



4th International Conference on Medical Geology – Bari, Italy – 20-25 September 2011

Sessions & Conveners

BB BIOMINERALS & BIOMATERIALS

- BB1 - Biopolymer Clay Nanocomposites for Medicinal Uses**
- BB2 - Renal Stones: Epidemiology, Mechanisms of Formation and Analysis**
- BB3 - Biomineralisation and Analysis of Pathological Mineral Deposits**

ET ENVIRONMENTAL TOXICOLOGY & EPIDEMIOLOGY

- ET1 - Pharmaceuticals and Personal Care Products – Emerging Environmental Pollutants**
- ET2 - Asthma and Allergies in Children and Adults: Role of anthropogenic emissions and search for protective factors with special reference to trace elements**
- ET3 - Role of Environment in Reproductive Disorders and Immune Impairments of Humans and Animals**
- ET4 - Epigenetic and Genetic Mechanisms and Environmental Factors in Disease Etiology**
- ET5 - Toxicokinetics & Fate of Pesticides in Biological Systems, Food & Environment**
- ET6 - The Importance of Biogeochemical Processes in Medical Geology**
- ET7 - Element Speciation in the Environment-Food Chain**
- ET8 - Veterinary Geology - Impacts of Geological Factors on Animal Health**
- ET9 - Biomonitoring and Biomarkers and Risk Assessment**
- ET10 - Metal Carcinogenesis in Medical Geology**
- ET11 - Mesothelioma inducing Minerals**
- ET12 - Solving Medical Questions with Geochemistry: Disease Inception, Diagnosis, and Treatment**

ME MINERALS & ENVIRONMENT

- ME1 - Clay Minerals: Management of Harmful Cations Wastes**
- ME2 - Airborne Particulate Matters & Minerals**
- ME3 - Minerals as Medicine**
- ME4 - Zeolites: Environmental & Medical Uses**

PQ AIR, SOIL & WATER POLLUTION & QUALITY

- PQ1 - Arsenic and the Environment: From Geology to Medicine through the Food Chain**
- PQ2 - Analytical and Biological Techniques for Detection of Pollutants**
- PQ3 - High Tech Metals and Health**
- PQ4 - Infiltration Reservoirs: a Low Cost, Sustainable Approach to providing Clean Water and Reversing Desertification/Salinization of Soils**
- PQ5 - Impact of Alterations in Water Environment on Human Health**
- PQ6 - Inherent Toxicity in Rocks and its Impact on Human Health**

RA RISK ASSESSMENT & COMMUNICATION IN MEDICAL GEOLOGY

- RA1 - Health Impacts of Mining Activities**
- RA2 - Teaching Medical Geology & Environmental Education**
- RA3 - Medical Geology Perspective on The Risks Associated with Volcanism**
- RA4 - Brownfield Sites in Metropolitan Areas and Risk Assessment for Public Health**
- RA5 - Medical Geology and Occupational Medicine**
- RA6 - Health Impact Assessment**

UM MISCELLANEOUS

- UM1 - Radioecology and Environmental Radioactivity**
- UM2 - Global Environmental Change Impacting Human Health**
- UM3 - General Topics**



4th International Conference on Medical Geology – Bari, Italy – 20-25 September 2011
Sessions & Conveners

WS

WORKSHOPS & SHORT COURSES

WS1 - Workshop on Dust (IUGS-GEM Commission)

WS2 - Workshop on the Current Status of Research in Medical Geology in Africa

WS3 - Short Course on Medical Geology

WS4 – Clinical cases of urinary calculi in Italy



BB1 Biopolymer Clay Nanocomposites for Medicinal Uses

In the last decades, clays and polymer–clay nanocomposites (PCNC) have been proposed as very useful materials for medicinal uses as tissue engineering or modified drug delivery. Natural phyllosilicates, including smectites, kaolinite, halloysite and fibrous clays are the clay minerals most used because of their high surface areas and colloidal dimensions of their particles. They are used as special excipients directly or as fillers in PCNC with different purposes. This session aims at reporting on very recent developments in the use of clay minerals and PCNC as materials with medical interest, including drug delivery and others medicinal targets.

Conveners: César Viseras Iborra, Dimitris Papoulis, Stefano Leporatti

BB2 Renal Stones: Epidemiology, Mechanisms of Formation and Analysis

Renal lithiasis (renal calculi) affects a wide sector of population, between 4 and 15% depending on the geographic region, and it has been classified as one of the illnesses that more pain can cause to human beings.

The renal lithiasis can be defined as an alteration of the balanced conditions of crystallization of the urine. The factors that participate in the formation of crystals can be diverse and for this reason renal lithiasis is clearly a multifactorial pathology. The session aims to discuss:

- Relation between epidemiology of renal stones, geographical characteristics (as climate and soil composition), diet and life style habits.
- Mechanisms of renal stone formation on the light of general aspects of stone/rock development.
- Methodologies of stone analysis and characterization that could be usefulness for improve the diagnostic and treatment of patients.

Conveners: Félix Grases, Antonia Costa-Bauza, Rafel M. Prieto, Maria Luigia Giannossi

BB3 Biomineralisation and Analysis of Pathological Mineral Deposits

There is an increase incidence of crystal deposition diseases such as gallstones and atherosclerosis in people of all ages. Crystal nucleation frequently occurs in bile and coronary artery resulting in these diseases. One of the main focuses is to determine whether nucleation is essentially homogeneous and takes place spontaneously from highly supersaturated body fluids or whether it is heterogeneous and is initiated by some other agents such as trace elements. The session aims to highlight studies on biomineralisation (in vivo and in vitro), trace element analysis of pathological minerals and epidemiology, particularly with respect to geographical location, climatic conditions etc.

Conveners: S.Narayana Kalkura

ET1 Pharmaceuticals and Personal Care Products – Emerging Environmental Pollutants

Pharmaceuticals and Personal Care Products as pollutants (PPCPs) are being released into the environment in large quantities on a regular basis. Due to the fact that PPCPs dissolve easily in aqueous media and don't normally evaporate at normal temperatures or pressure, they make their way into the soil and aquatic environments, mainly via sewage. Many disposed PPCPs are persistent in the environment and remain biologically active. This situation may result in unpredictable biochemical interactions when they mix together. Although the concentrations of some PPCPs detected in investigated water bodies worldwide are low, research is still immature to rule out the threat of PPCPs to human health. Some of the expected potential effects of PPCPs on living organisms are: delayed development in fish and frogs, delayed metamorphosis in frogs, increased feminization of fish populations, and a variety of reactions including altered behavior and reproduction.

Conveners: Amjad Shraim



4th International Conference on Medical Geology – Bari, Italy – 20-25 September 2011

Sessions & Conveners

ET2

Asthma and Allergies in Children and Adults: Role of anthropogenic emissions and search for protective factors with special reference to trace elements.

In urban areas, the prevalence of asthma and allergies is increasing and appears higher as compared to rural communities. Westernized life style, type of farming, diet and exposure to environmental pollutants can simultaneously interact in the determination of this phenotype in genetically predisposed individuals. This session intend to examine whether and to what extent anthropogenic airborne contaminants in general, and trace elements including platinum group elements in particular, play a role in the output and clinical expression of allergic immune responses. Studies on anti-allergic factors will be considered, with special reference to the protective role of essential trace elements and antioxidants. Experimental, biomolecular, immunological and epidemiological studies are welcome, as well as the assessment of gene-environment interactions in identifying individuals vulnerable to adverse effects from pollutants.

Conveners: Paola Borella

ET3

Role of Environment in Reproductive Disorders and Immune Impairments of Humans and Animals

Environmental changes have negatively affected most biological systems and effects include not only endocrine disruptions, sex-ratio changes and decreased reproductive parameters, but also teratogenic and genotoxic effects, immune-suppression and other immune-system impairments that can lead directly to disease or increase the risk of acquiring disease. Although environmental chemicals have been shown to affect reproduction and development in single organism tests, the degree to which chemicals contribute to the decline of reproductive and immune functions in human and animals, either alone or in concert with other factors such as climate change is still uncertain. This session will address the role of environmental chemicals such as polychlorinated biphenyl, toxic trace elements, pesticides and other well know endocrine disruptors in deficits of reproductive and immune parameters and functions. Experimental, biomolecular, immunological and epidemiological studies are welcome.

Conveners: Paola Borrella

ET4

Epigenetic and Genetic Mechanisms and Environmental Factors in Disease Etiology

Environmental exposure can induce changes in gene regulation associated with human diseases. Toxicogenomic technologies allow complete assessment of the functional activity of biochemical pathways, and of the structural genetic differences among individuals, that were previously unattainable. Environmental pollution, together with predisposing genetic factors, plays a key role in determining short and long-term adverse effects on human health. Epigenetic changes are thus a biological response to environmental stress factors and may be transmitted to the offspring. The epigenome is easily affected by different factors, such as aberrations of normal epigenetic processes that can be caused by environmental factors as exposure to xenobiotics, social behavior and nutritional deficiencies. Moreover, the gene expression screening through high through-put techniques like microarray, represent a new tool for the identification of new epigenetic indicators in order to monitor the early biological effects on the population exposed to xenobiotics.

Conveners: Elena Sturchio, Claudio Minoia

ET5

Toxico Kinetics & Fate of Pesticides in Biological Systems, Food & Environment

Widespread use of different pesticides having inherent toxicity pose hazards to the human/animal health, food & environment as a whole, if consumed injudiciously. Toxico kinetics & fate of pesticides are of tremendous importance from health point of view. The researches on these specific fields pursuing globally for assessing the quantum of toxicity, impact & their decontamination in bio and ecological systems can present their finding in the following subsections: i) Quantification of pesticides, analytical & bioanalytical methods in different substrates; ii) Toxico-kinetics & disposition of insecticides, fungicides, herbicides & other pesticides, in small & large animals; iii) Degradation & metabolism, identification of new derivatives & proposition of metabolic pathway in diverse substrates; iv) Remediation strategies & new pesticide formulations to reduce their environmental impact; v) Regulatory measures in different countries & their harmonization for food & environmental safety.

Conveners: Ashim Chowdhury, Sabino A. Bufo



4th International Conference on Medical Geology – Bari, Italy – 20-25 September 2011

Sessions & Conveners

ET6 The Importance of Biogeochemical Processes in Medical Geology

One aspect of Medical Geology that has received less attention is the role that biogeochemical processes play in exerting or exacerbating such contaminant exposures. As exposures are often a result of changing redox conditions within a hydrologic unit, driven by biogeochemical processes. Mercury exposures are also driven by biogeochemical processes, wherein the conversion of inorganic mercury to the neurotoxic and bioaccumulative methylmercury is driven by natural microbial processes in wetlands.

This session will explore the role of biogeochemical processes in Medical Geology. In many cases these processes may enhance the human health impacts of naturally occurring contaminants, although a reduction of impacts is also possible.

Conveners: William H. Orem

ET7 Element Speciation in the Environment-Food Chain

The phytoaccessibility of trace elements in soil is governed by several factors, such as pH, redox potential, organic matter, content of clay and oxides/hydroxides influencing element adsorption, etc. These factors dictate the migration of trace elements in the soil solution and their chemical speciation, which are the key issues for element mobility and plant availability. Different element species are taken up across the root plasma membrane through different processes, e.g., active transport mediated by diverse transporters. This session will cover the following topics: i) Study of element phytoaccessibility in soil; ii) Plant uptake of element species; iii) Transport of element species in plants; iv) Element speciation in plant food and feed; v) Risk/benefit assessment of trace elements species in the food chain; vi) Speciation and the impact of geochemical anomalies on human health.

Conveners: Francesco Cubadda

ET8 Veterinary Geology: Impacts of Geological Factors on Animal Health

Health, production and reproduction of livestock and wildlife could be affected by local geological anomalies and anthropogenic environmental changes. They are closely associated with their natural environment and could, ideally, also serve as sentinels. Seeing that animal products are consumed by humans, another dimension is added, namely public health. Trace element deficiencies or imbalances may be detrimental to animals in some areas, but the overabundance of certain elements (naturally or man-made) in other areas may even cause mortality. Veterinarians, animal scientists, geologists, geochemists, hydrologists, livestock and wildlife managers, agronomists, and policy makers should be primed to take note of their geological environment and manage livestock and wildlife accordingly. For this session, the ideal situation is not only to get international scientists together to present their "Veterinary Geology" findings, but also to discuss ideas and issues related to soil-plant-animal interactions.

Conveners: Jan Myburgh

ET9 Biomonitoring and Biomarkers and Risk Assessment

In Environmental Toxicology and Medical Geology, biomonitoring is a tool with great potential to assess the health risks of human exposures to harmful chemicals in the environment, in order to achieve corrective actions of prevention together with health and environmental interventions. It is conducted by collecting samples of human fluids and/or tissues to measure specific biomarkers. A biomarker is defined as any alteration in cells or biochemical processes that can be measured in a biological system or sample. They can be classified as "biomarkers of exposure", "biomarkers of effect" or "biomarkers of susceptibility". Nowadays, new analytical methods to quantify human biomarkers of chemical exposure in small samples have been developed for many substances. Contributions to this session will be on biomonitoring in public health risk assessment, development of implementation strategies to monitor exposures and early effects in human or animal populations, and new trends in biomarkers research.

Conveners: Nelly Mañay



4th International Conference on Medical Geology – Bari, Italy – 20-25 September 2011

Sessions & Conveners

ET10 Metal Carcinogenesis in Medical Geology

Metals are an important and emerging class of carcinogens. At least three metals, specifically nickel, chromium and arsenic, are proved to be human carcinogens, and many others are suspected to have a carcinogenic potential in human beings. Given the short list of known human carcinogens of any type, it follows that metals make up the most of it. Relatively little attention has been paid to the topic of metal carcinogenesis. The lack of interest may have been due to the fact that metals are the simplest of molecules and their mechanism of action is thought to be simple as well. This could not be further from the truth and, although no clear mechanisms have emerged in the area of metal carcinogenesis, they appear to be anything but simple.

This session will highlight the recent research activities both on metal carcinogenesis and the intricate nature of metal interactions in biologic systems, providing a forum to stimulate and promote a discussion on their effects upon human health.

Conveners: José A. Centeno

ET11 Mesothelioma Inducing Minerals

Asbestos group minerals have been the cause of mesothelioma, a rare but a deadly cancer, in many parts of the world for the past fifty years. Erionite, a zeolite group mineral, is more carcinogenic than asbestos and causing mesothelioma specifically in certain villages of Central Anatolia, Turkey. More than 50 % population of the three villages in that part of Turkey has mesothelioma. Recently, mesothelioma is identified in Mexico and few other places in USA. In addition to regulatory asbestos, "non-regulatory" asbestos group minerals (i.e., fluoro-edenite, balangeroite, etc.) identified in Italy and USA were also observed causing mesothelioma. This session would be an excellent platform to discuss new developments about mesothelioma inducing minerals and participating from medical doctors, pathologists, geneticists, medical geologists, and mineralogist-geochemists from universities and organizations will be encouraged.

Conveners: A. Umran Dogan, Marina Musti

ET12 Solving Medical Questions with Geochemistry: Disease inception, diagnosis, and treatment

"Nothing begets good science as much as the development of a good instrument" - Sir Humphrey Davy (1778-1829).
This session gathers scientific contributions about the effects on the human health of exposure to geological materials *lato sensu*. The geochemical approach, often focused on processes occurring in natural interfaces, is here applied to the recognition and explanation of phenomena occurring between geological materials and typical interfaces of the human body. This session welcomes presentation of research that discusses the application of geochemical principles, methods and instrumentation to the study of human health. We especially welcome contributions that focus on the unique relation between geochemistry and the diagnosis, treatment, inception and/or progression of disease. The innovative leit-motif of this session centres on the unique perspectives and approaches applied by geochemists and their potential contributions to human health-related research.

Conveners: Robyn Hannigan, Paolo Censi

ME1 Clay Minerals: Management of Harmful Cations Wastes

In the second half of the 20th century humanity has come face to face with two linked events: scientific and technological developments, which have caused an increasing pollution of the natural environment. In this sense, the interaction between clay minerals and aqueous solutions plays an important role in controlling radionuclides and heavy metals level and in preventing their disposal into the terrestrial and marine environment. This session aim is to cover all aspects of interaction between harmful cations and clay minerals which includes ion-exchange, physical sorption and chemisorption, filtration, precipitation and chemical reaction.

Conveners: María Dolores Alba Carranza, Maria del Mar Orta, Miquel Vidal



4th International Conference on Medical Geology – Bari, Italy – 20-25 September 2011

Sessions & Conveners

ME2 Airborne Particulate Matters & Minerals

Airborne particulate matters and minerals may include materials of different nature and toxicity and may be inhaled causing lung diseases including a malignant mesothelioma. These health hazard minerals include “regulatory” asbestos minerals (crocidolite, amosite, anthophyllite, tremolite, actinolite, and chrysotile) as well as “non-regulatory” minerals, which have appeared in literature. Under special conditions, other particulate minerals, such as very fine inhalable quartz, clay minerals, metal compounds etc., may also pose a risk to health. These particulate minerals and the elements they may release should be the aim of a multidisciplinary research, where mineralogists and geochemists may contribute to characterize mineral reactivity, help to identify possible mechanism(s) of their carcinogenicity, toxicity and capacity to induce diseases and aid government organizations in their decision making.

Conveners: Meral Dogan, F. Javier Huertas

ME3 Minerals as Medicine

It is law of nature that the cure of a disease is always available in the surrounding area where the disease is spread. Almost in every part of the world local medicines are being practiced for centuries and they are effective. These local traditional medicines are to be given a scientific coverage and testimony. In India Ayurveda is being practiced for hundreds of years using plant and animal products and minerals. The proposed Session will cover a number of minerals being used as medicine in Ayurveda and traditional medicines practiced in other countries like China, Taiwan Egypt, India and many African countries.

Conveners: B.S. Paliwal

ME4 Zeolites: Environmental & Medical Uses

Due to their structure, well-defined pores and channel size, ionic exchange, molecular sieving and catalytic properties, zeolites are used in numerous agricultural, industrial and environmental fields. In particular, they are widely employed in environmental applications for the decontamination of polluted soil and water. Recently, these microporous and mesoporous materials have also received great attention in medical application because of their biological properties, low toxicity and high compatibility. Zeolites have been investigated as drug carriers, adjuvant agents in anticancer therapies, dietetic supplements or antimicrobial agents. Due to their stability over time zeolites are used as biomaterials, too. This session will highlight the recent researches on synthetic and natural zeolites in medical and environmental applications providing a forum to stimulate and promote a discussion on their effects upon human health and the role they play in toxic element immobilization.

Conveners: Claudia Belviso

PQ1 Arsenic and the Environment: from Geology to Medicine through the Food Chain

Exposure to As may occur through several anthropogenic sources and also natural sources via ingestion, inhalation and dermal contact. Millions of people face the problem of acute and chronic As exposure via drinking water and contaminated foods (i.e. rice) in many countries, where the concentration of As in water is very high (>100 ppm). Geochemists, mineralogists, clinicians, food technologists are involved in defining the As mobility and fate, the risk assessment, the concentrations in foods since the risk associated to As intake from diet is of paramount importance. Therefore, this session is an inter- and multidisciplinary platform of information exchange, making an effort to link the occurrence of geogenic As and the potential mobilization and consequent contamination of ground- and surface water, soil and air and the propagation of As in the food chain, the chronic affects of As ingestion by humans, and their toxicological and related public health consequences.

Conveners: Jochen Bundschuh, Jiin-Shuh Jean, Prosun Bhattacharya, Andrea Masotti



PQ2 Analytical and Biological Techniques for Detection of Pollutants

During the last decades, tremendous improvements in analytical instrumentation and biological techniques have allowed a better detection of pollutant in soils, sediments and water. However monitoring of pollution of ecosystems by persistent pollutants is still an ongoing challenge for the analyst. Due to the extensive and increasing number of pollutants and to the difficulty of predicting their collective effects in receiving ecosystems, there is a need for screening methods in environmental monitoring.

In the one hand, new pollution-control programs mean lower detection limits of well known pollutants such as heavy metals and pesticides to be reached. In the other hand, number of substances liable to appear on directives increased. Hormone, metabolites of medicines, formaldehyde and platinum are examples amongst various new pollutants potentially harmful in the environment. The increase in such new pollutants calls for fast, cost-effective analytical or biological techniques to be used in extensive monitoring programs.

Conveners: Claude Geffroy

PQ3 High Tech-Metals and Health

Beryllium, Ga, Ge, Ir, In, Li, Nb, Pt, Pd, Rh, Ru, Ta and rare earth elements (REE) are examples of high tech-metals. Although these metals are needed only small amounts in the high technology production, they are strategically very important. The economic growth of developed countries is greatly dependent on new technological innovations based on new metallic alloys. High tech-metals are critical in the production based on a new technology, e.g. tantalum on mobile phone and indium in flat panel television (LCD TV) productions. High tech-metals often occur as the by-products of the mining. Indium, for example, is available as the by-product in zinc mining. The health effects of the high tech-metals are not well-known. The scientific publications of the bioavailability of high tech-metals from soil or water to humans is scanty available. High tech-metals are probably not necessary trace elements for human health, but vice versa there are indications that they are harmful, maybe toxic. The increased global processing of high tech metals is the reason why it should be important to highlight studies on their geochemical circulation and potential health disorders.

Conveners: Anne Kousa, Maria Nikkarinen

PQ4 Infiltration Reservoirs: a Low Cost, Sustainable Approach to providing Clean Water and Reversing Desertification/Salination of Soils

Infiltration is a low cost sustainable method of water disposal. This session will consider the use of infiltration (particularly in arid areas/semi-arid areas/coastal areas/areas with episodic or intermittent rainfall) to create perched reservoirs in clayey sediments to provide (i) treated drinking water (including removal of leached metals, micro-organisms, and organic chemicals), (ii) localised raised groundwater levels to support specific agriculture activities and remove the adverse effects of leaching, (iii) reclamation of salinized/sodicized/desertified land to provide increased crop yields, (iv) improved water quality in areas where the deep groundwater aquifers are affected by leached saline waters associated with irrigation projects, and (v) low cost, rapid supply, high volume sources of treated water in the aftermath of natural/ anthropogenic disasters.

Conveners: David J. Antia

PQ5 Impact of Alterations in Water Environment on Human Health

This session invites papers investigating human health related consequences of natural and anthropogenic alterations of the water environment. Human activities and/or climate change, such as water development and changes in precipitation patterns, can cause alternations in the water environment. These include variation of water quality and the spatial and temporal distribution of water resources, which have great potential to impact human health. Dissolution of metals from sediments and aquifers may result in elevated metal concentrations in drinking water. Ecological changes caused by such alterations may be important if vectors are involved in disease transmission. Interdisciplinary studies that include epidemiological, ecological, and hydrological aspects are essential to investigate the critical impact on human health caused by alterations of the water environment.

Conveners: Satoshi Takizawa, Motomu Ibaraki, Anwar Zahid



4th International Conference on Medical Geology – Bari, Italy – 20-25 September 2011

Sessions & Conveners

PQ6 Inherent Toxicity in Rocks and its Impact on Human Health

The concentration of toxic elements in certain rocks is relatively high. Therefore, it is important to understand about the presence of these toxic elements in rocks so as to take protective measures against excessive exposure. In most parts of the world the heavy metal toxicity is common that lead to release of toxic elements into soil and groundwater. This session invites work related to the i) investigation of the uptake of toxic elements by flora and fauna and the understanding of the bio-accumulation of these elements in the food chain; ii) quantification of the rate and path of transport of the toxic substances from the rocks to the biological environment and its impact on ecosystem and biodiversity.

Conveners: Lakshmanan Elango, K. Sankaran

RA1 Health Impacts of Mining Activities

Mining activities have been in operation for several centuries. Mining of metallic and non metallic ores constitute a potential source of contamination for the environment and biosphere. Mining wastes and acid mine drainage also contribute to the environmental and health degradation. Occupational safety and health measures are not properly applied in most mines particularly in developing countries.

This session will discuss the health problems associated with mining activities e.g. pneumoconiosis, black lung disease, silicosis, asbestosis, fluorosis, lung cancer caused by Radon emissions. Other issues that can be discussed is the use of toxic chemicals in the beneficiation of some ores like gold and phosphate and the radioactive hazards encountered in mining of uranium and phosphate ores.

Sound plans and management systems including health risk assessment and Environmental Impact Assessment studies associated with mining life cycle are also important issues to discuss in this session.

Conveners: Ashraf El Maghraby

RA2 Teaching Medical Geology & Environmental Education

Environmental Education does not stop with acquiring information about environment but also helps to acquire attitudes and values conducive to environment protection and understanding of interdependence of nature and people. Environmental education is to create an awareness of the economic, political and ecological interdependence of the modern world so as to enhance a spirit of responsibility and solidarity among nations and people. It is therefore very important to share approaches and ideas on teaching and learning Medical Geology! Oral and poster contributions will be welcome. We also encourage demonstrations and displays of teaching software (on your own computer), lab manuals, or other teaching materials that you have either developed yourself, or that have been developed by others but that you and your students have found useful.

Conveners: S. K. Sharma

RA3 Medical Geology Perspective on the Risks Associated with Volcanism

Well-known to the world community are devastating catastrophic volcanic events affecting nearby populations by lava flow, nueé ardent, lahar, and other plinian effects. Less well-known, but just as influential to human health are chronic health issues related to volcanism and geothermal systems in and around active volcanic areas. The session will emphasize these health issues related to volcanism; for example, volcanic air pollution from ash and volatiles, air pollution from geothermal fumaroles, groundwater contamination by geothermal fluids, and soil contamination. Such chronic health issues may have a long-lasting effect on generations of families living near volcanoes that is not well-understood by government agencies responsible for volcanic risk management. This session will bring together a multidisciplinary group of experts to examine and discuss these health issues.

Conveners: Benedetto De Vivo, Harvey Belkin



4th International Conference on Medical Geology – Bari, Italy – 20-25 September 2011

Sessions & Conveners

RA4 Brownfield Sites in Metropolitan Areas and Risk Assessment for Public Health

Urban habitats are important areas of biodiversity and the potential threatening impact of pollutants on this resource needs to be assessed. Many urban areas have to be cleaned up before the areas can be reutilized. The investigation of the impact of soil and water pollution on the environment and the related risks on human health is a good example of how the integration between various scientific research disciplines can be utilized to improve the protection of human health. The assessment of risk for human health consists of the identification of hazards and the characterization of risks resulting from exposure to soil and water pollutants, including the related uncertainties. To assess the magnitude of the problem, an interdisciplinary approach is of fundamental importance to achieve the following endpoints: i. to better understand the underlying patterns and size of risks (risk assessment), ii. to develop effective strategies for environmental remediation (risk management).

Conveners: Stefano Albanese, Domenico Cicchella, Annamaria Lima, Maurizio Manno

RA5 Medical Geology and Occupational Medicine

The Workers' Compensation Authorities protect workers from the physical and economic damage deriving from work related accident and diseases. The geologists' knowledge was and it is still essential for a correct risk assessment. The session, through a multidisciplinary approach, points out to some main subjects which are historically recognized and compensated as occupational illnesses.

Conveners: Rodolfo Coccioni, Bianca Rimoldi, Fabio Tateo, Paolo Valera

RA6 Health Impact Assessment

Health impact assessment (HIA) is commonly defined as “a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population”. Also the World Health Organization (WHO) recognizes the need for development policies to protect health, thus reducing negative environmental health impacts. This session will gather recent research activities dealing both with an estimation of project/policy benefits or risks on health and the planning of appropriate interventions, with the aim of promoting a discussion on the methodologies to be applied in order to describe, quantify, monetize and determine the distribution of the environmental effects on health.

Conveners: Coming soon

UM1 Radioecology and Environmental Radioactivity

The session aims to highlight many aspects of environmental radioactivity. Contributions dealing with naturally occurring nuclides in all divisions of lithosphere, biosphere and troposphere or with those created and released by man through nuclear weapons manufacture and testing, energy production, fuel-cycle technology, etc. are welcomed.

Conveners: Hiroshi Yasuda



4th International Conference on Medical Geology – Bari, Italy – 20-25 September 2011

Sessions & Conveners

UM2 Global Environmental Change Impacting Human Health

The session aims to highlight impacts of changes in Global Environment on human health. Such impacts would take place even if the environmental changes occur due to natural or anthropogenic causes. Natural causes include change in climatic pattern due to global warming, rise in sea level, increased number of GeoHazards such as floods, droughts, earthquakes, tsunamis, landslides etc. Anthropogenic causes would include deforestation, land degradation, desertification, wetland damage, etc.

Appreciation of the scale or magnitude of these impacts and their influences on human health requires a new perspective which focuses on ecosystems and on the recognition that the foundations of long-term good health of human population rely primarily on the continued stability and functioning of the biosphere's life-supporting systems, mainly land and water. The contributions to this Session would lead to appreciation of the complexity of the systems upon which we depend for wellbeing.

Conveners: Shrikant D. Limaye, Giuseppe Matronuzzi

UM3 General Topics

Contributions on any topic of interest to medical geology are welcome in this session. If your planned contribution does not "fit" in a thematic session or proposed symposium, this is the place to submit it. The general session will provide a potpourri of advanced Medical Geology research that will appeal to a wide cross section of GEOMED2011 attendees.

Conveners: Coming soon

WS1 Workshop on Dust (IUGS-GEM Commission)

The Commission on Geoscience for Environmental Management of the International Union of Geological Sciences is organising a Workshop on Dust in parallel with the 4th International Conference on Medical Geology at Bari, Italy, 20th-25th September 2011. The session will examine the current understanding of, and recent research on, the impacts of dust from direct (e.g. soil erosion, volcanic activity) and indirect (e.g. winning and processing of minerals, construction materials) geological sources on human and livestock health, wildlife and crops. Participants are invited to contact the co-conveners of the Working Group providing a title and short abstract (200 words) of their contribution by 11th January 2011. When abstracts have been accepted, full papers will be requested by 30th June 2011. If you are interested in participating please contact either of the co-conveners (tonycent@comcast.net; brian@amarker.freeserve.co.uk). If sufficient contributions are submitted these will be published in a peer reviewed book.

Conveners: José A. Centeno, Brian R. Marker

WS2 Workshop on the Current Status of Research in Medical Geology in Africa

Because of Africa's unique geoenvironmental condition, it is considered likely that the discovery of remarkable correlations between Earth materials and processes, and human health, will continue into the next decades, as research activities in this emerging area of study proliferate.

Rapid development of 'Medical Geology' in Africa followed concretisation and formalisation of the study by the International Medical Geology Association (IMGA) meeting in Uppsala in 2000. At this meeting it was agreed by international consensus that the former name of 'Geomedicine' be replaced by 'Medical Geology', a term that was deemed more likely to gain acceptance by the medical profession. Several short courses have since been run in Africa and a variety of awareness campaigns mounted to promote the study.

The workshop at GEOMED 2011 will examine the current status of Medical Geology research in Africa and look at other developments in the subject.

Conveners: Theo C. Davies



4th International Conference on Medical Geology – Bari, Italy – 20-25 September 2011

Sessions & Conveners

WS3 Short Course on Medical Geology

The Short Course on Medical Geology is intended for geologists, geochemists, ecologists, chemists, biologists, occupational and environmental scientists, medical professionals, toxicologists, epidemiologists, environmental pathologists, bio-statisticians and any other health, environmental and geo-sciences professional with interest on Medical Geology issues, particular interest on the effect of toxic metal ion species on environmental and human health. An important aim of the Course is to provide the opportunity for forming contacts and networks between professionals working in different areas of environmental and human health.

Speakers: Jose A. Centeno, Olle Selinus, Philip Weinstein, Robert B. Finkelman, Mark Cave

Conveners: José A. Centeno

WS4 Clinical cases of urinary calculi in Italy

A multidisciplinary research group is organising a Workshop that will cover scientifically broad aspects in the field of stone disease showing clinical cases in Italy, in parallel with the 4th International Conference on Medical Geology at Bari, Italy, 20th-25th September 2011.

Scientists of different specialities and fields will meet to exchange new ideas and knowledge in the history, epidemiology, pathogenesis, diagnosis and medical/surgical treatment of urinary stones.

If you are interested in participating please contact either of the convenor (bruno.baggio@unipd.it; marangella@mauriziano.it)

Conveners: Bruno Baggio, Martino Marangella

Last update: February 6, 2011