

the e.g.u. NEWSLETTER



NEWSLETTER & INFORMATION SERVICE OF THE E.G.U.

ISSUE 15, MAY 2006

AVAILABLE ON-LINE AT www.the-eggs.org



- The IMBER Project
- Name change for the international Network for the Detection of Stratospheric Change (NDSC)

Paper: ISSN 1027-6343
Online: ISSN 1607-7954



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Cover photo: London is completely blanketed by the black plume of smoke from Europe's worst peacetime fire in this Envisat image, taken within five hours of the blaze beginning on December 12, 2005. (©: ESA, see p. 10 in this issue)

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Climate change position

The European Geosciences Union (EGU) Divisions of Atmospheric and Climate Sciences support the joint science academies' statement on global response to climate change of June 2005.

Position Statement on Climate Change and Recent Letters from the Chairman of the U.S. House of Representatives Committee on Energy and Commerce

7 July, 2005.- The European Geosciences Union (EGU) Divisions of Atmospheric and Climate Sciences support the joint science academies' statement on global response to climate change of June 2005. (<http://nationalacademies.org/onpi/06072005.pdf>)

Moreover, we welcome the intention of the U.S. House of Representatives Committee on Energy and Commerce and its Chairman to explore the science of global warming and climate change as a basis for future political decisions. We also appreciate the well-established scientific practice of probing the validity of measurement data, mathematical analyses, and mechanistic interpretations, since this is a basic feature and continuously practiced element of scientific research.

On the other hand, we are surprised by the unusual approach which the Committee Chairman has chosen in an attempt to "review" the scientific basis of climate change as summarized by the Intergovernmental Panel on Climate Change (IPCC), which is the main representative of the global scientific community. (<http://www.ipcc.ch/>)

Rather than exploring the extensive scientific evidence and literature on climate change and the underlying processes through a hearing of experts representing the wide range of national and international scientific institutions engaged in climate research, the Committee Chairman has addressed three individual scientists, questioning their scientific and personal integrity on the basis of a newspaper article. In his letters of June 23, the Committee Chairman has asked these scientists to answer within less than three weeks multiple burdensome and intrusive requests, including detailed information about "all financial support" and "all data archives" related to the research

performed throughout their careers. (http://energycommerce.house.gov/108/Letters/06232005_1570.htm)

We do not consider personal inquisition of individual scientists as an appropriate way of probing the validity of the general scientific statements in the IPCC third assessment report (TAR), which represents the state-of-the-art of climate science supported by the major science academies around the world and by the vast majority of scientific researchers and investigations as documented by the peer-reviewed scientific literature. (<http://nationalacademies.org/onpi/06072005.pdf>)

We urge the Committee on Energy and Commerce and its Chairman to withdraw the highly inappropriate letters of June 23 and instead schedule a hearing of a representative group of climate research experts, presenting and discussing the available scientific evidence on global warming and climate change.

With regard to the scientific questions addressed in the letters of June 23, we would like to point out that: (1) the scientific statements of the IPCC TAR, including the finding that the increase in 20th century northern hemisphere temperatures is "likely to have been the largest of any century during the past 1,000 years", are based on multiple lines of evidence, not just the questioned study by Mann et al. (1998); and (2) the results of the study by Mann et al. (1998) have been confirmed by an independent team of scientists with freely available computer code and data (Ammann and Wahl, 2005).

(http://www.grida.no/climate/ipcc_tar/wg1/067.htm#232, <http://www.ucar.edu/news/releases/2005/ammann.shtml>)

**European Geosciences Union Divisions of
Atmospheric and Climate Sciences**

Sergey Soloviev Medal 2006

The Russian scientist Efim Pelinovsky has won the prestigious EGU Sergey Soloviev Medal in recognition of his world leadership in predicting the consequences of tsunamis and rogue waves, and in the avoidance and mitigation of these severe natural hazards.

The Sergey Soloviev Medal has been established by the Division on Natural Hazards (NH) in recognition of the scientific achievements of Sergey Soloviev. It will be awarded for outstanding scientific contributions in fundamental research that improves our knowledge of basic natural hazards principles as well as research that assesses and leads to the proper mitigation of natural hazards from both human and environmental perspectives.

Dr. Pelinovsky, 2006 recipient, is Head of the Laboratory of Hydrophysics and Nonlinear Acoustics at the Institute of Applied Physics, Russian Academy of Sciences, Novgorod, Russia.

Resumé

Dr. Efim Pelinovsky has contributed significantly to the understanding of tsunamis throughout the seas of the world, providing theories of wave propagation and estimates of wave

height and return periods. He has provided leadership in training members of the Russian Tsunami Service and attendees at the European Summer School and École Generaliste d'Ingenieurs in Marseille, and he has convened meetings on extreme waves at the American Geophysical Union meeting in Montreal, the European Geophysical Meeting in Vienna, and at several international conferences in Russia. He follows in the footsteps of S. Soloviev who pioneered some of the aspects of understanding and predicting tsunamis. The scope of his work extends from entire oceans to inland seas, rivers, and even cooling towers for electric power stations.

Medal Lecture

Dr. Pelinovsky accepted his medal and gave his Medal lecture during the EGU General Assembly, in Vienna, Austria 2 – 7 April 2006. The lecture 'Rogue Waves: Facts and Theories' took place on Thursday, 6 April at 8:45 h in Lecture Room 18.

Lewis Fry Richardson Medal 2006

The Italian scientist Roberto Benzi has won the prestigious EGU Lewis Fry Richardson Medal for his original work on hydrodynamic stability, stochastic resonance in climate change, lattice Boltzmann methods, and the theoretical and numerical aspects of turbulence.

The Lewis Fry Richardson Medal has been established by the Division on Nonlinear Processes in Geophysics in recognition of the scientific achievement of Lewis Fry Richardson. It is reserved for scientists for their exceptional contributions to nonlinear geosciences in general.

Dr. Benzi, 2006 Medalist, is a Full Professor of Theoretical Physics at the University of Roma II, "Tor Vergata," since 2000. He has also been Consultant to the Presidenza del Consiglio dei Ministri for Meteorological National Services and a member of the "Autorità per l'Informatica nella Pubblica Amministrazione" (AIPA), nominated by the Prime Minister to

develop and redesign the information systems of the Italian public administration.

Resumé

Roberto Benzi has made major contributions to the study of nonlinear phenomena and processes, in the geosciences and elsewhere. They include:

The discovery of a new amplification mechanism, named "stochastic resonance," which has been first applied to climate models in order to explain glaciation cycles. This mechanism

is now accepted as a source of large-amplitude, irregular oscillations in many areas of the physical and life sciences, and Benzi's early papers in this area are real landmarks.

- * The application of computer-based diagnostic and visualization methods for the investigation of anomalous flows in the atmospheric general circulation.

- * The development of a new theory for ultra-low-frequency planetary waves to explain the observed anomalous flows in the atmosphere. This theory provided a quantitative way to validate the basic mechanism of topographic instability for alternation between zonal and blocked flows in mid-latitudes.

- * The pioneering use of multifractal measures to describe the structure of strange attractors in dynamical systems.

- * The formulation of the Lattice Boltzmann Equation (LBE) for direct numerical simulations of turbulent flows, now widely used in many fields of computational fluid dynamics.

- * The discovery of Extended Self-Similarity (ESS), an approach that has dramatically improved the accuracy in measuring scaling exponents for turbulent flows.

Benzi has been a major leader in Italy in the development of computational fluid dynamics. He has trained many students in computational and theoretical work on turbulence.

Medal Lecture

Professor Benzi accepted his medal and gave his Medal lecture during the EGU General Assembly, Vienna, Austria, 2 – 7 April 2006. The lecture 'The mechanism of stochastic resonance: from climatic change to biology' took place on Thursday, 6 April at 19:00 h in Lecture Room D.

Plinius Medal 2006

The Canadian scientist Réjean Couture has won the prestigious EGU Plinius Medal in recognition of his contributions to the understanding of landslides using a combination of traditional and innovative techniques to help predict and mitigate the consequences of hazardous mass movements.

The Plinius medal has been established by the Division on Natural Hazards to recognize interdisciplinary research in natural hazards by young scientists. The name of Plinius (~23 - ~79 A.D.) acknowledges the role of our ancestors working to improve both knowledge and mitigation of natural hazards. The medal is reserved for excellent young scientists who have (a) outstanding research achievements in a field related with natural hazards, (b) important interdisciplinary activity in two or more fields related with this topic and (c) whose research has focused on the mitigation of natural risks.

Dr. Couture, 2006 Medalist, is working at The Geological Survey of Canada is a part of the Earth Sciences Sector of Natural Resources Canada. The GSC is Canada's premier agency for geoscientific information and research, with world-class expertise focusing on geoscience surveys, sustainable development of Canada's resources, environmental protection, and technology innovation.

Resumé

Dr. Réjean Couture has significantly contributed to the understanding of landslide phenomena in Canada. His research interests include: (i) analysis of the mechanical processes involved in large landslides, (ii) landslides mapping in permafrost areas, (iii) use of remote sensing technology for landslide mapping and monitoring, and (iv) monitoring of large

and complex mass movements. To conduct these researches, Dr. Couture inventively combines a wide range of methods and techniques, including field surveys, in situ investigations, geotechnical and geo-mechanical laboratory measurements, and remote sensing technology. Dr. Couture was the first to attempt evaluating the fragmentation energy associated with large rock avalanches applying techniques used in mining and rock mechanics. Dr. Couture is the leader of a large landslide mapping and research project in the Mackenzie Valley, in Canada, where he is coupling traditional mapping techniques with state-of-the-art remote sensing and GIS technology to map, monitor and characterize landslides in the Canada's permafrost terrain, contributing to the best exploitation of the area.

Medal Lecture

Réjean Couture accepted his medal and gave his Medal lecture during the EGU General Assembly, Vienna, Austria, 2 – 7 April 2006. The lecture 'Landslide Hazards and Risk in Canada in the last decade (1995-2005): Recent events and examples of multidisciplinary approaches' took place on Friday, 7 April in Lecture Room 16 (L) at 10:45 h.



United Nations proclaims 2008 International Year of Planet Earth

It will be the biggest ever international effort to promote the Earth sciences.

The United Nations General Assembly, meeting in New York, has proclaimed the year 2008 to be the United Nations International Year of Planet Earth. The Year's activities will span the three years 2007-2009.

The International Year of Planet Earth was approved by general acclamation of the General Assembly, and no vote was taken.

The Year's purpose, encapsulated in its strapline Earth sciences for society, is to:

- * Reduce risks for society caused by natural and human-induced hazards
- * Reduce health problems by improving understanding of the medical aspects of Earth science
- * Discover new natural resources and make them available in a sustainable manner
- * Build safer structures and expand urban areas, utilizing natural subsurface conditions
- * Determine the non-human factor in climatic change
- * Enhance understanding of the occurrence of natural resources so as to contribute to efforts to reduce political tension
- * Detect deep and poorly accessible groundwater resources
- * Improve understanding of the evolution of life
- * Increase interest in the Earth sciences in society at large
- * Encourage more young people to study Earth science in university

The Year aims to raise \$20 million from industry and governments and will spend half on co-funding research, and half on Outreach activities. It will be the biggest ever international effort to promote the Earth sciences.

Apart from researchers, who are expected to benefit under the Science Programme, the principal target groups for the Year's broader messages are:

- * Decision makers and politicians who need to be better informed about how Earth scientific knowledge can be used for sustainable development
- * The voting public, which needs to know how Earth scientific knowledge can contribute to a better society
- * Fellow geoscientists, who are very knowledgeable about various aspects of the Earth but who need help in using their knowledge for the benefit of the world's population.

The research themes of the year, set out in 10 science prospectuses (Note 2) were chosen for their societal relevance, multidisciplinary and outreach potential. The Year has 12 Founding Partners (Note 3), 23 Associate Partners (Note 4),

and is backed politically by 97 countries representing 87% of the world's population (Note 5). The Year was promoted politically at UNESCO and at the United Nations in New York by the People's Republic of Tanzania.

The Year is now open to Expressions of Interest from researchers within each of its 10 themes. The Outreach programme of the year is also now open to expressions of interest, and will work in a similar way by receiving and responding to bids for support from individuals and organisations worldwide.

The Year's Project Leader, former IUGS President Professor Eduardo F J de Mulder, said:

"Around the shores of the Indian Ocean, some 230,000 people are dead because the world's governments have not yet grasped the need to use geoscientists' knowledge and understanding of the Earth more effectively. Yet that knowledge is readily available in the practical experience and publications of some half a million Earth scientists all over the world, a professional community that is ready and willing to contribute to a safer, healthier and wealthier society if called upon by politicians and decision makers. The International Year of Planet Earth (2007-2009) aims to contribute to the improvement of everyday life, especially in the less developed countries, by promoting the societal potential of the world's Earth scientists."

The International Year of Planet Earth has been in planning since 2001. The Year's Science Committee is chaired by Prof. Edward Derbyshire (Royal Holloway) and its Outreach Committee by Dr Ted Nield (Geological Society of London).

The International Year of Planet Earth project was initiated jointly by the International Union of Geological Sciences (IUGS) and the United Nations Educational Scientific and Cultural Organisation (UNESCO). The UN press release reads: "By a draft on the International Year of Planet Earth, 2008, which the Committee approved without a vote on 11 November, the Assembly would declare 2008 the International Year of Planet Earth. It would also designate the United Nations Educational, Scientific and Cultural Organization (UNESCO) to organize activities to be undertaken during the Year, in collaboration with UNEP and other relevant United Nations bodies, the International Union of Geological Sciences and other Earth sciences societies and groups throughout the world. Also by that draft, the Assembly would encourage Member States, the United Nations system and other actors to use the Year to increase awareness of the importance of Earth sciences in achieving sustainable development and promoting local, national, regional and international action".

Opportunities for Europe-wide Collaborations - ESF Calls for proposals

ESF published call for proposals for all 2006 activities.

22 February, 2006.- Proposal announcements and submission are given for the following activities:

Proposals for ESF Exploratory Workshops

Small, interactive group sessions aiming to open up new directions in research or to explore emerging research fields. Proposals should demonstrate the potential to generate follow-up research activities.

Award will be to a max. value of €15 000

Submission open from: 1st March 2006

Deadline for submitting proposals: 2nd May 2006

Awarded workshops should take place during 2007

For further information: www.esf.org/workshops

EUROCORES (European Science Foundation Collaborative Research)

The scheme provides a framework to bring together national research funding organisations to support European research.

THEMES: The EUROCORES Theme Call is an important step to identify new areas for European collaborative research across all scientific fields. This creates future funding opportunities by developing the themes for new EUROCORES programmes.

Submission open from: March 2006 (expected)

Deadline for submitting proposals: 1st June 2006

PROJECTS: Each year a call for Collaborative Research Projects (CRPs) is announced, based on EUROCORES themes selected the previous year.

For further information: www.esf.org/eurocores

Proposals for ESF Research Networking Programmes

Long term networking activities bringing together nationally funded research groups, to address a major scientific or research infrastructure issue. Proposals must show the potential to be carried out at the European level.

Award will be to a max. value of up to €120 000 annually, normally 4-5 years

Submission open from: 1st July 2006

Deadline for submitting proposals: 30th October 2006

New Programmes should be launched from 1st January 2008

For further information: www.esf.org/programmes

Applications for EURYI Awards

These awards enable outstanding young scientists in any area of scientific research, from any country in the world, to create their own research teams at European universities and other research institutions. EURYI is a joint initiative of Eurohorcs and ESF. The 4th EURYI Call is expected to open later this year.

Award will be to a max. value of up to €1 250 000 over a five-year period

Submission open from: 1st September 2006 (expected)

Deadline for submitting proposals: 30th November 2006

For further information: www.esf.org/euryi

Also during 2006:

ESF Research Conferences will be announcing a separate call in the spring. For further information: www.esf.org/conferences

COST (European CO-operation in the Field of Scientific and Technical Research) will be announcing their first open call this year. For further information: www.cost.esf.org

COST and the management and networking of EURYI and EUROCORES are supported by grants from the European Commission.

For information on all ESF activities, please go to www.esf.org

R/V Maria S. Merian first expedition starts on 16th of February

Maria S. Merian, which is capable of navigating the edges of the polar ice cap, replaces the Alexander von Humboldt R/V, which retired at the end of 2004.

9 February 2006.- The new research vessel Maria S. Merian, entered service today. It will be leaving from the Baltic Sea Research Institute Warnemünde for its first research expedition in the Baltic Sea on 16 February. It will be carrying out biogeochemical investigations in the central and northern basin regions of the Baltic Sea, in particular to provide information about the dynamics of oxygen depletion in the deep waters of

the central Baltic Sea basin and the function of the northern Baltic Sea as a transfer area for terrestrially introduced compounds. Researchers from the Baltic Sea Research Institute Warnemünde, and the universities of Plymouth/United Kingdom, Stockholm/Sweden, Umea/Sweden and Helsinki/Finland will be participating in this first expedition.

The expedition schedule for the new research vessel over

2006 foresees traveling to the Gulf of Cadiz, the North Atlantic, the Norwegian Sea and East Greenland, among other destinations. The Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) has been funding the new research vessel since 2003 as a central research facility. The DFG covers 70% of the operating costs of approximately EUR 5-6 mil-

lion per year, and the German Federal Ministry of Education and Research funds the remaining 30%. The Maria S. Merian, which is capable of navigating the edges of the polar ice cap, replaces the Alexander von Humboldt, which retired at the end of 2004, and the previously decommissioned research vessels Valdivia and Victor Hensen.

Descartes Prizes for Research & Science Communication – 2005 Winners announced

European research team in climate change among winners.

EU Commissioner for Science and Research, Janez Potočnik awarded the prizes at a high level ceremony in London. The €1,000,000 Descartes Research Prize was shared this year between five pan-European teams. Complementing the Descartes Prize for Research, the €250,000 Descartes Prize for Science Communication, now in its the second year, was shared between five science communicators for their success in bringing science and technology to wider audiences in Europe.

For the Descartes Research Prize, the Grand Jury, chaired by Ene Ergma, Vice President of the Academy of Sciences of Estonia and President of the Estonian Parliament, chose five laureates from a highly competitive field of 85 entries. The teams will receive €200,000 each.

Among the winners was the CECA project team for breakthrough findings on climate and environmental change in the Arctic. The project leader was Professor Ola M. Johannessen from the Nansen-Mohn-Sverdrup Center/Geophysical Institute, University of Bergen, with Professor Lennart Bengtsson, Max-Planck Institute of Meteorology, Hamburg, Germany and Dr. Leonid Bobylev, Nansen Center in St. Petersburg, Russia as partners. The main conclusions from the CECA project show that the Arctic sea ice cover is reduced by 3% per decade from the 1970s and simulations with global climate models indicate that the sea ice in the Arctic will disappear during summer with a doubling of the CO₂-emissions, which probably will happen by the end of this century. Furthermore, the low pressure systems will increase in intensity with increasing atmospheric greenhouse gases, and consequently the weather in northern Europe and Norway will be warmer, wetter and wilder. It is also shown in CECA that the Greenland Ice Sheet increased from 1992 by 6 cm/year above 1500 meters above sea-level due to increased precipitation (snow) during winter - the Greenland Ice Sheet is a wildcard in the climate system. Increased

melting of its ice sheet in the future will influence the oceanic circulation and potentially lead to a reduced Gulf Stream on a temporal scale of several hundreds years. The Gulf Stream "heats" today Europe with 6°C compared to the mean zonal average temperatures. These climate variations will have consequences for fisheries, oil- and gas exploration and transportation at sea. The Descartes award money to the CECA team will be spent on further education of young Russian PhD-students – which was well received during the opening day.

Descartes Science Communication Prize

The second Descartes Prize, the Descartes Communication Prize, was awarded to five leading personalities for their achievements in making science accessible and interesting for the European public. The winners sharing the €250,000 Prize are:

- * Carl Johan Sundberg from Sweden, for his lifelong enthusiasm for explaining science in a clear, understandable way;
- * Anja C. Andersen the young astrophysicist from the Dark Cosmology Center, Copenhagen University for her exceptional gift for presenting the complexities of science to a popular audience;
- * Jos Van Hemelrijck from VRT Television, Belgium, for producing "Overleven", an innovative science TV series which follows the work and personalities of scientists as they solve key scientific enigmas;
- * the author Bill Bryson for his highly inspiring, innovative and entertaining book A Short History of Nearly Everything; and
- * Michael Seifert from Universität Tübingen, for the "Children's University", a highly successful series of lectures designed to stimulate young people's interest in studying science.

IODP Scientists Acquire Climate Records off Tahiti Coast

Investigators Retrieve Textbook-Quality Coral Fossil Sampling to Document History of Paleoclimatic Change

March 2, 2006, Bremen, Germany.- An international team of scientists, supported by the Integrated Ocean Drilling Program, reunited at the University of Bremen to analyze a trove of coral fossil samples retrieved from Tahitian waters during October and November 2005. Two weeks ago, led by chief scientists from France and Japan, the science party started their year-long analysis of 632 meters of fossil material retrieved from 37 boreholes drilled beneath the seafloor. The initial conclusion is that the IODP Tahiti Sea Level Expedition has assembled the most accurate physical evidence available today of changes in sea level during the last deglaciation, including a full record of temperature and salinity changes in the southern Pacific.

Co-chief scientist Gilbert Camoin, of CEREGE, a geoscience research center in France, summarized the expedition's success: "Tahiti has given us a treasure of records that archive sea level change over approximately the last 20,000 years. Because corals are ultra-sensitive to environmental change, we have been able—by splitting lengths of coral reef cores we acquired—to get better, more accurate descriptions of reef growth during the sea level rise that occurred after the last glacial maximum, 23000 years ago." Camoin explains that Tahiti was chosen for this expedition because of its unique geology and its location: a relatively stable, volcanic island, Tahiti is subsiding at a rate of just .025 mm per year, in the southern Pacific far away from the previously glaciated regions. "Tahiti presents a microcosm of what's happening globally in paleoclimatology today," he says.

Japanese co-chief scientist Yasufumi Iryu, of Tohoku University, praises the quality of the cores obtained. "The longest continuous coral core we collected is 3.5 meters long," he confirms. "It represents 350 years of coral growth." Providing a reliable climate record with no gaps, massive coral samples—just five percent of the samples obtained—are highly valued by scientific investigators as they reconstruct climate variability and piece together frequency and amplitude of climatic anomalies such as El Niño.

"Our goal to acquire high-resolution archival paleoclimate records has been met," says Camoin. "Examining the massive coral cores retrieved from 40 to 120 meters below sea level, we identified grooved pairs of light and dark bands, each pair measuring a centimeter in width, and each representing one year of growth." According to Camoin, the coral fossils record age in their grooves. "Using radiometric methods, we are able

to determine a coral fossil's age within 30 years."

Iryu, who specializes in El Niño anomalies, agrees that the age and water depth information found archived in the coral reef cores is simple, but crucial. In addition, "we measured live microbes (bacteria) living in the spaces within the deep fossil reefs. These samples," he confirmed, "have been collected and frozen for DNA sequencing."

"Coral reefs comprise the richest ecosystem on Earth," says Camoin, "and the most fragile." But coral reefs are diminishing, he notes: half of all reefs are expected to disappear in the next few decades. "Coral reefs are playing a prominent role in global matter cycles," Camoin asserts.

IODP Expedition 310 was conducted by the European Consortium for Ocean Research Drilling (ECORD), through ESO, one of IODP's three regional drilling operators and the program's specialist in mission-specific platform operations. ECORD represents 17 nations and provides support to IODP as a contributing member. A list of participants and their contact information is available at www.ecord.org/exp/tahiti/310.html.

The Integrated Ocean Drilling Program is an international ocean research program that promotes scientific advancement of the Earth through monitoring and sampling subseafloor environments. IODP receives its primary funding from the U.S. and Japan, through the National Science Foundation and the Ministry of Science, Education, Culture, Sports, Science and Technology, respectively. For photos or more program information, visit www.iodp.org.

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Press release from the DFG Research Center Ocean Margins, Bremen, Germany
http://www.rcom.marum.de/English/Press_Releases_2006.html

DFG Study Reveals Increasing Acceptance and Importance of Open Access

Of these, young researchers in the natural, life and engineering sciences expressed themselves more strongly in favour of promoting open access publications than their older colleagues.

9 January 2006.- The dissemination of research findings on special, free-to-user or open access platforms on the internet is approved by a majority of research scientists in all disciplines. However, only around ten percent have actually used the opportunity to make their own articles available in this way. These are the findings of a survey of researchers' publishing habits and means of accessing information, commissioned by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) in the summer of 2004. The study, which reveals some important insights into a change taking place in the publishing landscape, was published in German in July 2005 and is now available in English.

Over one thousand DFG-funded scientists from all disciplines took part in the survey. Of these, young researchers in the natural, life and engineering sciences expressed themselves more strongly in favour of promoting open access publications than their older colleagues. In the humanities and social sciences, the result was exactly the reverse. Above

all, secondary publications or "self-archiving" on open access platforms of scientific papers that have already appeared in conventional journals met with widespread approval. In the opinion of the respondents, subject-specific servers were the best suited to this purpose. Some of the scientists expressed reservations about the status of open access publications in specialist circles and worried about the long-term availability of electronic publications. However, these doubts decreased in line with the experience researchers already had of online publications.

The results of the study, entitled "Publishing Strategies in Transformation?", are available at www.dfg.de/lis.

Reference URL

http://www.dfg.de/en/news/press_releases/index.html

Europe's worst peacetime industrial fire in 50 years

Firefighters began laying down 250 000 litres of foam to control the blaze, which has been reported to be the largest industrial fire in Europe since 1945.



London is completely blanketed by the black plume of smoke from Europe's worst peacetime fire in this Envisat image, taken within five hours of the blaze beginning on December 12, 2005. (©: ESA)

This image was acquired at 10:45 GMT on Sunday morning by the Medium Resolution Imaging Spectrometer (MERIS), one of ten instruments aboard Envisat, Europe's largest satellite for environmental monitoring. This Full Resolution mode image has a spatial resolution of 300 metres, and shows the cloud spread across a span of around 140 km.

The pall of smoke comes from a fire at Buncefield oil depot on the outskirts of Hemel Hempstead. Buncefield is the fifth largest fuel storage depot in the UK, distributing millions of tonnes of petrol and other oil products per year, including aviation fuel to nearby Luton and Heathrow Airports.

Buncefield is located at the topmost part of the cloud, with light winds blowing the smoke south-west and south-east to cover a large part of Southern England.

The fire began with a series of explosions taking place on Sunday morning at around 06:00 GMT. Nobody was killed in the explosion but 42 people have been injured, and more than 2000 people have been evacuated from the vicinity of the depot.

All but seven out of 26 storage tanks at the depot burned – each tank contains more than 13 million litres of fuel.

The heat of the fire has driven smoke particles high into the sky, with aircraft reporting pollution reaching above 2750 metres, and the cloud stretching from East Anglia to Salisbury Plain.

ESA



The 30 December 2002 landslide-induced tsunamis in Stromboli

reconstruction of the landslides and tsunamis of December 30, 2002 on the island of Stromboli, Italy, based primarily on eyewitnesses' accounts.

This study focuses on the reconstruction of the landslides and tsunamis that occurred on December 30, 2002 on the island of Stromboli (southern Italy), based primarily on eyewitnesses' accounts. The paper represents one of the few examples in the published literature dealing with the detailed reconstruction of the characteristics and time evolution of a natural phenomenon based on reports of people who happened to witness the event. Due to the scarcity of the instrumental data set, the accounts turned out to be very precious and permitted to ascertain important details, such as that there were two main tsunamigenic landslides and that the first one detached underwater.

Article available free of charge at <http://www.copernicus.org/EGU/nhess/5/6/791.htm>

Tinti, S., Manucci, A., Pagnoni, G., Armigliato, A., and Zaniboni, F., The 30 December 2002 landslide-induced tsunamis in Stromboli: sequence of the events reconstructed from the eyewitness accounts, *Natural Hazards and Earth System Sciences*, 5, 763-775, 2005.

A review of severe convection in the context of hazards and the societal response to severe weather g service (DIFS) III

Worldwide implications of the experience with severe convective storms in the USA are discussed, with an emphasis on its relevance to the situation in Europe (2005 EGU Sergei Soloviev Medal Lecture).

This paper shows a review of severe convection in the context of geophysical hazards and the societal response to severe weather. This response depends on the ability to forecast the events but also on the infrastructure and information to allow a society to respond properly and in time to mitigate the hazard. However, societal responses to geophysical hazards are not only dependent on forecasting. Even perfect forecasts might not be sufficient for a meaningful societal response without the development of considerable infrastructure to allow a society to respond properly and in time to mitigate the hazard. Geophysical hazards of extreme magnitude are rare events, a

fact that tends to make funding support for appropriate preparations difficult to obtain. Worldwide implications of the experience with severe convective storms in the USA are discussed, with an emphasis on its relevance to the situation in Europe.

Article available free of charge at
<http://www.copernicus.org/EGU/nhess/5/5/691.htm>

C. A. Doswell III, Progress toward developing a practical societal response to severe convection (2005 EGU Sergei Soloviev Medal Lecture), *Natural Hazards and Earth System Sciences*, 5, 691 - 702, 2005.

Oxygenated VOCs in the background atmosphere

They account for up to 85% of all non-methane hydrocarbons (NMHCs) measured in marine air conditions, and they account for 80% of the loss of OH due to all organic gases combined.

Little is known about the occurrence of OVOCs (oxygenated VOCs) in the "background" atmosphere. The authors made the startling observation that they account for up to 85% of all non-methane hydrocarbons (NMHCs) measured in marine air conditions, and that they account for 80% of the loss of OH sink due to all organic gases combined. This is something quite unexpected and surprising: OVOCs have not been previously considered to be quite so important in clean marine air. OH is critical in determining the atmospheric lifetime of many gases, including climatically important gases such as methane. A detailed model incorporating an explicit chemical degradation mechanism indicated in situ formation during air mass transport was on timescales longer than the atmospheric lifetime of precursor hydrocarbons or primary emission. The period over which this process was significant was similar to

that of air mass motion on intercontinental scales, and formation via this route may reproduce that of a widespread diffuse source. The model indicates that continued short chain OVOC formation occurs many days from the point of emission, via longer lived intermediates of oxidation such as organic peroxides and long chain alcohols.

Article available free of charge at
<http://www.copernicus.org/EGU/acp/acp/5/1963/acp-5-1963.htm>

A. C. Lewis, J. R. Hopkins, L. J. Carpenter, J. Stanton, K. A. Read, M. J. Pilling, Sources and sinks of acetone, methanol, and acetaldehyde in North Atlantic marine air, *ACP*, 5, 1963-1974, 2005.



The IMBER Project

New project on the impacts of global change on the marine biogeochemical cycles and ecosystems

by Sophie Beauvais, Sylvie Roy and Julie Hall

Human activities are rapidly altering Earth System processes that directly and indirectly influence society. Informed decisions require an understanding of which parts of the Earth System are most sensitive to change, and the nature and extent of anticipated impacts of global change. In response to this need, the new IGBP-SCOR Integrated Marine Biogeochemistry and Ecosystem Research (IMBER) project has been formed, to focusing on ocean biogeochemical cycles and ecosystems. IMBER has been built on the successes of the now-complete JGOFS and the ongoing GLOBEC project. The IMBER vision is to provide a comprehensive understanding of, and accurate predictive capacity for, ocean responses to accelerating global change and the consequent effects on the Earth System and human society. We present here an overview of the scope of the IMBER science.

Introduction

The ocean has a vast capacity for storage and exchange of heat and gases and thus exerts a major control on the global climate. It is also the most extensive and yet least understood component of the Earth System. The past decade of internationally coordinated marine research has greatly increased our ability to describe and model the ocean's many biological, chemical and physical processes, however key biogeochemical and ecosystem questions remain unanswered and material sources and sinks are not fully understood. Previous research has quantified the global fluxes of major elements – with an emphasis on carbon – and has identified the organisms and processes central to the functioning of marine ecosystems. However, a newly emerging challenge, dictated by the society's need to understand and respond to the impacts of global change, is to determine the inter-relationships between biogeochemical cycles and ecosystems, and quantify and predict responses of the marine system to natural and anthropogenic perturbations. It is also of fundamental importance to investigate the potential feedbacks to the Earth system, including to the human system (Figure 1). The goal of IMBER is “to investigate the sensitivity of marine biogeochemical cycles and ecosystems to global change, on time scales ranging from years to decades”.

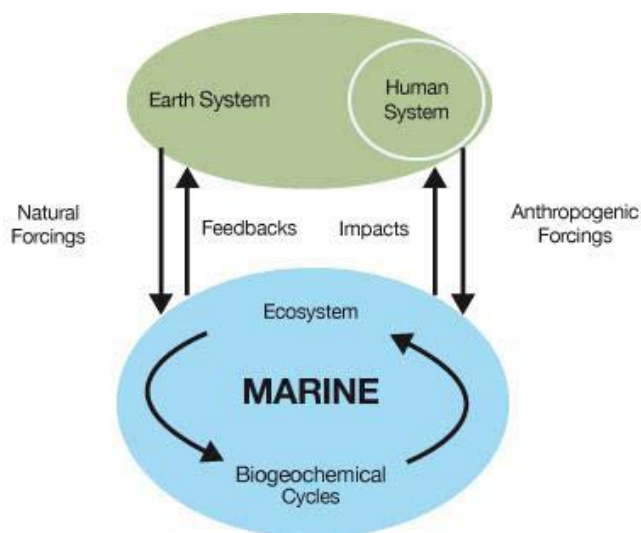


Figure 1. Essential features of IMBER, including impacts of natural climatic and anthropogenic influences on marine biogeochemical cycles and ecosystems, and their interactions and feedbacks to the Earth System including the human system.

Research Themes

The IMBER Science Plan and Implementation Strategy, published in 2005, is structured around four major research themes. Theme 1 focuses on identifying and characterising interactions of the key biogeochemical and ecosystem processes that will be impacted by global change. Central to IMBER goal, Theme 2 will develop a predictive understanding of how marine biogeochemical cycles and ecosystems respond to complex forcings, such as large-scale climatic variations, changing physical dynamics, carbon cycle chemistry and nutrient fluxes, and the impacts of marine harvesting. Theme 3 investigates the roles of ocean biogeochemistry and ecosystems in impacting the larger Earth System through direct and indirect feedbacks. Finally, Theme 4 integrates natural and social sciences, drawing on information from the previous three themes to investigate key interactions with the human system and the options for mitigating or adapting to the impacts of global change on marine biogeochemical cycles and ecosystems.

Theme 1 What are the key marine biogeochemical cycles and related ecosystem processes that will be impacted by global change?

Identifying and understanding fundamental interactions between marine biogeochemistry and ecosystems is a major intellectual challenge for IMBER. It is also important that research extends to regions such as continental margins associated with coastal upwelling, high latitude and polar regions, and tropical and subtropical oligotrophic gyres as they are predicted to be more sensitive to global change and hot spots of biogeochemical-ecosystem coupling. Three issues have been identified as the key science that will underpin the other project themes.

Knowledge of the connections between biological, physical and chemical factors influencing nutrient uptake and remineralisation in the ocean is needed for construction of realistic predictive models. Micronutrients bioavailability is intimately tied to physical and chemical speciation of elements in seawater. For example, global and regional changes in seawater pH, oxygen levels and other factors could lead to widespread changes in speciation and partitioning of important elements. Over the past decade, a better understanding of the chemical speciation of iron has changed our conceptual idea of its interactions with biological systems (Turner and Hunter, 2001). Similarly, we need to understand the sensitivity of other micronutrient speciation to reduction-oxidation (redox) conditions, and how this speciation affects bioavailability, toxicity, solubility and other critical properties. Moreover, to understand how food web structure and function may impact production, remineralisation, transport and transformation of organic matter, we need better descriptions of the cycles of macro- and micronutrients in marine ecosystems, the relationships between the genetic, morphological, physiological and behavioural characteristics of organisms, and interrelated major biogeochemical cycles.

Reactions and transfer of macro- and micronutrients, particle-reactive elements, and isotopes occurring at ocean interfaces (coastal-open ocean, and sediment-water) and across ocean boundaries (epipelagic and mesopelagic) represent the fundamental means whereby changes in source and sink strengths propagate into the marine environment and alter the oceanic biogeochemical state. For example, processes occur-

ring in the mesopelagic layer control the remineralisation of organic material produced in the euphotic zone and the release of material to the deep waters and seafloor. Furthermore, many unique processes on the continental shelf and slope transport and transform material entering the open ocean and contribute to the high spatial and temporal variability of these systems (Figure 2). Advances are needed in the understanding of how transfer of materials and energy across these interfaces influences, and is influenced by, marine biogeochemical and ecosystem interactions.

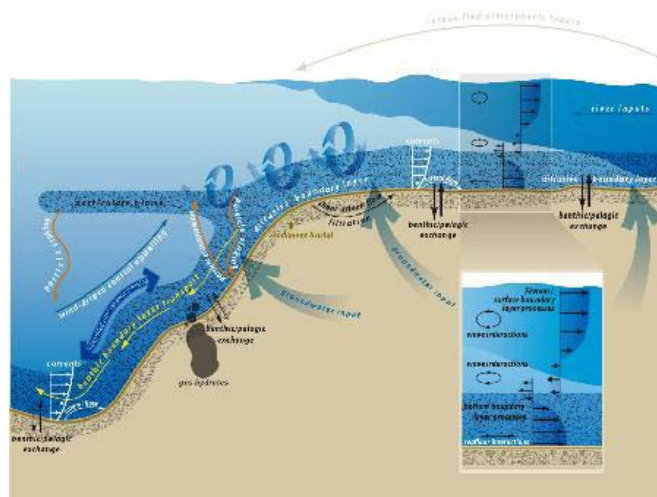


Figure 2. Schematic depiction of processes impacting coastal benthic exchange dynamics, many of which are sensitive to global change with local- and global-scale consequences for biogeochemical cycles and food webs. This figure was developed from a workshop that sought to define the role of coastal observing systems in the study of coastal benthic processes; an NSF-funded initiative arose from the workshop as the ORION Program's (www.orionprogram.org) inaugural research effort. From Reimers et al., (2004).

In keeping with the IMBER goal, research must approach marine food webs as comprehensive and integrated systems, from viruses to top predators. Perturbations at any point in these systems can propagate both up and down through trophic levels. More specifically, ecosystems changes may occur on a wide range of time scales in response to human activities and inputs, as well as in response to short- and long-term natural cycles (Chavez et al., 2003) in the open ocean and at continental margins. In the recent years, it has also become clear that many characteristics of global elemental cycles depend on specific properties of key species or functional groups. For example, species invasion (Grosholz, 2002) or harmful algal blooms occurring with increasing frequency particularly in coastal waters have already devastated some marine ecosystems. In addition, the composition of food webs in term of how many and which species are present, as well as their interactions, can have significant impacts on ecosystem dynamics (Irigoien et al., 2004) and biogeochemical cycles (Legendre and Rivkin, 2002; Quigg et al., 2003). Thus, it is important to quantify the flow of energy and materials through ecosystems and to characterise important cascading effects resulting from anthropogenic and natural forcing.

Theme 2

What are the responses of key marine biogeochemical cycles, ecosystems and their interactions, to global change?

IMBER supports an integrated approach to understand and predict the consequences of global change for ocean food webs and biogeochemistry, by examining the potential synergistic and antagonistic effects of key variables including physical forcing, CO₂ and pH, nutrients supply, and marine harvesting.

IMBER seeks an improved understanding of the impacts of climate-induced changes through physical forcing such as circulation, ventilation and stratification, and of seasonal to inter-decadal variability on food web-biogeochemical interactions. For example, decadal climate modes (e.g. ENSO, NAO and PDO) and related teleconnections are likely to introduce signals into the ocean system, such as variations in heat content (Levitus et al., 2005; Figure 3), changes in carbon storage in the subtropical thermocline (Bates et al., 2002) and changes in iron delivery as dust (Prospero, 1999). The nature and degree of the effects of changes in surface temperature and light environment on marine ecosystems, including on productivity, biodiversity, and biogeographical ranges will also be carefully evaluated. Moreover, IMBER aims at establishing how global changes in, for example, ocean stratification, acidity or nutrient availability, will cascade through marine ecosystems via extreme and episodic events.

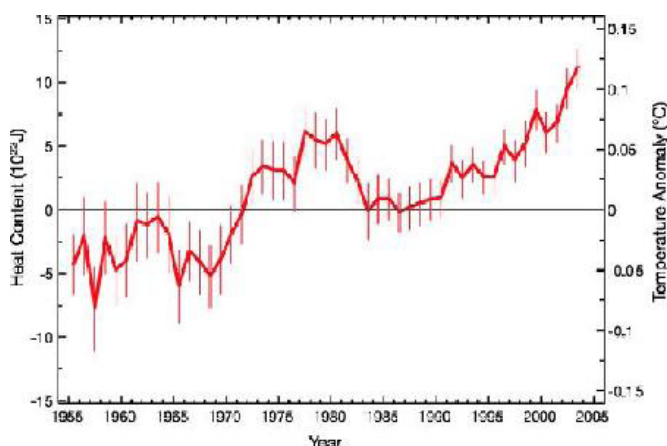


Figure 3. Time-series of yearly ocean heat content for the 0–700 m layer. Each yearly estimate is plotted at the mid-point of the year. From Levitus et al. (2005).

Projected CO₂ emissions to the atmosphere over the next century will approximately double surface seawater CO₂ concentrations, with a resulting drop in pH of about 0.35 (Wolf-Gladrow et al., 1999). By 2250, ocean pH is projected to decrease by 0.77 (Calderia and Wickett, 2003) while, most surface waters currently have a pH of 8.1 ± 0.1 (Figure 4). IMBER seeks a better understanding of the expected CO₂-driven changes in carbonate chemistry and their effects on marine organisms and metabolism in various ways and ultimately on biogeochemical cycles, ecosystems and their interactions. In addition to this direct effect of changing carbonate chemistry,

IMBER also focuses on the indirect changes via pH on the availability and speciation of macro- and micronutrients and toxic trace metals on ocean ecosystem structure and function. A broad understanding of the CO₂ and pH sensitivity of marine biogeochemical cycles and ecosystems, ranging from organisms and their metabolic processes to overall food web structure and function is being developed.

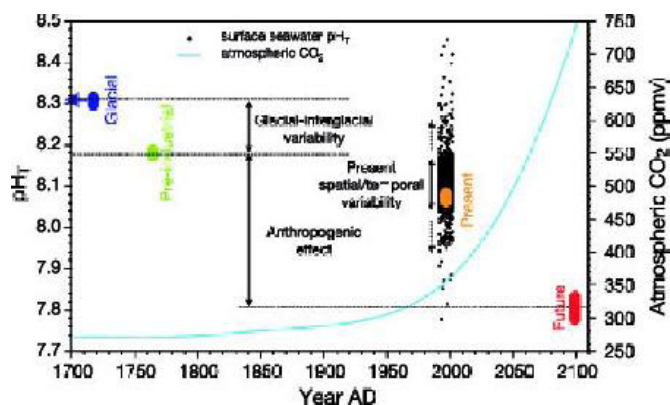


Figure 4. Surface seawater pH values and atmospheric CO₂ concentrations. Surface seawater pH values include 3000 values for 1990–2002 (from the upper 25 m across all oceans) calculated from measured DIC and alkalinity; typical values for glacial times (blue), pre-industrial times (green) and the present (orange); and predicted future values (red). Future values are based on predicted atmospheric CO₂. Atmospheric CO₂ values are based on historic measurements and an exponential future increase from simple scenario calculations. Prepared by Arne Körtzinger on the basis of WOCE data (Schlitzer, 2000).

Another forcing is due to the fact that inputs of nitrogen and phosphorus from land to the ocean are several times their natural values and another two-fold increase is projected to occur by the middle of this century (Figure 5). IMBER will develop a quantitative understanding of the coupled responses of marine biogeochemical cycles and food webs to such anthropogenic additions of both macro- and micronutrients. For example, continuing global expansion of oxygen-depleted zones resulting from eutrophication is expected to lead to an increase in denitrification rates (Diaz and Rosenberg, 1995). This change will be associated with remobilisation of phosphorus and micronutrients from continental shelf sediments, resulting in a decrease in the N:P ratio in the water column, and an increase in the availability of micronutrients such as iron for assimilation by organisms. How changes in the abundance, distribution and stoichiometry of nutrient elements affect food web structure and function, and how will increases in hypoxia and anoxia affect food webs and cycles of key macro- and micronutrients, are central questions to IMBER.

Selective exploitation of marine organisms can change the size and age structure of populations, with subsequent impacts on population dynamics and hence ecosystems via food web interactions (Marshall, 1999; Köster et al., 2001). Impacts of harvesting on food webs from end-to-end and the extent of trophic cascades are priority questions. This issue will be approached in close collaboration with the Global Ocean

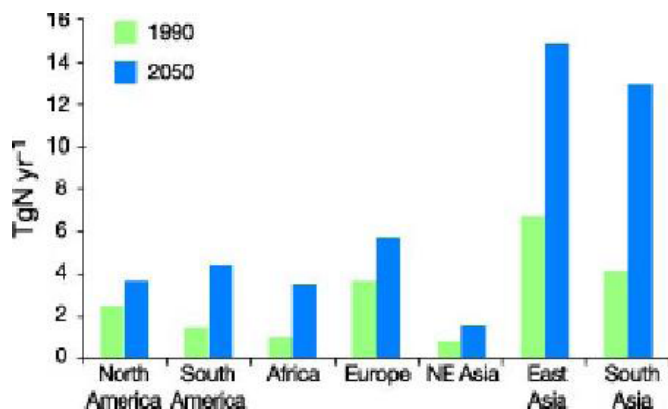


Figure 5. Predicted riverine fluxes of dissolved inorganic nitrogen for various regions in 1990 and 2050 for the “business-as-usual” scenario. From Seitzinger et al. (2002); reprinted with permission from Estuarine Research Fed.

Ecosystem Dynamics (GLOBEC) project, to ensure effective end-to-end food web research and to take advantage of ongoing and planned GLOBEC research. A particular interest is to understand how harvesting-induced changes in the food web structure will impact biogeochemical cycles and what are the impacts of harvesting living marine resources on end-to-end food webs (Figure 6).

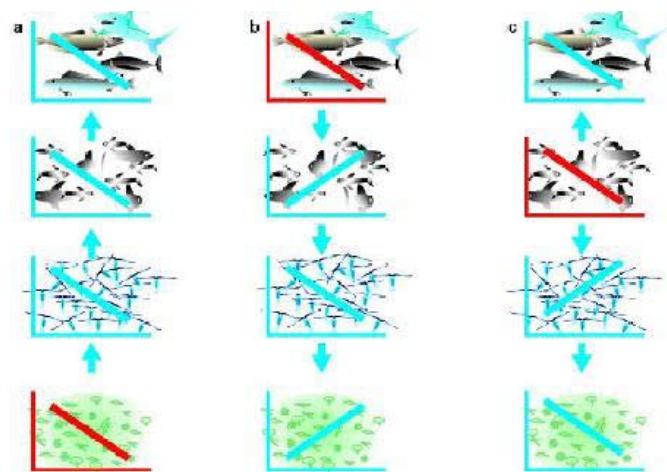


Figure 6. Schematic responses of a simplified four-level (phytoplankton, zooplankton, forage fish, predatory fish) marine food web: (a) bottom-up control, (b) top-down control, (c) wasp-waist control. Red lines indicate a anthropogenically- or environmentally-driven decrease in biomass at one trophic level with subsequent changes at other trophic levels (blue lines). From Cury et al. (2003); reprinted with permission from Food and Agriculture Organisation of the United Nations.

The combined effect of all these global change impacts may be very different from the sum of the individual effects, and at present there is no way to reliably predict how concurrent changes in multiple factors will affect marine ecosystem structure and function. The challenge is to provide an understanding of the net effects of global change on marine biota

and to supply vital information on how biogeochemical and ecosystem changes are linked through feedback mechanisms to oceanic and atmospheric chemistry.

Theme 3 What are the roles of ocean biogeochemistry and ecosystems in regulating climate?

Modelling the potential feedbacks from marine biogeochemical cycles and ecosystems to the Earth System will require detailed understanding of local and regional manifestations of global change in the ocean, and their interactions with other parts of the Earth System. This theme will focus on the present and future capacity of the ocean to control the climate system via atmospheric composition and ocean heat storage.

The most direct, and probably strongest, feedback from marine biogeochemistry and ecosystems to the Earth System will occur through oceanic regulation of atmospheric CO₂. So far, the anthropogenic increase of atmospheric CO₂ has led to enhanced accumulation of carbon in the upper and intermediate ocean (Sabine et al., 2004; Figure 7). The impacts of global change on the ocean’s carbon cycle could be mediated in many ways including vertical supply of nutrients, high-latitude convection activity and the strength of the thermohaline circulation, changes in calcification, efficiency and elemental composition of the biological pump, and the supply of macro- and micronutrients to the ocean. It is currently unclear what the integrated effects of these changes will be on the ocean carbon cycle. Consequently, IMBER seeks to demonstrate how the expected changes in intermediate and deep-water ventilation and the meridional overturning circulation will affect the spatial and temporal scales of CO₂ storage in the ocean interior. Furthermore, IMBER will address the likely vulnerability of coastal and shelf zones, as well as how the impacts of global change in the continental margin may propagate into open ocean and thus affect the oceanic carbon cycle as a whole.

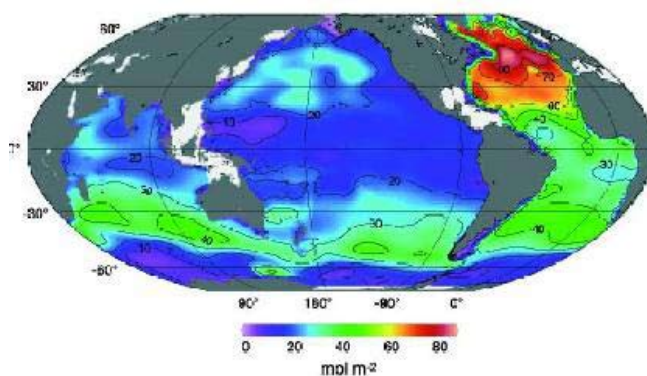


Figure 7. Column inventory of anthropogenic CO₂ in the ocean (mol m⁻²). Total inventory of shaded regions is 106 ± 17 PgC. From Sabine et al. (2004); reprinted with permission from American Association for the Advancement of Science.

Ecosystem feedbacks to ocean physics and climate also include direct feedbacks through changes in the ocean’s heat budget, and indirect effects such as changes in the carbon cycle and changes in oxygen minimum zones and their impacts on the nitrogen cycle. Upper-ocean heat budget and

ocean physics are likely to be affected by the marine food web structure through vertical distribution of phytoplankton species and their ability to absorb light and convert it to heat. A priority question for IMBER is to understand how the marine food webs structure and variability affect ocean and ice physics, and large-scale climate and its variability, via upper-ocean heat budget. In addition, it is believed that global change will impact nitrogen cycle especially through the transformations involving N₂O and ultimately its efflux to the atmosphere by altering the distribution of O₂ in the ocean (Codispoti et al., 2001). In this context of direct feedbacks to global warming, the impact of changes in oxygen minimum zones on N₂O sources, transport and out gassing is a focus of IMBER.

Theme 4

What are the relationships between marine biogeochemical cycles, ecosystems, and the human system?

This theme focuses on interactions between human and ocean systems. Its motivation stems from recognition that humans not only influence ocean systems, but that humans also depend on ocean systems for goods (e.g. oil, gas and minerals) and services (e.g. weather mediation, regulation of local and regional water quality, transportation, waste assimilation and global regulation of atmospheric concentration of CO₂). The theme goal is focussing on promoting an understanding of the multiple feedbacks between human and ocean systems, and to clarify what human institutions can do, either to mitigate anthropogenic perturbations of the ocean system, or to adapt to such changes. A major challenge is therefore to bring together scientists from a wide range of disciplines to identify areas of joint concern and interest, and to build an ongoing collaborative natural-social science research community. This theme is not as fully developed as the previous themes. An implementation plan including priority issues and questions to be addressed will be developed over the next 12 months.

Implementation

Working Groups and Task Teams

Working groups and task teams are an important mechanism for the implementation of the IMBER project. To date three groups have been appointed.

A cross-cutting End-to-End Food Webs task team is jointly sponsored with Global Ocean Ecosystems Dynamics (GLOBEC). The objectives of this group are to guide studies of integrated marine food webs extending from viruses to whales, and the impact of harvesting on end-to-end food webs and biogeochemical cycles. The initial activity of this groups is the development of a manuscript which lays out i) why we need to tackle end-to-end food webs in our studies at this time, ii) what the key challenges are and how we can meet them, and iii) how we can make headway in the experimental, observational and modeling components of marine end-to-end food webs, is in preparation.

Furthermore, recognizing the need for coordination of marine carbon research within IMBER and Surface Ocean-Lower Atmosphere Study project (SOLAS), the two projects have established a joint Ocean Carbon Working Group. The group is working closely with the International Ocean Carbon Coordination Panel (IOCCP). A joint SOLAS-IMBER Ocean Research

Implementation Plan has been produced and is available electronically on both projects' websites. This group is currently creating sub-groups to implement studies of the surface ocean CO₂ fluxes, interior ocean carbon storage and carbon cycle climate sensitivities and feedbacks.

Finally, a Capacity Building task team has been formed to develop a capacity building strategy and implementation plan that will be used by IMBER to guide capacity building issues. This strategy will take a broad view of capacity building and include increasing scientific capacity in developing countries and the training of students and young scientist from all countries.

Development of regional and national activities

Answering the broad interdisciplinary questions raised by IMBER requires an effort much larger than any single nation can mobilize. The development of regional and national projects is encouraged as a mechanism for implementation of IMBER research. To this date, major activities are developing to study the Southern Ocean, Indian Ocean, and marginal China Seas. Furthermore, over 15 countries have developed or in the process of developing IMBER research projects or have currently funded projects that will contribute results to the IMBER project. Strong collaboration with regard to studies of biogeochemical cycles and ecosystems are also being developed with both the European Network of Excellence for Ocean Ecosystems Analysis (EUR-OCEANS) and the integrated project CARBO-OCEAN (Marine carbon sources and sinks assessment).

Acknowledgements

We would like to thank IGBP and SCOR for their sponsorship of the IMBER project. We also acknowledge Centre National de la Recherche Scientifique (CNRS), Institut de Recherche pour le Développement (IRD), Université de Bretagne Occidentale (UBO), the Brittany Region and the European Institute for Marine Studies (IUEM) in Brest, for supporting the IMBER International Project Office (IPO).

For more information about the project or to receive our electronic Newsletter, we invite you to visit our website: <http://www.imber.info/> or e-mail: imber@univ-brest.fr.

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Sylvie Roy and Julie Hall

Name change for the international Network for the Detection of Stratospheric Change (NDSC)

Steering Committee letter to the science community
about the name change

by Dr. Michael J. Kurylo and Dr. Geir O. Braathen

NDSC changes its name to Network for the Detection of Atmospheric Composition Change to reflect expanded priorities and measurement capabilities

February 2006.-

Dear Colleagues,

As you know, the international Network for the Detection of Stratospheric Change (NDSC) was formed to provide a consistent standardized set of long-term measurements of atmospheric trace gases, particles, and physical parameters via a suite of globally distributed research stations.

Officially formalized and operational since 1991, the NDSC was set up during the late 1980s in response to the need to document and understand worldwide stratospheric perturbations resulting from increased anthropogenic emissions into the atmosphere of long-lived halogenated source gases with strong ozone-depleting and global-warming potentials.

The initial objective of the NDSC was to monitor, from pole to pole, the temporal evolution of the stratosphere, including its protective ozone layer, and to understand the causes (i.e., natural versus anthropogenic, chemical versus dynamical) of the observed changes and their impacts on the troposphere and at the ground. This dual goal of long-term global measurement and understanding has led to the implementation of a ground-based network of "primary" and "complementary" NDSC stations equipped with a suite of remote-sensing instruments, allowing the quasi-simultaneous study of a large number of chemical compounds and physical parameters.

Because of its worldwide dimension, the NDSC has been recognized as a major component of the international atmospheric research effort. As such, it has been endorsed by national and international scientific agencies, including the United Nations Environmental Programme (UNEP) and the International Ozone Commission (IOC) of the International Association of Meteorology and Atmospheric Physics (IAMAP). It also has been recognized by the World Meteorological Organization (WMO) as a major contributor to its Global Atmosphere Watch (GAW) Programme.

While the NDSC remains committed to monitoring changes in the stratosphere, with an emphasis on the long-term evolu-

tion of the ozone layer (its decay, likely stabilization, and expected recovery), its priorities and measurement capabilities have broadened considerably to encompass:

- detecting trends in overall atmospheric composition and understanding their impacts on the stratosphere and troposphere,
- establishing links between climate change and atmospheric composition,
- calibrating and validating space-based measurements of the atmosphere,
- supporting process-focused scientific field campaigns, and
- testing and improving theoretical models of the atmosphere.

Many members of the atmospheric science community have noted that this expanded emphasis is not adequately reflected in the name of the Network and, in fact, that the word "Stratospheric" has led to a mistaken impression that the focus of NDSC activities is that of a "solved problem" (i.e., stratospheric ozone depletion). Hence, to better reflect the free tropospheric and stratospheric coverage of Network measurement, analysis, and modeling activities, as well as to convey the linkage to climate change, the Steering Committee voted to change the name of the network to the Network for the Detection of Atmospheric Composition Change (NDACC). The NDSC web site soon will be changed to <http://www.ndacc.org>.

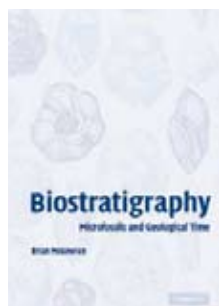
We look forward to your continued participation and support of NDACC.

Sincerely,

Dr. Michael J. Kurylo and Dr. Geir O. Braathen,
Co-Chairs, NDSC Steering Committee



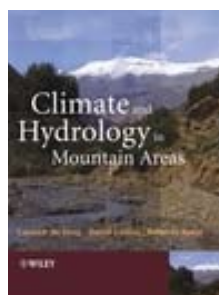
Biostratigraphy. Microfossils and Geological Time



Authors: Brian McGowran
 Publisher: Cambridge University Press
 ISBN: 0521837502
 YEAR : 2005
 EDITION : 1st
 PAGES : 480
 PRICE : 71.00 €

Using fossils to tell geological time, biostratigraphy balances biology with geology. In modern geochronology - meaning timescale-building and making correlations between oceans, continents and hemispheres - the microfossil record of speciations and extinctions is integrated with numerical dates from radioactive decay, geomagnetic reversals through time, and the cyclical wobbles of the earth-sun-moon system. This important modern synthesis follows the development of biostratigraphy from classical origins into petroleum exploration and deep-ocean drilling. It explores the three-way relationship between species of microorganisms, their environment and their evolution through time as expressed in skeletons preserved as fossils. This book is essential reading for advanced students and researchers working in basin analysis, sequence stratigraphy, palaeoceanography, palaeobiology and related fields.

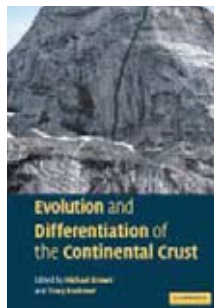
Climate and Hydrology of Mountain Areas



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

A comprehensive overview of interaction of the major hydrological and meteorological processes in mountain areas ie Cryosphere and Climatic Change, Snow Melt and Soil Water, Run-off and Floods, Water fluxes and Water Balance, Hydro-meteorological Coupling and Modelling. Each section will review recent research in the field and illustrate key interactions with case studies from mountainous regions in Europe, The Americas and Central Asia.

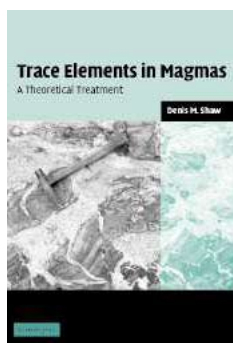
Evolution and Differentiation of the Continental Crust



Authors: Michael Brown (ed.)
Publisher: Cambridge University Press
ISBN: 0521782376
YEAR : 2006
EDITION : 1st
PAGES : 562
PRICE : 114.00 €

The evolution and differentiation of the continental crust pose fundamental questions that are being addressed by new research concerning melting, melt extraction and transport through the crust, and the effect of melt on crustal rheology. Insights into crustal processes have been triggered by combined field observations and laboratory experiments, supported by developments in numerical modeling. Opening chapters cover the structure of the continents, controls on heat production and the composition, differentiation and evolution of continental crust. The role of arc magmatism in the Phanerozoic and crustal generation in the Archean are addressed. Two regional examples illustrate the modification and differentiation of continental crust. Process-oriented chapters cover melting, melt extraction and migration, and crustal rheology. The final chapters review the emplacement and growth of plutons and outline a modeling approach to the physical controls on crustal differentiation. This is a valuable summary of recent advances for graduate students and research workers.

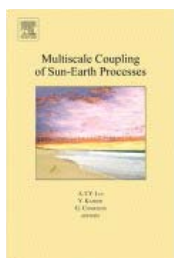
Trace Elements in Magmas. A Theoretical Treatment



Authors: Denis M. Shaw
Publisher: Cambridge University Press
ISBN: 0521822149
YEAR : 2006
EDITION : 1st
PAGES : 254
PRICE : 85.00 €

Studying the distribution of certain elements, present in very low concentrations in igneous and metamorphic rocks, can yield important clues about the rocks' origin and evolution. Trace elements do not give rise to characteristic minerals, but their behaviour can be modelled to provide historical information about the source magma. This book brings together the essential theory required to understand the behaviour of trace elements in magmas, and magma-derived rocks. It presents a wide range of models and mechanisms which explain trace element distribution. Trace Elements in Magmas provides an excellent resource for graduate students, petrologists, geochemists and mineralogists, as well as researchers in geophysics and materials science.

Multiscale Coupling of Sun-Earth Processes



Authors: A.T.Y. Lui, Y. Kamide and G. Consolini (eds.)

Publisher: Elsevier

ISBN: 0444518819

YEAR : 2005

EDITION : 1st

PAGES : 450

PRICE : 135.00 €

Many approaches exist for scientific investigations and space research is no exception. The early approach during which each space plasma region within the Sun-Earth system was investigated separately with physics-based tools has now progressed to encompass investigations on coupling between these regions. Ample evidence now exists indicating the dynamic processes in these regions exhibit disturbances over a wide range of scales both in time and space. This new reckoning naturally leads to an emerging perspective of probing these natural phenomena with concepts and tools developed in modern statistical mechanics for physical processes governing the evolution of out-of-equilibrium and complex systems.

These new developments have prompted a topical conference on Sun-Earth connection, held on February 9-13, 2004 at Kailua-Kona, Hawaii, USA, with the goal of promoting interactions among scientists practicing the traditional physics-based approach and those utilizing modern statistical techniques.

This monograph is a product of this conference, a compilation of thirty-nine articles assembled into seven chapters: (1) multiscale features in complexity dynamics, (2) space storms, (3) magnetospheric substorms, (4) turbulence and magnetic reconnection, (5) modeling and coupling of space phenomena, (6) techniques for multiscale space plasma problems, and (7) present and future multiscale space missions. These articles show a diversity of space phenomena exhibiting scale free characteristics, intermittency, and non-Gaussian distributions of probability density function of fluctuations in the physical parameters of the Sun-Earth system. The scope covers the latest observations, theories, simulations, and techniques on the multiscale nature of Sun-Earth phenomena and underscores the usefulness in cross-disciplinary exchange needed to unravel the underlying physical processes, which may eventually lead to a possible unified description and

Volcanoes and the Environment



Authors: Joan Marti and Gerald G. J. Ernst (eds.)

Publisher: Cambridge University Press

ISBN: 0521592542

YEAR : 2005

EDITION : 1st

PAGES : 488

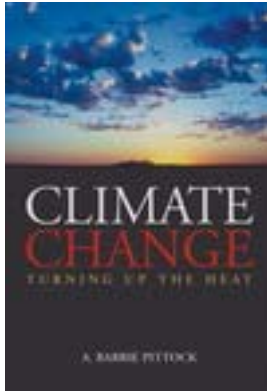
PRICE : 71.00 €

Volcanoes and the Environment is a comprehensive and accessible text incorporating contributions from some of the world's authorities in volcanology. This book is an indispensable guide for those interested in how volcanism affects our planet's environment. It spans a wide variety of topics from geology to climatology and ecology; it also considers the economic and social impacts of volcanic activity on humans. Topics covered include how volcanoes shape the environment, their effect on the geological cycle, atmosphere and climate, impacts on health of living on active volcanoes, volcanism and early life, effects of eruptions on plant and animal life, large eruptions and mass extinctions, and the impact of volcanic disasters on the economy. This book is intended for students and researchers interested in environmental change from the fields of earth and environmental science, geography, ecology and social science. It will also interest policy makers and professionals working on natural hazards.



Book Presentation

Climate Change-Turning Up the Heat



A. Barrie Pittock
Published by: CSIRO PUBLISHING
ISBN: 0643069313
YEAR : 2005
EDITION : 1st
#PAGES : 328
PRICE : 25.00 €

Is climate change really happening and does it matter? The answer from the scientific community is a resounding yes, yet debates about the reality of climate change and what measures to take are slowing our response.

Is climate change really happening and does it matter? The answer from the scientific community is a resounding yes, yet debates about the reality of climate change and what measures to take are slowing our response. Barrie Pittock, one of the world's leading climate researchers, argues that we need to act urgently to avoid increasingly severe climate change.

He looks at the controversy around global warming and other predicted changes, examining the scientific basis of the changes observed to date, how they relate to natural variations and why the evidence points to larger changes later this century. The effect of these changes on our natural systems and our lifestyles will be considerable and could include wild weather, shifts in global ocean circulation, decreases in crop yields and sea-level rises. But the impacts won't be distributed evenly: some countries will suffer more than others.

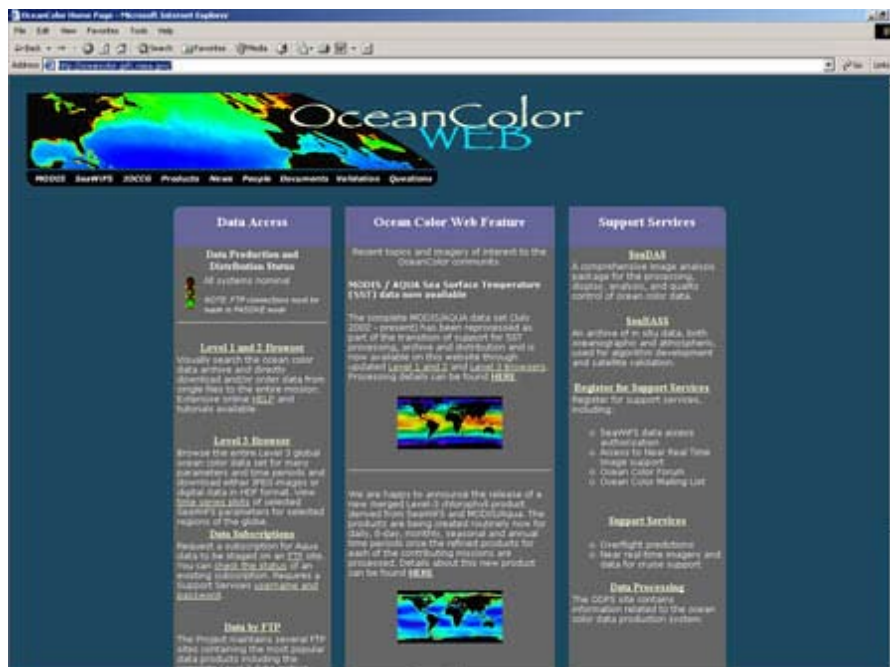
Climate Change: Turning up the Heat explains how our attitudes to risk and uncertainty - constant companions in life - influence our decision making and, ultimately, how much we and future generations stand to lose from rapid climate change. Our climate takes a long time to alter so what we do now will have impacts decades later; we must encourage market forces to think long term.

The book outlines the current concerns of the major international players and reviews the response to date, detailing national interests. Importantly, it shows there is real hope of managing climate change and minimising the risk of disaster if we step up efforts to develop and apply innovative technological and policy solutions.

Contents

Introduction
1. Climate change matters
2. Learning from the past
3. Projecting the future
4. Uncertainty is inevitable, but risk is certain
5. What climate changes are likely?
6. Impacts: why be concerned?
7. Adaptation: living with climate change
8. Mitigation: limiting climate change
9. Climate change in context
10. The politics of greenhouse
11. International concern and national interests
12. Accepting the challenge
Further information
Bibliography/reading list
Web sites
Index

Dr A. Barrie Pittock is one of the world's leading scientists in atmospheric research and the author of over 200 scientific papers. He was a senior scientist with CSIRO for over 30 years where he lead the Climate Impact Group in the 1990s until his retirement in 1999. He was awarded an Australian Public Service Medal for his leadership and visionary approach to identifying, researching and communicating a range of global climate science issues.



SeaWiFS biosphere data set 1997-2005

<http://oceancolor.gsfc.nasa.gov/>

An updated animation of the SeaWiFS biosphere data set is now available. The data set encompasses eight years worth of ocean colour (chlorophyll concentration) and land vegetation (normalized difference vegetation index) observations from September 1997 through July 2005. See NASA's Ocean Color website for more information.



EGU Humboldt Conference: The Role of Geophysics in Natural Disaster Prevention - (Meeting)

05/03/2007 - 09/03/2007 - Lima, Peru

Scope:

The recent catastrophic events related to the Indonesian Tsunami and Hurricane Katrina have brought the subject of Disaster Prevention to higher levels, in both the scientific and decision makers communities. This meeting aims at discussing improved geophysical methods for the evaluation of natural hazards as part of a more general risk assured effort and risk reduction process.

Casualties and property losses due to natural disasters, such as earthquakes, catastrophic volcanic eruptions, tsunamis, hurricanes, El Niño and Global Change related hazards, can significantly be mitigated when the risks involved for different scenarios are available in due time.

In most cases, however, scientists evaluate these hazards in probabilistic terms only. This is to be contrasted with precise forecasts expected by decision makers. Nevertheless, in most cases, science can provide decision makers with the best information for their mitigating decisions.

This dilemma will be borne in mind when progress in natural disaster "prediction" is discussed during this interdisciplinary conference. Thus, besides new or improved methods for natural hazard assessment, contributions reporting on failures and successes of past prevention cases, as well as socio-economic aspects, are invited.

Topics (to be introduced by invited Keynote Speakers)

- Volcanic Eruptions
- Earthquakes
- Tsunamis
- Landslides
- Avalanches
- Extreme climate and/or meteorological disastrous events
- El Niño related - Global Change related - Hurricanes

EGU Humboldt Conferences

This is the second of a series of Alexander von Humboldt International Conferences organised by the European Geosciences Union. The first Alexander von Humboldt International Conference on "The El Nino phenomenon and its global impact" was held May 16-20, 2005 in Guayaquil, Ecuador.

The third EGU Humboldt Conference will be in Beijing, 24-29 September 2007.

Organizer:

Instituto Geofísico del Perú (IGP) and European Geosciences Union (EGU)

<http://www.copernicus.org/EGU/topconf/topconf.html>

MYRES II: Dynamics of the lithosphere (Meeting)

02/07/2006 - 06/07/2006 - Lago Maggiore, Italy

The second Meeting of Young Researchers in Earth Sciences (MYRES) will focus on Dynamics of the Lithosphere. Topics covered include structure and evolution of the lithosphere, deformation processes, earthquake generation, geodesy, and geodynamics modeling.

The meeting is part scientific workshop, part summer school. Plenary talks will introduce each topic and will be complemented by breakout discussion groups, hand-on training sessions, and poster sessions.

Lodging and meals are covered, and we aim to cover travel expenses as much as possible, especially for students, young scientists and scientists from developing countries. Although MYRES is focused on young scientists and students, it is open to everyone interested. Please submit an application online at http://myres.org/MYRESII_application.html. Applications submitted before March 30th, 2006 will be given additional priority for funding support.

Organizer:

Meeting of Young Researchers in Earth Sciences (MYRES)

Laurent Montesi

Giulio Di Toro

<http://myres.org/meetings.html>

Laurent Montesi

Woods Hole Oceanographic Institution

WHOI MS24

Woods Hole, MA 02536

USA

montesi@whoi.edu

OXYGEN MINIMUM SYSTEMS IN THE OCEAN: DISTRIBUTION, DIVERSITY AND DYNAMICS - (Meeting)

24/10/2006 - 26/10/2006 - CONCEPCION, CHILE

The Faculty of Natural and Oceanographic Sciences, the Department of Oceanography, and the Center for Oceanographic Research in the eastern South Pacific (FONDAP-COPAS) of the University of Concepción, are pleased to announce the Workshop "Oxygen minimum systems in the ocean: distribution, diversity and dynamics", to take place in Concepción, Chile, October 24-26, as an activity that will coincide with the 2006 SCOR (Scientific Committee on Oceanic Research) General Meeting.

The Workshop will bring together scientists and students from many countries into one meeting covering the following areas of oceanography related to oxygen minimum zones and oxygen-deficient waters: physical and chemical oceanography,

biogeochemistry, ocean-atmosphere interactions, biology, biodiversity, ecology, paleoceanography, and anthropogenic influences.

English is the official language of the Workshop.

Structure of the Workshop

The Workshop will consist of invited lectures to be delivered during the first two days, and posters. Posters will be exhibited during the three days of the Workshop; brief poster presentations are scheduled for the last day of the Workshop.

Workshop Registration

Participants are advised to register in advance at reduced pre-registration rates by September 1st 2006. Pre-registration fees are:

Students: US\$ 50

Scientists: US\$ 100

Institutes, Centres & Companies: US\$ 200

On-site registration will be possible at the Workshop. On site-registration fees are:

Students: US\$ 60

Scientists: US\$ 120

Institutes, Centres & Companies: US\$ 250

Fees include a booklet with all abstracts, and a welcome reception on October 24th 2006.

Presentations

There will be a permanently installed desktop computer with projector at the Conference Hall. Invited speakers should bring their presentations on own data medium (CD – Pen Drive). Slide projectors and/or transparency/overhead projectors should be requested beforehand.

The final day of the Workshop will be devoted to the brief presentation of posters and their discussion, in parallel sessions. For each poster one numbered poster board in portrait format will be reserved with a clear dimension of 150 cm (width) x 220 cm (height). All the material necessary for attaching the poster to the poster board will be available in the poster area.

We encourage the participation of students and young investigators in the poster session. A limited number of fellowships will be available for students and young investigators.

Abstracts

The deadline for the submission of abstracts is June 30, 2006.

INVITED SPEAKERS

Yrene M. Astor, Fundación La Salle de Ciencias Naturales, Estación de Investigaciones Marinas, Venezuela, Seasonal variability in the hydrochemical structure of the suboxic waters at the Cariaco Time-series station

Kenneth W. Bruland, University of California, Santa Cruz, USA, A review of the chemistries of redox sensitive elements

within suboxic zones of oxygen minimum systems.

Tage Dalsgaard, National Environmental Research Institute, Denmark, Nitrogen cycling in suboxic water columns

Rubén Escribano, FONDAP-COPAS Center, Universidad de Concepción, Chile, Zooplankton interactions with the oxygen minimum zone in the eastern South Pacific

Víctor A. Gallardo, FONDAP-COPAS Center, Universidad de Concepción, Chile, The sediment microorganisms under the Oxygen Minimum Zone, present day analogs of Precambrian Oceans?

Raja S. Ganeshram, School of GeoSciences, University of Edinburgh, Scotland, United Kingdom, Paleoceanography of oceanic oxygen deficient zones

Humberto González, FONDAP-COPAS Center, Universidad de Concepción, Chile, Downward fluxes of particulate organic matter in coastal and oceanic areas off Chile: the role of the OMZ and functional groups of the plankton

Dimitri Gutiérrez, Instituto del Mar del Perú, IMARPE, Perú, Oxygen deficiency, sedimentary environments and benthic communities in the Peruvian upper continental margin

Richard J. Matear, CSIRO Marine Research and the Antarctic, Cooperative Research Center, Tasmania, Australia, TBA

Syed Wajih Ahmad Naqvi, National Institute of Oceanography, India, Oxygen deficiency in the North Indian Ocean

Temel Oguz, Middle East Technical University, Turkey, Mechanisms controlling the Suboxic Layer of the Black Sea: Observations and Modeling

Silvio Pantoja, FONDAP-COPAS Center, Universidad de Concepción, Chile, Biogeochemistry of the OMZ off Chile

Nancy N. Rabalais, Louisiana Universities Marine Consortium, Louisiana, USA, Oxygen Depletion in the Gulf of Mexico Adjacent to the Mississippi River

Wolfgang Schneider, FONDAP-COPAS Center, Universidad de Concepción, Chile, Vertical and horizontal extension of the oxygen minimum zone in the eastern South Pacific Ocean

Mary I. Scranton, Stony Brook University, New York, USA, The biogeochemistry of the suboxic and anoxic zones in the Cariaco Basin

Osvaldo Ulloa, FONDAP-COPAS Center, Universidad de Concepción, Chile, TBA

Workshop Coordinator: Dr. Víctor A. Gallardo (vagallar@udec.cl; vgallardo@coreocean.org)

Coordinator at large: Dr. John W. Farrington, Woods Hole Oceanographic Institution Woods Hole, Mass., USA

Contact: Mónica Sorondo: monicaso@vtr.net; monica.sorondo@gmail.com

Organizer:

Faculty of Natural and Oceanographic Sciences, Department of Oceanography & FONDAP-COPAS Centre of the University of Concepción, CHILE

<http://www.cona.cl/scor/oms.htm>

Monica Sorondo, Universidad de Concepcion,

monicaso@vtr.net

monica.sorondo@gmail.com

Environmental Applications and Distributed Computing EADC 2006 - (Meeting)

16/10/2006 - 18/10/2006 - Bratislava, Slovakia

SCIENTIFIC PROGRAM

EADC 2006 invites researchers and practitioners to submit papers that contribute the results of research in Environmental Application and Distributed Computing as well as papers that report on industrial IT projects. Contributions are welcome in, but not limited to the following topics of interests:

- Grid and Cluster Computing
- Web Distributed Computing
- High Performance Distributed Computing and Large Scale Simulation
- Environmental Modeling, Simulation, and Optimization
- Environmental Risk Assessment, Planning, and Policy Making
- Landscape Analysis, Hydrological and Climatologically Studies
- Environmental Pollution, Waste Management
- Remote Sensing and GIS
- Conservation Security of soil, water, air, energy, plant, animal life...
- Use of Knowledge and Semantics in Environmental Applications and Risk Management

SUBMISSION

Papers are invited to be submitted for the EADC 2006 workshop. Details on topics, including descriptions and chairs, are available on the workshop website. Original contributions regarding the theory and practice not submitted for publication elsewhere will be considered.

Paper submission must be performed electronically via the workshop website

<http://conference.ui.sav.sk/eadc2006/?page=guideline.php>

Papers should not exceed 10 pages in the LNCS style. Accepted paper formats are PDF with MSWord or Latex source files. All accepted papers will be included in the workshop proceedings. Online submission for camera-ready papers will be open until July 15, 2006.

IMPORTANT DATES

May 31, 2006 submission deadline for papers
Jun 30, 2006 notification of acceptance
July 15, 2006 submission of camera-ready final papers
October 16-18, 2006 the workshop

PROGRAM COMMITTEE

Ladislav Hluchy, General Chairman (IISAS - Institute of Informatics, SAS - Slovak Academy of Sciences)
Viet Tran (IISAS - Institute of Informatics, SAS)
Miroslav Dobrucky (IISAS - Institute of Informatics, SAS)
James Bathurst (UNEW - School of Civil Engineering and Geosciences)
Isabella Bovolo (UNEW - School of Civil Engineering and Geosciences)
George Eftichidis (ALGOSYSTEMS - Direction of Research and Development)
Yannis Perros (ALGOSYSTEMS - Direction of Research and Development)
Luis Mario Ribeiro (ADAI - University of Coimbra - Mechanical Eng. Dep.)
Claude Picard (CEREN - Centre d'Essais et de Recherche de l'ENTente)
Frederique Giroud (CEREN - Centre d'Essais et de Recherche de l'ENTente)
Veronique Cesari (CEREN - Centre d'Essais et de Recherche de l'ENTente)
David Caballero (TECNOMA - TECNOMA Department of Forest Ecosystems)
Andres Velasco (TECNOMA - TECNOMA Department of Forest Ecosystems)
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Luigi Fusco (ESA - European Space Agency)
Mikhail ZhiZhin (GC - Geophysical Center, Russian Academy of Sciences)

<http://conference.ui.sav.sk/eadc2006/>