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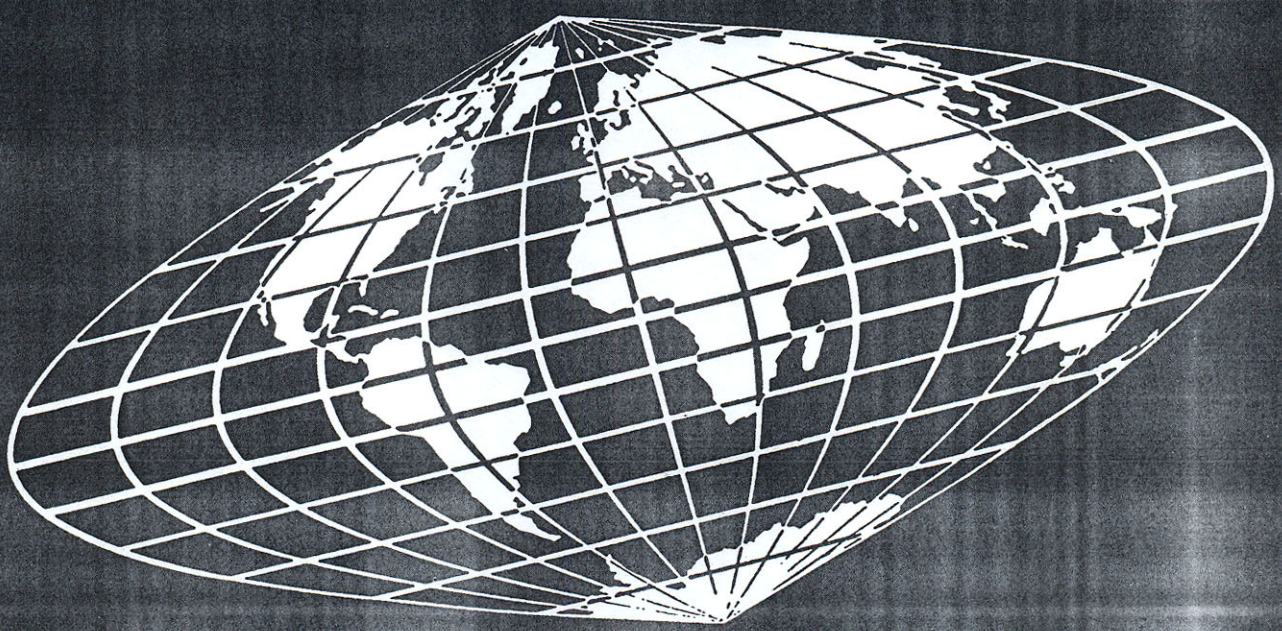

ABSTRACT VOLUME

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Wednesday PO Session

OS02 : WEpo01 : PO
Geosciences as a Social Focus in the Early 19th Century: And Today?

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Around 1800, the geosciences in Europe started to develop to an independent field in lecture and science, especially at the universities. Before that time, general geological and mineralogical topics were mentioned in lectures for natural history and medicine. But also outside the universities, geosciences played an important role for the social life during that time. Mining geology and mineralogy became more popular, because of the beginning industrialisation. But beside geosciences for practical use, also the principles of rock formation and the origin of the earth were discussed with special public interest. The discussion about the origin of basalt, which spread out over Europe is one of the most prominent controversies, and played an important role for the development of geosciences, especially for the beginning experimental petrology. Our study focuses on the geoscientific melting experiments of Johann Wolfgang von Goethe (1749-1832), his motivation and the background of the experiments. His studies have been analysed and the melting experiments reconstructed with a pottery kiln (wood heating) and modern furnaces in the laboratory of the Institute for Geosciences of the Friedrich-Schiller University in Jena. The samples Goethe used for the melting experiments range from single crystals (e.g. feldspar) to rocks (granite, mica schist etc.). For the reconstruction we resampled at historical outcrops in NW Boheme (Czech Republic), additionally there are historical samples from Goethe available for research at the 'Mineralogische Sammlung' the mineralogical museum in Jena. These samples (escpecially the products of Goethe´s melting experiments) and the products of the modern melting experiments have been analysed with Electron Microprobe. Goethe, eminent author, state minister in Weimar (Germany) and scientist as well as experimentalist in geosciences, provides the opportunity to analyse the role of geosciences in the society around 1800 with his enormous written estate. With this historic case study, we hope to give the starting-point for further discussions concerning the image of geosciences and geologists in the new millennium, because we must not forget the historical record in order to make a prognose for the future.

OS02 : WEpo02 : PO
Mining, Environment and the Public Image of Geology

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Mining, exploration and traditional geological research were in crisis during the 1990's. Institutions related to mining and geology were under political attack in the U.S.A., and there were continuous cuts in geological research funding and jobs all over the world. At the same time, the importance of environmental issues increased among geologists, mining companies and the general public. The benefit of geosciences to the society was acclaimed and it was noted that the general public has a lack of geoscience awareness. The necessity for wider public awareness of geosciences begged a very actual question. There has also been much debate on social and environmental impacts of mining. Many multinational mining companies have an adverse image among the general public and NGOs. This image is transferred to all mining activity and even to geology as a whole; this, in turn, has lead to severe restrictions in exploration in many countries. The concept of geologists as professionals related only to mining activities, has contributed to the negative image among the public. Therefore, some mining companies have started supporting initiatives on geoscience education and information campaigns on the benefits of mining to the society. They have also started to take more deeply into account the environment and local communities, to avoid the threat to their own interests.

In Northern Scandinavia, it is difficult to practice mining, exploration and even geological mapping due to popular resistance and where native rights to land restrict exploration and mining. This has been a challenge to many mining companies around the world. To avoid sentimental prejudices, large resistance to mining and exploration activities and to combine diverse interests, especially related to wilderness and native areas, mining companies and geological institutions have a fundamental role in acting in an environmentally responsible manner and distributing information on mining, geosciences and the environment among the general public and decision makers.

The mining industry should see the environmental protection as a part of the business and as a competitive advantage. Therefore the rising of the environmental image and diffusion of geological knowledge must be seen as a part of marketing by mining companies. In the U.S.A., the public has sympathy with institutions which contribute to the raising of public awareness of the environment in, e.g. national parks.

Geology, and especially mining, has great challenges concerning environmental and social issues, especially related to aboriginal people and NGOs. The adaptation of geology to the necessities of a changing society and values seems to be a requirement to maintain the geoscientific funding, its high level and societally beneficial know-how.

OS02 : WEpo03 : PO
Flood Hazards in Mainland Greece

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From ancient times to recent there are numerous mentions for the occurrence of big floods which struck the mainland Greece causing severe damage. In historical documents, even from the Greek mythology there are precise mentions not only about the damage from these phenomena but also on the reasons that caused them, or even the actions taken for inhibiting such phenomena. After evaluating and checking all the information it is found out that the floods concern the flooding of large fertile plains with river waters, like Pinios, Alfios, and Eurotas river. In the present century, it seems that there is a considerable decrease in the number of such episodes while there are some characteristic examples of some big catastrophes (Thessalic valley in 1994). Despite the fact that the flood hazards have generally been reduced in the large plains, however the hazards have increased significantly within or at the limits of built-up areas (i.e. Attika 1994, Korinthos 1997). The flooding events in the urban areas seem to have increased, while the main reasons are the following:

- The effective restriction of the river beds in the urban areas due to the uncontrolled building activity.
- The blockage of the river beds from constructions, the disposal of debris or the failed engineering constructions.
- The destruction of forests from fire and the deforesting of land towards the upper parts of the drainage basins.
- The decrease of water inflow and the simultaneous increase of the surficial outflow as a result of the covering of the basin surface after urbanisation. Additionally, in the broader area of the built up complex and within the drainage basin act a number of factors which are associated with the occurrence or not of floods, like for instance the presence of rocks with increased permeability, the morphological dips and their distribution, the degree of evolution of the hydrologic network, its type, etc. Recent research which took place in areas taken as model cases, it was found out that in each drainage basin coexist some particular factors, however with the occurrence of floods one of all reasons plays the most important role and is called the critical factor. Especially, in adjacent drainage basins and with almost the same characteristics it is found out that the critical factor is different, the removal of which in each case, only if possible, eliminate the occurrence of the phenomenon. The survey of the factors that contribute in the occurrence of a flooding event is a first action to reduce the risk. Secondly, processing all of the data through an electronic system for management geographical information, is possible to indicate the hazardous regions in the framework of constructing one land use plan.

OS02 : WEpo04 : PO
Landslide Hazards in Greece

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In the Greek mainland occur numerous landslide phenomena some of which cause particularly severe effects not only economic but socially also. According to surveys that were accomplished by the official state services it is found out that after 1950 have occurred in Greece more than 500 landslides, while the total number must be much higher considering that the latter number includes only landslides along the road network and the urban areas or generally landslides with some economic or social effects. After statistics analysis of the parameters that cause the occurrence of landslides it is discovered that the main reasons are briefly the following:

- The morphological dips of the slopes. Most landslides occur in the mountainous regions of Greece with an impressive concentration in areas along Pindos mountain chain.
- The poor magnitude of the geotechnical properties of the geological formations.
- The intense tectonic deformation, which intensely fractured the rock mass and contributed to the even higher reduce of the values of the geotechnical properties.
- The strong differentiation in the lithostratigraphic structure with the result of creating a succession with completely different geotechnical properties.
- The intense climatic differentiation and the extreme climatic conditions in some regions of the Greek mainland (i.e. Pindos mountain chain).
- The high seismic activity.

This connection has been noticed in many recent earthquakes which occurred in Greece (i.e. Killini 1988, Milos 1992, Pirgos 1993, Grevena 1995). · The human intervention in the environment, which is the deforesting, construction of artificial slopes, the removal of natural support and the building of engineering constructions without caring out any investigation (i.e. Malakasa 1995). The problem of landslides mainly emerge in areas with intense development, such as the limits of big urban complexes, in areas with high touristic development and in areas with building activity of engineering constructions and interventions. In these areas ought to the speed of development-expansion and the pressing need of finding more space there has not been done the necessary investigation neither has been taken even some basic measures, as a result the risk becomes high. In the last decade have been developed techniques for land management to encounter the landslide problem together with the development of computer packages for management geographical information. Particularly, the parameters that compose the problem of landslide are evaluated, mapped separately (i.e. morphological dips, zones of strain and intense fracturing of the rock mass, formations with reduced values of geotechnical characteristics, underground water reservoirs, human intervention, etc.), then rated and finally input in the system. After the data processing automatically a map of risk distribution of the region is formed, which consist in combination with other maps of other phenomena, a guide for the proposed land utilities.

OS02 : WEpo05 : PO
Geophysical and Geotecnhnical Investigation of an Areal Landslide in the Northern Tuscany (Italy): An Extensive Sloap Consolidation Proposal

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A detailed investigation of an areal landslide with geophysical and geotechnical methods is presented. The gravitative movement started in the Spring of 1998 and slowly but surely has continued for these two years. It took place on the north-western side of Mt. Tavianella, in the Tuscan Northern Apennines. Main lithological units in this area are turbiditc flysch (sansdtones and limestones) and heterogeneous covers (claystones and shales). This second type of terrain often lies as both small and wide landslides or palaeo-landslides on the turbiditic bedrock, even in poor deeper slopes. The present investigation is a part of an environmental plan designed in order to reset the areal stability and preserve the local road with geotechnical structures.