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Science Committee

Committee on the Challenges of Modern Society

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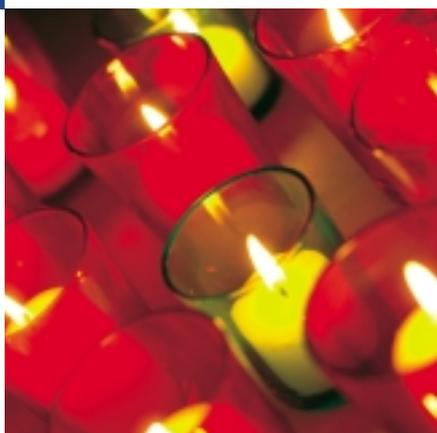
www.nato.int/science

www.nato.int/ccms

The security-related activities take off

Over thirty NATO-sponsored workshops on security-related science topics are taking place in the period September to December this year. This is just one indicator of the vitality of the new Security Through Science Programme since its launch at the beginning of the year, and the response of the academic community to the opportunities the programme has to offer. Fifteen new Science for Peace projects have also been launched, and forty planning grants have been awarded, which will result in more projects early next year. Add to this some one hundred Collaborative Linkage Grants, and sixty Reintegration Grants, as well as numerous Advanced Study Institutes and computer networking activities supported over the year, and it can be seen that the security-related activities have already taken root.

The programme was changed in line with the evolving security environment and NATO's changing goals and objectives. Many security challenges can only be addressed by working closely together, and nowhere more so than in the scientific arena. Scientists and experts from NATO, Partner and Mediterranean Dialogue countries are creating collaborative partnerships through the Security Through Science Programme, and the programme of the Committee on the Challenges of Modern Society (CCMS), to combat the terrorist threat, and the threats to the global environment, which are increasingly being recognised as a similar security challenge. The security-related activities described in our newsletter may attest to this constructive collaboration.



Advanced Research Workshops a fruitful autumn

⇒ The abundance associated with the autumn months has been reflected in the Security Through Science Programme this year, and notably through the number of Advanced Research Workshops which have taken place. The results of the workshops will be published in a few months' time in the NATO Security Through Science Series of books. The range of the security-related subjects covered among the workshops may be illustrated by the selection below.

A direct link to the full calendar of meetings is now shown on the home page of the NATO science web site at www.nato.int/science. Consult the site for new 2005 meetings.



Information Security

Today's information security is undisciplined. It is often treated as a last minute, patch-up band-aid, and ends up satisfying only certain minimal requirements; it is typically not a part of the system engineering process from the beginning. This assertion formed the basis for a workshop on **Cyberspace Security and Defence** held at Gdansk, Poland from 6-9 September, which tackled some of the research issues involved in overcoming the current technical restrictions. Among the topics dealt with were - effectiveness, management and deployment of intrusion detection systems; dependable and fault-tolerant systems to survive catastrophic attack; effectively building security into systems from scratch; and cryptography for new and effective data and communication protection. The co-directors were Dr. Janusz Kowalik, of Seattle, Washington, USA, and Prof. Anatoly Sachenko, Institute of Computer Information Technology, Ternopil, Ukraine.

Medical Countermeasures in Defence Against Terrorism

Such questions as - what are the most important gaps in public health protection with regard to escape of radioactive material and bioterrorist actions? what facilities are available for treatment of the public if exposed? what are the most important gaps in food safety? what border controls are there to combat the import of contaminated food or diseased plants? - were examined at a workshop in Tbilisi, Georgia, from 25-30 September. The aim of the workshop, on **Assessment of Preparedness of the Caucasus Countries for Bio-Terrorist Attacks, and Planning of Countermeasures**, was to aid the governments of the Caucasus republics in the planning and organisation of civil defence programmes in the event of major terrorist incidents. The workshop co-directors were Dr. Nina Chanishvili of the Eliava Institute of Bacteriophage, Microbiology, and Virology, Tbilisi, Georgia and Prof. Richard Sharp, Health Protection Agency, Porton Down, UK.

Human and Societal Dynamics

Creating the building blocks for a progressive dialogue between Europe, North America and North Africa was the title of a workshop held in Morocco on 8-11 October. The aim was to establish the exact nature of the 'image of the other' held by people from different areas of the world, and to devise a mechanism to enable national and international institutions to put in place processes to counter negative images on both sides. The participants were social scientists from both governmental and non-governmental sectors, including the corporate world, education and strategic studies. Two groups were of particular relevance, one being young

people of North African origin who live and work in Europe, and the other young North Africans, aged between 18 and 25, whose voice is seldom heard in such international fora. The co-directors were Mr. Francis Ghiles of the Institute of the Mediterranean, Paris, and Prof. Abdelmounaïm Dilami, of Rabat University, Morocco.



NATO book series goes online

The NATO Science Series of books will shortly be available in both electronic version and hard copy. The series will also be renamed to reflect the security-related content of the books, following the restructuring of the science programme. It will in future be known as the NATO Security Through Science Series.

The two publishers Springer Science and Business Media (formerly Kluwer Academic Publishers) and IOS Press Amsterdam are in the final stages of developing a system of e-books, based on their successful electronic journal publishing, to be available through the publisher's web sites. A link to these sites will be established from the NATO science web site, and an announcement will be made on the web site as soon as the series is online, which will be early in 2005.

A diagnostic tool to improve border security

Two complementary workshops dealing with border security problems have studied practical issues in controlling border traffic, by bringing together both field operators and technology specialists. The first workshop, held in December 2003, led to the development of a diagnostic tool to audit the efficiency of border security systems, and identify what technical means were currently being used to support border security and what shortfalls were evident. For the tool to be more effective, however, the workshop identified a need for a set of standards for border security against which agencies could be compared. A second meeting was therefore supported, which took place in July 2004, and which focused on four key areas of border security for which to set benchmark standards, namely counter-terrorism, counter WMD proliferation, intelligence fusion and inter-agency cooperation. In considering the possible application of science and technology to these areas a number of different topics were considered such as: CBRN Detection, Explosive Detection; Intrusive Inspection and Miniaturisation, Biometric Scanning and Profiling, etc. The workshops were co-directed by Andrew Dolan of Euroborders, Edinburgh, UK, Laszlo Toth, Szeged Centre for Security Policy, Hungary and Svilen Alexandrov, Rakovski Defence and Staff College, Sofia, Bulgaria.

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Suicide terrorism: the strategic threat and countermeasures

A workshop co-sponsored by the NATO Security Through Science Programme and the NATO Research and Technology Organisation sought to assess the available research on suicide terrorism in order to come to a better understanding of the phenomenon. The workshop took place in Lisbon, Portugal, on 10-14 June, and was co-directed by Dr. Scott Atran, University of Michigan, USA, and Dr. Ariel Merari, University of Tel-Aviv, Israel. Prominent experts on all aspects of suicide terrorism from countries with experience of such attacks, came together to consider the issue, to consider the perpetrators, their motives, their recruitment and preparation, and recommend counter strategies and further areas of research.

Our Science Memory

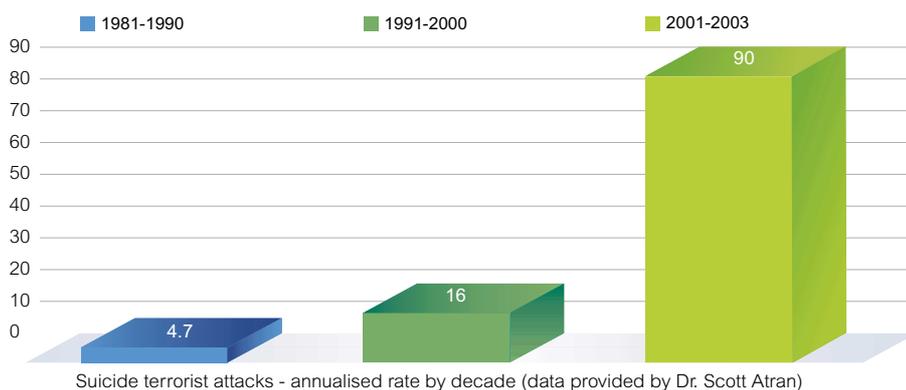
To the well-known question “Who did what, and when?” she would instantly give you fifty answers, each one different but each one well reasoned - such as the names of the NATO grantees who received the Nobel Prize, or the programme’s best research teams, ordered by laboratory, country, year of award...

She knows everything there is to know about the cooperative science programme of the Alliance, since it began in 1957/1958 to its latest incarnation in 2003. She is the living memory, and the observant and discreet witness of the programme’s hours of glory, its difficulties, and its numerous reorientations to serve the interests and missions of the Organisation.

She is also the agile pen which each quarter puts together this newsletter, taking care to transmit in a comprehensible style, the results and activities which unite the scientific communities of NATO and its Partners. A work of memory as well as of editorship.

But this “memory” is leaving us; this pen will now be devoted to... her own memories. Because this newsletter is her last, and is no doubt infused with a grain of nostalgia. The nostalgia which comes over us all in saying - “Thank you Enid for so many years’ work; thank you for your constant devotion to the Atlantic Alliance and to its Science Programme. A Merry Christmas, and many good and happy years ahead”.

Jean Fournet



Environmental security - an essential element of peace



⇒ “Peace on Earth depends on our ability to secure our living environment”

Norwegian Nobel Committee 2004

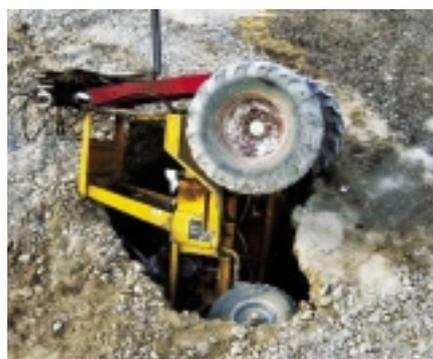


The Prespa Lake at Zaveri, Albania

Tackling sinkhole hazards around the Dead Sea

A Science for Peace project aimed at resolving a problem of environmental security and stability in the Dead Sea region will soon get underway. The project will develop a geophysical tool for prediction of sinkhole development in this region of Israel and Jordan. Sinkholes are a feature of areas where the land beneath the surface is porous rock, such as limestone, or salt beds. They can appear without warning, as water builds up underground, causing the rock to dissolve, and creating caverns within the rock. When there is not enough support for the land above the spaces, the land suddenly collapses. This is now happening frequently in Israel and Jordan along the coastlines of the Dead Sea. Since 1990 hundreds of sinkholes have collapsed in this area, including on main roads and in the area of resort hotels, in economically valuable potash concentration facilities, and on farmland.

As well as developing the geophysical tool, based on detecting variations in physical factors as the sinkholes develop, the project will also work on implementing and strengthening relationships between governmental institutions and professionals in the two countries concerned, and will initiate transfer of innovating technology. Project leaders are Dr. Christian Camerlynck, Pierre and Marie Curie University, Paris VI, France, Dr. Michael Ezersky, Geophysical Institute of Israel, Lod, and Dr. Abdallah Al-Zoubi, Al-Balqa Applied University, Salt, Jordan.



Restoring a threatened border region

The three lakes Ohrid, Big Prespa and Small Prespa, are on the borders between Albania, the former Yugoslav Republic of Macedonia⁽¹⁾ and Greece. They are places of recreation because of their beauty, and their waters are used for agriculture, fisheries and industry. In recent years there has been a steady drop in the water level of the Prespa Lake and at present it stands approximately seven meters below its highest recorded level, in 1963. Such a decrease has a big impact on a lake where the average depth is 15 meters. This natural reserve could be lost in the near future if adequate plans for its preservation are not put in place. A new Science for Peace project has the objective of understanding the mechanisms behind the water loss and making recommendations to the authorities of the region for a programme of sustainable development and preservation of the Prespa region.



The project directors are Victor Popov, Wessex Institute of Technology, UK, and Todor Anovski, the University Saints Cyril and Methodius, Skopje, in collaboration with the Institute of Geology and Mineral Exploration, Greece, and the Institute of Nuclear Physics, and the Institute for Hydro-meteorology, Tirana, Albania.

⁽¹⁾Turkey recognises the Republic of Macedonia with its constitutional name

Confronting catastrophic flooding

A project to predict and quantify extreme precipitation conditions will be undertaken with NATO Science for Peace funding, with the aim of making a comprehensive climatological assessment of the impact of severe rainfall on flooding in Europe and North America. In August 2002 large areas of Central Europe were under water, when dramatic flooding led to more than 100 fatalities. Economic loss amounted to 14.5 billion euros for Germany, Austria and the Czech Republic. In North America, high water conditions at major North American rivers have led to weather-associated economic losses of from 2 to 6.5 billion dollars per year during the last two decades. Thus the problem is of high economic and social value for all countries. This SfP project will use the reliable data and

know-how which already exist in Europe and North America for a thorough scientific investigation which should go a long way to resolving the problem. The end-users will be national environmental and risk management agencies who will be provided with tangible deliverables.

The project co-directors are Clemens Simmer of the Meteorological Institute, University of Bonn, Germany, and Sergey Gulev of the P.P. Shirshov Institute of Oceanology, Russia, and is in cooperation with the Scripps Institution of Oceanography, USA (Alexander Gershunov), and the Odessa State Ecological University, Ukraine (Sergey Ivanov).



Tracking dangerous pollution caused by sunken nuclear submarines

A Collaborative Linkage Grant will support a project focusing on the ecological safety of the Barents Sea. The Barents Sea is an area of intense military and economic activity, and the aim of this project is to develop a way of monitoring the spread of dangerous pollutants resulting from maritime accidents involving nuclear submarines, or buried radioactive waste. The pollutants collect at the sea bottom, and are carried by near-bottom currents. The structure of these near-bottom currents, and the way they spread pollutants, are at present practically unknown. Researchers from **Norway** and **Ukraine** will use satellite technology combined with statistical data to understand the role of these currents in spreading pollution. They will create an electronic atlas, which could also be used for studying the impact on the ecology of offshore projects such as drilling platforms and pipelines.

➡ The 2004 Nobel Peace Prize was awarded to Wangari Maathai of Kenya *“for her contribution to sustainable development, democracy and peace”*

News from CCMS



⇒ The studies and workshops pursued through the Committee on the Challenges of Modern Society (CCMS) bring together experts from different government agencies in NATO and Partner countries to concentrate inter-governmental action on pressing areas of environmental security. The Key Objectives of CCMS list the priority areas of study, and these, and further information on ongoing studies and events, may be found at the CCMS web site - www.nato.int/ccms.

NATO countries and Russia prepare a joint anti-terrorism study

Ecological Terrorism & Methods of Counteraction was the topic of a first Round Table held under the auspices of NRC (NATO-Russia Council) CCMS. The main objective of the meeting was to review a Russian proposal on the development of an international system of antiterrorism monitoring of the environment, and counteraction. The Russian CCMS representative, Andrei Kozeltsev, of the Ministry of Natural Resources, pointed out that effective international cooperation aimed at preventing or combating terrorism is a matter of top priority, in view of the potential use by terrorists of advanced technologies capable of causing death on a massive scale, and imposing serious economic and environmental damage.

The Round Table, which took place on 24-25 September, was hosted by the Italian Delegation to NATO together with the Italian Inter-University Consortium and Institute for Environmental Sciences, and was attended by 23 experts from six nations - Estonia, Italy, Latvia, Romania, Russia, and the United Kingdom. The Italian and Russian experts will finalise a joint project proposal to be considered by the NRC CCMS at its meeting on 26 November.

Moscow workshop considered regulatory measures for food safety

A workshop dealing with **Food Safety** took place in Moscow on 28-29 October, organised by the Russian Regional Environmental Center and the Ministry of Natural Resources, supported by experts of the ongoing CCMS Pilot Study on Food

Chain Security. New economic activities in the Russian Federation and the globalization of food supplies are increasing the threat to food and bio/environmental safety in the country, including the threat of terrorism. The goal of the workshop was to exchange information and facilitate a favourable climate for the development of a state policy and necessary regulatory legal base to cope with the threats to the food safety systems.

Environmental Management Systems in the Military Sector

Germany hosted a one-week workshop on the Implementation of Environmental Management Systems (EMS) in the Military Sector. Organised within the key CCMS objective of Environmental Impact of Military Activities, the workshop took place from 27 September to 1 October in Sonthofen. Participants were those tasked with environmental matters within the military, and they came from 20 countries. Focus was on the practical questions of establishing a suitable management system, and it was declared that environmental performance measurements should be **SMART** - **S**pecific, **M**easurable, **A**greed, **R**ealistic and **T**imely.

It was noted that that the knowledge gap between those organisations actively pursuing EMS implementation, and those with an interest in EMS but as yet unable to make measurable progress, has continued to grow. Nonetheless, the workshop broke new ground in applying a diagnostic approach to the latter group. For example a shortcoming in the ISO standard was identified as a significant stumbling block, and solutions to such problems were identified. There was widespread agreement that EMS is a vital tool for military organisations; that the current

socio-economic climate makes EMS implementation virtually an imperative; and that "mentoring" is the most effective means of implementing EMS in the short term.



Ongoing Pilot Studies

The following Pilot Studies advanced their activities at meetings convened in recent weeks:

- ⇒ **Risk Assessment of Chernobyl Accident Consequences: Lessons Learned for the Future** - led by Italy and the United States
- ⇒ **Clean Products and Processes** - led by the United States
- ⇒ **Integrated Water Management** - led by Belgium and Italy
- ⇒ **Use of Landscape Sciences for Environmental Assessment** - led by Germany and the United States



Science Committee meetings

set the scene

⇒ The Science Committee met in its three formats - Alliance, NATO-Russia Council (NRC), and Euro-Atlantic Partnership Council (EAPC) - in almost three days of meetings from 20-22 October. Discussions focused on the new security-related programme in the light of its first year of operation, and how best to develop programme operations in the coming months.

Launch of “horizon-scanning” initiative for security-related science

The Committee in Alliance format introduced some finetuning measures to ensure that the security-related goals continue to be met. Two security experts will be assigned to each of the four existing peer review advisory panels, to replace the specific expertise that was found in the Security-Related Civil Science Panel, which itself will be disbanded following its meeting in February 2005. The experts will be selected by the Science Committee following the usual panel member selection procedure. In conjunction with this move, a special **Security Conference** will be organised to take place at least twice a year, and will include as participants, members of the Science Committee, the panel chairmen and the security experts, and relevant members of other NATO divisions and bodies. The Conference will have a forward-looking 'horizon-scanning' role, and will as well act as an initiator of special activities. The Conference will also be tasked with advising the panels on risks and opportunities linked to their work.

NRC science reviews activities

The focus of the NRC Science Committee is on security-related, non-classified scientific and technological topics of primary importance to both the Russian Federation and the NATO countries. The Committee promotes joint cooperative projects involving teams of scientists from NATO countries and Russia. A draft Action Plan for 2005-2006 was reviewed at the meeting, including a list of priority topics in security-related science. Details of the Action Plan and a revised programme of support for collaborative activities



between scientists in Russia and NATO countries will shortly be available at the NATO Science web site.

EAPC Partners review their priorities

At the meeting of the EAPC Science Committee, there was a discussion of the Partner-country priorities in view of the security threats that are now a constant feature of any country in the world. Notable among the concerns expressed were threats related to border security and information security. This review of Partner-country priorities will be reflected in the list of Partner-country priorities eligible for support, and will be incorporated in the application material on the Science web site as they are developed. The meeting heard a number of briefings from other bodies involved in assisting scientists in the countries of the former Soviet Union, which included information on the Science Centers of the US Department of State's programme for Proliferation Threat Reduction (www.BIIState.net), and the European Researchers Mobility Portal of the European Union (europa.eu.int/eracareers).

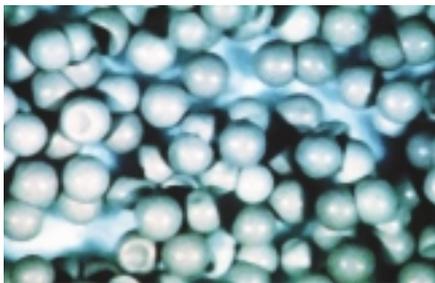
Our 'other' Partners

The Euro-Atlantic Partnership Council comprises 46 countries, of which 26 are NATO countries and 20 are 'Partner' countries. However, five of these Partner countries are not eligible for support under the STS programme, in view of their advanced economies vis-à-vis the 'eligible countries' undergoing transition. The five countries are usually referred to as our 'other' partners - they are Austria, Finland, Ireland, Sweden and Switzerland. These countries do play an active part in the EAPC Science Committee meetings, however, and bring their expertise to bear on the topics discussed. Another difference from non-Partner countries is that scientists from the five countries are considered favourably as participants in Advanced Study Institutes and Advanced Research Workshops, and no special permission is required for their attendance, although, for the reasons already stated, they cannot be funded from the NATO grant.

Central Asia and the Caucasus



⇒ NATO Secretary General Jaap de Hoop Scheffer visited the countries of Central Asia in October, and the Caucasus in November, to demonstrate the Alliance's commitment to expanding cooperation with the two regions. His agenda covered a wide range of Alliance issues, but he was also able to learn at first hand of the value that the governments of the region place on the Virtual Silk Highway and other science and environment activities. This prompts us to highlight some current activities underway in the countries of these two regions, and notably new projects dealing with the two inland seas which dominate the area - the Aral Sea and the Caspian Sea.



Revitalising the Aral Sea's aquaculture

Another newly-funded Science for Peace project will study the potential of the Aral Sea as an environment for sustained population growth and productivity of a tiny brine shrimp called *Artemia*. The increasing salinity of the Aral Sea since the 1960s has resulted in total obliteration of the fish stocks upon which the local population depended for sustenance and employment. The *Artemia*, which occurs in hypersaline lakes and saltworks worldwide, is gradually colonizing the environment, as other species are eliminated in this new hypersaline habitat. This seeming disaster, however, may hold the promise of a commercially viable resource for the future. The larvae of the *Artemia*, known as "cysts", are a crucial live food item in larviculture of marine shrimp and fish, and annually about 2,000 tons of these cysts are marketed for the needs of world aquaculture. However, it is not known whether the current hydro-biological and chemical status of the Aral Sea would be sufficient to support a stable *Artemia* population, and the object of this three-year study is to settle the question. The participants are from the Laboratory of Ichthyology and Hydrobiology, Tashkent, Uzbekistan, Ghent University, Belgium, and United States enterprises which cultivate and market *Artemia* cysts.

cannot be established without proper scientific understanding of the structure and functioning of the Sea's ecosystem. The main goal of a new Science for Peace project is to improve the region's own capacity for analyzing the functioning of the Caspian Sea, through the pooling of data and scientific expertise on a regional basis. The outcome of the project, based on data evaluation, *in-situ* and remote observations, and numerical modelling, will be available for use by governments for planning economic activities. Thirteen different research groups from the following eight countries are involved in the project - Azerbaijan, Russia, Georgia, Ukraine, Turkey, Greece, Belgium and the United States.

Aral Sea Water Management

At the specific request of the authorities of Kazakhstan, a Science for Peace project has been launched to study **Integrated Water Resources Management for Wetlands Restoration in the Aral Sea Basin**. This project is part of the ongoing international effort to define measures to alleviate the consequences of the drying out of the Aral Sea. It follows on from an earlier Science for Peace project involving the Uzbek side of the Aral Sea, when a water management scheme was designed to improve the socio-economic and ecological situation in the south part of the Sea's coastal zone. The new project will concentrate on the northern Kazakh side of the Sea, with particular study of the Syrdarya delta. The project is building on the experience of work undertaken in the creation and management of natural and constructed wetlands systems by Resource Analyses of Delft, Netherlands, who are co-directors of the project.

Regional project to analyse the Caspian Sea eco-system

Five countries share the coasts of the Caspian Sea, which is a highly productive enclosed body of water threatened by permanent environmental decline. Remedies to the problems of the Caspian Sea

A CCMS pilot study which aims to design a prototype Caspian Basin Observing System, to form the basis for environmental forecasting and decision-making, was the genesis for the Science for Peace project on the Caspian Sea described here. The need for continued research using modern tools and technologies was identified by pilot study participants, and they developed the proposal for Science for Peace funding. The pilot study continues its work of trying to understand the processes involved in the Caspian Sea's degradation. Because of a lack of continuous data collection over past years, little is known on how the changes to the Sea have taken place, and how they can be reversed.





A group of female students at Kabul University meet with the NATO Programme Director. The group of seventeen students are working to set up an "Internet Café" on the campus of the University, which they will operate, and which will be open to all students and teachers. NATO will provide funds for networking infrastructure and PCs.

The Virtual Silk Highway ↔ extends to Afghanistan

Afghanistan has become the latest country to link to the "Virtual Silk Highway", the NATO-funded project which provides high-speed Internet access to the academic communities of the Caucasus and Central Asia. On 10 October connection was established between Kabul University and the European hub in Hamburg, Germany. This new satellite link will mean that staff and students at Kabul University and seven other educational institutes in Kabul will have affordable access to the Internet. The costs associated with using alternative commercial Internet providers has made this out of the question for the academic community until now. Further equipment and radio infrastructure are now being installed in the Kabul area, to be connected to the Silk Highway in the coming months. With the link established in Kabul, the project has entered a test phase, to overcome a number of technical problems, such as ensuring a reliable power supply, before it becomes operational in a few weeks' time.

↔ looks to the future

Now that the Virtual Silk Highway has been brought into operation, and all the countries of Central Asia and the Caucasus are connected, thoughts have turned to sustaining the project in the future. NATO funding has been extended for a further two-year period, and will cover the equipment and communication costs through 2006. Efforts are now underway to ensure the maintenance and development of the Virtual Silk Highway well beyond that date. Aspects being studied by the project's managing body, the Silk Board, for the future operation include: funding of the bandwidth connections to the different countries, satellite versus fibre optic communication media, maintenance of equipment, management funding, and extension of the network beyond the initial one ground station in each country.

Although the Silk Project, as it is known for short, has been funded mainly by NATO, it has had additional contributions from a number of sources, and notably from Cisco Systems, DESY (Deutsches

Elektronen-Synchrotron), and the European Commission. Other bodies active in the Silk countries, such as UNDP and the World Bank, are also helping, often with direct support to the national research networks in each country. These agencies have continued to express their interest in the activity. In fact, the Silk Project is providing a basis for regional collaboration with other development agencies working in the area, and for the research communities there to collaborate with each other. (See www.silkproject.org for full information.)

2004 NATO Science Prize awarded at a ceremony in Turkey

NATO Secretary General Jaap de Hoop Scheffer presented a Special Summit Science Prize to Turkish State Minister Besir Atalay, minister responsible for the Turkish Scientific Research Council (TUBITAK), at a ceremony in Istanbul on 27 June, on the occasion of the NATO summit meeting. The Prize was awarded to three Turkish universities for achievements in research on mitigation of the consequences of earthquakes. Mr. De Hoop Scheffer noted that TUBITAK had been instrumental in driving the work, ensuring NATO support, and fostering cooperation between NATO and Partner countries. The leaders of the prize-winning projects were Professor Mustafa Erdik at Bosphorus University, Professor Naci Görür at Istanbul Technical University, and Professor Guney Özcebe and Professor Polan Gulkan at the Middle East Technical University. The NATO Science Prize is given annually and includes a €10,000 award for the winners' continuing research.

Mediterranean Dialogue

countries extend participation

⇒ An innovation this year is the eligibility of the Mediterranean Dialogue countries for support for Science for Peace projects, which has resulted in over forty applications for SFP planning grants from these countries. Collaborative Linkage Grants are also a popular mechanism for Mediterranean Dialogue countries, and an example for each of these types of grant is given here.



Developing improved detection methods for explosives

A new Science for Peace project awarded under the Mediterranean Dialogue will support a multidisciplinary team of explosives experts from Israel and the United States to tackle detection of improvised explosives. Improvised explosive devices have been used by suicide bombers and other terrorists increasingly in recent years to kill and injure ordinary citizens pursuing their daily lives. Israel, Turkey and Spain are just three countries which have cause to know this well. The explosives are peroxide based. They can easily be prepared anywhere. Their components are inexpensive, and synthesis protocols are to be found on the Internet. The research teams collaborating on this project have acquired a considerable amount of information on the physico-chemical properties of peroxide explosives, and they have developed laboratory analytical techniques. The information they have acquired will be used to design novel detection strategies of the compounds involved. It

will be essential to detect them rapidly and reliably, as well as covertly and remotely. Keeping these detection requirements in mind, they intend to move rapidly from understanding the basic science to fielding effective countermeasures.

Combating desertification by traditional methods

A Collaborative Linkage Grant has been awarded under the Mediterranean Dialogue for a study on combating desertification with traditional knowledge. The collaborators are from Jordan, Egypt, Italy, Germany, Spain, Algeria and Morocco, and the

research will focus on demonstrating the effectiveness of traditional knowledge to prevent migratory phenomena. It will examine how traditional knowledge has been used in the past in combating desertification challenges, and the possible contributions of traditional knowledge for the security of water and food supply, health and livelihood. A final objective is to contribute to an integrated and coherent policy of land and water resources management in the Mediterranean Region, which it is hoped will make a contribution to reducing human migration from southern and eastern Mediterranean countries to the northern ones

Upcoming Workshops

- ⇒ **Children in Armed Conflict**
27-29 Jan 2005: Cairo, Egypt
Co-Directors: Prof. Attila Tanzi, University of Verona, Italy and Mr. Mossad Ewies, Arab Council for Childhood and Development, Cairo, Egypt
- ⇒ **Mass Casualty Situations: Building the Infrastructure for Medical Response to Terrorism**
10 -15 Apr 2005: Haifa, Israel
Co-Directors: Dr. Jorge Mineiro, Chairman of the Portuguese Trauma Society, Lisbon, Portugal and Dr. Moshe Michaelson, Rambam Medical Center, Haifa, Israel
- ⇒ **Securitizing Terrorism in Europe and North Africa: Strategies for Regional Cooperation**
13-15 June 2005: Madrid, Spain
Co-Directors: Dr. Frederic Volpi, University of Bristol, UK and Dr. Abdennour Benantar, CREAD (Centre for Research on Applied Economics for Development), Algiers.

Déjà vu ?

The current high price of oil brings to mind the major oil crisis of the early 1970s, when the Science Committee rose to the challenge of the times and sponsored a special conference to examine the Technology of Efficient Energy Utilization. Following a review in the UK Financial Times the report of the conference became a "best-seller", and went into numerous reprints. The review remarked that - "what the scientists have generated is a rich dossier of ideas for examination in any specific energy-hungry situation, from the needs of a businessman to the needs of a nation". Some of these ideas are still valid, and the 60-page report is now available to download in pdf format from the NATO science web site.

A glance at collaboration with Russia

⇒ Storage of nuclear waste in salt mines

One of the most significant and costly challenges faced by industrialised countries using nuclear energy is disposal of high-level waste of nuclear power facilities. Because of the threat of terrorist attack, it has become increasingly clear that storage of such waste deep in the ground should be preferred over long-term storage in accessible facilities on the earth's surface. A Collaborative Linkage Grant has been awarded to researchers in Russia and the Netherlands to study the long-term stability of heavily irradiated rock salt in deep geological formations such as salt mines, which is one of the candidates for high-level waste storage.

⇒ Fast identification of dangerous contamination

A Collaborative Linkage Grant will bring together experts from six countries to work on the development of new models for detecting the nature of contamination of the atmosphere or groundwater in the event of malevolent or accidental release of chemical, biological or nuclear agents. If this occurred near a major urban area, the number of people affected could regrettably be in the millions. In the event of such a catastrophe, the ability to quickly and accurately determine the nature of the contamination would be crucial to evacuation and rescue efforts. To make such predictions, mathematical models and numerical techniques need to be developed which can quickly take into account the local geological or atmospheric conditions and yield at least approximate solutions to the movement of the contamination in a very short time. The six groups, from Russia, the United States, Bulgaria, Romania, Germany and the former

Yugoslav Republic of Macedonia⁽¹⁾, will work on different aspects of stochastic modeling and numerical computing, and by combining the singular expertise of these six groups, they expect to create a body of research able effectively to solve the problems involved.

Successful zinc deficiency project gets world-wide recognition

The results of a study of the reasons for zinc deficiency in wheat crops in Turkey, which was funded through the NATO Science for Stability programme in the early 1990s, are now being demonstrated at international symposia with a view to extending Turkey's experience to other areas of the world. Wheat production in Turkey at that time had very low yields, and the study aimed to identify the underlying causes and a possible link to zinc deficiency. The results of the study were spectacular, and were quickly passed on to interested parties, including Turkish farmers and the TOROS fertilizer company. Today, the total amount of zinc-containing fertilizers applied in Turkey is 300,000 tonnes, up from zero ten years ago, and Ministry of Agriculture estimates put annual economic benefits at 100 million dollars. In addition, large numbers of the Turkish population which have suffered from a diet containing too little zinc, now benefit from zinc-dense grain, which is expected to lead to improvements in mental and physical health. The Science for Stability programme assisted Greece, Portugal and Turkey in applying R&D to industry or the environment. It was a forerunner of the current Science for Peace programme. The project director was Prof. Ismail Cakmak, then at Cukurova University and now at Sabanci University, Turkey.

⁽¹⁾Turkey recognises the Republic of Macedonia with its constitutional name

ENVSEC - a multilateral Environmental Security Initiative

The Security Through Science Programme and CCMS have been invited to become associated with the Environmental Security Initiative, known as ENVSEC, launched in 2002 by three international organisations - the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP) and the Organisation for Security and Cooperation in Europe (OSCE) - and a host of other UN agencies and NGOs. A number of NATO-funded environmental projects have been identified to be embedded in the ENVSEC initiative, such as two Science for Peace projects which developed monitoring systems for pollution and water levels on the Rivers Prut and Nistru on the boundaries of Moldova, Romania and Ukraine, or a project just getting underway to develop a joint water management system of the Prespa Lake which is shared by the former Yugoslav Republic of Macedonia⁽¹⁾, Albania and Greece (see page 4). It is hoped that by pooling information and experience, the results of these activities will have a much wider impact and may be brought to the attention of governments and national decision-making agencies. Further information on ENVSEC may be found at: www.envsec.org

NATO Science Committee

new representatives appointed

Netherlands - Daniel Willem Hoffmans is Programme Director at TNO, the National Research Council of the Netherlands, and replaces Prof. C.H.C.M. Buys as Netherlands representative. Born in Amsterdam in 1945, Dr. Hoffmans attained his Ph.D. in Mathematics and Natural Sciences at Amsterdam University in 1973. He began his career at TNO as Researcher in 1975, and afterwards became successively Head of Department "Effectiveness Analysis" (1984), Head of Programme Affairs in "Headgroup Defense Research" (1988), Head of Division of "Munitions Technology and Explosion Safety" (1992) and of "Weapons and Weapons Platforms" (1997). He became Programme Director of the TNO Prins Maurits Laboratory (PML) in 2000, where his responsibilities encompass the three divisions of PML, one on chemical and biological defense, one on munitions technology and explosion safety and one on weapons and weapon platforms. His current research interest is combating terrorism. Dr. Hoffmans is also a member of the Applied Vehicle Technology Panel of the NATO Research and Technology Organisation (RTO).

Norway - Paul Narum is Director General of FFI, the Norwegian Defence Research Establishment, and replaces Jens Erik Fenstad as Norwegian representative. Born in 1951, he pursued his advanced degrees at the Norwegian University of Science and Technology, obtaining an M.Sc. in electronic engineering in 1975, and a doctorate in nonlinear optics in 1989. He joined the FFI Division of Electronics in 1976, and after working abroad in 1986 as Research Associate at the University of Rochester, USA, returned to FFI in 1987 as Director of Research of the Division of Electronics, becoming Director of the Division in 1996. In 2000 he spent a period in France, at the Ecole Militaire, Paris. He was Professor, part time, at the University of Oslo from 1997-2000, and Vice-President, Kongsberg Defence Communications, in 2001. He became Director General of FFI in 2002. Dr. Narum is also National Delegate of the NATO Research and Technology Organisation (RTO).

Spain - José Luis Huertas Diaz is Professor at the University of Seville, and Director of the Seville Institute of Microelectronics, part of the National Centre for Microelectronics (CNM) of the Spanish National Research Council (CSIC). He replaces Armando Albert as Spanish representative on the Science Committee. Born in 1947, he pursued his studies at the University of Seville, attaining his doctorate in physics in 1973. He started his career as Associate Professor at the University in 1969, and after a period of research in the Netherlands, at Philips International Institute of Technological Studies, he returned to the University of Seville as Adjoint Professor. He became full Professor in 1981. He has also spent two periods as Senior Research Engineer at the University of California, Berkeley, USA (1981 and 1985).

Poland - Wojciech Dziejczak is Senior Management Officer in the Department of International Cooperation, Ministry of Science and Information Technology, Warsaw, and has replaced Tomasz Lesniowski on the Committee. Born in 1978, he pursued studies in international business at Poznan University of Economics from 1997 to 2002, and continued his post-graduate studies at the National School of Public Administration in Warsaw until 2004. In 2003 he spent two periods as an intern at first the Ministry of Foreign Affairs, Department of National Security Policy, and then at the Congress of the United States.



Paul Narum

Wojciech Dziejczak

A last word

Mr. Jean Fournet's kind remarks on page 3 will have made it known that, after seventeen years editing this newsletter, and even more years working for the Science Programme, I will be leaving NATO at the end of February. Indeed, I have been here many years - I can't deny this, as everyone tells me so! But I have not been aware of time passing, only of events happening, and work to be done, not least the work involved in adapting the programme to respond to and keep abreast of these events. Some events have been more dramatic than others over this period, and none more so than those at the beginning of the last decade, which has led to our introduction to many new friends.

Through all this I have taken pride, of course, in working for NATO, but in particular in working for NATO's civil science programme. I believe it has had a special place in the Organization, creating a bond between hundreds of thousands of scientists who have studied and collaborated under its auspices. Of course, many have asked another well-known question - What is a military alliance doing supporting civil science? Well, that is too large a question to answer here, but I hope that our programme can now, and in the future, speak for itself in answering it. For myself, I will be pursuing other interests, as I reintegrate into my own country again after so long away. I wish continued success to all those associated with the NATO science and environment programmes, and not least to my successor as editor of this newsletter.

Enid Austin



NATO

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