	234 054
Forsvarets forskningsinstitutt	10 000	0	10 000
STM	5 000	0	5 000
Balmer und Klett	4 503	0	4 503
University of Svalbard	10 000	0	10 000
University of Tromsø	10 000	0	10 000
University of Oslo	10 000	0	10 000
Bank interests	1 121	0	1 121
SUM FINANCING	497 965	813 147	1 311 112

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

(2) The Norwegian Association of Young Scientists contributed approximately 3500 hours valued at NOK 150 per hour

EXPENSES 2013

EXPENSES (in NOK)	Budget 2013	Accounting 2013
Course materials	3 700	3 700
Balloon operation	4 880	4 880
Rocket campaign	110 300	111 820
Lodging and all meals for students, lecturers and Team	182 080	180 615
Travel expenses, lecturers and group leaders	11 000	7 564
Transportation at Andøya (students and Team)	15 000	21 366
External lectures	0	6500
Scientific assistance	10 910	10 861
Other expenses NAROM (unforeseen expenses, events, insurance)	29 923	29 232
Puffin safari	18 000	11 000
European Space Camp jackets	17 000	27 839
Equipment	1 500	1 560
Team expenses	6 000	5 769
Travel expenses, Team	42 000	40 756
Office expenses ⁽¹⁾	10 000	7 094
Postage	3 000	1 946
Other expenses Team (including unforeseen expenses)	1 500	0
Transfer to contingency fund	0	25 359
SUM	466 793	497 965

(1) Stationery, bank fees, Space Camp DVDs and annual reports

BUDGET 2014

EXPENSES (in NOK)	Budget 2014
Course materials	3700
Balloon operation	5 225
Rocket campaign	122 500
Lodging and all meals for students, lecturers and Team	201 120
Travel expenses, lecturers and group leaders	5000
Transportation at Andøya(students and Team)	20 000
External lectures	6000
Scientific assistance	11 870
Other expenses NAROM (unforeseen expenses, events, insurance)	37 752
Puffin safari	12 000
European Space Camp jackets	17 000
Equipment	1 600
Team expenses	6 000
Travel expenses, Team	42 000
Office expenses ⁽¹⁾	10 000
Postage	3 000
Other expenses Team (including unforeseen expenses)	1 500
Transfer to contingency fund	
SUM	506 267

Norwegian Association of Young Scientists (FUF) is a not-for-profit organisation, with the aim of organising 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 2013 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 25,359 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 2013. Major cost additions to European Space Camp 2013 compared to previous camps

were the increased cost of transportation (due to a switch in accommodation from the Rocket Range to Skarsteinsdalen) and the increased rocket campaign cost due to the use of a new rocket.

New additions to our sponsors were Telenor Satellite Broadcasting and Forsvarets Forskningsinstitutt (Norwegian Defence Research Establishment), who were invaluable in helping us overcome our higher costs.

Looking forward to ESC 2014, we are looking to further diversify sponsorship into Europe and internationally. We are extremely grateful for 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 2013 was a great success, as demonstrated by the strong positive feedback received from participants. 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 Skarsteinsdalen, including the accommodation, food and location.

Criteria	Average Percentage Rated 'Good' & 'Excellent'
Professional Content	92.0
Pedagogical Presentation	87.7
Relevance to the Course	86.2

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:

"It was an honour to receive lectures from such an experienced scientist"
"One of the best and funniest lectures I have ever been to. It was so much fun, and I learned so many new things"
"Once again, the high level of the lecture's quality was mind-blowing"
"Absolutely astonishing lecture with tonnes of valuable information"
"Extremely interesting, and of course, a big honour when someone this well-known comes to lecture us!"

Activities	Average Percentage Rated 'Good' & 'Excellent'
Opening Ceremony	73.9
ALOMAR Tour	91.3
Puffin Safari	82.6
GPS Quest	91.3
Engineering Challenge	91.3
Paper Rocket Building	95.7

Some comments made by participants were:

“Excellent trip, and a lot of fun” (LIDAR Observatory)
“It was a different and unique experience to be in a LIDAR observatory”
“This was really, really fun! The setting, the tasks and everything” (GPS)
“I really enjoyed the ESC show!”
“Once-in-a-lifetime experience” (Swimming under the midnight sun)
“Once again, brilliant challenge that was really good for getting our teamwork skills up to par” (Engineering Challenge)

Category	Average Percentage Rated ‘Good’ & ‘Excellent’
Location of camp	91.3
Accommodation	87.0
Team	95.7
General	91.3

Some comments made by participants were:

“It was amazing to experience a real rocket range and be able to use such fantastic facilities!”
“We had an amazing group leader, and he gave us the right amount of help and also the freedom to figure things out for ourselves. He was very passionate, and you could tell that he knew what he was talking about”
“Everyone was a pleasure to be acquainted with! Everyone was so unique and fun in their own way”
“It has been the greatest adventure of my life so far. Thank you for that”

Overall the feedback was extremely positive. The comments suggest that despite a small minority of participants having criticisms of some isolated aspects of the camp, virtually all participants rated the camp “excellent” overall. The team will be analysing the results of the camp evaluation further and identifying points of improvement for European Space Camp 2014 and beyond, so that each camp can continue to improve 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



NTNU



SCHWEIZER JUGEND FORSCHT

Schweizer Jugend Forscht



Hordaland County



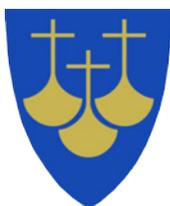
Procentia



Schulzentrum
Kühlungsborn



Akershus County



Møre og Romsdal
County



Sør-Trøndelag County



Rogaland County



Troms County



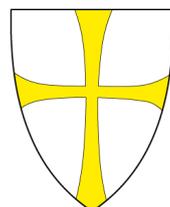
Gymnasium
Carolinum



Cosmonautics
Federation of Russia



Polish children's
fund



Nord-Trøndelag
County

SPONSORS

We would like to thank the following sponsors for supporting us financially in 2013: Norwegian Space Centre, STM, Kongsberg Spacetec, Kongsberg Norspace, Fugro, Nammo, Høgskolen i Narvik, The University Centre in Svalbard, University of Tromsø, The Norwegian University of Science and Technology (NTNU), University of Oslo, Telenor Satellite broadcasting, Forsvarets forskningsinstitutt, and Andøy municipality.



KONGSBERG



MEMOIRS FROM A PARTICIPANT

INGRID MARIE KJELSETH | ESC PARTICIPANT 2013

When you think of a space camp, the first thing that comes to your mind is probably a bunch of smart teenagers, and a lot of facts to remember. Relax, I will not take you through them all. However, there is one fact that I would like to highlight; the fact that European Space Camp 2013 was a week full of excitement that neither I nor any of the other participants are going to forget. We got to live out what every other geeky teenager dreams of – to be a rocket scientist. And we were presented with help and knowledge from the “crème de la crème” of Europe’s lecturers. Did I mention that it was all set under the stunning midnight sun, located amidst the beautiful scenery of Northern Norway? This had to be perfect.

Being fortunate enough to live only a few islands away, I was driven to the camp. On my way there I was extremely nervous and excited. I did not know what to expect at all. I was worried that everyone would be super geniuses taken straight out of The Big Bang Theory. Luckily they all seemed a little bit more down to earth than that. The first evening started out with some great icebreaker games, and I am proud to say that my group won the marshmallow-spaghetti tower construction challenge.

As the evening came to an end, I felt a bit more comfortable with these clever brains, and I could already tell that it would be a spectacular week. As the next day began, we all gathered outside for daily morning gym before

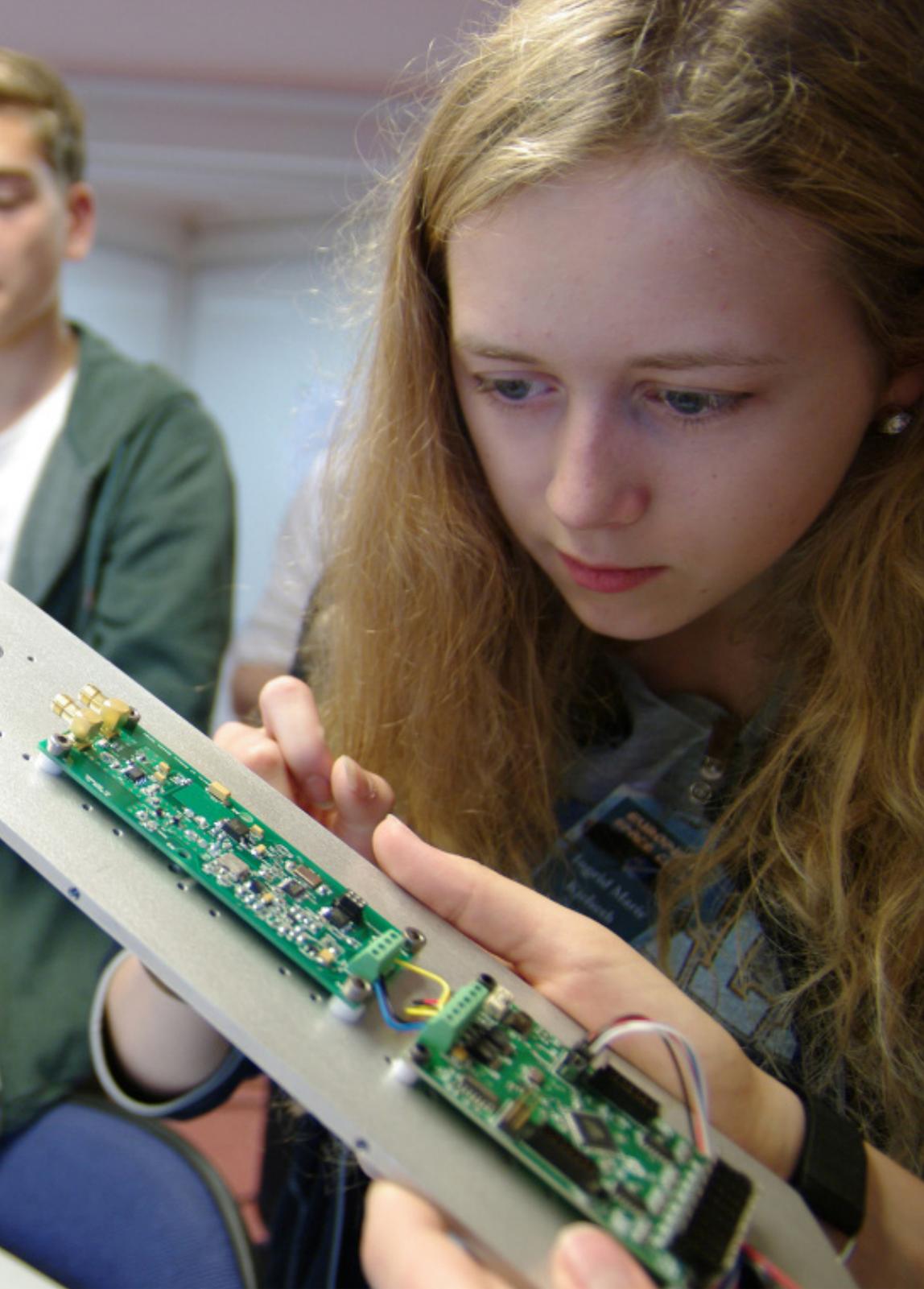


our first official day at camp. After the official opening speech, we were lectured by Jan-Erik Rønningen on rockets and their aerodynamics. The following day we were faced with the hardest challenge of them all – choosing which rocket group to be on. It was difficult choosing between five very different but equally exciting groups, however, I managed to eventually narrow it down to group C, the Payload Assembly Group. Our task was to make the light and temperature sensors, two of each. In addition to this, we had the honourable mission of putting together the entire payload for the rocket. This included making all of the cables to connect all the internal circuitry, and luckily we managed to replace some faulty cables before launch.

“Every single day we were presented with new and exciting lectures from the top-notch lecturers at ESC.”

Every single day we were presented with new and exciting lectures from the top-notch lecturers at ESC. They shared their experiences and knowledge with us, and they inspired us in every single way. We learned about everything from rocket aerodynamics to life on Mars, simply through the lectures. The people that I would claim we learned the most from were our group leaders, the ones that helped us build our rocket.





In my case it was lovely Thomas, the leader of the Payload group. He taught us how to solder and connect every single part of the sensor, such as the transmitters, the diodes and make the circuit work. What I found fascinating to learn was how to calibrate the sensors, so that they would work properly. Easily done by him, I tried to copy and understand how it all worked. We spent long hours on making that payload the best one there ever was, and we never would have managed it without our positive and reassuring leaders. There was no doubt in my mind that I was in the presence of some of the most skillful engineers and scientists that I had ever met.

The week threw up new highlights all day long, every day. All from the little things such as playing table tennis between lectures or cooperating on writing the (legend)diary. Boy did we eat a lot, but we made up for it with all the volleyball and the brainwork. The definite highlight of the entire camp was of course the launch of our very own rocket, a Mongoose, named the ESCapist.

“There was no doubt in my mind that I was among some of the most skillful engineers and scientists that I had ever met.”

Those of us who were not managing the launch itself got a little higher in the terrain, so as to have the perfect view when our baby was going to fly out into the atmosphere and down in

the ocean. It was a spectacular sight, knowing that we had done well. Other highlights also included bathing under the midnight sun. The beaches there may look like a paradise, but you soon forget about all of that when you can hardly feel your skin as you run into the ice cold water. We got to make one rocket each – made entirely out of paper though. Some went far, while some went even further. My paper rocket may be the best souvenir that I have from European Space Camp. Like I mentioned earlier, the week was packed with fun and delightful experiences all the time.

We got to visit ALOMAR, and get a tour where they explained the use of LIDARs. Above all, let us not forget the entrancing song that the team put together for the ESC party, it was unforgettable.

Going there I was nervous, but happy. Leaving I was filled with even more passion and happiness than ever before. Trust me when I tell you, if you attend ESC you will not want to leave. For me it was nearly an epiphany, I knew what I wanted to do, but this helped me see it clearly. The lecturers inspired me more than words will ever be able to explain. Even though I am not a strong believer in magic or anything else that cannot be proven by science, I would dare to claim that ESC was pure magic. European Space Camp helped us connect not only sensors, but also with each other and make true friends. It was literally the best week I could have imagined. I thought it would be an awesome week. It was a perfect one.

PARTICIPANTS 2013



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Romania



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Germany



Ewelina Badak
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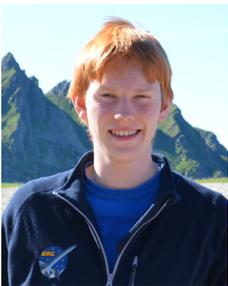
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