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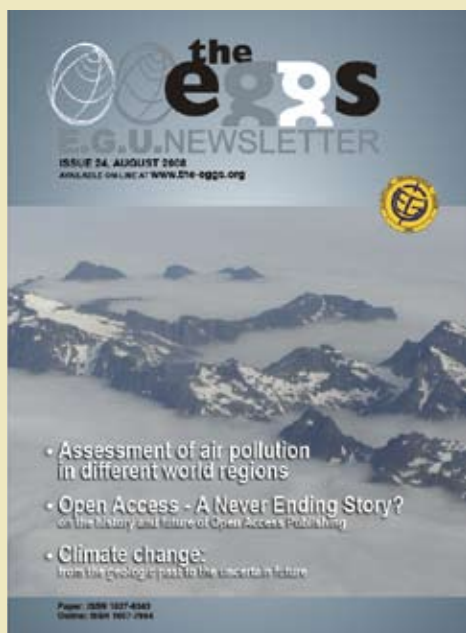
E.G.U. NEWSLETTER

ISSUE 24, AUGUST 2008

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- **Assessment of air pollution in different world regions**
 - **Open Access - A Never Ending Story?**
on the history and future of Open Access Publishing
 - **Climate change:**
from the geologic past to the uncertain future



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Cover photo: Low cloud cover, Northern Norway.

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EGU Awards

During the last General Assembly of the EGU 33 outstanding geoscientists received a medal or award in honour of their contribution to the Earth and Planetary Sciences

The Medal Ceremony as well as the Union Medal Lectures during the US1 on Wednesday, 16 April were broadcasted live and online for the first time. It was a Rich Media Format with the record of the presenter and its talk synchronized with his PowerPoint presentation. Scientists who were not able to attend the conference are cordially invited to watch these key note talks free of charge. Please enter the Live Stream at <http://www.webstream.at/egu/>. If the records are no longer available there, they will be available via the EGU webpage.

Webcast Programme

16:15–17:00 Medal Ceremony - Presentation of the Outstanding Young Scientist Awards, the Union Service Awards as well as the Union Medals & Honorary Memberships

17:15–18:00 Jean Dominique Cassini Medal Lecture, Bibring, J.-P.: Mars history end evolution, revisited by on going space exploration

18:00–18:45 Alfred Wegener Medal Lecture, Morel, P.: Models and Reality

18:45–19:30 Arthur Holmes Medal Lecture, Watts, A.B.: Isostasy, Flexure and Geological Processes

Below the list of this year's recipients of EGU Awards and Medals.

Anthony B. Watts (United Kingdom)

Arthur Holmes Medal & Honorary Membership
(Department of Earth Sciences, Oxford University, United Kingdom, tony@earth.ox.ac.uk)

Anthony B. Watts has studied the Earth's crust and upper mantle beneath the world's ocean basins and their margins using both geological and geophysical techniques. Predictions of simple thermal and mechanical models, have defined the response of the oceanic crust and upper mantle to geological processes associated with rifting of the continental crust. Professor Watts' research has lead to fundamental new insights on the evolution of the rheology and strength of the Earth's lithosphere.

http://www.copernicus.org/EGU/awards/medallists/_2008/arthur_holmes.html

Pierre Morel (France)

Alfred Wegener Medal & Honorary Membership
(Professor Emeritus, University of Paris, France, p.morel@mail.softhome.net)

Pierre Morel's continuous action has clearly been one of the keys of the success of the climate research everywhere in the world. He justly receives the Alfred Wegener Medal not only for his outstanding contributions to geophysical fluid dynamics, but also for the applications of space observation (METEOSAT, ARGOS, AÏLA) to meteorology and the Earth system science. One of his major achievements was the successful prediction of the Niño events one year in advance.

http://www.copernicus.org/EGU/awards/medallists/_2008/alfred_wegener.html

Jean-Pierre Bibring (France)

Jean Dominique Cassini Medal & Honorary Membership
(University of Paris & Institut d'astrophysique Spatiale (IAS), Orsay, France, bibring@ias.fr)

The main contribution of Jean-Pierre Bibring to the solar system exploration is the leadership of the OMEGA experiment aboard the ESA Mars Express spacecraft, which has led to two major discoveries: (i) The first direct detection of water ice at the South Pole of Mars and (ii) the characterisation of three ages of Martian geological history, namely the phyllocian, the theiikian, and the siderikian' eras. This latter is probably the major achievement in European Planetary science in the last 5 years. This year, Jean-Pierre Bibring receives the Cassini Medal for his outstanding contributions to planetology over many years.

http://www.copernicus.org/EGU/awards/medallists/_2008/jean_dominique_cassini.html

Maud Boyet (France)

Outstanding Young Scientist Award
(Laboratoire Magmas et Volcans, UMR CNRS 6524, OPGC, Université Blaise Pascal, Clermont-Ferrand, France, boyet@opgc.univ-bpclermont.fr)

Maud Boyet receives the Outstanding Young Scientist Award for successfully unlocking geochemical secrets of the Earth's early mantle development and evolution by ¹⁴²Nd.

She uses remarkable analytical skills to measure differences of tens of ppm in $^{142}\text{Nd}/^{144}\text{Nd}$ to produce the best evidence yet that the composition of the Earth was irreversibly modified by chemical differentiation events that occurred within a few tens of million years of solar system formation. Boyet's discovery and her publication in *Science*, highlight the ever increasing evidence that events occurring shortly after planet formation have a lasting, if not dominant, effect on the geochemical and geodynamic evolution of the terrestrial planets.

http://www.copernicus.org/EGU/awards/medallists/_2008/outstanding_young_scientist_award_boyet.html

Giulio Di Toro (Italy)

Outstanding Young Scientist Award
(Dipartimento Di Geoscienze, Padova University, Italy, giulio.ditoro@unipd.it)

Giulio Di Toro has contributed greatly to our understanding of fault mechanics at seismic slip rates, one of the hottest topics in fault and earthquake mechanics at present. No one, before them, would ever imagine that speed of dynamic rupture propagation could be determined from natural pseudotachylites. Within only few years, he has become a scientist of truly international standing and is already a charismatic leader worldwide. Most important is his demonstration of the significance and power of integrated field, laboratory and theoretical studies.

http://www.copernicus.org/EGU/awards/medallists/_2008/outstanding_young_scientist_award_toro.html

Alberto Naveira-Garabato (Spain)

Outstanding Young Scientist Award
(National Oceanography Centre, Southampton, United Kingdom, acng@noc.soton.ac.uk)

Dr. Naveira Garabato's research concentrates on Southern Ocean mixing and whether or not it has the central role in setting the global thermohaline circulation. What sets the size of the thermohaline circulation is the outstanding question in oceanography and climate. Recently, he led a series of research cruises in the Southern Ocean to infer and measure directly the mixing in this critical region. Ask any oceanographer in the field and you will find that Alberto is universally considered to be the top young scientist. As one of the world experts on ocean mixing, he now receives the Outstanding Young Scientist Award.

http://www.copernicus.org/EGU/awards/medallists/_2008/outstanding_young_scientist_award_naveira_garabato.html

Rosalind Å. Rickaby (United Kingdom)

Outstanding Young Scientist Award
(Department of Earth Sciences, Oxford University, United Kingdom, rosr@earth.ox.ac.uk, <http://www.earth.ox.ac.uk/~rosr/>)

Rosalind Rickaby made important contributions to the understanding of biogeochemistry of carbonates as recorders of past oceans and climate. Being a powerful role model, she is the sort of interdisciplinary scientist who transcends the traditional disciplines with abandon. Many colleagues praise her for her enthusiasm and thirst for knowledge. Rosalind Rickaby receives one of this year's Outstanding Young scientist awards.

http://www.copernicus.org/EGU/awards/medallists/_2008/outstanding_young_scientist_award_rickaby.html

Alfonso Saiz-Lopez (USA)

Outstanding Young Scientist Award
(Earth and Space Science Division, NASA Jet Propulsion Laboratory, California Institute of Technology, USA, alfonso.saiz-lopez@jpl.nasa.gov)

Alfonso Saiz-Lopez' research focuses on the atmospheric chemistry of iodine. Within only a couple of years, he contributed significantly to ground- and satellite-based observations, laboratory work and modelling. Alfonso Saiz-Lopez receives the Outstanding Young Scientist Award for his ground-breaking research in the field of atmospheric chemistry.

http://www.copernicus.org/EGU/awards/medallists/_2008/outstanding_young_scientist_award_saiz_lopez.html

Fausto Guzzetti (Italy)

Union Service Award
(Italian National Research Council (Consiglio Nazionale delle Ricerche), Italy, fausto.guzzetti@irpi.cnr.it)

In recognition of his outstanding leadership services for the EGU in general and especially for the Division on Natural Hazards, Fausto Guzzetti receives the EGU union Service Award. Currently being the executive editor of *Natural Hazards and Earth System Sciences* and the president of the Natural Hazards Section of EGU, he has made outstanding contributions to the research field of natural hazards in general. His personal research focuses mainly on the analysis and risk management of hazardous landslides.

http://www.copernicus.org/EGU/awards/medallists/_2008/union_service_award_guzzetti.html

Denis-Didier Rousseau (France)

Union Service Award
(Laboratoire de Météorologie Dynamique du CNRS, France, Denis.Rousseau@lmd.ens.fr)

Denis-Didier Rousseau has contributed strongly to the acceptance of the EGU publishing philosophy at international funding agencies. Being (co-) chief editor of the journal *Climate of the Past* and officer in the Division *Climate: Past, Present & Future*, he has provided the EGU exceptional services. This year, the EGU honours him with the union Service Award.

http://www.copernicus.org/EGU/awards/medallists/_2008/union_service_award_rousseau.html

Guri I. Marchuk (Russia)

Vilhelm Bjerknes Medal
(Institute for Numerical Mathematics, Russian Academy of Sciences, Moscow, Russia, guri@inm.ras.ru)

Guri Ivanovich Marchuk has made fundamental contributions to the studies of the dynamics of the atmosphere. He has been one of the key founders by introducing numerical methods of the atmosphere and oceans. Professor Marchuk's contributions cover both theoretical meteorology and numerical mathematics of the atmosphere and oceans. His splitting method, for example, is now widely used by meteorologists for solving geophysical fluid dynamics equations. In general, his work advanced our understanding of atmospheric processes, and the mathematical tools he introduced have aided to solve a wide range of atmospheric and other environmental problems.

http://www.copernicus.org/EGU/awards/medallists/_2008/vilhelm_bjerknes.html

Edward F. DeLong (USA)

Vladimir Ivanovich Vernadsky Medal

(Department of Biological Engineering & Dpt. of Civil and Environmental Engineering, Massachusetts Institute of Technology, USA, delong@mit.edu)

Edward D. DeLong has made important contributions to geomicrobiology and biogeochemical cycling through the use of molecular tools and a genomic approach. Ed DeLong published many landmark papers in highly visible journals (Science, Nature). His research has had enormous applications in many fields of bio-geosciences. Edward DeLong justly receives the Vladimir Ivanovich Vernadsky medal.

http://www.copernicus.org/EGU/awards/medallists/_2008/vladimir_ivanovich_vernadsky.html

William Richard Peltier (Canada)

Milutin Milankovic Medal

(Department of Physics, University of Toronto, Canada, peltier@atmosp.physics.utoronto.ca)

William Richard Peltier has provided fundamental and pioneer work in modelling mantle convection, glacial isostatic adjustment process and global sea level changes. In addition, one of his best contributions was to design accurate models of the topography and ice distribution over the Earth for the last twenty thousand years. He has published about 250 papers in international journals of high standard and is listed as one of the most frequently cited Earth scientists. Being an internationally renowned geophysicist, he now receives the Milutin Milankovic Medal.

http://www.copernicus.org/EGU/awards/medallists/_2008/milutin_milankovic.html

Dominique Raynaud (France)

Hans Oeschger Medal

(Laboratoire de Glaciologie et Géophysique de l'Environnement, CNRS Université Joseph Fourier, Saint-Martin-d'Ères, France, raynaud@lgge.obs.ujf-grenoble.fr)

Dominique Raynaud played a fundamental role in the reconstruction atmospheric composition in CO₂ and CH₄ over the past 800,000 year from Arctic ice cores (Vostok records). He also contributed extensively to the understanding of the link between these greenhouse gases and climate, the latter being illustrated by >30 publications in Science and Nature. Dominique Raynaud therefore receives this year's Hans Oeschger Medal.

http://www.copernicus.org/EGU/awards/medallists/_2008/hans_oeschger.html

Johannes Oerlemans (The Netherlands)

Louis Agassiz Medal

(Institute for Marine and Atmospheric research Utrecht (IMAU), Utrecht University, The Netherlands, j.oerlemans@phys.uu.nl)

The research of Hans Oerlemans has contributed significantly to the understanding of the relations between ice masses, climate and sea level fluctuations. Oerlemans' research is characterised by a combination of innovative numerical modelling and field experiments. Also typical for his work is its spirit of quantification, thereby recognizing that simple models can be valuable tools in studying particular phenomena. Being one

of the world's foremost experts on the role of the cryosphere in global climate makes him a fitting recipient of the Louis Agassiz medal.

http://www.copernicus.org/EGU/awards/medallists/_2008/louis_agassiz.html

Donald B. Dingwell

Robert W. Bunsen Medal

(Department für Geo- und Umweltwissenschaften, Ludwig-Maximilians-Universität München, Germany, Dingwell@lmu.de)

Donald B. Dingwell receives the Robert W. Bunsen medal for his major contributions in the study of the physics and chemistry of silicate melts. He has made outstanding contributions with respect to silicate melt viscosity, chemical diffusion, and finally, structural relaxation of melts and its role in fragmentation of lavas. Dingwell was among the first to recognize the importance of the glass transition to geology.

http://www.copernicus.org/EGU/awards/medallists/_2008/robert_w_bunsen.html

Carl-Christian Tscherning (Denmark)

Vening Meinesz Medal

(Niels Bohr Institute, Copenhagen, Denmark, cct@gfy.ku.dk)

Carl-Christian Tscherning made fundamental contributions to physical geodesy. Colleagues praise him for his unselfish involvement within the International Association of Geodesy. We honour him for his achievements to receive this year's Vening Meinesz Medal from the EGU.

http://www.copernicus.org/EGU/awards/medallists/_2008/lening_meinesz.html

Richard J. 'Connell (USA)

Augustus Love Medal

(Department of Earth and Planetary Sciences, Harvard University, Cambridge, USA, connell@geophysics.harvard.edu)

Richard J. 'Connell receives the Augustus Love Medal for his fundamental achievements in geodynamics. His research has focused particularly on studies of post-glacial rebound, mantle convection, Earth rotation, the properties of composite and cracked solids, and finally, the nature of the driving forces responsible for plate motions. Importantly, he demonstrated that the lower mantle is not rigid, but that it has a viscosity low enough to permit mantle flow, currently remaining a standard paradigm of modern global geophysical research.

http://www.copernicus.org/EGU/awards/medallists/_2008/augustus_love.html

Kelin x. Whipple (USA)

Ralph Alger Bagnold Medal

(School of Earth and Space Exploration, Arizona State University, Tempe, USA, kxw@asu.edu)

Kelin x. Whipple's most outstanding contributions have been in deepening our understanding of Landform evolution in active tectonic settings, examining the interactions of climate, tectonics, and the mechanics of river incision into bedrock, and their impact on sculpting of the Earth's surface, particularly in mountainous areas. He has shown how the interaction of river

incision and tectonics influences the morphology of mountain regions. The EGU honours him with the Ralph Alger Bagnold Medal.

http://www.copernicus.org/EGU/awards/medallists/_2008/ralph_alger_bagnold.html

Horst Uwe Keller (Germany)

Christiaan Huygens Medal

(Max-Planck- Institute for Solar System Research, Katlenburg- Lindau, Germany, keller@linmpi.mpg.de)

Horst Uwe Keller has made important contributions to the exploration of our solar system, through his innovation and development of cameras and related instrumentation. He has promoted and participated in a large number of important ESA and NASA missions. His instrument developments have led to a really significant progress in European (and the US) planetary exploration. The EGU honours him for his achievements with the Christiaan Huygens Medal

http://www.copernicus.org/EGU/awards/medallists/_2008/christiaan_huygens.html

Mike J. Kirkby (UK)

John Dalton Medal

(School of Geography, University of Leeds, United Kingdom, m.j.kirkby@leeds.ac.uk, <http://www.geog.leeds.ac.uk>)

Professor Mike Kirkby's work has a highly significant impact on our understandings of network hydrology and landscape development. He has world-wide influenced generations of researchers. Kirkby is probably most famous for his research on hillslope and network hydrology as well as his development of the TOPMODEL methodology and the concept of the topographic wetness index. He enriched hydrologic science through cross-fertilization of knowledge and concepts from hydrology, ecology and geomorphology. The EGU honours him with this year's John Dalton Medal,

http://www.copernicus.org/EGU/awards/medallists/_2008/john_dalton.html

Hubert H.G. Savenije (The Netherlands)

Henry Darcy Medal

(Civil Engineering & Geosciences, Delft University of Technology, Delft, The Netherlands, h.h.g.savenije@tudelft.nl)

Hubert Savenije is a leading researcher in the field of estuary hydrology and hydraulics, where he has developed new theories that deal with hydraulics, mixing, morphology and salinity within an integrating framework. Throughout his career he has dedicated much of his efforts to training and education of water scientists from developing countries. Hubert Savenije helped put water firmly on the international political agenda. For his outstanding contributions to hydrology and Water Resources Management, he receives this year's Henry Darcy Medal.

http://www.copernicus.org/EGU/awards/medallists/_2008/henry_darcy.html

J. Brian Evans (USA)

Louis Néel Medal

(Department of Earth, Atmospheric and Planetary Sciences (EAPS), Massachusetts Institute of Technology, USA, brievans@mit.edu)

J. Brian Evans receives the Louis Néel Medal for his internationally acclaimed path-breaking research on the rheology of rocks. He is famous for his elegant experiments based on physics and materials science and made fundamental discoveries in the relationship between deformation and fluid transport in a variety of geophysical environments. Last but not least, he has created an enormous "footprint" through his tutoring and continued advising of brilliant young scientists world-wide.

http://www.copernicus.org/EGU/awards/medallists/_2008/louis_neel.html

Jean-Pierre Brun (France)

Stephan Mueller Medal

(Geosciences Rennes, Université de Rennes, France, Jean-Pierre.Brun@univ-rennes1.fr)

A pioneer both in the field of experimental modelling, Jean-Pierre Brun has made great contributions to the analysis of ductile deformation and physical modelling of tectonic processes. He deserves the Stephan Mueller Medal not only for this outstanding research, but also for teaching and inspiring a whole generation of young researchers.

http://www.copernicus.org/EGU/awards/medallists/_2008/stephan_mueller.html

Franz Theodor Fürsich (Germany)

Jean Baptiste Lamarck Medal

(Institute for Paleontology, Universität Würzburg, Germany, franz.fuersich@mail.uni-wuerzburg.de)

This year's Jean Baptiste Lamarck Medal goes to the internationally renowned palaeontologist Franz Theodor Fürsich. By researching trace fossils and Jurassic bivalves, he plays a great role in the understanding and reconstruction of ancient ecosystems. Above all he is truly honourable and tolerant person, who is also engaged in the social help for people in developing countries.

http://www.copernicus.org/EGU/awards/medallists/_2008/jean_baptiste_lamarck.html

Rickard N.A. Lundin (Sweden)

Hannes Alfvén Medal

(Institute of Space Physics, Kiruna, Sweden, rickard.lundin@irf.se)

Rickard N.A. Lundin made great advancements in inventing new techniques to measure space plasma. He generated new important knowledge with these new measurements. This makes him the winner of the Hannes Alfvén Medal, a medal for scientists who contribute to the understanding of plasma processes in the solar system.

http://www.copernicus.org/EGU/awards/medallists/_2008/hannes_alfven.html

Victor A. Sergeev (Russia)

Julius Bartels Medal

(Institute of Physics, University of St.- Petersburg, Russia, victor@geo.phys.spbu.ru)

Due to his research in solar- terrestrial sciences for more than 30 years, Victor A. Sergeev receives this year's Julius Bartels Medal. His studies about space plasma processes were often ahead of their time. Part of his success stems from

experiments with the use of a wide variety of both ground-based and space-borne instruments.

http://www.copernicus.org/EGU/awards/medallists/_2008/julius_bartels.html

Alain Ruellan (France)

Philippe Duchaufour Medal
(Agrocampus Rennes, Rennes Cedex, France, ruellan@agropolis.fr)

The Philippe Duchaufour Medal of this year will go to another French soil Scientist: Alain Ruellan. Ruellan is an internationally recognised and outstanding expert in the field of soil systems. The EGU honours him for promoting soil science internationally, but especially for his soil education in developing countries. He did this in an energetic, enthusiastic and novel way.

http://www.copernicus.org/EGU/awards/medallists/_2008/philippe_duchaufour.html

John Woodhouse (United Kingdom)

Beno Gutenberg Medal
(Department of Earth Sciences, University of Oxford, United Kingdom, John.Woodhouse@earth.ox.ac.uk)

John Woodhouse deserves this medal for his major discoveries on the earth's internal structure and his findings about the characteristics of earthquakes. This man has a deep understanding and interest in seismology and there are not many topics in seismology that John Woodhouse has not touched upon, just like Beno Gutenberg.

http://www.copernicus.org/EGU/awards/medallists/_2008/beno_gutenberg.html

Christophe Sotin (France)

Runcorn-Florensky Medal
(Laboratoire de Planetologie et Geodynamique, University of Nantes, France, Christophe.Sotin@univ-nantes.fr)

During his career Christophe Sotin worked extensively on the structure and internal dynamics of the Earth, Mars and other planets. He also made a major contribution to several planetary space missions. He developed a laboratory on Planetology Science at the University of Nantes and is a professor with a great reputation.

http://www.copernicus.org/EGU/awards/medallists/_2008/runcorn_florensky.html

John Ç. Simpson (United Kingdom)

Fridtjof Nansen Medal
(School of Ocean Sciences, University of Wales, Bangor, United Kingdom, j.h.simpson@bangor.ac.uk)

Spectra of surface waves, estuarine fronts, coastal regions, water turbulence in shallow parts of the ocean... John

Ç. Simpson studied it all. With that he made an outstanding contribution in understanding processes that govern shelf and shelf-edges of oceans. He applied his knowledge to the benefit of multi-disciplinary studies of motion and life on the ocean's shelves. We are very pleased to honour him with the Fridtjof Nansen Medal.

http://www.copernicus.org/EGU/awards/medallists/_2008/fridtjof_nansen.html

Akiva İ. Yaglom (USA)

Lewis Fry Richardson Medal
(Department of Aeronautics and Astronauts, Massachusetts Institute of Technology, Cambridge, USA)

Akiva İ. Yaglom sadly passed away last year. As a pioneer in developing statistical theories of turbulence, atmospheric dynamics and diffusion he truly deserved the Lewis Fry Richardson Medal. He was a scientist who made an exceptional contribution to the nonlinear geosciences. His relatives will receive the medal during a tribute ceremony on Tuesday 14 April 2008.

http://www.copernicus.org/EGU/awards/medallists/_2008/lewis_fry_richardson.html

Theo van Asch (The Netherlands)

Sergey Soloviev Medal
(Faculty of Geosciences, Utrecht University, The Netherlands, t.vanasch@geog.uu.nl)

For more than 25 years Theo van Asch has been a leader in Geomorphology, Engineering geology and Physical Geography. He did innovative research on modelling natural hazards, like hydrological and land degradation processes. For his achievements the EGU honours him with the Sergey Soloviev Medal.

http://www.copernicus.org/EGU/awards/medallists/_2008/sergey_soloviev.html

Neil D. Opdyke (USA)

Petrus Peregrinus Medal
(Department of Geological Sciences, University of Florida, USA, dmo@nersp.nerdc.ufl.edu)

Neil D. Opdyke made a great contribution to our understanding of the history of the magnetic field. For this pioneering work in magnetic stratigraphy of marine and continental sediments the EGU awards him with the Petrus Peregrinus Medal.

http://www.copernicus.org/EGU/awards/medallists/_2008/petrus_peregrinus.html

EGU Press Release

Young Scientist Outstanding Poster Paper of the Atmospheric Science Division

a paper by Peter Hjort Lauritzen poster title: A Stability Analysis of Finite-Volume Advection Schemes Permitting Long Time Steps

Peter Hjort Lauritzen's poster A Stability Analysis of Finite-Volume Advection Schemes Permitting Long Time Steps got the YSOP award of the AS division during the EGU 2008 Wien Assembly.



Peter Lauritzen

Peter is an ASP (Advanced Study Program) postdoc at the National Center for Atmospheric Research in Boulder, Colorado. He got his PhD from the University of Copenhagen where he, in collaboration with the Danish Meteorological Institute, derived and implemented a new dynamics module for HIRLAM that exactly conserved mass of air and tracers.

He is particularly interested in numerical methods for dynamical cores, that is (roughly speaking), algorithms that approximate the solution to the adiabatic frictionless equations of motion for the atmosphere on resolved scales.

The present poster is about a fundamental part of the dynamical core: advection. It presents the damping and dispersion properties of several widely used advection schemes; among them the so-called Lin & Rood scheme that is used in several European and American general circulation models. It was demonstrated both theoretically and with a conceptual analysis that the scheme is sensitive to the choice of inner and outer operators applied in the scheme that can lead to increased numerical damping for large Courant numbers. For more information see

<http://www.cgd.ucar.edu/cms/pel/index.html>
as well as the attached poster in pdf format.

Annales Geophysicae

best reviewers for 2007

In 2006 the Editorial Board of Annales Geophysicae decided to list the names of the best reviewers in the field of different topic areas covered by the journal. We wish to highlight their contribution for maintaining the high quality of our journal.

For 2007, the Editorial Board selected the following colleagues:

Olaf Amm, Finnish Meteorological Institute, Helsinki, for Ionosphere & Aeronomy

Steve Christon, Focused Analysis and Research, Columbia, USA, for Magnetosphere & Space Plasma Physics

Brian I. Magi, GFDL/NOAA, Princeton, USA, for Lower Atmosphere & Climate

Tamitha Mulligan, Aerospace Corporation, Los Angeles, USA, for Solar Corona & Heliospheric Physics

Wlodek Kofman,
Directeur de Recherche au CNRS,
Editor in Chief

Arne Richter looks back

A short interview with the Executive Secretary of EGU

Arne Richter, one of the founding fathers of the European Geosciences Union has been in the council (first of the EGS, then of the EGU) for over 20 years. He is now the executive secretary of EGU. Many people will remember running into this amiable character at one of the many conferences he organised.

When did it all start, Arne?

"It all began in 1969 when a group of geophysicists decided to have regular meetings. Just a couple of hundred friends from all over the world. In 1971 we started the European Geophysical Society. It was fun in those days. We were very small then but since then, obviously, the meetings have expanded enormously. In 2003, the EGS and the EUG became the EGU and we now have more than 8,000 people attending our General Assemblies."

What should the future of the General Assembly look like?

"It should be modernised, new media applications should play a greater role. For the future I see portable digital viewers to follow oral sessions. I would like the poster sessions to be less static. We already see laptops on a table next to the poster, but they are not often used. In the future we will see posters on a screen and be interactive and dynamic.

This year we started live broadcasting (little bit). That worked really well."

Geosciences is responsibility?

"That has always been my opinion. Outreach is very important. Over the years, I have seen a shift from fundamental geoscience to scientific issues that touch human interest, such as global warming, water, and energy. Ocean acidification, for instance, is a major issue on top of global warming.

We must report to the public, but the problem is that we cannot change environmental problems. Although we raise our finger we unfortunately don't make the decisions."

Next year, you will be retiring from the EGU. Do you mind leaving the organisation you have watched growing?

"No, I don't regret it. I will end my leadership of this project just like I have ended many projects. It was nice to build this organisation together with so many people. They just said: 'Jawohl! We're with you!'. I will just continue my other projects on hippotherapy and the Kindergarten in Katlenburg. The only issue is my health. The body is bad for people: one day, the body will be artificial, and the brain will laugh."

This interview was published in EGU today during the last day of the April 2008 General Assembly.

Dick van der Wateren, EGU Press Officer

Annales Geophysicae is launching a new section

named AnGeo Communicates for rapid and short communications

Annales Geophysicae (www.annales-geophysicae.net), is launching a new section: AnGeo Communicates.

AnGeo Communicates is the place for rapid and short communications of major scientific results in the sciences of the Sun-Earth system, including the science of Space Weather, Solar-Planetary plasma physics and environments, and the Earth's atmosphere and oceans.

AnGeo Communicates accepts contributions restricted in length to four published pages; all papers are reviewed by one referee only; major revisions are not accepted.

AnGeo Communicates publication time is usually two months, using author-produced copy.

Please send your manuscripts as one .pdf or .doc file, or further inquiries to anngo@cesr.fr with AnGeo Communicates in the subject area.



Phoenix Spacecraft Lands At Martian Arctic Site

Phoenix is designed to study the history of water and habitability potential in Martian ice-rich soil.

15 June, 2008.- NASA's Phoenix spacecraft landed in the northern polar region of Mars on May 25, 2008, to begin three months of examining a site chosen for its likelihood of having frozen water within reach of the lander's robotic arm.

Phoenix was launched on Aug. 4, 2007. The cruise stage was jettisoned seven minutes before the lander entered the Martian atmosphere. Phoenix is designed to study the history of water and habitability potential in the Martian arctic's ice-rich soil.

Mission objectives

Objective 1: Study the History of Water in All its Phases

Phoenix will be the first mission to collect meteorological data in the Martian arctic needed to accurately model

Mars' past climate and predict future weather processes.

Objective 2: Search for Evidence of Habitable Zone and Assess the Biological Potential of the Ice-Soil Boundary

Phoenix will assess the habitability of the Martian northern environment by analysing the soil's composition of elements relevant to life such as carbon, nitrogen, phosphorus, and hydrogen. Phoenix will also look at reduction-oxidation (redox) molecular pairs that may determine whether the potential chemical energy of the soil can sustain life, as well as other soil properties such as pH and saltiness.

Images taken by the lander are available at <http://phoenix.lpl.arizona.edu/gallery.php>

With data recorded on board Mars Express, you can hear Phoenix descend on to the surface of Mars. After being processed by the Mars Express Flight Control Team at ESA, the sounds of Phoenix descending are clearly audible and can be heard at

http://www.esa.int/esaSC/SE-MAWQ1YUFF_index_0.html

NASA, ESA

New international data centre for lakes to improve water management

Agreement signed between the World Meteorological Organization (WMO) and the Federal Service of Russia for Hydrometeorology and Environmental Monitoring (ROSHYDROMET).

Geneva, 25 June 2008 (WMO) – A long-standing gap in water data collection has been filled by the establishment of an International Data Centre for the Hydrology of Lakes and Reservoirs (HYDROLARE), following an Agreement between the World Meteorological Organization (WMO) and the Federal Service of Russia for Hydrometeorology and Environmental Monitoring (ROSHYDROMET).

The Agreement was signed by WMO Secretary-General Michel Jarraud and the Permanent Representative of the Russian Federation to WMO Alexander Bedritsky, in margin of the annual session of the WMO Executive Council (Geneva, 18-27 June 2008). It is the outcome of detailed technical planning on an initiative launched by Roshydromet. The Center is expected to become operational this year.

WMO PR No. 819

ESA to consult the science community on Earth Explorer selection

The meeting follows the selection of six missions to undergo assessment studies Oceansat-2 mission, ISRO's second in the series of IRS satellites dedicated for ocean research

Paris, 17 July 2008.- As part of the European Space Agency's user-driven approach to preparing new Earth Explorer missions to advance the understanding of the Earth system, six candidate missions will be presented to the science community at a User Consultation Meeting in January 2009.

The meeting follows the Call for Core Earth Explorer Ideas released in 2005, and the subsequent selection of six missions to undergo assessment studies out of 24 original proposals. As the assessment period draws to a close, the goal is to select up to three of the missions for the next stage, the feasibility study. In accordance with the peer-review selection process the user community is invited to express their views at the Earth Explorer User Consultation Meeting as an important input to the decision making process on which missions will go forward.

The meeting will be held at the Congress Centre of the Belém Cultural Centre in Lisbon, Portugal, on 20-21 January 2009. At the meeting the Agency and representatives from the scientific community will present the status of all the six candidate missions. Meeting registration details and the agenda can be found at <http://www.congrex.nl/09C01/>

After completion of the feasibility studies the user community will again be consulted before selecting one of the candidate missions for full implementation. This will become the seventh Earth Explorer mission, after GOCE, CryoSat, SMOS, ADM-Aeolus, Swarm and Earth-CARE.

The six candidate missions that will be presented at the meeting are:

A-SCOPE - The A-SCOPE mission concept aims to observe total column carbon dioxide with a nadir-looking pulsed Differential Absorption Lidar (DIAL). The lidar would have high-resolution ranging capability to provide additional information on tree canopy height. In addition, aerosol and cloud layer information could be gained as a spin-off.

The mission would realise a spatially-resolved global carbon budget combined with diagnostic model analysis through global and frequent observation of carbon dioxide.

BIOMASS - The aim of the BIOMASS mission concept is to significantly improve estimates carbon stocks and fluxes over land through global measurements of forest biomass and its change with time. These data will contribute to reduce the uncertainty in the worldwide spatial distribution and dynamics of forests, thereby helping improve present assessments and future projections of the carbon cycle. The mission concept is based on a novel spaceborne P-band synthetic aperture polarimetric radar operating at 435 MHz. The mission would provide the first opportunity to study the Earth's surface at P-Band with new information expected for polar ice sheets, subsurface geology and forest flooding.

CoreH2O - The CoreH2O mission concept aims to fill the gaps in current information on snow, glaciers and surface water. The objective is to improve the modelling and prediction of water balance and streamflow for snow covered and glacierised basins, the modelling of water and energy cycles at high latitudes, and the forecasting of water supply from snow cover and glaciers, including the relation to climate change and variability. The mission concept employs twin frequency synthetic aperture radars (9.6 and 17.2 GHz) in two consecutive mission phases to deliver all-weather, yearround information on regional and continental-scale snowwater equivalent.

FLEX - The main aim of the FLEX concept is to make global observations of photosynthesis through the measurement of chlorophyll-fluorescence. Chlorophyll-fluorescence radiation is emitted from vegetation in the visible and infrared region of the electromagnetic spectrum and provides unique information about the photosynthetic activity of

plants. FLEX will carry a very high-spectral resolution imaging spectrometer that allows the weak fluorescence signal to be decoupled from the reflected sunlight background. Fluorescence observations together with the information retrieved from the mission's secondary instruments will allow to quantitatively monitor photosynthetic efficiency of terrestrial ecosystems at global scale supporting the improvement of the understanding of the carbon cycle as well as the role of vegetation in the water cycle.

PREMIER - The PREMIER concept aims to advance our understanding of the processes that link trace gases, radiation and chemistry in the upper troposphere and lower stratosphere. The radiative effects of water and clouds are at a maximum in this region. It is also a region characterised by small-scale processes that have not been studied by previous missions. The instrumentation will consist of an infrared limb-imaging spectrometer and a millimetre-wave limb-sounder. By linking with MetOp and the National Polar-orbiting Operational Environmental Satellite System (NPO-ESS) data, PREMIER also aims to provide insights into processes occurring in the lower troposphere.

TRAQ - The TRAQ mission concept focuses on air quality and the long-range transport of air pollutants. The objective is to understand more about the rate of air-quality change at regional and global scales, the strength and distribution of sources and sinks of tropospheric trace gases and aerosols influencing air quality, and the role of tropospheric composition in global change. A new synergistic sensor concept would allow for process studies, particularly with respect to aerosol-cloud interactions. The instrumentation concept consists of imaging spectrometers operating in ranges between ultraviolet and short-wave infrared, spectrometers in the thermal infrared, a multi-directional polarisation imager and a cloud imager.

ESA

Irish Research Council announces open access policy

Effective from 01 May 2008

01 May 2008.- The Irish Research Council for Science, Engineering & Technology (IRCSET) has taken moves today to ensure that research papers published by its funding recipients will be made available in an open access repository, within six months of their first publication.

A copy of the policy statement may be found at: www.ircset.ie

The new IRCSET policy took effect

from 1st May 2008. IRCSET's initiative follows a public consultation process in 2007 during which inputs were received from the research community.

The accepted trend among researchers to date has been to publish research findings in one or other well known research journals, a process which the new policy still supports. Where a research publication arises in whole or in part from IRCSET funded research,

researchers will now also be required to file their published research papers in an open access repository as soon as is practical, but within six calendar months at the latest.

The requirement will from now on form part of IRCSET's terms and conditions in offering and providing funding to researchers.

Reference URL <http://ircset.ie>

COSPAR Awards 2008

The Committee on Space Research presented its awards on 14 July during the 37th COSPAR Scientific Assembly

The COSPAR Awards 2008 were presented on 14 July during the 37th COSPAR Scientific Assembly (13 - 20 July 2008, Montreal, Canada).

A brief description of the awards and the citations are given below.

COSPAR Space Science Award for outstanding contributions to space science:

George Gloeckler (USA), Universities of Michigan and Maryland and Ken Pounds (UK), University of Leicester

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

Marvin A. Geller (USA), State University of New York at Stony Brook

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:

Joe W. Waters (USA), Jet Propulsion Laboratory, Pasadena, California

COSPAR Distinguished Service Medal for extraordinary services rendered to COSPAR over many years:

Isaac Révah (France), former COSPAR Executive Director, Paris

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:

Giovanni G. Fazio (USA), Harvard Smithsonian Center for Astrophysics, Cambridge, Massachusetts

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:

Mangalathayil A. Abdu (Brazil), Instituto Nacional de Pesquisas Espaciais (INPE), Sao Jose dos Campos

Jeoujang Jaw Award (a joint award of COSPAR and the Chinese Academy of Sciences) recognizes scientists who have made distinguished pioneering contributions to promoting space research, establishing new space science research branches and founding new exploration programs:

James L. Burch (USA), Southwest Research Institute, San Antonio, Texas

Zeldovich Medals (a joint award of COSPAR and the Russian Academy of Sciences) conferred on young sci-

entists for excellence and achievements, honoring the distinguished astrophysicist Yakov B. Zeldovich. One medal is awarded for each COSPAR Scientific Commission:

COSPAR Scientific Commission A: Kauzar Saleh Contell (UK/Spain), University of Cambridge, in recognition of scholarly contributions on innovative analysis methods for the first measurements of soil moisture from space.

COSPAR Scientific Commission B: No award in 2008

COSPAR Scientific Commission C: Jonathan J. Makela (USA), University of Illinois, Urbana-Champaign for his innovative experimental observations and studies of the growth, structure, and drift of ionospheric irregularities.

COSPAR Scientific Commission D: Olena Podladchikova (Belgium/Ukraine), Royal Observatory of Belgium, Brussels for significant progress in understanding the role of small scale sources for coronal heating through the development of statistical models and a new approach to statistical studies using automatic recognition.

COSPAR Scientific Commission E: Sergey A. Bogachev (Russia), Lebedev Physical Institute, Moscow, for his research on particle acceleration and solar hard X-ray emission, of seminal importance for solar flare and astrophysics studies.

COSPAR Scientific Commission F: Thomas Berger (Germany/Austria),

Deutsches Zentrum für Luft- und Raumfahrt eV (DLR), Koeln, in recognition of his outstanding contributions to the specification of radiation detectors and their use for measurements in the space radiation field especially during the MATROSHKA study essential for estimating astronaut radiation risk.

COSPAR Scientific Commission G: Farzam Zoueshtiagh (France/Iran), Laboratoire de Mécanique, Lille, in recognition of his scholarly contributions to the study of experimental interfacial fluid mechanics.

COSPAR Scientific Commission H: Tim van Zoest (Germany), Institut fuer Quantenoptik, Leibniz Universität, Hannover, in recognition of his pioneering achievements in the preparation of ultra-cold quantum gases for micro-gravity environments.

CITATIONS

COSPAR Space Science Award:

George Gloeckler (USA)

George Gloeckler is among the most innovative and influential experimentalists in the study of the Sun, the heliosphere, and the magnetospheres of the Earth and other planets. In the late 1960s he developed a new class of solid-state instruments that could determine the composition of relatively low-energy ions (~1 MeV/nucleon), which are rich in information about the origin of energetic particle populations. In the 1970s he developed and flew instruments to determine the elemental as well as the ionic-charge composition of low-energy energetic particles. The most significant advance in instrumentation came in the late 1970s with the invention of a new class of instrumentation that is capable of measuring simultaneously the mass, charge, and energy of plasma particles with unprecedented sensitivity.

George Gloeckler has used the data from his instruments to make major discoveries concerning plasma and energetic particles from the Sun, in the magnetospheres of the planets and in the heliosphere, and also concerning the conditions in the local interstellar medium. He has exploited the information that is available in pickup ions, which result from neutral gas that is ionized in the solar wind, and in doing so has created a new field of research. He has determined the composition of the solar wind, and the information it contains on basic processes occurring in the solar

corona. In recent years, George Gloeckler has devoted his insightful analysis to energetic particles that are accelerated in the solar wind, making the profound discovery that the spectra have a common spectral index in many different settings.

George Gloeckler is also known for his leadership in both his scientific discipline and in scientific cooperation between Europe and the United States. He has encouraged and supported the development of experimental capabilities within Europe, and in light of all these and other accomplishments, it is a pleasure to bestow the COSPAR Space Science Award on him.

Ken Pounds (UK)

Professor Ken Pounds, recipient of this year's COSPAR Space Science Award, is Emeritus Professor of Space Physics at the University of Leicester. Following a PhD in Physics from University College London he moved to Leicester in 1960, forming a new research group in Space Astronomy.

An experiment on Ariel 1 in 1962 recorded the first low resolution X-ray spectra of the Sun, showing the strong flux and temperature variability of the coronal emission, and resolving the hard X-ray bursts arising from solar flares. Later solar experiments were flown on several NASA spacecraft and on ESRO-2. Pounds' group were early entrants to the new field of X-ray astronomy with a series of Skylark rocket flights from Woomera. Subsequently, the Leicester Sky Survey Instrument on the Ariel 5 satellite (1974-80) yielded many important discoveries; including the extremely bright transient source A0620-00 (now a primary galactic black hole candidate); establishing powerful X-ray emission to be a common property of active galaxies (AGN); and a catalogue of over 300 X-ray sources which underpinned research for many years. Under Ken Pounds' direction the Leicester group's international impact was extended with major hardware and science roles in the EXOSAT, GINGA and ROSAT missions. Highly cited papers over this period (1983-94) report the rapid and large amplitude X-ray variability of AGN, Fe K fluorescence and continuum X-ray reflection as new diagnostic features, and the first all sky catalogue of XUV sources. Most recently Pounds has been using the XMM-Newton Observatory to explore the importance of energetic outflows in AGN.

Over a 50 year career, Ken Pounds has contributed to the development of X-ray Astronomy as a major part of modern astrophysics. He has held important responsibilities in the astronomical (Vice-President of IAU) and space communities (Vice-Chairman of the COSPAR Commission on Research in Astrophysics from Space). He is a past President of the Royal Astronomical Society and was the first (1994-8) Chief Executive of the UK Particle Physics and Astronomy Research Council. In 1989 he received the RAS Gold Medal and in 2007 the Planetary Award of the Association of Space Explorers. He is now the well deserving recipient of the COSPAR Space Science Award.

COSPAR International Cooperation Medal:

Marvin A. Geller (USA)

The COSPAR International Cooperation Medal is awarded to a scientist who has made distinguished contributions to space and Earth science and whose work has contributed significantly to the promotion of international scientific cooperation. The 2008 Medal is awarded to Marvin A. Geller.

Dr. Geller, an outstanding atmospheric scientist, is the father of the Stratospheric Processes and their Role in Climate program, known as SPARC, a core element of the World Climate Research Program or WCRP. He set the science goals and strategy and won approval from WCRP for the establishment of SPARC. For the first ten years of SPARC, Dr. Geller led the program as co-chair. From the beginning, Dr. Geller envisioned SPARC as an international collaboration to address important scientific problems in stratospheric research. Under Dr. Geller's leadership, SPARC produced outstanding assessments on the coupling between the Earth's lower atmosphere, upper atmosphere, and solar radiation. The Intergovernmental Panel on Climate Change or IPCC and the World Meteorological Organization or WMO utilized the SPARC scientific assessments. Dr. Geller was personally involved in organizing and helping to obtain funding for the SPARC Data Center, which provides stewardship and worldwide distribution of SPARC data. After SPARC was well established, Dr. Geller served with great distinction for two elected terms as President of the Solar Terrestrial-Energy Program of the Scientific Committee for Solar-Terrestrial

Physics, an element of the International Council for Science, known as ICSU. Under Dr. Geller's leadership, a new program named Climate and Weather in the Sun-Earth System was conceived, developed and implemented for scientists from all countries.

Dr. Geller epitomized the recognition that scientists working together will achieve breakthroughs that will forever elude individuals working independently. Dr. Geller's deep understanding of scientific issues, his inclusiveness of others, his ability to attract the world's foremost experts to volunteer their time, and his sensitivity of cultural issues enabled his outstanding successes. For his exceptional scientific and leadership contributions to the improved understanding of the chemistry, physics and thermodynamics of the stratosphere and its interactions with the troposphere, I am pleased to present Dr. Marvin A. Geller the COSPAR International Cooperation Medal.

COSPAR William Nordberg Medal:

Joe W. Waters (USA)

Dr. Joe Waters' 37-year scientific career has been marked by sustained exceptional achievements and leadership in the field of satellite remote sounding of atmospheric composition. His crowning successes have been as Principal Investigator of the two Microwave Limb Sounder (MLS) instruments flown on NASA's Upper Atmosphere Research Satellite (UARS, launched 1991) and Aura (launched 2004) missions. These instruments have revolutionized the study of atmospheric composition from space, their observations having been used in more than 375 peer-reviewed scientific publications, including groundbreaking studies of the stratospheric ozone layer, climate, and air quality. In addition to his outstanding leadership of these experiments, Dr. Waters has himself authored 196 peer-reviewed scientific publications over his career, including 13 in *Science* or *Nature*. Dr. Waters was identified as the 16th most cited author in geoscience for the decade 1991–2001.

Dr. Waters pioneered the development of balloon- and aircraft-based microwave instruments to measure ozone and chlorine monoxide, the primary agent for ozone destruction in the stratosphere [Waters et al., *Science*, 1981]. This led him to conceive and pioneer

the satellite-based MLS instruments. The first MLS was one of ten instruments on NASA's UARS. The very first UARS MLS observations in September 1991 clearly showed the Antarctic 'ozone hole.' The Aura MLS instrument, launched in 2004, is a greatly enhanced version of the MLS instrument flown on UARS. Dr. Waters' foresight and leadership continue to be amply demonstrated, most recently by development and advocacy of the 'Scanning Microwave Limb Sounder' concept.

Dr. Waters' manifold accomplishments and unique combination of vision, perseverance, wisdom, focus, and scientific and technical expertise have combined to make him one of the truly exceptional leaders in atmospheric science, clearly meriting the highest honors that can be bestowed by the scientific community.

COSPAR Distinguished Service Medal:

Isaac Révah (France)

Dr Isaac Révah graduated from the Sorbonne University in Paris. In 1962 he joined the French Centre National d'Etudes des Télécommunications, where he worked as a research scientist and studied the dynamics of the lower ionosphere. He spent two years in 1970–1971 in Dr William Nordberg's group at the NASA Goddard Space Flight Center where he developed an original inversion method applied to Nimbus satellite data for the study of the vertical structure of the Earth's atmosphere, later also used for the study of planetary atmosphere. Back in France, he moved to lower atmosphere research, and played a leading role in the development of a new generation of meteorological radars and acoustic sounders. He became the head of the renowned Centre de Recherches en Physique de l'Environnement, an institute with over 189 researchers and engineers active in space plasma physics and ground-based and satellite remote sensing of the Earth's surface and atmosphere.

In 1984 Dr Révah was appointed by CNES, the French space agency, Director of Programs. Under his leadership a number of space missions involving cooperation with European partners, the USA, and Russia were decided. He also led the CNES Environment Programs Directorate and the External Relations Directorate before his retirement in 1998. He then worked with the French

Academy of Sciences until January 2001 when he was appointed Executive Director of COSPAR.

At all times during his brilliant scientific career Isaac Révah was an active member of academic institutions such as URSI and a participant in numerous COSPAR Assemblies. His seven years of service as Executive Director from 2001 through 2008 have been exceptionally successful for COSPAR, with the World Space Congress in Houston in 2002, the memorable Assembly held in Paris in 2004 with record attendance, the wonderful 36th Assembly in Beijing in 2006, and now this present Assembly in Montréal, the initial preparation of which was made under his direction.

In recognition of the exceptional services rendered to COSPAR, I am delighted to award the COSPAR Distinguished Service Medal to Dr Isaac Révah.

Massey Award:

Giovanni G. Fazio (USA)

Citation not yet available.

Vikram Sarabhai Medal:

Mangalathayil A. Abdu (Brazil)

Dr. Mangalathayil Ali Abdu born in the state of Kerala, India on 7 July, 1938 has made significant contributions to the studies of equatorial aeronomy. After his graduation and post graduation in Kerala, he joined the Physical Research Laboratory, founded by the father of the Indian Space program, (late) Professor Vikram Sarabhai, in whose memory and honour this award is being presented, to do his doctorate in Ionospheric physics. After a brief stint as a postdoctoral fellow in Canada, he moved over to Brazil in 1971, to take up teaching in Sao Paulo. From 1973 till date he has been associated with the Brazilian Institute of Space Research (INPE) in Sao Jose dos Campos as one of the senior researchers and as a motivator. From 1992 to 1996 he spearheaded aeronomy research in INPE as the head of the division.

Dr. Abdu was instrumental for a series of sounding rocket experiments from Brazil, design and implementation of an ionospheric research station in Sao Luis city and establishment of a VHF radar facility in Brazil in addition to development of several satellite experiments.

He has made fundamental and pioneering contributions to equatorial electrodynamics in general, and phenomena like equatorial ionization anomaly, equatorial electro jet, equatorial spread

F, ionosphere-thermosphere coupling processes, ionosphere-magnetosphere coupling and the like.

Apart from his individual scientific contributions, Dr. Abdu fostered Space Research in Brazil, spearheaded several international collaborations with other South American countries, and also with Japan, the United States and India. He successfully organized international coordinated, innovative experimental campaigns like COPEX (Conjugate Point Experiment) by making use of the availability of geo-magnetically conjugate locations within Brazil. Dr. Abdu has striven for the cause of basic space sciences - in the Latin American countries in particular. He has more than 200 publications in refereed journals to his credit.

In view of Dr. Mangalathayil Ali Abdu's remarkable spirit of scientific cooperation, his significant discoveries pertaining to equatorial electro-dynamics, the global coupling processes in the Ionosphere-Thermosphere-Magnetosphere systems and for his pioneering efforts in the development of ground based and space borne experiments and above all for his relentless efforts to promote space sciences in developing countries, ISRO and COSPAR are very pleased to present the Vikram Sarabhai Award to Dr. Mangalathayil Ali Abdu for the year 2008.

Jeoujang Jaw Award:

James L. Burch (USA)

The Jeoujang Jaw Award recognizes scientists who have made distinguished pioneering contributions to promoting space research, establishing new space science research branches and founding new exploration programs.

The 2008 Medal is awarded to Dr James L. Burch. Dr. Burch was born in 1942. He received his Ph D in Physics from Rice University, and followed with a series of outstanding contributions in space particle exploration. In 2000, as the P.I. of the NASA IMAGE Satellite Mission, Dr. Burch pioneered the use of global magnetospheric imaging for the study of the dynamics of the inner magnetosphere and magnetosphere-ionosphere coupling. The results of his

work have provided new views of the plasmasphere, ring current and proton aurora that have verified existing theories, identified new unpredicted features and demonstrated important responses of these phenomena to changes in the interplanetary magnetic field. These contributions were the beginning of a new era of Earth magnetosphere exploration with imaging type instruments.

A complete list of previous award recipients may be found at <http://cosparhq.cnes.fr/Awards/awards.htm>

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.

Further information on COSPAR is available at <http://cosparhq.cnes.fr>

**Committee on Space Research
(COSPAR) Press Release**

IOC and Inmarsat sign agreement

to improve tsunami warning system in Indian Ocean

20 December, 2007.- The Intergovernmental Oceanographic Commission of UNESCO (IOC) signed an agreement today in London with Inmarsat (LSE:ISAT), the leading provider of global mobile satellite communications, to further upgrade and enhance the Indian Ocean Tsunami Warning System.

Under the agreement, Inmarsat will provide Broadband Global Area Network (BGAN) transmission service for 50 sea-level stations in the Indian Ocean. BGAN, which delivers broadband data connectivity via communications satellites, will enable transmission of sea level observation every minute, versus the current system that uses meteorological satellites to transmit data every 15 minutes.

Time saved by faster transmission represents significant progress; in the eastern and north-eastern Indian Ocean, a tsunami wave can hit the shore in about 30 minutes. Increasing the transmission frequency will provide more time and information for national

warning authorities to alert coastal populations at risk.

The signing ceremony took place at Inmarsat's headquarters in London, in the presence of Patricio Bernal, Assistant Director-General of UNESCO and IOC Executive Secretary, and Michael Butler, President and Chief Operating Officer of Inmarsat.

We have worked closely with Inmarsat to explore the feasibility of using BGAN, and are delighted that Inmarsat was able to provide transmission airtime for 50 sea level stations, said Patricio Bernal, IOC/UNESCO. On this occasion he recalled, the Director-General of UNESCO, Mr Matsuura's determination to accompany progress on this issue with national preparedness. As Mr Matsuura recently stated: Without effective national infrastructure, tsunami warnings will not reach people at risk along coastlines. And without practice response exercises, when warnings do reach coastlines, communities and local authorities at the receiving end are un-

likely to know the best actions to take.

The agreement was signed just days before the third anniversary of the tsunami that devastated parts of south-east Asia in December 2004. Immediately following the tsunami, the international community mandated the IOC to coordinate the development of the Indian Ocean Tsunami Warning System, similar to the system established in the Pacific in 1965. For the last three years, more than 50 sea-level stations operating in the Indian Ocean have been providing data as part of a network of seismometers, sea-level gauges and deep pressure sensors. These measurements are used to confirm or cancel a tsunami watch alert following a seismic event.

The feasibility of using BGAN for transmission of data from sea level gauges was first demonstrated by the Proudman Oceanographic Laboratory, based in Liverpool, UK.

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Press Release N°2007-162

Ocean may exist beneath Titan's crust

Cassini has discovered evidence that points to the existence of an underground ocean of water and ammonia on Saturn's moon Titan

25 March 2008.- Cassini has discovered evidence that points to the existence of an underground ocean of water and ammonia on Saturn's moon Titan. The findings were made using radar measurements of Titan's rotation.

Members of the mission's science team used Cassini's Synthetic Aperture Radar to collect imaging data during 19 separate passes over Titan between

October 2005 and May 2007.

Using data from the early radar observations, they established the locations of 50 unique landmarks on Titan's surface. They then searched for these in the data returned by Cassini in its later flybys of Titan.

They found that prominent surface features had shifted from their expected positions by up to 30 km. A systematic

displacement of surface features would be difficult to explain unless the moon's icy crust was decoupled from its core by an internal ocean, making it easier for the crust to move.

These findings appear in Titan's Rotation Reveals an Internal Ocean and Changing Zonal Winds by R. Lorenz et al. in the March 21 issue of the journal Science.

EarthCARE satellite contract signed

The EarthCARE mission aims to improve the representation of the Earth's radiative balance in models by acquiring vertical profiles of clouds and aerosols

Paris, 27 May 2008.- The European Space Agency and Astrium GmbH have today signed a contract worth €263 million to provide the EarthCARE satellite, the sixth Earth Explorer mission of ESA's Living Planet Programme. As prime contractor, Astrium GmbH is responsible for the satellite's design, development and integration.

The contract was signed today in Berlin on the occasion of the International Aerospace Exhibition (ILA) by Volker Liebig, ESA's Director of Earth Observation, Evert Dudok, CEO of Astrium Satellites and Uwe Minne, Director of Earth Observation and Science at Astrium GmbH (Friedrichshafen), in the presence of German Chancellor Angela

Merkel, ESA Director General Jean-Jacques Dordain and Head of the German Aerospace Centre (DLR) Johann-Dietrich Wörner.

EarthCARE, ESA's Cloud and Aerosol mission developed in co-operation with JAXA, the Japanese Aerospace Exploration Agency, will address the need for a better understanding of the interactions between cloud, radiative and aerosol processes that play a role in climate regulation.

The EarthCARE mission aims to improve the representation and understanding of the Earth's radiative balance in climate and numerical weather forecast models by acquiring vertical profiles of clouds and aerosols, as well

as the radiances at the top of the atmosphere.

The satellite will weigh about 1.7 tonnes and will be placed in a quasi-polar orbit of 97° inclination at an altitude of about 400 kilometres. Its launch is scheduled for 2013. The four instruments of the payload consist of an Atmospheric Lidar, a Broad-Band Radiometer and a Multi-Spectral Imager developed by ESA, and a Cloud Profiling Radar developed by JAXA. This instrument suite has been optimised to provide co-located samples of the state of the atmosphere along the satellite flight track.

ESA PR 28-2008

GMES Sentinel-2 satellite contract signed

Sentinel-2 will support the operational generation of products such as the mapping of land cover, land use, change detection and geophysical variables

17 April 2008.- The European Space Agency and Astrium today signed a €195 million contract to provide the first Sentinel-2 earth observation satellite, devoted to monitoring the land environment, as part of the European GMES programme. As prime contractor, Astrium is responsible for the design, development and integration of the satellite, which will perform a multi-spectral optical imaging mission.

The contract was signed today in Friedrichshafen by Volker Liebig, ESA Director of Earth Observation, Evert Dudok, President of Astrium Satellites, and Uwe Minne, Director of Earth Observation & Science for Astrium, in the presence of the European Commission and Ulrich Kasparick, German Parliamentary State Secretary at the Transport, Building & Urban Affairs Ministry.

Global Monitoring for Environment and Security (GMES) aims to deliver environment and security services and is being led by the European Commis-

sion. It is the European response to the ever-increasing demands of effective environmental policies. At the same time, it is the European contribution to the Global Earth Observation System of Systems (GEOSS).

ESA is responsible for implementation of the GMES Space Component, a set of earth observation missions involving ESA, EU/ESA Member States and other partners. Central elements of the Space Component are the five families of Sentinel missions.

Sentinel-2 will support the operational generation of products such as the mapping of land cover, land use, change detection and geophysical variables. The mission objective is systematic coverage of the earth's land surface (from -56° to +83° latitude) to produce cloud-free imagery typically every 15 to 30 days over Europe.

Sentinel-2 features a 290 km-wide coverage, 10-20 m spatial resolution, 13 optical channel instrument (operating

from visible-near infrared to shortwave infrared) and will ensure enhanced-quality continuity with existing missions Spot and Landsat. It will provide improved revisit time, swath width, coverage area, spectral bands, calibration and image quality.

The launch of the first Sentinel-2 satellite is planned for 2012. The industrial consortium led by Astrium-GmbH (platform and satellite prime) includes a number of core-team partners: Astrium SAS is responsible for the payload instrument and system support activities; Boostec (F) is providing the three-mirror Silicon carbide telescope; CASA (E) is responsible for satellite structural and thermal activities; Jena-Optronik (D) is responsible for the instrument electrical architecture including video signal processing and data compression; Sener (E) is supplying the instrument calibration and shutter mechanism.

ESA PR 24-2008

EarthCARE satellite contract signed

The EarthCARE mission aims to improve the representation of the Earth's radiative balance in models by acquiring vertical profiles of clouds and aerosols

17 April 2008.- The European Space Agency and Astrium today signed a €195 million contract to provide the first Sentinel-2 earth observation satellite, devoted to monitoring the land environment, as part of the European GMES programme. As prime contractor, Astrium is responsible for the design, development and integration of the satellite, which will perform a multi-spectral optical imaging mission.

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ESA PR 24-2008

Contract signed for ESA's Sentinel-3 earth observation satellite

The Sentinel-3 mission will produce a long-term set of marine and land data for ocean state analysis, forecasting and service provision

14 April 2008.- The European Space Agency and Thales Alenia Space today signed a €305 million contract to provide the first Sentinel-3 earth observation satellite, devoted to oceanography and land-vegetation monitoring, as part of the European GMES programme. As prime contractor, Thales Alenia Space is responsible for the satellite's design, development and integration.

The contract was signed today in Paris by Volker Liebig, ESA Director of Earth Observation, and Pascale Sourisse, President and CEO of Thales Alenia Space, in the presence of Jean-

Jacques Dordain, ESA Director General, officials from the European Commission, the French Ministry of Research and Higher Education and Dominique Bussereau, French Secretary of State for Transport at the Ecology, Energy, Sustainable Development & Land Management Ministry.

The Sentinel-3 mission will produce a consistent, long-term set of remotely-sensed marine and land data for (operational) ocean state analysis, forecasting and service provision.

Sentinel-3 will determine parameters such as sea surface topography, sea/

land surface temperature, ocean colour and land colour with high-end accuracy and reliability. For this purpose, it carries an advanced radar altimeter and a multi-channel optical imaging instrument.

To achieve near-global coverage and meet all scientific requirements, Sentinel-3 will be placed in a high-inclination, sun-synchronous polar orbit. Near-realtime data processing and delivery will allow operational services.

ESA PR 22-2008

Winners of Europlanet competition

The competition was organised to celebrate the 50th anniversary of the launch of Sputnik and the 10th anniversary of the launch of Cassini-Huygens

17 June, 2008.- The European winners of Europlanet's Very Spatial Year competition, Elisabeth Ledersberger-Lehoczky and Sophie Lox, visited ESTEC on 13th May 2008.

The Very Spatial Year competition was organised by Europlanet to celebrate the 50th anniversary of the launch of Sputnik and the 10th anniversary of the launch of Cassini-Huygens. The winners and their families were welcomed to ESTEC by Jean-Pierre Lebreton, the mission scientist for Huygens and a co-founder of Europlanet.

Elisabeth Ledersberger-Lehoczky, the European and Hungarian national winner of the artists' category, and Sophie Lox, the European and Belgian national winner of the children's category, gave presentations on their competition entries. The winners and their families were then given a guided tour of ESTEC by Bernard Foing, the mission scientist of SMART-1. To complete the day, the visitors toured ESTEC's Space Expo centre.

Kostas Christodouloupoulos, the winner of the Greek national and European level amateur competition, will visit the Pic du Midi Observatory in August as part of his prize.

Sophie Lox, aged 11, won the children's category with an entry entitled

Thousands of years ago, Mars had a big ocean; in thousands more years, maybe there won't be water on Earth anymore. Speaking about her entry, Sophie said, "My work is a look-back to the past for Mars in contrast a fiction about the future of the Earth. We think that Mars used to be covered in the Northern Hemisphere by a large ocean and by red rocks and dust in the Southern Hemisphere and by snow on both poles. "We talk a lot about global warming. For me, that means the melting of ice on Earth and the evaporation of the oceans – perhaps their disappearance too! I'm not a pessimist but I think we have to shock to change the minds of the leaders with the aim to always make a better world. I hope that Earth will stay the blue planet and Mars the red one for a long time yet!"

Elisabeth Ledersberger-Lehoczky, came to ESTEC as the representative of a group of sculptors that won the Hungary national competition and were the overall European winners for the artists' category. Their entry was an installation of sculptures, collectively entitled Sic itur ad astra, created over six days at the first Woodcarver Symposium in Szombathely, Hungary. Speaking about the installation, Elisabeth said, "This project for the Very Spatial Year was initiated by Professor Istan Jancovick, the director

of ELTE Gothard Observatory in Hungary. I worked with five colleagues, from Hungary, Austria and Italy. We could work very authentically with the wood off the park of the observatory because the trees had grown up and were too big to make observations, so had to be cut. With this wood we realised some ideas for this theme A Very Spatial Year. The observatory opened their doors. Many visitors – schools, classes with many children – came to us (to the artists) to see how we realised the ideas but they came back with their parents to look at the stars in the night. So it was a very nice combination between science and art. "My main inspiration is to ask why I am here and what is the meaning of my life. It's a general theme for me whether we have free will or not. I know I cannot find an answer, but the answer is not important, to ask is important. These are the questions also for the artist and the scientist.

More info at
http://www.europlanet-eu.org/demo/index.php?option=com_content&task=view&id=113&Itemid=41

Europlanet



Food consumption patterns and their effect on water requirement in China

the effect of the food consumption patterns on China's water resources is substantial both in the recent past and in the near future

It is widely recognized that food consumption patterns significantly impact water requirements. The aim of this paper is to quantify how food consumption patterns influence water requirements in China. The findings show that per capita water requirement for food (CWRF) has increased from 255 m³ cap⁻¹y⁻¹ in 1961 to 860 m³ cap⁻¹y⁻¹ in 2003, largely due to an increase in the consumption of animal products in recent decades. Although steadily increasing, the CWRF of China is still much lower than that of many developed countries. The total water requirement for food (TWRF) has been determined as 1127 km³ y⁻¹ in 2003. Three scenarios are proposed to project future TWRF, representing low, medium, and high levels of modernization. Analysis of these three scenarios indicates that TWRF will likely continue to increase in the next three decades. An additional amount of water ranging between 407 and 515 km³ y⁻¹ will be required in 2030 compared to the TWRF in 2003. This will undoubtedly put high pressure on China's already scarce water resources. We conclude that the effect of the food consumption patterns on China's water resources is substantial both in the recent past and in the near future. China will need to strengthen green water management and to take advantage of virtual water import to meet the additional TWRF.

The authors acknowledge that the scenario analysis presented in this paper is rather simplified. The society is much

more complex than what they have assumed. For example, consumption of animal products may be affected by prices and trade policies, which have not been taken into consideration. Or, future production of animal products such as pork may rely more on maize than in the past.

Although this study focused on China, the impact of the developments studied will have a bearing on water cycles worldwide. As soon as China starts to import "virtual" water, it will certainly impact food prices and production systems in the rest of the world. Moreover, the development sketched in this paper may be exemplary for developments which are likely to occur elsewhere, more particularly on the Indian sub-continent, Africa and South America, where similar dietary changes are taking place. If, in addition, one considers the water demands associated with the expected largescale production of biofuel, then considerable changes in the hydrological cycle are likely to occur, worldwide.

The full paper is available free of charge at

<http://www.hydrol-earth-syst-sci.net/12/887/2008/hess-12-887-2008.html>

Liu, J. and Savenije, H. H. G.: Food consumption patterns and their effect on water requirement in China, Hydrol. Earth Syst. Sci., 12, 887-898, 2008.

Effect of UV radiation and temperature on the emission of methane from plants

several structural plant components, emit significant amounts of methane upon irradiation with UV light and/or heating

The recently reported finding that plant matter and living plants produce significant amounts of the important greenhouse gas methane under aerobic conditions has led to an intense scientific and public controversy. Whereas some studies question the up-scaling method that was used to estimate the global source strength, others have suggested that experimental artifacts could have caused the reported signals, and two studies, one based on isotope labeling, have recently reported the absence of CH₄ emissions from plants.

Here the authors show – using several independent experimental analysis techniques – that dry and detached fresh plant matter, as well as several structural plant components, emit significant amounts of methane upon irradiation with UV light and/or heating. Emissions from UV irradiation are almost instantaneous, indicating a direct photochemical process.

Long-time irradiation experiments demonstrate that the size of the CH₄ producing reservoir is large, exceeding potential interferences from degassing or desorption processes by several orders of magnitude.

The full paper is available free of charge at

<http://www.biogeosciences.net/5/937/2008/bg-5-937-2008.html>

Vigano, I., van Weelden, H., Holzinger, R., Keppler, F., McLeod, A., and Röckmann, T.: Effect of UV radiation and temperature on the emission of methane from plant biomass and structural components, Biogeosciences, 5, 937-947, 2008.

Detection of regional scale sea-to-air oxygen emission related to spring bloom

high values of atmospheric potential oxygen, which last for several hours or several days could be attributed to the oxygen emission associated with the spring bloom of active primary production

The authors have been carrying out in-situ monitoring of atmospheric O₂/N₂ ratio at Cape Ochi-ishi (COI; 43°10' N, 145°30' E) in the northern part of Japan since March 2005 by using a modified gas chromatography/thermal conductivity detector (GC/TCD). The standard deviation of the O₂/N₂ ratio is estimated to be about ±14 per meg (≈3 ppm) with intervals of 10 minutes. Thus, the in-situ measurement system has a 1σ precision of ± 6 per meg (≈1.2 ppm) for one-hour mean O₂/N₂ ratio. Atmospheric potential oxygen (APO≈O₂+1.1 CO₂), which is conserved with respect to terrestrial photosynthesis and respiration but reflects changes in air-sea O₂ and CO₂ fluxes, shows large variabilities from April to early July 2005. Distribution of satellite-derived marine primary production indicates occurrences of strong bloom in the Japan Sea and the latitudinal band between 30° and 40° N in the western North

Pacific in April and in the Okhotsk Sea and northeastern region near Hokkaido Island in the North Pacific in June. Back trajectory analysis of air masses indicates that high values of APO, which last for several hours or several days, can be attributed to the oxygen emission associated with the spring bloom of active primary production.

The full paper is available free of charge at <http://www.atmos-chem-phys.net/8/3325/2008/acp-8-3325-2008.html>

Yamagishi, H., Tohjima, Y., Mukai, H., and Sasaoka, K.: Detection of regional scale sea-to-air oxygen emission related to spring bloom near Japan by using in-situ measurements of the atmospheric oxygen/nitrogen ratio, *Atmos. Chem. Phys.*, 8, 3325-3335, 2008.

Maintenance of polar stratospheric clouds in a moist stratosphere

PSC radiative effects can help slow removal of water from the stratosphere via self-heating but the ability of PSCs to have a substantial impact on climate depends strongly on the particle number density and the strength of the overturning circulation

Previous work has shown that polar stratospheric clouds (PSCs) could have acted to substantially warm high latitude regions during past warm climates such as the Eocene (55 Ma ago). Using a simple model of stratospheric water vapor transport and polar stratospheric cloud (PSC) formation, the authors investigate the dependence of PSC optical depth on tropopause temperature, cloud microphysical parameters, stratospheric overturning, and tropospheric methane. They show that PSC radiative effects can help slow removal of water from the stratosphere via self-heating. However, they also show that the ability of PSCs to have a substantial impact on climate depends strongly on the PSC particle number density and the strength of the overturning circulation.

Thus even a large source of stratospheric water vapor (e.g. from methane oxidation) will not result in substantial PSC ra-

diative effects unless PSC ice crystal number density is high compared to most current observations, and stratospheric overturning (which modulates polar stratospheric temperatures) is low. These results are supported by analysis of a series of runs of the NCAR WACCM model with methane concentrations varying up to one thousand times present levels.

The full paper is available free of charge at <http://www.clim-past.net/4/69/2008/cp-4-69-2008.html>

Kirk-Davidoff, D. B. and Lamarque, J.-F.: Maintenance of polar stratospheric clouds in a moist stratosphere, *Clim. Past*, 4, 69-78, 2008.

Thirty thousand years of vegetation development and climate change in Angola

results from Ocean Drilling Program Site 1078

ODP Site 1078 situated under the coast of Angola provides the first record of the vegetation history for Angola. The upper 11 m of the core covers the past 30 thousand years, which has been analysed palynologically in decadal to centennial resolution. Alkenone sea surface temperature estimates were analysed in centennial resolution. The authors studied sea surface temperatures and vegetation development during full glacial, deglacial, and interglacial conditions.

During the glacial the vegetation in Angola was very open consisting of grass and heath lands, deserts and semi-deserts, which suggests a cool and dry climate. A change to warmer and more humid conditions is indicated by forest expansion starting in step with the earliest temperature rise in Antarctica, 22 thousand years ago. The authors infer that around the period of Heinrich Event 1, a northward excursion of the Angola Benguela Front and the Congo Air Boundary resulted in cool

sea surface temperatures but rain forest remained present in the northern lowlands of Angola. Rain forest and dry forest area increase 15 thousand years ago. During the Holocene, dry forests and Miombo woodlands expanded. Also in Angola globally recognised climate changes at 8 thousand and 4 thousand years ago had an impact on the vegetation. During the past 2 thousand years, savannah vegetation became dominant.

The full paper is available free of charge at
<http://www.clim-past.net/4/107/2008/cp-4-107-2008.html>

Dupont, L. M., Behling, H., and Kim, J.-H.: Thirty thousand years of vegetation development and climate change in Angola (Ocean Drilling Program Site 1078), *Clim. Past*, 4, 107-124, 2008.

Assessment of air pollution in different world regions

by Frank Dentener and Eimear Kelleher, European Commission, JRC, IES

JRC is organizing model studies and performing measurements of air pollution that gives robust knowledge to assess future trends under various policy options. Through these studies, Europe gets valuable estimates of the intercontinental transport of air pollution on European air quality.

Climate Change (CC) and Air pollution (AP) are intimately linked through emissions from common sources, primarily those related to the use of fossil fuels. The Climate Change Unit (Institute for Environment and Sustainability), which is part of the Joint Research Centre based in Ispra, Northern Italy, performs scientific research on the linkages between air pollution and climate change to make policy makers aware of potential synergies and trade-offs that are imposed by the way the atmosphere and the climate system work.

CCU focuses on a number of world regions such as the Mediterranean, China, Russia, India where AP and CC are different priorities for policy makers. It will provide the European Commission and EU negotiators with comparative assessments of (present day) air pollution and its impact on climate in these regions. The CCU uses models, ground- and space-based monitoring systems to produce its assessments. For instance the JRC global chemistry transport model TM5 is used to assess the impact of air pollution emissions on ozone and particulate matter concentrations worldwide. Likewise the ECHAM-HAM climate model is used to provide assessments of the climate impacts of sector and region based emission reduction strategies on climate. The CCU operates the EMEP superstation in Ispra, measuring long term records of air pollutants and climate gases. A new high-tech instrument employed at JRC linking pollution by aerosol and the climate effect of the same aerosol is a so-called aerosol lidar, that can measure vertical profiles of aerosol upto 10 km altitude. Ispra is the only station in Southern Europe with such a complete set of measurements to characterize changes in the atmosphere. Recently, CCU has installed measurement equipment on the cruise ship “Costa Magica”, with frequently cruises around the Mediterranean Ocean. Preliminary results indicate that concentrations of air pollution (ozone and aerosols) are high over the Mediterranean, and thus provide high “background” concentrations on top of which countries and regions in the

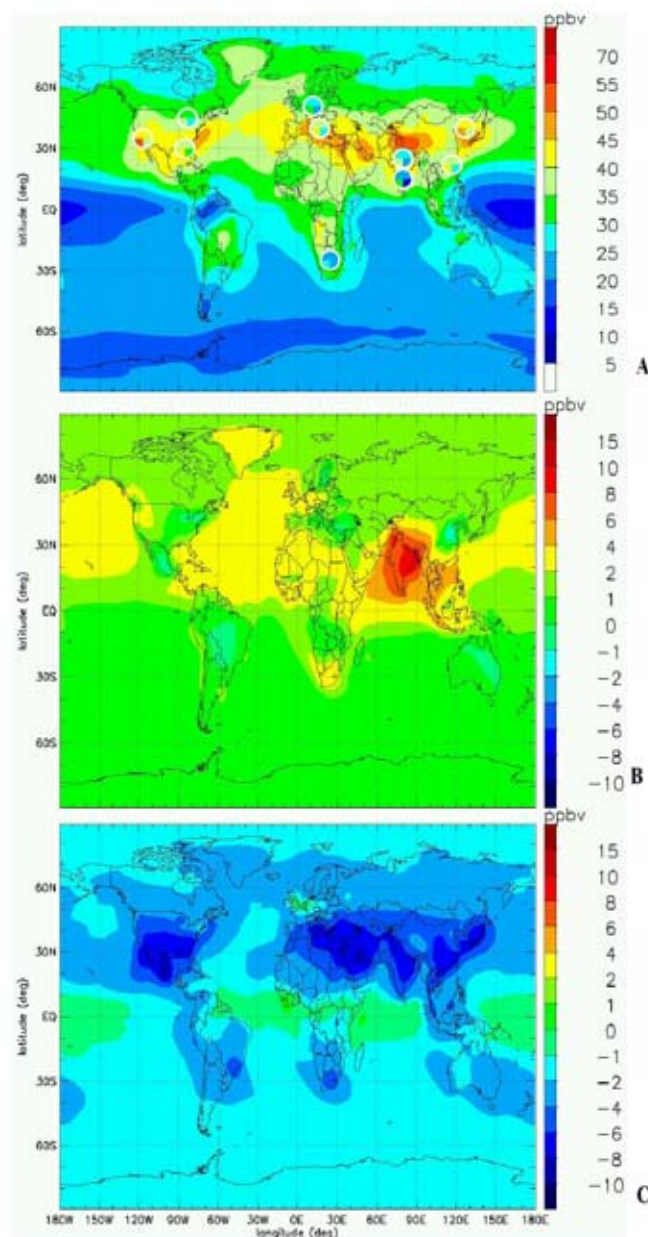


Fig. 1a: Average results of about 25 models in predicting current ozone. The upper part of the circles represents the annual mean concentration of a number of stations in that region; the lower left and right parts are ± 1 sigma, Fig 1b: ozone in the year 2030 evaluating the effects of currently decided world-wide emission reductions, Fig 1c: the emission reductions achieved when all currently available technologies would be used to achieve a better air quality.

Mediterranean add their local pollution, which leads to frequent exceedances of air pollution regulations.

The CCU also plays a leading role in bringing the worlds' scientific community to perform common model studies (e.g. AEROCOM, PhotoComp, and recently the work for the Task Force on Hemispheric Transport of Airpollution) and collecting and harmonizing measurements (e.g. the JRC WMO-GAW database), in order to improve the common scientific understanding that is input to policy making.

To support the fourth assessment report of IPCC the JRC, together with scientists of the ACCENT Network of Excellence, organized an international comparison of global atmospheric models to calculate the effects of air pollution emission reduction strategies for a range of environmental issues. Fig. 1a shows the average results of about 25 models in predicting current ozone, Fig 1b ozone in the year 2030 evaluating the effects of currently decided world-wide emission reductions, and Fig 1c the emission reductions achieved when all currently available technologies would be used to achieve a better air quality. The uncertainties of these predictions are large at the regional level. Figure 2 displays the uncertainty range of present-day model simulations over the European region. Figure 2a is a measure for the upper limit of the calculations (mean+1standard deviation); and Figure 2b for the lower limit. Figure 2c is the JRC high resolution model, which is close to the mean model.

This uncertainty range, and the sparsity of existing measurements of ozone over the Mediterranean region motivated JRC to start measurements over the Mediterranean sea, by installing a set of measurement devices for ozone and particles on the cruise ship Costa Fortuna.

The policies that these activities support are the the EU post-Kyoto Climate Change Policy, the EU transboundary air pollution policy, the UN convention on long range transport of transboundary air pollution and the UN Framework Convention on Climate Change / IPCC.

Challenges ahead

- To assess the role hemispheric transport of air pollution on regional air pollution and climate change; and make a comparison of the role of major world regions.
- To enhance the scientific understanding on the linkage between emissions and policies to reduce them for air pollution and greenhouse gases.
- To estimate the source strengths and the potential to reduce the emissions of in particular black barbon/organic carbon and methane which would have effects on both air pollution and climate.

More info on these and other CCU activities can be found at <http://ies.jrc.cec.eu.int/ccu.html>

Relevant publications

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Van Dingenen R. et al. (2004): A European Aerosol Phenomenology 1: Physical characteristics of particulate matter at kerbside, urban, rural and background sites in Europe, Atmos. Environ., 38, 2561-2577.

Putaud J., et al. (2004): A European Aerosol Phenomenology 2: Chemical characteristics of particulate matter at kerbside,

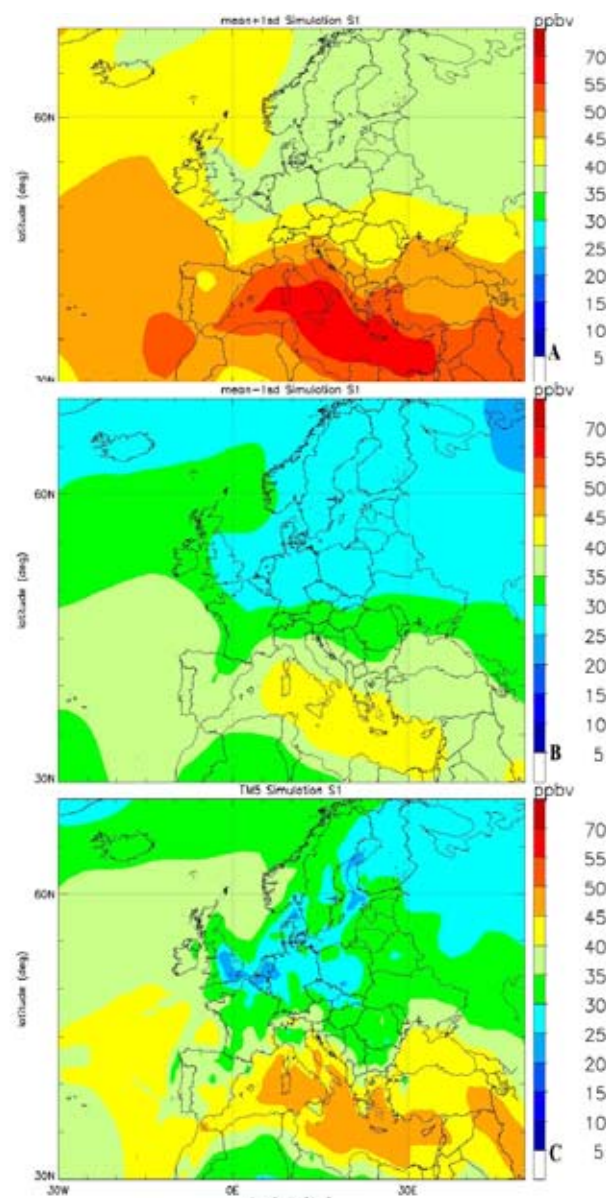


Fig. 2: The uncertainty range of present-day model simulations over the European region. Fig. 2a is a measure for the upper limit of the calculations (mean+1standard deviation) and Fig. 2b for the lower limit. Fig. 2c is the JRC high resolution model.

urban, rural and background sites in Europe, Atmos. Environ., 38, 2579-2595.

Stier P. et al. (2005): The aerosol-climate model ECHAM5-HAM, Atmospheric Chemistry and Physics, 5, 1125-1156.

Dentener F. et al. (2006): The global Atmospheric Environment for the Next Generation, Environmental Science and Technology, 40, 3586-3594.

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Open Access A Never Ending Story?

on the history and future of Open Access Publishing, by Arne K. Richter

The message of the lecture presented here is that the open access mission, born as one of the answers to the steady increase in the subscription fees by, on average, 250% from 1983 – 2003, is a trilogy involving the different wishes and prospects of the subscribers, the authors and the publishers. So far, we are discussing open access mainly from the point of view of the readers and researchers (subscribers), trying to make academic work barrier-free available on the web; however, causing, at the same time, an even greater injustice: article charges at very high prices of several thousands of Euros per article to be paid by the author. As largest open access publisher in the geosciences we at the European Geosciences Union have identified this problem already some years ago and have started the Online Automated Publication Initiative making rigorously advantage of the internet, the web and the software that can be downloaded free of charge with regard to upload and registration of manuscripts, open peer review and public discussion, editing and formatting, distribution and archiving worldwide. First examples of page-charge-free publications are the comments published open access in our discussion journals completely in journal style. Only if reading is free and article charges are sustainable and well below a thousand Euros we can celebrate the open access mission as a success.

1. Introduction

Like all good stories, also the story of „open access“ is occasionally rather confusing, and in which direction the story will develop and where and how it will end will depend on the point of view and the position of the person actually telling the story. Thereby, one has to remember that the story of „open access“ is a trilogy rather than a monograph, since at least three sides with their own, independent ideas are involved: the subscribers (readers and researchers), the authors and the publishers.

The present report is therefore based on our own experience as scientists serving as readers, researchers, authors, editors, referees and officers for the European Geosciences Union (www.egu.eu) and its open access publications, with our open access publisher Copernicus Publications (www.copernicus.org), and with the software house for open access publishing Copernicus Systems + Technology (www.copernicussystems.net).

After a short retrospect on the history of the open access mission, we will discuss the advantages as well as the stumbling blocks of open access for researchers, authors and publishers and possible business models for open access publishing.

2. Retrospect on the Open Access Mission

Only a few years ago the academic community was facing the following, rather hopeless situation:

- a steady increase in the subscription rates of academic work by about 250% from 1983 – 2003 or of about 13% per year (journalprices.com) on the one hand, and, at the same time, a substantial decrease in the financial support of academic work in general on the other hand.
- a substantial surplus for commercial publishers from academic publications on the one hand, and a substantial transfer of „value adding“ work from the publishers back to the academic community serving as authors, editors and referees free of charge anyhow.
- an explosive expansion of the internet and its accessibility worldwide and of academic work available on the internet, even though only toll-free.

Based on this situation, the academic community reacted in different ways:

- to require „Free Access to all Academic Work on the Internet“ like the free access to all the other work presented on the web.
- unrefereed, self- publishing of own work in the old fashion pre-print style (arXiv.org).
- self-archiving of copies of published work (sherpa.ac.uk/)

romeo) or its archiving in public repositories and digital libraries (opendoar.org) for free public use.

- cancellation of subscriptions and/or passover of entire editorial boards from expensive to less expensive journals and/or notices of termination from the position of editor and/or referee by individual scientists.

The request for „free access“ was later on phrased more precisely as „open access“ in the Bethesda Statement (2002) and in the Berlin Declaration (2003) in the following way:

- barrier-free access to all academic work on the internet.
- license to copy, distribute, transmit and display the work publicly and to make and to distribute any derivative works to proper attribution of authorship (creative commons attribution license).
- deposit the work and any supplemental material in at least one online repository for open access and long term archiving.

A survey by the Deutsche Forschungsgemeinschaft (DFG) on the other hand showed that the scientific community prefers to publish its work in proper, thematic scientific journals of high reputation and international, worldwide distribution, which guarantee a fair but rigorous peer review process of all academic work prior to publication, and which are included in the Citation Index with reasonable Impact Factors. This survey clearly disapproves the preprint and self-archiving philosophies. Moreover, the

distribution of author-generated copies of published work will be questioned with regard to its originality, and in the long term it will undermine the availability of genuine publications. And, finally, cancellations of subscriptions will most of all hurt the scientists themselves as readers and researchers but also as authors (I cannot read but my work is not read either). Thus, the early messages of the open access mission are:

1. from readers and researchers: free access to and free downloads for derivative works of academic work of high quality.
2. from authors: publication in refereed open access journals of high reputation and international, worldwide distribution.
3. and from scientists in general: both services, in principle, at no cost, since scientists that cannot pay expensive subscriptions can also not pay expensive page/article charges.

The open access mission must therefore find a way which is a win-win situation for all three sides: for the scientists as readers and authors as well as for the open access publishers.

3. Advantages of Open Access for Subscribers and Publishers

Here „Open Access“ benefits, first of all, from the explosive development and availability of a barrier-free internet worldwide, tending to become the only platform for any digital information and any digital work. In addition, all electronic media being able to store digital work for purposes of information and/or for performing derivative works are steadily decreasing in price but increasing in its capacities: besides the PCs, Laptops and Palmtops, we will shortly have the TG stick, TG flash memories and fusion cells for powerful mini-workstations, as well as digital paper in user-friendly sizes. Moreover, more and more software, which is needed to perform professional original and/or derivative work, can be downloaded from the internet free of charge. In parallel, the academic institutions and organizations have established a worldwide network of open access data bases, repositories, digital libraries and archives

for open access academic work. This also includes data bases and archives for well defined topics, such as e.g. ADS, CAS, CSA, GeoRef etc, as well as the first long-term digital archive PORTICO of the US Library of Congress.

Moreover, Alert Services, RSS feeds and DOI are active tools to inform the scientists online about the latest work of interest or its location on the internet.

Several organizations are working on the problem to improve the internet search-engines, such as Google or Google Scholar, to become more personalized and sophisticated with regard to the actual search as well as with regard to the personalized listings of the results (Get-What-You-Really-Want Search Engines). Another feature describing the quality of an open access publication could be the comparison of its content with the content of similar open access publications with regard to plagiarism and IPR (Intellectual Property Rights) violations to classify also the originality of a publication. Certainly, only academic work which is fully open accessible will profit from such advantages.

ISI – Thompson will also include quality, open access and purely digital journals in the Citation Index; and it has already been shown that the higher the percentage of open access publications in a given journal is the higher its Impact Factor.

A further important advantage for researchers is that open access work is published under the creative common attribution license, i.e. that any open access work may be copied, distributed, transmitted and displayed publicly and may be used to make and to distribute any derivative works to proper attribution of authorship without any annoying questions regarding copyright regulations any longer.

To help readers and researchers in studying open access literature online, certain open access publishers have started to change the format of their journals from portrait, double column (print) to landscape, on-screen publications with off-screen readable fonts (e.g. www.atmos-chem-physdiscuss.net). Finally, the scientific community is more and more requesting that also the essential supplemental material of an original publication becomes publicly available, including reports, movies, numerical codes, experimental set-ups etc. Here only the internet with links to (self-) archived materials can serve as an answer.

In summary we may conclude:

- open access – internet publishing provides the best overall services for the academic community for studies and derivative works, and
 - open access work is available free of charge worldwide.
- And the message back to the publishers:
- only quality, open access work will be cited and/or used for derivative works in future, i.e. non open access work will not be read and therefore slowly forgotten within the scientific community.

- publishers should use the numerous advantages of the free internet more rigorously, since typical tasks such as publishing, distribution and marketing of academic work as well as its storage and its problems with subscriptions, back issues, annual page budgets, investments in new publications etc will not exist in their old fashion manner any longer in the open access world of publishing and will therefore represent a good chunk of expenses to be saved.

4. Stumbling Blocks for Open Access

Open access as the barrier- and subscription-free way of

publishing academic work may be advantageous for readers and researchers; however, it is less advantageous for authors and publishers:

In the open access world the sources of income for publishers reduce to just page/article charges to be paid by the author. Thus, in the open access world the philosophy of payment is inverted from „subscription-paid and author-free“ to „subscription-free and author-pays“. In turn, these charges are therefore, in general, rather high. According to the conversion and the hybrid models offered by academic publishers, the article charges amount to about EUR 1.500 – 2.100 per article, depended on the size of the publisher and whether only the subscription fees or the overall turnover is converted into article charges. In the past the subscription fees have been paid by the libraries or directly by the organizations. Page or article charges, however, have to be paid by the authors or their departments or institutes. Very often these departments and institutes have no explicit account for „page or article charges“. „Active“ departments and research institutes would pay presently less for their subscriptions than for their article charges, if the price per article would amount to the value given above. Even the signatories of the Berlin Declaration continue to pay subscription fees or a similar amount for their own authors to publish open access and are therefore still bound to the overall increase in the payment for published academic work. And the amount provided by some organizations to authors that want to publish open access is only a fraction of the article charges mentioned above. And according to our experience in the geosciences, the old model of „subscription and author free“ seemed to work more „ethical“ than the open access model, since we were always able to distribute our own „pre-prints as accepted for publication“ or even our off-prints to our friends and their departments and institutes, whereas for most of our colleagues a payment of article charges of the amount mentioned above will be impossible. Finally, all major organizations in Europe will continue to support the classical, commercial publishers in the one or the other way. During the transition phase from toll-access to open access the amount of money for open access will remain relatively small. Thus, serious open access publishers serving an international, worldwide community must investigate the details of applying the internet and the modern, digital technologies in their publication strategies for reducing the article charges for authors and yet earn an income sufficient for completing their tasks and responsibilities in the way asked for by the academic community.

5. Open Access Online Publishing for Authors and Publishers

Due to the steep cuts in their budgets, scientists have learned to use their computers, the associated software and the internet to compile and to edit the results of their research ready-for-publication (called camera-ready some years ago), and to submit or to upload them online by themselves. This includes not only simple text but also equations, tables, plots, figures, photographs, movies, soundtracks etc. In this way, they are also able to interact with server-aided macros and templates to produce their articles online in the respective journal style ready for publication on the internet.

Moreover, in the open access world readers and researchers will loose their interest in elaborated and expensive formats and will prefer simple, author-generated pdf or HTML files, wikis or blogs. Thus, the actual production of articles will rest mainly in the hands of the authors and of intelligent serv-

ers, and the staff at the production offices of publishers will just serve as a kind of „supervisor and quality control“ rather than performing typesetting, editing, lay-outing, formatting etc. as in previous times. Purely author-generated, high quality online publications are already included in our discussion journals (e.g. www.atmos-chem-phys-discuss.net). Once an article has „passed“, the server generates automatically customized XML files of the article and sends them to the respective data bases, archives, repositories and libraries worldwide, and via the alert services and RSS feeds also to the individual customers. In this way the article is published immediately worldwide and becomes at once part of all search engines and catalogues practically free of charge for the publisher. In this way, an author receives prompt publication, a gigantic large readership, highest impact factors, and, last but not least, the copyright remains with the author. And for the publisher the cumbersome printing and distribution and tracing of printed issues has passed, while print-on-demand allows to distribute printed material at any time. Here a substantial part of past expenses of publishers can again be saved. Remains the more complicated and time consuming and therefore more expensive part in the publication procedure, the procedure of the actual peer review of scientific work prior to publication. Here we are applying two different models:

1. the online yet classical review based on 2-3 independent referee reports – anonymous or eponymous.
2. the „open online peer review plus public discussion“, procedure.

Since in both cases the entire review process rests in the hands of the editors and referees, it entirely can be serviced and monitored by intelligent servers, reducing the actual work of the editorial support office of the publisher more or less to a monitoring support of the work of the authors, editors and referees. Thereby, the second procedure has shown to have the following additional advantages:

- the manuscripts submitted for publication are more carefully compiled and of higher standard, so that editors and authors have less work to do for the review.
 - referees' and public comments are open access and published alongside the original article.
- Thus, value is added to the work of the referees and editors and the reports are generally of greater value to the author.
- the actual work of the editorial support office is roughly cut in half.
 - manuscripts are more intensively check against plagiarism and IPR violations.

At any time, however, either the author, the editor or the publisher can decide which services have to be added by the publishing staff for a successful publication of the manuscript. This also holds for copy editing, which is performed online by professional staff and which has to be paid by the author as an extra service. From our model of publication we may therefore conclude:

- the entire process of submission, registration, peer review, production, publication and distribution of academic work can be handled, in principle, by the authors, editors and referees in cooperation with intelligent servers together with the publisher providing just the overall management, monitoring and quality control, the costs of which are merged into one fixed flat rate per article.
- In addition, the author pays for the services asked for from the editorial support and the production offices of the publisher, page by page.

This service charge model is already applied by the EGU to its open access journals; however, not yet fully automated, since the articles in all main journals are still edited and formatted by the staff in the production offices in the old fashion portrait, double column, print-on-paper style.

6. Business Models for Open Access

Due to an increasing pressure on the part of the science community towards open access, academic publishers will be urged to become, sooner or later, open access publishers. In the transition phase, which is already going on, different business models are discussed in parallel:

1. the Hybrid Model: in a journal, which is not open access in general, an author may choose the option that his/her article is open access in accordance to the creative commons attribution license. For this service the author has to pay an extra article charge (Springer's Open Choice Model)

2. the Conversion Model: a smaller, well defined community organized through a dozen or so institutes/organizations and using only a small number of journals for research and publication, arrange with the corresponding publishers that by payment of the regular subscription fees the journals become open access (the CERN et al. Model).

3. the Article Charge Model: articles are published in accordance to the classical procedure but are open access and the charge per article is minimized but fixed for the journal in question (BioMedCentral, PLoS, IOP - New Journal of Physics).

4. The Service Charge Model: the less service an author requires from the editorial support and the production and distribution office of the publisher, the less the price per page (European Geosciences Union)

According to the first model, an institute subscribing to journals but asking its authors to publish open choice, pays actually twice. The conversion model, on the other hand, puts the same fiscal burden on the formerly subscribing institute, even if other institutes will have free access to their work. Model 3 is a rigid model leading still to article charges of the amount of about EUR 1.500, which is too high for the majority of the worldwide geosciences community. Model 4 is an automated, adoptive and flexible model, and in view of the very fast development of the software on the internet and for the web, this model will lead eventually to very low flat rates. Our dream is even that the makers of OpenOffice, ADOBE etc develop an Open Access Publishing Tool to further reduce the page and finally the article charges to values, which will then become affordable for all authors worldwide. The mission statement of the EGU for publications is: dedicated to the pursuit of excellence and free and universal accessibility and affordability of scientific publications in all areas of geosciences and planetary and solar system sciences for the benefit of the scientists worldwide.

6. Reputation

The essential work for a publication is performed by the scientists acting as author, editor, referee, subscriber, reader and researcher. The decision about the quality, acceptance and value for further promotion purposes, and thus of the reputation of a journal also rests in the hands of the scientific community, including some of the parts of reputation, such as excellent editors, strong and competent referees, a steady flow of excellent, up-to-date and timely work, diversity etc. Thus, learned societies and organizations with their devoted com-

munities and their tradition to listen to their grass-roots members and to follow and to incorporate their feedback in their work will be able to build up publications of highest standards, reputation, and excellency under the flag of open access, and by applying the automated, service charge model even at low investment and maximum services for their members and their worldwide communities. Some years ago, the EGU has started a new open access journal with an open peer review process and public discussions right in the middle of a group of traditional, high ranked atmospheric and environmental journals. After only 4 years this journal was the number 1 publication according to its Impact Factor. A later journal started with an Impact Factor of 2.13 right from the beginning!

7. Summary

Open access is a mission for modern, online publishing of academic work with great potential and advantages for all sides involved: the researchers (subscribers), the authors and the publishers. Based on the continuous increase in the subscription fees by about 13% per year and the resulting decrease in the availability of quality publications in the academic libraries, the general opinion was voiced that at least the work on the internet should be open accessible, i.e. barrier-free accessible and freely usable for any derivative work to proper attribution of authorship. Certainly, such a mission guarantees maximum worldwide distribution and impact of academic work and a number of simplifications and savings with regard to the tasks and responsibilities of publishers. On the other side, however, it causes new, even more severe problems which have to be solved: in a strictly open access world the sources of income for publishers would reduce to page or article charges to be paid by the authors. Converting the income from subscription fees or even the overall income to article charges, one would presently get fees of the order of EUR 1.500 – 2.5000 or even more per article. For most of our scientists worldwide it will be absolutely impossible to pay such a high price. Even more, in the previous subscription model in which publishing was free for authors, the „richer“ colleagues could distribute copies, pre-prints and off-prints of their work to their „poorer“ colleagues. In the new open access world reading would be free but publishing practically impossible for most of our colleagues. Thus, as long as the number of genuine publications in journals of high reputation is one of the key measure for the quality of a scientist, open access so far would only favour the rich but not necessarily the best scientists. Even though the open access publishers are taking a 10% margin of free-of-charge pages in their annual budget into account, this would not be sufficient to serve the worldwide community in many areas in the geosciences.

Thus, if we want to put the open access mission on sustainable grounds, we have to continue to make rigorous use of the internet and the new web 2.0, the freely available software and intelligent servers and to develop the „Automatic Online Publication and Distribution System“ to further reduce the tasks and responsibilities of publishers with regard to submission, peer review, production, distribution and marketing of academic work to an absolute minimum, just providing monitoring and quality control of the processes involved and the overall management of a journal.

In this way, we envisage that article fees can be reduced to affordable flat-rates covered, may-be, by interested sponsors. In this way, „Open Access“ is indeed a story that, at least for

the moment, has not yet come to its end: to the battle call „free to read for everyone“ we have to add „ and free to publish for everyone“ if we want to serve our entire community in a fair way!

Keynote Lecture presented at the International Conference on Academic Publishing in Europe 2008, Berlin, Germany, 22 -23 January, 2008.

Dr. Arne K. Richter
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European Geosciences Union
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Climate change: from the geologic past to the uncertain future

A tribute to André Berger

Four-day symposium in honour of EGU Honorary President André Berger's retirement

6 to 29 May 2008, Louvain-la-Neuve University, Belgium.- André Berger is one of the world's leading experts in Quaternary climate change who has made major contributions to the astronomical theory of palaeoclimates. André Berger is Honorary President of the European Geosciences Union. This four-day symposium in honour of André Berger's retirement hosted 100 palaeoclimatologists from around the world.

What causes glacial-interglacial cycles?

This not so anodinous question has been inspiring André Berger's research for over 35 years. André Berger has been a key character in the world of past and future climate modelling since his 1978 publication of an algorithm still used today to calculate the changes in the Earth orbit that trigger glacial-interglacial cycles. With the help of his team in Louvain-la-Neuve, he never stopped delivering world-leading research on the astronomical theory of palaeoclimates. Now he retires, and this event is celebrated with a symposium entitled Climate change: from the geologic past to the uncertain future.

Around 100 scientists worldwide including some of the most authoritative experts on quaternary climatic changes, past climates reconstruction and climate modelling gathered in Louvain-la-Neuve in May 2008 to summarise the state-of-the-art on some of the most intriguing and outstanding questions about the astronomical theory of palaeoclimates:

- What are the mechanisms of glacial-interglacial cycles?
- When and why did they regime change?
- Would they occur in absence of orbital forcing?
- What do we learn from recent marine, ice core and terrestrial records?
- Can we predict climate on long time scales?
- When will the next glacial inception occur?
- Do past and future greenhouse gas emissions have long-term consequences?

For programme and further details see:

<http://www.uclouvain.be/en-berger2008.html>

Brief biography of André Berger

André Berger is Master of Science in Meteorology from M.I.T. (1971) and Doctor of Science from the Université catholique de Louvain (Belgium) (1973). He is ordinary professor and was head of the Institute of Astronomy and Geophysics Georges Lemaître (1978-2001) at the Catholic Univer-



André Berger.

sity of Louvain where he lectures on meteorology and climate dynamics. He is doctor honoris causa from the University of Aix-Marseille III, the Université Paul Sabatier in Toulouse and the Faculté Polytechnique de Mons. He was C.R.B. graduate fellow of the Belgian American Educational Foundation (1970-71) and professor at the Vrij Universiteit Brussel and Université de Liège.

André Berger was chairman of both the International Climate and Paleoclimate Commissions and of NATO scientific Panels. He was president of the European Geophysical Society and is Honorary President of the European Geo-Sciences Union. He is fellow of the American Geophysical Union. He serves on several national and international scientific committees dealing with climate and global change. He is, in particular, member of the scientific council of the European Environment Agency.

He received the Norbert Gerbier-Mumm International Award from the World Meteorological Organization (1994), the Milutin Milankovitch Medal from the European Geophysical Society (1994), the Prix quinquennal A. De Leeuw-Damry-Bourlart of the Belgian National Funds for Scientific Research for 1991-1995 and the European Latsis Prize in 2001. He is member of the Academia Europaea, foreign member of the Koninklijke Nederlandse Akademie van Wetenschappen, membre associé étranger de l'Académie des Sciences de Paris, member de l'Académie Nationale de l'Air et de l'Espace, membre de l'Académie royale des Sciences, des Lettres et des Beaux Arts de Belgique, foreign member of the Serbian Academy of Sciences and Arts, membre étranger de la Société royale du Canada and associate of the Royal Astronomical Society (London).

André Berger is the author of 'Le Climat de la Terre, un passé pour quel avenir?'. He has edited 10 books on climatic variations and has published more than 150 papers on this subject. He is associate editor of Surveys in Geophysics and editorial board member of The Holocene, Climate Dynamics and Earth and Planetary Science Letters. He was editor of EOS for Atmospheric Sciences, associate editor of Atmospheric Environment and board member of Climatic Change.

His main research is about modeling climatic changes at the geological and at the century time scales. He has made notable contributions to the astronomical theory of paleoclimates which explain the recurrence of glacial-interglacial cycles from the long-term variations of the Earth's orbit around the Sun.



Group photo with the participants of the Symposium. A. Berger is in the middle in the front row.

The climate model that he has developed with his team is also used for simulating the response of the climate system to human activities and the possible impact of such man's induced perturbations on the natural course of climate at the geological time scale. He is a cited pioneer of the interdisciplinary study of climate dynamics and past climate history.

He has been ennobled by His Majesty Albert II, King of the Belgians, with the title of Chevalier (Sir) and received the title of Chevalier de la Légion d'Honneur from the President of France.

Brief Report on the 2nd EGU Alexander von Humboldt Conference

The role of Geophysics in Natural Disaster Prevention

Besides scientific methodology, the conference aimed at discussing also the “dilemma” of scientists against the expectations of decision makers: While scientists, in most cases, evaluate natural hazards in probabilistic terms, decision makers expect to get precise forecasts.

A special volume of *Advances in Geosciences* (<http://www.adv-geosci.net/>) is devoted to papers presented during the 2nd EGU Alexander von Humboldt Conference on The role of Geophysics in Natural Disaster Prevention held 5–9 March 2007 in Lima/Peru.

Co-organized by the European Geosciences Union (EGU) and the Instituto Geofísico del Perú it was attended by about 200 scientists from more than 40 countries worldwide.

Topics covered during the 5 days’ meeting were:

- Volcanic Eruptions
- Earthquakes
- Tsunamis
- Landslides
- Avalanches
- Extreme climate and/or meteorological disastrous events

These topics were introduced by Keynote and invited Speakers, who, in concert with the highly interdisciplinary audience, set the scene for vivid discussions. Besides new or improved methods for natural hazard assessments and mitigation, the conference aimed at discussing the “dilemma” of scientists against the expectations of decision makers: While scientists, in most cases, evaluate natural hazards in probabilistic

terms, decision makers expect to get precise forecasts. This problem was highlighted by reports on failures and successes of past prevention cases, as well as socio-economic aspects.

The organizers of the 2nd EGU Humboldt Conference, now in the role of guest editors of this special volume of *Advances in Geosciences*, like to use this opportunity for thanking their teams and many sponsors for making this conference possible. We particularly like to thank the keynote speakers most of whom have given valuable additional help towards setting up the scientific program and in the review process for this volume. Last not least we thank all authors who provided their papers for this proceedings volume.

The papers are available as Volume 14 of *Advances in Geosciences* at <http://www.adv-geosci.net/14/index.html>, where they can be viewed and downloaded free of charge.

**P. Fabian, European Geosciences Union
P. Lagos, Instituto Geofísico del Perú,
Special Volume Editors**

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Brief Session Report

Topics in modern geophysical fluid dynamics

Modern geophysical fluid dynamics includes numerical as well as laboratory experiments and also all the mathematical aspects of flows. In general, the word geophysical is used in a broad sense

Vienna is a fascinating modern city with rich and glorious history and best known as a place where many new developments in literature, art, and of course music started. Less known to the public might be the fact that at the turn of the 20th century, Vienna was the center of meteorological research in Europe and the Viennese school of theoretical meteorology influenced the development of geophysical fluid dynamics during the whole 20th century.

Thus, to us there appears to be no better place for a session on geophysical fluid dynamics than Vienna. On Monday, 3 April 2006, and Thursday, 19 April 2007 the sessions AS1.05 New aspects of theoretical geophysical fluid dynamics and AS1.05 Recent developments of geophysical fluid dynamics took place in the Austrian Center Vienna, during the General Assemblies of the European Geosciences Union (EGU). Also as regards the time the sessions were fitting well, since meteorologists had a benchmark in 2006, namely the 50 year anniversary of Norman A. Phillips' numerical simulations of the general circulation of the atmosphere Phillips (1956) (see Fig. 1). For this paper, N. Phillips got the Sir Napier Shaw Memorial Prize and E. T. Eady Sutcliffe et al. (1956) remarked that the numerical integrations carried out give us a unique opportunity to study large-scale meteorology as an experimental science.

Modern geophysical fluid dynamics includes numerical as well as laboratory experiments and also all the mathematical aspects of flows. In general, the word geophysical is used in a broad sense and Tritton and Davies (1981) pointed out that it is unfortunate that there is no single word meaning geophysical, planetary physical, and astrophysical. The sessions covered all the aspects mentioned above but had a slight preference towards the fundamental side of rotating stratified flows. Nevertheless, we hope that the reader will share our satisfaction and enthusiasm when reading the collection of papers. Moreover, it is hoped and anticipated that these proceedings will be useful to those seeking subjects for further investigation.

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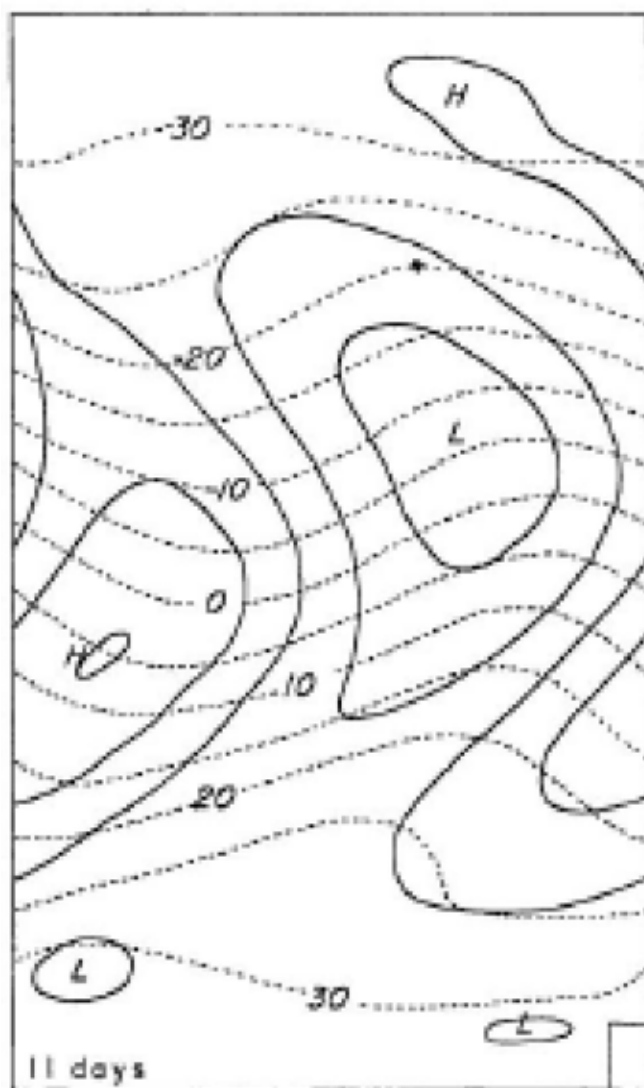


Fig. 1. First numerical prediction by N. A. Phillips in 1956. Distribution of 1000 mb contour height (solid lines) and 500 mb temperature at 5 deg C intervals (dashed lines) at 11 days.

Sutcliff, R. C., Sheppard, P. A., Eady, E. T., et al.: Discussions: The general circulation of the atmosphere : a numerical experiment, Q. J. Roy. Meteor. Soc., 82, 535–539, 1956.

Tritton, D. J. and Davies, P. A.: Instabilities in geophysical fluid dynamics, in: Topics in Applied Physics, edited by: Swinney, H. L. and Gollub, J. P., Springer, 45, 229–270, 1981.

The papers from the Sessions are available as Volume 15 of Advances in Geosciences at <http://www.adv-geosci.net/15/index.html>, where they can be viewed and downloaded free of charge.

**U. Harlander, A. Will, M. V. Kurgansky, and M. Ehren-
dorfer**

Special Volume Editors

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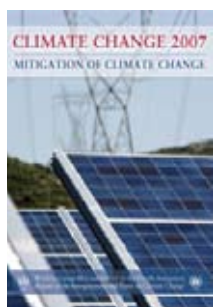
A Solar System educational resource

of the British National Space Center

At <http://www.bnsc.gov.uk/learningzone.aspx?nid=3261> , the British National Space Center (BNSC) offers a wide variety of classroom activities linked to the planets, earth and moon, the asteroids as well as the Cassini-Huygens and Mars Express missions. It includes numerous worksheets, lesson plans and teachers' notes. It also includes activities involving experiments.



Climate Change 2007: Mitigation of Climate Change



Authors: Intergovernmental Panel on Climate Change

Publisher: Cambridge University Press

ISBN: 978052170598

YEAR : 2007

EDITION : 1st

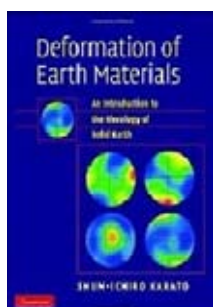
PAGES : 851

PRICE : 55.00 €

paperback

The Climate Change 2007 volumes of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) provide the most comprehensive and balanced assessment of climate change available. This IPCC Working Group III volume is a state-of-the-art assessment of the scientific, technical, environmental, economic, and social aspects of the mitigation of climate change. Written by the world's leading experts, the IPCC volumes will again prove to be invaluable for researchers, students, and policymakers, and will form the standard reference works for policy decisions for government and industry worldwide.

Deformation of Earth Materials



Authors: Shun-Ichiro Karato

Publisher: Cambridge University Press

ISBN: 9780521844048

YEAR : 2008

EDITION : 1st

PAGES : 463

PRICE : 58.00 €

Hardback

Much of the recent progress in the solid earth sciences is based on interpretation of a range of geophysical and geological observations in terms of the properties and deformation of earth materials. This graduate textbook presents a comprehensive, unified treatment of the materials science of deformation as applied to solid earth geophysics and geology. The deformation of Earth materials is presented in a systematic way covering elastic, anelastic and viscous deformation. Advanced discussions on current debates are also included to bring readers to the cutting-edge of science in this interdisciplinary area. This textbook is ideal for graduate courses on the rheology and dynamics of solid Earth, and includes review questions with solutions so readers can monitor their understanding of the material presented. It is also a much-needed reference for geoscientists in many fields including geology, geophysics, geochemistry, materials science, mineralogy and ceramics. A comprehensive, unified treatment of the materials science of deformation as applied to solid earth geophysics and geology, this textbook is ideal for graduate courses on the rheology and dynamics of solid earth. It is also a much-needed reference for geoscientists in geology, geophysics, geochemistry, materials science, mineralogy and ceramics.

Drinking Water Quality: Problems and Solutions



Authors: N. F. Gray
Publisher: Cambridge University Press
ISBN: 9780521702539
YEAR : 2008
EDITION : 2nd
PAGES : 520
PRICE : 45.00 €
paperback

This textbook provides a comprehensive review of the problems associated with the supply of drinking water in the developed world. Since the first edition of this book was published, water companies and regulators have been presented with numerous new challenges - global warming has seriously affected water supplies and water quality; advances in chemical and microbial analysis have revealed many new contaminants in water that were previously undetectable; and recent terrorist attacks have demonstrated how vulnerable water supplies are to contamination or disruption. This new edition includes an overview of the current and emerging problems, with potential solutions. It has been completely updated, and includes the WHO Revised Drinking Water Guidelines. An ideal textbook for courses in environmental science, hydrology, environmental health and environmental engineering; it also provides an authoritative reference for practitioners and professionals in the water supply industry.



International Symposium: Fifty Years after IGY - (Meeting)

10/11/2008 - 13/11/2008 - Tsukuba, Ibaraki, Japan

The International Symposium: Fifty Years after IGY - Modern Information Technologies and Earth and Solar Sciences - will be held at the National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Ibaraki, Japan.

The symposium will comprise keynote talks from IPY, IHY, IYPE, eGY, WDC CODATA, and SCOSTEP with invited and contribution papers, and a concluding session to express the "Tsukuba Agenda" summarizing the outcome of the symposium. During the symposium, exhibitions and outreach activities will be featured. A grand design of sustainable international cooperation beyond IGY+50 is expected to be one of the symposium targets.

A goal of the symposium is to encourage communication between Earth and solar scientists, informatics experts, computer technologists/engineers, and others in order to resolve the issues addressed in the symposium.

Contributed papers will cover, but not be limited to, the following:

Part I: New knowledge and information of Earth and solar sciences based on observation/modeling

Papers for this part will review new knowledge and information in the Earth and solar sciences that have been achieved by observations, modeling, and simulations since IGY. Papers are also welcome on advances in technologies during the past fifty years and challenges in Earth and solar science research to be addressed using modern technologies (particularly information and communications technology).

Part II: Application of Information and Communications Technologies

Modern information and communications technologies and advances in informatics now makes it possible to research and understand the Earth in a 'digital' way. Digital data processing techniques have been utilized independently in each scientific discipline to yield fruitful results. However, it is still ahead of us to use an informatics approach in synergistic ways to explore causal relationships between multi-scale phenomena ongoing around the Earth. In this part, emphasis is on recent results and methods of informatics (including data integration, data mining, and knowledge extraction), networks, communication engineering, and computer science in Earth and solar science research.

Part III: Data sharing beyond "IGY+50" and our mission

The body of this part consists in candid and latest information exchange on data center activities, data policy/copyright issues, and preservation/rescue of data in Earth and Solar sciences. The session may begin with comprehensive reviews on the past and current status of the existing international data providing systems with special attention to their roles in basic research, preservation of our environments and disaster prevention. Reports on outreach activities and educational efforts using Earth and Solar science data are also emphasized and welcome.

Organizer:

Science Council of Japan/IYPE/IPY/IHY(STPP)/eGY/WDC/SCOSTEP/CODATA

<http://wdc2.kugi.kyoto-u.ac.jp/igy50/>

10th Plinius Conference on Mediterranean Storms - (Meeting)

22/09/2008 - 24/09/2008 - Nicosia, Cyprus

European Geosciences Union Topical Conference Series

Conference Objectives:

(A) Over the last decade, the Plinius Conferences on Mediterranean Storms have provided crucial contributions in improving our understanding of extreme rain events over the Mediterranean area and of their ground effects.

(B) The main objectives of this 10th Plinius Conference is to provide an interdisciplinary forum for discussion of the current state of knowledge and advances in research/application disciplines related to Mediterranean storms, including:

- (i) the nature and physical processes of these extreme events;
- (ii) the expected changes in relationship to predicted climate changes;
- (iii) advanced techniques to observe, monitor and forecast these storms;
- (iv) the extreme event relationships to coupled surface processes and effects, with particular emphasis on damaging floods, and landslides;
- (v) the socio-economical implications.

Invited Keynote Speakers Include: Richard Carbone, Ziad Haddad, Arthur Hou

Topics (Conveners)

- PLC1 Climate Change and Extreme Events (P. Alpert, V. Levizzani]
- PLC2 Storm Processes (G. Tripoli, A. Bartzokas, A.)
- PLC3 Mesoscale Modeling (V. Kotroni, S. Davolio, S.)
- PLC4 Remote Sensing (E. Smith, A. Mugnai)
- PLC5 Nowcasting (C. Price, S. Michaelides)
- PLC6 Operational Meteorological Forecasting (A. Jansa, K. Lagouvardos)
- PLC7 Rainfall Downscaling (R. Deidda, E. Foufoula)
- PLC8 Soil-Vegetation-Atmosphere Interactions (G. Boni, M. Fiorentino)
- PLC9 Hydrological Processes (G. Roth, P. Claps)
- PLC10 Operational Hydrological Forecasting (L. Ferraris, Morin)
- PLC11 Prediction and Effects of Rainfall-Induced Landslides (F. Guzzetti, B. Malamud)
- PLC12 Societal Impacts & Responses (M. Llasat, F. Siccardi)

Abstract submission deadline: 15 June 2008

More information and abstract submission: <http://meetings.copernicus.org/plinius10/>

2009 AMS Annual Meeting - Urban Weather and Climate: Now and the Future - (Meeting)

11/01/2009 - 15/01/2009 - Phoenix, Arizona

The theme for the 2009 Annual Meeting is "Urban Weather and Climate: Now and the Future". The relevance and timeliness of the urban theme cannot be overemphasized.

Recent events – Hurricane Katrina; urban floods in Europe and China; heat waves in London, Paris and Chicago; homeland security concerns and industrial chemical accidents; to name a few – point out the vulnerability of urban populations to high-impact weather of all types. In the U.S. today, approximately two-thirds of the population live in cities that occupy less than two percent of the U.S. land mass. This past year, the global population may have reached a tipping point with the world's urban population equaling its rural population; by 2030, the urban population fraction is predicted to surpass 60% globally and exceed 82% in the more developed countries. Most of the urban population growth results from migration from the rural areas as birth rates tend to decline in the urban areas. The nexus of urbanization and population growth, coupled with anthropogenic urban weather influences and global climate changes, portend an impending 'perfect storm' for the urban environment.

The 2009 Annual Meeting aims to highlight advances and challenges in urban-related science, applications, observations, modeling and operations. The specialty conferences, symposia and special sessions that comprise the annual meeting will focus attention on six cross-cutting urban themes:

- (a) measurement systems and networks;
- (b) modeling and forecasting;
- (c) observations and studies of high-impact weather;
- (d) geographic influences on urban weather and climate;
- (e) human and environmental impacts; and
- (f) implications of climate change and population growth.

"High-impact" weather is considered in its broadest sense, and includes severe weather, high wind events, precipitation, floods, icing, lightning, poor visibility, adverse air quality, and temperature extremes.

This deadline for submitting an abstract is 1 August 2008.

To submit your abstract, go to the meeting web page. Select a Program from the list on that page to read the Call for Papers or to submit a new abstract online. An abstract fee of \$90 (payable by credit card or purchase order) is charged at the time of submission (refundable only if abstract is not accepted). The abstract fee includes the submission of your abstract, the posting of your extended abstract, and the uploading and recording of your presentation which will be archived on the AMS Web site. We will no longer be producing a CD-ROM, allowing us to extend the deadline date for extended abstracts.

As always, the 2009 AMS annual meeting includes a number of forums, conferences, and symposia covering a broad array of topics in the atmospheric and related oceanic and hydrologic sciences. The calls for papers, logistics, and other meeting information are also available at <http://www.ametsoc.org/MEET/annual/call.html>

Even if you choose not to submit an abstract for the 89th AMS Annual Meeting, we hope you will come to listen, discuss, learn, and connect with colleagues. Continue to check out the AMS Meeting website for information on short courses, exhibiting details and much more.

Sue Grimmond and Rita Roberts
Program co-chairs, 89th AMS Annual Meeting

Organizer:

AMS

<http://ams.confex.com/ams/89annual/oasys.epi>

PORSEC 2008 - (Meeting)

02/12/2008 - 06/12/2008 - Guangzhou, China

PORSEC 2008, the Ninth Biennial Conference with the overall theme Oceanic Manifestation of Global Changes, will be held in Guangzhou, China on December 2nd-6th, 2008, hosted by the South China Sea Institute of Oceanology (SCSIO), Chinese Academy of Sciences (CAS).

PORSEC is an organization dedicated to helping developing nations stimulate their science programs using global remote sensing data, with a governing body of 60 global scientists providing the guiding effort and leadership to make that a successful movement.

SCSIO, founded in January 1959, is one of the largest marine research institute in China. It is featured by a postdoctoral research station and Ph.D. degree program in various fields related to marine sciences. Research Center of Remote Sensing on Marine Ecology & Environment (RSMEE) is one of the key departments of SCSIO.

Guangzhou is the capital of Guangdong, located in the southern China, north of the Pearl River Delta, close to the South China Sea, Hongkong and Macau, with the City of Ram its alias. Its average temperature in Dec. is around 20°C. The new Guangzhou Baiyun International Airport is the largest, best equipped and most modernized civil air terminal in China, serving 111 destinations at home and abroad with 152 domestic, international and regional air routes.

<http://ledweb.scsio.ac.cn/porsec2008/>

8th Symposium on the Urban Environment - (Meeting)

11/01/2009 - 15/01/2009 - Phoenix, Arizona

The Eighth Symposium on the Urban Environment, sponsored by the American Meteorological Society, and organized by the AMS Board on the Urban Environment, will be held 11–15 January 2009, as part of the 89th AMS Annual Meeting in Phoenix, Arizona.

Preliminary programs, registration, hotel, and general information will be posted on the AMS Web site in late-September 2008.

Papers and posters are invited on all subjects dealing with urban atmospheres, including observational, modeling, theoretical, forecasting, and applied studies.

Joint plenary-sessions with the Oke Symposium are planned on the topics of the urban climate system, urban energy balance and urban heat islands. Authors planning to submit abstracts in these topic areas should indicate if their work is related to Tim Oke's legacy and if they want to have their abstract considered for the Joint Sessions with the Oke

Symposium. Regular abstract submissions (not intended as being part of the Oke Symposium) in these topic areas are also strongly encouraged.

A joint session on weather and climate in coastal areas is planned together with the Eighth Conference on Coastal Atmospheric and Oceanic Prediction and Processes. Additionally, joint sessions are planned with the Boundary Layers and Turbulence Committee on modeling and measurements of urban boundary layers and turbulence, with the Atmospheric Biogeosciences Committee on urban ecological monitoring networks, and with the Committee of Meteorological Aspects of Air Pollution on dispersion and air quality in cities (including emergency response). We also plan to offer a session co-sponsored by the Board on Societal Impacts focusing on the societal and economic impacts of urbanization, including weather and climate hazards in the urban environment. Joint Sessions on urban weather impacts on energy demand and atmospheric modeling tools for urban/complex terrain energy production are planned together with the Energy Committee.

Other planned session-themes include: energy and water balances; urban canopy and roughness sublayers, global climate change and urbanization, biometeorology and public health in urban areas; precipitation; weather forecasting for urban areas; and urban planning. Persons with additional program suggestions are encouraged to contact the program chairs.

The \$90 abstract fee will now include the submission of your abstract, the posting of your extended abstract, and the uploading and recording of your presentation which will be archived on the AMS Web site. We will no longer be producing a CD-ROM, allowing us to extend the deadline date for extended abstracts.

Please submit your abstract electronically via the Web by 1 August 2008 (refer to the AMS Web page at http://www.ametsoc.org/meet/online_submit.html.) An abstract fee of \$90 (payable by credit card or purchase order) is charged at the time of submission (refundable only if abstract is not accepted).

Authors of accepted presentations will be notified (via e-mail) by late-September 2008. All extended abstracts are to be submitted electronically and will be available on-line via the Web. Instructions for formatting extended abstracts will be posted on the AMS Web site. Manuscripts (up to 3MB) must be submitted electronically by 02 January 2009. All abstracts, extended abstracts and presentations will be available on the AMS Web site at no cost.

For additional information please contact the program chairpersons, Anthony Brazel (abrazel@asu.edu), Petra Klein (pkklein@ou.edu) and Julie Lundquist (lundquist1@llnl.gov).

Organizer:

AMS Board on the Urban Environment
<http://www.ametsoc.org/meet/annual/>



Atmospheric Sciences-Academic

Faculty position in atmospheric and oceanic sciences

Company: Princeton University
 Location: USA-Princeton
 Date Posted: 28/03/2008

[\[show details...\]](#)

General-Academic

Faculty position in atmospheric and oceanic sciences

Company: PRINCETON UNIVERSITY
 Location: USA-Princeton
 Date Posted: 22/05/2008

[\[show details...\]](#)

Planetary and Solar System Sciences-Academic

ESA Postdoctoral Fellowships in Space Science

Company: European Space Agency
 Location: Netherlands or Spain-Noordwijk or Madrid
 Date Posted: 23/07/2008

[\[show details...\]](#)

More details on these jobs can be found online at www.the-eggs.org (click on the button “Job Positions” on the left). Job positions online are updated twice a week.