



European Space Agency's  
Newsletter on Education

No 6 July 2004

# EDU news

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## Editorial

The disaffection of youth in science and engineering studies is a reality that might affect the social and economic growth of Europe in the near future. It worries national authorities as well as European institutions. This is why the European Commission has set up the High-Level working group on Human Resources for Science and Technology.



The working group, while highlighting the importance of promoting the excellence of scientific and technological human capital in Europe, also recognises the need for an increase of human resources in science and technology.

ESA agrees with the conclusions of the working group, in particular with the need to encourage and stimulate youngsters – especially girls – to prepare for a career in science and technology. We also believe that young people need to be encouraged and appropriately trained from the beginning of their studies. That is why ESA's education activities, very often involving teachers directly, have always been devoted to students of all ages, from primary schools to graduate and postgraduate.

With the recent strengthening of ESA's educational service by creating an "Education Department", future educational activities will benefit from an improved organisation. The objective is to respond in the most efficient way to the needs of all those directly involved in education and taking into account the requirements of the national curricula and educational systems. ESA is committed to support the needs and practices of the world of education. However, we can only be successful with the help of all those involved.

Since the beginning of 2002 EDUnews has kept you informed not only about ESA's but also European and international educational activities. I hope you will enjoy reading this sixth issue – this one is mainly dedicated to education activities for University students.

*Thank you for your interest!*

A handwritten signature in black ink, appearing to read 'Roger Elaerts'.

Roger Elaerts

EDUnews is read in many different European countries. From time to time we present general and space-related activities in ESA Member States to provide an in-depth view of "space in your backyard" and points of contact. If you'd like to write about what's going on in your country, please send an email to [education@esa.int](mailto:education@esa.int)

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# 'Life in Space 2004': course for students

Thirty-five European Life Sciences students will get the opportunity to follow a two-week course in the Arago Laboratory in Banyuls, France, from 6 to 17 September this year.

With the building of the International Space Station and the development of planetary missions (in particular to Mars) new opportunities arise in the field of life sciences. These challenges also rely on cooperation at European and worldwide levels and an adequate education of life science specialists in the space environment.

This is already the third time that ESA supports the 'Life in Space' programme. The ERASMUS-supported course is carried out in collaboration with five European universities, namely University Pierre et Marie Curie Paris VI, France; University of Bonn, Germany; University of Sassari, Italy; University of Nottingham, UK and Autonomous University of Madrid, Spain. As the major non-academic partner, ESA will contribute expertise by organising three lectures by ESA experts and

a meeting with an ESA astronaut during an e-learning session.

Students attend lectures on different aspects of microgravity and its influence on the body. During the two weeks, they also create their own life-science experiments, practicing not only real science but also work in a team.



ESA astronaut Pedro Duque conducting a Life Science experiment during the "Cervantes" mission to the ISS

Caroline Pujol  
ESA (MSM-GS)

## International Science Fiction and Essay Writing Contest

EURISY, UNESCO, ESA and the Norwegian Space Centre have had a lot of response to their two competitions they organised for secondary school pupils worldwide.

The first contest was an International Science Fiction Writing Contest for 16 to 19-year-olds on the theme "Outer Space". The two winners are Marc Metziger from France with "Beyond" and Dewi Harjanto from the United States with "Natural Beef". They win a visit to the Space Camp in Norway. The special prize for developing countries was awarded to Christina Imera Bendeliani from Georgia with "Dream".

For 11 to 15-year-olds there was an International Essay Contest with the theme

"Space in our lives". The winners are Charlotte Monteil from France (1st prize), Benedict Alois Martin from Austria (2nd prize) and Tor Gaute Syrstad from Norway (3rd prize). The special prize for developing countries was awarded to Paul Sherwin Tarnate from the Philippines.

As there was such an overwhelming response from the younger age group, the organisers decided that next year's competitions will be oriented towards the age 11 to 13 years and 14 to 16 years. It will be an International Essay Competition with the title "From Earth to Planet X in an adjacent Solar System". Details will be available on the EURISY website in September 2004.



Erratum: The article in EDUnews 5, page 4, Life science students learn about "Life in Space" was not written by the coordinator Marie Diop but by the following students: André Blondiau and Bernhard Wulffen, University of Bonn, Germany; Clémence Chatreau, University Pierre et Marie Curie Paris VI, France; Carmen García Roch and Maite Laredo Varala, Autonomous University of Madrid, Spain; Hayder Guler, University of Nottingham, United Kingdom.

# Students win trip to Kourou

Micaela Bracciaferri  
ESA Education  
Department



A large group of students and young professionals visited the European Spaceport in Kourou, French Guiana, this year – some of them even watched a real rocket launch! Two groups took the trip to South America: one at the end of February and one in mid-March 2004.

The participants were either winners of the 1st Aurora Student Design Contest or selected students from partner organisations such as International Space University. Sponsored by ESA's Education Office and the Aurora

Programme, the visits were co-sponsored by the ESA's Directorate of Launchers, CNES and Arianespace. A small group of young professionals who joined the groups were financed by their own organisations.

They were all taken on a tour of the Ariane launching and propulsion facilities and met managers who answered all their questions. The trip included a visit to interesting local and natural sights. For the first group, certainly the most exciting part of the trip was the unexpected possibility to see a launch! The lift-off of the Ariane carrying the Rosetta probe is something they will never forget.



For more information:  
<http://www.esa.int/aurora>

## First Danish student space workshop a success

Lars Alminde  
Danish Astronautical  
Society



More than 50 students of nine different nationalities met in Copenhagen on the last weekend of March 2004 to share ideas and knowledge about space education and space activities in general. Organised by the Danish Astronautical Society, the workshop saw the contribution of experts from the European Space Agency, NASA, the Danish and European space industries and research institutions.

SMART-1 project scientist Bernard Foing (left) and the attitude control and determination group of the next Danish student satellite: AAUSAT-II

The theme of the workshop was "Going to Mars". Students participated actively in the workshop sessions and panel discussions. The different working groups focused on space medicine, planetary exploration and small satellite technologies respectively. They also worked at an interdisciplinary level.

The workshop had the dual- positive effect of bringing together students with experts and students with each other. All participants will benefit from the new network by exchanging ideas and projects. The second Danish Student Space Workshop is planned to take place at the end of 2005.

For more information:  
[http://www.rumfart.dk/workshop\\_ws04@rumfart.dk](http://www.rumfart.dk/workshop_ws04@rumfart.dk)

# Students from developing countries participate in the 54<sup>th</sup> International Astronautical Congress

At the International Astronautical Congress (IAC) 2003 in Bremen, Germany, the annual Student Participation Programme featured a novelty. For the first time, students from developing countries were given the opportunity to join the 300 European students in their trip to the IAC. They attended a specially-organised UN/IAF Workshop as well as the Congress itself to meet the experts and students of the space community.

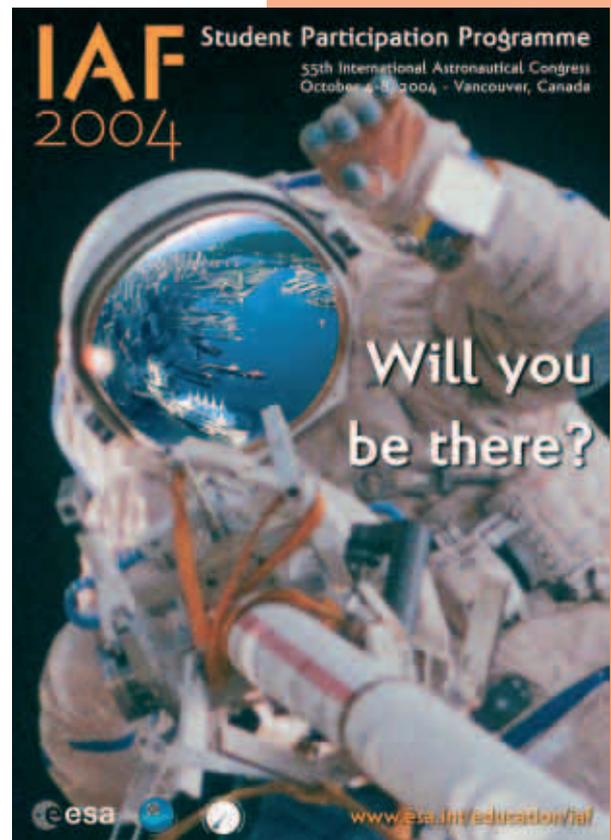
Five of them were chosen in a world-wide competition. The winners were Paula Almeida from Ecuador, Nabila Ibrahim from Egypt, Nabin Paudel and Nabin Kumar Malakar from Nepal and Juliano Schirmbeck from Brazil. For the competition, all students were asked to submit a proposal on how space can be related to their country's environment. This first initiative was a great success! For the students it was a unique cultural and scientific experience, they enjoyed the exchange of information and were amazed that the experts in their field were willing to help.



One student commented, "it has given me a lifetime vision to the space science and technology and I got really excited to see these all! I hope that I can do something for my country because in my country space technology is at ground state and ESA has told me to suggest some idea so that they can help me!" Another added "ESA and UNESCO have really contributed to my life and career." One event of particular interest to student from developing countries was the UN/IAF Workshop on "Education and Capacity Building in Space Technology for the Benefit of Developing Countries" with emphasis on remote sensing applications.

Feedback from both students and professionals underlined the benefits from students participating in the IAC. Preparations are already underway for next year's meeting in Vancouver, where 100 European students and eight students from developing countries will be given the opportunity to participate.

Dorothea Czernik  
ESA Education  
Department



For more info on the 6th IAC Student Participation Programme, visit [www.esa.int/education/iaf](http://www.esa.int/education/iaf) or email us at [student.iaf@esa.int](mailto:student.iaf@esa.int) or [dorothea.czernik@esa.int](mailto:dorothea.czernik@esa.int)

# The 2<sup>nd</sup> Young Engineers' Sat

## European students develop tethered re-e

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The YES2 team

**YES2, the 2<sup>nd</sup> Young Engineers' Satellite, is an educational project in which European students build, fly and re-enter the first student-built re-entry vehicle with 30-km tether**

### The YES2 mission

The YES2 mission is planned to be launched on the Russian carrier Foton-M3 in 2006 to demonstrate the SpaceMail concept, a payload-delivery system from Low Earth Orbit. YES2 returns a capsule, possibly an inflatable one, from space to Earth using tether technology. This tether is a very long, thin cable (30 km, 0.5 mm) that performs the function of a conventional deboost rocket by swinging back the capsule to Earth. After the tether is cut, the YES2 capsule begins the re-entry into the atmosphere to land on the ground.

### The YES2 team

Students are developing the YES2 mission in three phases. The first phase (2002- 2003) focused on involving students from all over Europe to set up a network of participating universities. Some 400 students from 25 uni-



YES2 tether deployer test rig at Delta-Utec SRC



# elite entry technology

universities were involved in this phase to study the technical feasibility of the mission and come up with concepts for inherently safe capsules. We are now in the second phase (2003-2005). Here, five centres of YES2 expertise have been created where the detailed design of the satellite and manufacturing and testing of the components are carried out. These centres are linked to different institutions in Europe and are hosted at five universities, each having a special role and expertise in the YES2 project: Kent (UK) in the instrumentation and software of the capsule, Krefeld (Germany) in the development and testing of the tether deployment system (FLOYD), Patras (Greece) in the mechanical design and thermal tests, Reggio Emilia (Italy) in the re-entry technology and the inflatable capsule structure and Samara (Russia) in the aerothermodynamics, mission simulations and tests. In the final phase (2006), the flight preparation, flight recovery and post-flight analysis will be performed.

Delta-Utec SRC, a Dutch company based in Leiden, is the project's prime contractor.

Artist's impression of YES2 capsule deployed from Foton-M3



More information about the project and information how you can participate is available on the website: [www.yes2.info](http://www.yes2.info)

## Summer Space School in Samara, Russia

Many educational initiatives take place in the framework of YES2. For example the ESA-sponsored Samara Space Summer Schools (SSSS 2003 and 2004) where YES2 students get together with their Russian colleagues to share knowledge and work. During these two-week events, Russian experts help solve questions related to the YES2 mission in fields such as aerothermodynamics, telemetry, trajectory and more. The Space Summer School 2004 will focus on the development of the YES2 Fotino capsule and several payloads of the satellite such as the capsule's beacon and the on-board GPS.

# Building the workforce of the

Micaela Bracciaferri

ESA Education  
Department

The decrease of interest in science and technology careers threatens to slow down the social and economic growth of Europe. This article explains how a European Space Education Policy can help reverse the trend.



## **Towards a knowledge-based society. The Lisbon objectives.**

According to the Lisbon EU Summit declaration of March 2000, by the year 2010 Europe should become the most competitive and dynamic knowledge-based economy in the world. The 2002 European Summit in Barcelona called for an increase in the proportion of European GDP invested in research from 1.9% to 3% by the same deadline, with a third of the investment coming from the private sector.

The European Commission has organised a series of conferences<sup>i</sup> dealing with this topic, the first of which presented the results of the High Level Group on Human Resources for Science and Technology. Following the issues raised by the Commission's communication published in February 2003 on "The role of universities in the Europe of knowledge", this independent group of experts identified a need for a strong growth of human resources in science and technology in Europe, and called for higher-quality training. The European Research Area (ERA) project is one of the responses to the Lisbon objectives as it aims to overcome the weaknesses of research in Europe. But higher-quality training for future researchers should start well before they enter university. Should the Barcelona objectives be met, 700,000 new researchers would be active by 2010. Is it possible to train a future generation of scientists and engineers within 5 years?

The interest of pupils in Science, Engineering and Technology (SET) studies starts in primary and secondary school, long before they choose their career path. The scientists of the future need to develop core competencies from an early age. That is why all European institutions, academies and international organisations should work together to encourage young students and provide a good training system for graduates and post-graduates.

## **What can space do for the scientists of the future?**

The decrease of interest in SET studies, the shortage of science teachers, the ageing population, the low proportion of women in SET careers and the risk of brain drain are widely known threats to a knowledge-based society in Europe.

Although space education cannot solve these major problems it can contribute effectively to combat the decrease of interest and promote excellence in SET at all study levels.

ESA Education programme targets students from the early stage of their studies (6 years) to postgraduate level (28 years) and includes programmes for teachers (at a primary and secondary level) and activities with university students.

Tools like EDUSPACE, website on Earth Observation for teachers in secondary school, now available in six languages) can transform lessons. Projects like the Student Parabolic Flights Campaign allow university students to work in a team and see their own experiments flying in weightlessness.

ESA selects and finances students' participation to events like the International Astronautical Federation Congress where they can meet experts and receive feedback on their projects and ideas.

The International Space Station (ISS) Education Programme focuses on a range of activities for primary and secondary schools and university students and develops teaching materials. Its activities are supported both by ESA and the ISS Education Fund.

ESA's education programme is evolving: an Education Department has recently been created and the overall re-organisation is close to being finalised. The coordination of all education activities within ESA will be strengthened and a closer alliance with Member State institutions and the EU will be reinforced.

## **The need for a common European policy in human resources**

With its White Paper on Space the European Commission acknowledges the contribution of Space Policy to the promotion of SET careers and calls for ESA's support offering tools like the Marie Curie programme<sup>ii</sup> in the framework of the European Research Area .

The implementation of a common SET education policy becomes urgent as the Lisbon target approaches, and the White Paper represents the starting point of a fruitful co-operation.

# future

It is now the time to see what has been done so far and what there is still to be done. It will not only be important to encourage young people to choose SET careers but also to train a generation of graduates ready to respond to a changing research and industry context. It is therefore necessary to work on a common framework for quality education in Europe where mobility is facilitated at all levels: from university to industry and vice versa. ESA is in the position to improve the communication between the stakeholders.

The ESA/EC Framework agreement for a European Space Policy has now entered into force and a "High-Level Space Policy Group" will define the next steps for common activi-

ties. One of its tasks will be the organisation of a Space Council that will bring together ESA and EU Council for the first time. The time has come to build a coherent long-term education policy.

#### Sources:

- European Commission: Towards a European Research Area - Science, Technology and Innovation - Key figures 2003-2004
- Communication from the Commission: "Education and Training 2010" The Success of the Lisbon Strategy hinges on Urgent Reforms (11.11.2003)
- Communication from the Commission: The Role of the Universities in the Europe of Knowledge (05.02.2003)
- Increasing Human Resources for Science and Technology in Europe. Report to be presented at the EC conference EUROPE NEEDS MORE SCIENTISTS Brussels, 2 April 2004.
- European Commission - ESA White Paper on Space

#### Useful links:

[www.europa.eu.int/comm/research](http://www.europa.eu.int/comm/research)



<sup>1</sup> Conferences: "Increasing Human Resources for Science and Technology in Europe", 2 April 2004, Brussels (Belgium). "The Europe of Knowledge 2020. A vision for University-based Research and Innovation", 25-28 April 2004, Liege (Belgium).

<sup>2</sup> The Marie Curie Actions are financed by the Framework Programme's Human Resources and Mobility (HRM). They aim at the development and transfer of research competencies, the consolidation and widening of researchers' career prospects, and the promotion of excellence in European research.

## Star biographies in the Alps

This year's Alpbach Summer School will focus on the theme "The Birth, Life and Death of Stars". Alpbach, a village in the Austrian Alps, enjoys a long tradition of Summer Schools with in-depth lessons on aspects of space science and space technology for European graduates, post-graduate students, young scientists and engineers. The purpose is to foster the practical application of knowledge, develop organisational and team working skills and encourage creativity. Four teams of 15 participants each will compete for the best project, a scientific mission study related to the theme of stellar life cycles, judged by an independent jury composed of some of Europe's leading space science experts.

The School will take place from 27 July to 5 August 2004. The Summer School is organised by the Austrian Federal Ministry of Transport, Innovation and Technology (BMVIT) and the Austrian Space Agency (ASA) and sponsored by the European Space Agency (ESA) and the national space authorities of its member states.

Astrophysics is undergoing a revolution in understanding, driven by developments in ground-based and space-based measurements by space observatories such as XMM-Newton, Integral, the Infrared Space

Observatory, the Hubble Space Telescope and many future missions. The Summer School lectures will inform students in detail about the scientific advances made, the science goals of planned missions and the technical details of the missions, spacecraft and payloads. The Summer School takes place at a time when ESA and other agencies tackle the "big questions" and try to find answers to them. Students of the Alpbach Summer School should regard themselves as part of this process. Using the lectures and other sources of information they can identify a specific scientific goal and develop a mission concept, spacecraft and payload to address it. The mission proposals will also be considered in the framework of ongoing planning exercises for the future European space science programme.

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# Tele-education projects by ES

Andrea Cotellessa  
and Francesco  
Feliciani

Telecommunications  
Department

Directorate of  
European Union and  
Industrial  
Programmes

ESA

The satellite is a very effective means to transfer educational content and a faster solution when compared to terrestrial networks. Satellite communications can distribute large amounts of data over a wide geographical area. Since the late 1980s, ESA has been active in promoting activities in satellite communications with industry and user groups to bridge the distance between teachers and learners. The internet shows how Information and Communication Technology (ICT) can become an integral part of the educational world. Satellite communications continue to play an important role in enabling the widespread use of ICT for education.

ESA's Telecom Applications programme encourages, hosts and partially finances tele-education projects in order to develop and promote the use of satellite communications.

## **Distribution of educational content via satellite: from the TV to the IP World**

Distance education via satellite is not a new concept; for many years satellite TV broadcasting has been used to distribute educational content in the same way as the distribution of commercial satellite TV channels. The utilisation of a TV broadcasting channel via satellite for education is often hampered by the cost, which means that only if the community of users is very large the system can reach some form of sustainability. In the last years, with the rise of IP (Internet Protocol), an alternative set of technologies has become available. In particular, the possibility to distribute IP-based content via

satellite in broadcast and multicast mode using low-cost equipment at the reception sites, associated with new highly efficient video encoding techniques, has opened a breadth of new opportunities to tele-education via satellite.

## **Espresso for Schools:**

Espresso for Schools is one of the first projects hosted in ESA Telecom Applications. Launched in 1998 and concluded in late 1999, the pilot project of "Espresso for Schools" has developed a structured solution for providing educational multimedia content to British primary schools.

The architecture of the system is straightforward: every week, new educational content prepared at "Espresso" by a team of teachers and editors or gathered from a set of selected educational sites on the internet, is assembled in a portal organised according to the British curricula, and it is transmitted via satellite to the schools using a package delivery service provided by AstraNet. In each school, the "Espresso" content is received by a satellite TV dish and stored on the dedicated server. This way, video-rich educational material can be accessed without delay even when a broadband internet connection is not available.

Teachers have very little time to find educational resources suitable for activities in the classroom, and "Espresso" provides a tool to use ICT technologies without forcing the teacher to become an internet or multimedia expert. Espresso also provides a news section covering recent news topics.



More than 1750 schools in the UK use Espresso.

# A Telecom Applications



The Espresso for Schools website.

Pupils and teachers have enthusiastically accepted the whole concept of Espresso. Since its start in 1998, “Espresso” has become a fully commercial initiative, which is now adopted by more than 1750 schools and used daily by over 400,000 pupils in the UK. For more information about “Espresso for Schools” go to: <http://telecom.esa.int/espresso>

## 6. SchoolSat, the Satellite Goes to School

Access of primary and secondary schools to broadband internet is one of the key priorities in the EU political agenda. However, many rural areas are still excluded from broadband access to the internet. In order to provide a solution to this problem, the SchoolSat project used a two-way satellite system to connect ten schools in rural Ireland during a

service pilot phase in 2002-2003. The first part of the pilot phase has shown that the rate of internet use of the school is drastically influenced by the teachers’ motivation, experience and expectation, and not only by the availability of broadband access or by the ratio PC/pupils.

The project was partially financed by ESA under the ARTES 3 Multimedia Programme with the Belgian company @IT as prime contractor and the Irish Organisations WebSat, National Centre for Technology in Education NCTE and DCE.

More information on the SchoolSat project can be found on the website:

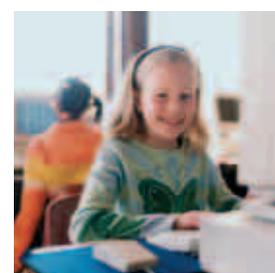
<http://telecom.esa.int/schoolsat>

## 5. SkyNurse: an Interactive Educational Platform for Professional Training

Among the different opportunities for professional education, the SkyNurse project, lead by the Italian research organisation Padova Ricerche in cooperation with Italian companies Telbios, Eukrasia and Didae, develops a tele-education platform which will be used in a pilot service phase to train 180 professional nurses in Romania in intensive qualification courses. After their examinations, the selected nurses will travel to Italy for the final part of the course and might eventually be recruited by Italian healthcare institutions.



Carndonagh Community School in Ireland SchoolSat is a trial service providing fast access to the Internet for schools in rural Ireland using leading-edge satellite technology developed by Web-Sat in Dublin and supported by the Telecommunications department of the European Space Agency.



Satellite technology can reach schools in rural areas.

Project Name [Prime Contractor - Countries Involved]	Key Subject	Web Link
Espresso for Schools [Espresso Productions – UK]	Multimedia educational resources via satellite for Primary Schools	<a href="http://telecom.esa.int/espresso">http://telecom.esa.int/espresso</a>
MODUS [SSI – I]	Distance University course over SkyPlexNet	<a href="http://telecom.esa.int/modus">http://telecom.esa.int/modus</a>
TRAPEZE [EFECOT – B]	Two-way satellite education network for children of travelling families	<a href="http://telecom.esa.int/trapeze">http://telecom.esa.int/trapeze</a>
HAMLET [Consortio Nettuno – I]	Intelligent portal for flexible learning environment via satellite	<a href="http://telecom.esa.int/hamlet">http://telecom.esa.int/hamlet</a>
SchoolSat [@IT – B, IRL]	Connectivity for Rural Schools via two-way satellite network	<a href="http://telecom.esa.int/schoolsat">http://telecom.esa.int/schoolsat</a>
SkyNurse [Padova Ricerche – I]	Training of Romanian Nursing Staff via Satellite	<a href="http://telecom.esa.int/skynurse">http://telecom.esa.int/skynurse</a>

Some of the tele-education projects in the ESA Telecom Programme.

# Space Girls' Day

"It is great to see that science and technology can be so much fun! And it is nice that people in these jobs are cool, too," says a 16-year-old while admiring the training pool in the European Astronaut Centre (EAC). On 22 April, the EAC and the German Aerospace Centre (DLR) in Cologne and the European Space Operations Centre (ESOC) in Darmstadt, Germany, were full of teenage girls who wanted to see what it is like to work in the space sector. Girls' Day is a Germany-wide event for schoolgirls between 14 and 16. All across the nation, technology-based businesses, research institutes, laboratories, offices and organisations like ESA and DLR open their doors to inform potential future engineers and scientists about career possibilities in science and technology.

More than 160 girls visited the different centres, made experiments in propulsion technology, tried out computers in ESOC's control room and chatted with female professionals from all disciplines about how they became interested in space. At the end of the day, the girls left exhausted and with lots of new knowledge in their heads – the most important of which is that science isn't scary after all!

For the female teenagers, the personal touch that the ESA-experts added by talking about their experiences in the space sector giving their own explanations of space research can be decisive. Lecturers, teachers and speakers often fulfil a function as role-model for youngsters who look for orientation in choosing a career path. "It was only by chance that I myself ended up in the space environment and I am happy it worked out that way. I wish today's girls would act in a more goal-oriented way. They should be aware of the fact that this will not only have consequences for their future professional career but will also have a considerable influence on their private life."-said Petra Mittler who talked about her work in medical control for astronauts in space at the EAC.

Kristin Wirth, one of the female experts from ESA, hopes to have inspired the scientists of the future: "I am very enthusiastic about science and physics and space and my job within the Rosetta Science Operations Team. So I wanted to get a bit of this motivation across to the girls and encourage them to become engaged in science." Daniela Zajonc from ESA's Education Department and ESA-coordinator for the EAC event, added: "We are not career coaches but role models. We aren't here to give lectures about our work but show girls that female professionals are nice, normal, accessible, fun women." It worked: "This day is great," comments a girl. "I can learn about new jobs and I get help to think about my own life. Can I become an engineer even though my grades in physics are bad this year?"



Physics can be fascinating.



The girls enjoyed the hands-on activities most.



Future control room staff?



The ESA "space girl" team.



Pupils enjoy a chat with a real "space girl" from ESA.

## Training for space-related applications

**FORUM ISSAT 2004**  
**17 and 18 November 2004**  
**Toulouse, France**



What training should be offered to highlight and develop the socio-economic contributions from space sciences and technologies? The third ISSAT (Institut des Sciences Spatiales et Applications de Toulouse) Forum will try to answer this question involving the organisations in charge of space-related training and the Industry and Space Agencies . The Forum is targeted at educators, students and professionals of the following areas:

- Control and management of the environment
- Telecommunication, positioning, navigation, data collection
- Knowledge of the Universe
- Space & Society

The forum will be organised in four sessions, one dedicated to each these topics. In conclusion, there will be a round-table discussion of the forum theme on the basis of the presented contributions.

For further information  
[www.forum2004.issat.com](http://www.forum2004.issat.com)

# Pictures from Madrid



Ariane 5 workshop with students

ESA Education participation in "Madrid por la Ciencia" Fair , 27 – 30 March. Of the approximately 120 000 visitors (30 000 students on Monday and Tuesday), some 25 000 people participated in ESA activities, which included workshops, videos, games, quizzes and a lecture.



More than 300 people wanted to see the Rosetta video – there wasn't enough space in the 50 m<sup>2</sup> stand!



The space quiz. All children wanted to play ...

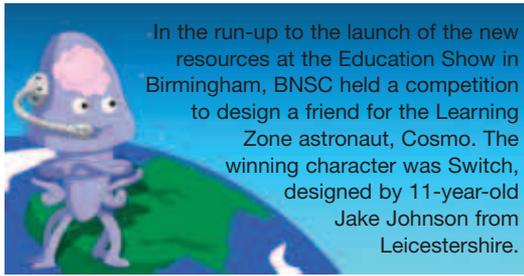


Game with children using the ESA images. Learn and play!



Valeriano Claros, head of VILSPA, on the inauguration day.

# Lessons for Young Space Cadets



Teachers can take their class on a journey around the Solar System and look at how plants and animals grow here on Earth.

The materials help with English and maths lessons as well as science, with sections dedicated to literacy and numeracy in a space setting.

Children as young as four can learn about the excitement of space with new teaching resources launched by the British National Space Centre (BNSC).

The new BNSC resources will help teachers to inspire very young children to learn about our planet and encourage them to find out more about space. The lessons are easy to download from the BNSC Learning Zone website and are tailored to Key Stage 1 of the UK National Curriculum (children aged four to seven).

Children across the UK will discover why the Moon shines, why we cast a shadow and what happens when the Sun goes behind a cloud.

The BNSC has a wide range of resources for students in Key Stages 1 to 4 (ages four to 16). The web-based lesson plans and worksheets help teachers and their students explore the science and technology behind ground-breaking events like Europe's first mission to Mars, as well as look at how humans impact on the Earth and find out more about the Solar System. All BNSC education materials are tied to the National Curriculum and are a unique way to teach science, maths and design technology.



Visit the BNSC's Learning Zone website at [www.bnsc.gov.uk/learningzone](http://www.bnsc.gov.uk/learningzone) or contact [fiona.hatton@bnsc.gsi.gov.uk](mailto:fiona.hatton@bnsc.gsi.gov.uk) for more information.

**Fiona Hatton**  
British National  
Space Centre

## What is ESA?

The European Space Agency is Europe's gateway to space. Its mission is to shape the development of Europe's space capability and ensure that investment in space continues to deliver benefits to the people of Europe.

ESA has 15 Member States: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom. Canada has special status and participates in some projects under a cooperation agreement. By coordinating the financial and intellectual resources of its members, ESA can undertake programmes and activities far beyond the scope of any single European country. ESA is an entirely independent organisation, although it maintains close ties with the European Union with whom it shares a joint space strategy.

ESA's job is to draw up the European space plan and carry it through. The Agency's projects are designed to find out more about the Earth, its immediate space environment, the Solar System and the Universe, as well as to develop satellite-based technologies and promote European industries. ESA also works closely with space organisations outside Europe to share the benefits of space with the whole of mankind.

ESA has its headquarters in Paris and it is here that future projects are decided upon. However, ESA also has centres throughout

Europe, each of which has different responsibilities:

- ESTEC, the European Space Research and Technology Centre, is the design hub for most ESA spacecraft and is situated in Noordwijk, the Netherlands.
- ESOC, the European Space Operations Centre, is responsible for controlling ESA satellites in orbit, and is in Darmstadt, Germany.
- EAC, the European Astronaut Centre, trains astronauts for future missions and is situated in Cologne, Germany.
- ESRIN, the European Space Research Institute, is situated in Frascati, near Rome in Italy. Its responsibilities include collecting, storing and distributing satellite data to ESA's partners and acting as the Agency's information technology centre.

In addition, ESA has liaison offices in the United States, Russia and Belgium, a launch base in French Guiana, and ground and tracking stations in various parts of the world.

ESA's mandatory activities (Science Programme and the general budget) are funded by a financial contribution from all the Agency's Member States, calculated in accordance with each country's gross national product. In addition, ESA conducts a number of optional programmes. Each country decides in which optional programme it wishes to participate and the amount of its contribution.

# What's coming up:

The **6th IAF Student Participation Programme** will take place from **4 to 8 October 2004** in **Vancouver, Canada**. The application deadline for ESA sponsorship for non-European students is 20 July 2004. All students from around the world are encouraged to apply. This year's themes are Disaster Management and World Heritage Sites. More information can be found at <http://www.estec.esa.nl/outreach/iaf/index.htm>

The **Children's international art contest** organised by Eurisy, Unesco and the Norwegian Space Centre is dedicated to children from 6 to 10 years. The last contest deadline for the Unesco calendar was extended to **20 August 2004**. All website visitors can vote for the best drawing/painting of the month by visiting the website: <http://www.spacecentre.no/competition>. More information is given on this website.

In the framework of the French "**Fête de la science**" the International Weather Forum will take place in Paris from **14-17 October**. The forum is organised by "Société Météorologique de France" and ESA is one of the partners. There will be exhibitions and activities for children and the general public. Coming soon on the website [www.cite-sciences.fr](http://www.cite-sciences.fr) or [www.smf.asso.fr](http://www.smf.asso.fr)

The **World Space Week** will take place from **4 to 10 October**. There will be activities all over the world. Check what's coming up in your country on the official website: [www.spaceweek.org](http://www.spaceweek.org)

Coming soon for teachers: on the EDUSPACE website "Africa from Space", "Envisat", "Europe Image Databank". Please visit [www.esa.int/education/eduspace](http://www.esa.int/education/eduspace)

The **ESA International Space Station Education team** develops educational products and organizes activities for different age groups. These are the events planned for 2004. More information under <http://www.esa.int/spaceflight/education>

- ISS Education Kits: Distribution in **Belgium** (Euro Space Centre Sep-Oct 2004) and Spain (Granada Oct 2004)
- Video Lesson Newton (DVDs): launch **10 September 2004 (ESTEC)**. For the DVD launch, ESA astronaut Pedro Duque and the three secondary-level schools from Germany, Ireland and Spain who were filmed as part of the DVD will be present. Request a copy at: [video-lessons@esa.int](mailto:video-lessons@esa.int)
- Erasmus Programme - Life in Space Lessons (with University P&M Curie) - **Sep. 2004, Banyuls**
- ISS Education Fund: Annual Meeting **10 September 2004 (ESTEC tbc)**

## EDUnews

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Editor: Barbara Warmbein  
Design & Layout: Eva Ekstrand

Published and distributed by:  
ESA Publications Division  
ESTEC, Keplerlaan 1  
2200 AG Noordwijk  
The Netherlands  
Phone: (+31)71 565 3400  
Fax: (+31)71 565 5433

© 2004 European Space Agency  
Printed in The Netherlands

ISSN 1682-8941



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