

# European Space Camp 2004

**the sky  
is not  
the limit...**

**... it is where  
the fun  
begins**



# Contents

- > Introduction
- > About Space Camp
- > Brief history
- > Space Camp 2004
- > Accounts and budget
- > Press clippings

*(...) no other 7 days of our lives contain so many experiences and adventures.*  
- Marte Amlie Staude (18) / Norway

*It was the best summer I ever had. Thanks a lot to everyone. And special thanks to Team Spac Camp... Without you it had never been as funny as it was.*  
- Stefan Rathmann (19) / Germany



# INTRODUCTION

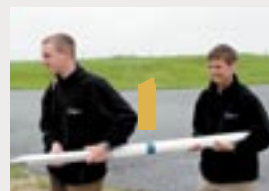
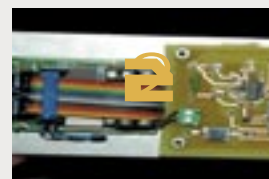
**European Space Camp 2004 was a great success. 21 gifted and inspired young students from Europe and the US spent a week at Andøya working on a real rocket campaign, experiencing each others cultures and learning about space related subjects from top researchers and engineers.**

The participants left Andøya Rocket Range with new knowledge on rockets and space, inspiration to do further research on these subjects and with new friends from all over the world. The camp went into Space Camp history as yet another great event engaging young people in space and science.

This report is meant to give you as sponsors, partners and supporters a peak into what Space Camp is all about – spanning from facts and accounts to the history of Space Camp and showing you what impressions, memories and inspiration the participants got from the camp.

A week at Space Camp is filled with lots and lots of experiences and impressions; midnight sun, rockets, whale safari, lectures, hands-on group work, and the opportunity to meet and get to know people from all over Europe that is just as crazy about space as themselves. Hopefully we will manage to communicate to you what great impact a week like this have on young people and how it really inspires them to develop and focus their interest in space related subjects.

Silje Bakken Gill  
Head of Team Space Camp  
Norwegian Association of Young Scientists



# ABOUT SPACE CAMP

**Space Camp is organized by Team Space Camp, representing the Norwegian Association of Young Scientists, and the Norwegian Centre for Space Related Education. Other cooperating partners are the Norwegian Space Centre and the European Space Agency .**

## **Norwegian Association of Young Scientists**

The Norwegian Association of Young Scientists is a youth organization based on voluntary work done by young students, working for increased scientific interest among youths. This projective is approached by organizing different scientific events: Space Camp on Andøya, BioMed Camp in Bergen, Cyber Camp in Trondheim, weekend seminars and scientific cafés.

Team Space Camp is a subgroup of the Norwegian Association of Young Scientists. All the work done by the Team is voluntarily, and amongst other things the work includes: raising money, recruiting and selecting participants, promoting the camp (brochures, internet, press) and planning the event. Team Space Camp is responsible for the non-scientific activities at Space Camp and general coordination in advance and during the camp: making the camp a memorable event for the participants.

The Team currently consists of Silje Gill, Vegard Aas and Irlin Nyland, who are all full-time students using their spare time to organize the European Space Camp

# UNGE FORSKERE

## **Norwegian Centre for Space Related Education (NAROM)**

NAROM is a daughter company of Andøya Rocket Range. Its main projective is to increase the recruitment to space related subjects. This is, among other things, achieved by organizing courses and events at Andøya Rocket Range for youths, students and teachers.

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

This, combined with the exotic and beautiful surroundings of the North of Norway, makes Andøya Rocket Range the perfect choice for organizing European Space Camp.

NAROM is responsible for the scientific part of the program on Space Camp.



# A BRIEF HISTORY OF TIME

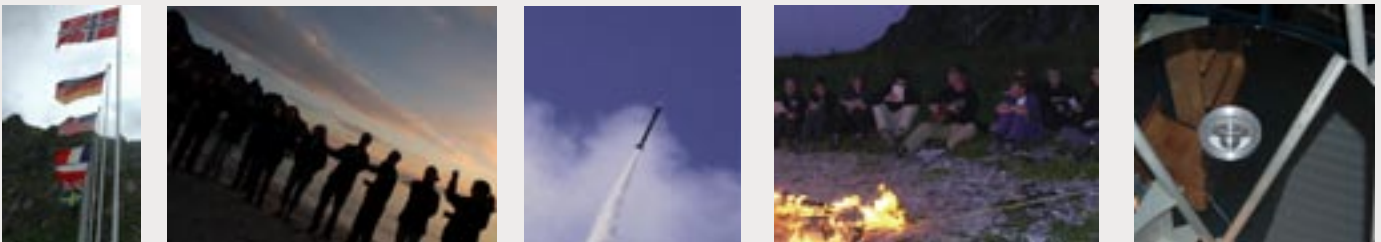
**It all started back in 1996 when the Norwegian Association of Young Scientists initiated the first Space Camp on Andøya Rocket Range. The camp started out as a Nordic event, and the first 5 camps had participants from Norway, Sweden, Denmark, and even Finland.**

In 2000, NAROM was founded and organizing the camp then became a cooperation between the Norwegian Association of Young Scientists and NAROM.

One year later, in 2001, Space Camp was turned into a European event and youth from all over Europe was invited to participate. As a consequence of this the working language was changed from Scandinavian to English. At this time, a cooperation with the European Space Agency was also initiated.

The European approach turned out to be very successful, and thus it was decided to continue organizing the camp in this way. In total, young people from 13 nations have attended Space Camp.

Space Camp 2004 took place at Andøya Rocket Range from 27. July to 4. August. It was the fourth European camp, and the ninth Space Camp. This means that next year Space Camp will be arranged for the tenth time – something that will of course be celebrated some time in 2005!



## Year by year:

- 1996:** The Norwegian Association of Young Scientists initiated the first Space Camp on Andøya Rocket Range. The first camps gathered participants from the Nordic countries.
- 2000:** NAROM was founded on Andøya, and organizing the camp then became a cooperation between the Norwegian Association of Young Scientists and NAROM.
- 2001:** Space Camp became a European event, gathering participants from all over Europe. A cooperation with the European Space Agency was initiated. Ever since, the camp has been European
- August 2004:** The ninth European Space Camp took place on Andøya Rocket Range. The camp was a complete success!
- August 2005:** European Space Camp is organized for the tenth time, and this of course will be celebrated by the Space Camp 10th anniversary.

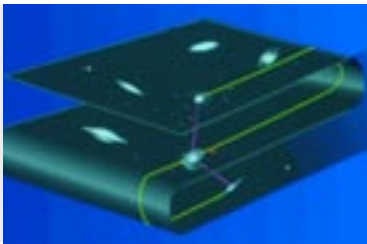
# Space Camp 2004

**This year, Space Camp gathered 21 young students on Andøya Rocket Range. In total, 7 different nations were represented: Germany, Sweden, Poland, the United Kingdom, USA, France, and last but not least Norway. The participants were all between 17 and 19 years old, and in their final stages of high school with maths and physics as major subjects.**

Bringing together youths from all over Europe to live and work together for a week at a rocket range creates a unique international atmosphere for learning, personal development, forming friendships and relations across national borders.

We recruited applicants to the camp through a range of channels. In Norway the main source of information was brochures distributed to all Norwegian high schools and the information on our webpages; [www.spacecamp.no](http://www.spacecamp.no). Reading about the event in the press or being told about it from family and friends were also important ways to reach potential participants both nationally and internationally. In addition to this, we used our international network of Young Scientist organizations, schools and embassies to spread information about Space Camp to the world.

Space Camp has developed into a well-known and recognised event in Europe, and scholarships to the camp is used both as prizes in national science fairs and also to reward outstanding students at selected schools. This year, participation at Space Camp was also used as the first prize in a worldwide essay contest organized by EURISY and UNESCO.



## Lectures

Lectures was designated an important place in the scientific part of the Space Camp programme. During the camp, the participants got lecturers within a wide range of space related subjects. This year we focused on inviting Norwegian professors and lectures all leading within their fields of science to Space Camp. We did this in order to show the participants what resources Norway have to offer this field of subject.

**Jan Erik Rønningen (engineer, Nammo Raufoss A/S):**

“Rockets and how they work”, “Rocket aerodynamics and stability – an introduction”,  
“Rocket ballistic and trajectories – an introduction”

**Alv Egeland (professor, University of Oslo):**

“The plasma universe; The Sun’s radiation and the magnetosphere”

**Egil Lillestøl (professor, University of Bergen/CERN):**

“The Grand Unified Theory”

**Knut Jørgen Røed Ødegaard (scientist, University of Oslo):**

“Our mysterious universe”, “Modern exploration of our Solar system”

**Tormod Guldvog (Norwegian Space Centre):**

“What makes Norway a space nation?”



# Space Camp 2004

**During the camp, the participants were divided into smaller groups with different assignments, all working towards the same goal: Preparing and launching a student rocket at the end of the camp. In this way, Space Camp was organized like a real rocket campaign, and the participants got a unique insight of the life and work on a rocket range.**

## **Rocket system design group**

The task of this group was to prepare the rocket for launch. They implemented the payload, did theoretical- and software based calculations and performance analyses, as well as the final assembly of the rocket. The members of this group learned how to use special software for calculating and simulating rocket trajectories, and they put this theory into practical work as they designed different water rockets for demonstration. The group also built two hybrid motors for demonstration of the principles of rocket engines.

## **Experimental instrumentation group**

The main goal of this group was to develop instruments and implement these into the rocket to receive scientific data during the flight. The group drew circuit boards for different sensors; Humidity, shock, tilt, temperature, magnetic field sensor, air pressure. The participants thereafter soldered the sensors, and cooperated with the other groups to assemble the complete payload and incorporate this into the rocket.



## **Rocket payload**

Here, the participants were divided into two smaller subgroups. These two groups were responsible for building the payload section of the rocket, centered around a flight computer (the R-DAS). In addition, the groups made a circuit board and connected it to additional hardware in the payload.

## **Rocket telemetry**

The participants at this group learned the basics of telemetry. They got knowledge on how to operate the TRAKSAT program to simulate satellite activity. The group also tracked satellites with a mobile telemetry antenna. The group was responsible for tracking the Space Camp rocket during the flight.

## **Social activities**

Social activities in between the group work and the lectures are a crucial element to create a great atmosphere at Space Camp. The participants explored the beautiful surroundings of Andøya by going on a whale safari and hiking in the mountains. The evenings were spent in the sea with the (very cold) traditional Space Camp-midnight-swims. In addition, the participants spent the spare-time together, playing pool, volleyball and table tennis. As a result of this, the participants went home being happy, inspired, a bit tired, but with new friends from all over the world!



# ACCOUNTS 2004

## Expenses

	<b>NOK</b>
Course materials	2 316
Balloon release	6 418
Expenses in relation to the rocket campaign	29 950
Accommodation and lodging	101 458
Travel expenses, lecturers, group leaders and Team	33 373
Transportation at Andøya	3 084
Scientific assistance	3 370
Rent of other facilities	1 600
Marketing (brochures)	14 880
Other expenses	14 442
Whalesafari <sup>(1)</sup>	5 410
Travel expenses, Team <sup>(2)</sup>	35 177
Space Camp jackets	9 352
Misc. Team expenses	15 000
Postage	2 997
Office expenses	22 861
Equipment	5 387
<b>SUM</b>	<b>307 075</b>

<sup>(1)</sup> This is the whale safari ticket fee for scholars and team members that accompany the participants. Regular participants (i.e. not scholars) pay for the whale safari themselves. Please do also refer to (3.5)

<sup>(2)</sup> Travel expenses for Team Space Camp include both travel to the camp as well as travels made throughout the year to meetings etc.

## Financing

	<b>Financial support</b>	<b>Other support<sup>(3)</sup></b>	<b>Sum financing <sup>(4)</sup></b>
Norwegian Association of Young Scientists	0	360 000 <sup>(3.1)</sup>	360 000
Norwegian Centre for Space Related Education	42 000	175 000 <sup>(3.2)</sup>	217 000
Norwegian Space Centre	80 000	0	80 000
Andøya Rocket Range	19 575	15 00 <sup>(3.3)</sup>	34 575
Nammo Raufoss	15 000	41 000 <sup>(3.4)</sup>	56 000
Norwegian Defence Research Establishment	50 000	0	50 000
Læringsenteret	20 000	0	20 000
Næringsutvikling Andøy	5 000	0	5 000
Høgskolen i Narvik	5 000	0	5 000
Whale Safari Andenesx	0	5 400 <sup>(3.4)</sup>	5 400
Scholarship fees	52 500	0	52 500
Participation fee	18 000	0	18 000
<b>SUM</b>	<b>307 075</b>	<b>596 400</b>	<b>903 475</b>
<b>SUM FINANCING</b>	<b>307 075</b>		
<b>SUM EXPENSES</b>	<b>307 075</b>		
<b>RESULT</b>	<b>0</b>		

<sup>(3)</sup> This is support that we receive in the form of services we do not have to pay for or as services at a reduced fee:

<sup>(3.1)</sup> The Norwegian Association of Young Scientists, represented by Team Space Camp, put down approximately 2400 hours of voluntary work each year to make Space Camp happen. If a payment by the hour of 150 NOK is used, this is the financial value of this effort.

<sup>(3.2)</sup> NAROM spends about 500 hours on Space Camp related work each year. This work is done by employees, and a payment by the hour of 350 NOK is used in this calculation.

<sup>(3.3)</sup> The support from Andøya Rocket Range consists of:

- A group leader: One employee at Andøya Rocket Range use all his time at work during Space Camp to be the supervisor for a group of participants.

- Free lodging and meals for a total of 45 nights. These nights cover the stay at the rocket range for Team Space Camp, some guests and lecturers (this is counted as financial support).

<sup>(3.4)</sup> Nammo Raufoss also let us use one of their employees as a group leader during Space Camp. This sum corresponds to his wage in this period.

<sup>(3.5)</sup> Whalesafri Andenes offers Space Camp participants a reduced ticket fee. The discount corresponds to this amount.

In addition to this, the lecturers at Space Camp also work without charging any fees.

<sup>(4)</sup> This total value corresponds to the sum of both the financial support and the support mentioned under <sup>(3)</sup>.





# Budget 2005

In order to continue the development of European Space Camp we continuously try to improve our cooperation with partner organisations and sponsors, as well as initiating new contacts. In order to improve the professionalism and contents of the camp some of the budget posts have been somewhat increased. The largest increase is to fund a project to initiate a cooperation with NASA and the International Space Camp.

Expenses	NOK
Expenses in relation to the camp: accomodation, food, travel, course materials, scientific assistance, etc.	250 000 <sup>(5)</sup>
Whalesafari	6 000
Travel expenses, Team	45 000 <sup>(6)</sup>
Team expenses	15 000
Space Camp jackets	12 000
Postage	3 000
Office expenses	27 000
Equipment	6 000
Development of cooperation with ESA and initiating a cooperation with NASA/International Space Camp	40 000 <sup>(7)</sup>
<b>SUM</b>	<b>412 500</b>

<sup>(5)</sup> Hopefully we will have at least 22 participants at Space Camp 2005, this being the reason for adding some to this part of the budget as compared to 2004.

<sup>(6)</sup> This fall, Team Space Camp will expand as two trainees are joining us. The trainees are crucial to ensure recruitment to the Team, so that there are always someone around to organize Space Camp. A natural consequence of increasing the number of people in the Team is that some expenses will go up.

<sup>(7)</sup> In order to ensure a more stable financial situation for Space Camp, we wish to develop the already existing cooperation with ESA further. This may involve costs as travel to meetings etc. We also wish to visit NASA and the International Space Camp to meet some of our contacts and exchange ideas and experiences that can hopefully contribute to making our Space Camp even better in the years to come.

# in the media

European Space Camp generally gets good coverage in the media, and this year was no exception. A variety of newspapers and radio stations have covered the event, promoting the camp, its organizers and sponsors, as well as the interest for space and science in general.

Date:	Media:	Media type	Coverage:	Topic:
Spring/04	Hubro	University magazine	1 page	Girls and space
27.07	Bladet Vesterålen	Local newspaper	1/4 page	Preview of the camp
27.07	NRK Text-tv	National TV	Notice	Preview of the camp
27.07	NRK Nordland	Regional radio	Interview	Interview with Head of Team, Silje Gill

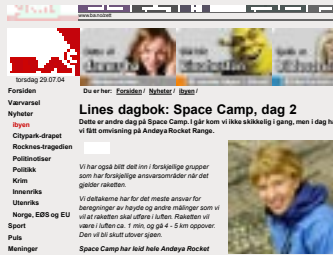


27.07	Lofotposten	Local newspaper	1 page	Interview with participant Gyrid Angelsen
28.07	Nordlys	Regional newspaper	1/2 page	Preview of the camp
28.07	Fredrikstads blad	Local newspaper	1 page	Interview with participant Sverre Andreas Dahl
28.07	Radio Fredrikstad	Local radio	Interview	Interview with press liason Vegard Aas and participant Sverre Andreas Dahl



# in the media

29.07	Andøyposten	Local newspaper	1 page	Official opening of the camp
29.07	Bergensavisen/web	Regional newspaper	1 page	Space diary by Line Drange
30.07	Bergensavisen/web	Regional newspaper	1 page	Space diary by Line Drange
30.07	Radio Telemark	Regional radio	Interview	Interview with participant Benedikte Hole
31.07	Bergensavisen/web	Regional newspaper	1 page	Space diary by Line Drange
01.08	Bergensavisen/web	Regional newspaper	1 page	Space diary by Line Drange
02.08	NRK Reiseradioen	National radio	Interview	Interview with press liason Vegard Aas



02.08	Bergensavisen/web	Regional newspaper	1 page	Space diary by Line Drange
03.08	Bladet Vesterålen	Local newspaper	1 page	Article on the successful launch
03.08	Bergensavisen/web	Regional newspaper	1 page	Space diary by Line Drange
03.08	Andøyposten	Local newspaper	2 pages	Article on the successful launch
04.08	Bergensavisen/web	Regional newspaper	1 page	Space diary by Line Drange





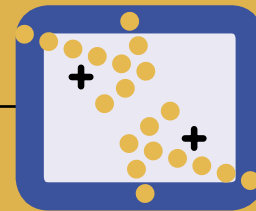
*I am a new person after Space Camp, meeting people from all over Europe and learning about our differences and similarities has really enlightened me.*

- Timothy Funnel (17) / England

## COOPERATE

*Every day a lot of songs from Space Camp pop up in my brain and make me remember the smiling faces of all the participants, the leaders and the lecturers, the nice and warm (...) swims in the sea, the singing moments in the sauna and elsewhere, the smell of warm waffles, the fun group work, the interesting lectures and the smell of coffee.*

- Ida Benedikte Amlie Hope (18) / Norway



*(...) So I think Space Camp is not the end of all, it's just the beginning. It's the beginning of a new part of life, the beginning of wonderful and strong friendships, the beginning of a new era of young interested people and multinational relationships and research. And I'm sure everyone of us will feel that in any way... It was the best summer week I've ever had in my life and I miss all of you very much.*

- Christian Wussack (18) / Germany

## EXPLORE



[www.spacecamp.no](http://www.spacecamp.no) | [team@spacecamp.no](mailto:team@spacecamp.no)