

# Cooperation to Motivate Students – the CaNoRock Program

Most countries in the western world strive to motivate young people to choose natural science and technical studies. A lack of highly educated employees can become a problem if the western countries intend to maintain a leading role in the technical development. The field of space research and space utilisation is not an exception.

Norway and Canada intend to be in the forefront, thus they have invested resources in a program to motivate young students to seek a career within the space research field – the CaNoRock program.

## Introduction to the CaNoRock Program

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The proposed CaNoRock program is aimed to serve as a basis for a 10-year bilateral student sounding rocket program between Canada and Norway from 2011 - 2021. Here it is vital to motivate students to join space activities and acquire enhanced knowledge in physics, engineering and electronics for sounding rockets and stratospheric balloons.

The program may also include working with other scientific platforms such as Unmanned Aircraft Systems and Long Duration Balloons. The universities of Oslo, Tromsø, Alberta, Calgary and Saskatchewan have common research interests in atmospheric, aurora and magnetospheric physics. Each institution specializes in different experiment types, and in collaboration we can produce even more advanced scientific rocket and satellite payloads.



### CaNoRock Kick-off Rocket Launch

On 17 to 21 of January 2011, a total of 21 students from Norway and Canada gathered at Andøya Rocket Range to design, build and launch their own instruments onboard the CaNoRock III rocket. CaNoRock III marks the official start of the 10-year sounding rocket collaboration program between Norway and Canada and was officially opened by the Canadian ambassador, John Hannaford.

Students from the Universities of Oslo, Bergen, Tromsø, Saskatchewan, Calgary, Alberta and Østfold University College attended the CaNoRock III course. The students prepared a student sounding rocket, performed the rocket operation and analysed the data from the rocket.

The students performed the work, guided by professionals from the Norwegian Centre for Space-related Education (NAROM) and Andøya Rocket Range. There were also highlight lectures given by the best professors within their scientific background.

Topics like trajectory analysis, introduction to rockets, payload integration and telemetry were covered. The main focus was the preparation of the student rocket where the students built the instruments, performed the rocket launch operation, tracking the rocket and analyzing data from the rocket.

The course also included a guided tour at Andøya Rocket Range and ALO-MAR. The students had to deliver a final report, which they can get 5 ECTS-credits from the course provided by the University of Oslo.

This type of student rocket course will be arranged twice a year with both Norwegian and Canadian participants.

The interest for the project was overwhelming in both countries. Worth to mention is the fact that the universities in Alberta and Calgary both had 50 applications for the four available student spots in Canada to the first CaNoRock student rocket from Andøya in November 2009. "CaNoRock I and II" were conducted as a test before the project officially started in 2011.



Students from CaNoRock III together with the Canadian ambassador, John Hannaford.  
Photo: Stian Vik Mathisen, NAROM



Launch of CaNoRock II  
Photo: Kolbjørn Blix Dahle, Andøya Rocket Range

### Science and Technology in Focus

The CaNoRock program is going to be a student program based on science, an important contribution to "The High North Commitment" when it comes to innovation, development of knowledge and recruiting to the knowledge-based industry in the region. The start of the CaNoRock happened simultaneously with the increased intensity of sunspot cycle 24 and gives increased chances for sun storms and thus breakdowns of navigation and communication systems under the flaring northern lights. It is becoming a greater challenge to ensure safe systems as the polar ocean opens for economical exploitation.

### The Scientific rockets

The CaNoRock program is still under development however the smaller student rockets are meant to be an introduction for students who would like to continue to study space science and maybe in the future take part in the larger scientific rocket campaigns. The CaNoRock program opens up for participation for Master and PhD students for the larger scientific rockets, in cooperation with the Norwegian and Canadian scientists.

More about the CaNoRock program:  
[http://www.rocketrange.no/?page\\_id=246](http://www.rocketrange.no/?page_id=246)



#### Links:

[www.rocketrange.no](http://www.rocketrange.no);  
[www.asc-csa.ca](http://www.asc-csa.ca)  
[www.isset.ualberta.ca/index.php/outreach/canorock](http://www.isset.ualberta.ca/index.php/outreach/canorock)

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