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- **Ice On Fire**
  Methane Emissions to the Atmosphere
  European research priorities in polar regions
- **Awards 2006**
  Presented at the 36th COSPAR Scientific Assembly

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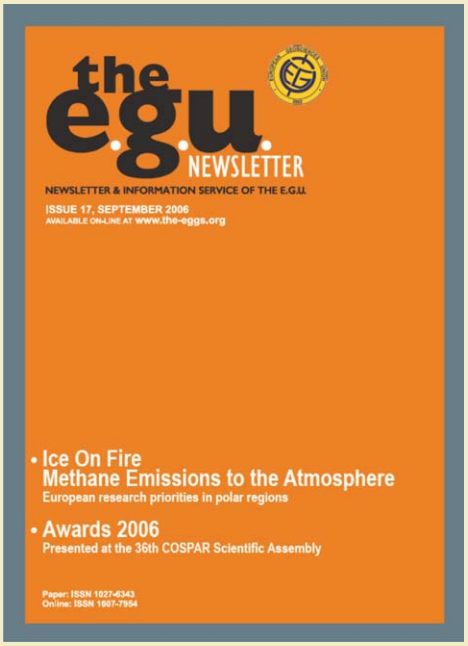

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3 **EGU News**

4 **News**

13 **Journal Watch**

15 **Ice On Fire**
Methane Emissions to the Atmosphere
European research priorities in polar regions

19 **Awards 2006**
Presented at the 36th COSPAR Scientific Assembly

23 **Education**

24 **Book reviews**

25 **Web watch**

26 **Events**

Portico to archive EGU e-journal collection

The Library of Congress has recently opened the archive PORTICO, and from now all EGU e-journals will be archived there

There are special libraries around the world that are specialized in long-term archiving of printed scholarly literature, such as, e.g., the Library of Congress in the US, or the Bodleian Library in the UK, or the Deutsche Bibliothek in Germany. All these libraries are governmental to ensure a long-term archiving. All EGU journals are delivered regularly in printed format to these libraries for long-term archiving purposes.

The Library of Congress has recently opened the archive PORTICO (www.portico.org) "to preserve scholarly literature published in electronic form and to ensure that these materials remain accessible to future scholars, researchers, and students". All Copernicus publications and therefore all EGU e-journals will now be archived by them.

Since 1990, Copernicus has been publishing high quality literature in the sciences and fine arts, specializing in serving scientific associations. They play a leading role in the areas of online, public peer-reviewed and open access publications. Copernicus is also publishing all EGU e-journals.

Through this archiving agreement with Portico, eleven e-journal titles from Copernicus, including all EGU e-journals, will be preserved for future scholars, practitioners, researchers, and students.

With the inclusion of publications from Copernicus, over 3,700 titles have now been entrusted to the Portico archive. The list of participating publishers is available at http://portico.org/about/part_publishers.html.

Guenther Bloeschl elected AGU Fellow

EGU's Hudrological Sciences Division President, Guenther Bloeschl, elected AGU Fellow

During the 2006 Americal Geophysical Union (AGU) Joint Assembly, held in Baltimore, MD, USA, Guenther Bloeschl was presented an AGU Fellow certificate. AGU Fellows are scientists that have attained "acknowledged eminence in the geophysical sciences". Fewer than 0.1% of AGU members are elected Fellows each year. Guenther Bloeschl was elected for "his outstanding contributions to hydrology and water resources modelling".

Guenther Bloeschl is EGU's Hudrological Sciences Division President. We congratulate him for his election.

Young Scientists' Publication Award (YSPA)

Young scientists may apply personally for this award

All EGU journals are automatically subject to the 'Young Scientists' Publication Award (YSPA)' scheme of the Union. Details can be found at the websites of the EGU journals.

Young scientists may apply personally for this award and editors, supervisors and colleagues may apply for this award on behalf of their authors, students or fellow colleagues by posting an application into the respective YSPA Forum. Whenever an external application is received, the moderator informs the sender; all applications are discussed in confidence and the candidates are informed by the Union accordingly.

Between 1990 and 2002 a good number of young scientists received the award presented by the EGS, and many of these scientists are still in science at important positions.

James Alfred Van Allen (1914-2006)

James Alfred Van Allen died on August 9, 2006.

James Alfred Van Allen, a pathbreaking astrophysicist best known for his work in magnetospheric physics, died on August 9, 2006.

James A. Van Allen was born on 7 September 1914 on a small farm near Mount Pleasant, Iowa, the second of four sons of Alfred Morris and Alma Olney Van Allen. He grew up in the small town of Mount Pleasant, located forty-five miles south of Iowa City.

Van Allen graduated from Iowa Wesleyan College in 1935. He then enrolled at the University of Iowa where he received an M.S. in 1936 and a Ph.D. in 1939. After school, Van Allen accepted employment with the Department of Terrestrial Magnetism at the Carnegie Institution of Washington. In April 1942 Van Allen moved to the Applied Physics Laboratory at the Johns Hopkins University where he worked to develop a rugged vacuum tube. He also helped to develop proximity fuzes for weapons used in the war, especially for anti-aircraft projectiles used by the U.S. Navy. By the fall of 1942, he had been commissioned as an officer in the Navy and was sent to the Pacific to field test and complete operational requirements for the proximity fuzes. Upon completing his assignments in World War II, Van Allen returned to civilian life and began working in high altitude research, first for the Applied Physics Laboratory and, after 1950, at the University of Iowa. In 1955, Van Allen and several other American scientists developed proposals for the launch of a scientific satellite as part of the research program conducted during the International Geophysical Year (IGY) of 1957-1958. Van Allen's Explorer spacecraft flew on 31 January 1958 from Cape Canaveral, Florida, and returned important scientific data about the radiation belts circling the Earth. Aboard Explorer 1 were a cosmic ray experiment designed by Van Allen and others. Data from Explorer 1 and Explorer 3 (launched March 26, 1958) were used by the Iowa group to make the discovery of the existence of a doughnut-shaped region of charged particle radiation trapped by Earth's magnetic field.

In one way or another, Van Allen was involved in the first four Explorer probes, the first Pioneers and several Mariner efforts. He retired from the University of Iowa in 1985, after having served as the head of the Department of Physics and Astronomy from 1951.

Van Allen, Sidney Chapman, Lloyd Berkner, S. Fred Singer, Harry Vestine, and others developed the first plans for an International Geophysical Year (IGY), a coordinated, international study of Earth for an 18-month period from July 1957 through December 1958.

He was one of 15 US scientists honored as TIME's "Men of the Year" in 1960; further, he was awarded the Gold Medal of the Royal Astronomical Society in 1978, National Medal of Science in 1987 and the Crafoord Prize in 1989.

Large crack in Afar desert

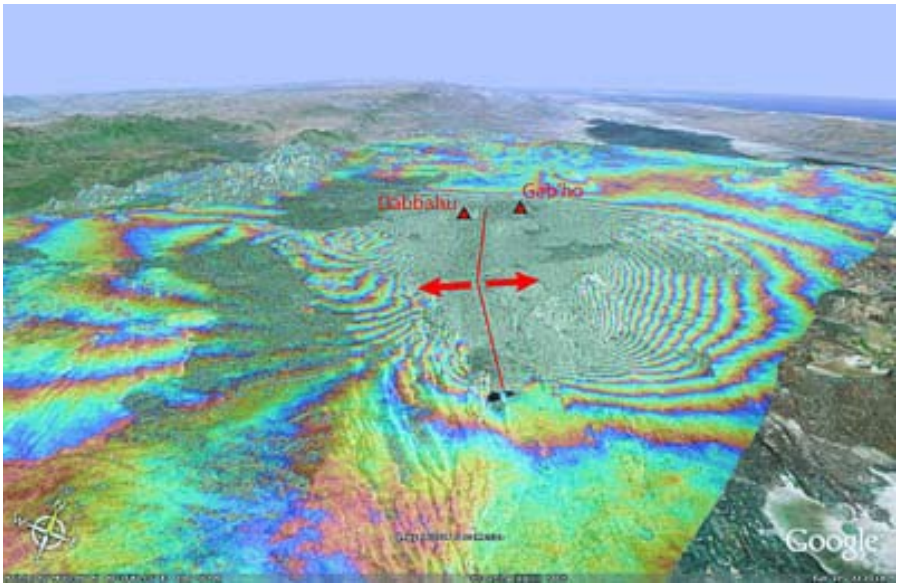
could isolate Ethiopia and Eritrea from the rest of Africa

20 July 2006.- The recent tear in the Earth's continental crust near the Red Sea in Africa's Afar desert could isolate Ethiopia and Eritrea from the rest of Africa and could eventually form a new ocean, according to an article published today in the journal Nature.

In September 2005, the Earth split apart along a 60 kilometre section of the East African Rift in Afar, Ethiopia. By monitoring Envisat satellite radar data acquired over the area before and after the event, a team of scientists from the UK, U.S. and Ethiopia has determined the 8-metre rift developed along the 60 kilometre-long stretch of the rift in just three weeks.

"Because Envisat is routinely acquiring data in areas prone to earthquakes and volcanic eruptions, we were able to make very precise measurements of this rare phenomenon for the first time. The results from Envisat have been vital for guiding our ongoing field studies, and without the satellite data we would have had no idea of the scale of this event," Tim Wright of the University of Leeds and lead author of the study told ESA.

The use of Envisat data to monitor the rift marks the first time scientists have been able to analyse the spreading process with satellite instruments and shows the process happened suddenly rather than smoothly during large rupture events. These observations also allowed the scientists to determine that the Earth's tectonic plates split apart due to the injection of magma (molten rock).



A 3D view of the rift based on Envisat data (Credits: Figure was prepared by Tim Wright, University of Oxford/Leeds using Google Earth. Copyright: ESA)

"It is clear that the rise of molten rock through the plate is enabling the break up of Africa and Arabia," Wright said. This process began some thirty million years ago when lava rose from beneath the Earth's crust and separated the Arabian Peninsula from Africa, creating the Red Sea. This is one of the few areas on Earth where a continent is being actively separated by the ongoing forces of plate tectonics and is believed to be a similar tectonic process to the one that formed the Atlantic Ocean.

ESA

Huygens Scientific Archive data set released

Access to the Huygens archive is open from today to the wide scientific community.

2 August 2006.-The data obtained by the six Huygens experiments are now being archived in the ESA Planetary Science Archive (PSA). A copy of the archived data set is also available in the NASA Planetary Data System (PDS).

Access to the Huygens archive is open from today to the wide scientific community. The data sets include the data, calibration information and documentation necessary to understand and process the products. The full archive containing all data available to the scientists is also open to the public for download.

It is possible to retrieve data from the following instruments: ACP (Aerosol Collector and Pyrolyser), GCMS (Gas Chromatograph and Mass Spectrometer), DWE (Doppler Wind Experiment) and HASI (Huygens Atmospheric Structure Instrument). Engineering data are also available.

Data from the DISR (Descent Imager Spectral Radiometer) and SSP (Surface Science Package) experiments, together with the official Huygens entry and descent trajectory are expected to be released in the September-October timeframe.

Any questions and feedback related to the use of the Huygens archive data set should be sent to psahelp@rssd.esa.int .

ESA Planetary Science archive (PSA) (http://www.rssd.esa.int/PSA)

ESA

High-altitude clouds found on Mars

at an altitude between 80 and 100 kilometres. The clouds are most likely composed of carbon dioxide.

28 August 2006.-Planetary scientists have discovered the highest clouds above any planetary surface. They found them above Mars using the SPICAM instrument on board ESA's Mars Express spacecraft.

Thanks to data from the SPICAM Ultraviolet and Infrared Atmospheric Spectrometer onboard Mars Express, a fleeting layer of clouds have been discovered at an altitude between 80 and 100 kilometres. The clouds are most likely composed of carbon dioxide. SPICAM made the discovery by observing distant stars just before they disappeared behind Mars.

The first hints of the new cloud layer came when certain profiles showed that the star dimmed noticeably when it was behind the 90–100 kilometre high atmospheric layer. Although this happened in only one percent of the profiles, by the time the team had collected 600 profiles, they were confident that the effect was real.

At 90–100 kilometres above the Martian surface, the temperature is just –193° Celsius. This means that the clouds are unlikely to be made of water. "We observe the clouds in super-cold conditions where the main atmospheric component CO2 (carbon dioxide), cools below its condensation point. From that we infer that they are made of carbon dioxide," says Montmessin.

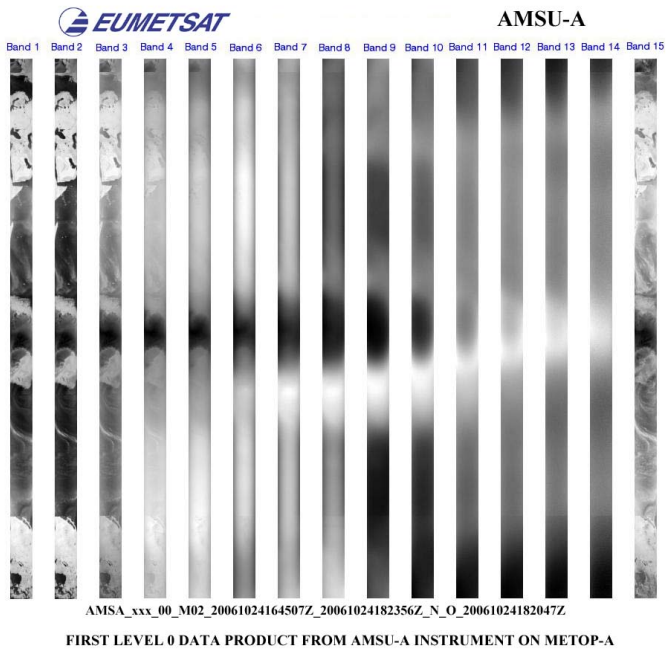
But how do these clouds form? SPICAM has revealed the answer by finding a previously unknown population of minuscule dust grains above 60 kilometres in the Martian atmosphere. The grains are just one hundred nanometres across.

They are likely to be the 'nucleation centres' around which crystals of carbon dioxide form to make clouds. They are either microscopic chippings from the rocks on the surface on Mars that have been blown to extreme altitudes by the winds, or they are the debris from meteors that have burnt up in the Martian atmosphere.

These results are published online in the Icarus scientific magazine (vol. 183, issue 2, August 2006), in the article titled: "Subvisible CO2 ice clouds detected in the mesosphere of Mars", by F.Montmessin, J.L.Bertaux (Service d'Aeronomie du CNRS, Verrières-le-Buisson, France), et al.

MetOp-A succesfully launched

and first instrument aboard successfully switched on



First image acquired by the AMSU-A instrument, aboard MetOp-A, in its fifteen channels (Credits: EUMETSAT).

25 October 2006.- The first instrument aboard MetOp-A has been switched on and has successfully acquired data. The primary purpose of the Advanced Microwave Sounding Unit-A (AMSU-A) instrument, which detects radiated thermal energy emitted by the air in different levels in the atmosphere, is to provide high temperature sounding data even in cloudy conditions.

The data acquired by AMSU-A in its fifteen channels can be seen in the image. In the lower part of the first stripe on the left, Band 1, the Baja California coastline is visible, in the middle part of the same band the Antarctic continent can be seen and in the upper part the coast of Africa and the Arabian Peninsula are visible. The images shown for the other bands correspond to the temperature of air at different heights within the atmosphere.

MetOp-A incorporates a comprehensive remote-sensing payload consisting of a set of new-generation European instruments supplied by ESA, the European Meteorological Satellite Organisation (EUMESAT) and the French Space Agency (CNES), plus a set of 'heritage' instruments provided by the US National Oceanic and Atmospheric Administration (NOAA).

NOAA provided the AMSU-A instrument. The AMSU-A instrument, manufactured by Northrop Grumman of Azusa, California, under contract to NASA, is currently undergoing functional and performance checks.

The first of three satellites developed under a joint programme being carried out by ESA and EUMESAT, MetOp-A was successfully launched from the Baikonur Cosmodrome in Kazakhstan on 19 October 2006 by a Russian Soyuz 2/Fregat rocket. ESA handed control of MetOp-A over to EUMETSAT on 22 October following the satellite's successful completion of the launch and early orbit phase.

ESA

Impact landing ends SMART-1 mission to the Moon

Early this morning, a small flash illuminated the surface of the Moon as the European Space Agency's SMART-1 spacecraft impacted onto the lunar soil, in the Lake of Excellence region. The planned impact concluded a successful mission that, in addition to testing innovative space technology, had been conducting a thorough scientific exploration of the Moon for about a year and a half.

Paris, 3 September 2006.-SMART-1 scientists, engineers and space operations experts witnessed the final moments of the spacecraft's life in the night between Saturday 2 and Sunday 3 September at ESA's European Space Operations Centre (ESOC), in Darmstadt, Germany. The confirmation of the impact reached ESOC at 07:42:22 CEST (05:42:22 UT) when ESA's New Norcia ground station in Australia suddenly lost radio contact with the spacecraft. SMART-1 ended its journey in the Lake of Excellence, in the point situated at 34.4º South latitude and 46.2º West longitude.

The SMART-1 impact took place on the near side of the Moon, in a dark area just near the terminator (the line separating the day side from the night side), at a grazing angle of about one degree and a speed of about 2 kilometres per second. The impact time and location was planned to favour observations of the impact event from telescopes on Earth, and was achieved by a series of orbit manoeuvres and corrections performed during the course of summer 2006, the last of which was on 1 September.

Professional and amateur ground observers all around the world from South Africa to the Canary Islands, South America, the continental United States, Hawaii, and many other locations were watching before and during the small SMART-1 impact, hoping to spot the faint impact flash and to obtain information about the impact dynamics and about the lunar surface excavated by the spacecraft. The quality of the data and images gathered from the ground observatories a tribute to the end of the SMART-1 mission and a possible additional contribution to lunar science - will be assessed in the days to come.

For the last 16 months and until its final orbits, SMART-1 has been studying the Moon, gathering data about the morphology and mineralogical composition of the surface in visible, infrared and X-ray light.

The legacy left by the huge wealth of SMART-1 data, to be analysed in the months and years to come, is a precious contribution to lunar science at a time when the exploration of the Moon is once again getting the world's interest said Bernard Foing, ESA SMART-1 Project Scientist. The measurements by SMART-1 call into question the theories concerning the Moon's violent origin and evolution, he added. The Moon may have formed from the impact of a Mars-size asteroid with the Earth 4500 million years ago. SMART-1 has mapped large and small impact craters, studied the volcanic and tectonic processes that shaped the Moon, unveiled the mysterious poles, and investigated sites for future exploration, Foing concluded.

ESA's decision to extend the SMART-1 scientific mission by a further year (it was initially planned to last only six months around the Moon) allowed the instrument scientists to extensively use a number of innovative observing modes at the Moon, added Gerhard Schwehm, ESA's SMART-1 Mission Manager. In addition to plain nadir observations (looking down on the vertical line for lunar surveys), they included targeted observations, moon-spot pointing and push-broom observations (a technique SMART-1 used to obtain colour images). This was tough work for the mission planners, but the lunar data archive we are now building is truly impressive.

SMART-1 has been an enormous success also from a technological point of view, said Giuseppe Racca, ESA SMART-1 Project Manager. The major goal of the mission was to test an ion engine (solar electric propulsion) in space for the first time for interplanetary travel, and capture a spacecraft into orbit around another celestial body, in combination with gravity assist manoeuvres.

SMART-1 also tested future deep-space communication techniques for spacecraft, techniques to achieve autonomous spacecraft navigation, and miniaturised scientific instruments, used for the first time around the Moon. It is a great satisfaction to see how well the mission achieved its technological objectives, and did great lunar science at the same time, Racca concluded.

Operating SMART-1 has been an extremely complex but rewarding task, said Octavio Camino-Ramos, ESA SMART-1 Spacecraft Operations Manager. The long spiralling trajectory around Earth to test solar electric propulsion (a low-thrust approach), the long exposure to radiation, the strong perturbations of the gravity fields of the Earth-Moon system and then the reaching of a lunar orbit optimised for the scientific investigations, have allowed us to gain valuable expertise in navigation techniques for low-thrust propulsion and innovative operations concepts: telemetry distribution and alerting through the internet, and a high degree of ground operations automation - a remarkable benchmark for the future, he explained.

Note to editors

SMART-1, (Small Mission for Advanced Research and Technology) is the first European mission to the Moon. It was launched on 27 September 2003 on board an Ariane 5 rocket, from the CSG, Europe's Spaceport in Kourou, French Guiana and reached its destination in November 2004 after following a long spiralling trajectory around Earth.

In this phase, the spacecraft successfully tested for the first time in space the series of advanced technologies it carried on board. The technology demonstration part of the mission was declared successfully concluded when SMART-1 reached the Moon and was captured by the lunar gravity field in mid-November 2004.

SMART-1 started its scientific observations of the Moon in March 2005, running on an elliptical polar orbit that ranged

from about 500 to 3000 kilometres over the lunar surface. The instruments on board included a miniaturised imaging camera (AMIE), an X-ray telescope (D-CIXS) to identify the key chemical elements in the lunar surface, an infrared spectrometer (SIR) to chart the Moon's minerals and an X-ray solar monitor (XSM) to complement the D-CIXS measurements and study the solar variability.

SMART-1 was a small unmanned satellite weighing 366 kilograms and roughly fitting into a cube just 1 metre across, excluding its 14-metre solar panels. It was manufactured by the Swedish Space Corporation, Solna, leading a consortium of more than 20 European industrial teams.ss/SEM7ZTULWFE_0.html)

More images and further updates on the SMART-1 mission end can be found at:

www.esa.int/smart-1

ESA PR 31-2006

EURYI: European Young Investigator Awards 2006

This October, at the 3rd Annual EURYI Award Ceremony, three geoscientists will receive awards of around 1 million Euro each which will enable them to create research teams in Europe to focus on cutting-edge science research.

Now in its third year, EURYI - the European Young Investigator Awards scheme - is designed to attract outstanding young scientists from any country in the world to create their own research teams at European research centres. Each award is up to €1,250,000 and comparable in size to the Nobel Prize.

The EURYI Awards are offered by 20 European national research organisations in an open competition, with candidates selected on the basis of their academic and research excellence and their future potential.

Candidates are selected by a two-stage process, firstly at the national level by the relevant Participating Organisation and secondly at the international level by high-level scientific panels managed by ESF.

The EURYI Awards scheme was developed by the European Research Organisations Heads of Research Councils (EuroHORCS) and the European Science Foundation (ESF). ESF's role in the coordination and selection processes of EURYI is supported by funds from the European Commission's Framework Programme 6.

More information: http://www.esf.org/euryi

This year, three geoscientists are among the winners:

Dr Frank Keppler, Department of Atmospheric Chemistry, Max Planck Institute for Chemistry, Mainz, Germany for the project Origin, fate and impact of biospheric climate-relevant trace gases during global change, will receive € 1,168,266.

Frank Keppler, aged 39, is a Research Associate at the Max-Planck Institute for Nuclear Physics in Heidelberg, in a group formerly led by Professor Thomas Röckmann. His strong publication record in earth sciences began as a PhD fellow in organic geochemistry at a Centre of Excellence in Heidelberg from 1997 to 2000. He stayed on at the Graduate College of Earth Sciences in Heidelberg as Post Doctoral Fellow until 2002, when he moved to Northern Ireland as a Marie Curie Fellow at Queen's University, Belfast, leaving there in 2004 for his present position back in Germany. He has developed a reputation for applying highly innovative methods to study the formation of organic trace gases in the terrestrial biosphere.

He said: *"This award is just what we needed and we are all highly grateful for the chance it gives us to fulfil our ambitions. Our work which focuses on the evolution of climate-relevant trace gases from terrestrial ecosystems is highly multidisciplinary, and the award will make sure we can bring in all the expertise we need in different fields."*

Project Description

While attention has focused on rising atmospheric carbon dioxide levels as the primary contributor to global warming, the role of secondary climate feedback elements such as organic trace gases within the biosphere has yet to be given proper consideration. Yet a recent, and unexpected, observation suggested that plants produce relevant trace gases that play an important role in the budgets of methane, chloromethane and bromomethane. These three gases are suggested to play a key role in the natural cycles of climate change and atmospheric ozone levels.

The aim of this project is to assess more accurately the contribution to climate change made by these biospheric climate-relevant volatile organic compounds (VOCs) by studying their life cycle utilising a stable isotope approach. Particular emphasis will naturally be placed on the fact that emissions of these gases are likely to increase in response to anticipated global warming during the 21st century, creating additional feedback effects. Moreover, the role of VOCs in global change during other periods of Earth's history, particularly at mass extinction events, will be assessed.

While the group will focus on the three simple VOCs of known interest, ie methane, chloromethane and bromomethane, other candidates such as iodomethane, chloroform, and bromoform, will also be considered. After having identified the major sources of the contributing gases and assessed their response to, and impact, on climate change, numerical models will be developed and applied to simulate past and future impact of these atmospherically important compounds. This will all require a multidisciplinary approach, involving interaction between several disciplines including geochemistry, biochemistry, analytical chemistry, and atmospheric physical-chemistry.

Dr Francesca Funiciello, Dipartimento di Scienze Geologiche, Universita' degli Studi "Roma TRE", Roma, Italy, for the project Convergent margins and seismogenesis: defining the risk of great earthquakes by using statistical data and modelling, will receive € 897,500.

Francesca Funiciello, aged 36, is a Geodynamic Modeler specialised in the study of the subduction process using laboratory, numerical and analytical models.

She is currently a post doctoral fellow at the Department of Geology of the University "Roma TRE". She has just chosen this institution as host for this EURYI project because of its expertise in the study of convergent margins and exceptional facilities of its Laboratory of Experimental Tectonics.

Funiciello gained a Ph.D at the ETH-Institut für Geophysik in Zurich in 2002, where she studied the physics of the subduction process, developing a dynamic model to explain the Central Mediterranean's tectonic history over the last 80 Myr, proceeding to a post doc position at the "Roma TRE" University, where she continued to study the dynamics of subduction and plate motion with specific applications to real cases (Mediterranean, South America, North-East Japan, Arabian plate) until now.

She is involved in several national and international research projects, collaborating with a wide range of scientists and institutions (ETH, Zurich-Switzerland, Univ. Montpellier-France, MIT-USA, Univ. Toulose-France, Tohoku Univ.-Japan, among others).

Alongside her current post doc work, she is involved in outreach programmes, including her role of Italian representative in the Committee of Education of the EGU (Europena Geosciences Union) for the organization of the GIFT (Geophysical Information for Teachers) workshop.

She said: *"I am proud to be the first winner of a EURYI Award in Earth Science.*

Receiving this award is wonderful for me, all my team and for our project.

It gives us not just the resources but the confidence we need to move closer towards understanding the potential of megathrust earthquakes, quantitatively explaining the causes and effects of the dynamics of convergent plate margins."

Project Description

Megathrusts, caused by subduction associated with strong locking, or seismic coupling, between adjacent tectonic plates, are the source of the world's strongest earthquakes of magnitude 8.0 or more. They are capable of generating devastating Tsunamis when occurring offshore, as at the end of 2004 in SE Asia. Such events have increased the urgency for more accurate predictions of the potential for such megathrusts, which occur near convergent margins, where one plate passes beneath another in the subduction process. The potential for megathrusts in areas where plate locking has occurred is currently modeled by analyzing local precursors, along with dislocation and thermal factors. However the exact physical mechanism controlling the activity of megathrusts is still poorly understood. This project aims to improve this modeling process by quantifying the causes and effects of observation and stress in these subduction zones. Since the seismic coupling depends strongly on the forces acting in the subduction area, Funiciello's team will identify and quantify the relevant force parameters by means of multidisciplinary approach including statistical data on subduction zones and results of ad hoc laboratory and numerical modelling. The project is aiming for substantial progress in:

characterizing force parameters of worldwide convergent margins at both shallower and deeper levels in order to

define the areas in a potentially critical condition for the occurrence of mega-earthquakes

Dr Willem van Westrenen, Department of Petrology, Vrije Universiteit Amsterdam, The Netherlands, for the project Full Moon: Novel constraints on the origin and evolution of the lunar interior and the early Earth, will receive € 1,249,816.

Dr Willem van Westrenen is 33 years old and gained his PhD in Experimental Petrology from the University of Bristol (UK) in 2000. Prior to joining Vrije Universiteit as a lecturer, he undertook his Postdoctoral research at the Carnegie Institution of Washington DC and later at ETH Zurich. He has a good publication record, with 23 listed publications, all in high level journals, including one in Nature.

He said: *"I am most delighted to receive this award. A key result of this project will be a greatly improved understanding of constraints on the interior composition and evolution of the moon. It has direct applications related to future space missions, and also in a wider context to problems such as understanding volcanic eruptions on earth and other planets."*

Project Description

Our Moon formed from the debris of the most dramatic event in the Earth's history: a giant collision between the young Earth and a Mars-sized impactor. This collision had enormous effects on the constitution and differentiation of our planet, ultimately controlling the plate tectonic processes that produced present-day landforms, atmosphere, and life. Understanding the current working of the Earth's interior requires detailed knowledge of this collision event. The Moon retains information about this earliest history due to the absence of plate tectonics, but existing models for lunar origin and evolution lack consistency and accuracy. To constrain the impact's key role in the evolution of the Early Earth I propose to develop a fully consistent physical and chemical model for the origin and evolution of the Full Moon.

Novel constraints on the physical properties and compositions of the materials forming the lunar crust, mantle and core will be obtained using a multidisciplinary approach.

Lunar rocks will be subjected to high pressures and temperatures to study their properties at conditions prevalent in the Moon. A Full Moon model will be synthesised by combining the results of these experiments with the latest lunar surface compositional data from space missions, and with computer simulations of the dynamics of the early lunar interior. This will be the first instance in which the evolution of a complete planetary body is modelled using direct measurements of physical and chemical properties at all relevant pressures and temperatures, without having to resort to extrapolation. Constraints provided by our approach are expected to lead to unprecedented insight into the Moon-forming impact and its effect on the Early Earth. The methodologies developed will form the foundation for models of larger planetary bodies, specifically Mars, the target of future exploration by ESA and NASA.

Reappointment of ESA Director General and other Directors

Today the Council of the European Space Agency announced the renewal of the mandate of Mr Jean-Jacques Dordain as Director General of ESA for a further period of four years.

Paris, 22 June 2006.- Mr Dordain was appointed ESA Director General in December 2002 and took up his post in July 2003.

At ESA he started with heading the Space Station and Platforms Promotion and Utilisation Department, and then, following a reorganisation, the Microgravity and Columbus Utilisation Department. In 1993 he became Associate Director for Strategy, Planning and International Policy and in May 1999 was appointed Director of the Strategy and Technical Assessment Directorate. He subsequently took up the post of Director of Launchers in February 2001.

At the same meeting, held at the Agency's headquarters in Paris, the ESA Council also renewed the mandate of Mr Antonio Fabrizi of Italy as Director of Launchers for a further four years.

Mr Fabrizi was first appointed Director of Launchers at ESA in April 2003 and took up his post in July of the same year. Mr Fabrizi graduated in Mechanical Engineering from La Sapienza University in Rome and held several positions at BPD before taking up further responsibilities within Fiat Avio/UBS, including the Vega programme. In the 2000-2003 period, before joining ESA, he was Vice-President of the Space Business Unit at Fiat Avio and President and Director General of Vegaspazio.

In November 2004, Daniel Sacotte became Director of Human Spaceflight, Microgravity and Exploration Programmes after having been Director of Administration from June 1997 to March 2004 and Director of Exploration from April to October 2004. He too has had his mandate renewed today by the Council of ESA for a further two-year term.

ESA PR N° 20-2006

Rise in Number of Marine 'Dead Zones'

according to the new UNEP State of the Marine Environment report

Beijing/Nairobi, 19 October 2006 - The number of 'dead zones' or low oxygenated areas in the world's seas and oceans may now be as high as 200 according to new estimates released at an international marine pollution meeting in Beijing.

The number and size of deoxygenated areas is on the rise with the total number detected rising every decade since the 1970s. These areas are fast becoming major threats to fish stocks and thus to the people who depend upon fisheries for food and livelihoods.

In 2004, UNEP reported in its Global Environment Outlook Year Book, an estimated 149 sites known to have experienced or be suffering 'dead zones'.

Some of the earliest recorded dead zones were in places like Chesapeake Bay in the United States, the Baltic Sea, the Kattegat, the Black Sea and the northern Adriatic Sea. Others have been reported in Scandinavian fjords. The most well known area of depleted oxygen is in the Gulf of Mexico. Its occurrence is directly linked to nutrients or fertilizers brought to the Gulf by the Mississippi River.

Others have been appearing off South America, China, Japan, south east Australia and New Zealand.

Research by a team led by Professor Robert Diaz at the College of William and Mary, Virginia Institute of Marine Science in Gloucester Point, Virginia, whose work contributed to the GEO Year Book, now estimate that the number has climbed to 200 sites.

Professor Diaz told UNEP in advance of the Global Programme Action Global (GPA) for the Protection of the Marine Environment from Land-Based Sources (GPA) meeting in Beijing that the full list of new or newly-registered sites would be available in early 2007.

But he said among them were ones in the Archipelago Sea, Finland; the Fosu Lagoon, Ghana; the Pearl River Estuary and the Changjiang River, China; the Mersey Estuary, United Kingdom; the Elefsis Bay, Aegean Sea, Greece; Paracas Bay, Peru; Mondego River, Portugal; Montevideo Bay, Uruguay and the Western Indian Shelf. Professor Diaz appealed for more information and sightings from the Pacific Ocean where there are gaps in intelligence gathering.

The GPA's State of the Marine Environment report launched in advance of the Beijing meeting also identified nutrients as a key issue.

Nitrogen exports to the marine environment from rivers are expected to rise globally by 14 per cent by 2030 when compared with the mid 1990s, says the report.

Details and documents on the Inter Governmental Review-2 of the Global Programme of Action can be accessed at http://www.gpa.unep.org/bin/php/igr/igr2/home.php

The State of the Marine Environment report can be found at http://www.gpa.unep.org/bin/php/igr/igr2/supporting.php

The GEO Year Book published in 2004, including the report and graphics on 'Dead Zones', is available at www.unep.org/geo/yearbook/

UNEP Press Release

First Meeting of the PFT Working Group

Objectives of this first Phytoplankton Functional Types group meeting were to agree on how to define PFTs, to agree on a possible comparison of the existing methods of detection and to discuss improved methods

The IOCCG working group on Phytoplankton Functional Types (PFTs) met for the first time on 6-7 July 2006 at the CNES Headquarters in Paris. The meeting was chaired by Dr. Cyril Moulin (LSCE/IPSL, France) and was attended by a number of specialists in the field. The objectives of this first meeting were to: (1) Agree on how to define PFTs; (2) Agree on a possible comparison of the existing methods of detection; (3) Discuss the improved methods in the future.

By definition, PFTs are groups of phytoplankton species that have a specific function in common with respect to the scientific question being addressed. However, for biologists working on marine ecosystems at both global and regional scales, phytoplankton are often classified by pigment composition and not by function. The definition of PFTs thus depends on the type of application, and is also susceptible to change (e.g. with the increasing complexity of biogeochemical models). Retrieval of information on PFTs from space by various analytical and empirical approaches was also discussed at length. Further information about this meeting and the PFT working group can be found under the IOCCG Working Groups section of the IOCCG website, at

http://www.ioccg.org/groups/PFT.html

IOCCG

2nd Intn'l Conference Advances in Mineral Resources Management and Environmental Geotechnology

successfully held between 25-27 September 2006 at the city of Hania, island of Crete, Greece

The 2nd International Conference titled: "Advances in Mineral Resources Management and Environmental Geotechnology", was very successfully held between 25-27 September 2006 at the beautiful city of Hania, on the island of Crete, in Greece.

The aim of this 2nd Conference was to provide a forum for the world's leading scientific and technical communities to interact and address the main issues and the key challenges related to all aspects of the mining, minerals and metallurgical industry in the beginning of the 21st century in order to improve industry's sustainability, reduce its environmental and health impacts in substantial and measurable terms, enhance resource recovery efficiency and reduce consumption of resources. Focus was also on sustainability of mining, mineral and metallurgical processes, strategic development, preservation and efficient use of resources, clean technologies, life cycle assessment, risk analysis, hazard detection and control, environmental and health consequences and liability, waste management through treatment and recycling, socio-economic impacts and preservation of industrial heritage, advanced modelling (geostatistical analysis, computer simulation and virtual reality applications), monitoring (sensing, remote sensing, positioning, decision support and alerting techniques), projection techniques (multi-criteria analysis), geotechnical issues, geoenvironmental engineering, dam and embankment design and case studies.

139 delegates coming from operating companies, government agencies involved in planning and regulating mining operations, the environmental community, the investment community, research and development organizations, academic institutions and mining associations attended the conference.

119 full papers, from 34 countries, have been published in the book of proceedings of the AMIREG 2006 International Conference. For more information and a copy of the book please visit the electronic bookstore on the web site http://www.conferences.gr.

A large number of people were involved in the successful organization of this international conference. Firstly, the contribution of the members of the International Scientific Committee is greatly acknowledged and appreciated. In addition, the contribution of the sponsors of this conference, the Greek Ministry of Education, the Technical University of Crete, the Public Power Corporation of Greece, the S&B Industrial Minerals S.A. and the Titan Cement Company S.A., is greatly appreciated.

Prof. Zach. Agioutantis, Technical University of Crete, and Assoc. Prof. Kostas Komnitsas, Technical University of Crete

Vautrin Lund geography prize

EGU member Heinz Wanner received this year this prestigious geography award

Heinz Wanner, director of the swiss National Centre of Competence in Research on Climate (NCCR Climate), which is based in Bern, Switzerland, and professor of geography and climatology at the University of Bern, has been awarded the Prix Vautrin Lud. This prize is the most prestigious award for geographers throughout the world. Heinz Wanner was honoured for his lifelong contributions as a researcher, teacher and promoter of international projects. The award was presented on 28th September 2006 during the Festival International de Géographie in Saint-Dié-des-Vosges, France.

The Prix Vautrin Lud, has been awarded 16 times in the past. It has been given to scientists from different continents that work in all fields of geography. Vautrin Lud was a French scholar who was instrumental in naming America for the Florentine navigator Amergio Vespucci. In 1507, he and a group of scholars published one of the earliest geographical treatises about the New World, aided by Vespucci's account of landing on the North American continent.

Atmospheric implications of radiation belt remediation

A proposed US system to protect satellites from solar storms or high-altitude nuclear detonations would cause worldwide radio communications blackouts, according to new research.

In the following press release of the EGU Press and Media Office (http://www.egu-media.net/) of 9 August 2006, highlighting results published recently in Annales Geophysicae, potential dangers from a proposed US system to protect satellites from solar storms or high-altitude nuclear detonations are presented.

If activated, the envisaged "radiation belt remediation" system would significantly alter the upper atmosphere in the short term, seriously disrupting high frequency (HF) radio wave transmissions and GPS navigation around the globe, says the group's lead researcher, Dr Craig Rodger of the University of Otago Physics Department.

The remediation system aims to protect hundreds of low earth-orbiting satellites from having their onboard electronics ruined by charged particles in unusually intense radiation belts "pumped up" by high-altitude nuclear explosions or powerful solar storms, says Dr Rodger.

The approach, which is being considered by the US Air Force and the US Defense Advanced Research Projects Agency, involves using very low frequency radio waves to flush particles from belts and dump them into the upper atmosphere over either one or several days.

"We've calculated that Earth's upper atmosphere would be dramatically affected by such a system, causing unusually intense HF blackouts around most of the world," he says. "Airplane pilots and ships would lose radio contact and some Pacific Island nations could be isolated for as long as six to seven days, depending on the system's design and how it was operated."

"GPS would likely also suffer large-scale disruptions, as signals between ground users and satellites were scrambled by the ionosphere, he added. The disruptions result from a deluge of dumped charged particles temporarily changing the ionosphere from a "mirror" that bounces high frequency radio waves around the planet to a "sponge" that soaks them up," Dr Rodger says.

In their paper, just published in the August edition of Annales Geophysicae, the Otago researchers and UK and Finnish colleagues suggest that policymakers need to carefully consider the implications of remediation.

The researchers also calculated the likely effect of remediation on the ozone layer, but found that ozone depletion would be short-lived and similar to that resulting from natural processes such as large solar storms and volcanic eruptions.

The original paper is available online at
http://www.copernicus.org/EGU/annales/24/7/2025.htm

Rodger, C. J. , Clilverd, M. A., Ulich, Th., Verronen, P. T., Turunen, E., and Thomson, N. R., The atmospheric implications of radiation belt remediation, Annales Geophysicae, Page(s) 2025-2041, 2006.

Simulations of preindustrial, present-day, and 2100 atmospheric and climatic conditions

Tropospheric ozone burden might increase by 100% in 2100 including both emissions and climate changes

A model of atmospheric composition and climate has been developed at the NASA Goddard Institute for Space Studies (GISS) that includes composition seamlessly from the surface to the lower mesosphere.

Simulations of preindustrial (PI) to present-day (PD) changes show tropospheric ozone burden increases of 11% while the stratospheric burden decreases by 18%. The resulting tropopause dariative forcing (RF) values are −0.06 W/m2 from stratospheric ozone and 0.40 W/m2 from tropospheric ozone. Global mean mass-weighted OH decreases by 16% from the PI to the PD.

In the future, the tropospheric ozone burden increases by 101% in 2100 for the A2 scenario including both emissions and climate changes. The primary reason is enhanced Stratosphere-Troposphere Exchange (STE), which increases by 124% (168% in the SH extratropics, and 114% in the NH extratropics). Climate plays a minimal role in the SH increases, but contributes 38% in the NH. Chemistry and dry deposition both change so as to reduce tropospheric ozone, partially in compensation for the enhanced STE, but the increased ozone influx dominates the burden changes. The net RF due to projected ozone changes is 0.8 W/m2 for A2. The influence of climate change alone is −0.2 W/m2, making it a substantial contributor to the net RF. The tropospheric oxidation capacity increases seven percent in the full A2 simulation, and 36% due to A2 climate change alone.

The full article is available free of charge at
http://www.atmos-chem-phys.net/6/4427/2006/acp-6-4427-2006.pdf

D. T. Shindell, G. Faluvegi, N. Unger, E. Aguilar, G. A. Schmidt, D. M. Koch, S. E. Bauer, and R. L. Miller, Simulations of preindustrial, present-day, and 2100 conditions in the NASA GISS composition and climate model G-PUCCINI, Atmos. Chem. Phys., 6, 4427-4459, 2006.

Aerosol nucleation over oceans and the role of galactic cosmic rays

Strongest aerosol production occurs in the upper troposphere over areas with frequent convective activity, in particular in the tropics

The authors investigate formation of sulfate aerosol in the marine troposphere from neutral and charged nucleation of

H2SO4 and H2O. A box model of neutral and charged aerosol processes is run on a grid covering the oceans. Input data are taken from a model of galactic cosmic rays in the atmosphere, and from global chemistry and transport models.

The authors find a weak aerosol production over the tropical oceans in the lower and middle troposphere, and a stronger production at higher latitudes, most notably downwind of industrial regions. The strongest aerosol production however occurs in the upper troposphere over areas with frequent convective activity, in particular in the tropics. This finding supports the proposition by which non-sea salt marine boundary layer aerosol in tropical regions does not form in situ, but nucleates in the upper troposphere from convectively lifted and cloud processed boundary layer air rich in aerosol precursor gases, from where it descends in subsiding air masses compensating convection. Convection of boundary layer air also appears to drive the formation of condensation nuclei in the tropical upper troposphere which maintains the stratospheric aerosol layer in the absence of volcanic activity.

Neutral nucleation contributes only marginally to aerosol production in the simulations. This highlights the importance of other mechanisms, including charged binary and ternary, and neutral ternary nucleation for aerosol formation. The analysis indicates that the variation of ionization by galactic cosmic rays over the decadal solar cycle does not entail a response in aerosol production and cloud cover via the second indirect aerosol effect that would explain observed variations in global cloud cover. It is estimated that the variation in radiative forcing resulting from a response of clouds to the change in galactic cosmic ray ionization and subsequent aerosol production over the decadal solar cycle is smaller than the concurrent variation of total solar irradiance.

The article is available free of charge at

http://www.atmos-chem-phys.net/6/4905/2006/acp-6-4905-2006.pdf

J. Kazil, E. R. Lovejoy, M. C. Barth, and K. O'Brien, Aerosol nucleation over oceans and the role of galactic cosmic rays, Atmos. Chem. Phys., 6, 4905–4924, 2006.

Ice On Fire

Methane Emissions to the Atmosphere

European research priorities in polar regions

Hazards of the Sea Floor, by Carsten Schubert

The stories told by seafarers over the centuries about burning icebergs were long considered superstition until they were finally confirmed near the end of the last century. The "burning icebergs" are caused by pieces of methane hydrate, a compound of ice and methane deposited in the sediments of the seabed, occasionally floating to the sea surface. All it takes is for them to be struck by lightning and we really can see burning ice. Around 10,000 billion tonnes of methane are bound in the form of gas hydrates in the sediments of the world¢s oceans. In the EU project CRIMEA, EAWAG is investigating the occurrence of methane in the Black Sea.

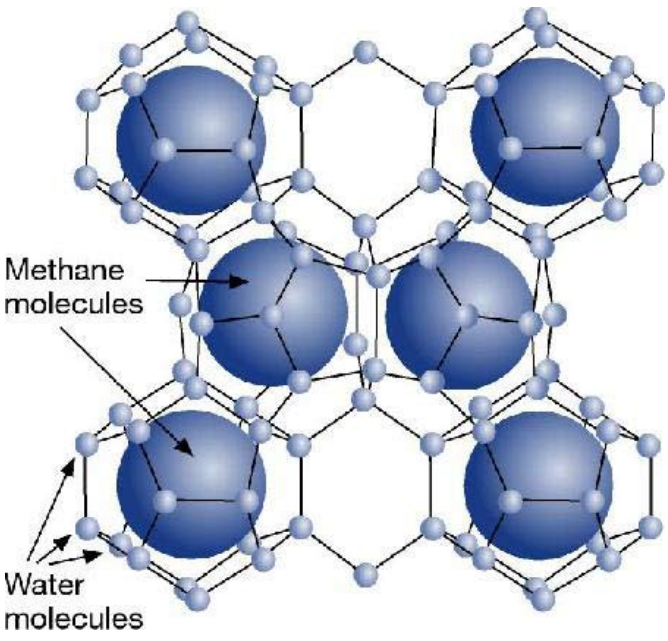


Fig. 1: Structure of methane hydrate.

Gas hydrates are non-stoichiometric, crystalline substances consisting of gas and water. Water molecules form cage structures in which the gas molecules are enclosed (Fig. 1). Gas hydrates are therefore also called inclusion compounds, or clathrates (Latin: clatratus = cage). All in all, there are five different cage structures known. About 90% of the naturally occurring gas hydrates contain methane. In addition, there are hydrates of carbon dioxide and hydrogen sulfide. Methane hydrate is formed at low temperatures and high pressures, and the methane gas necessary for its formation originates from the anaerobic decomposition of organic material by bacteria. Given long periods of time, this continuous process can result in surprisingly large quantities of methane hydrate. Gas hydrates contain much more energy than all the reserves of natural gas, coal, and oil put together, and therefore represent a potential future energy source. The technical problems involved in exploring for methane from gas hydrates have not been solved yet and will occupy technologists for some years to come. Should it come to an industrial exploitation of methane, we must bear in mind that the burning of methane leads to the emission of carbon dioxide, the most important greenhouse gas (after water vapor).

Methane hydrate looks like ordinary ice, but when it comes into contact with air, it decomposes, separating into methane gas and water. This compound of frozen water and methane

belongs to what are known collectively as gas hydrates (see box and Fig. 1), and is found mainly in marine sediments and polar permafrost. There are particularly large methane hydrate fields on the continental shelves of the oceans, where the water is between 500 and 2000 m deep [1]. The methane hydrate could be shaken free of its bonds by an undersea earth tremor, resulting in enormous amounts of methane escaping into the atmosphere. Since methane, along with carbon dioxide, is one of the major greenhouse gases (see box), the consequences of this for the climate could be serious. There is a lot of evidence to suggest that such a catastrophe has occurred once already, 55 million years ago, resulting in a dramatic global warming event [2].

Methane Sources in the Black Sea

Even small changes in environmental conditions – such as a slight rise in the deep-water temperature, or a variation in sea level causing a pressure change – can result in methane being released from methane hydrate. This process should not be underestimated, considering that the concentration of methane in the atmosphere has doubled over the past 150 years, and is now 1.7 ppm (ppm = parts per million), i.e., 1.7 parts methane per million parts air. Along with methane hydrate, there are also other undersea methane sources which, through microbial and geochemical processes, cause methane to be released from the sediments, increasing the methane concentration in the atmosphere.

Thousands of active methane sources have already been located in the northwestern part of the Black Sea, where plumes of bubbles rising from them have been detected by hydro-acoustic techniques. During our CRIMEA research expeditions alone, we have discovered approximately 2800 new sources. Measurements of the methane flux through the water surface over the Georgian Shelf of the Black Sea have shown that between 1.7 and 7.0 liters of methane per m2 are being released there per day. Extrapolating this over the entire Black Sea, we estimate that around 70,000 tonnes of methane are escaping annually into the atmosphere. However, it is still unclear what happens to the methane on its journey through the water column.

The CRIMEA Project

This is one of the questions researchers from ten European research institutes and universities – including EAWAG – are seeking to answer within the framework of the CRIMEA project (Contribution of high intensity gas seeps in the Black Sea to methane emission to the atmosphere). CRIMEA specifically aims to:

- map the methane sources in the Black Sea,
- quantify the escaping fluids and gases,
- describe the active methane-decomposing bacteria on the seabed and in the water column,
- quantify the methane turnover, and
- characterize the physical, biological, and chemical processes involved during the rise of the methane to the sea surface.

(**Editor's note:** more on the CRIMEA project was reported in Issue 1 of this Newsletter, http://www.the-eggs.org/articles.php?id=11).

The First Black Sea Expedition

In June 2003, we undertook the first Black Sea expedition on the Ukrainian ship "Prof. Vodyanitsky". Our objectives included investigating two different methane sources, one at a depth of 90 m and the other at 1980 m. The existence of these sources could be identified using what is known as gas bubble imaging. For comparison purposes, measurements were also conducted at two reference sites with no methane sources. The Black Sea is 80 m deep at the shallower of the two reference sites, and 1660 m deep at the other.

The Path of Methane through the Water Column

The first step involved finding answers to two questions [3]: how high are the methane concentrations immediately above the emission sites, and how does the methane behave during its rise through the water columns of differing lengths? To answer these questions, a special probe, a rosette sampler, was used to take water samples above the two methane sources and at the two reference sites. The rosette is comprised of 12 10-liter sampling bottles which can be closed off by a signal from the ship at different depths (see photo).

Photo: To obtain the water samples we used a rosette sampler with 12 sampling bottles which could be closed off at different depths by a signal from the ship.

Preliminary results show that the methane concentrations are highest directly above the two emission sites (Fig. 2A + B). The concentrations change very little during the first 40 m above the shallow site, and during the first 1500 m above the deeper site. At the deep methane source, a significant decrease in methane concentration only occurs in the upper 500 m of the water column.

We had expected to find much lower methane concentrations at the reference sites than at the emission sites. In the shallow zone this is in fact the case: there the methane concentrations at the reference site were on average 10 times lower than in the water column above the methane source (Fig. 2A). The methane concentrations found over the deep emission site, however, do not differ significantly from those found over the corresponding reference site. This was surprising, and we wondered whether our measuring technique, which involved the detection of methane using a gas chromatograph with a flame ionization detector, was capable of distinguishing such a

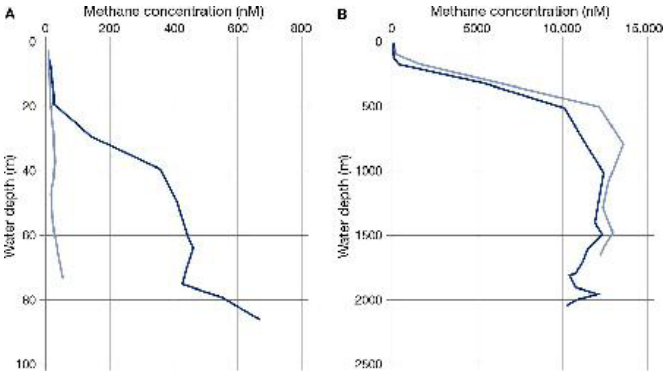


Fig. 2: Methane concentrations in the water columns above two methane sources (dark-blue curves) and the respective reference sites with no methane emission (light-blue curves). (A) in the shallow zone, (B) in the deep-water zone.

low concentration difference.

We therefore used a second measuring technique that involves determining the distribution of the noble gas neon in the water column. Neon gas is present in air. In addition, neon is able to dissolve in water by gas exchange at the air-water interface. The neon concentration in the water depends on its equilibrium concentration, which is determined by the environmental conditions, such as water temperature and salinity, that prevail at the time of gas exchange. Since the Black Sea is stably stratified and neon is chemically inert, the concentration of neon in the deep water is constant. Any deviation from this constant concentration indicates that some additional physical process is at work.

Normally, we would expect the neon concentration to be approximately the same throughout the deep water of the Black Sea. An anomalously low neon concentration in the water above a methane source would therefore suggest the occurrence of gas exchange between the rising methane bubbles and the water column. The concentration differential between the gas bubbles and the water column would cause some of the neon dissolved in the water to diffuse into the gas bubbles, and a corresponding amount of methane to diffuse out of the gas bubbles into the water column (Fig. 3). We did indeed find a lower neon concentration in the water column above the deep methane emission site than at the reference site, which, integrated over time, corresponds to a 20% higher methane concentration above the methane emission site.

Are Bacteria Decomposing the Methane?

A second step involved determining whether the methane is being decomposed by bacteria on its journey through the water column [4]. The continuous decrease in the methane concentration from the seabed to the water surface (Fig. 2A + B) suggests that this may be the case. Methane-oxidizing bacteria belong to the euryarchaeota, one of the two subgroups of the archaea bacteria. In the upper water layers, methane is oxidized to carbon dioxide by aerobic methane-oxidizing bacteria using oxygen. In the anaerobic conditions prevailing in the deep water, however, methane is oxidized sulfate. This process is carried out by a specially adapted bacterial community: sulfate-reducing bacteria reduce sulfate to sulfide, and archaea oxidize methane to carbon dioxide.

Molecular biological methods make it possible to identify individual groups of bacteria, and to calculate the proportions

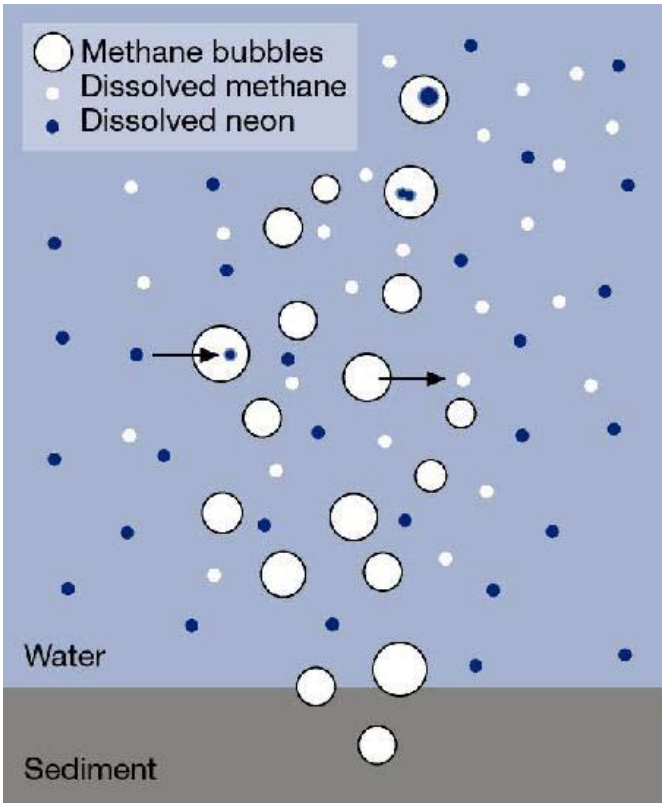


Fig. 3: Gas exchange between methane bubbles rising from a methane source and the surrounding deep water. Some of the neon dissolved in the water diffuses into the gas bubbles because of the concentration difference, and a corresponding amount of methane diffuses from the gas bubbles into the water.

of the total number of bacteria in the water samples belonging to each of these groups. We counted on average 25% more archaea cells at the emission sites than at the reference sites. This result shows that methane-oxidizing bacteria are present above both the deep and shallow methane sources, and convert methane to carbon dioxide. Whether the methane from the sources we analyzed reaches the sea surface, and from there is able to get into the atmosphere, still needs to be investigated. The latest model calculations indicate that little or no methane from sources deeper than 100 m below the sea surface escape to the atmosphere [5]. We are currently processing the samples that have been brought back from the

Methane hydrate in a sediment sample.

Black Sea expedition in 2004. The CRIMEA project runs until the beginning of 2006; by then we hope to have built up a comprehensive picture of the fate of this methane.

Acknowledgements

The CRIMEA project is funded by the European Union and the Swiss Federal Office of Education and Science.

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Fig. 6: Carsten Schubert.

Carsten Schubert is a geologist and heads the "Biochemistry" group in the Department of Surface Waters. His chief areas of research are the anaerobic oxidation of methane and ammonia in marine and limnetic systems, and the decomposition of organic carbon in sediments.

Co-authors: Edith Durisch-Kaiser, Lucia Klauser, Christian Holzner, Dan McGinnis, Rolf Kipfer, Johny Wüest, Bernhard Wehrli.

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Awards 2006

Presented at the 36th COSPAR Scientific Assembly

COSPAR Space Science Award for outstanding contributions to space science, COSPAR International Cooperation Medal, COSPAR William Nordberg Medal, Massey Award and other awards and medals were presented to the recipients during the 36th COSPAR meeting, that took place 16-23 July 2006 in Beijing, China.

16 - 23 July 2006, Beijing, China

See below for complete citations and a brief description of COSPAR.

COSPAR Space Science Award for outstanding contributions to space science:

Atsuhiro Nishida (Japan), Graduate Univ. for Advanced Studies, Kanagawa

and

Eberhard T. Gruen (Germany), MPI fuer Kernphysik, Heidelberg

COSPAR International Cooperation Medal for distinguished contributions to space science and work that has contributed significantly to the promotion of international scientific cooperation:

Raymond A. Greenwald (USA), Johns Hopkins University, Applied Physics Lab., Laurel, Maryland

COSPAR William Nordberg Medal commemorating the late William Nordberg and for distinguished contributions to the application of space science in a field covered by COSPAR:

John P. Burrows (UK/Germany), Inst. of Env. Physics & Remote Sensing, Univ. of Bremen

Massey Award (a joint award of COSPAR and the Royal Society of London) honoring the memory of Sir Harrie Massey, FRS, for outstanding contributions to the development of space research in which a leadership role is of particular importance:

Charles Elachi (USA), Jet Propulsion Laboratory, Pasadena, California

Vikram Sarabhai Medal (a joint award of COSPAR and the Indian Space Research Organization) honoring Vikram Sarabhai, one of the architects of modern India, for outstanding contributions to space research in developing countries:

Marcos E. Machado (Argentina), Comision Nacional de Actividades Espaciales (CONAE), Buenos Aires

Zeldovich Medals (a joint award of COSPAR and the Russian Academy of Sciences) conferred on young scientists for excellence and achievements honoring the distinguished astrophysicist Yakov B. Zeldovich. One medal is awarded for each COSPAR Scientific Commission:

COSPAR Scientific Commission A

Olga V. Kalashnikova (Kazakhstan/USA)

Jet Propulsion Laboratory, Pasadena, California

For outstanding contributions to modeling optical properties of non-spherical particles and remote sensing applications to dust sources, transport and deposition studies.

COSPAR Scientific Commission B

Tristan Guillot (France)

Observatoire de la Cote d'Azur, Nice

For outstanding research on the interior structures of giant planets, work which has had a major impact on our understanding of the formation and evolution of large planets not only in our solar system but around other stars as well.

COSPAR Scientific Commission C

Marina Galand (France)

Department of Physics, Imperial College London

For her theoretical and modeling studies of proton and electron aurora in the Earth's upper atmosphere and in planetary atmospheres.

COSPAR Scientific Commission C

Viviane Pierrard (Belgium)

Belgian Institute for Space Aeronomy, Brussels

For her theoretical and modeling studies of collisionless and collisional transport processes in planetary and stellar atmospheres, including the polar and solar winds.

COSPAR Scientific Commission D

Vladislav Izmodenov (Russia)

School of Mathematics and Mechanics, Moscow State University

For significant contributions to understanding the global structure of the heliosphere and its interaction with the Galaxy through development of global multi-component models of the heliospheric interface with filtration of the interstellar neutrals.

COSPAR Scientific Commission E

Mikhail Revnivtsev (Russia)

Space Research Institute, Russian Academy of Sciences, Moscow

For his activity in the field of high energy astrophysics, and in particular for the detailed study of the Galactic Ridge X-ray emission.

COSPAR Scientific Commission F

Natalie Baecker (Germany)

Deutsches Zentrum für Luft- und Raumfahrt eV (DLR), Koeln

In recognition of her outstanding scientific achievements in the field of gravitational and space flight physiology, particularly in the nutritional aspects of bone disease and space flight induced bone loss.

COSPAR Scientific Commission G

Ichiro Ueno (Japan)

Faculty of Science and Technology, Tokyo University of Science, Chiba

In recognition of his scholarly contributions to the study of thermocapillary flows and microgravity fluid mechanics.

COSPAR Scientific Commission H

Diana Shaul (United Kingdom)

Blackett Laboratory, Imperial College London

For her essential contribution to the design and preparation of the charge control system for LISA Pathfinder and her investigations of the influence of solar particles on fundamental physics experiments in space.

COSPAR Space Science Award:

Atsuhiro Nishida (Japan)

Atsuhiro Nishida, a recipient of this year's COSPAR Space Science Award, is Emeritus Professor at the Institute of Space and Astronautical Science (ISAS), former Director General of the same institute, a Board member of the Graduate University of Advanced Studies, as well as a Member of the National Committee for Space Research of the Science Council of Japan. He received his Ph.D. in Physics from the University of Colombia in 1962. After spending two years as a post-doctoral fellow at the University of Chicago, his return to the University of Tokyo was followed by a series of outstanding contributions to the progress of magnetospheric physics, a field in which he has led the Japanese community and inspired many young researchers over the past forty years.

Professor Nishida's scientific work covers a wide range of topics, including almost every field of space physics. After discovering the formation mechanism of the plasmasphere in 1966, his focus shifted to the plasma flow within the magnetosphere. In 1980 he provided a detailed account of how magnetic reconnection in the magnetotail is the crucial process. Having seen the need for a deeper understanding of this key process, he proposed a fleet of satellites, to be known as the ISTP missions, and led this program to remarkable success. In ISTP he also served as Project Scientist of the Japan-US Geotail mission which has been operating since its launch in 1992 and whose scientific output is one of the driving forces of on-going research in space plasma physics. In addition to these achievements he also worked to understand the behavior of energetic particles in the heliosphere and in planetary magnetospheres. His accomplishments are recorded in books and monographs that he authored or edited, one of which was selected as the best scientific publication of the year in the United States.

As the above summary suggests, Professor Nishida has been one of the most innovative physicists in the world space physics community. He has also served the international space research community during his term as Vice-President of COSPAR, as a member of the editorial team of several international journals, and as a member of international consultative committees. Atsuhiro Nishida is a most deserving recipient of the COSPAR Space Science Award.

Eberhard T. Gruen (Germany)

Eberhard T. Grün, the recipient of the 2006 COSPAR Award, holds the positions of Senior Scientist at the Max-Planck-Institut für Kernphysik in Heidelberg, Professor at the University of Heidelberg, and Researcher at the Hawaii Institute of Geophysics and Planetology of the University of Hawaii, Honolulu. He has been playing a leading role in the exploration of interplanetary and interstellar dust and has decisively shaped the concept of dust astronomy. His scientific career started in 1972 with his participation in the Pioneer 8/9 mission as a guest scientist at GSFC, where he discovered the so-called beta-meteorites, collisional products of interplanetary dust grains accelerated outward from the sun until they finally leave the solar system. Since then, he has led or participated in most of the dust experiments in space, including those on the German-American probe HELIOS, the space probes ULYSSES and GALLILEO of ESA, and CASSINI of ESA/NASA.

E.T. Grün has gained an international reputation as the pioneer of dust astronomy. Examples of his outstanding scientific achievements are the development of a consistent picture of the interplanetary dust dynamics based on measurements of his dust detector on the HELIOS mission, the understanding of the origin and dynamics of the dust population of the outer solar system and near Jupiter and Saturn from his measurements on board ULYSSES, GALILEO and CASSINI, and, most recently, the identification of the Saturnian moon Enceladus as the source of the E-ring dust grains. A most important finding was his confirmation of the penetration of interstellar grains into the solar system. E.T. Grün has substantially contributed to our understanding of the interplanetary and cosmic dust population of the solar system. For his outstanding contributions to space research, Professor Eberhard T. Grün is named a recipient of the 2006 COSPAR Space Science Award.

COSPAR International Cooperation Medal:

Raymond A. Greenwald (USA)

The COSPAR International Cooperation Medal is awarded to a scientist who has made distinguished contributions to space science and whose work has contributed significantly to the promotion of international scientific cooperation. The 2006 Medal is awarded to Dr. Raymond A. Greenwald.

Dr. Greenwald is the father of the Super Dual Auroral Radar Network. SuperDARN grew out of a concept Dr. Greenwald had for a way of providing low-cost, global, continuous measurements of the high-latitude electric field of Earth. The Dual Auroral Radar Network, DARN, was proposed to consist of pairs of VHF radars that would be part of a ground-based component for the NASA mission known at the time as Origins of Plasmas in Earth's Neighborhood (OPEN). Over the years, OPEN metamorphosed into the International Solar-Terrestrial Physics (ISTP) program and Dr. Greenwald's simple VHF radars turned into much more advanced HF radars that became SuperDARN. From the very beginning, Dr. Greenwald envisioned SuperDARN as an international collaboration to address important problems in solar-terrestrial research. The first radar of what was to eventually become SuperDARN was constructed in Goose Bay, Labrador, in 1983. Helping with the construction and initial data analysis were two of Dr. Greenwald's colleagues from France and two from the U.K. Since then SuperDARN has grown to include 10 radars in the northern hemisphere and 6 in the southern hemisphere. Several more radars in both hemispheres are under construction or on the drawing boards. The international collaboration has grown from four countries in 1983 to over a dozen in 2006, and real-time SuperDARN data are now in daily use by scientists around the world to understand Earth's space environment.

For his outstanding scientific and engineering contributions to the creation of new techniques for HF-radar observations of the ionosphere and for his leadership in the establishment of the international SuperDARN program, I am pleased to present Dr. Raymond A. Greenwald the COSPAR International Cooperation Medal.

COSPAR William Nordberg Medal:

John P. Burrows (Germany/UK)

The COSPAR William Nordberg Medal is awarded to a scientist who has made a distinguished contribution to the application of space science in a field covered by COSPAR. The 2006 Medal is presented to Professor John P. Burrows.

Professor Burrows' many important discoveries in space physics result from his deep and pioneering research on kinetics and spectroscopy of atmospheric gases and extending that knowledge to remote sensing these gases from space. Of particular note is his development of the capability to measure chemically and radiatively active gases in the troposphere and associating their abundance and distribution with emerging global environmental problems.

His research and development of all aspects of trace gas remote sensing, including basic laboratory behavior of these gases, the development of technology enabling their observations from space, and the development of radiative transfer codes and algorithms that allow retrieval of theses gases has opened a new window to observe the Earth environment. In developing these capabilities, he assembled a team of scientists to maintain the core laboratory research that has now expanded to lead the world in remote sensing of atmospheric composition. He first demonstrated his concepts to measure active chemical species with GOME flying on ERS-2 in 1995, then fulfilled his promise to measure also greenhouse gases from SCIAMACHY, now in orbit since 2002, and he continues to make new discoveries about the interaction of atmospheric chemistry, climate, and the Sun.

In recognition of his exceptional contributions to the practical application of fundamental research in space physics to space observations for the benefit of mankind, I am pleased to present the COSPAR William Nordberg Medal to Professor John P. Burrows.

Massey Award:

Charles Elachi (USA)

Charles Elachi has, for over thirty years, been an international scientist and leader as a researcher and manager in the robotic Space Science flight missions, science, and technology activities of NASA's and Caltech's Jet Propulsion Laboratory. In his over three decades at JPL Dr. Elachi has led the development of spaceborne imaging radar to be a major field of scientific study. He is also recognized for his long and continuing energetic leadership of JPL's international flight mission, flight instrument, and technology development as Director for Space and Earth Science Programs (1988-2001) and as Director of the laboratory (since 2001).

Under Dr. Elachi's leadership, JPL has enjoyed an outstanding record of successful scientific spacecraft missions. In addition, JPL has continued to support deep space tracking, communication and navigation for many international missions. In the five years of Dr. Elachi's directorship of JPL the laboratory has conducted successful Mars rover and orbiter missions, missions to study comets, a Voyager mission that has become an interstellar spacecraft, a joint JPL-ESA mission to Saturn and its moons, space telescope missions in the ultraviolet and infrared, and has developed several complex Earth monitoring missions and instruments. JPL is now operating eighteen spacecraft throughout and beyond the solar system, and is tracking several more international missions.

In recognition of his outstanding contributions to international planetary, space, and Earth sciences, especially for his role in developing the technology and applications for synthetic aperture radar, COSPAR and the Royal Society are honored to confer the Massey Award on Dr. Charles Elachi.

Vikram Sarabhai Medal:

Marcos E. Machado (Argentina)

Dr. Marcos E Machado was born in 1949 and started his research career with the study of Solar flares at the Cosmic Physics Observatory in Argentina. In as early as the 1980's Dr. Machado developed first of their kind semi-empirical models of solar flares that are used as references even today. He was one of the first to realize the importance of studying the hot solar plasma using multi-wavelength observations with specific emphasis on X-rays and Gamma rays. In addition to carrying out intensive studies using Skylab Apollo Telescope Mount and the Hard X-ray Imaging Spectrometer of the Solar Maximum Mission, he proposed the development of the first indigenous scientific satellite of Argentina, SAC-B, an international collaborative effort that served as a forerunner for future programs.

Dr. Machado had been the coordinator and manager of the Argentine component of NASA's Space Experiment Module Program making Argentina the only country outside USA to participate and succeed in growing crystals in space in the 1990s. At all phases of his career, Dr. Machado has pursued

development of space research in developing countries, especially in Latin America. In addition to encouraging an international approach among Argentine scientific groups, he was, and continues to be, instrumental in ensuring Argentina's engagement in international space research activities. Dr. Machado has been involved in the Latin American Association of Space Geophysics and served in the organizing committee for the Latin American Conferences on Space Geophysics.

He has held responsible positions in the Argentine Space Agency CONAE, providing direction to the space science programs of his country. As Vice Chairman and Chairman of the COSPAR Panel on Space Research in Developing Countries for more than a decade, Dr. Machado promoted space science in developing countries by organizing meetings and discussions. He is currently a member of the COSPAR Panel for Capacity Building. In view of his outstanding scientific contributions and exceptional contributions towards promoting space science research in developing countries, ISRO and COSPAR are very pleased to present the Vikram Sarabhai Award to Dr. Marcos E. Machado for the year 2006.

COSPAR TODAY

The Committee on Space Research (COSPAR) has both National Scientific Institutions and International Scientific Unions as members. Forty-four National Scientific Institutions engaged in space research and thirteen International Scientific Unions adhering to the International Council for Science (ICSU) belong to COSPAR. Moreover, approximately 6000 scientists actively engaged in space research are COSPAR Associates. Companies and organizations interested in supporting COSPAR activities may also become Associated Supporters of the Committee.

COSPAR acts mainly:

• as a body responsible for organizing biennial Scientific Assemblies, with strong contributions from most countries engaged in space research. These meetings allow the presentation of the latest scientific results, the exchange of knowledge and also the discussion of space research problems. Over several decades providing this service has brought recognition to the COSPAR Scientific Assembly as the premier forum for presenting the most important results in space research in all disciplines and as the focal point for truly international space science. In this regard it should be observed that COSPAR has played a central role in the development of new space disciplines such as life sciences or fundamental physics, by facilitating the interaction between scientists in emergent space fields and senior space researchers.

• as an entity whose role, in addition to providing a meeting ground for scientists involved in fundamental research, is also to provide the means for rapid publication of results, in its journal and colloquia proceedings,

• as a body organizing, on a regional scale, scientific exchange on specific research topics, in the framework of Colloquia.

• as a scientific committee advising, as required, the UN and other intergovernmental organizations on space research matters or on the assessment of scientific issues in which space can play a role,

• as a panel for the preparation of scientific and technical standards related to space research,

• as an entity promoting, on an international level, research in space, much of which has grown into large international collaborative programs in the mainstream of scientific research. COSPAR strives to promote the use of space science for the benefit of mankind and for its adoption by developing countries and new space-faring nations.

COSPAR's objectives are to promote on an international level scientific research in space, with emphasis on the exchange of results, information and opinions, and to provide a forum, open to all scientists, for the discussion of problems that may affect scientific space research. These objectives are achieved through the organization of Scientific Assemblies, publications and other means.

ICSU established COSPAR during an international meeting in London in 1958. COSPAR's first Space Science Symposium was organized in Nice in January 1960. COSPAR is an interdisciplinary entity that ignores political considerations and views all questions solely from the scientific standpoint.

Press Release, Committee on Space Research (COSPAR)

Science in School

a new online journal for secondary school science teachers, scientists and other stakeholders in European science education

Science in School, a new online journal for secondary school science teachers, scientists and other stakeholders in European science education, aims to promote inspiring science teaching by encouraging communication between teachers, scientists, science teachers and everyone else involved in European science education.

Science in School addresses science teaching across Europe and across disciplines: highlighting the best in teaching and cutting-edge research. It covers biology, physics, chemistry, maths, earth sciences, engineering and medicine, focusing on interdisciplinary work.

The contents include teaching materials; cutting-edge science; education projects; interviews with young scientists and inspiring teachers; education research; book reviews; and European events for teachers.

Science in School is published quarterly and is freely available on the web; print versions in English are distributed across Europe. Online articles are published in many European languages. Science in School is published by EIROforum with the support of the European Union. EIROforum is a partnership of Europe's seven intergovernmental research organisations. In EIROforum, these organisations pursue joint initiatives, combine resources, and share best practices. The seven EIROforum members are CERN, EFDA, EMBL, ESA, ESO, ESRF and ILL.

In the current, 2nd issue of Science in School, Uffe Gråe Jørgensen from the University of Copenhagen, Denmark, describes the search for Earth-like planets elsewhere in our galaxy. In the section teaching activities, Richard Harwood and Chris Starr, from Aiglon College, Switzerland, describe a school project to measure water quality in a local wetlands region.

The journal is accessible on-line free of charge at
http://www.scienceinschool.org/

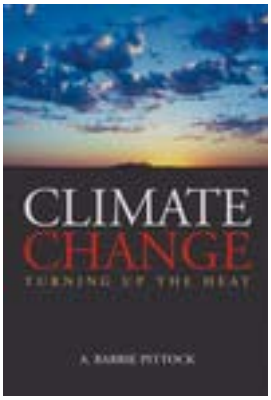
EGU General Assembly 2007 call for papers

We are pleased to inform you that the Call-for-Papers programme of the European Geosciences Union (EGU) General Assembly 2007 is open now. On behalf of the Programme Committee, we cordially invite you to have a look in the programme and to submit abstracts to the various sessions. The deadline for the receipt of abstracts is 15 January 2007!

All necessary information can be found under http://meetings.copernicus.org/egu2007

A good reference for graduate students and researchers

Climate and Hydrology of Mountain Areas



Carmen de Jong, David N. Collins, Roberto Ranzi (eds.)
Published by: Wiley
ISBN: 0470858141
YEAR : 2005
EDITION : 1st
#PAGES : 338
PRICE : 150.00 €

As more research is conducted on physical processes in mountain areas, society as a whole is becoming increasingly aware that mountains function as 'water towers', supplying much of the populated world with water resources. However, our understanding of precipitation and air temperature variability, their interactions with the mountain cryosphere and biosphere, and subsequent downstream impacts, remains limited. Many scientists are actively engaged in addressing this research gap, and their work makes it clear that mountain climatological and hydrological research is highly complementary. Carmen de Jong, David Collins and Roberto Ranzi succeed in solidifying this climate-hydrology connection by collating in a single volume a series of seminal articles on all components of the mountain hydrologic system: from snow and ice to soils and permafrost. While previous books have either addressed specific portions of this system (Mountain Rivers, by E. Wohl), or taken a much broader view (Global Change in Mountain Regions, edited by U. Huber and others), this is the first to synthesize key knowledge specific to climate and hydrology in mountain regions, and their links to climate change.

The book is divided into five sections:

(1) Snow and ice melt includes papers by R. Kayastha and other, J. Corripio & R. Purves, U. Strasser & P. Etchevers, and P. Singh & L. Bengtsson. This section covers the modelling of snow and ice melt with both degree-day and energy balance methods, and also includes a discussion of the role of the forest canopy in snow melt.

(2) Soil water and permafrost includes papers by C. Hauck and others, D. Bayard & M. Stahli, M. Menziani and others, and S. Barontini and others. This section examines specific variables such as the impact of permafrost on groundwater recharge and hydraulic conductivity in mountain soils, while also addressing broader issues such as the measurement and monitoring of permafrost in alpine areas, and the water balance of surface soils.

(3) Evapotranspiration and the water balance includes papers by G. Eder and others, T. Link and others, C. de Jong and others, and J. Loffler & O. Robler. This section introduces the vegetation aspect of mountain hydrology, including water balance modelling, evapotranspiration, and the role of climate and hydrology in forest ecology.

(4) Coupling meteorology and hydrology includes papers by B. Bacchi & V. Villi, C. Lin and others, S. Uhlenbrook & D. Tetzlaff, and C. de Jong and others. This section synthesizes the climate-hydrology relationship discussed separately in previous sections, by examining floods in relation to both runoff and precipitation, and introducing a technique of geomorphological zoning using linked hydrology and meteorology.

(5) Climate change impact and mountain hydrology includes papers by W. Hagg & L. Braun, F. Keller & S. Goyette, and O. Yildiz & A. Barros. This final chapter takes a broader view of mountain regions and their response to climate change by addressing specific issues such as glacier retreat and water yield, changes in snowmelt with increased air temperature, and water and energy budgets given enhanced climate variability and hydrologic extremes.

I am always apprehensive of books that constitute a collection of research articles rather than a comprehensive summary of the field of interest, as they are often disjointed and fail to provide the background material that would be useful in tying the papers together. While the authors have largely avoided this pitfall by including an overview foreword by Roger Barry, the book could be improved by including a summary chapter that compares and contrasts the preceding papers and addresses research gaps and future research directions. Additionally, while perhaps beyond the scope of this book, a manuscript addressing the downstream impacts on water quality and quantity (other than floods) of changes in mountain hydrology and climate would also have been useful. Of minor note is that fact that one of the editors is the first author of two papers in the volume. While it is clear that the editors are experts in their field, these types of books are usually meant to showcase the work of others, rather than their own.

Overall, however, the book succeeds in identifying and addressing the many interconnections between climate and hydrology in mountain regions. It serves as an excellent reference for graduate students and researchers, and provides a starting point from which to assess research gaps and future research needs in the discipline.

Sarah Boon
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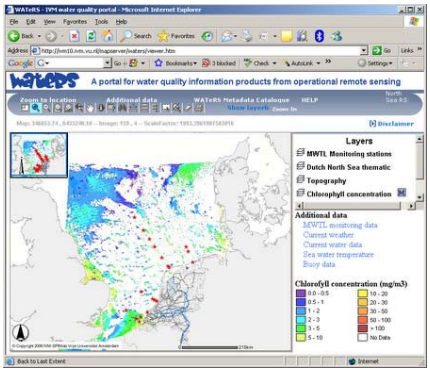
WATeRS: A portal for water quality information products from operational remote sensing

http://ivm10.ivm.vu.nl/mapserver/waters/viewer.htm



he Institute for Environmental Studies of the Vrije Universiteit of Amsterdam has developed a generic method to convert MODIS-Aqua satellite data to information in GIS format. The Institute's web site is at http://www.ivm.falw.vu.nl/home/index.cfm.

The information is provided in near-real time and is freely available on the Internet via the customised WATeRS web portal. This is an ArcIMS-application with a WMS ArcIMS-OGC connector which enables users to interactively explore remote-sensing products, and to seamlessly combine the data with other data with a geographic component. The service has been created for the North Sea only, but the procedure could be adapted for other regions, and also other algorithms and sensors.

Decision tree for choosing an uncertainty analysis methodology in hydrology

http://www.floodrisk.net

Decision tree for choosing an uncertainty analysis methodology: a Wiki experiment.

Uncertainty and risk analysis of models has received increasing attention over the last decades in hydrological and hydraulic modelling. However, the potential user is always faced with a difficult decision about which of the available methods to choose (especially given that there will be a learning curve associated with each method). There has been some progress in providing guidance to the user about available methods. A new web site (http://www.floodrisk.net) will contribute to these efforts. It provides a catalogue of uncertainty analysis methods, some worked examples, and a decision tree, helping users choose a method by answering a small set of questions.

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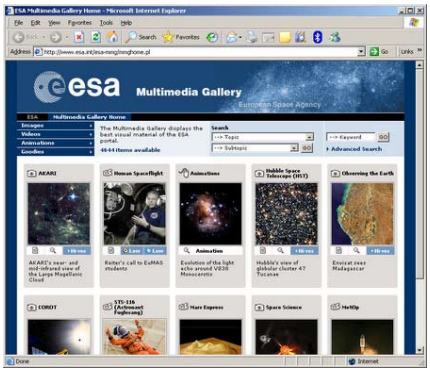
ESA multimedia gallery

http://www.esa.int/esa-mmg/mmghome.pl



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Process Modelling of Hydrothermal Systems using SHEMAT / Processing SHEMAT - (Course)

25/09/2006 - 27/09/2006 - Guesthouse of the RWTH Aachen University

Hydrothermal systems are the engines that fuel geothermal fields and are of great significance for the generation of the world's hydrocarbon and mineral resources. Adequate and reliable supplies of affordable energy, obtained in environmentally sustainable ways, are essential to economic prosperity, environmental quality, and political stability around the world. The challenge for geological exploration is to find cost-effective ways of locating high quality geothermal and mineral resources. Numerical simulation of reactive transport is an emerging exploration tool, which can provide a more quantitative exploration effort.

In order to meet this challenge, the Institute of Applied Geophysics of RWTH Aachen University has developed a 3-day training course in cooperation with the University of Western Australia in Perth. The focus of this course is on coupled numerical simulation of fluid flow, heat transfer, multi species transport and chemical reactions and how these processes relate to rock deformation and geodynamics. An outline of the physical and chemical foundations will be given and the philosophy of how to conceptualise, set up and carry out numerical modelling projects will be discussed in detail. This is a hands-on course with an emphasis on using the computer program SHEMAT.

The target audience are geophysicists, geologists, geochemists and hydrogeologists from industry, universities and governmental institutions interested in processes and simulation techniques of hydrogeological, geothermal and reactive transport applications. Post-graduate students are particularly encouraged to attend, as are all users of the program package SHEMAT / Processing SHEMAT.

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International Conference Montessus de Ballore: 1906 Valparaiso Earthquake Centennial - (Meeting)

06/11/2006 - 08/11/2006 - Universidad de Chile, Santiago, Chile

Scope: Three very large earthquakes took place in the Americas in 1906, the first one, on 31 January in the Colombia-Ecuador region, the second on 18 April in San Francisco, California, and the third one, on 16 August in Valparaiso, Chile. In all three cases, earthquakes resulted into the massive destruction of cities and large number of casualties. The year 1906 marks the beginning of Seismology as a scientific field. Chile, one of the most seismic countries in the world, decided to install a seismic network which is operating since that time. Its implementation and the associated investigations were entrusted to Fernand Montessus de Ballore. During the last century, seismic source investigations have revealed much of the intimacy of earthquakes, still escaping though an accurate prediction.

This conference will be devoted to the state-of-the art in different aspects of Earthquake Seismology. Contributions from seismologists and other geoscientists on earthquake and seismic cycle investigations are welcome. Target Audience: Seismology, Tectonics, Geodesy, Geology and Earthquake Engineering communities.

Abstract deadline: 1st of September 2006.

Email: montessus@dgf.uchile.cl

More information and on-line registration at the conference web site.

Organizing Committee:
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http://www.dgf.uchile.cl/montessus

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6th International Conference on Urban Air Quality - (Meeting)

27/03/2007 - 29/03/2007 - Limassol,Cyprus

The conference will be held at the Amathus beach Hotel, Limassol,Cyprus.

Supporting organisations

American Meteorological Society (AMS), Air & Waste Management Association (A&WMA), World Meteorological Organisation (WMO), European Meteorological Society (EMS) and European Association of the Science of Air Pollution (EURASAP).

Specials sessions

ACCENT (FP6 Network of Excellence) - Aerosols

COST 728 Action - Mesoscale modelling for air pollution applications

AIR4EU/CLEAR – Local to regional scale air quality assessment methodologies

SAPPHIRE/CLEAR - Source apportionment of particles and PAHs

Conference topics

Air quality and climate interactions
Air quality in megacities
Air quality management
Air quality policy analysis and development
Chemical and physical transformation processes
Development/application of models for local to meso scales
Early warning systems
Emission models/inventories
Integrated modelling systems
Measurement of air pollutants
Meteorological processes/interactions
Model evaluation studies
Parametrisation schemes
Personal exposure and environmental and health impacts
Remote sensing/satellite data assimilation
Role of aerosols
Sampling techniques/instrumentation
Source apportionment studies
Urban air quality databases, information systems and data mining/archiving
Urban climate/meteorology
Urban-regional-global scale interactions and feedbacks
Wind tunnel/physical modelling

Important deadlines

SUBMISSION OF ONE PAGE ABSTRACT - FRIDAY 20 OCTOBER 2006

SHORT PAPERS FOR PROCEEDING - FRIDAY 19 JANUARY 2007

Organizer:

University of Hertfordshire, University of

Cyprus, ACCENT, COST 728, Cyprus International Institute for the Environment and Public Health in Association with Harvard School of Public Health

www.urbanairquality.org

Scientific and Fundamental Aspects of the Galileo Programme - (Meeting)

02/10/2007 - 04/10/2007 - Toulouse, France

An international colloquium on fundamental aspects and scientific applications of Galileo and GNSS will be held in Toulouse in October 2007. ANAE (Académie Nationale de l'Air et de l'Espace), Bureau des Longitudes, Académie de Marine and ESA (European Space Agency), are the main instigators of this colloquium meant to contribute to the 50th anniversary celebrations of the launch of Sputnik.

The colloquium will address three major issues:

• The fundamental aspects of navigation by satellites and Galileo: geodetic and temporal reference frames, relativistic frame, on board and ground clocks, orbits, radiative environment in orbit, intersatellite links, fundamental aspects of propagation, tropospheric and ionospheric corrections, calibration and validation, relations with international organisations (BIPM, IGS).

• Scientific applications in meteorology, geodesy, geophysics, space physics, oceanography, land surface and ecosystem studies, using either normal or reflected signals, differential measurements, phase measurements, occultations, in real or delayed modes, using receivers placed on the ground, in airplanes or in scientific satellites.

• Scientific developments in physics and dealing with future systems, particularly in testing fundamental laws, in astronomy, in quantum communication, and in developing clocks or experiments based on GNSS.

This colloquium intends to bring together leading members of the European scientific community and their international partners. One of its aims is to propose to Galileo partners means of enhancing the scientific use of Galileo and to contribute to GNSS development based on scientific approaches.

Contact Points:

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Organizer:

ESA, ANAE (Académie Nationale de l'Air et de l'Espace) and Bureau des Longitudes, Académie de Marine

http://www.congrex.nl/07a06/

Future Challenges for Local and Regional Authorities: How can Space Technology help? - (Meeting)

16/04/2007 - 17/04/2007 - Barcelona, Spain

The Conference will enable representatives from European Regions and Cities to discover new services, share on their practices, challenges and issues, meet with service providers and institutions, and propose evolution for the future services. Speakers from Regions and Cities will discuss the challenges they face (such as Monitoring of the natural environment, pol-

lution, land use, real estate, traffic management, tracking of goods and people, natural disaster management, etc), and the services they can use to respond. Representatives from the Service industry will be present to provide educated responses and demonstrations.

The Conference is organised within the Eurisy three year programme addressing the utilisation of Space Application based Services by European Local and Regional Authorities.

Organizer:
Eurisy
http://www.eurisy.org/

Production Logging 2006 - (Meeting)

28/11/2006 - 29/11/2006 - The Ardoe House, Aberdeen, Scotland

An integrated approach to acquire, interpret and optimise data for production excellence

Who should attend? Petrophysicists, Petroleum Engineers, Production Technologists, Heads of Reservoir Engineering, Geologists, Heads of Production,…

Every year millions of dollars are lost due to the lack of production logging. Wells are constantly at a risk of costly shutdowns and there is an increasing need for efficient data acquisition and interpretation in aging wells due to high oil prices and tightening regulations.

At Production Logging 2006 you will pick up the tools and tips to achieve:

--An effective production logging process in horizontal and deviated wells

--Proactive data acquisition in multiphase flow

--Seamless integration between departments involved with production logging

--Quality data interpretation and analysis

--Accurate production logging in HP/HT wells

Organizer:
IQPC
http://www.iqpc.co.uk/GB-2822/EGU

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Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes - (Meeting)

02/07/2007 - 05/07/2007 - Cambridge, U.K.

The 11th international conference on "Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes" is aimed towards model developers, model users, environmental protection agencies, and environmental legislation experts. It is distinguished from other conferences by its focus on common tools and methodologies.

Focus of the conference

The series of international conferences on 'Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes' is concerned with the improvement of "modelling culture" both in Europe and also more internationally.

Dispersion modelling is widely used for regulatory purposes, both for permits and for assessments, but there is a lack of sufficient mechanisms to make modelling processes transparent and generally to ensure trust in modelling results.

There are many aspects of this such as: ensuring that models are scientifically sound; model validation; guidance to ensure proper use of models; promotion of good practices and elimination of bad; quality assurance with respect to model development; establishment of reference problems; comparability of input and output; ensuring proper exchange of experiences.

Such issues that are not specific to one particular model, but common to several, are in focus at the 11th International conference on 'Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes'.

The entire series of Harmonisation conferences is the result of an initiative launched in 1991 (see http://www.harmo.org). The conferences have a role as a forum where users and decision-makers can bring their requirements to the attention of scientists. They are also a natural forum for discussing modelling issues related to the European Union air quality directives.

The deadline for abstracts is November 20, 2006.

http://www.harmo.org/harmo11

Location Asia 2007 - (Meeting)

04/04/2007 - 05/04/2007 - Hong Kong, China

Navigation and Positioning technology is an enabling utility that can markedly improve human activities. It is a key element fuelling growth in both infrastructure provision and location related business sevices. As we stand at the exciting horizon of 'Tagged World', there is a need to create awareness about the potential of navigation and positioning technology and build capacity of the local industry to design and develop products to meet the future requirements. The given situation also underlines the need to develop a forum, which could facilitate interaction and demonstration of positioning and navigational technologies, prevalent in the world, amongst various stakeholders within Asia.

Location Asia 2007 is the Annual International Conference and Exhibition in the field of positioning, navigation and timing technologies. It will serve as a platform where the Technology Providers, Application Developers and Users will converge to discuss and deliberate on the potential and usage of these technologies. It will attempt to discuss the relevance of positioning and navigation technologies in defense, aviation, surveying, transportation and location based services.

The conference will be user oriented and will look forward to integrating the application developers with the user segment. The rapid development in the field of positioning and navigation technologies, underlines the need of creating awareness amongst the large business user base, which can benefit through these tools.

Venue

Ideally situated in the heart of the business, entertainment and shopping area of Tsim Sha Tsui in Kowloon, InterContinental Hong Kong is right on the edge of Victoria Harbour and enjoys spectacular views of Hong Kong Island. It is located 36 kilometres from Hong Kong's Chek Lap Kok airport, and is accessible via a variety of transportation options.

The hotel is adjacent to the Hong Kong Space Museum, with one of the largest planetariums in the world. Also next door is the Hong Kong Cultural Centre and Art Museum. Just a few minutes from both Star Ferry Terminal and Ocean Terminal, the hotel provides easy access to every part of the city.

Organizer:
GIS Development
http://www.location.net.in/asia/index.htm