ILUSTRE COLEGIO OFICIAL DE GEÓLOGOS

FÉDÉRATION EUROPÉENNE DES GÉOLOGUES
EUROPEAN FEDERATION OF GEOLOGISTS
FEDERACIÓN EUROPEA DE GEÓLOGOS

WORKSHOP

GESTIONANDO LOS RIESGOS NATURALES

10 y 11 de Mayo de 2012

Reunión anual del
Consejo de la Federación Europea de Geólogos

PUERTO DE LA CRUZ - TENERIFE

ILUSTRE COLEGIO OFICIAL DE GEÓLOGOS

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Presentación:

El Colegio Oficial de Geólogos organiza este año en Tenerife la reunión anual del Consejo de la Federación Europea de Geólogos. Con este motivo, se celebrarán las jornadas "GESTIONANDO LOS RIESGOS GEOLÓGICOS" los días 10 y 11 de mayo.

Con estas jornadas queremos hacer un intercambio de ideas acerca de cómo vemos los geólogos la gestión de los riesgos naturales, y conocer proyectos que se están poniendo en marcha para mejorar dicha gestión.

Para nosotros es un tema fundamental que debe abordarse de forma integral y desde la prevención que significa poner el conocimiento y la profesionalidad de los geólogos a disposición de la sociedad. Situaciones como el terremoto ocurrido en Lorca en 2011, el tsunami en Japón, o el riesgo volcánico en estas islas Canarias, nos recuerdan la importancia del conocimiento geológico para que haya un desarrollo social y económico que no se vea frustrado o mermado en sus posibilidades.

Te esperamos en estas jornadas para compartir con los profesionales de otros países nuestras inquietudes y experiencias. Un cordial saludo.

Luis E. Suárez Ordóñez
Presidente del Colegio Oficial de Geólogos

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PROGRAMA

GESTIONANDO LOS RIESGOS NATURALES

10 y 11 de Mayo de 2012

JUEVES 10 DE MAYO

Lugar de celebración: Sala de reuniones en Hotel Sol Puerto de la Cruz

08:30 – 09:30 Registro de participantes

09:30 - 10:00 Bienvenida de las autoridades locales
Palabras de apertura:
Ruth Allington – Presidenta de la Federación Europea de Geólogos
Luis Suárez – Presidente del Colegio Oficial de Geólogos

10:10 – 12:30 Morning session - Moderate: Nieves Sánchez (Vicepresidenta de la FEG)

10:10 – 10:35 **COPING WITH URBAN GEOLOGICAL HAZARDS IN NORTH-CENTRAL TEXAS, USA – A LEGACY OF THE STATE'S GEOLOGICAL, TECTONIC AND VOLCANIC HISTORY**
EurGeol Dr. Robert Font, PhD, CPG, CG, PG President, Geoscience Data Management, Inc. AIPG National President – 2005

10:35 – 11:00 **VOLCANO-RELATED HAZARDS AND RISKS IN SOUTHERN ITALY**
Corrado Cencetti - Italian Council of Geologists

11:00 - 11:20 **Coffee Break**

11:20 - 11:45 **NATURAL RISKS IN SPAIN**
Luis E. Suárez – President Spanish National Geologists Association

11:45 – 12:10 **SNOW AVALANCHE RISK MODEL, GENERATING DAILY UPDATED, HIGH RESOLUTION DANGER MAPS**
Anna Seres - University of Miskolc (Hungary), Institute of Geography.

12:10 – 12:35 **REDUCING VOLCANIC RISK IN THE CANARY ISLANDS**
Nemesio Pérez - Scientific Coordinator, Instituto Volcanológico de Canarias (INVOLCAN).

12:35 – 13:40 Lunch in the Hotel

13:40 – 17:30 Evening session

Moderate: Manuel Regueiro (ICOG General Secretary)

13:40 – 14:05 **TERRAIN MOTION MEASUREMENTS – SERVICES TO SOCIETY**
Isabel Fernández – EFG Brussels Office Director
David Norbury - EFG Chair Registration Authority

14:05 - 14:30 **SELLING GEOHAZARDS INFORMATION TO NON SCIENTISTS**
David Norbury – EFG

14:30 - 14:55 **USE OF INSAR FOR LANDSLIDE MONITORING AND TSUNAMI IMPLICATIONS ON CANARIA**
Richard Burren – Fugro NPA

14:55 - 15:20 **VOLCANIC ASH AND GAS AS A POTENTIAL HAZARD IN AIR NAVIGATION**
Carlos García Royo - M.Sc. Geologist, Airline Transport Pilot. Iberia Airlines – SEPLA Technical department.

15:20 – 15:40 **Coffee Break**

15:40 – 16:05 **THE SPANISH EMERGENCY MILITARY UNIT (UME) IN THE MANAGEMENT OF NATURAL DISASTERS.**
Captain Ignacio Juan Oliver Llorente, Los Rodeos Emergency Military Unit Detachment Commander.

16:05 – 16:30 **CANARY ISLANDS SPATIAL DATA INFRAESTRUCTURE AS TOOL FOR NATURAL DISASTER PREVENTION AND ANALYSIS**
José Julio Rodrigo Bello – GRAFCAN Head of Engineering Department.

16:30- 16:55 **RED MUD SPILL IN HUNGARY, OCTOBER 2010**
Éva Hartai – EFG Delegate for EU
Peter Scharek – Hungarian Geological Survey

17:00 – 17:30 DISCUSSION and CONCLUSIONS

Todas las sesiones de las jornadas serán en inglés y sin traducción simultánea. Cada presentación tendrá un tiempo asignado de 20 minutos para poder disponer de 5 minutos más para las preguntas.

20:00 Cena del jueves en un restaurante típico canario

VIERNES 11 DE MAYO

09:00 – 11:00 Excursión al PARQUE NACIONAL "CAÑADAS DEL TEIDE"

11:00 - 12:00 Subida a la parte alta del volcán Teide.

Visita guiada por D. Juan J. Coello – Geólogo experto - Cabildo Insular de Tenerife - Consejo Insular de Aguas de Tenerife

12:00 - 13:00 Vista panorámica

13:30 a 14:00 Salida del autobús hacia Parador Cañadas del Teide

14:00 a 16:00 Comida típica canaria

16:00 a 18:00 Regreso al hotel

20:00 Cena y cata de vinos de todos los países asistentes

Alojamiento:
Las jornadas se celebrarán en el **Hotel Sol Puerto de la Cruz**
http://es.solmelia.com/hoteles/espana/tenerife/sol-puerto-de-la-cruz/home.htm

*Hotel Sol Puerto de la Cruz *****
Avda Marques Villanueva del Prado, s/n
38400 Puerto de la Cruz – Tenerife - Islas Canarias
Phones: 00 – 34 - 922 384 011 - Ext 1740
00 – 34 - 922 372 709 (direct)
fax : 00-34-922 386 559
mails: reservas.sol.puerto.de.la.cruz@melia.com
ildefonso.masa@melia.com
web : www.solpuertodelacruz@melia.com

La organización ha pactado unos precios especiales con el hotel para todos los participantes, siendo los siguientes (incluido IVA):

Alojamiento y desayuno en habitación doble ..... 44.60 € / día y habitación
Alojamiento y desayuno en habitación individual..... 32.30 € / día y habitación

Media pensión (desayuno y una comida) en habitación doble….54.60 € por día y habitación
Media pensión (desayuno y una comida) en habitación individual.....37.30 € por día y habitación

Estos precios para los participantes en las jornadas están garantizados hasta el día 15 de marzo de 2012.

La organización ha incluido las comidas dentro del programa (días 10 y 11 de mayo) y las cenas de ambos días que, en caso de estar interesado, pueden ser seleccionadas en la hoja de inscripción.

Para realizar la reserva en el hotel, es necesario escribir un e-mail a *reservas.sol.puerto.de.la.cruz@melia.com* indicando el código de reserva del grupo: **224489**. El hotel confirmará la recepción del correo indicando la forma de pago.

Contacto:
Para cualquier pregunta o cuestión se puede escribir un correo a las siguientes personas:

Nieves Sánchez (Vicepresident of EFG): nsguitian@yahoo.es
Manuel Regueiro (Secretary General of ICOG): m.regueiro@igme.es

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Workshop – Gestionando los riesgos naturales
May 10-11, 2012
TENERIFE (SPAIN)

HOJA DE INSCRIPCIÓN

Fecha límite de inscripción: **30 de abril de 2012**

Enviar por e-mail to **icog@icog.es** o mediante fax al 00 34 91 405 50 35

			Coste en Euros por persona
Name:			
Organisation:			
E-mail:			
Attending 10th May Workshop (workshop + buffet lunch)	yes	no	40
Attending 10th May Dinner	yes	no	20
Attending 11th May Trip (all-day travelling + guide + lunch Teide´s national park visit)	yes	no	65
Attending 11th May Special Dinner	yes	no	40
Any special dietary requirements			
Comments/queries			

The payments will be done by transference to ICOG´s account indicating "TENERIFE EFG (Name)".

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ABSTRACTS WORKSHOP
MANAGING NATURAL HAZARDS
May 10-11, 2012
TENERIFE (SPAIN)

COPING WITH URBAN GEOLOGICAL HAZARDS IN NORTH-CENTRAL TEXAS, USA – A LEGACY OF THE STATE'S GEOLOGICAL, TECTONIC AND VOLCANIC HISTORY

EurGeol Dr. Robert Font, PhD, CPG, CG, PG President, Geoscience Data Management, Inc. AIPG National President – 2005.

The great state of Texas in the United States of America is not currently known for active tectonics or volcanic activity; however, many geologic hazards affecting some of its urban areas are related to past orogenic and volcanic events and related structures and earth materials. Various Cretaceous clay-shales and bentonite layers derived from the alteration of volcanic ash are well known for causing engineering problems in the region. Extremely high shrink-swell properties and related potential volume change lead to damage of roads and foundations and costly repairs. In addition, the physical and chemical properties of the clays lead to undesirable geotechnical conditions of low shear and bearing strengths, mass wasting and associated engineering troubles. Geotechnical problems commonly encountered include:

- Landslides or mass wasting in the shales (earth flows and slumps) and overlying limestone (rock falls).
- Swell pressures in clay-rich strata sometimes exceeding 30,000 pounds per square foot.
- Low shear strength and very low angles of internal friction in the clay-shales, which may be on the order of 5 to 10 degrees.
- High corrosive conditions associated with some argillaceous units.

The proper understanding of the geologic and tectonic history, igneous-activity, depositional environments and rock properties, along with suitable engineering solutions, help mitigate and prevent existing or potential construction predicaments. This paper reviews the applicable geologic setting and points out examples of natural hazards and solutions to these problems.

MANAGING VOLCANO-RELATED HAZARDS IN ITALY

Corrado Cencetti - Italian Council of Geologists, Rome, Italy

Due to its position in the tectonically active Mediterranean basin, Italy hosts an important volcanic activity, mainly concentrated in its southern regions. Phlegrean Fields, Mt. Somma-Vesuvius, Mt. Etna, Eolian islands are the principal active volcanic systems which threaten a numerous population living in their surroundings. Volcanic eruptions notoriously are possible sources of composite or secondary hazards, that sometimes are most destructive than the direct actions of the eruptions themselves: lahars, tsunamis, landslides, bradyseism offer clear evidences of the complexity which can characterize an active volcanic district, with relevant consequences as regards to hazard management and risk reduction.

After a brief description of the geological settings of the main Italian active volcanic systems, some comments will be spent on the various types of volcano-related hazards which feature them, paying due attention to the available contingency and emergency plans and to the role that the professional geologists can play in their management.

THE GEOLOGIC HAZARDS IN THE LAND PLANNING

Luis E. Suárez – President Spanish National Geologists Association

The flood, both in the Bible and in Sumerian king Gilgamesh legend, is conceptualized as a divine punishment. This divine punishment is interpreted geologically as a catastrophic flood, 7,600 years ago in the black sea, occurred by the sudden genesis of the Bosphorus as a result of the Quaternary glaciations.

Today, the public awareness has more in mind the importance of the risks associated with the dynamics of the earth. In Spain, geohazards caused losses of 2,200 million euros in 2010, considering a medium-risk scenario.

It is difficult for citizens to perceive geological hazards in an area where generations have lived safely, because most of these risks do not occur on a time scale that allows to be perceived during the experience of a lifetime.

In Spain, to minimize the problem of natural hazards, the Land Act of 2008 states that "in the environmental sustainability report for the management tools related with the urban development will be necessary to include a map of natural hazards in the area under planning."

To implement this technical measure, Association of Geologists and the Ministry of Housing drafted the Methodological Guidelines for the Development of Cartographies of Hazards in Spain.

In conclusion, our system sets out four proposals for: legislative action, planning, public awareness and safe policy, all of them directed to reduce natural hazards in Spain.

SNOW AVALANCHE RISK MODEL, GENERATING DAILY UPDATED, HIGH RESOLUTION DANGER MAPS

Anna Seres - University of Miskolc (Hungary) - Institute of Geography

Snow avalanches pose a great danger to people travelling and living in mountainous regions of temperate and arctic zones of the world. Avalanche accidents become more and more frequent with the increasing number of people going for winter outdoor activities to the mountains in Europe and America. In 90% of the avalanche accidents it was the victim itself who caused the snow slide. There are excellent gadgets which help finding and recovering the victim from underneath the snow or help them to stay on top of the flowing avalanche and avoid being buried. Despite these, avalanche rescue is often not successful, the best is to rather avoid getting caught into an avalanche at all.

Daily updated danger maps are available for most of the mountains which get a lot of tourism in the winter. However, these maps only indicate a general level of avalanche danger, sometimes giving slightly more details on the height and aspect where the danger is higher. These maps, this information give only a hint about the danger, these are usually not sufficient for a proper and safe route selection. My aim is to prepare a model which creates a daily updated, very detailed, good resolution avalanche danger map, showing the actual risk of the snowpack in each valley, slope, ridge, etc, thus making it easy for the general public to avoid the dangerous areas.

Avalanche danger basically depends on four factors: weather, terrain, snowpack and vegetation cover/surface type. The base of the avalanche danger model is the snowpack module. This is the core, and the most complicated part. The development of the snowpack during the winter can be estimated based on weather, which data is obtained from meteorological stations on the mountain; and terrain, which is derived from DEM. Each new snowfall exceeding 5 cm or strong wind, depositing significant amount of snow results a new layer in the snowpack. Each layer has attributes like height, density, snow crystal type and size and strength. These properties change from day to day according to the input weather and terrain parameters. The module creates weak layers in the snowpack at locations depending on weather and terrain, but if these weak spots really mean avalanche danger or not is decided by the model by further evaluation based on terrain parameters and vegetation cover. Avalanche danger at these locations is heightened or lowered by certain slope ranges and aspects in relation to snowpack and weather.

The model's input requirements are: weather, new snow and terrain parameters and vegetation cover/surface type from remotely sensed data. It creates intermediate weather and snowpack maps, spatially distributed data from point weather and new snow data according to mathematical description of the processes and terrain parameters. These, together with the potentially dangerous areas located by terrain and vegetation cover, at the end create a daily updated, very detailed avalanche risk map, which can be used by itself or can make the existing, general danger level much more detailed and accurate. This daily updated, final result will be uploaded to a website, where anybody can have a look at it and plan their tour according to it.

REDUCING VOLCANIC RISK IN THE CANARY ISLANDS

Nemesio Pérez, Scientific Coordinator, Instituto Volcanológico de Canarias (INVOLCAN)

The Canarian archipelago is the only Spanish territory exposed to volcanic risk. Clear geological evidences of this fact is that the Canaries are the only part of the country that has experienced volcanic eruptions during the last 500 years, recording the last 3 events during the last 70 years 3 volcanic eruptions, one in Tenerife (Chinyero volcano in 1909) and two in La Palma (San Juan, 1945; Teneguía, 1971; El Hierro submarine eruption, 2011-2012). In addition to this eruptive history, Teide volcano (Tenerife, Canary Islands) is one of 16 volcanoes on Earth that has been identified as a Decade Volcano by the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI) and UNESCO in the framework of the United Nations Decade for Natural Disaster Reduction (1990-99). Therefore, despite the Canary Islands is exposed to various natural hazards, volcanic risk is the most specific natural risk of this community, that makes the difference with the rest of the country.

At present the social and economic reality of the Canaries, with a population of 2 million people and 10 million tourists, is very different from that existing 50 years ago. This fact establish without doubt that the volcanic risk in the Canary Islands today is much larger than during the last century as a result of the existence of higher levels of population and socio-economic parameters exposed to volcanic hazards.

During the last 15 years several initiatives have been implemented to reduce volcanic risk in the Canary Islands which are related to (a) the development of volcanic hazard maps in order to perform a better use and planning of the territory in terms of volcanic hazards, (b) the design, operation and maintenance of a volcano monitoring program that includes the use of geophysical, geochemical, geodetic and other methods to improve and optimize the detection and interpretation of early warning signals about future volcanic crises that might occur in the Canaries, and (c) the development of emergency plans for volcanic risk.

Several and interesting results of the volcano monitoring program in the Canaries related to the 2011-2012 submarine eruption off the coast of El Hierro will be presented on this forum as well as other educational initiatives devoted for reducing volcanic risk in the Canary Islands.

TERRAIN MOTION MEASUREMENTS – SERVICES TO SOCIETY

Isabel Fernandez (EFG Brussels Office director); David Norbury (EFG, Chair Registration Authority).

This paper outlines how InSar is increasingly being used in a variety of technical contexts that contribute to public safety. Two projects in Europe serve as examples that demonstrate the reliable and useful services to society through assessment of InSar measurements of terrain motion. This paper outlines the projects deliverables and how these are increasingly being used in a variety of technical contexts.

The ***Terrafirma*** project aims to implement an operational pan-European ground motion information service in support of policies aimed at protecting the citizen against natural and anthropogenic ground motion hazards. The technology used is based on using Persistent Scatterer Interferometry (PSI) to detect and monitor terrain motions. PSI InSar compares the phase difference between tens or hundreds of radar scenes to derive the measurement of terrain motion and is a non invasive survey method able to measure millimetric motions over wide areas in both urban and non-urban environments. A substantial global archive of scenes exists dating back to 1991.
In the current stages, key user segments were identified which are interested in the particular products from the service portfolio. This segmentation into themes is made according to the motivation behind these users of *Terrafirma* as follows:

- **Hydrogeology:** with sub-themes of Groundwater management, and abandoned or inactive Mines.
- **Tectonics:** with sub-themes of Crustal block boundaries and Vulnerability maps
- **Flood:** with sub-themes of Flood risk maps and Flood defence monitoring.
- **Wide Area mapping:** with sub-themes of widely acceptable and interpretable subsidence maps which are scalable and compatible with other products.

The ***PanGeo*** project is a service proposed to enable free and open access to geohazard information to be achieved by the generation of a validated Geohazard Data Layer and Geohazard Summary for 52 of the largest towns listed in the GMES Urban Atlas. Upon user enquiry, a PanGeo web-portal will automatically integrate the geohazard data with the Urban Atlas to highlight the polygons influenced. The datasets will be discoverable, accessible and useable via a distributed web-map system as built and demonstrated by OneGeology Europe (www.onegeology-europe.eu). The key users of PanGeo are anticipated as:

- Local Authority planners and regulators who are concerned with managing development risk,

- National geological surveys and geoscience institutes who are obliged to collect geohazard data for public benefit,
- Policy-makers concerned with assessing and comparing European geological risk, much as the Urban Atlas data is used to compare the land cover or use status of European towns.

Products will be made by integrating interpreted InSAR terrain-motion data, geological information and the land cover and land use data contained within the Urban Atlas. Integration, interpretation and validation of key features observed will be made by the national Geological Survey. It is planned to deliver the service for two Urban Atlas towns in each country of the EU equalling fifty-two towns in total; this will cover 13% of the total EU urban population.

The presentation will outline the background to these projects and provide examples of improvement in public safety.

SELLING GEOHAZARDS INFORMATION TO NON SCIENTISTS
David Norbury - EFG

This presentation will be aimed at 'Selling PanGeo', which is a brief training course prepared by EFG for the project, telling specialist scientists how to sell their technical products to non specialists who will pay for the product/service. Although it is placed in the PanGeo context, the content will be relevant to all geoscientists who have to tell others - the public, local and central government, civil protection etc - what we know about earth processes, geohazards and their implication to safety of society.

USE OF INSAR FOR LANDSLIDE MONITORING AND TSUNAMI IMPLICATIONS ON CANARIA
Richard Burren – Fugro NPA

This is a case history of using Insar in monitoring of the landslide on Gran Canaria that could slip and if does so there is the possibility of creating a tsunami across the Atlantic. Some members of the Terrafirma team have been using radar measurements of terrain motion to link with GPS and other measurement methods to monitor the slide.

VOLCANIC ASH AND GAS AS A POTENTIAL HAZARD IN AIR NAVIGATION

Carlos Garcia Royo - M.Sc. Geologist, Airline Transport Pilot. Iberia Airlines. SEPLA Technical Department.

Volcanoes placed at divergent, convergent tectonic margins and intra-plate zones may significantly affect today's air transport. Eyja eruption in 2010 was the most serious air traffic interruption since World War II.

As an economic factor, it is important to consider an estimate of 1.7 billion $, according to EC, and 1.1 trillion $, OECD data, as primary and secondary losses that affected the economy of the airline industry during the last Eyja volcanic episode.

Ash and gas may significantly affect aircraft performance. Solid ash particles of pulverized volcanic glass may easily erode engine components, as blades, nacelle, and block either air and fluid multiple inlet and outlet tubes. Its melting point is significantly lower than combustion chamber temperature at cruise level, thus generating a melted material that easily cover air inlet vents at turbine components.
Gas interacting with water constitutes also a serious hazard to both planes and occupants, potentially causing metal corrosion and failure and respiratory problems.
A safe evaluation the material ejected, quantifying the ash amount in precise safe concentrations and gas type is required from the aviation community in order to perform safe flights.

Geological Surveys, geologists, and volcanologists, earth scientists and engineers and pilots from the aeronautical community have a common task to define safe threshold values either on gas and ash to flight safely in such a peculiar environment.

THE SPANISH EMERGENCY MILITARY UNIT (UME) IN THE MANAGEMENT OF NATURAL DISASTERS.

Captain Ignacio Juan Oliver Llorente, Los Rodeos Emergency Military Unit Detachment Commander.

Global warming and social development, both and at the same time, are producing new scenarios for geological and human induced hazards management. This century could be considered as a critical milestone in geological processes, because human effects might be irreversible.

With these new parameters, environmental and geological forces might be new enemies that society needs to understand and study, to control, to prevent its adverse effects, and at the same time, to safeguard against future damages which could increase their strength.

Traditionally, the existence of Armies has been based in the existence of different enemies, commonly other human beings: But now, things are changing. No one denies that countries might need a defence structure to be prepared against actions that can cost lives and produce economical damages from potential enemies. This is the main reason why there are national Armed Forces. Such is the grounds of a defence system. However, whilst we prepare resources for such defence activities, we could think that the same structure can help to reduce damages, when these result from the effect of Nature.

This is the case of the Spanish Emergency Military Unit. The advantage of this structure is that on the one hand, you keep the discipline, the techniques and the development of standard Armed Forces. On the other hand, you use their capabilities to mitigate damages when these result from natural (or another) causes. This new philosophy helps the military to be better accepted by Society, and at the same time, helps Society to strengthen their capabilities against catastrophic events. The result is a positive interchange of experiences between both views.

In this presentation, you will get a brief overview of how the unit was created; which are the tasks where it could be engaged and how it is engaged; its features from a broad approach; a very quick summary of operations; last but not least, something about its main capabilities.

CANARY ISLANDS SPATIAL DATA INFRAESTRUCTURE AS TOOL FOR NATURAL DISASTER PREVENTION AND ANALYSIS

José Julio Rodrigo Bello. Responsable del Departamento de Ingeniería de GRAFCAN. Gobierno de Canarias.

IDECanarias is the Canary Islands Spatial Data Infrastructure (SDI) according to INSPIRE, the Directive 2007/2/CE of the European Parliament and the Council. This Spatial Data Infrastructure allow users access to public free information via several services. IDECanarias web portal (http://www.idecan.grafcan.es) has system general information, news, documentation, tutorials, links and access to main services: IDECanarias viewer (http://visor.grafcan.es) and OGC services.

IDECanarias offers Orthophotos, Topographic Maps, Streemaps, Digital Terrain Models, Historic Aerial photos (more than 150.000 since 1959) and a lot of Thematic Maps like Vegetation maps, geological maps, land cover maps...

RED MUD SPILL IN HUNGARY, OCTOBER 2010

Éva Hartai – EFG Delegate for EU; University of Miskolc (Hungary)
Peter Scharek – Hungarian Geological Survey

Red mud is a solid waste product of the Bayer process, the principal industrial means of refining bauxite in order to provide alumina as raw material for the electrolysis of aluminium by the Hall–Héroult process A typical plant produces one to two times as much red mud as alumina. This ratio is dependent on the type of bauxite used in the refining process.

Red mud is composed of a mixture of solid and metallic oxide-bearing impurities, and presents one of the aluminium industry's most important disposal problems. The red colour is caused by the oxidised iron, which can make up to 60% of the mass of the red mud. In addition to iron, the other dominant particles include silica, unleached residual aluminium, and titanium oxide.

Red mud cannot be disposed of easily. In most countries where red mud is produced, it is pumped into holding ponds. Red mud presents a problem as it takes up land area and can neither be built on nor farmed, even when dry. Due to the Bayer process the mud is highly basic with a pH ranging from 10 to 13. Several methods are used to lower the alkaline pH to an acceptable level to decrease the impact on the environment.

Hungary has 207.5 million tons of potential bauxite resources, from which 8.5 million tons of industrial reserves are expected. The only bauxite mining in Hungary is carried out by Bakony Bauxite Mines Ltd. with an annual production of 546,000 t (2007). The Ajka Alumina plant (MAL Zrt.) is situated near to the mines and its annual alumina production was 270,000 t (2007).

In 4th of October 2010, approximately 0.7 million cubic meters of red mud were accidentally released into the surrounding countryside in the alumina plant accident, killing ten people and contaminating a large area. Immediate scientific efforts at the site included geological and geochemical survey by the Geological Institute of Hungary (MAFI). A part of the fast response actions, geologists were among the first in the field providing reliable site description, sampling and laboratory analyses. The official investigation of the accident has not finished yet. The first published results show a geotechnical problem in planning and constructing the mud deposit.