Throughout the project they receive guidance from experts and document their progress.

The possibility to participate in a launch campaign with teams from across Europe is a unique and unforgettable opportunity. Many students choose to base their university projects or theses on their REXUS/BEXUS experiments.

Students are also encouraged to develop an outreach programme and present their experiment to experts in conferences and to the public through media such as the internet or their local press.

Who can participate?

The programme is targeted to teams of students or PhD students of science, engineering and technology-related disciplines, who have a strong concept for a rocket or balloon experiment. Since the students themselves are responsible for designing, building and operating their experiment, they are advised to form an interdisciplinary team, which includes knowledge of mechanics, electronics and experimental methods, alongside scientific expertise. Guidance from a professor or an institute is highly recommended.

Details of the eligibility criteria for sponsorship are published with the annual call for proposals by DLR and ESA/SNSB.

Further information

www.rexusbexus.net

REXUS/BEXUS-GB-8/12

DLR at a glance

DLR is the national aeronautics and space research centre of the Federal Republic of Germany. Its extensive research and development work in Aeronautics, Space, Energy, Transport and Security is integrated into national and international cooperative ventures. In addition to its own research, as Germany's space agency, DLR has been given responsibility by the federal government for the planning and the implementation of the German space programme. DLR is also the umbrella for the nation's largest project management agency.

Approximately 8000 people are employed at 16 locations in Germany: Cologne (headquarters), Augsburg, Berlin, Bonn, Braunschweig, Bremen, Goettingen, Hamburg, Juelich, Lampoldshausen, Neustrelitz, Oberpfaffenhofen, Stade, Stuttgart, Trauen, and Weilheim. DLR also has offices in Brussels, Paris, Tokyo and Washington D.C.

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German Aerospace Center

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RYMDSTYRELSEN Swedish National Space Board

esa

SSC

ZARM

EuroLaunch

REXUS/BEXUS

A German-Swedish Student Programme

Rocket/**B**alloon-**EX**periments for **U**niversity **S**tudents

The programme

The REXUS/BEXUS programme allows student teams from universities and higher education colleges across Europe to carry out scientific and technical experiments on rockets or balloons. Each year, two rockets and two balloons are launched in March and October respectively, carrying up to 20 experiments designed and built by students.

The application process for participation opens at the beginning of September* each year, with the experiment selection being finalized before Christmas. From then, the students´ projects take about one year for BEXUS and 18 months for REXUS. *2014 in mid-June

Sponsorship is available for the student teams to attend a training week, project reviews and the launch campaigns. Financial support for the development of experiments is possible to a limited extent.

The REXUS/BEXUS programme is realized under a bilateral Agency Agreement between the German Aerospace Center (DLR) and the Swedish National Space Board (SNSB). Through the collaboration with the European Space Agency (ESA), the Swedish share has been made available to students from all ESA Member or Cooperating States.

EuroLaunch, the cooperation between the Esrange Space Center of SSC and the Mobile Rocket Base (MORABA) of DLR, is responsible for the campaign management and operations of the launch vehicles. Experts from DLR, ZARM (Center of Applied Space Technology and Microgravity), SSC and ESA provide technical and logistic support to the student teams throughout the project.

Esrange Space Center

The REXUS rockets and BEXUS balloons are launched from the European launch site Esrange, which is situated near the town of Kiruna in Sweden, 200 kilometres north of the Arctic Circle. The students travel there to prepare their experiments for launch and to operate them during the flight. Parachutes are used to carry the experiment payloads of the balloons and the rockets back to earth. After landing, helicopters collect and return them to Esrange for analysis. A typical launch campaign lasts for approximately ten days.

A REXUS rocket ready for launch

Preparing a BEXUS balloon launch

REXUS

The REXUS vehicles are unguided, solid propellant, single-stage rockets which reach an altitude of up to 100 kilometres.

Five experiments per rocket can be accommodated, with a total mass of 30 kilogrammes. REXUS offers experiment time of up to three minutes during its ballistic flight.

With the use of a yo-yo despin system it is possible for experiments to experience around 90 seconds of reduced gravity.

In this configuration it is also possible to eject the nose cone of the rocket during the flight, thereby exposing the experiment beneath it to the atmosphere.

BEXUS

A BEXUS stratospheric balloon can reach an altitude of up to 35 kilometres. Depending on the wind speed, the flight lasts for between two and five hours. That includes about 45 minutes of ascent and 30 minutes of descent. A standard balloon has a volume of 12,000 m^3 and a diameter of 14 metres. For launch it is filled with helium. The total length of the balloon system varies between 65 and 100 metres. The gondola beneath the balloon can carry between 40 and 100 kilogrammes of experiment payload.

The experience

Students experience the full life-cycle of a space project, beginning with the idea and design definition, continuing with building and testing, participating in the flight campaign and completing with data analysis and reporting. >>