

## In Brief

# Galileo: First contracts signed

After the appointment of Rainer Grohe as Director of the Galileo Joint Undertaking in June, contracts for the first Galileo satellites were signed on Friday 11 July at ESTEC, the European Space Agency's research and technology centre in Noordwijk (NL).

*"Galileo is taking shape with every passing day. These first contracts are symbolic of Europe's collective resolve to develop the first civil global satellite navigation system",* said Claudio Mastracci, ESA's Director of Application Programmes.

The contracts are for two experimental satellites. One contract, worth 27.9 million Euros, has been awarded to the British firm Surrey Space Technology Limited. The main task of this test satellite is to transmit the Galileo signals from one of the orbits to be used by the constellation. It will also test various critical technologies that it will be flying, including the rubidium atomic clock and a signal generator. It will also measure the physical parameters of the orbit.

In order to minimize risks of delays, launch failure, etc. a contract worth 72.3 million Euros to build another test satellite has been placed with the consortium Galileo Industries. With a payload very similar to that of the satellites that will form the complete constellation, this satellite will serve to validate all the technologies to be flown. It might also be used in the system validation phase itself.

The appointment of Rainer Grohe means that the Joint Undertaking can now proceed with the various steps towards setting up the Galileo network. The Joint Undertaking's main task is to prepare for the Galileo programme deployment and operational phase, which should culminate in the selection of a concession holder to take charge of running the future Galileo operating company. Three or four test satellites will subsequently be launched for validation of the system around 2006/2007.



The core of the Galileo system is its constellation of 30 satellites (27 operational, 3 spare) circling in medium Earth orbit in three planes inclined at 56° to the equator at 23 616 km altitude. This constellation will provide excellent global coverage. Two centres will be set up in Europe to control satellite operations and manage the navigation. 

*Claudio Mastracci, ESA Director of Application Programmes (left) and Sir Martin Sweeting of Surrey Space Technology Limited sign one of the first contracts for Galileo*

## Green Paper on European Space Policy

After a four-month consultation on the Green Paper on European Space Policy, key measures to drive forward Europe's space ambitions were proposed at a conference in Paris in June. Other priorities outlined at the conference included better co-ordination between all sectors at EU and international levels, guaranteed independent access to space for Europe and a flexible system of programme funding.

Participants stressed the need to develop space technology, such as Internet by satellite and security applications. The conference provided important input for the forthcoming EU White Paper on Space Policy, due to be published by the European Commission in October this year.

*"People expect the EU to play a greater role in space, and we must be ready to meet those expectations", said Philippe Busquin, European Commissioner for Research. "We will build on the lessons learnt from the consultation to devise an ambitious action plan for European space policy. With strong political commitment from all key space stakeholders and sustained interest among the public, we can turn Europe into the space leader of the 21st century."*

The Green Paper on European Space Policy, adopted by the European Commission on 21 January, is a strategic document developed in co-operation with the European Space Agency, which opens a new era for Europe in space. Its aim was to initiate a broad debate on the medium- and long-term future use of space for the benefit of Europe.

With six meetings scheduled in European capitals, workshops, bilateral presentations and an on-line forum, this consultation prompted several thousand contributions from a whole host of interested parties. Institutional users, industrial managers, researchers and scientists, NGOs and ordinary citizens in Member States, applicant-member countries and other countries associated with European space activities have thus had ample opportunity to voice their opinions and help usher in a new era for Europe in space.

Through an open, transparent and democratic debate, a broad consensus on a number of key actions has taken shape. During the consultation, space sector players addressed a series of options, including:

- Upgrading the space policy institutional framework, possibly by creating a Council of Space Ministers;
- Using the same satellite systems for both civil and defence/security purposes (multiple-use systems);
- An institutional market which recognises space potential in addressing civil policy objectives such as communication and navigation;
- Independent, reliable and affordable access to space through the European Guaranteed Access to Space (EGAS) programme;
- The need for a European Security and Defence Agency;
- Improved career prospects, training and development for people working in space research and technology;
- A doubling of funding for European research;
- Harmonising data collection and processing at European level, with the Commission supporting a powerful data processing system for climate forecasts and global change monitoring;
- Establishing the International Space Station as a base for microgravity research;
- Further support for ESA's Aurora programme;
- Developing space applications to underpin technological and scientific development and the security of citizens;
- Developing a programme to achieve seamless broadband communications for everyone in Europe; and
- Supporting the enlargement process and European integration through satellite technologies and shared policy objectives.

In October 2003, the Commission is expected to release the White Paper on European Space Policy, with subsequent submission to the Council and Parliament. The White Paper will include an action plan setting out a future strategy for space activities in the European Union. It will acknowledge the contributions received, and include proposals for the content, organisation and level of future European space activities. In November 2003, the White Paper is on the agenda to be discussed by the Council of the European Union in the Competitiveness Council under the Italian Presidency. 

## First EGNOS signal in space

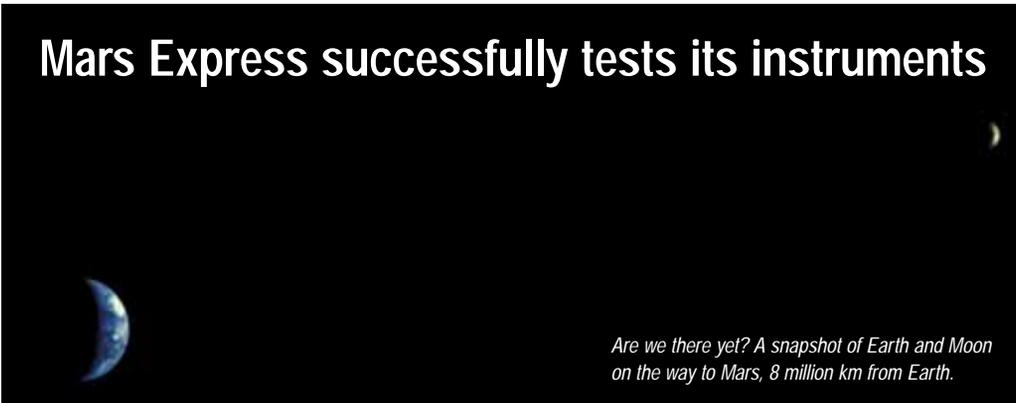
The European Geostationary Navigation Overlay Service (EGNOS) system has started its first signal transmission tests. This system is Europe's first venture into satellite navigation and by early next year will deliver the first European Satellite Navigation service. It will augment the two military satellite navigation systems now operating, the US GPS and Russian GLONASS,

making them suitable for many mass-market applications such as car navigation, bus and truck fleet management, but also for specific applications such as assisting blind people when walking in an unknown area. In addition, after a certification process, EGNOS will be used for safety-critical applications such as controlling aircraft or navigating ships through narrow channels.

When completed, EGNOS will consist of three geostationary satellites and a network of ground stations that will transmit signals containing information on the reliability and accuracy of the positioning signals sent out by GPS and GLONASS. It will enable users in Europe and beyond to determine their position to within 2 m, compared with about 20 m with GPS alone.

EGNOS is a joint project involving the European Space Agency, the European Commission and Eurocontrol. It is Europe's contribution to the first stage of the Global Navigation Satellite System (GNSS) and is a precursor to Galileo, the full global satellite navigation system under development in Europe. 

## Mars Express successfully tests its instruments



*Are we there yet? A snapshot of Earth and Moon on the way to Mars, 8 million km from Earth.*

One of the first data sets coming from ESA's Mars Express is a unique view of our home planet and the Moon. *"It is very good news for the mission,"* says ESA's Mars Express Project Scientist, Agustin Chicarro. These and other data, such as those recording the major constituents of Earth as seen from space, are the actual proof that the instruments on board Mars Express, launched on 2 June 2003, are working well.

The views of Earth and Moon were taken on 3 July 2003 by Mars Express's High Resolution Stereo Camera (HRSC), when the spacecraft was 8 million kilometres from Earth. The image taken shows true colours; the Pacific Ocean appears in blue, and the clouds near the Equator and in mid to northern latitudes in white to light grey. The image was processed by the Instrument Team at the Institute of Planetary Research of DLR, Berlin (Germany). It was built by combining a super resolution black and white HRSC snapshot image of the Earth and the Moon with colour information obtained by the blue, green, and red sensors of the instrument.

The experts will carry on testing Mars Express's instruments until its arrival at the Red Planet next December. The instruments will increase our understanding of the morphology and topography of the Martian surface, of the geological structures and processes and of Mars's geological evolution. With such tools, Mars Express is also able to address the important "water" question, namely how much water there is today and how much there was in the past. Ultimately, this will also tell us whether Mars had environmental conditions that could favour the evolution of life.



## Argentina's CONAE joins the International Disaster Charter

The International Charter on Space and Major Disasters has a new member, Argentina's Comisión Nacional de Actividades Espaciales (CONAE).

The Charter is the expression of a joint effort of global space agencies to put space technologies at the disposal of rescue authorities in the event of major disasters. This help is given by providing space-acquired data and associated information and services to civil protection agencies worldwide. CONAE's accession to the Charter represents an important addition to the only operational service making co-ordinated use of multiple Earth Observation satellites, bringing the South American region within the scope of the Charter for the first time.



## Keeping in touch with probes in deep space

ESA is going to build a deep space ground station in Cebreros near Avila in Spain. ESA's Director General Jean-Jacques Dordain and representatives of the Spanish Government, the Secretary of State for Defence Fernando Díez Moreno and the Secretary of State for Science and Technology, Pedro Morenés Eulate, signed an agreement to this effect in Madrid on 22 July.

Communicating with spacecraft, such as Mars Express, over very long distances, and probes that have to be controlled remotely, together with their onboard instruments, at distances up to 900 million kilometres from Earth (more than six times the distance from the Earth to the Sun) requires large and powerful antennas.

The new ground station is scheduled to start operations in September 2005. The Government of Spain will grant ESA a 75-year lease on two plots of land. One plot will accommodate the space

tracking facilities and the 35 m diameter deep-space antenna. The other will house the calibration tower, used to simulate the signals transmitted by spacecraft for testing purposes. Construction work is scheduled to start in September this year.

*"In terms of radio-electric conditions, the Cebreros environment is perfect, and will give this new site an important growth potential,"* said ESA's Director of Technical and Operational Support, Gaele Winters.

The network of antennas in Spain – at Cebreros, Villafranca del Castillo (ESA) and Robledo (NASA/JPL) – will soon be one of the most important groups of satellite tracking stations in the World, due to their optimum environments free of radio-electric disturbances. They will make a valuable contribution to the scientific and technological infrastructure for European space activities.



## ISS prepares for Spanish Soyuz mission



*The Progress vehicle about to dock with the International Space Station*

The Spanish Soyuz mission to the International Space Station (ISS) planned for October took another step forward with the arrival of European experiment hardware at the ISS on an unmanned Progress M1-10 spacecraft on 11 June.

The European cargo included a 3D-camera, a new crew restraint system and a major component of the NANOSLAB experiment, which first flew with ESA astronaut Frank De Winne in November 2002 as part of the Belgian Odissea Mission. It has since been modified for the Spanish Soyuz Mission in October.

Another European experiment to arrive was PROMISS-2, which is designed to investigate the fundamental processes that underly protein crystallisation. A number of educational experiments have also arrived on

the Progress M1-10, including APIS, a motion experiment, Thebas, to test basic principles of mechanics, and Video-2, which is designed to demonstrate Newton's three laws of motion under microgravity conditions.

Spanish ESA astronaut Pedro Duque will be flight engineer on the new Soyuz TMA-3 spacecraft, which will take him and the ISS Expedition 8 crew to the ISS. He will return in the Soyuz TMA-2 spacecraft with the Expedition 7 crew (US astronaut Ed Lu and Russian cosmonaut Yuri Malenchenko) who are currently on the ISS.

The new Soyuz TMA spacecraft has been fully approved for operations. In May, the first spacecraft of the new series TMA-1 had touched down 400 km short of the intended landing site

when it returned to Earth with the ISS Expedition 6 crew on board.

In the meantime, around 5000 school children in more than 250 Spanish primary school classes entered the 'Habla ISS' contest to win a chance to talk live via radio with ESA astronaut Pedro Duque during his stay on board the ISS. The evaluation committee has selected the two best drawings and the two best stories, and the winning classes will spend one day in the 'Verbum' museum of Vigo, Spain, from where the radio-contact will be established with the Space Station.



*3D camera with its launch container*

## ESA's science fleet makes headlines

### Cluster

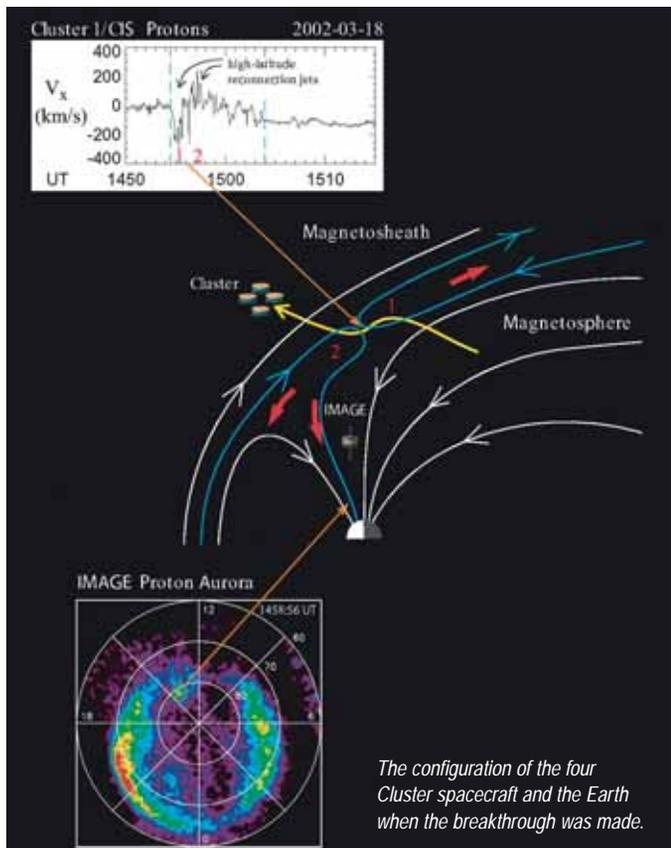
ESA's four Cluster spacecraft have made a remarkable set of observations that has led to a breakthrough in understanding the origin of a peculiar and puzzling type of aurora.

These aurorae – seen as bright spots in Earth's atmosphere and called 'dayside proton auroral spots' – occur when fractures appear in the Earth's magnetic field, allowing particles ejected from the Sun to squirt through and collide with the molecules in our atmosphere. This is the first time that a precise and direct connection between the two events has been made.

Philippe Escoubet, ESA's Cluster Project Scientist, comments:

*"Thanks to Cluster's observations scientists can directly and firmly link for the first time a dayside proton auroral spot and a magnetic reconnection event."*

Tai Phan, leading the investigation at the University of California, Berkeley, United States, now looks forward to a new way of studying the Earth's protective shield. He says, *"This result has opened up a new area of research. We can now watch dayside proton aurorae and use those observations to know where and how the cracks in the magnetic field are formed and how long the cracks remain open. That makes it a powerful tool to study the entry of the solar wind into the Earth's magnetosphere."*



*The configuration of the four Cluster spacecraft and the Earth when the breakthrough was made.*

### XMM Newton

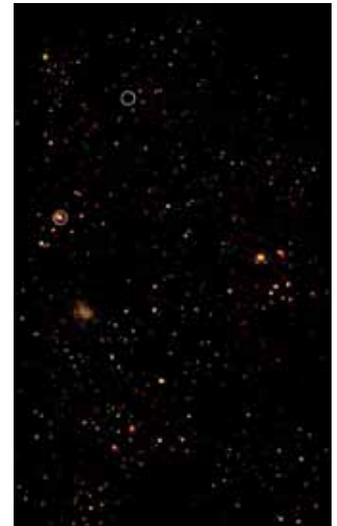
Also XMM-Newton has provided a first in astronomy – it measured the magnetic field of a neutron star for the first time. The results provide deep insights into the extreme physics of neutron stars and reveal a new mystery yet to be solved about the end of this star's life.

A neutron star is very dense celestial object. It is the product of a stellar explosion, known as a supernova, in which most of the star is blasted into space, but its collapsed heart remains in the form of a super-dense, hot ball of neutrons that spins at an incredible rate.

One such neutron star is 1E1207.4-5209. Using the longest ever XMM-Newton observation of a galactic source (72 hours), Professor Giovanni Bignami of the Centre d'Etude Spatiale des Rayonnements (CESR) and his team have directly measured the strength of its magnetic field. This makes it the first ever isolated neutron star where this could be achieved.

X-rays emitted by a neutron star like 1E1207.4-5209 have to pass through the star's magnetic field before escaping into space. En route, particles in the star's magnetic field can steal some of the outgoing X-rays, imparting on their spectrum tell-tale marks, known as 'cyclotron resonance absorption lines'. It is this fingerprint that allowed Prof. Bignami and his team to measure the strength of the neutron star's magnetic field.

All previous values of neutron star magnetic fields could only be

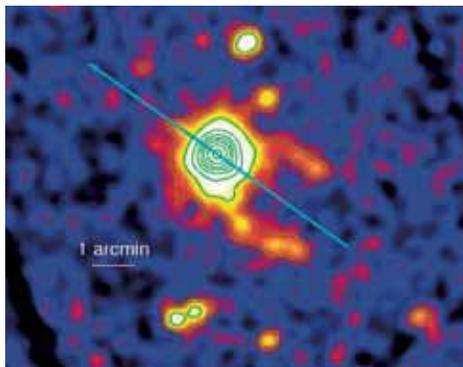


*The first image from the XMM-LSS survey, the world's deepest 'wide screen' X-ray image of the cosmos to date. It represents a region of the sky eight times larger than the full Moon and contains around 25 clusters.*

estimated indirectly. This is done via theoretical assumptions based on models that describe the gravitational collapse of massive stars, like those which lead to the formation of neutron stars. A second indirect method is to estimate the magnetic field by studying how the neutron star's rotation slows down, using radio astronomy data.

In the case of 1E1207.4-5209, this direct measurement using XMM-Newton reveals that the neutron star's magnetic field is 30 times weaker than predictions based on the indirect methods.

How can this be explained? Astronomers can measure the rate at which individual neutron stars decelerate. They have always assumed that 'friction' between its magnetic field and its surroundings was the cause. In



Geminga and its tails.

this case, the only conclusion is that something else is pulling on the neutron star, but what? We can speculate that it may be a small disc of supernova debris surrounding the neutron star, creating an additional drag factor.

The result raises the question of whether 1E1207.4-5209 is unique among neutron stars, or is the first of its kind. The astronomers hope to target other neutron stars with XMM-Newton to find out.

This is not XMM Newton's only headline. Astronomers using it have discovered a pair of X-ray tails stretching 3 million million kilometres across the sky. They emanate from the mysterious neutron star known as Geminga. The discovery gives astronomers new insight into the extraordinary conditions around the neutron star.

A neutron star measures only 20-30 kilometres across and is the dense remnant of an exploded star. Geminga is one of the closest to Earth, at a distance of about 500 light-years. Most neutron stars emit radio emissions, appearing to pulsate like a lighthouse, but Geminga is 'radio-quiet'. It does, however, emit huge quantities of pulsating gamma rays, making it one of the brightest gamma-ray sources in the sky. Geminga is the only example of a successfully identified gamma-ray source from which astronomers have gained significant knowledge.

## ISO

Scientists are celebrating the thousandth scientific publication from ESA's veteran Infrared Space Observatory (ISO). ISO is becoming one of the world's most productive space missions, even though its operational life ended in 1998.

ISO was the world's first space observatory able to see the sky in infrared light. Through its 'eyes', we have discovered many new phenomena that have radically changed our view of the Universe.

*"ISO results are impacting most fields of astronomical research, almost literally from comets to cosmology,"* explains Alberto Salama, ISO Project Scientist. *"Some results answer questions. Others open new fields. Some are already being followed up by existing telescopes; others have to await future facilities."*

When ISO's operational lifetime came to an end in 1998, its observations became freely available to the world scientific community via ISO's data archive. In May 2003, the 'milestone number' of 1000 scientific papers was reached. Even now, ISO's data archive remains a valuable source of new results. For example, some of the latest papers describe the detection of water in 'protostars', which are stars just in the process of being born.



## SOHO resumes full operation

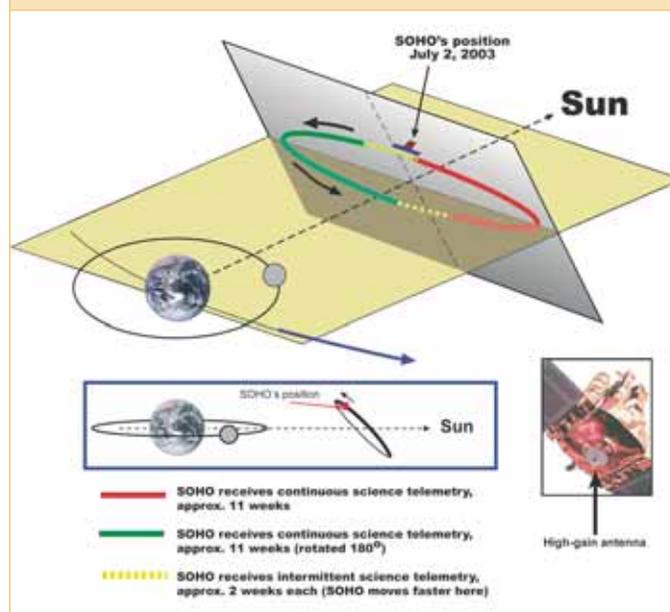
ESA/NASA's SOHO spacecraft is back to full operation after its predicted 9-day high-gain antenna blackout. Engineers and scientists are now confident that they understand the situation and can work around it in the future to minimise the data losses.

Since 19 June SOHO's high-gain antenna (HGA), which transmits high-speed data to Earth, has been fixed in position following the discovery of a malfunction in its pointing mechanism. This resulted in a loss of signal through SOHO's usual 26-metre ground stations on 27 June, while 34-metre radio dishes continued to receive high-speed transmissions from the HGA until 1 July.

Since then, astronomers have been relying primarily on a slower transmission rate signal, sent through SOHO's backup antenna. It can be picked up whenever a 34-metre dish is available. However, this signal could not transmit all of SOHO's data. Some data was recorded on board, however, and downloaded using high-speed transmissions through the backup antenna when time on the largest, 70-metre dishes could be spared.

SOHO itself orbits a point in space, 1.5 million kilometres closer to the Sun than the Earth, once every 6 months. To reorient the HGA for the next half of this orbit, engineers rolled the spacecraft through a half-circle on 8 July 2003. On 10 July, the 34-metre radio dish in Madrid re-established contact with SOHO's HGA. Then on the morning of 14 July 2003, normal operations with the spacecraft resumed through its usual 26-metre ground stations, as predicted.

With the HGA now static, the blackouts, lasting between 9 and 16 days, will continue to occur every 3 months. Engineers will rotate SOHO by 180 degrees every time in order to minimise data losses.



## ESA at the 2003 Paris Air Show

From Saturday 14 to Sunday 22 June, ESA was present at the 2003 Paris Air Show at Le Bourget with a special pavilion dedicated to the European space programmes. The 1000 square metre exhibition area was used to host a wide range of exhibits and events highlighting ESA's activities in Space Science, Space Transportation, Human Spaceflight, Telecommunications and Navigation, Earth Observation, Industrial Matters and Technologies, Future Concepts and Education.

As the largest international air show, Le Bourget represented an excellent opportunity for the general public and the space community to get acquainted or keep up to date with the latest European space projects. The media in particular benefitted from the special opportunities that were provided for briefings and interviews with ESA's Directors and experts in various disciplines.

Highlights of the media programme during the week included:

- *'ESA Achievements and Perspectives'* - Press Breakfast with ESA's Director General Antonio Rodotà and future Director General Jean-Jacques Dordain.

- *'European Strategy for Satellite Navigation: From EGNOS to Galileo'* - Press Briefing with Claudio Mastracci, ESA's Director of Applications.

- *'European Launchers: The Way Forward'* - ESA's Director of Launchers Jean-Jacques Dordain, and representatives of CNES and Arianespace, outlined to managers from European industry the decisions concerning the European launcher sector taken at the ESA Ministerial Council Meeting on 27 May and the impact that they will have.

- *'Observing the Earth: Why is it Important?'* - Conference chaired by ESA's Director of Earth Observation José Achache, in which



distinguished speakers outlined to potential users and European policy makers the importance of satellite images for understanding and securing our planet.

- *'Overview of ISS Status'* - Jörg Feustel-Büechl, ESA's Director of Human Spaceflight, briefed the media on the present status of and outlook for European participation in the International Space Station.

- *'Launch of the European ISS Business Club'* - The launching of an ESA-initiated forum for commercial entities associated with the design, development, operation and utilisation of the European elements of the International Space Station.

- *'Technology Transfer: An Everyday Reality'* - Pierre Brisson, Head of ESA's Technology Transfer Programme, was present to demonstrate what things like an anti-UV suit for babies suffering from Xeroderma Pigmentosum, the C 60 prototype cars of the Pescarolo Sport Team, an air-decontaminating device for hospitals, an alarm to monitor elderly people and the new sailing catamaran of French yachtsman Yves Parlier have in common, and what all of these items have to do with space.

- *'Women in the Space Industry'* - A debate chaired by ESA's Director of Administration Daniel Sacotte, in which women from industry, universities, international organisations and the media shared their experiences in their professional careers.

- *'The European Space Technology Master Plan'* - A debate chaired by Hans Kappler, ESA's Director of Industrial Matters and Technology Programmes, addressing how technology harmonisation is able to support the competitiveness of European industry and the creation of a balanced industrial landscape.

The accompanying photographs were taken during these and the many other events that took place in the ESA Pavilion during the week.



*The visit of President Jacques Chirac (left) to the ESA Pavilion on 14 June, accompanied by ESA's current and future Director Generals, Antonio Rodotà (centre) and Jean-Jacques Dordain (right) (photo: ESA/S. Corvaja)*



The media briefing on Tuesday 17 June on 'European Launchers: The Way Forward', hosted by Jean-Jacques Dordain (third from left)



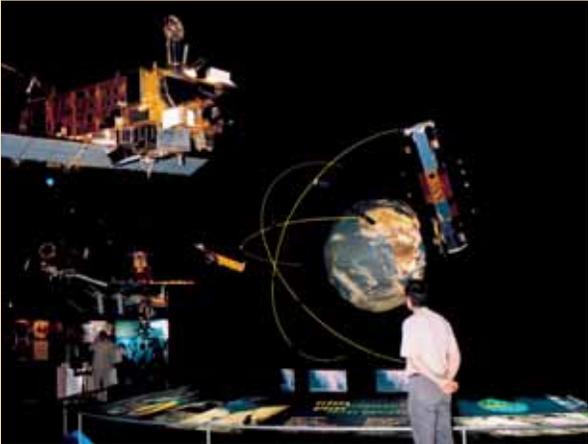
Signature, on 18 June by the Director General of UNESCO, Koichiro Matsuura, and ESA's Director General, Antonio Rodotà, of the ESA-UNESCO Agreement on the use of European space technology to help preserve more than 700 natural and cultural World Heritage Sites designated by UNESCO



The 'Observing the Earth: Why is it Important?' conference on Wednesday 18 June, chaired by José Achache, ESA's Director of Earth Observation (third from left)



(photos: ESA/A. v.d. Geest)



## Getting ready for Physics on Stage 3

For the second year, ESA/ESTEC will host the teaching festival Physics On Stage. This third edition of the unique international event will take place from 8 to 15 November. More than 400 delegates – experts on physics teachers, university lecturers, researchers and others – from 22 countries will take part in this big week of information exchange organised around the theme of 'Physics and Life'.

The overall objective of the Physics on Stage project is to raise the quality and increase the attractiveness of science teaching in Europe. This year's theme, 'Physics and Life', reflects the decision to broaden the Physics on Stage activities to encompass all sciences in an interdisciplinary approach.

The festival is only the culminating event of a year-long programme. Many activities take place throughout the year in the various countries involved in the project (see panel) and a national steering committee chooses the delegates to the festival. Each delegate has been selected for his or her projects or outstanding and original ideas dedicated to making science more attractive.

Physics on Stage is organised by EIROforum (European Inter-governmental Research Organisations Forum) (see Bulletin 108, November 2001), and is co-funded by the European Commission, as part of European Science and Technology Week 2003.

The week's programme will include spectacular and original

performances, a large fair with a stand for each country, where teachers can exchange ideas, and dedicated workshops. A new innovation this year will be seminars organised and presented by EIROforum members. Also on the agenda are a mystery cultural event and an award ceremony for the most popular project.

For more information about Physics on Stage 3 and the national events, visit the web site: <http://www.physicsonstage.net>.



Students performing at the Bulgarian National Event



This year's topic is "Physics and Life"

### List of National Events in 2003

- 15-18 May Silistra, Bulgaria
- 16 May Gothenburg, Sweden
- 28 May Gent, Belgium
- 31 May Varna, Bulgaria
- 7 June Varna, Bulgaria
- August / September Finland
- 27 - 29 August Ceske Budejovice, Czech Republic
- 6 September Poznan, Poland
- 12-14 or 19-21 September, Hungary
- 12 September Aarhus, Denmark
- 19 - 21 September Geneva, Switzerland
- 19 - 20 September Athens, Greece
- 20 September, Slovak Republic
- 25 - 26 September L'Aquila, Italy
- 26 - 28 September Terrassa, Spain
- 2 October Utrecht, The Netherlands
- 4 October Lisbon, Portugal

## Earth observation on a global scale

High-level delegates from 30 countries and 22 international organisations agreed at the Earth Observation Summit, held on 31 July in Washington, to improve cooperation on Earth observation and to remove barriers to the exchange of information between countries and organisations.

ESA already carries out its Earth observation programmes in cooperation with other agencies or countries through mechanisms such as CEOS, the Committee of Earth Observation Satellites and IGOS-P, the Integrated Global Observing Strategy Partnership. Another good example of the way cooperation between space agencies can lead to increased utilisation of EO data is the International Charter on Space and Major Disasters. This provides data at short notice to civil protection agencies to help them deal with emergencies.

ESA is an active member of these organisations and also leads, together with the European Commission, Europe's major contribution to integrated global observation of the Earth – the Global Monitoring for Environment and Security (GMES) initiative. GMES also involves Eumetsat and European national space agencies in an integrated approach to support European policy.

Important though these initiatives are, what is still lacking is a truly global partnership to encompass all countries, rich and poor, which will allow the transfer and use of Earth-observation information by



all. The meeting was an important step in the right direction because it showed that the political will is now there to bring this about.

The declaration issued at the end of the meeting emphasised the need for timely long-term information as the basis for sound decision making; the need to coordinate strategies and systems; to assist developing countries to use and contribute to Earth observation data; and, to foster the exchange and integration of information obtained from the ground, as well as from aircraft and satellites. The Earth Observation Summit also agreed to prepare a 10-year Implementation Plan to build on existing systems and initiatives.

ESA's delegation to the Summit was led by the new Director General Jean-Jacques Dordain.

As a member of the Panel on 'How to identify needs and how to fill the gaps', ESA's Director of Earth Observation Programmes, José Achache, described how a number of ESA's Earth Explorer missions – such as the SMOS satellite to measure soil, moisture and ocean salinity; CryoSat to measure changes in the Earth's terrestrial and marine ice fields; and the ADM-Aeolus mission to provide global observations of three-dimensional wind fields – will make a unique contribution to global monitoring. These missions will improve our understanding of the Earth system, but there will

remain a need to support long-term continuity of such observations beyond the research stage.

*"For its part", says José Achache, "ESA has already demonstrated, through its GMES and Oxygen initiatives, that it is a strong believer in global monitoring and improving access to Earth observation data. It is important that we contribute to the proposed global coordination, while maintaining the independent capacity to make observations in support of European policies in environment and civil security. A strong independent programme is a prerequisite for successful partnership. We support the Summit declaration and will play our part to ensure that it is implemented."*

Work will now proceed with preparing the framework for the 10-year Implementation Plan in time for the next Ministerial Conference to be held in Tokyo before next summer. This will enable the Plan to be presented at the Ministerial Conference to be hosted by the European Union towards the end of 2004. 