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S-Bridge International Conference - Shale Gas as a Bridge Energy Carrier "from fossil fuels to green energy"

12-13 November 2013 Conference center « Copernicus » Warsaw

The current growth in production of natural gas from unconventional resources has significantly influenced the economies of primarily two countries: The United States and Canada. It is expected that this trend will continue, with the production of shale gas set to start in other parts of the world, including Europe. An increase in natural gas production in our region would be highly advantageous as it would reduce the dependence on imports and cause a drop in the prices of energy. Additionally the increase would facilitate de-carbonification of the energy sector which in some countries is still mainly based

on coal. The transition towards a sustainable energy supply from renewable sources remains unclear, therefore, natural gas from unconventional resources may turn out to be the most promising bridge energy carrier until fossil fuels are replaced by energy sources of a new type. This Conference will shed some new light on chances for the safe and sustainable use of shale gas as well as its future role in the forecasted energy budget of individual countries, especially in Europe.

<http://konferencje.pgi.gov.pl/shalegasbridge-home.html>

GEMAS Atlas: the flagship of the World Soil Day

On the 5th of December 2013, on the occasion of the UN World Soil Day, the GEMAS (Geochemical Mapping of Agricultural and Grazing Land Soil) Atlas will be launched at the FAO Headquarters in Rome as a flagship of the event."

The GEMAS project provides for the first time a fully harmonised, freely available and interoperable geochemical data base on the natural distribution of chemical elements and of parameters determining their availability in soil at the continental scale. The data set is based on low-density sampling of both agricultural and grassland soil across 33 European countries, representing an area of 5.6 million km², and comprises more than 60 chemical elements and additional parameters, determined

on more than 4,000 soil samples. Some key results will be presented during the plenary session attended by hundreds of authorities coming from all over the world, and in a workshop organized by the EuroGeoSurveys Geochemistry Expert Group, which carried out the project.

The GEMAS project has been possible thanks to the participation of 65 organisations from around the world, including almost all Geological Surveys of Europe, research organisations, universities, ministries and industry under the auspices of EuroGeoSurveys (the association of the European Geological Surveys) and Eurometaux (the European Association of Metals).



35th EGS General Meeting & Director's Workshop

Basis for joint large scale geological mapping between Europe and Asia set in St. Petersburg

On 1-2nd October 2013 the members of EuroGeoSurveys met in St. Petersburg, Russia for the 35th General Meeting and Director's Workshop hosted by the A.P. Karpinsky Russian Geological Research Institute (VSEGEI). This marked the first time an EGS statutory meeting was held in the Russian Federation. All participants were very much impressed by the organisational capacity of VSEGEI and by the attention dedicated to everyone.

Special guests invited to the General Meeting and Director's workshop included: Mr. Eikichi Tsukuda (Director General of the Geological Survey of Japan - GSJ), Mr. Mike Villeneuve (Director of Targeted Geoscience Initiative at the Geological Survey of Canada - GSC), Mr. Mohammed Tahar Bouarroudj (President of the Algerian Agency for Geology and Mining Control - ANGCM), Mr. Lhacene Bitam (President of the Organisation of African Geological Surveys - OAGS), Mr. Hazim Hrvatovic (Director of the Geological Survey of Bosnia and Herzegovina - BIH), and Mr. Dong Shuwen (Vice President of the Chinese Academy of Geological Sciences - CAGS). Ms. Suzette Kimball (Acting Director of the United States Geological Survey - USGS) and the whole USA delegation had to cancel their participation at the very last moment due to the US Government shut down.

Two important bilateral meetings were held between the EGS executives and Russian Federation and Algeria respectively. In the first case the parties agreed to cooperate more closely on a series of strategic activities, and in particular in the areas of critical raw materials, earth observation and large scale geological mapping. The parties agreed to meet again in March 2014 together with the European Commission, to further develop the cooperation on critical minerals. The cooperation with Algeria will, instead, mainly revolve into capacity building in the fields of mining, marine geology and geochemistry.

Since evaluating the potential of mineral resources around the world is an important topic which needs to be addressed by all Geological Surveys, the overall event was marked by the International conference entitled "International projects on geological study and the assessment of the mineral potential of the World's largest regions", organised by Dr. Oleg Petrov, VSEGEI Director General, who opened the conference with an outstanding presentation on international cooperation in the framework of projects studying the geological structure and mineral potential of major regions of the world. The conference included top level presentations covering almost all regions of the world, providing an impressive overview of on-going cooperation and of the potential generated by joint Geological Surveys work.

Dr. Valery Pack, Deputy Minister of Natural Resources and Environment of the Russian Federation – Head of the Federal Agency on Mineral Resources (Rosnedra), outlined it was an historical event bringing together all the Geological Surveys of Europe to VSEGEI and St. Petersburg for the first time. In his closing remarks he stressed that geology has no borders and that the cooperation amongst all countries of Europe is very important. This aspect was stressed again at the end of the conference by the Rosnedra Deputy Head, Dr. Andrei Morozov who, on the basis of the excellent conference outcomes, proposed the launch of a joint large scale mapping programme between Europe and Asia. The proposal was supported by many delegates, and EGS will take actions to follow this proposal up.



6th Annual Meeting of the Organisation of African Geological Surveys



Organisation of African Geological Surveys
Organisation des Services Géologiques Africains
Organização de Serviços Geológicos Africanos



The Organisation of African Geological Surveys (OAGS) held its 6th Annual Meeting from 23 to 26 September 2013 in the heart-warming city in Accra, Ghana. The event was hosted by the Geological Survey of Ghana under the able leadership of its Director, Dr John Agyei Duodu, and parallel to the celebration of the centenary of the Geological Survey of Ghana.

The meeting was also attended by members of EuroGeoSurvey, with the aim to strengthen the relationship between the two organisations. Presentations and discussions on the Seismotectonic Map of Africa, the Role of Geological Surveys in Supporting Small-Scale Mining in Africa and the 35th IGC to be held in Cape Town, South Africa, in 2016, proved that geological surveys and especially organisations such as the OAGS play a vital role in the development and sustainability application of the earth sciences in Africa.

A full day dedicated to an OAGS/EGS workshop on the role of the EGS in assisting OAGS and its members to increase geosciences knowledge for the benefit of African countries. At the meeting, OAGS members

also elected new office bearers, with Presidency from Namibia (Dr G Schneider) and the two Vice-Presidents coming from Mozambique (Dr A Servano) and Niger (Dr H Amadou).



Swiss Map Mobile with an extended range of geological content

Producing geodata of top quality is a major task of the Swiss Geological Survey. Many wonderful maps, cross-sections and reports are securely stored but are not widely known. Geology is fascinating and an important socioeconomic factor, but is it enough so to become politically essential? Through a professional use of existing technologies of comprehensive data dissemination and fast links to online Geodata, we can better show how important geology is for the society.

Geo-enthusiasts will enjoy the novelties in the updated version of Swiss Map Mobile. The geology presents itself to the user in form of a 3D-panorama from his current vantage point; the information about the type of rock, age and tectonic situation lie at the tip of a finger; and a more detailed insight into the subsurface can be obtained by viewing one of the ca. 100 cross-sections.

This year geological information was introduced into Swiss Map Mobile. The app – which is available for iPhone and iPad (Android will follow soon) – features content such as the Geological Map of Switzerland 1:500,000 with a dynamic legend, or the maximum extent of glaciation during the last ice age (Last Glacial Maximum, LGM) in the north-western Alps. Furthermore, there is the possibility of querying 'points of interest' (POIs) based on the geological or topographic map. These provide interesting information related to topics such as 'Raw materials' (quarries, gravel pits, mining and industry), 'Monument stones' (stones of historical buildings), 'Geological hiking trails', 'GeoSites', or 'GeoEvents' from partner organisations of the Swiss Geological Survey.



EGS Announcements

The current version of Swiss Map Mobile – available in the App Store since July 2013 – has several additions to the basic service. Besides the extended content of the POI-database (particularly that of raw materials, GeoEvents and Geotopes), new visualization tools were developed. They offer the app user a variety of interesting perspectives on geological content:

By using a digital surface model, the app user can, playfully or professionally, navigate in 3D across the surface geology of Switzerland and easily observe the geological setting of the Alps from different points of view. An innovative feature is that with a simple tap on the map, the corresponding rock type, age and tectonic position are shown. This spatial illustration facilitates the understanding of the often complex situation of different rock formations.

Novelties also include the geological panoramic views, which are available at selected sites of particularly interesting geological scenery. They can be displayed by tapping a panorama-POI on the map. Furthermore, the digital compass and the orientation sensor allow a dynamic representation of the geological formations draped over the real landscape. As the user turns around, the view of the geology with

the underlying landscape seen through the mobile device changes accordingly.

About one hundred different profile lines can be displayed on the geological map. By tapping a line, the corresponding geological cross section and legend are opened. These give the user a glimpse of the geological situation in the subsurface.

All the geological data and functionality described above are part of the Swiss Map Mobile base-App, which can be acquired for four Swiss francs in the App Store. Users who already have the app will be notified by an update-message that a newer version is available. Further information regarding Swiss Map Mobile can be found at the product website.

www.swisstopo.admin.ch/internet/swisstopo/en/home/products/maps/mobile.html

This article was kindly provided by Peter Hayoz, EGS National Delegate of the Federal Office of Topography, swisstopo.



Fig. 1: Split image to show both modes of the three-dimensional view: the left half shows view with the legend of a specific point and the right half shows normal view (simulated visualisation of the app).

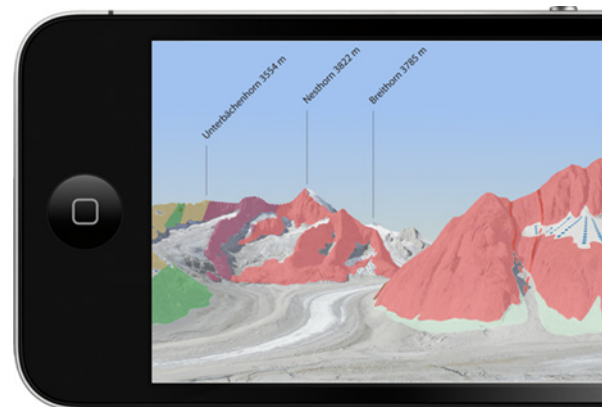


Fig. 2: Geological 360° panorama on the iPhone version.

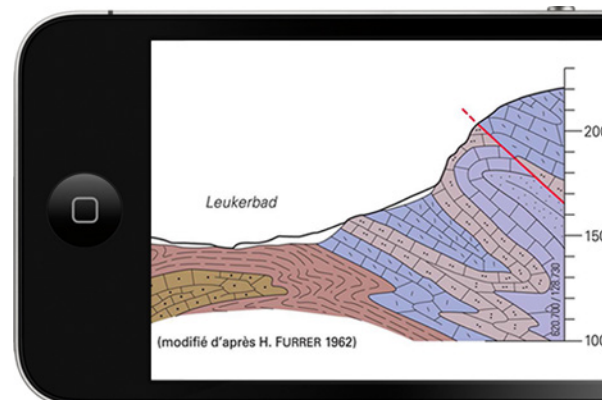


Fig. 3: Display of additional information and graphs such as geological cross-sections (iPhone Version)

The Swiss Geological Survey is a partner of a new big Swiss project in Energy Supply

TBerne, 07.10.2013 - The Federal Council's 'Coordinated Energy Research Switzerland' action plan aims to promote energy research in the years 2013-2016. Central to the action plan is the creation of research competence centres or networks between higher education institutions, to be known as Swiss Competence Centres for Energy Research (SCCERs). These centres will be active in seven action areas. Two applications in the areas Storage and Electricity Supply have already been approved by the Steering Committee. The two competence centres can already start operating this year.

www.news.admin.ch/message/index.html?lang=en&msg-id=50481

New Heads at the Geological Surveys of France, Greece and Albania

Dr Vincent Laflèche has been appointed CEO of the Geological Survey of France (Bureau de Recherches Géologiques et Minières - BRGM). Dr. Vassilis Kostopoulos has been appointed President of the Greek National Institute of Sustainable Development, which includes the Institute of Geology and Mineral Exploration (EKBAA-IGME). Dr. Viktor Doda has been appointed General Director of the Albanian Geological Survey (AGS). EuroGeoSurveys congratulates Vincent, Vassilis and Viktor on their new appointment and welcomes them to the EGS Board of Directors.



Dr Vincent Laflèche, CEO of the Bureau de Recherches Géologiques et Minières (BRGM).



Dr. Vassilis Kostopoulos President of the National Institute of Sustainable Development, (EKBAA-IGME).



Dr. Viktor Doda has been appointed General Director of the Albanian Geological Survey (AGS).

Malta meetings in September and progress

The **EGDI-scope** project recently held meetings on 9-10th September in Malta. The meetings consisted of a full consortium meeting, including all delegates from national surveys followed by a stakeholder event. The agenda included updates from all the work packages, input and collaboration on use cases, as well as initial discussions on the next steps towards implementation and governance of the e-infrastructure.

WP updates. All work packages are progressing well and a number of deliverables have now been submitted in report form – all reports are available via the EGDI web site. There is still the opportunity to complete the questionnaires (3d data and national dataset availability) online as we move towards a final analysis of the datasets and proposal of methodologies in the 2nd phase of the project. A brief update on the work packages is provided below.

WP2 Stakeholder consultation has had considerable input and collaboration with a wide variety of stakeholders in a broad range of thematic areas such as hydrogeology, marine, environment and mineral resources. Questionnaires, meetings and feedback has provided extremely useful information and contributed to the development of a series of Use Cases. These Use Cases enable the development and output of the EGDI-scope to identify and develop its proposals in a constructive and illustrative way with both data providers and user-needs considered. They demonstrate the types of information required by the user, and how the EGDI might be able to provide the relevant information.

WP3 Prioritisation of datasets has collated and analysed almost 2000 datasets from across Europe incorporating information from the INSPIRE indicators, questionnaire returns from NGOs and output data from past or ongoing pan-European projects e.g. SubCoast. This initial data analysis will now be taken forward to identify and propose a series of developments for the short-, medium and long-term. The issue of scale was discussed with particular emphasis on suitability and applicability.

WP4 Technical design has analysed and identified a number of requirements including functional, INSPIRE, portal and infrastructure needs. Full details are documented and available via the website. Further development will incorporate proposals for how the EGDI could potentially organise QC of products, share methodologies to produce European-wide products, and how new projects could use existing egdi components. In addition, issues such as hosting of portals, catalogue, services and their sustainability, performance is being considered.

WP5 Legal aspects has considered and reported on trust and authentication. This includes Service level agreements – how far does your commitment go, e.g. updates, tracking data to protect IP, the need for easy registration and access to attract users, and personal data protection. The full report is available on the website.

Breakout discussions focussed on the principles and opportunities for governance and funding and prioritizing thematic areas/ datasets for EGDI: INSPIRE/ use cases. With regard to governance, there was a common understanding that for the implementation of the EGDI a certain permanent structure will be necessary to maintain relevant datasets and project results at European level. With regard to the datasets and use cases it was agreed that there was a need for data of varying resolutions to suit different needs. The top themes proposed as priority based on political importance, scientific importance and short-term feasibility, were baseline geological map data (both onshore and offshore), mineral resources, geohazards e.g. landslides and subsidence, hydrogeology, water resources, soils and land use.

Stakeholders meeting

A diverse range of topics were included and discussions were initiated by a series of presentations including geographic data, domain-specific topics e.g. hydro, ecosystem services, marine and many more. User needs in other related domains were discussed to ensure that the EGDI takes into account and considers all aspects of user needs both in terms of data requirements but also access to the data (IP, format, technical architecture). Projects presented included OneGeologyEuropePlus, the EEA/EGDI-Scope soil use case, EMODnet geology, Minerals4EU, The European Location Framework, GeoMol, and InGeoClouds. The need for geological data and services from the view of professional geologists was highlighted by the European Federation of Geologists, and also the links with GEOSS. Break-out-sessions were split into four topics – Minerals, Marine geology, Environment and Geohazards.

Both days meetings provided extremely useful information exchange and continued collaboration and much encouragement was gained with positive feedback both within the geological community and stakeholders. This contributes to taking forward the current results towards a work plan for implementation of the EGDI, that is shared among national surveys, EGS expert groups and stakeholder representatives. In the coming six or seven months there will be several events or other opportunities for additional exchange and concerted action, before the presentation of final results of EGDI-Scope which is planned for the EGU 2014 in Vienna. We look forward to seeing you there. If you require more information please see the website www.egdi-scope.eu where more information or the relevant contacts can be found.

New Geochemical Atlas Of Europe Ready: Chemistry Of Europe's Agricultural Soil

Soil is formed, primarily, through the weathering of the underlying bedrock parent material over geological time. In terms of a human time-scale, it is a non-renewable natural resource. Knowledge about soil quality and the driving forces behind it is thus of great importance for society. Clean, productive agricultural soil is a vital European resource, which should be safeguarded for the present and future generations.

- Is European agricultural soil of good quality?
- Is there evidence for large-scale industrial contamination of European agricultural soil (diffuse pollution)?
- Is there evidence of other anthropogenic impacts on European agricultural soil?
- What are the levels of toxic or potentially harmful elements in European agricultural soil?
- Are there element deficiencies in European soil?
- How large is the natural variation of chemical elements in European soil?
- Are there differences between European countries and, if so, what is the explanation?
- Are geology and climate reflected in the spatial distribution of chemical elements in European soil?

These and similar questions can be answered using the data and maps presented in the new geochemical atlas of European agricultural and grazing land soil, in short the GEMAS atlas, the newest product of the EuroGeoSurveys Geochemistry Expert Group.

EuroGeoSurveys, the association of European Geological Surveys, was in 2007 approached by Eurometaux, the association of European metal producers, and asked whether it would be possible to produce a consistent and harmonised database of chemical elements and key parameters determining their availability in agricultural and grazing land soil at the continental (European) scale. The only existing data, at the European scale, the FOREGS atlas, were not collected for a specific land use, and the earlier Baltic Soil Survey that sampled agricultural soil covered only north-eastern Europe. Industry, however, needed land use related data in an aqua regia extraction to produce their REACH (Registration, Evaluation, Authorisation of Chemicals) reports. Of course, the new soil geochemical data can be used for a multitude of additional purposes, such as ecosystem assessment, risk evaluation, forensic studies, geomical investigations, monitoring future developments due to

human activities or climate change effects and, last but not least, to study the influence of trace elements on plant and animal health and productivity.

The atlas provides access to the first ever fully harmonised and quality controlled database of metals in agricultural and grazing land soil at the European scale, and of the parameters influencing their availability. The two-volume atlas comes with a DVD that provides access to all maps and graphics shown in the atlas, as well as to the full database developed by the GEMAS project. This unique work is the result of cooperation of more than 60 organisations from around the world.



Interview with Machado Leite

Member of LNEG Board of Directors - Director of Geological Survey of Portugal



Raw Materials Initiative is an important EU document regarding Mineral Resources in Europe. What consequences and effects have induced in the attitude of mineral sector players in Portugal?

Portuguese Geology is favorable to the occurrence of a significant variety of mineral resources. We have indeed several outcropping igneous rock masses of different ages and some important sedimentary and metasedimentary sequences that control the geographical distribution of interesting metallic ore bodies. Remarkable are the cases of Panasqueira mine in the Portuguese tin/tungsten metallogenic province and Neves-Corvo copper/zinc mine in the Portuguese part of the Iberian Pyrite Belt (IPB), both world class deposits that have remained working even during the long negative cycle of low metal prices before 2008. After the rising of metal prices, Portugal was able to attract prospecting enterprises for exploration of gold/silver, tin/tungsten, base metals, lithium and iron ores. LNEG plays an important role in that matter as data provider and also as a scientific and technological partner.

Reflecting on the momentum created by the EC documents, "Raw-Materials Initiative" and "Critical Raw Materials for EU", the Portuguese Government realized that Mineral Raw Materials could play an interesting role for the recovery of the economy, and decided to improve some policy measures for the sector launching a "National Strategy for Geological Resources – Mineral Resources". This important document is supported in a review of the Portuguese Potential for Mineral Raw Materials made by LNEG. Several on-line databases, geological mapping and other important data and information about mineral occurrences in Portugal are now available in the LNEG GeoPortal (www.lneg.pt). LNEG assuming its position as a research institution in the valuable chain of raw materials, also provides knowledge and services to industry, both for ore body resources appraisal (geology mapping,

geochemistry and geophysics) and in the technological stages of the pre-competitive level of project development (ore petrology, raw materials characterization, bench and pilot test for mineral processing and environmental control). Nowadays some prospecting projects have entered in an experimental exploitation phase, namely for gold and tungsten and it is expected that 3 or 4 projects will achieve maturity for commissioning in a very near future.

How Portuguese Geosurvey is facing the present opportunities and challenges of Geosciences?

During the last 4 years LNEG has been driving its Plan of Activity having in mind the Geology as key issue for defining the competitiveness of the territory. In this vision, the activity of the Geosurvey is oriented both to the territory itself, contributing to the establishment of public policies, definition of priorities for land planning, giving advice for the environmental impact assessment of any project of land use and to the economy, providing scientific and technological data and knowledge about geology, hydrogeology, coastal geology, geological hazards, traditional and non-traditional mineral resources, such as geothermal and shale gas.

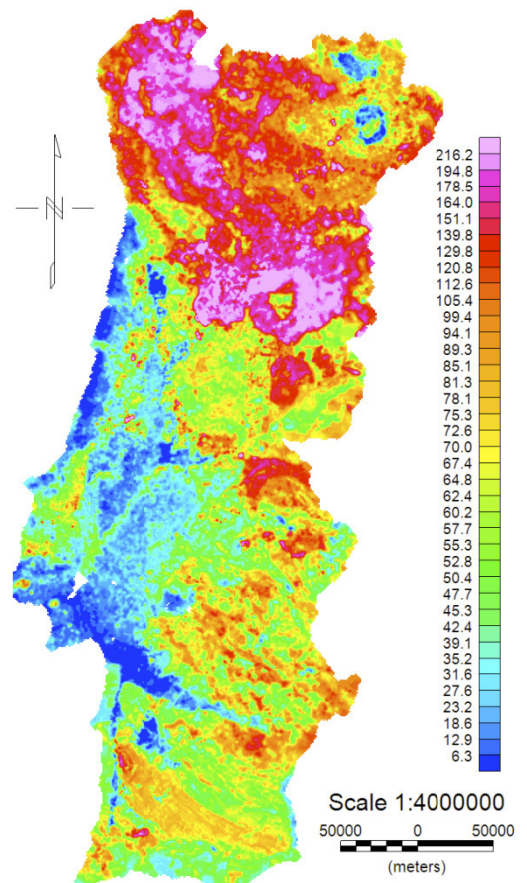
Following these ideas and in what concerns the public service, LNEG participation in the preparation of the National Plan for Risks Prevention should be pointed out, namely in what concerns the publications of the Map of Natural Radioactivity in Portugal. This important map referring the whole country is supported by almost one million raw data field determinations, which enlarges the range of use of such mapping from broad to smaller scales. Considering the Portuguese Economy factor, the increasing importance of minerals, as said before, has attracted foreign investment for mining exploration and prospecting, which enterprises frequently sign partnership protocols with LNEG, looking for better conditions to develop their jobs. Emergent matters such as geothermal (low and high

temperature) and hydrocarbon source rock exploration, conventional and unconventional (shale gas) are also present challenges.

The Western and Southern borders of Portugal are Meso-Cenozoic continental platforms underexplored in terms of its petroleum geology and though have been explored since the 70's, any finding of economic importance has been recognized until now. LNEG having in its mission the research on renewable energy, is a member of EERA – European Energy Research Alliance and was very active in the launching of the EERA SG-Joint Program, thinking that research in this field should be encouraged.



Radiometric Map of Portugal



National Geological surveys

Which are the most significant LNEG flagship projects under development?

The Iberian Pyrite Belt, stretching from Grândola in Portugal to Seville in Spain is one of the most outstanding ore provinces in Europe, hosting some of the largest concentrations of massive sulphides and 22% of the world-class (>32 Mt) VHMS orebodies. The Iberian Pyrite Belt hosts more than 90 massive sulfide deposits. The dimensions of the deposits vary from 1 to >300 Mt [e.g., Neves Corvo (Cu-Zn), Aljustrel (Cu) and Rio Tinto] including 14 world-class volcanogenic hosted massive sulfide (VHMS) orebodies. Ten deposits are located in Portugal where currently only Neves Corvo and Aljustrel are being exploited. The work undertaken by LNEG in the recently finished PROMINE project on this polymetallic belt, is very promising because important new 2D+ deep geophysical data are fine tuning the identification of deep potential structures for hosting mineralization, which coupled with micro palynological studies envisaging specific stratigraphic horizons that are known massive sulphide carriers, greatly enhance the probability for new deep discoveries.

In the subject of EGS - Enhanced Geothermal Systems, Madeira Island, as an active volcano without any activity for the last 6.000 years, is an important target for geothermal energy that LNEG is researching in a partnership with the local electric company. This is an intermediate and innovative case study between classical volcanic geothermal systems and EGS. We are now ending the first phase of the survey where geological, geophysical, hydrogeological and geochemical data are being processed to evaluate the existence of exploitable geothermal reservoir(s). Depending on a positive result, a second phase of confirmation and detailed characterization of the promising geothermal area may be set up. We hope that this will raise the readiness level of the project to access of funding for industrial development.

Another very significant project for LNEG is the consortium with IGME-Spanish Geological Survey and a Spanish enterprise (IMPULSO), established to answer to a public tender settled by Angola Government to produce the geological and mineral resources mapping. The expectation is now very high, because almost one third of the land was attributed to the consortium to develop the project, the Southeast and part of the South of the country regions, moreover, it is expected that the contract will be signed soon. This project is very significant, because it consolidates the involvement of Portugal in the international cooperation with the Portuguese Speaking Countries since the last 30 years, being also a challenging opportunity to make a good application of the regional geology knowledge that several LNEG geologists have been studying for years in Angola.

LNEG - Geological Survey of Portugal in brief

The National Laboratory of Energy and Geology (LNEG) is a research institute in the Ministry of Environment, Territory Planning and Energy focused on answering the needs of the society. Its willing is to meet the international best practices and to ensure that its areas of expertise contribute to increase competitiveness of the economic agents that make use of the territory in a context of sustainability.

The internal organics includes the Laboratory of Energy (LEN) in the branch of energy and the Laboratory of Geology and Mining (LGM) that is the National Geological Survey.

Mission of LNEG as National Geological Survey:

- Development of the geological knowledge, following the best standards and conceptual models
- Acting as data provider, feeding and maintaining geologic data sets and mineral resources databases
- Producing the official geological mapping at several scales
- Updating the mineral resources potential and supporting the process of mining rights attribution
- Acting as an agency of knowledge, using its own GeoPortal for spreading geoinformation tailored to meet end users' needs
- Giving scientific and technological advice to Public Policies for the sector

Interview with Josip Halamić

Director of the Croatian Geological Survey - HGI-CGS

What are the main aims and tasks of HGI-CGS?

Croatian Geological Survey is founded in 1909 as "The Geological Governmental Department for the Kingdom of Croatia and Slavonia" and it maintained its mission, assigned to it from the beginning, up to the present day. The Department's policy was to study mountain geological and agro-geological circumstances in Croatia and Slavonia through the geological and agro-geological mapping and publishing of geological maps of various purpose and scale, with associated explanatory notes. During almost centennial tradition of geological research on the territory of the Republic of Croatia and overcoming all the changes from past times and events including multiple alterations of its names, changes of organizational structure and number of employees, HGI-CGS as a successor of Geological Governmental Department, has retained until today its basic activity it had been appointed with since its inception.

The mission of HGI-CGS is the basic scientific investigations in the field of geosciences and geologic engineering, making of the geological maps of various purposes and scales, with associated databases covering the territory of the Republic of Croatia (land and seabed). The HGI-CGS is also a public service for distribution of geologic information to economy, public administration, science community, and to the public in general through the Geology information System (GEOLIS) based on modern and compatible GIS technologies (WEB services) for the development of HGI-CGS in the forthcoming period.

HGI-CGS is the biggest scientific research institute in Croatia in a domain of geology performing systematic and standardized geological investigations (geologic mapping, hydrogeologic, engineering-geologic, and geochemical explorations, as well as description of the mineral and geothermal resources) and acquisition of geological data over the entire territory of RH.

What were the changes that affected HGI-CGS after the accession of Croatia to the European Union?

Even before Croatia's accession to the European Union HGI-CGS initiated changes and adjustments of its role from closed scientific-research institution into the leading organization in geosciences acquisition, evaluation, processing, storage and distribution of geological data for the territory of the Republic of Croatia. This endeavor significantly intensified efforts in activities concerning the basic projects of geological maps in order to cover, as soon as possible, the major part of the state territory by the new geological maps based on lithostratigraphic relations because, in my opinion, the latter builds up the grounds for the better cooperation with other Geological Surveys and geological institutions in general, which are already the members of EU.

Croatia's accession to EU opened the door to our performance in the joint research area intensifying, among other things, education of junior researchers through collaboration with analogous institutions all over the European Union. By this very fact the transfer of knowledge and modern technologies is made possible improving and adjusting our performance to the standards of other geologic institutions in Europe.

What is the importance of EGS for HGI-CGS?

EGS is a paramount association of 32 Geological Surveys in Europe and thus it embodies a grate force and human potential both in the field of scientific research and in the sense of assistance to responsible people involved in decision making processes at the level of the European Union regarding sustainable development, environmental protection, and human well-being in general. To perform the role of EGS member is for HGI-CGS a mark of greater recognition and, at the European level, a possibility of equal participation in creating and making decisions essential in the field of geosciences, which are of importance

for the prosperity and development of EU society. I hold that geology is still in the company of underestimated sciences and professions with regards to its being indispensable in solving the basic problems of EU society (such as, for example, the mineral resources supply, drinking water supply, geohazards assessment, energy supply, human health protection, and environment protection in general). In accordance to the aforementioned the joint operations at the European level is indispensable for our profession to bestow distinguished contribution to the EU community as a whole.



Adria islands



Karst phenomenon

National Geological surveys

What are the future prospects of HGI-CGS?

In the forthcoming period, as far as activity of HGI-CGS on the territory of the Republic of Croatia is concerned, the most important task will be implementation of its mission, that is, the quickest possible publication of the basic geological maps of the entire territory of the state. In this regard it is essential, in the light of ever growing importance of the marine environment, to explore the Adriatic seabed which in heretofore strategic guidelines of our institution was not accentuated.

Due to the changes of ownership in the former state oil company of INA and reinforced concern of international companies for research of Adriatic marine environment with purpose of finding an economic accumulation of hydrocarbons, HGI-CGS will increase its efforts focusing its own investigations on this area.

At the international level HGI-CGS will strive together with other EGS members to give its best in granting geology its proper place in the European Union, that is, to grow into a science discipline and profession recognized in service to improvement and bettering of Eu society as a whole.



Karstic Adria coast



Karstic Adria coast

Plitvice lakes



Strategic Implementation Plan for the European Innovation Partnership on Raw Materials launched

The ETP SMR (European Technology Platform on Sustainable Mineral Resources) whole heartedly supports the European Commission in its European Innovation Partnership (EIP) and welcomes the issuing of the Strategic Implementation Plan (SIP) for the EIP on Raw Materials that was officially adopted today. The SIP addresses all actions necessary to achieve the objectives and targets of the European Innovation Partnership, in particular with regard to research and development along the value chain and raw materials knowledge in general. It calls for a swift implementation of the SIP, supporting the ambitions and goals of Horizon 2020.

With its Strategic Research and Innovation Agenda, the ETP SMR members have already actively contributed to the preparation of the SIP, especially to the Technology Pillar which aims to better integrate and push Europe to the forefront in the raw materials technology sector and to contribute to improving access to resources in the EU on the one hand, and develop marketable technologies on the other hand. At the same time it addresses the issue of reducing the EU's import dependency through new integrated technological solutions for accessing new raw materials, better resource efficiency of industrial processes and improved recycling, as well as through finding new alternatives to supply rare and critical raw materials through substitution, while mitigating the related negative environmental impacts and increasing social sustainability.

In the SIP this will be achieved through the actions in the following Priority areas: Raw materials research and innovation coordination Technologies for primary and secondary raw materials production Substitution of raw materials.

Raw materials research and innovation, as one of the priority areas, has the objective to strengthen the coordination of research efforts among all relevant players in the EU, knowledge, tools and research infrastructures in order to maximize impacts of all R&D actions in the technological pillar. This will be achieved through different initiatives such as increased coordination with other European Technology Platforms (ETPs) on relevant raw materials issues, future programming under Horizon 2020, future joint Member States research programming as stipulated by ERA-MIN and other comparable initiatives.

Members of ETP SMR will closely cooperate with the European Commission to initiate up to 10 innovative pilot actions on exploration, extraction, processing, and recycling for innovative production of raw materials.

ETP SMR members will help to establish the right framework for supporting pilot actions which enhance the introduction of the innovation pathways as a means to foster innovation along the entire value chain from exploration, extraction, mineral processing, metallurgy and refinement to recycling. As specified in the SIP "the experience acquired from the pilot actions could be used to speed up development and implementation of innovative breakthrough solutions, ideas and concepts to sustain in the long term the global population growth, the increased demand for raw materials; to ease land use limitations in Europe; and to replace depleted deposits."

The launch of the EIP on Raw Materials and the launch of Europe 2020 Strategy targets on resource efficiency creates a historic opportunity to establish a 3D data and knowledge infrastructure and "Mineral Intelligence" at EU level that would be built on existing national / Member States capacities and derive

synergies from international cooperation. By 2020, the EU will have secured a sustainable minerals and metals supply base to ensure competitiveness and growth of the EU industry as a whole. Scientific breakthroughs and sustained innovation efforts will have significantly improved access to, production, use and recycling of resources. By 2050, the EU will have managed on a sustainable basis the entire life-cycle of minerals and metals in the EU.

"Technological research, development and education will be a core element of the overall innovation agenda that by 2020 will have extended Europe's raw materials supply, its knowledge and competence and industrial growth and leadership" highlights Dr Corina Hebestreit, Chair of the ETP SMR High Level Group.

As presented on the SIP the knowledge base on raw materials will help all the EU actors to better target their sustainability efforts. Improving the knowledge is a continuous process and will constantly support all the other initiatives, actions and decision making.

The European Technology Platform on Sustainable Mineral Resources (ETP SMR) aims at modernising and reshaping a fundamental pillar of the European economy: the European Minerals Industries. These include oil, gas, coal, metal ores, industrial minerals, ornamental stones, aggregates, smelters as well as related technology suppliers and engineering companies. The ETP SMR unites many stakeholders from minerals industry and related technology and machinery providers, the research community, regulators, consumers and civil society around the major technological challenges to the sector, in order to jointly act towards a common vision. For more information, visit the website at www.etpsmr.org

News from I2Mine

The I2Mine project consortium will soon be hosted by Agnico Eagle in Levi, Finland, for their upcoming General Assembly this October. The four year project is reaching its half way point and there is much anticipation around the progress to be presented during the meeting. Amongst the technological developments that are underway in the project, a new cutting head for cutting very hard rock is finally built and will now step into the testing phase to assess the real capabilities of this equipment. Laboratory prototypes of the machine guidance system and the integrated process optimisation system for a road heading and cutting machine are also currently undergoing testing. Furthermore, we will see a first demonstration of the new "intelligent rock bolt" - some of these rockbolts are installed in Kittilä mine

which will be visited the day after the meeting.

Another important event for the project will be coming up in 2014 during the Aachen International Mining Symposia (AIMS 2014) conference and exhibition, which has been provisionally scheduled to take place on 11-12 June 2014 in Aachen, Germany. This annual event focuses on a specific topic of interest to the worldwide mining community and next year's edition will hold a special place for the I2Mine project in the overall context of 'High Performance Mining'. More information can be found on the AIMS 2014 website:

www.aims.rwth-aachen.de/en/home

Visit the I2Mine website for a detailed project description and the latest news on progress: www.i2mine.eu

Secretariat's agenda

- **1-2 October** EGS General Meeting in St. Petersburg
- **7 October** EGS-EGU (European Geosciences Union) High Level Meeting in Brussels
- **9 October** EGS Water Resources Expert Group (WREG) meeting in Brussels
- **9-11 October** Hans-Peter Broers and Klaus Hinsby, Chair and Deputy Chair of the EGS Water Resources Expert Group (WREG), at EC Conference on the Review of Annexes I & II of the Groundwater Directive in Brussels
- **10-11 October** Stuart Marsh, Chair of the EGS Earth Observation Expert Group (EOEG), at EO-MINERS final scientific and technical conference in Versailles, France
- **11 October** Isabel Pino de Juana, EGS Scientific Officer, at the third meeting of the Ad hoc Working Group on Critical Raw Materials of the EC Raw Materials Supply Group (RMSG) in Brussels
- **14-15 October** Luca Demicheli at Joint Programming Initiative (JPI) on Climate 'Stakeholders' Workshop on Sustainable Transformations of Society in Face of Climate Change' in Venice
- **14-16 October** Patrick Wall, EGS Scientific Policy Officer, and EGS Strategy Team carrying out technical evaluation of the Geological Survey of Greece in Athens
- **20-24 October** Luca Demicheli at 49th Coordinating Committee for Geoscience Programmes in East and Southeast Asia (CCOP) Annual Session in Sendai, Japan
- **21 October** Marko Komac, EGS Representative at OneGeology, at 'The future of OneGeology' meeting in Paris
- **21-22 October** Henry Vallius, Chair of the EGS Marine Geology Expert Group (MGEG), at EC Marine Observation and Expert Group (MODEG) meeting in Brussels



Secretariat's agenda

- **23-25 October** Patrick Wall, EGS Scientific Policy Officer, at I2Mine Project Annual Progress Meeting in Levi, Finland
- **23 October** Isabel Pino de Juana, EGS Scientific Officer, and Claudia Delfini, EGS Communication Manager, at Group on Earth Observation High Level Working Group (GEO HLWG) meeting in Brussels
- **5 November** Luca Demicheli at High Level Meeting at World Bank in Washington D.C.
- **6-7 November** Luca Demicheli at EGS Delegation accompanying EU at 'EU-USA Industrial Policy Dialogue meeting on Critical Raw Materials' in Reston, Washington D.C.
- **12-13 November** Luca Demicheli at EGS Conference 'S-BRIDGE - From fossil fuels to green energy: shale gas as a bridge energy carrier' in Warsaw
- **12 November** Daniel Cassard, Deputy Chair of the EGS Mineral Resources Expert Group (MREG), at 2nd Stakeholder Workshop on Statistical Information on EU Raw Materials Deposits (Minventory) in Brussels
- **18 November** Nikos Arvanitidis, Chair of the EGS Mineral Resources Expert Group (MREG), at COST workshop 'Materials in a Resource-Constrained World' in Delft, The Netherlands
- **18-20 November** EGDI-Scope Project Board meeting in Brussels
- **21-22 November** Minerals4EU Project Board meeting in Brussels
- **21-22 November** Serge van Gessel, Deputy Chair of the EGS GeoEnergy Expert Group (GEEG), at 22nd Session of the UNECE Committee on Sustainable Energy in Geneva
- **22-23 November** Luca Demicheli and Klaus Hinsby, Deputy Chair of the EGS Water Resources Expert Group (WREG), at European Federation of Geologists (EFG) Workshop 'European water policy: challenges for Hydrogeologists' in Brussels
- **24-26 November** Marek Graniczny, Chair of the EGS International Cooperation and Development Task Force (ICDTF), at '7th International Conference on Geology of Africa' in Assiut, Egypt
- **25 November** EGS-EFG (European Federation of Geologists) High Level Meeting in Brussels
- **28-29 November** Luca Demicheli and Nikos Arvanitidis, Chair of the EGS Mineral Resources Expert Group (MREG), at COBALT Conference on 'Setting the scene on societal and business needs in relation to sustainable use of raw materials in Europe' in Brussels
- **4 December** EGS Geochemistry Expert Group (GEG) meeting in Rome
- **5 December** EGS Executive Committee and Clemens Reimann and Anna Ladenberger, Chair and Deputy Chair of the EGS Geochemistry Expert Group (GEG), at launch of the Geochemical Atlas of European Agricultural and Grazing Land Soil (GEMAS) at FAO in Rome
- **6 December** EGS Executive Committee meeting in Rome
- **10 December** Nikos Arvanitidis, Chair of the EGS Mineral Resources Expert Group (MREG), at EC Raw Materials Supply Group (RMSG) Plenary Meeting in Brussels

➤ **Effects of shale gas development on water quality: experiences from the Marcellus Shale**

The impact of shale gas development on surface water quality has been explored in a recent study. Focusing on the Pennsylvania portion of the Marcellus Shale formation (which stretches from West Virginia to the Canadian border), the researchers conclude that shale gas wells and the treatment of shale gas extraction waste have measurable impacts on downstream surface water quality.

The researchers collected data from over 20,000 water quality observations, between 2000 and 2011, and mapped them. These were then considered in relation to the location of shale gas wells and information about shale gas waste shipments, using a geographical information system (GIS). This allowed them to make links between areas of shale gas development and downstream water quality, using a sophisticated statistical model that accounted for other factors that might be affecting water quality. The study revealed that downstream concentrations of chloride increased when there were more wastewater plants treating and releasing shale gas waste in an area. High levels of chloride can damage aquatic ecosystems, and also trigger the release of other pollutants, such as heavy metals and phosphates, from sediment. The number of wells themselves did not seem to affect chloride levels.

Source: www.eurogeologists.eu

➤ **Only one submission for CCS funding**

Proponents of carbon capture and storage (CCS) technology, which traps carbon emissions and stores them underground, are expressing alarm after only one demonstration project applied for EU funding by a 3 July deadline. CCS 'demonstration projects', which trial the yet-unproven technology, were meant to be funded by the NER300 programme, which uses proceeds from the EU's Emissions Trading Scheme (ETS) to fund low-carbon technologies. In a first round of funding last year no CCS project could be given funds because of insufficient financial commitments from member state governments. The Commission is running a consultation with stakeholders to determine what should be done about the CCS funding failure.

Source: Dave Keating, www.europeanvoice.com, 7/9/2013

➤ **Fracking: Local and regional authorities call for compulsory environmental impact assessments**

The Committee of the Regions (CoR) has called for the EU to urgently introduce mandatory environmental impact assessments (EIA) for all shale gas and oil projects. As Europe continues to look to alternative forms of energy as part of its efforts to become more sustainable and reduce import dependency. Fracking – the process of drilling or injecting fluid into the ground to extract shale gas or oil – has been considered by some companies in the EU, hoping to emulate the experiences in the US. The Committee of Regions warned, however, that in addition to the serious environmental and health harm that can be caused by this activity, alongside other carbon energy it is simply not sustainable in the long-term. The CoR urgently calls for the EU to put in place tight regulation and control, with limits on exploration and exploitation until a legislative agreement has been reached. Mandatory EIAs must be introduced and carried out, helping reduce air and water contamination often associated with the drilling for shale gas and oil. The introduction of mandatory EIAs would also improve transparency forcing companies, for example, to declare chemical content used during the process. Given the potential hazards, the Committee also calls for local and regional authorities to be given the right to decide whether such activity takes place in their region, especially in sensitive areas or in cases where they feel this could impede their efforts to meet greenhouse gas targets. Counteracting claims made by supporters of fracking, the CoR argues that shale gas and oil exploitation "will not reverse the continuing trend of declining domestic production and rising import dependency". The Committee also questions the wider implications that fracking will have in terms of releasing more greenhouse gases, including methane, into the atmosphere contributing to further climate change.

Source: www.eureporter.co



➤ **Groundwater pollution in Europe: an overview**

An overview of groundwater contaminants in Europe is provided by a recent study, which calls for more integrated monitoring using a range of indicators. Groundwater contamination presents serious health and environmental concerns. The article can be downloaded at:

<http://ec.europa.eu/environment/integration/research/newsalert/pdf/339na1.pdf>

Source: www.eurogeologists.eu

➤ **Europe threatened by increasing water risks**

According to a recent report of the Organisation for Economic Co-operation and Development (OECD), Europe is threatened by greater water risks in the coming decades. This risk for those water-related disasters is linked to stress on water systems, increased demand and pollution. More information can be found at:

www.euractiv.com
www.oecd.org/env/resources/watersecurity.htm

Source: www.eurogeologists.eu

➤ **Consultation on the revision of Annexes I and II of the groundwater Directive (2006/118/EC)**

Open from 30.07.2013 to 22.10.2013

The objective of the consultation is to gather views for the first review of Annexes I and II of the Groundwater Directive (Annex I covers groundwater quality standards and Annex II, threshold values for groundwater pollutants and indicators of pollution). Article 10 of the Groundwater Directive requires the Commission to review Annexes I and II of the Directive every six years and come forward with legislative proposals, if appropriate.

<http://ec.europa.eu/environment/consultations/groundwater%5Fen.htm>

Upcoming Events

➤ **EO-Miners Final Scientific and Technical Conference** Versailles, France 10-11 October 2013

The final EO-MINERS Project Conference has been announced and will take place in Versailles, France. The conference aims at presenting the project developments and results to parties interested in Earth Observation especially applied to environmental and societal issues, with a special focus on mining activity.

The sessions will include a general presentation of the project and its objectives, the main scientific developments carried out and the products developed to meet stakeholder requirements. Invitees are welcome to present their relevant activities, both on form of presentations and/or posters.

www.eo-miners.eu

➤ **EURADWASTE Conference 2013** Vilnius, Lithuania 14-16 October 2013

The objective of Euradwaste'13 will be to present an overview of all recent EC activities in the field of radioactive waste management with the focus on geological disposal(GD) as the main challenge, including RD&D, policy, strategic, legislative and socio-political aspects. Euradwaste'13 will address the main aspects of the Waste Directive which has to be transposed into national legislation, due by August 2013, and the establishment and/or implementation of the respective national programmes, to be effective by August 2015.

<http://cordis.europa.eu/fp7/euratom-fission/docs/finalleaflet-euradwaste2013-web.pdf>

➤ **The International Conference On Geoethics** Příbram, Czech Republic 14-18 October 2013

The Conference will be arranged in the framework of the MINING PŘÍBRAM SYMPOSIUM 2013 accordingly to the International Declaration of Geoethics agreed on behalf of the Working Group for Geoethics of the Association of Geoscientists for International Development (AGID) at the end of the traditional international section on GEOETHICS hosted by the Symposium in October 2011.

The Conference will cover a special session "Risk in earth sciences and nanotechnology" with a block examining special ethical aspects of the L'Aquila case.

The Conference will take place together with a joint meeting of the Working Group for Geoethics established by the Association of Geoscientists for International Development (AGID)

http://tierra.rediris.es/Geoethics_Planetary_Protection/Newsletter/2013ICG_PribramCircularJULY.pdf

➤ **S-Bridge International Conference - Shale Gas as a Bridge Energy Carrier «from fossil fuels to green energy»** Warsaw, Poland 12-13 November 2013

The current growth in production of natural gas from unconventional resources has significantly influenced the economies of primarily two countries: The United States and Canada. It is expected that this trend will continue, with the production of shale gas set to start in other parts of the world, including Europe. An increase in natural gas production in our region would be highly advantageous as it would reduce the dependence on imports and cause a drop in the prices of energy. Additionally the increase would facilitate decarbonification of the energy sector which in some countries is still mainly based on coal. The transition towards a sustainable energy supply from renewable sources remains unclear, therefore, natural gas from unconventional resources may turn out to be the most promising bridge energy carrier until fossil fuels are replaced by energy sources of a new type. This Conference will shed some new light on chances for the safe and sustainable use of shale gas as well as its future role in the forecasted energy budget of individual countries, especially in Europe.

<http://konferencje.pgi.gov.pl/shalegasbridge-home.html>

➤ **Geothermiekongress** Essen, Germany 12-14 November 2013

This year the geothermal energy congress will take place at the Messe Essen at the same time as the trade exhibition Geo-T Expo. The workshops will include themes such as International geothermal projects; Public Relations; Communal electrical power supply; Quality management in near-surface geothermal energy; Effects of geothermal energy on ground water; Monitoring on near-surface geothermal energy projects; 3D seismic exploration method for exploring geothermal reservoirs; Use of deep groundwater.

www.geothermie.de



Upcoming Events

➤ **EIP Water Annual Conference 2013** Brussels, Belgium 21 November 2013

The first European Innovation Partnership (EIP) Water Conference themed "Networking – Interacting – Innovating" will bring together all stakeholders for networking, taking stock of where we stand and shaping the future of the EIP Water in the medium and long-term to further increase the potential and opportunities for the co-generation of water innovations. The Conference will highlight innovations within and outside the water sector – globally and in the EU – through keynote addresses, panel discussions with high-level representatives from across the innovation value chain and moderated plenary discussions.

www.eip-water.eu/eip-water-annual-conference-2013

➤ **22nd Session of the UNECE Committee on Sustainable Energy**

Geneva, Switzerland 21-22 November 2013

In light of the decision of the UN General Assembly to declare the period 2014-2024 to be the Decade of Sustainable Energy for All (SE4All) and considering the role of energy in the elaboration of the post-2015 development agenda, the Committee will focus this year's dialogue on «Securing Sustainable Energy Supply: Time To Act.» The Committee will concentrate on the following themes: achieving sustainable energy for All (See4All) in the UNECE Region, reducing carbon intensity in the energy sector, a new role for gas in a green economy, and UNECE Pathways to Sustainable Energy.

www.unece.org/index.php?id=31774

➤ **Workshop European Water Policy: challenge of Hydrogeologists**

Royal Belgian Institute of Natural Sciences, Brussels 22-23 November 2013

This workshop will highlight those areas where hydrogeologists are playing an important role in the implementation of the Water Framework Directive and the new business opportunities now opening to firms in hydrogeology with the publication of the Blueprint. The Workshop will also provide a unique opportunity to obtain a corresponding official acknowledgement of this role by the European Commission.

www.eurogeologists.eu

➤ **Seventh International Conference on the Geology of Africa (ICGA 2013)** Assiut, Egypt 24-26 November 2013

The Geology Department of Assiut University invites scientists to gather in the capital of Upper Egypt for the Seventh International Conference on the Geology of Africa (ICGA 2013).

This conference is the premier forum for the presentation of new advances and research results in the fields of theoretical, experimental, and applied geological sciences. The conference «ICGA» has taken place six times in Assiut, Egypt. Bringing together leading researchers, scientists and engineers in the domain of interest from around the world. Topics of interest for submission include, but are not limited to: Environmental Geology and Hazards, Hydrogeology and Water Management, Petroleum Geology and Mineral Resources, Structural Geology and Geotectonics, Sedimentology, Stratigraphy and Paleontology, Remote Sensing, Engineering Geology and GIS, Igneous, Metamorphic Petrology and Geochemistry, Exploration Geophysics, Geoscience Education (Role of Women in Geoscience), Geoarchaeology and Geotourism.

www.aun.edu.eg/conferences/goa/english/



Upcoming Events

➤ **GEochemical Mapping of Agricultural and grazing land Soil of Europe (an Atlas)**

Rome, Italy 5 december 2013

On the 5th of December 2013, on the occasion of the UN World Soil Day, the GEMAS (GEochemical Mapping of Agricultural and Grazing Land Soil) Atlas will be launched as a flagship of the event in Rome, at the FAO Headquarters, which will play host to hundreds of authorities coming from all over the world. The GEMAS project provides for the first time a fully harmonised, freely available and interoperable geochemical data on the natural distribution of chemical elements and of soil at the continental scale. The data set is based on low-density sampling of both agricultural and grassland soil across 33 European countries, representing an area of 5.6 million km², and comprises more than 60 chemical elements and parameters, determined on more than 4,000 soil samples. The main results will be presented during the workshop by the EuroGeoSurveys Geochemistry Expert Group who carried out the project.

The GEMAS project has been possible thanks to 65 organisations, including all the Geological Surveys of Europe, research organisations, universities, European associations such as Eurometaux (the European Association of Metals) and industry partners who have cooperated to produce a fully harmonised, strictly quality controlled and freely available dataset at the continental scale.

www.fao.org/globalsoilpartnership/gsp-events/en/

➤ **Final MIN-NOVATION Conference 2013**

Krakow, Poland 6 December 2013

The Steering Committee of the MIN-NOVATION project would like to cordially invite you to attend our final conference, which will be held on Friday, December 6th, 2013 in Krakow, Poland. The benefits of attending include: Learning first-hand about 1. 4 launched pilot investments (EE, FI, PL, SE) focused around reusing mining waste and/or recovering raw materials from it 2. the MIN-NOVATION publication highlighting mining waste management practice in Estonia, Finland, Germany, Norway, Poland, Sweden. 3. Regional efforts to foster closer contacts and effective feedback mechanisms between mining business community, R&D centres and local/regional government and also networking with representatives of mining waste management companies from Poland, mining professionals and mining researchers, and government officials from the Baltic Sea Region.

www.min-novation.eu

➤ **GEO-X and 2014 Ministerial Summit**

13-17 January 2014 Geneva, Switzerland

The Summit would have one major outcome, which is Ministers – through a declaration - to decide the continuation of GEO after 2015 and give a mandate to define the “Second Implementation Plan 2025”. The Ministers are also expected to review the progress against the GEOSS Strategic Targets and to confirm their commitment to complete the current 2005-2015 Implementation Plan.

www.earthobservations.org/geo10.shtml

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