



[www.GeoDarmstadt2010.de](http://www.GeoDarmstadt2010.de)

### Annual meeting of the Deutsche Gesellschaft für Geowissenschaften and the Geologische Vereinigung \* 8<sup>th</sup> European Coal Conference

Participating institutions: Akademie für Geowissenschaften und Geotechnologien e.V. \* American Association of Petroleum Geologists (AAPG) \* Arbeitskreis Bergbaufolgen der DGG \* Berufsverband Deutscher Geowissenschaftler (BDG) \* Bundesanstalt für Geowissenschaften und Rohstoffe (BGR) \* Deutsche Bodenkundliche Gesellschaft \* Deutsche Geophysikalische Gesellschaft (DGG) \* Deutsche Gesellschaft für Geographie (DGfG) \* Deutsche Gesellschaft für Polarforschung (DGP) \* Deutsche Gesellschaft für Technische Zusammenarbeit - gtz \* Deutsche Mineralogische Gesellschaft (DMG) \* Deutsche Quartärvereinigung (DEUQUA) \* Deutsche Stratigraphische Kommission \* Deutscher Arbeitskreis für Geomorphologie \* Fachsektion Geoinformatik der DGG (FGI-DGG) \* Fachsektion Geotop der DGG \* Fachsektion Hydrogeologie der DGG (FH-DGG) \* Fachsektion Ingenieurgeologie der DGG (FI-DGGT & DGG) \* GEOTECHNOLOGIEN \* Geothermische Vereinigung (GtV) \* GeoUnion (Alfred Wegener Stiftung) \* Gesellschaft für Bergbau, Metallurgie, Rohstoff- & Umwelttechnik (GDMB) \* Helmholtz-Zentrum Potsdam – Deutsches GeoForschungszentrum – GFZ \* Helmholtz-Zentrum für Umweltforschung – UFZ \* Institut für Physikalische Geodäsie (IPGD) \* Leibniz-Institut für Angewandte Geophysik (LIAG) \* marum \* Megastädte von morgen \* Paläontologische Gesellschaft \* Senckenberg Forschungsinstitute und Naturmuseen \* SEPM – Central European Section

Dear colleagues,  
given the manifold problems our society is facing, geosciences are playing a key role for the next decades. We are therefore looking forward to your participation at our congress that will gather - in an attractive congress center - nearly all geo-societies and institutions that are working and conducting research in Germany. We are therefore looking forward to your participation at our congress that will gather – in an attractive congress center - nearly all geo-societies and institutes currently working and conducting research in Germany.

This circular addresses the English speaking participants. All descriptions for German language meetings and excursions are in German.

Unter [www.GeoDarmstadt2010](http://www.GeoDarmstadt2010) werden wir Sie ständig zum Stand der Tagung auf dem Laufenden halten.  
Darmstadt, den 30. Januar 2010

Andreas Hoppe & Christoph Schüth

### Schedule and locations

October 9, 2010: Excursions

October 10, 2010: Jubilee event “100 years Geologische Vereinigung” in the Senckenberg Museum in Frankfurt and Icebreaker Party (with bus transfer to Darmstadt afterwards)

October 11 to 13, 2010: Plenary Sessions and Special Scientific Sessions in the darmstadtium, the congress center of the Technische Universität and the city of Darmstadt ([www.darmstadtium.de](http://www.darmstadtium.de))

October 14, 2010: Excursions

### Call for papers

Please submit your abstracts to the conference office: [info@GeoDarmstadt2010.de](mailto:info@GeoDarmstadt2010.de). The deadline is **March 31, 2010**.

Please be sure your submission complies with the following guidelines:

- the abstract must be written in English or German.
- all tables and figures should have a minimum resolution of 300 dpi (600 dpi would be better). They should not be included in the Word-file but submitted together with the abstract in a separate eps-, jpg-, tif- or pdf-file. All tables and figures must be assigned to the specific abstract (e.g.: Müller\_abstract, Müller\_fig\_1, Müller\_tab\_1).
- the abstract should not comprise more than 4000 characters, incl. title, authors and institutions, incl. full postal and email address.
- the abstract should be created with the template, e.g. by overwriting the appropriate text blocks.
- the appropriate topic number has been specified
- the author has indicated whether this is an oral presentation or a poster.

### Poster awards for students

The Deutsche Gesellschaft für Geowissenschaften and the Geologische Vereinigung will present awards for the three best student posters. The winners will receive a monetary award of 1.000, 500 or 200 Euro.

### Plenary Sessions (Preliminary Titles)

Man and Environment (NN)

Global Change and Oceanic Diversity (Antje Boetius)

Earth and Climate (Martin Melles)

Fossil Energy Resources - Limits and Chances (Ferdinand Schüth)

Mineral Resources (Hans-Joachim Kümpel)

Natural Hazards (Jochen Zschau)

The Deep Ocean, a Scientific Challenge (Gerhard Bohrmann)

Soils (David Montgomery)

Water and Environment (Georg Teutsch)



Foto: darmstadtium / juergenmar.com  
The congress center in Darmstadt

## Scientific sessions

### 1. Climate

#### 1.1. Boden als Senke und Quelle für Kohlenstoff (Rainer Horn)

Die C-Speicherung in Böden unter verschiedenen Klima- und Landnutzungsbedingungen wird gegenwärtig noch sehr kontrovers diskutiert. Dabei variiert die Meinung über die jährliche zusätzliche Speicherung zwischen max. 2 mg/ha und einer Quellenfunktion. Welche Bedeutung in diesem Zusammenhang der Bewirtschaftung (konventionell/konservierend, organischer Landbau, zero tillage) zukommt und inwiefern durch eine angepasste Landnutzung die Speicherfähigkeit von C über eine bessere Erreichbarkeit von Partikeloberflächen und verbesserter Zugänglichkeit von Struktureinheiten gefördert werden kann soll ebenso diskutiert werden wie die Bedeutung von Wald- sowie Weidewirtschaft hinsichtlich der langfristigen Speicherung. Hierbei gilt es auch die Folgen einer Intensivierung der Weide- und Waldwirtschaft z.B. durch eine zunehmende Mechanisierung in ihrer Wirkung für die Speicherung zu erörtern wobei ggf. auch die Senken- in eine Quellfunktion für klimaschädliche Gase verändert werden kann.

#### 1.2. Carbon Cycle and Climate Change (Martin Kastowski)

This session is dedicated to climate change and related geoscientific processes. The utmost urgency of the topic poses great scientific, technical and political challenges and the connectivity of processes necessitate a good communication between specialists of different subjects. This may include soil scientists, hydrologists, hydrogeologists, geochemists, geomorphologists, (palaeo)-limnologists, ecologists, oceanographers, etc. Specific focus is laid on the role of biogeochemical cycles relevant for the balance of greenhouse gases in terrestrial as well as in lacustrine and marine realms. Welcome are for example studies dealing with the problem of quantifying and modelling carbon fluxes on different scales and in different environments and regions.

#### 1.3. Langfristige und sichere Speicherung von CO<sub>2</sub> in geologischen Formationen (Franz May & Michael Kühn)

Damit Deutschland seine Klimaziele erreichen und seiner klimapolitischen Vorreiterrolle gerecht werden kann, werden realistische Optionen benötigt, um die anthropogenen Treibhausgasemissionen deutlich zu reduzieren. Als eine mögliche Schlüsseltechnologie gilt CCS (Carbon Capture and Storage), die sich nicht nur im Kraftwerksbereich, sondern in vielen anderen CO<sub>2</sub>-intensiven Technologiebereichen wie in der Stahlproduktion oder Zementindustrie, aber auch bei der Erzeugung von regenerativer Energie aus Biomasse einsetzen ließe. Zentrale Bedeutung für die erfolgreiche Einführung der Technologie hat die dauerhaft sichere geologische Speicherung des abgeschiedenen Kohlendioxids. Die hier angebotene Session wird den Stand sowie Chancen und Risiken der Technologie allgemein, aber speziell für Deutschland diskutieren unter Berücksichtigung der in der Bundesrepublik vorhandenen Potenziale. Dazu sind Vortrags- und Posterbeiträge u.a. aus den Bereichen Geologie, Geophysik, Geochemie zu folgenden Themen erwünscht: Demonstrationsstandorte und Feldversuche, Erkundungs- und Überwachungsmethoden, Prozesse im Speicher und Deckgebirge (Chemie, Hydraulik, Mechanik), numerische Simulation, Laborexperimente, Risikoabschätzung, CO<sub>2</sub>-Speicherung, allgemein.

#### 1.4. Sediments as Archives of Environmental and Climate Change (Olaf Lenz)

Marine and terrestrial sediments deposited through earth's history record a variety of different proxies of earth's environmental and climatic evolution. For this session, contributions are encouraged that relate to environmental and climatic interpretations of all sedimentary deposits and rocks of marine, lacustrine and terrestrial origin. Topics shall cover millennial to million year time scales. Presentations may include biological, geochemical and physical aspects or synergistic efforts combining different paleoenvironmental reconstructing methods. Contributions presenting novel approaches or analytical techniques for environmental archive analysis are particularly welcome.

#### 1.5. Insights into past climate dynamics – Lessons for the future (Michael Schulz & Martin Claussen)

In the past few years, climate science has made impressive progress in quantifying possible future climate changes arising from anthropogenic greenhouse gas emissions and land cover change. However, it is still a major challenge to estimate the range of uncertainty of the climate sensitivity to natural and anthropogenic perturbation. The Earth sciences play a vanguard role in this quest, since geoscientific data are the only method to document and quantify past climate change beyond the range of instrumental observations. Paleoclimate data revealed unambiguously that the Earth's climate is not steady. Natural variations occur on time-scales of a few years to thousands of years. More specifically, Earth's climate system is capable of exhibiting abrupt changes with large amplitudes over the time span of a few decades or less. The goal of this

session is to review some of the most recent scientific highlights in the field of paleoclimate research and to explain their implications for future climate change. A specific aim is to evaluate the skill of climate models for projecting future climate based on their capability of hindcasting past climate variations.

## 2. Earth History

### 2.1. Biodiversity and Environment - The Deep-Time Perspective (Dieter Uhl)

Our current biodiversity evolved over billions of years in response to changing environmental conditions. Today we understand that the evolution of the biosphere constantly changed environmental conditions throughout this time. Many positive and negative feedbacks between the biosphere and a number of environmental factors (including climate) have been identified so far, but it is not always clear how environment and biodiversity (as an important aspect of the biosphere) interacted. It is the aim of this symposium to demonstrate how biodiversity and environment have interacted during this long and complex evolution, based on case studies on marine as well as continental biota. We therefore invite our colleagues to submit contributions spanning the entire history of the earth.

### 2.2. Developments in Stratigraphy: Methods, Techniques, Applications (Manfred Menning)

A revised International Stratigraphic Guide has been proposed by Maria Bianca Cita (Milano) who both chaired and reorganized the International Subcommittee on Stratigraphic Nomenclature (ISSC) 2000–2008. The new guide will focus on developments in post-Hedberg stratigraphy. Basic articles have already been published in Newsletters on Stratigraphy addressing cyclostratigraphy, chemostratigraphy, and magnetostratigraphy. These methods underwent a significant development after the publication of the Hedberg's (1976) Stratigraphic Guide. Both the potential and limitations of these and other methods (e.g., biostratigraphy, lithostratigraphy, seismostratigraphy, sequencestratigraphy, climatostratigraphy, and graphic correlation techniques) be presented using topical examples.

### 2.3. Land–sea interactions in the Phanerozoic (Eberhard Schindler, Rainer Brocke, Achim Wehrmann & Volker Wilde)

The land-sea transition is characterized by specific environments throughout the entire history of the earth. A number of special ecosystems developed within the transitional zone, such as tidal flats, tropical mangrove systems, large delta systems, or rocky shores. Different processes on each side of the coastline and their manifold interactions play a key role for the development not only of the adjacent ecosystems, but even for distant areas through system interactions. Therefore, the effects of major changes can be traced in both directions far beyond the land-sea transitional area. This becomes especially prominent during times of marked climate and/or sea-level changes or important evolutionary steps. One of the periods of special interest in relation to land-sea interactions is the mid-Palaeozoic,

namely the Devonian. Continental surfaces were progressively invaded by life during this period, and terrestrial environments diversified quickly. Due to coupling effects, numerous consequences on weathering processes and products, soil formation and depositional systems may be seen even in the marine realm. Due to the complex patterns of interaction, we encourage colleagues from a range of different disciplines to participate. We are seeking contributions spanning the whole Phanerozoic to the present time.

### 2.4. Non-Actualistic Environments (Martin Keller)

Earth history, about 4.5 billion years long, saw many drastical changes in the forces and factors that control earth surface processes. The establishment of an oxic atmosphere, the different steps in the evolution of life, periods of extreme glaciations, and episodes of tremendous volcanism are just but a few of these events. The interactions between these factors apparently created sedimentological, biological, and geochemical environments that have not known recent correlatives. All relevant processes and their interactions that may have triggered the evolution of such non-actualistic environments will be discussed in this session.

### 2.5. Paleontological Applications (Gudrun Radtke)

This session will represent the Paläontologische Gesellschaft und focus on the following topics that are subject to modern research in paleontology and biogeology: Geodynamics, evolution and diversity / Mass extinction and recovery / Microbial phosphate accumulations / Deep sea ecosystems / Bacterial sulphur oxidation and reduction / Marine microbiology / Genetic research and fossils / Facies analysis – microstratigraphy / Sea level change – global warming / Konservat-Lagerstätten / Paleo-archives in limnic environments.

### 2.6. Terrestrial Eocene (Sonja Wedmann & Stephan Schaal)

The Eocene was a period of drastic changes both in regard to climatic shifts as well as to rates of diversification and also extinction in many groups of organisms. At this time, there were no high Alps, nor a wide North Atlantic and today's Europe consisted of many islands. Europe and North America were still connected by land bridges located high in the North. Volcanism was common, some associated with the opening of the Atlantic ocean, some along fracture zones, such as the Rhine rift valley. The aim of this session is to cover a broad range of topics concerned with the terrestrial Eocene in the broadest sense, ranging e.g. from paleontological research on vertebrates, invertebrates and plants to geological and actiopaleontological studies. The focus will lie on different topics of biotic evolution during the terrestrial Eocene. Presentations on current research concerning the fauna and flora of the UNESCO fossil site "Grube Messel" near Darmstadt are welcome, and we cordially invite all colleagues working on other Eocene localities to submit contributions.

## 3. Energy

### 3.1. Qualitätssicherung in der oberflächennahen Geothermie (Ingo Sass)

Die Nutzung oberflächennaher geothermischer Energie bedarf in sämtlichen Projektphasen, begonnen bei der Vorplanung über die Bauausführung und die Inbetriebnahme bis hin zum Rückbau von Anlagen, der umfassenden Qualitätssicherung. Insbesondere bei der Bohrausführung von Erdwärmesonden in geologisch-hydrogeologisch komplexen oder auch in wenig erkundeten Gebieten ist dies zwingend erforderlich. Darüber hinaus bedürfen auch andere Teilaspekte einer erweiterten Normung und Strukturierung, wie z.B. das Hinterfüllen, da in solchen Projekten auch oftmals Haftungs- und Verantwortungsfragen zu klären sind. Beiträge zu dieser Thematik sind sowohl in deutscher als auch in englischer Sprache willkommen.

### **3.2. The 8<sup>th</sup> European Coal Conference** (Euro-pean Coal Geology Group)

The conference deals with the geology of European coal deposits, with special attention to environmental issues. As the hard coal mining industry has closed in some countries, special attention will be paid to problems and opportunities related to mine closure as well as to the continuing importance of coal for the energy supply in Europe. The newer technologies of Coal Bed Methane (CBM), Coal Mine Methane (CMM) and Underground Coal Gasification (UCG) are becoming more important as traditional mining is challenged, and the opportunities for underground storage of CO<sub>2</sub> continue to promote lively technological debate.

#### **3.2.1. Coal in the History of the Earth / Coal Geology** (Ralf Littke & Petra David)

Conditions and constraints on coal formation. Mineralogical, geochemical and isotopic characterisation of coal and coal gas. Burial history, coal maturation and gas generation, basin modelling.

#### **3.2.2. Coal as an Energy Source in Europe / Evaluation of Coal Resources and Mining** (Ernst-Bernhard Teigler & Bernhard Cramer)

Advances in techniques for coal prospecting and evaluation. Computer modelling of coal deposits. Improving mining productivity. Coal and coal derivatives properties. Forecast for coal use in Europe / comparison of domestic and imported coal. Clean coal technologies (e.g. combustion, gasification, liquefaction).

#### **3.2.3. Coal Seams and Coal Bearing Formations as Gas Deposits (CBM) and CO<sub>2</sub>-Storage Sites** (Karl-Heinz Wolf & Vitaliy Privalov)

Coal mine methane recovery, coal bed methane, CO<sub>2</sub> storage, coalfires

#### **3.2.4. Consequences from Underground and Surface Extraction** (Roland Dreesen & Petr Martinec)

Abandonment policies and future utilisation of mining sites. Coal geology and mining considered as part of the industrial heritage. Environmental and social impact of mining and mine closure. Groundwater rise after mine abandonment. The impact of mining subsidence.

### **3.3. Wirtschaftsgeologie – Mineralische Rohstoffe, Energierohstoffe** (Volker Steinbach)

Die nachhaltige Nutzung von Rohstoffen und die langfristige Sicherung der Rohstoffversorgung ist eine ent-

scheidende Grundlage für die Zukunftssicherheit unserer Gesellschaft. Mit dem weltweiten Bevölkerungswachstum und der wirtschaftlichen Entwicklung, insbesondere in den Schwellenländern, wird sich der Rohstoffverbrauch in den kommenden Jahrzehnten deutlich erhöhen.

Neben der Eigenversorgung mit Baurohstoffen, einigen Industriemineralien und Braunkohle ist Deutschland in hohem Maße von Energieimporten und fast vollständig von Metallrohstoffimporten abhängig. Vor diesem Hintergrund sind Marktbeobachtungen, die Bewertung des Rohstoffpotenzials, die Entwicklung neuer Prospektions- und Explorationsmethoden, die Nutzung heimischer Rohstoffe sowie die Unterstützung von Entwicklungsländern bei der Bewertung und Nutzung ihres Rohstoffpotentials von grundlegender Bedeutung. Die Session bietet ein Forum für Vertreter der Rohstoff- und Consultingindustrie, der Hochschulen, der Geo- und Bergbehörden sowie der Politik. Folgende Themen zu mineralischen Rohstoffen und Energierohstoffen sollen in den Vorträgen und Postern behandelt werden: Nationale und internationale Rohstoffinitiativen / Rohstoffbedarf für Zukunftstechnologien / Rohstoffsicherung, Rohstoffmärkte, Rohstoffverfügbarkeit / Rohstoffprojekte in Deutschland / Auslandsbergbau / Rohstoffsektor in Entwicklungsländern / neue Prospektions- und Explorationsmethoden / neue Bergbautechnologien.

## **4. Geo-Processes**

### **4.1. Earth Surface Processes** (Richard Dikau & Friedhelm von Blanckenburg)

The thin soil layer covering the earth's surface provides a major environmental resource for our civilisation. Today, this layer is under enormous pressure caused by an increase in the intensity of agricultural practices, construction works, and global change. Over longer time scales, weathering and erosion of rocks controls global climate by constantly withdrawing atmospheric CO<sub>2</sub> and by shaping the rise and destruction of mountains. The way we think about these processes currently undergoes a dramatic change due to our ability to measure (with high-resolution DEM's) topographic variables and archive changes in erosion and sedimentation patterns, to determine (with cosmogenic nuclides and optical luminescence) ages and rates of landforms and landform change, to identify (with pollen, biomarkers, and stable isotopes) the role of vegetation covers, and to model these processes with advanced 3D geophysical-geomorphologic numeric approaches.

We will address these questions in relation to the relative impacts of humans, climate change, and tectonic activity on changes of earth surface processes in close connection with the spatial and temporal scales under which the contributing processes operate, and discuss the consequences for human societies.

### **4.2. Karst Processes** (Wolfgang Dreybrodt & Stephan Kempe)

Karst terrains are important sources of potable groundwater and water management of karst aquifers and of karst terrains has become an important chal-

lenge, which requires a profound understanding on the principles of karst: its genesis, the evolution of phreatic conduits underground and the evolution of the pathways feeding the water to the phreatic zone as well as questions of stability of the karst surface. Dissolution of limestone, gypsum and salt by water and the containing acids, such as  $\text{H}_2\text{CO}_3$  or  $\text{H}_2\text{SO}_4$  drive the formation of aquifers with extremely heterogeneous distributions of hydraulic conductivities. Stalagmites are now used as important proxies of past climate. Karst processes govern the inscription of climatic signals from the surface into the calcite precipitated from karst water. To investigate Karst processes a wide spectrum of science is needed: such as physics, chemistry, geology, engineering, hydrology, and also biology, just to name a few. New ideas and observations in karst-related science are subjects of this session. Topics include, among others: Engineering problems associated with karst, numerical modelling of karst evolution underground and on the surface, observation and modelling of karst aquifers, spreading of pollution in karst, hydrochemistry of karst water, kinetics of limestone dissolution by acidic waters, kinetics of calcite precipitation to understand growth of speleothems, isotopic evolution of carbonates in karst water and the isotopic signal in speleothems, or biological processes in karst. Other topics are also welcome.

#### **4.3. Tectonics and Sedimentation** (Sybille Roller)

The session calls for contributions shedding new light on the interplay of tectonics and related sedimentation processes at all scales, e.g., source-to-sink analysis of depositional systems from individual fault setting up to large-scale plate tectonics. We welcome a broad set of methodological approaches for an inspiring discussion, e.g. sediment provenance analysis, basin analysis, sequence stratigraphy, erosional flux balancing, thermochronology, structural geology, tectonic geomorphology, geochemistry, paleoclimatology, etc.

### **5. Man – Environment – Technology**

#### **5.1. Aerosols: Interaction from Atmospheric Science and Climate Change to Human Health** (Jörg Matschullat & Stephan Weinbruch)

Aerosols, with their fascinating variance of chemical and physical characteristics, steadily emerge as a trigger material not only for atmospheric science and current climate change issues, but also for agriculture and ecology, technological applications and human health. This session invites contributions that represent important aspects of this wide range of topics and add to our growing understanding of aerosols and their role in the environment at large. Papers are particularly welcome that challenge current paradigms and/or present new approaches to aerosol research. The session chairs believe that this interdisciplinary approach may be particularly useful for all participants.

#### **5.2. Anthropogenic Loads** (Peter Grathwohl & Christoph Schüth)

This session addresses fate and transport of pollutants (compounds with an undesired high concentration) in the subsurface environment. It includes saturated and

unsaturated transport, sorption and degradation of local and diffuse pollutants. Contributions about risk analysis and remediation technologies are welcome as well.

#### **5.3. GeoInformationSystems and 3D Modeling** (Rouven Lehné & Helmut Schaeben)

The importance of Geo Information Systems (GIS) and 3/4D-modelling in geosciences increases permanently. The development of task specific routines is often needed next to the application of available tools. This session is addressed to all people who use GIS, 3/4D-modelling or programming as a methodological approach to working on geoscientific tasks. The session calls for contributions which are related either to development of methodological approaches or results derived by application of GIS, 3/4D-modelling or programming.

#### **5.4. GEOTECHNOLOGIEN** (Ute Münch & Ludwig Stroink)

Die verheerenden Folgen von Naturkatastrophen, der globale Klimawandel, die optimale Verwendung von Naturressourcen sowie die Erkundung und Nutzung des Untergrundes sind aktuell große Herausforderungen für Politik, Wissenschaft und Gesellschaft. Sie stehen daher im Fokus des gemeinsam vom Bundesministerium für Bildung und Forschung (BMBF) und der Deutschen Forschungsgemeinschaft (DFG) geförderten FuE-Programms GEOTECHNOLOGIEN. In transdisziplinären Forschungsverbänden arbeiten Geowissenschaftler, Chemiker und Informatiker, Biologen, Physiker und Ingenieure Hand in Hand, um die komplexen Vorgänge in und auf der Erde zu verstehen. Neben einer exzellenten Grundlagenforschung setzt das Programm dabei gezielt auf den Transfer von Forschungsergebnissen in die industrielle Anwendung. Es werden aktuelle Forschungsergebnisse aus verschiedenen Schwerpunktfeldern der GEOTECHNOLOGIEN vorgestellt. Sie dokumentieren, wie produktiv und selbstverständlich Wissenschaftler unterschiedlichster Disziplinen zusammenarbeiten und welche innovative Ergebnisse aus Allianzen zwischen Forschungsinstituten und Unternehmen erwachsen.

#### **5.5. Megacities** (Frauke Kraas & Claus Milkereit)

By 2015, more than 600 million people will live in approx. 60 megacities worldwide. Megacities as new phenomena of the worldwide urbanisation processes associated with accelerating globalisation are subject to global ecological, socio-economic and political change. Conversely, they also influence these changes due to their strong developmental dynamics, achieving unprecedentedly high spatial and demographic expansion and concentrations of population, infrastructure, economic power, capital, and decision-making, as well as excessive and partially self-energising acceleration of all the development processes. Increasingly, megacities are subject to an as yet unmeasured loss of formal governability and control – with the consequence that processes are unregulated and take place informally or illegally. Megacities have developed into new socio-economic and political 'labo-

ratories of the future', as they seem to reflect global development trends compactly, sometimes anticipatorily. In Germany, three programs are investigating key dynamics of development within selected megacities. The session will focus on main challenges of sustainability, governance and informality, risks and conflicts as well as resource security. Moreover, action models and strategic solutions will be addressed.

### **5.6. Mensch – Klima – Umwelt im Quartär** (Margot Böse)

Die Menschheitsgeschichte und der Lebensraum des Menschen sind geprägt durch die Klimaschwankungen des Quartärs und den damit einhergehenden, durch wechselnde morphodynamische Prozesse gesteuerten Landschaftsveränderungen. Die Quartärforschung befasst sich sowohl mit den natürlichen Veränderungen und Stoffflüssen während der Glaziale und Interglaziale, als auch mit dem Einfluss des Menschen auf die Erdoberfläche und damit in der Folge auch auf das Klima. Datierungsmethoden und ihre kritische Anwendung bieten in vielfältiger Hinsicht in zwischen Möglichkeiten, hoch auflösende Geochronologien für das Quartär zu erstellen. Beiträge, die sich mit natürlichen Klimaschwankungen, ihren Ursachen und Auswirkungen auf biotische und abiotische Bereiche sowie der Landschaftsgenese und der darin eingebetteten Menschheitsentwicklung befassen, sind willkommen. Für das Holozän sind aber auch gerade das Wechselspiel zwischen natürlichen und mensch-induzierten Landschaftsveränderungen, der Einfluss auf Vegetation, Boden und Wasserhaushalt sowie der Landschafts- und Ressourcenverbrauch und der davon abzuleitende Einfluss auf das Klima von zentraler Bedeutung.

### **5.7. Mess- und Quantifizierungsmethoden in der Ingenieurgeologie** (Kurosch Thuro)

Es soll dargestellt und diskutiert werden, wie sich geologische und ingenieurgeologische Parameter quantifizieren oder messen lassen. Dabei werden sowohl Feldmethoden als auch Labormethoden geschildert werden, aus denen Kennwerte erhalten werden können, die beispielsweise in die Modellbildung eingehen, Berechnungsgrößen darstellen oder selbst einen wesentlichen Anteil an einem Modell haben. Zu den Feldmethoden zählen auch Monitoringmethoden und Alarmsysteme.

Hinweis: Überwachungssysteme von Hangbewegungen sollten in der Session "7.2. Mass movements" eingereicht werden, Systeme, die im Programm GEOTECHNOLOGIEN gefördert werden dort (5.4.).

### **5.8. Salt Formations as Repositories for Hydrocarbons and Radioactive Waste** (Gernold Zulauf & Jörg Hammer)

Rock salt is generally characterized by low porosity, low permeability and low water content. Thus, thick salt layers and especially diapirs have been targeted as storage sites for gas and crude oil, and are also considered for the long term disposal of radioactive waste to exclude a threat to current and future generations. The session will cover various aspects of internal

structure and behaviour of salt rocks. A special focus is directed to the understanding of emplacement, deformation and properties of rock salt and anhydrite, which are of interest concerning advanced problems in storage and waste disposal.

### **5.9. Technische Entwicklungen zur Abbildung und Überwachung in der oberflächennahen Geophysik** (Marek Naser & Charlotte Krawczyk)

Für eine Beurteilung von Georisiken, die Sanierung oder Verlegung von Leitungen, die Planung von Baumaßnahmen oder für eine Grundwasserbewertung, aktuell besonders in urbanen Räumen, sind hoch auflösende Informationen über den Untergrund notwendig. Auch eine nachhaltige Ressourcenplanung, z.B. in der geothermischen Erkundung oder bei der Reservoircharakterisierung, ist auf Informationen über den Untergrund mit verbesserter Auflösung und der Abbildung von wichtigen physikalischen Kenngrößen angewiesen. Dieser wachsende Bedarf wird durch fehlende oder unzureichende Überwachungsmethoden noch verstärkt. Es werden neue technische Entwicklungen, Experimente im Feld und Auswertemethoden vorgestellt und diskutiert, die eine verbesserte Charakterisierung des Untergrunds oder Möglichkeiten zur Überwachung bieten.

### **5.10. Urban Geology and Sustainable Development** (Andreas Hoppe, Dieter Schott & Volker Steinbach)

For the first time in human history, more than 50% of the global population live in urban settlements and thus trigger sustainable or non-sustainable societal developments. However, geologists often try to circumvent cities because knowledge about the subsoil is difficult to obtain in an area covered by buildings and infrastructure. On the other hand, the metabolism of a settlement needs water and mass resources for their reproduction while emitting used materials like wastes and polluted water into the environment, and a settlement may be endangered by natural hazards.

This means that a thorough and, if possible, 3D investigation of the local geology is needed that is understandable for decision makers who are generally not geologists. The session will discuss examples of urban areas with its surroundings as well as methods approaching these goals.

## **6. Minerals and Raw Materials**

### **6.1. Applied Mineralogy / Materials for the Future** (Matthias Göbbels & Hans-Joachim Kleebe)

The session is concerned with aspects of materials development that reveal great potential for solving pressing future societal problems such as energy-related issues, environmental concerns and/or sustainability of resources. Moreover, new materials for specific niche applications are also of interest in this context. All contributions should emphasize the correlation between micro/nanostructure and properties/performance of such novel materials/composites. Speakers are invited to bring along their manuscript to be reviewed immediately; it is intended to publish all papers in a peer-reviewed international journal.

## 6.2. Bergbaufolgen (Jochen Rascher & Katrin Kleeberg)

Deutschland ist ein Land mit bedeutender geowissenschaftlicher Tradition und Jahrhunderte währendem Bergbau. Ebenso wie bei der Lagerstätten erkundung und der Planung des Rohstoffabbaus erfordert die Bewältigung von bergbaulichen Hinterlassenschaften in ehemaligen und heutigen Gewinnungsgebieten die komplexe Beschäftigung mit montanwissenschaftlichen Problemen. Diese umfasst sowohl lagerstätten-, ingenieur- und hydrogeologische sowie geoökologische Fragen als auch Lösungsansätze für die Folgenutzungen von Bergbauflächen und -anlagen.

In der Session sind Beiträge erwünscht, in denen durch die Verknüpfung von wissenschaftlichen Aspekten mit montanpraktischen Erfahrungen grundlegendes Know-how für die Sanierung, Revitalisierung und Gestaltung von Bergbaufolgelandschaften sowie die Folgenutzung von Standorten des ober- und untertägigen Rohstoffabbaus im Mittelpunkt steht. Rahmenthemen sollen sein: Folgen des Uranerzbergbaus: Aufgaben, Erfolge, Außenwirkung / Vom Bergwerk zum Endlager / Geologie, Bergbau und Geotourismus.

## 6.3. Kupferschiefer 2010 (Gregor Borg, Slawomir Oszczepalski & Cliff Taylor)

Europe's Permian Kupferschiefer (medieval miners term for "copper shale") Basin is host to one of the biggest sediment-hosted copper districts of the world. Current exploration in the Lausitz targets significant deep resources and Poland tests down-dip extensions of ore zones. The polymetallic Cu-Pb-Zn-(Au-PGE-Co-Ni-etc) mineralisation is transgressive to the Lower Permian – Upper Permian boundary, closely associated with redox events of different styles and ages, and occurs in various host rocks. Although a polyphase metallogenetic origin consisting of diagenetic and major epigenetic stages is widely accepted, key problems such as source rocks for base and particularly precious metals as well as the detailed timing of events remain unsolved. Furthermore, a recent evaluation by the USGS has revealed several major underexplored and unexplored metallogenetic tracts in Germany and Poland. Scientific results from the fields of organic geochemistry, PGE-geochemistry, isotopic age dating, and paleomagnetism now provide the base for an integrated, holistic approach to improve our understanding of the Kupferschiefer mineralising system. Additionally, research from different scientific fields, such as archaeogeology highlight the socio-economic significance of the Kupferschiefer. The session invites scientists working on the Kupferschiefer or related topics from all geoscientific disciplines, from the exploration industry, universities, research institutions and geological surveys alike. Field trips to the most significant German and Polish Kupferschiefer Districts will be offered in conjunction with the conference.

## 6.4. Raw Materials (Franz Michael Meyer & Thomas Oberthür)

The session will cover aspects of the origin, anatomy, and inventory of metallic as well as non-metallic mineral deposits. It will be the platform for the presentation

and dissemination of research focussing on this wide range of economic geology-related topics. We seek presentations that provide insights into ore-forming processes from ore petrology, geochemistry as well as radiogenic and stable isotope investigations. We also invite contributions to new developments in the quantitative modelling of hydrologic and chemical processes pertinent to land-based and seafloor hydrothermal systems. Research into sulfide and oxide mineralogy and geochemistry is also welcomed as it is central to many aspects of ore deposit studies, mineral technology, and the environmental impact of resource exploitation. This symposium will explore recent advances in both fundamental and applied studies across a wide range of areas involved in the formation of ore and industrial mineral deposits as well as the application of mineralogical and geochemical methods to exploration, ore dressing, and waste management.

## 6.5. Scientific Drilling and Subsurface Geophysics (Uli Harms & Rudi Giese)

Exploring the geological underground at depth is a rapidly developing critical tool in earth sciences. Boreholes, mines, and tunnels are increasingly surveyed and utilized as underground laboratories for experiments at natural conditions. Subsurface measurements and monitoring in boreholes or tunnels are the only means to observe processes directly and acquire quasi in situ properties of rocks and fluids. Furthermore, subsurface data bridge the divide between rock physics on samples and geophysical measurements from surface, serve to understand this scale effect, and facilitate calibration of data gained at ground level. Contributions from various fields in Earth science are invited to bring forward new results and novel methods of geophysical and geological underground investigations acquired in drill holes and tunnels.

## 7. Natural Hazards

### 7.1. Earthquakes and Volcanoes (Carl Gerstenecker, Stefano Parolai & Thomas R. Walter)

Global population growth and connectivity have increased the vulnerability and awareness of natural hazards. Destructive earthquakes in the past have lead to very high economical and human losses. Major volcanic eruptions affected population, disturbed air traffic and resulted in economic loss across the borders. These events once more demonstrated the far reaching and often indirect effects associated with dynamic shaking, site amplification, explosivity and ash transportation, tsunami generation and associated processes, and the need to investigate underlying processes and monitor time dependent activity states. This session aims to serve as a general and special platform to exchange novel techniques, results and understanding related to hazards in association with earthquakes and volcano activity. In particular it encourages, but is not limited to, studies related to: The physics of earthquake and volcanic eruptions / Triggers, occurrence and associated hazards / Long-term and short-term deformation and structural evolution / Field and modelling methods to investigate earthquake

ground shaking and volcano eruption processes and associated effects / Relationships between earthquakes, volcanoes and their environment / Evolution, migration and intrusion of magmas / Hazard assessment and risk reduction in earthquake and volcanic regions as well as general topics related to earthquake and volcano research.

## **7.2. Mass Movements** (Andreas von Poschinger & Joachim Rohn)

Investigation of mass movements in mountainous regions is a crucial part of natural hazard management. Considering a possible climate change, investigation of specific sites, research on mechanisms and kinematics as well as on the probability of events and on risk assessment gets increasing importance. Detection and monitoring methods for mass movements have changed rapidly in recent years. Nevertheless, besides new methods as GIS, radar interferometry, and other remote sensing techniques, old-fashioned methods as field mapping or traditional geodesy preserve their advantages.

## **8. Oceans**

### **8.1. The Effect of Global Change on Carbonate Sedimentary Systems in Present and Past** (Hildegard Westphal, Wolf-Christian Dullo & Dierk Hebbeln)

Carbonate sediments act as sensitive archives of environmental change (temperature, hydrology, trophic conditions, etc.). The session deals with global change in the present and past and the effect of change on carbonate sedimentary systems both, aerobically and anaerobically formed. We invite contributions presenting study of modern systems, where the environmental conditions are well known, as well as study of ancient carbonate deposits being interpreted in terms of environmental change.

### **8.2. Marine Resources** (Gerhard Bohrmann & Peter Herzig)

The oceans cover 70 percent of earth's surface, and host a vast variety of geological processes responsible for the formation and concentration of non-living mineral resources. Hence, oceans contain vast quantities of materials that presently serve as major resources for humans. Such resources are oil and gas, gas hydrates, manganese nodules, and various minerals precipitates like metal-rich deposits from hydrothermal systems among others. Today, the direct extraction of raw materials is very limited although such resources are of great scientific interest and are potentially valuable in future times. The session aspires to cover all aspects of science related to the formation, distribution of resources, as well as their economic background.

### **8.3. Ocean Margin Systems** (Gerold Wefer)

Ocean margins are the transitional zones between the oceans and continents where most of the sediments which arrive from the land are deposited. The ocean margins are dynamic systems in which many processes shape the environment. In recent years, commercial activity has expanded farther out into the

oceans as the margins gain increasing attention as potentially valuable assets for hydrocarbon extraction and industrial fisheries. Margins have great commercial potential, but they can also bear high potential hazards, for example, in the form of earthquakes and possible tsunamis triggered by slope and seismic instability, which can have a direct impact on the densely populated coastal regions. The goal of this session is to present and discuss new scientific results in the fields of sedimentation processes, hazard records, slope stability, dewatering of margin sediments, etc.

## **9. Water**

### **9.1. Arid Hydrogeology** (Christoph Schüth & Ralf Rausch)

Arid hydrogeology and water management in arid regions have some particularities that result from the specific climatic conditions in these areas. In general, the potential evaporation by far exceeds the precipitation limiting groundwater recharge. The smart management of the water resources is therefore of overriding importance. This requires a sound understanding of the local and regional hydrogeological conditions, available resources and water budgets, ideally leading to an integrative resources management approach. Contributions related to all aspects of arid hydrogeology (quantification of water cycles, characterization of aquifers, resources management) are welcome.

### **9.2. Bodengeophysik** (Ugur Yaramanci & Gerd Wessolek)

Böden bilden entscheidende Teile des Geosystems, zentral und verschiedene Bereiche miteinander verbindend und beeinflussend. Ihre flächenhafte Erfassung und Bewertung, die Aufklärung von Aufbau und Strukturen sowie die Ableitung von Eigenschaften und Stoffdynamik erfordern neue, zerstörungsfreie Erkundungstechniken. Die geophysikalischen Methoden werden zunehmend für diese Aufgabe spezifiziert und adaptiert. So entwickelte sich in den vergangenen zehn Jahren eine Teildisziplin in der Geo- und Bodengeophysik, die als Bodengeophysik oder gelegentlich als Pedogeophysik bezeichnet wird. Die erforderliche hohe Auflösung in Raum und Zeit sowie der technische Bedarf zur Erfassung großer Räume, teilweise ganzer Regionen ist dabei eine enorme Herausforderung für die Fachdisziplinen. Sehr oft ist eine multimethodische Herangehensweise erforderlich, um umfangreiche Datenmengen zum Abbild des Untergrundes erfassen, auswerten und abbilden zu können. Eine spezielle Herausforderung ist dabei die Umsetzung der geophysikalischen Größen in bodenphysikalische Kenngrößen und Strukturparameter. Die Sitzung will die Neuentwicklungen im Bereich Bodenphysik und Angewandte Geophysik vorstellen und diskutieren.

### **9.3. Hydrogeophysik** (Ugur Yaramanci, Martin Sauter & Christoph Schüth)

Im Zusammenhang mit Fragen der Wasserressourcen, des Grundwasserschutzes, des Schadstofftransports sowie der Überwachung des Grundwassers ist die Erkundung und Charakterisierung der Grundwasserleiter von essentieller Bedeutung. Methoden aus der Ange-

wandten Geophysik werden eingesetzt zur Ermittlung der Geometrie der geologischen Verhältnisse und zur hydraulischen Parametrisierung des Untergrundes. Neuere Entwicklungen zeigen beeindruckend das Potential dieser Methoden, Grundwasserleiter zuverlässig und hoch auflösend charakterisieren zu können. Die Sitzung soll eine Zusammenfassung der Neuentwicklungen in dem interdisziplinären Bereich der angewandten Geophysik und der Hydrogeologie geben und anregen, neue Wege zu gehen.

#### **9.4. Isotopenhydrogeologie** (Stephan Weise & Karsten Osenbrück)

Isotopenmethoden stellen eine der zentralen Möglichkeiten dar, Wasserkreisläufe und die angebundene Stoffkreisläufe in der Hydrosphäre zu charakterisieren und zu quantifizieren. So erlauben sie Rückschlüsse auf die Dynamik des Grundwasser-Reservoirs und eine direkte Skalierung auch des mit einem Fließsystem verbundenen Stofftransports. Beiträge, die sich mit dem Einsatz von Isotopenmethoden im Rahmen der genannten Themenbereiche beschäftigen, sind willkommen.

#### **9.5. Reservoir Sedimentology** (Jens Hornung & Matthias Hinderer)

Sedimentological features are still regarded as one of the key controls for reservoir management purposes. Asset teams in all kinds of disciplines like CO<sub>2</sub> sequestration, hydrocarbon exploitation, aquifer characterisation or environmental issues are challenged to quantify and predict these controls from microscopic to regional scales. Outcrop analogue studies, ground penetrating radar, seismics, drilling, logging, 3-D modelling (dynamic and static), sequence stratigraphy and hydraulic testing (in lab and in field) are tools to predict such subsurface properties. This session refers to various disciplines and all kinds of state-of-the-art methods seeking a better understanding of sedimentological reservoir characterisation and prediction.

## **10. Open Topics**

### **10.1 Studium und was dann?** (Ulrike Mattig)

Erfahrene Vertreterinnen und Vertreter der verschiedenen Berufsgruppen im BDG (Hochschulen und Forschungseinrichtungen, Geobüros und Freiberufler, Industrie und Wirtschaft sowie Ämter und Behörden) stellen unterschiedliche Einsatzfelder für Geowissenschaftlerinnen und Geowissenschaftler vor. Neben Informationen zu aktuellen Arbeitsmarktchancen enthalten die Beiträge wichtige Hinweise zu den spezifischen Anforderungen in den verschiedenen Tätigkeitsbereichen und Anregungen zu einer gezielten Vorbereitung darauf, aber auch Tipps zum Berufseinstieg, zur Ausländertätigkeit und zur Weiterqualifizierung. Großer Wert wird dabei auf die Vernetzung gelegt: so besteht die Möglichkeit, das Mentoring-Programm des BDG näher kennen zu lernen und sich mit den anwesenden Experten auch zu individuellen Fragen und Problemen auszutauschen.

### **10.2. Geowissenschaften kommunizieren – aber wie?** (Lutz Geißler, Albert Gerdes, Monika Huch)

Das öffentliche Interesse an geowissenschaftlichen Themen hat in den vergangenen Jahren deutlich zugenommen – nicht zuletzt aufgrund der gehäuften Berichterstattung vieler Medien über Natur- und Baugrundkatastrophen, den steigenden Bedarf an Bodenschätzen oder über den Klimawandel. Dem gestiegenen Interesse der Bevölkerung tragen bereits einige größere Projekte, wie das Jahr der Geowissenschaften, der Tag des Geotops oder der Tag der Steine in der Stadt, aber auch viele kleine Aktionen erfolgreich Rechnung. Die Frage ist, wie diese Kommunikation zwischen den Geowissenschaften und unterschiedlichen Zielgruppen in der Öffentlichkeit ausgebaut und intensiviert werden kann. Die Session gibt all jenen Geowissenschaftlern und Öffentlichkeitsarbeitern ein Forum, die sich in Museen, Schulen, Forschungseinrichtungen, Behörden, Vereinen, als Kleinunternehmer oder ehrenamtlich an der Schnittstelle zwischen Fachwissenschaft und Öffentlichkeit engagieren. Während der Session werden verschiedenste Projekte aus der geowissenschaftlichen Öffentlichkeitsarbeit vorgestellt, Forschungsergebnisse präsentiert und mit dem Plenum diskutiert. Dabei stehen aktuelle Tendenzen, Probleme, Visionen und Ideen der Wissenschaftskommunikation im Vordergrund.

**Excursions** (prices include transportation from/to congress site)

#### **Saturday, October 9 (Pre-Congress)**

A1 Potassium mining in Eastern Hesse (Karl-Heinz Voigt): Visit of the subsurface repository Herfa-Neurode (formerly potassium mine), technical lecture by a member of Kali + Salz AG (full day, costs: 50 Euro).

A2 The Variscan Island Arc in the Odenwald Mts (Eckart Stein): Geology of the Odenwald Mts (full day, costs: 50 Euro).

A3 Spas and Water Management in Wiesbaden (Georg Mittelbach): Drinking water abstraction and operation of spas: benefit and bane (full day, costs: 50 Euro).

A4 The Messel Pit, a UNESCO Heritage Site (N.N.): Geology, state of art, excavation highlights (approx. 3 hours, costs: 30 Euro).

#### **Tuesday, October 12 (During the Congress)**

B1 European Space Operations Centre (ESOC) (N.N.): Presentation of the organisation, visit of the main control centre, presentation of missions, visit of the mission control centre, technical lecture (approx. 2 hours, afternoon, costs: 15 Euro)

B2 Art Nouveau in Darmstadt (N.N.): Visit of Darmstadt's Mathildenhöhe, centre of the German Art Nouveau (exterior area, Art Nouveau houses Olbrecht and Glückert, colony of artists, wedding tower, Russian chapel; approx. 3 hours, afternoon, costs: 20 Euro, incl. guide and admission charges).

B3 Vineyards and Culture in the Rhinegau (N.N.): Bus ride to the Rhinegau including visit of abbey Eberbach (guided tour), ship voyage from Rudesheim to St. Goarshausen, wine-tasting (full day, costs: 90

Euro, incl. guided tour Eberbach abbey, ship voyage, wine-tasting).

#### Thursday, October 14 (Post-Congress)

- C1 Groundwater of the Upper Rhine Graben (N.N.): Active cultivation, controlled infiltration, agricultural irrigation, water supply, prevention from water logging (full day, costs: 50 Euro).
- C2 Cement industry in Heidelberg (Michael Bindig): Visit of HeidelbergCement's quarry in Nußloch, presentation of the company, geology of the quarry, production, recultivation (full day, costs: 50 Euro).
- C3 The Messel Pit, a UNESCO Heritage Site (N.N.): Geology, state of art, excavation highlights (approx. 3 hours, costs: 30 Euro).
- C4 Mosbach Sands and Tertiary Limestones of the Mainz Basin (Thomas Keller and Gudrun Radtke (full day, costs: 50 Euro)
- C5 Lignite mining, Tagebau Hambach (NN): Excursion starts at 6 in the morning with a maximum of 30 participants (costs: 100 Euro).
- C6 Hardcoal mining, Bergwerk Saar (NN): Excursion starts at 6 in the morning with a maximum of 12 participants (costs: 100 Euro).
- C7 Power plant Staudinger (NN): Excursion starts at 6 in the morning with a maximum of 25 participants (60 Euro).

#### Congress fees (payable by May 30, 2010)

190 (reduced 90) Euro for members of the participating geo-institutions, 250 (120) Euro for non-members. Reduced fees are available to students, PhD students, unemployed and retired persons). In order to claim reduced fees, please submit proof of your status to the congress office. Eligible persons are also asked to present this proof at the congress. There is a late registration surcharge of 50 (30) Euro (after June 1, 2010). Please use the online registration on the congress website [www.GeoDarmstadt2010.de](http://www.GeoDarmstadt2010.de).

#### Travel grant for students

Student members of the DGG and GV as well as those joining during the congress may apply for a travel grant. Details are available from the DGG ([info@dgg.de](mailto:info@dgg.de)) or GV ([info@g-v.de](mailto:info@g-v.de)).

#### Committee

**Organizing Committee:** Andreas Hoppe (Darmstadt) \* Heinz-Gerd Röhling (Hannover) \* Christoph Schüth (Darmstadt) \* Ogarit Uhlmann (Leipzig)

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#### Accommodation in Darmstadt

Details of a selection of hotels in different categories as well as a reservation form are available on the congress website [www.GeoDarmstadt2010.de](http://www.GeoDarmstadt2010.de). Please use the provided hotel fax form to book a room in the hotel of preference. Please note that the number of rooms is limited and that the indicated rates are subject to change approx. 4-6 weeks ahead of the conference. Rates after that time are subject to the hotel's discretion. Room rates always include breakfast and VAT. Room allocations have been reserved for the period between October 9 and 14, 2010..

#### Travel information

You will find details for traveling to the congress center darmstadtdium and the Senckenberg Museum in Frankfurt on the congress website [www.GeoDarmstadt2010.de](http://www.GeoDarmstadt2010.de). Here you will also find information about special rates for traveling to the congress with Deutsche Bahn AG .

#### Contact

For scientific questions: GeoDarmstadt2010 c/o TU Darmstadt (Andreas Hoppe), e-mail: [hoppe@GeoDarmstadt2010.de](mailto:hoppe@GeoDarmstadt2010.de)

For organizational questions please contact the congress office: F&U confirm (Ogarit Uhlmann and Susanne Lange), e-mail: [info@GeoDarmstadt2010.de](mailto:info@GeoDarmstadt2010.de), Tel: 0341/235-2264