SGA News
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Sediment-hosted Base Metal Sulphide Deposits in Neoproterozoic Strata of Namibia

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Introduction

Neoproterozoic sedimentary successions of the Pan-African Damara and Gariep Belts are some of the most important hosts of economic base metal concentrations in southwestern Africa. Two major types of deposit are distinguished, the Tsumeb- (including the Berg Aukas-) type and the Rosh Pinah-type. These two have been compared with MVT and SEDEX deposits, respectively. Both types have in common that Neoproterozoic, shallow marine carbonates played an important role as chemical trap for the ore fluids. The recent surge in chemostratigraphic data (Fölling and Frimmel, 2002; Hoffman et al., 1998) on these carbonates, together with new age constraints (Fölling *et al.*, 2000; Kamona *et al.*, 1999) make it feasible to compare the geological, tectonic and climatic conditions during mineralisation and thus the principal controls on the formation of these deposits. Based on that, the widely held notion of MVT and SEDEX deposits having a similar genesis will be critically assessed.

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NEWS OF THE SOCIETY

☞ News of the Council

Subsidised Subscription Program for *Mineralium Deposita*

The SGA Council has approved the request of Dr. Duncan Large Chief Geologist, Transitional Department of Trade and Industry, Directorate of Mines and Minerals, New Economic Faculty Pristina, Kosovo, and SGA will provide free MD copies to the University of Pristina, Kosovo. Kosovo geologists will be hugely grateful for modern literature on ore deposit geology. The economy of the country used to be based on mining – the Trepca lead-zinc mines (5 were in operation up to the beginning of hostilities), smelters and refinery were the principal source of employment, but there were also important lateritic nickel, bauxite, chromite, lignite and magnesite mines and plants. All, with the exception of the lignite, are now on care and maintenance as a result of under-investment during the 1990's and subsequent collateral damage during the hostilities. There is an active group of geoscientists who are anxious to update and maintain their knowledge of the science. The journals will be housed in the National Library, which also acts as the University Library of Kosovo and serves the mining-geology faculty in Mitrovice and the geology-geography faculty in Pristina.

SGA Guide for Organizing and Managing the SGA BIENNIAL MEETINGS

The Council has prepared a document intended to assist in organizing, financing, and managing the SGA biennial meetings, and that will serve the local organizing committee, SGA Council, and any others contributing to SGA biennial meetings. This guide provides a template for planning meeting activities, subject to modifications and additions as needed for a particular venue. This guide will help insure that SGA meetings achieve the highest professional level, from the technical and scientific viewpoints.

Report of the SGA Promotion Manager

G. Borg presented new developments for the public promotion of SGA.

SGA Student Chapters

The SGA Council is open to Student Members to form Student Chapters. The Council approved the creation of a joint Prague-Freiberg SGA Student Chapter. Participation in SGA Student Chapter activities does not necessarily entitle the member to SGA Student fees.

Proposal for creation of SGA Awards

The Council approved the creation of the SGA Young Scientist Award. The award will be given biannually to a young scientist for research in economic geology published before his 35th birthday. The award consists of a citation, 1500 EURO and travel to the Biennial meeting for the presentation (see pages 5-7).

7th SGA Biennial Meeting

The 7th Biennial SGA Meeting "Mineral Exploration and Sustainable Development" will be organized by Society for Geology Applied to Mineral Deposits in Athens (Greece), August 24-28, 2003. The meeting will be co-organized by the Institute of Geology and Mineral Exploration, Athens Technical University, Geological Society of Greece, Society of Economic Geologists and others.

☛

!!! NEW !!!

SGA NEWS MAILBOX

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We expect your letters with comments, news, criticisms, ...

✂.....

CHANGE OF ADDRESS FORM

If you have changed (or will change in the near future) your address please fill in this form and send it to:

Peter M. Herzig, SGA Treasurer - Institut für Mineralogie, TU Bergakademie Freiberg, Brennhausgasse 14 - D-09596 Freiberg, Germany; phone: +49 3731 39-2662/2626; fax: +49 3731 39-2610; e-mail: herzig@mineral.tu-freiberg.de

Name: .....

Old address: .....

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!!! IMPORTANT NOTICE !!!

Applications to SGA for meeting sponsorship have to be submitted to Jan Pasava, SGA Executive Secretary, on appropriate forms developed and approved by the SGA Council which are available at the SGA home page on Internet:

http://www.min.tu-clausthal.de/sga.html

Other requests will be not considered.

The SGA Council thanked D. Eliopoulos for the excellent organization of both the SGA Executive Committee and Ordinary Council Meetings in Athens and the great hospitality provided by IGME. A personal welcome by Director General, IGME, and Head, Mineral Deposit Department, were highly appreciated. The Council approved that D. Leach will act as a technical liaison within the Organizing Committee. The registration fees for the congress have been fixed as follows:

registration	*by 30/04*	*after 30/04*
Member SGA/SEG	€ 250	€ 350
Non-member	€ 350	€ 450
Student member SGA/SEG	€ 100	€ 150
Student non-member	€ 150	€ 200

The second circular will be sent to only those people who responded to the 1st call or will make a request for a copy.

Status of SGA-SEG collaboration

The Council approved the organization of the SGA module –session on "Cutting edge advancements in economic geology" for the 2004 SEG meeting in Perth, Australia (already approved by SEG Council).

Status of SGA-IAGOD collaboration

The Council approved that SGA should take a larger role in the organization of the 12th IAGOD Quadrennial Meeting (St. Petersburg – August 2006) and recommended to discuss more on SGA-IAGOD collaboration during a possible joint IAGOD-SGA Council meeting in Windhoek, Namibia.

Meeting sponsorship

The Council approved the following requests for meeting sponsorship by SGA:

- 4th Fennoscandian Exploration and Mining (FEM), December 3-5, 2003, Rovaniemi, Finland. H. Papunen will act as SGA keynote speaker.
- 12th IAGOD Quadrennial Symposium, August 2006, St. Petersburg, Russia.
- 16th Australian Geological Convention, June 30 -July 5, 2002, Adelaide, Australia.World class mineral deposits and earth evolution, August 19-21 2003, Cardiff, UK. Ch. Heinrich will act as SGA keynote speaker.

Various

J. Cabello (Regional Vice-President for South America) will launch a promotion campaign of economic geology in South America.

Jingwen Mao offered to organize the next SGA Biennial Meeting (2005) in Beijing (China).

Your suggestions and ideas for any topic of interest to SGA are welcome! They can be addressed to any Council member or to

Dr. Jan Pasava
SGA Executive Secretary

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CZECH REPUBLIC

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Report of the Executive Secretary about membership

50 Regular Members, 41 Student Members and 5 Corporate Members applied for membership from April 2 to October 31, 2002

LIST OF NEW SGA MEMBERS
(April 2 – October 31, 2002)

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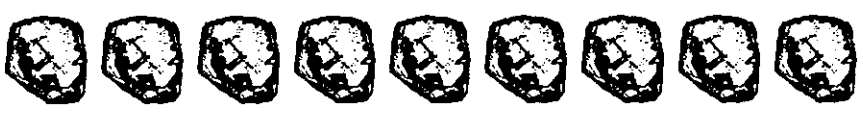

The SGA Young Scientist Award

The SGA Young Scientist Award is offered biannually to a young scientist who contributed significantly to the understanding of mineral deposits.The award which consists of a citation, price money of EUR 1500, and travel to the Biennial meeting for the presentation, is not restricted to the candidate's nationality, place of employment, or membership in the Society. The award is given for contributions to economic geology.The SGA Young Scientist Award is awarded for research in economic geology published before the author's 35th birthday. The awardee must be less than 37 years of age on January 1 of the year in which the award is presented.

Any Society member in good standing may nominate candidates for the award. Nominees who are not selected in their first year of nomination, but are still eligible will be considered for awards in following years.

How to Nominate

A brief biographical summary in the style of American Men and Women of Science or other similar biographical listing should be submitted by the person making the nomination to the SGA Executive Secretary by **January 1 of the year of Biennial Meeting (2003, 2005, 2007,...)**. The following information should be included:

1. Name of nominee.
2. Date of birth.
3. Education (degrees, institutions, dates) and previous awards.
4. Past and present professional affiliations.
5. Reference citation(s) to publication(s) for which the award is to be made, and to other published works. Indicate critical paper(s) and provide a copy of the abstract, if possible. An individual's contribution in co-authored papers is difficult to evaluate; such papers should be avoided unless the nominee is a senior author whose contributions can be clearly identified.
6. Brief statement explaining the significance of the research, including its pertinence to economic geology, its demonstrated effects, the originality and creativity shown in the research, the clarity of presentation, and its impact on scientific theory or technology.
7. Additional pertinent or related scientific contributions such as other accomplishments, advisory or consultant activities, and recognition of research stature elsewhere by others.
8. Names of individual making the nomination.

Supporting letters are helpful and may be attached to the letter of nomination or sent separately to the Chair of the SGA Young Scientist Award Committee.

SGA Executive Secretary
Czech Geological Survey
118 21 Praha 1, Czech Republic
Tel. ++(420) – 2- 51817390
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DEADLINE: January 1st of the year of Biennial Meeting (2003, 2005, 2007...)

For the nomination form see pages 6 and 7. ◆

SGA News

N.° 14 December 2002

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Items for publication may be sent to: SGA News (see address below)
Manuscripts should be sent in computer diskette in Macintosh or DOS formats using Microsoft Word. Please always send a paper copy and indicate the format you are using.

Deadline for SGA News N.° 15: 31 MARCH 2003

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SOCIETY FOR GEOLOGY APPLIED TO MINERAL DEPOSITS

SGA YOUNG SCIENTIST AWARD
NOMINATION FORM

DATE: _____

NAME OF CANDIDATE: _____

ADDRESS: _____

_____

_____

BIOGRAPHICAL INFORMATION (use format style in American Men and Women of Science, Who's Who in America, or similar biographical listing: SGA record available from the SGA Office)

SUMMARY OF MAJOR CONTRIBUTIONS OR ACHIEVEMENTS (up to 300 words)

SUBMISSION MUST BE RECEIVED BY SGA HEADQUARTERS BY JANUARY 1st OF THE YEAR OF BIENNIAL MEETING (2003, 2005, 2007...)

Please complete the other side, too .....

-SIDE 2- - SIDE 2 -

SOCIETY FOR GEOLOGY APPLIED TO MINERAL DEPOSITS - AWARD NOMINATION FORM

SIGNIFICANT ACCOMPLISHMENTS/PUBLICATIONS: (for accomplishments, give specific examples; for publications, list no more than 5 titles.)

Individual nominations for any of these awards MUST BE SUPPORTED by three signed letters from SGA Members. The letters may be attached to this form or sent separately. Supporting letters should emphasize the significance of the nominee's contributions. All information must be verifiable.

NAME OR PERSON MAKING NOMINATION: _____

ADDRESS: _____

_____

_____

DATE: _____ **SIGNATURE:** _____

LETTERS OF SUPPORT WILL BE SUBMITTED BY:

1. _____
2. _____
3. _____

RETURN TO:

SGA EXECUTIVE SECRETARY
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http://www.min-tu-clausthal.de/www/sga/sga.html

DEADLINE: January 1st of the year of Biennial Meeting (2003, 2005, 2007...)

"Ex Africa aliquid novi"

SGA at the IAGOD/Geocongress 2002 in Namibia

Gregor Borg

SGA Promotion Manager, University of Halle (Germany)

"There is always something new from Africa", this saying by Pliny the elder (1st century A.D.) certainly applies to the IAGOD/Geocongress 2002 (held in Windhoek, 22-26 July), which was co-sponsored by SGA. This impressive geological conference had its main focus on international and specifically on African ore deposit geology and was jointly organised by the Geological Societies of Namibia, South Africa and Zambia with some co-organisation by IAGOD and SEG.

The meeting attracted well above 300 delegates from over 20 countries and featured 240 papers. The impressively high scientific standard of a great majority of the presentations was widely acknowledged as was the well-organised structure of the meeting and the convenient venue at one of Windhoek's best hotel and conference centres. The meeting featured also an exhibition hall next to the poster forum, which turned out to be the hub of activities and favourable meeting place during the entire conference period. Exhibitors included geological surveys, mining houses, geophysical consultancy services and very prominently the exhibition booths of the sponsoring organisations, including SGA, SEG, GSSA, GSN, and IAGOD. Excursions visited world-class venues as far as the Zambian Copperbelt or as close as the famous dunes of Sossousvlei in the Namib desert.

The SGA exhibition was well-stocked with the society's eye-catching display wall, banners, and promotion material, which attracted a large number of visitors. Scientific discussions, lead to conversation about society matters and to attracting new members or the sale of SGA short course volumes. The exhibiton hall's bustling atmosphere of scientific and business small talk provided the perfect communication platform with its well-stocked coffee bar, which was converted to a more proper watering hole in the later afternoons.

More than 15 new SGA members signed up during the conference at the SGA booth, which was staffed professionally by Jan Pasava, Hartwig Frimmel, and Gregor Borg, who all volunteered their persuasive promotional skills.

SGA's sponsorship to IAGOD/Geocongress 2002 in Windhoek proved to be a sound investment, which helped to make a great geoscientific conference a success. The international crowd, predominantly of economic geologists, thoroughly enjoyed the experience, interaction and Namibian hospitality.

Many conference delegates at the IAGOD-Geocongress 2002 took the opportunity to visit the famous sand dunes at Sossousvlei in the Namib Desert (Photo G. Borg).

Rosh Pinah-type Deposits

Largely stratiform Zn-Pb(-Cu-Ag) sulphide mineralisation of the Rosh Pinah-type occurs in the continental, para-autochthonous Port Nolloth Zone of the Gariep Belt. Within that zone, a more or less coast-parallel basement high separated two basin, a failed continental rift in the east (Rosh Pinah graben) and a half-graben that eventually evolved into the oceanic Marmora Terrane in the west. In the former, three megasequences (M1 - M3) are distinguished: M1 (770 - 740 Ma) constitutes the lower part of the Port Nolloth Group. It starts with alluvial fan deposits in an emerging continental rift graben and evolves to alluvial plain and fan delta deposits in the widening rift. Locally, at the flanks of a major growth fault along the eastern boundary of the Rosh Pinah graben, diamictite, intercalated with upward fining arkose and greywacke beds, along with dolomitic olistostromes of the Kaigas Formation are interpreted as representing, respectively, debris flow sediments, proximal to medial turbidity fan deposits, and large slump masses, laid down adjacent to drowned rift shoulders. A glacio-marine or fluvio-glacial origin of parts of this formation is indicated from faceted exotic dropstones that show signs of ice-induced fracturing. Bimodal, but largely felsic, continental rift magmatism, dated at 741 ± 6 (Frimmel et al., 1996b), accompanied this glacial period. Based on this age constraint and on low $^{*13}C$ and low $^{87}Sr/^{86}Sr$ ratios and the chemostratigraphic comparison with similar Neoproterozoic sequences elsewhere, this glacial influence is correlated with the global 720-750 Ma Sturtian glaciation.

Table 1: Comparison between Rosh Pinah- and Tsumeb-type deposits.

	Rosh Pinah-type	Tsumeb-type
Host rock	limestone, arkose, pyroclastics	limestone, dolomite, arkose (740-720 or 570-540 Ma?)
Age	pre-orogenic (741±6 Ma)	syn-orogenic (560-530 Ma)
Tectonic setting	failed continental rift	foreland fold-thrust-belt
Main ore minerals	sphalerite, galena, chalcopyrite	sphalerite, enargite, tennantite, galena; bornite, chalcopyrite
Ore fluid	H_2O - CO_2 - CH_4 - H_2S (low Eh)	H_2O - CO_2 - CH_4 - H_2S (low Eh)
Salinity	27 wt% NaCleq	21 wt% NaCleq
Main solutes	Ca^{2+}, Mg^{2+}, K^+, CO_3^{2+}, Cl^-	Ca^{2+}, Mg^{2+}, CO_3^{2+}, Cl^-, Br^-
Temperature	-400 EC	2756405 EC (N6S)

Post-glacial drowning of the basement high led to widespread shallow marine carbonate deposition under increasingly warmer climatic conditions on a passive continental margin, followed by a major regressive phase (M2; 720 - 580 Ma). The latter was in preparation of a second major glacial event, which based on chemostratigraphic and Pb-Pb carbonate age data is correlated with the global 580 Ma Marinoan glaciation (Numees Formation diamictite). Post-glacial carbonate and subsequent siliciclastic flysch deposits constitute M3. Sedimentation was probably terminated around 550 Ma, with transpressive continent-continent collision and associated metamorphism reaching a peak at 545 ± 2 Ma (Frimmel and Frank, 1998).

Rosh Pinah-type mineralisation is confined to the Rosh Pinah graben, where it occurs in clastic to volcanoclastic, largely calcareous rocks in a sub-basin near the rift volcanic centre. Textural, isotopic and geochemical evidence indicates replacement of the host sediments during early diagenesis, whereby feldspathic arenite was silicified and limestone dolomitised by an overall reducing mineralising fluid. Fluid inclusion data support a magma-derived component in that fluid (Frimmel and Board, 2000). Starvation of the Rosh Pinah graben during climatically controlled Sturtian sealevel drop is proposed to have created the necessary redox barrier for massive sulphide precipitation to occur near the sediment-seawater interface.

Tsumeb-type deposits

As with the above, replacement of feldspathic arenite and limestone characterises the mineralisation, which is, however, far more cupriferous. The host carbonate succession (Otavi Group) forms part of an extensive platform on the northern margin of the Khomas Trough, which is believed to be an equivalent to the Gariep Basin in the Damara Belt. Similarly as in the Port Nolloth Zone, two glaciogenic diamictite units are present, with carbonates dominating in between and also above the younger diamictite. Although the correlation of glaciogenic deposits across the Neoproterozoic successions in southwestern Africa (and elsewhere) is hampered by a lack of good geochronological control, correlation of these two diamictite units with the inferredsyn-Sturtian and syn-Marinoan diamictite units in the Gariep Belt is proposed. This is in spite of the fact that the younger carbonate succession (Tsumeb Subgroup) is characterised by a distinct positive $^{*13}C$ excursion (Frimmel et al. 1996a; Hoffman et al., 1998), which has led other workers (Hoffman et al., 1998) to propose a Sturtian age for the entire Otavi Group. Here the C isotopic variations are explained, however, as mainly a reflection of the restricted nature of the depositional basin and not that of global climatic changes.

In contrast to the above, Tsumeb-type mineralisation appears to be epigenetic and synchronous with the formation of a foreland fold-and-thrust belt during the 550 - 540 Ma Damaran orogeny. This is indicated not only by the syn-tectonic nature of the main-stage mineralisation, but also by Pb-Pb model ages (Kamona et al., 1999). No connection to magmatism exists, but evaporite beds played a crucial role in rendering the mineralising fluid sufficiently saline to transport the required amounts of base metals (Chetty and Frimmel, 2000).

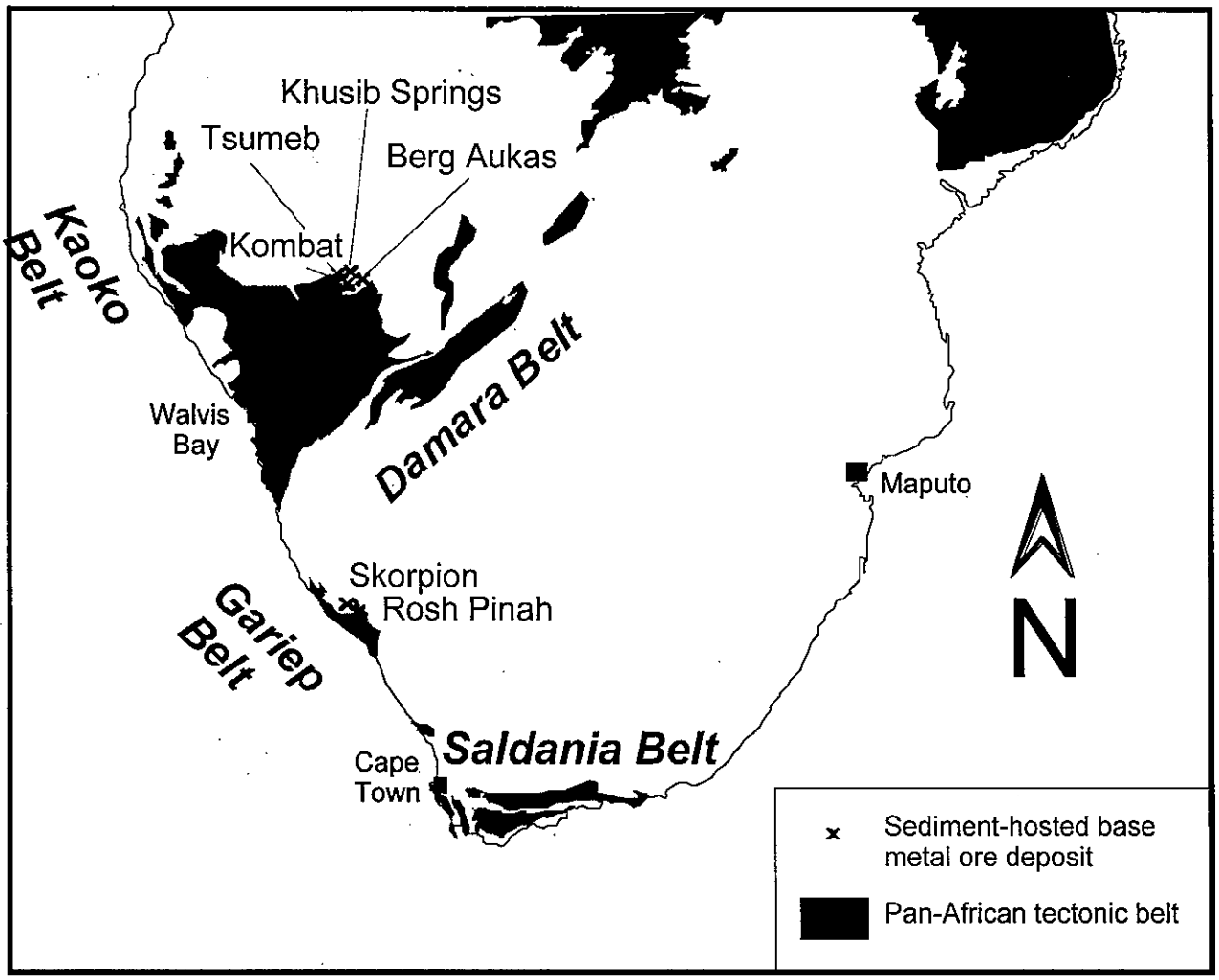

Figure 1: Location of major base metal ore deposits in Neoproterozoic strata of southwestern Africa.

Comparison and conclusions

In spite of both having replaced similar host rocks of similar age, the Rosh Pinah- and Tsumeb-type mineralising fluids are derived from different sources and are of different age (Table 1). The former is related to magma-fed hydrothermal fluids circulating in an extensional basin starved by eustatic sealevel fall, whereas the latter can be described as syn-orogenic brine that was expelled from the emerging Damara orogen northwards into the foreland. Rosh Pinah-type deposits are a hybrid between VMS and SEDEX deposits. Leach *et al.* (2001) made a clear case for MVT deposits having formed during large contractional tectonic events in areas where platform carbonates had a hydrological connection to orogenic belts. The Tsumeb-type deposits fit this characterisation perfectly. Supercontinent consolidation should be the best time for MVT mineralisation, as evidenced by the majority of MVT deposits having formed during the assembly of Pangea. Tsumeb-type mineralisation exemplifies an MVT equivalent during Gondwana assembly.

Although the nature of Neoproterozoic base metal deposits in Namibia documents that VMS/SEDEX deposits differ entirely from MVT deposits in terms of tectonic setting, age relative to that of host rock, and source of mineralising fluid, there might be a connection between the two deposit types. Rosh Pinah-type mineralisation is speculated to have been a major metal source (specifically Pb and Zn) for the later Tsumeb-type mineralisation. The extent of post-depositional base metal mobilisation appears directly related to the salinity of later fluids. In the northern Damaran foreland, syn-orogenic fluids were highly saline with high Br/NaCl ratios (Chetty and Frimmel, 2000), thus providing an essential ingredient not only for Tsumeb-type mineralisation, but also for the potential mobilisation and thus destruction of former Rosh Pinah-type deposits. In contrast, the external Gariep Belt was infiltrated by syn-orogenic fluids of low salinity (Frimmel and Board, 2000) and Rosh Pinah-type deposits were well preserved during Pan-African orogeny.

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INTRODUCTION

It has been tradition to organize very successful UNESCO Postgraduate Courses on Geochemical Prospecting Methods in the former Czechoslovakia from mid 70's. The first certificated course - GEOCHIM PRAHA UNESCO 1975 was launched on September 5, 1975 and lasted till October 25, 1975. Since that time this course has been organized biannually by the Czech Geological Survey in Prague together with the Dionyz Stúr Geological Survey in Bratislava and sponsored by the Division of Earth Sciences (UNESCO/Paris) and the International Association of Geochemistry and Cosmochemistry (IAGS). The course was specialized on both theoretical and practical training in classical geochemical prospecting methods. A team of internationally experienced geoscientists as Drs. J. Pokorny, F. Mrna, J. Manour, V. Lomozová, Z. Sulcek, I. Rubeska, A. Spacková, V. Sixta, J. Juna, J. Vesely, J. Dornic and others, co-ordinated by Dr. Zdenek Pácal from the Czech Geological Survey in Prague has soon earned high international reputation and the GEOCHIM CSSR UNESCO Postgraduate Course developed into one of the most successful Postgraduate Training Programmes of UNESCO.

The major political and economic changes initiated in 1989 and which led to a split up of the former Czechoslovakia into two independent countries - the Czech and Slovak Republic have had a significant impact on the evolution of earth sciences and related mining activities. Following decades of extensive exploration programmes and also underground and surface exploitation, new policies have been formed which will result in a more responsible approach to the environment.

A very old and famous prospecting and mining tradition, coupled with a strong emphasis on environmental issues, are reflected in the character of a newly recovered certificated GEOCHIM Postgraduate Training Course. Our new group intends to offer more complete view, showing how these classical geochemical prospecting methods can be successfully used in the solution of various environmental problems.

The GEOCHIM 99 was held in Prague and Dolní Rozínka (Czech Republic) from September 6-20, 1999 and 12 scientists (of which 7 were female), representing 8 countries (Albania, Argentina, Brazil, China, Jordan, Republic of Congo, Romania and Tunisia), were trained both theoretically and practically in the geochemical exploration methods and their environmental applications. For more description see Episodes, 1999, vol. 22/4.

The GEOCHIM 2000 was held in Prague and Dolní Rozínka (Czech Republic) from September 4-18, 2000 and 13 scientists (of which 6 were women) went through similar training programme (for more details see Episodes, 2000, vol. 23, no. 4).

The GEOCHIM 2001 was held in Prague and Dolní Rozínka (Czech Republic) from September 3-17, 2001 and 12 scientists representing 7 countries were trained both theoretically and practically in the geochemical exploration methods and their environmental applications. For more description see Episodes, 2001, vol. 24, no. 4.

GEOCHIM 2002

The GEOCHIM 2002 was held in Prague and Dolní Rozínka (Czech Republic) from September 2-16, 2001 and 14 scientists (of which 5 were female) from Botswana, Cameroon, China, Croatia, Egypt, Iran, Jordan, Nigeria, Russia and Sri Lanka were trained both theoretically and practically in the geochemical exploration methods and their environmental applications similarly as during 1999, 2000 and 2001 courses.

This course was organized by the Czech Geological Survey and IGCP 429 under the auspices of the Ministry of the Environment, Czech Republic, Czech Commission for UNESCO and the Czech IGCP National Committee and financially sponsored by the Czech Government (through the Program of Technical Assistance of the Czech Republic to developing countries), Czech Geological Survey in Prague, Division of Earth Sciences - UNESCO/Paris (through the contract no.4500002206), and the International Geological Correlation Programme - IGCP 429 "Organics in Major Environmental Issues".

It should be noted that the course was officially launched on September 3rd, 2002 in the building of the Czech Geological Survey in Prague by opening speeches delivered by Mr. R. Tomas (on behalf of the director of the Czech Geological Survey), Mr. M. Pastvinsky (Director, Department of Global Relations, Ministry of the Environment, Czech Republic), Mr. J. Blazek from the Czech Commission for UNESCO and Mr. J. Pasava, Chairman of the Czech IGCP National Committee, Co-leader of the IGCP 429 and Director of the GEOCHIM Courses.

Lectures, seminars and practical field training started on September 4th, 2002 in Dolní Rozínka and included the following subjects: (1.) Introduction to the geochemical prospecting

methods, (2.) Principles of environmental geochemistry, (3.) Principles of analytical methods, (4.) Heavy minerals prospecting and evaluation of HM concentrates with environmental applications, (5.) Stream sediment prospecting with environmental applications, (6.) Soil prospecting with environmental applications, (7.) Biogeochemical prospecting with environmental applications and up to date results of the IGCP 429, (8.) Lithogeochemical prospecting, (9.) Hydrogeochemical prospecting with environmental applications, (10.) Geophysical prospecting methods with environmental application and radon risk, and (11.) Computer modelling of prospecting and environmental data.

Individual lectures covering various geochemical methods which were presented during morning sessions were followed by afternoon practical field and computer training. The underground visit to the uranium mine as well as processing plant and remediated sites at Dolní Rozínka (Moravia) and also full day field trip observing surface lignite mining operations and examples of various types of remediation in the North Bohemian Coal Basin (North Bohemia) were a part of this course. The aim of these visits was to demonstrate possible ways of effective usage of geochemical methods in both prospecting and environmental fields.

The following special textbooks were prepared for the purpose of the GEOCHIM Postgraduate Training Course on the Geochemical Prospecting Methods and Their Environmental Applications:

Pasava, J. and Kríbek, B., (eds.), 1999, *Geochemical prospecting methods and their environmental applications*. Special Publication, 132 p., Czech Geological Survey, Prague, ISBN 80-7075-357-9.

Geochim 2002 Postgraduate Training Course - Field trip guide to the North Bohemia (2002). Czech Geological Survey, 12 pages.

CONCLUSIONS AND FUTURE PLANS

It is apparent that renewed GEOCHIM Courses have become very popular among geoscientists from especially developing countries. Many participants very highly appreciated both organization and scientific level of the course through their personal letters mailed either to organizers or to Mr. F. Repetto from the Division of Earth Sciences, UNESCO, Paris.

Moreover, the organizers have already started seeking funds for GEOCHIM 2003 which should be organized from September 1 to September 15, 2003, if sufficient funding available.

ACKNOWLEDGEMENTS

On behalf of the Organizing Committee, I wish to extend best thanks to the following sponsors for their financial and/or moral support: Government of the Czech Republic, Czech Geological Survey in Prague, Czech Commission for UNESCO, Division of Earth Sciences, UNESCO (Paris), IGCP 429 and Czech IGCP National Committee.

It would not have been possible to organize this course without efforts of members of the Organizing Committee (D. Masek, R. Cadská, V. Bláha and J. Tesar from the Czech Geological Survey in Prague) as well as considerable understanding of the management of the DIAMO/GEAM State Enterprise in Dolní Rozinka. The leadership of the North Bohemian Mines j.s.c. also supported our activities. Mr. F. Repetto from UNESCO helped to get the course funded through the UNESCO administration. Last, but not least, I wish to thank all authors who contributed to the textbook and to all lecturers.

More information is available at http://www.geology.cz or from pasava@cgu.cz or masek@cgu.cz

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Certificated postgraduate course aims at providing knowledge of important geochemical methods widely used in the prospecting for ore deposits and at showing their applications in the solution of environmental problems. Individual lectures covering various geochemical methods will be accompanied by practical field and also computer training. The course will be followed by a 3 day field trip visiting ongoing open and underground mining operations and processing plants as well as abandoned mining sites with the aim to demonstrate possible ways of effective usage of geochemical methods in both exploration and environmental issues.

Contents of the course
Principles of exploration and environmental geochemistry, exploration and environmental applications of soil geochemistry, stream sediments, heavy minerals, biogeochemical, lithogeochemical, hydrogeochemical, geophysical and radiometric studies with practical field and computer training.

Language of the course
The official language of the course will be English.

Other information considered relevant to the course
For technical reasons, the number of participants has to be restricted to 15 persons.
Tuition fees including the cost of printed handouts is USD 100 for university postgraduate students, USD 200 for personnel from state agencies such as geological surveys and USD 400 for staff members of private companies. The organizers will cover accommodation, travelling and meals during the course. International travelling to Prague is not included.
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URANIUM GEOCHEMISTRY 2003. Nancy, France – Contact address: Michel Cuney, B.P. 23., 54501 Vandoeuvre-Les-Nancy, France; e-mail: michel.cuney@g2r.uhp_nancy.fr; web-site: www.uranium2003.uhp_nancy.fr

May 12-16
GEOFLUIDSIV: FOURTH INTERNATIONAL CONFERENCE ON FLUID EVOLUTION, MIGRATION AND INTERACTION IN SEDIMENTARY BASINS AND OROGENIC BELTS, Utrecht, The Netherlands – Contact address: The Netherlands Institute of Applied Geoscience TNO-National Geological Survey, Ms. J.M. Verweij, PO Box 80015, 3508 TA Utrecht, The Netherlands; phone: +31 30 256 4600; fax: +31 30 256 46 05; e-mail: j.verweij@nitg.tno.nl; web-site: http://www.nitg.tno.nl

May 18-24
39TH FORUM ON THE GEOLOGY OF INDUSTRIAL MINERALS, Sparks, Nevada, USA – Contact address: Terri Garside, NBMG/MS, 178, University of Nevada, Reno, NV 89557-0088, USA; phone: +1- 775-784-6691 ext 126; fax: +1-775-784-1709; e-mail: tgarside@unr.edu; web-site: http://www.nbmg.unr.edu/imf2003.htm

★ May 21-23
INTERNATIONAL WORKSHOP, SUSTAINABLE DEVELOPMENT INDICATORS IN THE MINERAL INDUSTRIES: MILOS CONFERENCES (SDIMI 2003). Milos Conference Center, George Eliopoulos. Greece – Contact address: *Heliotopos Professional Congress Organisers, Ypsilantou 28, 172 36* Dafni, Athens, Greece; phone: +30 109 730 697; fax: +30 109 767 208; e-mail: sdimi@heliotopos.net; web-site: http://www.heliotopos.net/conf/sdimi2003

★ May 25-28
Geological Association of Canada, Mineralogical Association of Canada, Society of Economic Geologists: JOINT ANNUAL MEETING: ON THE EDGE: EARTH SCIENCE AT NORTH AMERICA'S WESTERN MARGIN (GAC-MAC-SEG/AGC-AMC-SEG), Vancouver, B.C., Canada – Contact address: VANCOUVER 2003, C/O Venue West Conference Services Ltd., 645 - 375 Water Street, Vancouver, B.C. Canada V6B 5C6; phone +1 604 681 5226; fax: +1 604 681 2503; e-mail: Vancouver2003@nrcan.gc.ca; web-site: www.Vancouver2003.com

★ May 26-30
THE FIFTH INTERNATIONAL SYMPOSIUM ON APPLIED ISOTOPE GEOCHEMISTRY (AIG-5), P&O Resort, Heron Island, Great Barrier Reef, Queensland, Australia – Contact address: AIG-5 Registration, c/o Professor Barry Batts, Department of Chemistry, Macquarie University, NSW, 2109, Australia; fax: +61 2 9850 8313; web-site: http://www.chem.mq.edu.au/aig-5/

★ May 26-30
12TH INTERNATIONAL CONFERENCE ON HEAVY METALS IN THE ENVIRONMENT. Grenoble, France – Contact address: Heavy Metals Conference in the Environment, Laboratoire de Glaciologie et Géophysique de l'Environnement du CNRS, 54 rue Molière BP 96, 38402 saint Martin d'Hères cedex, France; phone: +33 4 76 82 42 53; fax: +33 4 76 82 42 01; e-mail: echeveti@glaciog.ujf-grenoble.fr or ichmetals@glaciog.ujf-grenoble.fr; web-site: www.ujf-grenoble.fr/ichmet

June 22-27
8TH INTERNATIONAL KIMBERLITE CONFERENCE, Victoria, British Columbia, Canada – Contact address: Dr. Roger H. Mitchell, Geology

Department, Lakehead University, Thunder Bay, Ontario, Canada P7B 5E1; phone: +1 807 343 8287; fax: +1 807 623 7526; e-mail: Roger.Mitchell@lakeheadu.ca; web-site: www.venuewest.com/8IKC

★ **July 12-18**
6TH INTERNATIONAL CONFERENCE ON ACID ROCK DRAINAGE: ICARD 2003. Cairns, Queensland, Australia – Contact address: phone: +61 3 9662 3166; fax: +61 3 9662 3662; e-mail: miriamw@ausimm.com.au

August 19-21 - SGA-Cosponsored
THE GEOLOGICAL SOCIETY FERMOR FLAGSHIP MEETING: WORLD CLASS MINERAL DEPOSITS AND EARTH EVOLUTION, Cardiff University and the National Museum and Galleries of Wales, Cardiff, Wales, U.K. Contact address: Iain McDonald, Department of Earth Sciences, Cardiff University, P.O. Box 914, Cardiff CF10 3YE, U.K; email: mcdonaldi1@cf.ac.uk; web-site: http://www.mdsg.org.uk

★ **August 24-27**
FOURTH SOUTH AMERICAN SYMPOSIUM ON ISOTOPE GEOLOGY (IV SSAGI). Salvador, Bahia, Brazil – Contact address: 4a Avenida, 460 Centro Administrativo da Bahia (CAB) or Salvador, BA 41750-300, Brazil; phone: +55 71 370 7445; fax: +55 71 370 7548; e-mail: ivssagi@npd.ufpe.br or cbpmba:cbpm.com.br; web-site: www.cbpm.com.br/ivssagi/index.htm

★ **August 24-28 - SGA-Cosponsored**
7TH BIENNIAL SGA MEETIG: MINERAL EXPLORATION AND SUSTAINABLE DEVELOPMENT. Athens, Greece – Contact address: 7th SGA Biennial Meeting, Secretary: Dr. Demetrios Eliopoulos, Institute of Geology and Mineral Exploration, 70 Messoghion Str., GR-115 27 Athens, Greece; fax: +30 1 77 73 421, E-mail: Eliopoulos@igme.gr; web-site: http://www.igme.gr/sgaconference.htm

August 29-September 3
THE 21ST INTERNATIONAL GEOCHEMICAL SYMPOSIUM (IGES) OF THE ASSOCIATION OF EXPLORATION GEOCHEMISTS, Dublin, Ireland – Contact address: Eibhlin Doyle; e-mail: eibhlindoyle@gsi.ie; web-site: http://www.aeg.org/Symposia/21stSymposiumTrip/21st_internationa l_geochemical_s.htm

August 31-September 3
NORTH ATLANTIC MINERALS SYMPOSIUM (NAMS-2003), Dublin, Ireland – Contact address: web-site: www.gov.nf.ca/nams/

★ **September 2-6**
THE FIFTH HUTTON SYMPOSIUM ON THE ORIGIN OF GRANITES AND RELATED ROCKS (HUTTON V), Toyohashi, Japan - Hutton V Office, Geological Survey of Japan, AIST, Tsukuba Central-7, Higashi 1-1-1, Tsukuba, 305-8567 Japan; e-mail: Hutton-V@m.aist.go.j; web-site: http://www.gsj.jp/Info/event/hutton

September 7-11
6TH INTERNATIONAL SYMPOSIUM ON ENVIRONMENTAL GEOCHEMISTRY (ISEG), Edinburgh, Scotland – Contact address: John Farmer, Department of Chemistry, The University of Edinburgh, Joseph Black Building, Kings Buildings, West Mains Road, Edinburgh EHP 3JJ Scotland; phone: +44 131 650 1000; fax: +44 131 650 4757; e-mail: J.G.Farmer@ed.ac.uk

September 7-12
13TH V.M. GOLDSCHMIDT CONFERENCE, Kurashiki, Japan – Contact address: Organizing Committee of Goldschmidt 2003, c/o International Communications Specialists, Inc., Sabo Kaikan-bekkan, 2-7-4 Hirakawa-cho, Chiyoda-ku, Tokyo 102-8646, Japan; e-mail: gold2003@ics-inc.co.jp; web-site: http://www.ics-inc.co.jp/gold2003/

★ **September 9-12**
ASIA PACIFIC'S INTERNATIONAL MINING EXHIBITION - AIMEX 2003. Sydney Showground, New South Wales, Australia – Contact address: George Martin, Exhibition Manager industrial events, Reed Exhibition Companies; phone: +61 2 9422 2511; fax: +61 2 94222553; e-mail: george.martin@reedexhibitions.com.au; web-site: http://www.aimex.reedexhibitions.com.au

September 10-11
MANTLE PLUMES: PHYSICAL PROCESSES, Chemical Signatures, Biological Effects. Cardiff, Wales, UK. – Contact address: Dr. Andrew C. Kerr, Department of Earth Sciences, Cardiff University, Main Building, Park Place, Cardiff, Wales, UK. CF10 3YE; phone: +44-(0)29-2087-4578; fax: +44-(0)29-2087-4326; e-mail: kerra@cf.ac.uk; web-site: http://www.geolsoc.org.uk/template.cfm?name=Plumes

★ **September 10-12**
KAZMIN 2003. Atakent Exhibition Center, Almaty, Kazakhstan –Contact address: ITE Group Plc.; phone: +44 20 7596 5213; fax: +44 20 7596 5128; e-mail: mining@miningandevents.com; web-site: www.miningandevents.com

September 15-18
INDUSTRIAL MINERALS AND BUILDING STONES, INTERNATIONAL SYMPOSIUM (IAEG), Istanbul, Turkey – Contact address: Prof. Dr. Erdogan Yüzer, Istanbul Teknik Universitesi, Moden Fakültesi, Ayazaga Kampüsü 80626-Maslak, Istanbul, Turkey; phone/fax: +90 212 2856 146; e-mail: yuzer@itu.edu.tr

★ **September 16-18**
INTERNATIONAL CONFERENCE ON TECTONICS AND METALLOGENY OF CENTRAL AND NORTHEAST ASIA, Novosibirsk, Russia – Contact address: Alexander A. Obolensky, United Institute of Geology, Russian Academy of Sciences, Novosibirsk, Russia 630090; phone: +7 3832 33 30 28; fax: +7 3832 35 27 92; e-mail: obolensk@uiggm.nsc.ru; web-site: www.uiggm.nsc.ru/uiggm/geology/admin/

★ **September 24-25**
CIM FIELD CONFERENCE: ORE DEPOSITS AT DEPTH-CHALLENGES AND OPPORTUNITIES. Timmins, Ontario, Canada – Contact address: Mr. Damien J. Duff, Manager of Geology, Falconbridge Limited, Timmins Region, P. O. Bag 2002, Timmins Ontario, Canada, P4N 7K1; phone: +1 705 267 8683; e-mail: dduff@falconbridge.com

September 28-October 3
SOCIETY OF EXPLORATION GEOPHYSICISTS (SEG), INTERNATIONAL EXPOSITION AND 73RD ANNUAL MEETING, Dallas, TX, USA – Contact address:SEG Business Office; phone: +1 918/497 5500; fax: +1 918/497 5557; web-site: http://seg.org

October 5-10
THE XXII INTERNATIONAL MINERAL PROCESSING CONGRESS, Cape Town, South Africa – Contact address: Mrs. Meg Winter, Dept. of Chemical Engineering, University of Cape Town, Rondebosch 7700, South Africa; fax: +27 (0)21 689 7579; e-mail: mw@chemeng.uct.ac.za; web-site: http://www.impc2003.org.za/

November 1-5
19TH WORLD MINING: MINING IN THE 21ST CENTURY - QUO VADIS? CONGRESS & EXPO – 2003, New Delhi, India – Contact address: The Institution of Engineers (India), Indian National Committee of World Mining Congress, 8, Gokhale Road Calcutta –700020; phone: +91 33 2238311, 2238314, 2238316; fax: +91 33 2238345; e-mail: ieihqrs@vsnl.com; web-site: www.tafcon.com or http://www.19wmce2003.com

November 2-5
GEOLOGICAL SOCIETY OF AMERICA: ANNUAL MEETING, Seattle, Washington, USA – Contact address: GSA Meetings Department, P.O. Box 9140, Boulder, CO 80301-9140, USA; phone: +1 303 447 2020; fax: +1 303 447 0648; e-mail: meetings@geosociety.org; web-site: http://www.geosociety.org/meetings/index.htm

★ **November 30-December 3**
COPPER 2003 (COBRE 2003). Santiago, Chile – Contact address: Dr. Gustavo Lagos Chairman Organizing Committee Copper 2003-Cobre2003, Representante del Instituto de Ingenieros de Minas de Chile, Centro de Minería, Pontificia Universidad Católica de Chile, Vicuña Mackenna 4860, Santiago, Chile; phone: +56 2 686 5927 / +56 2 686 5895; fax: +56 2 686 5805; e-mail: info@cu2003.cl; web-site: http://www.cu2003.cl/

December 3-5 - SGA-Cosponsored
FEM 2003, 3RD FENNOSCANDIAN EXPLORATION AND MINING, Lappia Hall, Rovaniemi, Finland – Contact address: Regional Council of Lapland, Ms. Riitta Muhojoki, Project secretary, P.O. Box 8056, Fin-96101 Rovaniemi, Finland; phone: +358 16 3301 230; fax: +358 16 318 705; e-mail: riitta.muhojoki@lapinliitto.fi; web-site: www.lapinliitto.fi/fem2003

2004

February 23-25
SME ANNUAL MEETING AND EXHIBITION, Denver, Colorado, USA – Contact address: Society for Mining, Metallurgy & Exploration; phone: +1 303 973 9550; fax: +1 303 979 3461; web-site: http://www.smenet.org

May 17-21
JOINT MEETING: 2004 AMERICAN GEOPHYSICAL UNION (AGU) SPRING MEETING AND THE CANADIAN GEOPHYSICAL UNION ANNUAL MEETING, Montreal, Canada – Contact address: AGU Meetings Department, 2000 Florida Avenue, NW, Washington, DC 20009 USA; phone: +1-202-462-6900; fax: +1-202-328-0566; e-mail: meetinginfo@agu.org; web-site:

www.agu.org/meetings

August 18-28
32ND INTERNATIONAL GEOLOGICAL CONGRESS, Florence, Italy – Contact address: Matteo Moscatelli or Erica Galli, Newtours SpA, Via San Donato 20, I-50127 Florence, Italy; phone: +39 055 33611; fax: +39 055 33611250/350; e-mail: newtours@newtours.it; web-site: http://www.newtours.it or http://www.32igc.org

September 11-19
INTERNATIONAL ASSOCIATION ON THE GENESIS OF ORE DEPOSITS, VLADIVOSTOK-2004: INTERIM IAGOD Conference on Metallogeny of the Pacific Northwest: Tectonics, Magmatism & Metallogeny of Active Continental Margins, Vladivostok, Khabarovsk, Magadan Russian Far East, Russia – Contact address: Far East Geological Institute, FEB RAS 159, Prospekt 100-letiya, Vladivostok, 690022, Russia; phone: +7-4232-31-87-50; fax: +7-4232-31-78-47; e-mail: iagodconf@fegi.ru or fegi@online.marine.ru; web-site: http://www.fegi.ru

September 27-30
MINEXPO 2004, THE NATIONAL MINING ASSOCIATION, Las Vegas, Nevada, USA – Contact address: e-mail: rmaddalena@nma.org

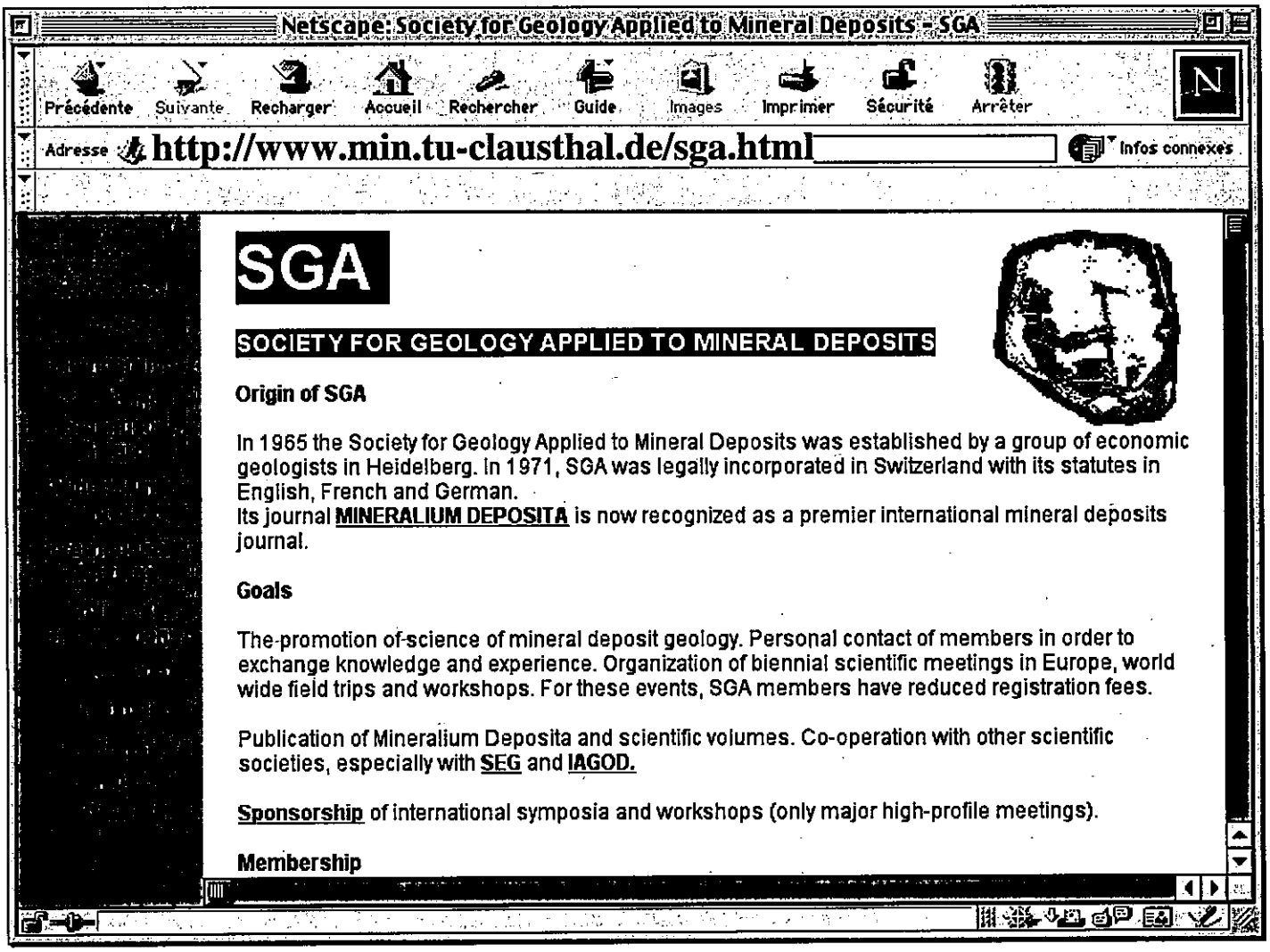
September 27 – October 10
SEG: PREDICTIVE MINERAL DISCOVERY UNDER COVER, Perth, Western Australia – Contact address: web-site: www.cgm.uwa.edu.au/geoconferences

October 10-15
SOCIETY OF EXPLORATION GEOPHYSICISTS (SEG), 74TH ANNUAL MEETING AND INTERNATIONAL EXPOSITION, Denver, CO, USA – Contact address: Debbi Hyer, 8801 S. Yale, Tulsa, OK 74137, USA; phone: +1 918 497 5500; e-mail: dhyer@seg.org; web-site: meeting.seg.org

THE SGA HOMEPAGE ON INTERNET

The SGA homepage has a new address on INTERNET. From this homepage you can get information about biennial scientific meetings in Europe, worldwide field trips and workshops, membership application form for the SGA and authors and titles of this year contributions to Mineralium Deposita as well as the electronic edition of SGA News.

http://www.min.tu-clausthal.de/sga.html



SOCIETY FOR GEOLOGY APPLIED TO MINERAL DEPOSITS (SGA)

Seventh Biennial *SGA* Meeting

Mineral Exploration and Sustainable Development

August 24-28, 2003
Athens (Greece)

Co-organizers

INSTITUTE OF GEOLOGY AND MINERAL EXPLORATION (IGME)
ATHENS TECHNICAL UNIVERSITY (NTUA)
ATHENS UNIVERSITY
UNIVERSITY OF THESSALONIKI
SOCIETY OF ECONOMIC GEOLOGISTS (SEG)
GEOLOGICAL SOCIETY OF GREECE - SECTION OF ECONOMIC GEOLOGY AND GEOCHEMISTRY

Organizing Committee

Demetrios **Eliopoulos** (I.G.M.E, Chairman)
Costas **Panagopoulos** (N.T.U.A, Vice-Chairman)
Demetrios **Bitzios** (I.G.M.E, Secretary)
Demetrios **Galanos** (I.G.M.E., Treasurer)
Alexander **Demetriades** (I.G.M.E, Excursions)

Nickolas **Arvanitidis** (I.G.M.E), Gregor **Borg** (Promotion Manager, SGA), George **Christidis** (U.C), George **Christofidis** (U. Th- GSG), Maria **Economou-Eliopoulos** (U.A), Purification **Fenoll-Hach Ali** (President, SGA), Richard Goldfarb (SEG), Martha **Grossou-Valta** (I.G.M.E), Peter **Herzig** (Treasurer, SGA), Brian **Hoal** (SEG, Executive Director), Jeffrey **Hedenquist** (SEG), Dimitris **Kaliampakos** (N.T.U.A), Stefanos **Kilias** (U.A), David **Leach** (SGA), Ferenc **Molnar** (SEG), Euripidis **Mposkos** (N.T.U.A)), Costas **Papavassiliou** (U.A), Jan **Pasava** (Executive Secretary, SGA), Adam **Piestrzynski** (U.M.M Poland), Michael **Vavelidis** (*U.Th*).

Invitation by the Organizing Committee

Under the general theme "*Mineral Exploration and Sustainable Development*" the Organizing Committee invites economic geologists from academia, government, and industry to discuss current issues regarding exploration for mineral deposits and their sustainable development by the minerals industry. Sustainable development is a matter of great concern to our discipline, as during the previous two decades the focus on environmental, social and economic issues of sustainability has been dramatic. We kindly invite those of you interested in the publication of your current research related to these topics to submit extended abstracts by the end of January 2003 for either oral or poster presentation at the 7th Biennial SGA Meeting. We anticipate that the growing interest in global mineral exploration, and associated issues of sustainability, will result in a large and provocative international forum that will interest economic geologists from both the academic and private sectors.

The venue of the meeting is the city of Athens, specifically at the modern facilities of the National Technical University on the eastern side of the city. Athens, the historical capital city of Greece, has been a scientific and cultural center for many centuries, and is the host city of the 2004 Olympic Games.

Programme

Sunday, August 24	09:00-18:00	Registration at the National Technical University, Main Building
	14:00	SGA Council Meeting
	19:00	Ice-breaking party
Monday, August 25	09:00	Opening Ceremony, NTUA Great Hall, Main Building
	09:30-11:00	Plenary Session, Great Hall
	11:00-11:30	Coffee break
	11:30-13:00	Plenary Session, Great Hall
	13:00-14:30	Lunch
	14:30-16:00	Thematic Sessions
	16:00-16:30	Coffee break
	16:30-18:00	Thematic Sessions
	18:00	SGA Plenary Meeting, Great Hall
Tuesday, August 26	09:00-11:00	SEG Symposium, Great Hall
	11:00-11:30	Coffee break
	11:30-13:00	SEG Symposium, Great Hall
	13:00-14:30	Lunch
	14:30-16:00	SEG Symposium, Great Hall
	16:00-16:30	Coffee break
	16:30-18:00	SEG Symposium, Great Hall
	09:00-11:00	Thematic Session
	11:00-11:30	Coffee break
Tuesday, August 26	11:30-13:00	Thematic Session
	13:00-14:30	Lunch
	14:30-16:00	Thematic Session
	16:00-16:30	Coffee break
	16:30-18:00	Thematic Session
	20:30	Greek night at "Gazi"
Wednesday, August 27	09;00-11:00	Thematic Sessions
	11:00-11:30	Coffee break
	11:30-13:00	Thematic Sessions
	13:00-14:30	Lunch
	14:30-16:00	Thematic Sessions
	16:00-16:30	Coffee break
	16:30-18:00	Thematic Sessions
Thursday, August 28	09:00-11:00	Thematic Sessions
	11:00-11:30	Coffee break
	11:30-13:00	Thematic Sessions
	13:00-14:30	Lunch
	14:30-16:00	Thematic Sessions
	16:00-16:30	Coffee break
	16:30	Closing Ceremony

Thematic Sessions

S1 Sustainable development and geoenvironmental impact models
Session leaders: Kate Johnson, Cam Allan, Demetrios Kaliambakos

S2 Supergene metallogenic processes
Session Leaders: Gregor Borg, Maria Boni, Euripidis Mposkos

S3 Seafloor hydrothermal systems
Session Leaders: Fernando Barriga, Costas Papavassiliou

S4 Porphyries/granites and the magmatic-hydrothermal transition
Session Leaders: Chris Heinrich, John Thompson, Tim Baker

S5 Epithermal systems
Session Leaders: Jeff Hedenquist, John Naden, Stefanos Kilias

S6 Ore forming processes associated with mafic and ultramafic rocks
Session Leaders: Giorgio Garutti, Maria Economou-Eliopoulos

S7 Basin evolution and ore forming processes
Session Leaders: Karen Kelly, Philippe Muchez, Alex Brown

S8 Orogenic hydrothermal systems
Session Leaders: David Groves, Richard Goldfarb, Vincent Bouchot

S9 Organic matter and mineral deposits
Session Leaders: Jan Passava, Andy Gize, Patric Landais

S10 Industrial minerals
Session Leaders: George Christidis, Peter Scott, Michael Stamatakis

S11 Laurium, 3000 years of silver mining
Session Leaders: Costas Panagopoulos, Alexander Demetriades

S12 Open session
Session Leaders: Paul Spry, Holly Stein, George Beaudoin

Special Session on
"FeOx-Cu-Au, VMS, and orogenic gold deposits in light of the tectonic evolution of the Fennoscandian Shield".
Session Leaders: Pär Weihed, Pasi Eilu
Co-sponsored by GEORANGE

SYMPOSIUM
EXPLORING FOR TETHYAN ORES
DEVELOPMENT FROM HISTORIC ROOTS
ORGANIZED BY THE SOCIETY OF ECONOMIC GEOLOGISTS

The Tethyan metallogenetic belt has been intensively explored since the dawn of civilization. Despite thousands of years of mining in various parts of this belt, new discoveries of important ore bodies are continuing, even in old mining districts. Reconstruction of the complex geodynamic evolution of this belt is a key factor in the exploration for ores. The tremendous amount of knowledge accumulated during the long history of mining, combined with new results from academic and industry research are leading to new syntheses.

This symposium aims to review the present state of our understanding about Tethyan metallogeny, highlight new achievements related to mineral exploration in the belt, and trigger an exchange of ideas between academic and industry experts. Keynote lectures will focus on the geodynamic evolution and economic geology of the western half of the Tethyan orogenetic belt that stretches from Iran to Central Europe. This region has experienced renewed exploration interest during the past decade, with several important discoveries.

Oral and poster presentations are welcome on:

- The plate tectonic aspects of ore formation,
- Case studies describing new deposits within their tectonic setting,
- Exploration in old mining districts as well as new target areas.

In conjunction with the theme of this symposium a post-conference field trip is being considered to the Cretaceous deposits of the Srednogorie zone in Bulgaria. This trip will visit working porphyry and epithermal mines as well as other deposits.

For further information and to receive a preliminary registration form, please contact:
Ferenc Molnár at the Department of Mineralogy, Eötvös Loránd University.
Mailing address: Budapest, Pázmány Péter s. 1/C, 1117 Hungary.
Fax: 36 1 381 2110 e-mail: molnar@abyss.elte.hu
Or visit the SEG website: www.segweb.org

Abstract submission date: January 31, 2003. Final registration date: April 30, 2003. Please also visit the homepage of the 7th SGA Biennial Meeting: www.igme.gr/sgaconference.htm

Keynote lectures

Keynote lectures will be held both during the Plenary Session for all participants and in the Thematic Sessions. We have invited several distinguished keynote speakers and discussions with others are in progress.

Abstracts and the Proceedings Volume

The Organizing Committee kindly invites participants to prepare and submit papers for oral and poster sessions. Extended abstracts of the papers accepted for presentation will be published as a Proceedings volume, which will be distributed to all participants at the meeting. The price of the volume is included in the registration fee. The language for the abstracts is English, and non-English speaking authors are kindly requested to have their papers edited by a native English speaker. The Scientific Committee will determine the acceptability of all abstracts after a peer-review process; those abstracts determined to be acceptable will be returned to the lead authors for revision following comments from the reviewers and committee members. The maximum length of printed abstracts will be four pages, including references; black-and-white diagrams and gray-tone photographs will be accepted, but they must be included in the length of four pages.

Copyright of the paper will be transferred to the publisher, A.A. Balkema, and all contributions will be provided to the participants in electronic form on CD-rom, fixed in a CD envelope to the inside back cover of the hardbound volume, with adequate search facilities. Instructions for camera-ready abstracts will be available on our website and on the Balkema site (www.millpress.com). To view these, the author must select the Instructions button and then downloading instructions are explained on the screen. Click on the name of the conference.

Deadlines for Abstracts

January 31st, 2003: submission of extended abstract to the Organizing Committee. ***Please indicate the session and your choice of oral/poster presentation.***

February 28th, 2003: authors will be notified of the acceptance of abstracts.

April 30th, 2003: return the final camera-ready abstracts and payment of registration fees.

The abstracts will be printed only if the registration fee is paid at the time the camera-ready abstracts are submitted to the Organizing Committee. For late payments (after April 30th, 2003) publication of abstracts cannot be guaranteed.

Posters

Poster sessions will be held from August 25 to 29, concurrently with the thematic sessions. The space offered is: Vertical length 195cm, horizontal length 95cm. Poster authors will be required to be present with their posters at a predetermined time.

Field trips

There will be a large variety of pre- and post-meeting field trips to different geological settings and ore types in Greece and the neighbouring countries. Field trip guidebooks will be prepared and distributed to the participants. As we can accept only a limited number of participants, reservations will be made on a first come-first serve-basis. You can register for a field trip with the registration form included in this circular.

Pre-meeting field trips

A1 Xinjiang, China (August 9-21, 2003)

In coordination with the IGCP-473 Field Symposium in Urumqi and Xinjiang entitled: "Paleozoic Geodynamic Processes and Metallogeny of the Chinese Altay and Tianshan".

Field trip leaders: Mao Jingwen (jingwenmao@263.net), Reimar Seltmann, Rich Goldfarb and local geologists

The field excursion in northern Xinjiang will allow the participants to develop a better understanding of the Paleozoic geology of this part of central Asia, and to study the relationship of its geology to the distribution of some of the most important recently discovered mineral deposits. The excursion will include visits to a series of different syngenetic and epigenetic deposit types and related geological features. These include the Kalatongke Cu-Ni-PGE deposit (associated with mafic-ultramafic intrusive complexes emplaced along deep faults), the world famous Keketuohai No. 3 pegmatite (Li-Be-Nb-Ta-Cs-Zr-rich bodies with gem quality tourmaline and aquamarine), Keketale Pb-Zn deposit, Mengku Fe skarn, Altay granite-hosted metal deposits, Ashele VHMS Cu-Zn deposit, and Dulanasayi and Saidu orogenic gold deposits. These deposits are mainly located along the southern margin of the Altay Mountains and are relatively easily accessible by motorized vehicles. The Arxi and Yilmend epithermal gold deposits represent the site of the largest gold mining activity in western China. It is located in the western Tianshan Mountains, to the south of the Altaids and across an extensional basin between the two ranges. The field trip will focus on these Hercynian metallic deposits and their geological setting, observing their field features and relating their genesis to the Hercynian orogenic processes, which is typical of much of central Asia. Additionally, Precambrian metamorphic assemblages, post-Hercynian rocks and other ore deposits will also be examined along the trip route.

Cost: From/to Urumqui 1000 USD (for further details see trip website below).
Deadlines: 31 March 2003 for registration (max. 50 participants, first-come-first-served) and 31 May 2003 for payment (directly to the organizers).
Further information: http://www.nhm.ac.uk/mineralogy/cercams/index.htm
Contact e-mails: Mao Jingwen (jingwenmao@263.net)
Wang Denghong (wangdenghong@hotmail.com.cn)

Post-meeting field trips

B1 Cretaceous porphyry-epithermal systems of the Panagyurishte ore district (August 29-31, 2003)
Organized by the Society of Economic Geologists

Field trip leader: Prof. Kamen Bogdanov, Sofia University (Sofia Student Chapter sponsor)

Field trip departs from Sofia, Bulgaria, after the SGA meeting (fly from Athens early August 29, 2003).

1st day: Sofia-Vlaikov Vruh porphyry copper deposit; Elshitsa LS epithermal deposit-Pangyurishte; Assarel porphyry copper deposit (operating mine, open pit); Medet porphyry copper deposit. night in Panagyurishte.
2nd day: Drive to Chelopech HS epithermal deposit (with possible underground visit depending on the number of the participants and the situation in the operating mine). Drive to Elatsite porphyry-copper deposit. Night in the guesthouse of the Elatsite mine.
3rd day: Elatsite porphyry Cu-Au-PGE deposit (operating mine, open pit). Discussion on the geology and ore genesis of the Elatsite porphyry system. Return to Sofia.

B2 Troodos Ophiolite Complex and related mineralization, Cyprus (August 28-September 1, 2003)
Co-organized by the Geological Survey of Cyprus

The Troodos Zone or the Troodos Ophiolite Complex dominates the central part of the island and constitutes the geological core of Cyprus. It outcrops in two regions (main mass of the Troodos mountain range and in the Limassol and Akapnou Forests to the south of the range) and has a characteristic elongated dome structure.

It was formed in the Upper Cretaceous (90 Ma) on the Tethys sea floor, which extended from the Pyrenees through the Alps to the Himalayas. It is regarded as the most complete and well-studied ophiolite in the world. It is a fragment of a fully developed oceanic crust, consisting of intrusive and volcanic rocks and chemical sediments. Stratigraphic completeness of the ophiolite makes it unique. It was created during oceanic spreading and formation of oceanic crust and was emplaced in its present position during complex tectonic events relating to the collision of the Eurasian plate to the north and the

African plate to the south. The stratigraphy of the ophiolite shows a topographic inversion, with the lower suites of rocks outcropping in the highest points of the complex, while the upper suite rocks appear on the flanks of the ophiolite. This apparent inversion is related to the way the ophiolite was uplifted (diapirically) and to its differential erosion. The diapiric rising of its core took place mainly with episodes of abrupt uplifting through time until the Pleistocene (2 Ma).

1st day: Late afternoon flight from Athens to Cyprus, hotel arrangements in Nicosia.
2nd day: Troodos ophiolite complex, visit exposures of the plutonic rocks (mantle and cumulates), intrusives, volcanics and chemical sediments. Introduction to the geological evolution of the ophiolite complex.
3rd day: Mineralization related to plutonic rocks. Chromite and asbestos mines.
4th day: Cyprus type sulphide deposits. Skouriotissa-Phoinix mining district.
5th day: Sedimentary formations and industrial minerals. Visit the archaeological sites of Choirokition and Kourion.

Provisional cost: 650 € (Including Air fare Athens-Cyprus-Athens, accommodation in single rooms, transportation in Cyprus)
Maximum No of participants: 25

B3 Base metal mineralization in a classic mining district, the Harz Mountains, Germany (August 29-31, 2003)

Field trip leaders: Dr. Duncan Large, Prof. Hans-Joachim Franzke and Prof. Bernd Lehmann

Mining in the Harz Mountains, central Germany, has a 1000-year-long history focused on massive sulphide (SEDEX and VHMS), sediment-hosted Cu (classical Kupferschiefer mineralization) and vein-type Zn-Pb-Ba and fluorite deposits. In addition to the metallogenic diversity within a small area that is supported by excellent outcrops and preserved mines, there are numerous museums that demonstrate the history of the mining technologies that were developed in the Harz Mountains. Potential participants should be aware that there is no active mining today and, although there will be an opportunity to examine mineralization at historical mine sites, the emphasis of the trip will be on demonstrating the geological, stratigraphic and structural setting of the deposit types within the relatively small geographic area of the famous Harz Mountains mining district. The field trip will provide participants with an overview of the geological setting of two economically important styles of mineralization that supported mining operations until the early 1990's:

- Rammelsberg polymetallic SEDEX mineralization hosted by Devonian shales, and the Einheit volcanic-hosted massive sulphide (VHMS) mineralization associated with Devonian volcanics, and discussion of the regional tectonic setting
- Mansfeld-Sangershausen district of "Kupferschiefer" strata bound copper mineralization hosted by the Permian Zechstein sequence.
- In addition, participants will have the opportunity to examine several occurrences of younger (Mesozoic/Tertiary) polymetallic vein-type mineralization.

1st day: Assemble at Hanover airport. Travel to Rammelsberg, various stops to demonstrate the stratigraphic setting of the Rammelsberg SEDEX deposit. Visit to the Rammelsberg museum to view the outstanding collection of Rammelsberg ore-types.
2nd day: Visit volcanic massive sulphide mineralization and vein-type mineralization in central Harz.
3rd day: Various stops to demonstrate the stratigraphic and structural setting of the Kupferschiefer strata bound copper mineralization in the south Harz foreland. Visit outcrops of the mineralization preserved underground at two sites.
Further information and assistance can be provided to participants who wish to extend their stay to visit some or all of the mining museums in the Harz Mountains.
Provisional cost: 600 € (Including accommodation and transportation in Germany)
Maximum No of participants: 12

B4 Ovacik and Küçükdere Epithermal Gold Deposits, Turkey (August 29-31, 2003)

Field trip leader: Assoc. Prof. Huseyin Yilmaz, Dokuz Eylul University

The Ovacık gold deposit is located 100 km north of Izmir in western Turkey. It occurs adjacent to the ENE-trending Bergama graben, and consists of a series of high-grade gold-bearing epithermal quartz veins hosted by sub-aerial andesitic-dacitic lava dome facies of Lower Miocene age. Middle to Late Miocene extensional tectonism was responsible for the formation of NNE-SSW- to NE-SW-trending grabens. The extensional activity was accompanied by normal faulting with a later, variable sinistral strike-slip component oriented E-W and NW-SE. It is probable that these faults were critical in controlling the development of epithermal quartz veins, both mineralized and unmineralized.

Two of four nearly EW-trending epithermal veins at Ovacik contain significant Au mineralization and display typical low-temperature epithermal textures, including crustiform banding, quartz pseudomorphs after bladed calcite, and multiphase hydrothermal breccias. Veins outcrop over a maximum strike length of 400 m, with widths at the surface up to 35 m. Mineralization extends down dip for at least 200 m. To date, a resource of 2,980,000 tonnes at 9.0 g/t Au containing 947,000 ounces Au has been delineated.
The Küçükdere gold deposit is located 140 km north of Izmir in western Turkey. It occurs adjacent to the ENE-trending Edremit graben, and consists of a series of gold-bearing, vertical to flat-lying quartz and carbonate epithermal veins hosted by the subaerial andesitic porphyry lava dome facies of Lower Miocene age. Middle to Late Miocene extensional tectonism was responsible for the formation of NNE-SSW-trending Edremit graben. Four NE-trending veins outcrop irregularly over a distance of 2 km, with widths at the surface up to 30 m, although only two of these veins contain economic gold grades. Ore grade veins consist of siliceous breccia and carbonate, which is in turn composed predominantly of chalcedonic quartz with coarse banding, shattered fragments of andesite/quartz and comb quartz. To date, a resource of 1,413,000 tonnes at 6.4 g/t Au containing 219,000 ounces Au has been delineated.

1st day: Arrival at Izmir Airport. From Izmir to Bergama. Overnight in Bergama (Bergama is 7 km from the Ovacik Mine).
2nd day: Visiting Ovacik Gold Mine and Küçükdere Gold Deposit. Overnight in Izmir.
3rd day: Departure from Izmir.

Provisional cost: 480 € (including single room with breakfast, transportation within Turkey, return air fare Athens - Izmir - Athens).
Maximum No of participants: 25.

B5 Milos Island-Workshop on Industrial Minerals (August 29-September 1, 2003)

Field trip leader: Prof. Ian Plimer

There has been a 10,000-year-long history of mining on the island of Milos (Cyclades). Commodities such as obsidian, mill stones, salt, sulphur, pozzolan, pumice, alunite, kaolinite, bentonite, copper, silver and lead were mined in antiquity from the Pliocene-Pleistocene volcanic rocks. Hot springs reflect the current extremely high geothermal gradient of up to 8°C/10 m and vents release 2.5 Mt CO_2 per annum. Milos is currently the world's second bigger producer of bentonite and perlite. The bentonite, kaolinite and perlite mines of Silver & Baryte Mining Ores SA will be visited, as well the defunct submarine hydrothermal Mn-Fe-Ba deposit at Cape Vani where white smokers occur in outcrop. The trip will include visits to the recent discoveries of epithermal precious metal deposit at Profitis Ilias (crack-seal quartz-adularia), breccia pipes (Triades) and ore deposits formed during advanced argillic alteration and in steaming grounds (Milos Sulphur Mine; silica barite, alunite and kaolinite mines; sinter terraces). Participants will also visit the oldest and best-preserved Christian catacombs, sites of archaeological interest, hot springs, beaches and quaint fishing villages.

1st day: Arrival to Milos from Pireaus by high-speed boat. In the afternoon, introduction to the geology of the island.

2nd day: Visit the bentonite, kaolinite, perlite mines and the processing plant. In the afternoon visit the epithermal precious metal deposit at Profitas Ilias and the submarine hydrothermal Mn-Fe-Ba deposit at Cape Vani.
3rd day: Workshop on the industrial minerals of Greece at the "George Eliopoulos" Conference Centre, Milos.
4th day: Return to Pireaus

Provisional Cost: 450 € Transportation from Piraeaus to Milos by high-speed boat, accommodation, transportation within the island)
Maximum No of participants: 45

B6 Santorini (August 29-30, 2003)

Field trip leader: Dr. George Vougioukalakis

The Santorini volcanic field is the most active volcano of the South Aegean volcanic arc. It comprises two of the three active volcanic Aegean centers, Kameni and Kolumbo. Santorini is one of the world's most violent caldera volcanoes. During the last 400,000 years, more than 100 explosive eruptions were manifested. Twelve of these discharged volumes of magma exceeding a few cubic kilometers, and triggered at least four caldera collapses. The latest of these was the so-called Minoan eruption (3.6 ka) that shaped the present Santorini Island group (Thira, Thirasia and Aspronisi Islands) and buried the late Bronze Age settlements of Santorini. After the Minoan eruption, volcanic activity continued, mainly localized in the intra-caldera area. Extrusive, effusive and slightly explosive activity produced the dacitic lava domes, flows and pyroclasts that built up Palea and the Nea Kameni islets between 197 BC and 1950 AD. Outside the caldera depression, historic volcanic activity was manifested only once, during 1649-1650 AD and built up the Kolumbo submarine volcano.

1st day: Departure from Athens. Arrival at Thira. Bus transport to the hotel and then to Fyra cable car. Boat transport to Nea Kameni island. Visit to the historic volcanic features of the island, the central craters and the active fumarole field. Intracaldera sailing near the caldera cliffs. Observation of the composite Santorini volcano edifices, structure and features. Lunch on boat and swimming stop. Transport back to the hotel. Transport for sunset in Ia village. Dinner in a traditional tavern.
2nd day: Visit to the Prehistoric Archaeological Museum in Fyra town. Visit to a pumice quarry, observation of the Minoan deposits facies sequence and older products. Visit to the Akrotiri Late Bronze Age Settlement excavation. Visit and observation of the Kolumbo tuff ring edifice (NE Thira). Swim at the spot. Lunch in a traditional tavern. Transport back to the hotel. Free afternoon to spend in Fyra town. Transport to the airport. Departure from Thira to Athens.

Provisional cost: 450 € (Air fare Athens-Santorini-Athens, accommodation in Santorini, cable car ticket, boat rental, bus rental, lunch and soft drinks for the first day, entrance to the archaeological sites.)
Maximum No of participants: 45

B7 Fe-Ni laterite ores, Lokris (August 29, 2003)

Field trip leader: Dr. Demetrios Eliopoulos

The Fe-Ni laterites of Greece are mainly found in the sub-Pelagonian and Pelagonian geotectonic zones and are related to Upper Jurassic to Lower Cretaceous ophiolites. These deposits have been affected by intense tectonism, which has included overthrusting, folding and other faulting. This has resulted in the transportation of the laterite bodies, disrupting their continuity and, in some cases, mixing them with underlying rocks. The multistage deposition of the Fe-Ni ores, the redistribution of ore metals, the intense tectonism and metamorphism (which have affected all the Ni-laterite deposits of Greece), have almost totally changed the initial mineralogical composition and textures of the ores. Interpretations of the mechanism(s) and conditions of their genesis are complicated.

During the field trip three sites will be visited:

- Tsouka

The Tsouka Ni-laterite deposit is developed on highlyaltered peridotite and it is characterized by a saprolite zone, 1-m-thick, followed by a pelitic-pisolitic horizon, 4-m-thick, the upper part of which is comprised of variably transported material. Lower Cretaceous limestone layers, alternating with Ni-laterite ore, conformably overlie the mineralized horizon.

- Kopais deposit

The Kopais deposit is developed on karstified limestone of Jurassic age below the Quaternary lacustrine sediments of the Kopais basin. These Cretaceous sediments are comprised of marls and clays. The ore extends along a zone 600-m-long l, 500-m -wide and has an average thickness of 20 m.

- Nissi (Bauxitic Ni-laterite deposit)

The Nissi deposits lie on karstified Jurassic limestone and are conformably overlain by Lower Cretaceous limestone. A peculiarity of the Nissi deposits is that they may occur either as isolated typical Ni-laterite or bauxitic laterite ores or as an association of Fe-Ni ore at the lowest part of the deposit, followed by bauxitic laterite in its upper part.

The Fe-Ni-laterite ore is mainly composed of goethite, hematite, Ni-bearing chlorite, illite, quartz, calcite and chromite. Boehmite, gibbsite and kaolinite are common minerals in the bauxitic laterite. Goethite, hematite, chromite (usually as very small fragments), rutile and sulfides (pyrite, Ni-pyrite) are also present, whereas smectite and takovite are more abundant towards the lowest part of the deposit.

Provisional cost: 50 € (Including transportation and lunch)
Maximum No of participants: 30

B8 Parnassus bauxite deposits (August 29, 2003)

Field trip leader: Ass. Prof. M. Laskou

Cost: 60 € (Including transportation, entrance to the archaeological site of Delphi, lunch)
Maximum No of participants: 25

B9 Lavrion (August 29, 2003)

Field trip leader: Alexander Demetriades

The Lavreotiki (Lavrion) area is renowned for two reasons:

1. The exploitation of argentiferous galena during ancient and recent times,
2. The abundance of tens of common and unique primary and secondary (*lavrionite, kamarizite, ktenasite, thorikosite, serpierite*, etc.) minerals occurring in its subsurface.

Exploitation of argentiferous galena dates back to approximately 3500 BC, with a production peak during the 5th century BC, the "Golden Age of Athens or Pericles". Ancient Greeks developed a unique technology of crushing, gravity separation and smelting of ore. Because the operations were in an area with a dry climate, the ingenious system of cisterns and washing plants, designed for water conservation, amaze even present day visitors. Mining and smelting activities produced an enormous amount of toxic wastes, which have seriously contaminated the surface and subsurface environments.
The Lavreotiki (Lavrion) excursion is unique because it combines geology, history, culture and sight-seeing. The visitor will be informed about the geological setup of the ore, the ancient and recent mining and beneficiation activities (ancient adits, washing plants, etc., the 19th-20th smelter complex, which is now converted into a Technological-Cultural Park), and the environmental problems caused by the contamination in the Lavrion urban area. The excursion will end up at Sounion promontory, with a visit to the Temple of Poseidon to see the beautiful sunset, "garnished" with coffee.

Cost: 30 €
Maximum No of participants: 50

General Information

Meeting venue
The meeting will be held at the National Technical University of Athens, Technical University Campus, Zografou, Athens.

Language
The official language of the meeting is English. All publications and information will be issued in English. Simultaneous translation of oral presentations will not be available.

Registration
The registration form can be found on the Meeting website (http://www.igme.gr/sgaconference.htm) and contains registration for the Meeting, field trips and social events. Please, indicate the session code for which you intend to submit your presentation(s) or poster(s) and the code of any field trip you wish to attend. Registration will be confirmed in writing.

The registration fee includes the scientific program, Proceedings Volume and CD-rom, coffee and refreshments during breaks, as well as the ice-breaking party. Please, return your registration form to the following address:

Dr. Demetrios G. Eliopoulos
I.G.M.E, 70 Messoghion Str., GR 115 27 Athens, GREECE
Ph.: +30 210 77 07 830, FAX: +30 210 77 73 421, E-mail: eliopoulos@igme.gr

	Registration fees: By April 30	After April 30
SGA/SEG Members	**250€**	**350€**
Non-Members	**350€**	**450€**
SGA/SEG Student Members	**100€**	**150€**
Student Non-Members	**150€**	**200€**

Payments
Registration fee should be paid in EURO, by bank transfer or internationally accepted credit card (VISA, MasterCard, American Express), free of bank charges to the recipient, at the Organizing Committee bank Account:

ALPHABANK 365-002101-045631
Swift Code: CRBAGRAAXXX
With the note SGA 2003

In agreement with the SGA Board the Organizing Committee has allocated limited funds to cover travel and accommodation expenses for a number of students and junior staff.

Accommodation
PAM TOURS Ltd. has been appointed to provide the accommodation for Meeting participants and accompanying persons. Rooms will be booked on a first-come-first served basis, so please, indicate your 1st and 2nd choice of hotel.
PAM TOURS Ltd. reserves the right to book another hotel of the same category in case the hotel indicated is fully booked.
Accommodation has been reserved in the following hotels, breakfast included:

Hotel Divani Caravel *****
2 Vas. Alexandrou Str.
GR 161 21 Athens
Tel. +30 210 720 7000
www.divanicaravel.gr
- Single room 140 €
- Double room 76 €/night/person

Hotel Alexandros **** ***Superior***
8 Tim. Vassou Str
GR 115 21 Athens
Tel. +30 210 643 0464
www.airhotel-hotels.com
- Single room 123 €
- Double room 66 €/night/person

Hotel Parthenon **** ***Standard***
6 Makri Str.
GR 117 42 Athens
Tel. +30 210 923 5797
www.airhotel-hotels.com
- Single room 96 €
- Double room 55 €/night/person

Hotel Titania **** ***Standard***
52 Panepistimiou Str.
GR 106 78 Athens
Tel. +30 210 330 0111
www.titania.gr
- Single room 90 €
- Double room 53 €/night/person

Hotel President **** ***Standard***
43 Kifissias Str.
GR 115 23 Athens
Tel. +30 210 698 9000
www.president.gr
- Single room 85 €
- Double room 55 €/night/person

Hotel Stanley **** ***Standard***
1-5 Odysseos Str.
GR 104 37 Athens
Tel. +30 210 524 1611
www.aqn.gr/hotel/stanley
- Single room 66 €
- Double room 43 € night/person

Please find the hotel reservation form as a part of the registration form on the Meeting website (http://www.igme.gr/sgaconference.htm). Please return the form to the Organizing Committee before April 30, 2003 with the hotel deposit for the first night's accommodation paid by bank transfer or major credit card (VISA, MasterCard, American Express).
Unfortunately, personal checks are not accepted.
Participants are **strongly** advised to book their hotels as early as possible, because Athens is a popular tourist destination. Please, make sure that your name is properly indicated on the bank transfer.

All hotel fees are payable directly to **PAM TOURS Ltd.**

For further questions about your accommodation please, contact:
Mrs. Despina Gyra, PAM TOURS Ltd., 3 Spirou Donta Str., GR 117 42 Athens, Greece
FAX: +30 210 92 41 803
E-mail: root@pamtours.ath.forthnet

Cancellation
Cancellation must be made in writing to the Organizing Committee. A refund of 80% of the
total amount paid will made upon cancellation before July 1st, 2003. No refunds will be made after this date.

Accompanying persons program
The accompanying persons program will be organized by PAM TOURS Ltd. The following activities will be available:

- Athens tours
- Athens by night
- Daily excursions to archaeological sites (Delphi, Epidavros, Mycenae etc)
- Daily cruises to the Saronic gulf
- Cruises in the Aegean Sea
- Ticket reservations for the Athens Festival

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REGISTRATION AND ACCOMMODATION FORMS CAN BE DOWNLOADED FROM THE MEETING WEBSITES

www.igme.gr/sgaconference.htm

www.minetech.metal.ntua.gr/sgaconference.htm