



SGA

News

June 2010
Number 27

The geology and discovery of the Merlin Mo-Re zone of the Mount Dore Deposit, Mount Isa Inlier, NW Queensland, Australia

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Introduction

The Merlin molybdenum-rhenium zone was discovered in early 2008 while drilling the northern extension of the Mount Dore copper deposit. Subsequent drilling has defined a zone of molybdenum-rhenium mineralisation over 1 km long and up to 40 m thick, to approximately 550 m from surface. Mineralisation consists of molybdenite as infill to breccias, veins and disseminations. Merlin is the world's highest grade molybdenum-rhenium deposit, the current resource averaging 0.6% Mo and 10 g/t Re, with up to 22% Mo and 297 g/t Re over two metre intervals; the majority of global molybdenum production being from porphyry deposits where molybdenum grades are generally in the order of 0.1% to 0.2% Mo. Molybdenite dominates the paragenetic sequence, chalcopyrite and pyrite occurring locally. Merlin appears to represent a new style of molybdenum deposit, with no known analogous deposits reported within the literature.

Geological Setting

The Merlin deposit is located within the Eastern Fold Belt of the Mount Isa Inlier (Fig. 1, p. 9). The Eastern Fold Belt consists of a sequence of polydeformed metasediments and metavolcanics (Blake 1987).

These sedimentary and volcanic packages are broadly broken into the Soldiers Cap and Mary Kathleen Groups.

The Soldiers Cap Group consists of a metamorphosed sequence of siliciclastic sediments and mafic volcanics (Blake 1987). At Merlin the Soldiers Cap Group is represented by the Kuridala Formation, which is interpreted as being equivalent to the base of the Soldiers Cap Group (Foster and Austin 2008). The Mary Kathleen Group consists of a sequence of metamorphosed siliciclastic and calcareous sediments (Blake 1987). Regional to the Merlin deposit, units of the Mary Kathleen Group have been recently informally ascribed to the "Young Australia Group" by Foster and Austin (2009), on the basis of new geochronology. These units consist of a series of pelitic, calcareous and carbonaceous metasediments, aged between 1675 and 1610 Ma, which are interpreted as a lateral equivalent of the Soldiers Cap Group. Within the Merlin area, the Young Australia Group is represented by the calcareous metasediments of the Staveley Formation.

The Eastern Fold Belt has undergone a protracted and complex sequence of deformation which has been the focus of numerous conflicting studies (Blake 1987;

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From the SGA President

Fernando Tornos, IGME, Salamanca, Spain (f.tornos@igme.es)

As many of you know, since January there is a new SGA Council and I became the new President of the Society for the 2010-2011 period. First of all, and on behalf of the new Council, I would like to express our thanks to the outgoing president, David Groves, and the Council members for their generous contribution during the last years. They deserve our greatest appreciation for their many times demanding extra work. The last two years have been rather stressful due to the abrupt economic and social changes, something that has had an obvious impact on our economy and plans. Despite that, the outgoing Council leaves a strong Society that has increased significantly its membership and visibility. I am sure that everybody agrees that the last years have been really good for the SGA. However, renovation is the key of any group and I would like to welcome the new members of the Council. This new Council includes really great people and I hope that we will be able to form a fantastic and really active team. Unfortunately, and just when we were planning the first activities of the Biennial Meeting, Ricardo Presnell passed away due to an unfortunate accident when skiing in the Rockies. We have missed one of the key members of our team.

Thanks to the organizing committee of the EGRU of the James Cook University, and especially Pat Williams, Nick Oliver and Brian Rusk, the 2009 edition of the SGA meeting was a big success. We attended to a well organized meeting in a great

spot, with exciting sessions, field trips and courses.

The SGA is now 45 years old, a rather venerable age, and perhaps our major challenge is to prepare SGA for the future. The SGA of 2010 is dramatically different from the one founded in Heidelberg in 1965. Times change and we have to be able to understand them and accommodate ourselves. The role of the traditional scientific societies is not as clear as before. Now, many people don't find major interest in joining societies because the most visible product, the journals, are easily accessible through Internet. Also, our potential membership is no longer in the most developed countries where the number of economic geologists is more or less stable. In Europe, the political and academic interest in ore deposits is slowly diminishing due to the feeling that in the region there are no ore deposits, the pressure for impeding their exploitation and the low number of mining companies. There is a continuous merging or closure of University departments and students don't even think about pursuing ore exploration. However, in many other places the universities are not able to provide enough students to the industry. This is especially remarkable in Latin America, Asia and Africa, where geologists start to work even before graduating. In the near future, these countries will develop high quality teaching and research and we should be there, trying to

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SGA NEWS

No. 27 June 2010

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SGA News is a publication of SGA (Society of Geology Applied to Mineral Deposits) and appears twice a year.

SGA News can be also read in the SGA homepage on Internet:
<http://www.e-sga.org>

CONCEPT AND PRINTING

WMXDesign GmbH

Heidelberg, Germany

LAYOUT

Massimo Chiaradia, Geneva, Switzerland

INFORMATION FOR CONTRIBUTORS

Items for publication may be sent to:

SGA News (see address below)

Manuscripts should be sent by e-mail using Microsoft Word for text and Jpeg or Tiff formats for pictures and figures (the latter must be in grey level tones, not colour!). Please always send a paper copy and indicate the format you are using.

DEADLINE FOR SGA NEWS No. 28
31 October 2010

SGA NEWS - MAILBOX

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News of the Society

SGA Ordinary Council Meeting, March 25, 2010, Hammamet, Tunisia

J. Pašava (SGA Executive Secretary), Czech Geological Survey, Prague, jan.pasava@geology.cz

Ricardo Presnell †

SGA Council took 2 minutes silence in honor of Dr. Ricardo Presnell (SGA Council member from 2008) who tragically died on Wednesday, January 27, 2010. Council greatly appreciated the preparation of an obituary by K. Kelley which was published at the Society website and will be printed in the upcoming issue of SGA NEWS. Underworld Resources, Inc. and Full Metal Minerals Ltd., together with Ricardo's wife Caroline have established a scholarship fund in Ricardo's memory at the University of Utah for Minorities who are studying science. Council approved:

- donation of EUR 2000 to this fund (K. Kelley to inform "Fund people" and provide details on money transfer to D. Leach and S. Lange)
- replacement of Ricardo by someone who is linked to international mining industry (names of candidates to be sent by Council members to J. Pašava by May 31, 2010).

Minutes of Previous Council Meeting
(August 16, 2009 Townsville, Australia)

It was suggested that SGA members should receive an email notice when SGA NEWS is published (G. Beaudoin and M. Chiaradia to implement this decision). The Minutes were unanimously approved.

Results of the recent elections (J. Pašava)

The report was presented by J. Pašava. All outgoing Council members were thanked by SGA Executive Secretary for their services to SGA and new members welcomed on board. SGA President welcomed the new RVP for Europe (A. Cheillett) who participated in the meeting.

Reports of Officers on Council and Matters Arising from These Reports

Reports were submitted by the SGA Executive Secretary, Treasurer's Office, Promotion Manager, Editor of SGA Website, Regional VP for Australia/Oceania, Regional VP for North America, Regional VP for South America, and orally presented by the VP for North Africa.

>>>> highlight the social, economic and scientific importance of our job. And perhaps it is time to consider moving slowly our gravitational centre to some of these places.

Thus, it is critical to encourage colleagues from these regions to discover the advantages of joining SGA. It is time of changing our mentality and offer new products. Which products? We have to be innovative and imaginative, and not simply mimic what other societies do. Perhaps one of the major decisions is how to balance academy and industry. Both are necessary but it is not always easy to find the correct midterm.

We plan to improve the visibility of SGA and make it really useful for members and non-members. Our ideas include increasing the organization and sponsorship of short courses, conferences and field trips. Most of their products will be accessible through the e-shop, with important discounts for members. Our journal is ranked among the top in the field of ore deposits, our biennial meetings are

After discussion, Council approved the reports and the following motions:

D. Leach to transfer EUR 18 000 from the revenue of the Townsville meeting to the SGA student's fund.

D. Leach to ask all RVPs if they would be willing to assist students and possibly other members with money transfers for membership and dues; any costs associated with this service will be reimbursed by the Treasurer's office. For the regions in which the RVPs agree to provide this service, the members in that region will be notified. Council approved minor changes in Articles III and XV to bring the SGA Constitution in accord with the nonprofit status of the Society. Council also approved a creation of a new voting position of the Student Representative to be a part of the Executive Committee. The Constitution will be changed accordingly (J. Pašava to implement suggested changes and get back to Council).

H. Frimmel will order depleted promotional items (water-proof scales and rulers, stickers, pens, pins etc.) with the SGA website address as soon as possible. Pins will be used only for new members and will be a part of welcome envelope sent to new members from Prague. The budget should be discussed with D. Leach. H. Frimmel will also get in touch with past and new RVPs to determine the locations for both types of SGA booths. SGA advertisement posters (large tif. files should be sent to relevant people for translation into Spanish, Portuguese, Chinese and attached to SGA website).

B. Lehmann will determine from Springer if SGA can sell through the SGA website, pdfs of the Beijing Proceedings and will inform G. Beaudoin.

Great appreciation is extended to Fillipa Marques for launching and managing SGA Network on Facebook and officially recognized as the SGA Facebook contact.

G. Beaudoin will look after adding a password modification option in the Member Profile at the SGA website.

D. Huston will continue to chair Award Committee (other members are K. Kelley, A. Cheillett and S. Bouhlef) D. Huston will also take necessary steps to implement recommendations with the aim to improve nominating procedure and selection process for the SGA-Barrick Young Scientist Award and the SGA-Newmont Gold

perhaps the best in economic geology and our e-shop is quickly growing; undoubtedly, our web page has to improve and become a reference in the field of the ore deposit studies. For all this we can say „Well done!“, but we need more ideas.

The previous council realized the importance of opening the society to Latin America, as an example of these areas where our future lies. Antofagasta 2011 is going to be our first meeting in Latin America and probably will be a landmark on our modus operandi in the future. No doubt that with the great team, both from the LOC and Council, organizing the meeting it will be a great success.

Finally, I would like to thank all members for their trust in the team and hope that we will not miss their expectations. It sounds trivial and repetitive, but I would like to ask anybody that has ideas on how we can improve SGA to contact me or any member of the Council. Comments and ideas that can help our community are always welcome.

APPLICATIONS to SGA for meeting sponsorship must be submitted to Jan Pašava, SGA Executive Secretary, on appropriate forms available at the SGA home page on Internet: www.e-sga.org

Other requests will be not considered.

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

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Medal Award. A call for proposals will be made through the SGA News (send information with updated forms to Massimo Chiaradia by April 30) and through website (to update description and forms at website with Georges Beaudoin)

D. Huston will offer on behalf of SGA a third topic to be included into the 34th IGC Program (“Imaging ore systems in 3D: application of geophysical and geological inversions to mineral exploration and ore genesis”)

SGA will sponsor session on „Precambrian Geology“ at GAC-MAC-SEG-SGA 2011 and release \$2000 for the GAC-MAC-SEG-SGA 2011. Council asked if there would be any chance to get involved and/or to suggest a short course related to Precambrian Geology (A. Conly to determine).

Council approved to participate in the Cordilleran Round-Up in Vancouver, B.C. Canada (January 24-27, 2011).

A.Conly: - will contact Sabine Lange (sabine-klausdorf@t-online.de) for details on the money transfer.

- follow the experience of G. Beaudoin, distribution of GAC-MAC-SEG-SGA 2011 flyers will be made with MD and will provide Massimo Chiaradia (Massimo.Chiaradia@unige.ch) with flyers to be published in the upcoming issue of SGA NEWS (by April 30, 2010),

- will contact other session chairs jointly with G. Beaudoin to find what is a suitable SGA sponsorship and report back to Council,

- will stay in touch with G. Beaudoin and discuss all relevant prizes with him determine if there will be enough people to staff the SGA booth and other activities (including evaluating students’ posters and/or oral presentations).

E. Ferrari will send relevant information on the XVth Peruvian Geological Congress for promotion to M. Chiaradia and G. Beaudoin. F. Tornos will nominate a SGA distinguished lecturer for this meeting.

E. Ferrari will provide more information on the planned field course ADIMB-SGA on the Central Andes IOCG Deposits.

E. Ferrari will keep Council informed on the negotiations with Argentina Mining 2010 and Latin Exploration 2010 meetings.

Editorial Matters (B. Lehmann, P. Williams)

The report was presented by B. Lehmann and P. Williams. Journal production is on time and runs smoothly. The Heidelberg production office is now transferred to the Philippines. Several thematic issues are in preparation. The Editorial Board has three new members (M. Cuney, T. Wagner and J. Perello) and one new member will join this summer (M. Leshner). Council approved the report with great thanks.

SGA-SEG relations

Following communication between J. Thompson (SEG Past-President) and D. Groves (SGA Past-President), SGA Council learned from published Minutes of the SEG Council Meeting (Portland, Oregon, October 2009, SEG Newsletter no. 80), that a proposal for MOU on exchange of booths at biennial conferences between SEG and SGA wasn’t endorsed by SEG Council. SGA Council recommended that F. Tornos (SGA President) will write a letter to SEG President suggesting an exchange of approved Minutes with the aim to improve communication between both the Societies.

Status of Planning for SGA 2011 in Antofagasta – a discussion of a draft of the First Circular submitted by E. Campos et al. (F. Tornos et al.)

The report was presented by F. Tornos. After a broad discussion

Council recommended the following:

- LOC to maintain a smooth and timely communication with SGA Officers,

- LOC to promptly activate the work of various Committees (it is impossible for a single person or a small group of people to manage such a large meeting successfully). Council is unaware that the Committees are active. Furthermore, SGA Council members of those committees are not listed in the draft of the First Circular and have never been approached by Committee chairs. This should be corrected as follows:

	LOC	SGA
Organizer	E. Campos	
Technical Liason		F. Tornos
Budget Committee	M. Bembow, E. Campos	D. Leach
Students Committee	A. Beloso, students UCN	A. Vymazalova, J. Relvas
Sponsorship Committee	M. Bembow, E. Campos	E. Ferrari, D. Leach
Courses Committee	B. Dold, T. Bissig	M. Chiaradia, A. Piestrzynski
Field Trip Committee	S. Kojima, B. Towley	B. Lehmann
Technical Session Committee	M. Reich, F. Barra, T. Bissig	P. Williams
Advertising Committee	R. Gonzalez (+ web page)	H. Frimmel
Edition	M. Reich	F. Tornos
Logistics	H.-G. Wilke, R. Riquelme	
Secretary	W. Vivallo, A. Veloso	J. Pasava

- Council also recommended incorporating Alain Cheilletz to the organization as he speaks fluent Spanish.

- The title “Let’s talk ore deposits” (remove “about”)

- The budget is unclear in many aspects. Both Fernando Tornos and Dave Leach provided a detailed budget of previous meetings that should be followed. Council suggested that you start with the projected expenses and finish with the estimated registration cost. Registration Fees must be in accord with equivalent international conferences in the region. Council suggested revising the difference between members and non-members registration fees. The difference should be increased to at least 100 €. Also, there are no differences between SGA student members and non- members – this difference is however quoted in the draft of the first circular. The budget should include the estimated amount of sponsorship as well as the funds designated to students – initially suggested by

Council in the amount of 30 000 €. The both figures can then be modified according to received sponsorship. Finally, a 10% contingency should be included in the budget. D. Leach will provide F. Tornos and E. Campos with a list of budget concerns, questions and requirements by May 1, 2010. Response to these points should be sent to D. Leach along with a revised budget by May 15, 2010.

- Key dates: Only some minor modifications:

First circular (plus web site working)	April/May, 2010	Registration	
Second circular	November, 2010	Early registration closes	May 27th, 2011
Registration opens	January, 2011	Payment due from accepted authors	May 27th, 2011
Open submission of abstracts	January 28th, 2011	Field trip registration	May 27th, 2011
Papers and posters		Refund	
Abstract submission deadline	March 7th, 2011	Full refund possible	May 27th, 2011
Acceptance of abstract	May 1st, 2011	No refund	July 1st, 2011
Submission of final abstract	May 27th, 2011		
Students			
Student application for support	March 7th, 2011		
Notice of student grant	May 15th, 2011		

- List of sessions: The Council recommended the following sessions:

- Large scale controls on ore genesis
- New developments of Cordilleran evolution and metallogeny
- Ore deposits in South American Shields
- IOCG and magnetite-apatite deposits
- Porphyry and epithermal systems (perhaps a more exciting name)
- Mineralization associated with mafic and ultramafic magmas
- Nitrates, salars and industrial mineral deposits
- Energy Resources
- Geometallurgy
- Dating of ore deposits
- Orogenic gold deposits (possibly sponsored by IGCP project 540)
- Supergene alteration and modification of primary ores
- Sediment and volcanic-hosted deposits
- Mining and related environmental issues
- New developments in the study of mineral deposits (general sessions)

- Council added a session on porphyry/epithermal systems on the list. This preliminary list will be revised after the receipt of the first batch of abstracts. Some sessions will be cancelled and new one created depending on the profile of the submitted abstracts.

- Council also recommended modifying the list of plenary speakers. The scheme of the Townsville meeting worked well and should be followed – i.e. to continue with some plenary lectures during two mornings. It was recommended that keynote speakers for different sessions be selected by the session convenors, and to reduce the number of plenary speakers by 8-12. Council also discussed and modified the list of plenary speakers. Council strongly prefers that plenary speakers include mostly SGA and “new faces “speakers. Council is aware of the importance to have a strong participation of Latin American speakers and a representation of different groups/ companies from all over the world. Council recommended to consider the following names as plenary speakers: Massimo Chiaradia, Lluís Fontboté, Chris Heinrich, Eugenio Ferrari, Noel White, David Cooke, Richard Sillitoe, Victor Ramos, Constantino Mpodozis, José Perelló, Francisco Camus and Fernando Tornos (as SGA president should present a talk – a subject to be decided at a later date).

Field trips: When calculating the costs, Council recommended budgeting for one free student’s participation (Beijing model – D. Leach available for more details). Bernd Lehman offered to organize a pre-meeting field trip to Bolivia, starting in La Paz and finishing in Antofagasta.

Short courses: Pat Williams and co-workers from the IOCG group offered to present a modified course from one successfully presented in Townsville and at GAC-MAC.

Council would appreciate to have exact date for the full-working web page and to also allow Council members the opportunity to test it and eventually suggest modifications before it is made public. It was recommended that website should be in full operation when the first circular is released. Council also expressed concern on if it will be possible to realize payments through web page or it will need to be redirected to the SGA website.

Other comments to the draft of the first circular

- a. Highlight that it is in Antofagasta
- b. Include deadlines
- c. Modify the list of sessions
- d. Change the title to Let’s talk ore deposits
- e. Change the registration fees and add the currency
- f. Include (IMPORTANT) the address of web page of the meeting

Council recommended that LOC produces a poster that could be displayed at the SGA booth in the XVth Peruvian Geological Congress. It should include very basic information including title, dates, web page address and some other information. The poster along with the First Circular should be sent to Eugenio Ferrari so that they can be printed and advertised/distributed at the meeting. Council welcomed that Fernando Tornos and probably Eugenio Ferrari could meet with you (and perhaps other members of the LOC) in early May 2010. It is important to set up exact date of this meeting (F. Tornos and E. Campos). D. Leach will participate via videoconferencing. Council approved the report with best thanks.

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Discussion and vote on the bids for the 12th SGA Biennial Meeting – 2013 (J. Pašava et al.)

The SGA Council had a very difficult task to select SGA 2013 location due to the high quality of all proposals (Turkey, Sweden and

South Africa). Council vote was very close but finally selected the proposal from Sweden. The Council greatly appreciated the efforts of the Turkish and South African groups and expressed a hope that the proposals will be resubmitted for 2015 when the call for the SGA 2015 venue is announced. J. Pašava will inform individual groups on the Council vote.

Progress report on membership drive from the last SGA Council Meeting (P. Eilu, J. Pašava, A. Vymazalová)

The report was presented by J. Pašava. At the end of 2008 we had 904 members and at the end of 2009 our membership was 913 including more than 100 new members who subscribed during past 9 months. Unfortunately, the loss of members is similar to the gain of new members. Council approved the report with great thanks and recommended the following actions:

S. Lange to prepare a list of people who didn’t renew SGA membership and send it to all Council members by April 5, 2010 so that individual Council members and Regional Vice-Presidents could contact individual people.

S. Lange to email reminders to all who didn’t renew SGA membership at least 3 times a year (every 4 months).

Council also greatly appreciated recent SGA promotion by D. Groves in Colombia that resulted in about 40 new SGA membership applications.

Status of development of SGA Student and Young Scientist Network – Reports from Prague and Baltic Chapters – approval of budget for 2010 for Chapters (A. Vymazalova and J. Relvas)

On behalf of the Prague and Baltic Chapters, the reports were presented by A. Vymazalová and J. Relvas with additions by A. Piestrzynski who informed Council on the intention of the Baltic Chapter to organize next Students Network Meeting in Poland. Council approved both the reports with great thanks and also requested budget for the Prague chapter.

Requests for sponsorship

- SGA students’ meeting in Halle, Germany– February 19–23, 2010
- M. Decker - request for EUR 500 approved by the SGA Executive Committee
- SGA session on “Crustal Fluids and Gold” at IMA Budapest 2010 – H. Frimmel – EUR 1000 approved to support two keynote speakers
- SGA Mineral Deposit Field trip to the Bohemian Massif - IMA 2010, Budapest — approved EUR 600
- German Geological Society Meeting – October 2010, Darmstadt – SGA Kupferschiefer session (Borg et al.) – approved EUR 500 for SGA keynote speaker
- SGA promotion at the next RST meeting (Réunion Annuelle des Sciences de la Terre) in Bordeaux, France, October 2010 – approved EUR 500 for SGA booth – A. Cheilletz, M. Pagel

Any other business

- SGA promotion at SEG Keystone (Sept-Oct 2010) – SGA booth – D.Leach, K.Kelley, S.Roberts
- Goldschmidt 2011 – Prague – August 2011 – discussion and proposal for SGA sessions (J. Pašava)

Council recommended offering two SGA sessions: Geochemistry of Mineral Deposits and Mineral deposits associated with black shales: from their origin to their environmental impacts. J. Pašava to negotiate with the LOC.

- Request for hosting Secretariat of Latin-American Metallogeny Courses (question of guidebooks – prices/distribution – Tornos/R. Foster)

Council approved proposal to host Secretariat of Latin-American Metallogeny Courses and recommended to highlight SGA benefits for joining the Society when linking to the Secretariat website (F. Tornos and G. Beaudoin to implement). It was also decided that SGA will prepare Guidebooks from past Metallogeny Courses which will be sold to SGA members and students at a low price and to non-members at a higher price (F. Tornos and R. Foster responsible).

- Strategy on future SGA Publications – proposal for revival of SGA Special Publication Series, SGA Conference Proceedings-ISI listing (R. Foster, J. Pašava, F. Tornos)

The reports by Publication Manager were presented by J. Pašava with additions of D. Leach and F. Tornos. Council approved both the reports with great thanks and recommended the following actions: Except of the preparation of Guidebooks from previous Latin-American Metallogeny Courses (F. Tornos and R. Foster – responsible), the major focus should be put on working with E. Campos and field trip committee (Shoji Kojima, Brian Towley, Florencia Marquez and Bernd Lehmann) and short course committee (Bernhard Dold, Thomas Bissig, Massimo Chiarardia and A. Piestrzynski) on the preparation of SGA Excursion Guidebooks and SGA Short Courses No. 2-X. R. Foster to provide Eduardo Campos and other relevant people with templates and a schedule indicating deadlines securing quality and timely publication process. Council again postponed a decision of revival of SGA Special Publications. Council accepted to order 10 sets of printed volumes from the SGA Townsville meeting (J. Pašava responsible), that will be used for SGA promotion at various SGA meetings. One set of the Townsville conference papers will be mailed to H. Frimmel who will mail it together with a set of conference papers from Dublin to ISI Thomson Reuters office for evaluation (to be included into WOS listed Proceedings of Conference Papers – H. Frimmel responsible) Also one set of conference papers from Polish meeting (Cracow) – (A. Piestrzynski responsible) will be mailed to ISI Office for evaluation.

- Proposal for SGA-UNESCO Metallogeny Courses in Africa – update (G. Borg, F. Tornos)

Council noted from the published Minutes of the SEG Council Meeting (Portland, Oregon, October 17, 2009) that SEG decided to not participate in this project. No other news was received on this project.

- Creation of Working Group (WG) on VMS deposits (F. Tornos et al.)

Council approved creation of WG on VMS deposits chaired by F. Tornos, J. Peter and R. Allen gatehring a group of international people originally collaborating within the IGCP 502.

- SGA participation in the 11th International Platinum Symposium (June 18–29 Sudbury, Canada)

Due to insufficient participation of SGA officers in this meeting Council decided to use an offer from M. Leshner to display two A0 SGA posters that were displayed at the SGA booth in Townsville (H. Frimmel responsible).

Date and Place of the Next Council Meeting

The next Council Meeting will be held in association with IMA Meeting in Budapest, Hungary on August 22, 2010 (from 8.30 to 13.00) in room no. 00-708 at the Eotvos Lorand University Campus, South Building.

SGA COUNCIL 2010

SOCIETY FOR GEOLOGY APPLIED TO MINERAL DEPOSITS

President	F. Tornos (Spain)
Vice-President	P. Weihed (Sweden)
Executive Secretary	J. Pasava (Czech Republic)
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Promotion Manager	H. Frimmel (Germany)
Chief Editors	B. Lehmann (Germany) - MD European Office P. Williams (Australia) - MD Australian Office M. Chiaradia, C. Heinrich (Switzerland) - SGA News G. Beaudoin (Canada) - SGA website
Student Represent.	A. Vymazalová (Czech Rep.)

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>>>> **page 1** *The geology and discovery of the Merlin Mo-Re zone, Mt. Isa Inlier, NW Queensland, Australia*

O’Dea et al. 1997; Sayab 2005; Giles et al. 2006a,b; Betts et al. 2000, 2006; Blenkinsop et al. 2008; Rubenach et al. 2008). Various workers, as summarised from Rubenach et al. (2008), suggest that the first deformation event observed within the rocks of the Eastern Fold Belt is a bedding parallel foliation related to extension during basin formation. This foliation is folded by north-south directed compression during D1, producing east west trending folds and foliation. Following this is a period of east-west compression (D2) resulting in north-south trending folds with the dominant steeply dipping penetrative cleavage. A third compression event (D3) is seen as north-northwest trending folds with steep axial planes. This event is overprinted by northeast trending D4 folds with steep axial planes which reactivate many D2 structures.

Metamorphic grade within the Eastern Fold Belt increases from lower greenschist facies in the north and west to upper amphibolite facies in the south and east (Jaques et al. 1982; Foster and Rubenach 2006)

The rocks of the Eastern Fold Belt have been intruded by three main igneous phases. The most relevant of these are the

rocks of the Williams Batholith (1530-1493 Ma; Page and Sun 1998). The Squirrel Hills Granite is one of the larger outcropping intrusive bodies within the Williams Batholith and consists of a coarse-grained porphyritic monzogranite dated at 1508 ± 10 Ma (cited in McLellan and Oliver 2008). More proximal to Merlin, the Mount Dore Granite consists of a heterogeneous body of coarse-grained quartz monzonite aged 1516 ± 10 Ma (Pollard and McNaughton 1997).

The Eastern Fold Belt has been the focus of a significant volume of metasomatism. An early sodic-calcic alteration event recognised within the Snake Creek Anticline is dated between 1640 and 1690 Ma, and interpreted to be the result of heat injection and fluid circulation on the margins of early dolerite/gabbroic sills (Rubenach et al. 2008). Following this is a major sodic-calcic event resulting in blanket albitisation within the Eastern Fold Belt. This event has been linked to the intrusion of the granites of the Williams Batholith (Mark et al. 2004; Oliver et al. 2004). A later potassic alteration event is synchronous with much of the IOCG mineralisation within the Eastern Fold Belt (Williams 1998).

Discovery and history of the Merlin zone
The Merlin zone was discovered in February 2008 during a drilling campaign on the northern extension of the Mount

Dore copper deposit. The discovery hole MDQ0153 returned 32 m @ 0.41% Mo from 166 m. This hole was twinned using diamond core as concerns were raised about potential molybdenite loss and poor recovery by percussion drilling below the water table. This diamond twin returned 40 m @ 0.99% Mo. Four scissor holes were drilled next to determine the attitude of the host structure, and intercepts clearly established the trend of the mineralisation. Following this, the nearby shallow percussion drill holes were deepened with diamond core and step-out diamond holes were drilled both to the north, south and down dip. During the last three months of 2008 approximately 60 diamond drill holes were collared to define a 500 m long zone of molybdenum mineralisation to approximately 400 m from surface. Additionally, the presence of high-grade rhenium within the molybdenite was confirmed. By April 2009, a JORC compliant indicated and inferred mineral resource had been released for the Merlin zone with some 13 Mt @ 0.8% Mo and 14 g/t Re (IAL Market Release, 21 April 2009). During further drilling south of the main Merlin zone in mid-2009 drill hole MDQ0264 intersected a narrow but extremely high-grade intercept of molybdenite (3.73 m @ 15% Mo and 150 g/t Re). Further close spaced drilling identified a 60 m long pod of extremely high-grade Mo-Re mineralisation.



Figure 1: Location of the Merlin deposit within the Eastern Fold Belt of the Mount Isa Inlier, Northwest Queensland, Australia. Modified from Brown et al (2009).

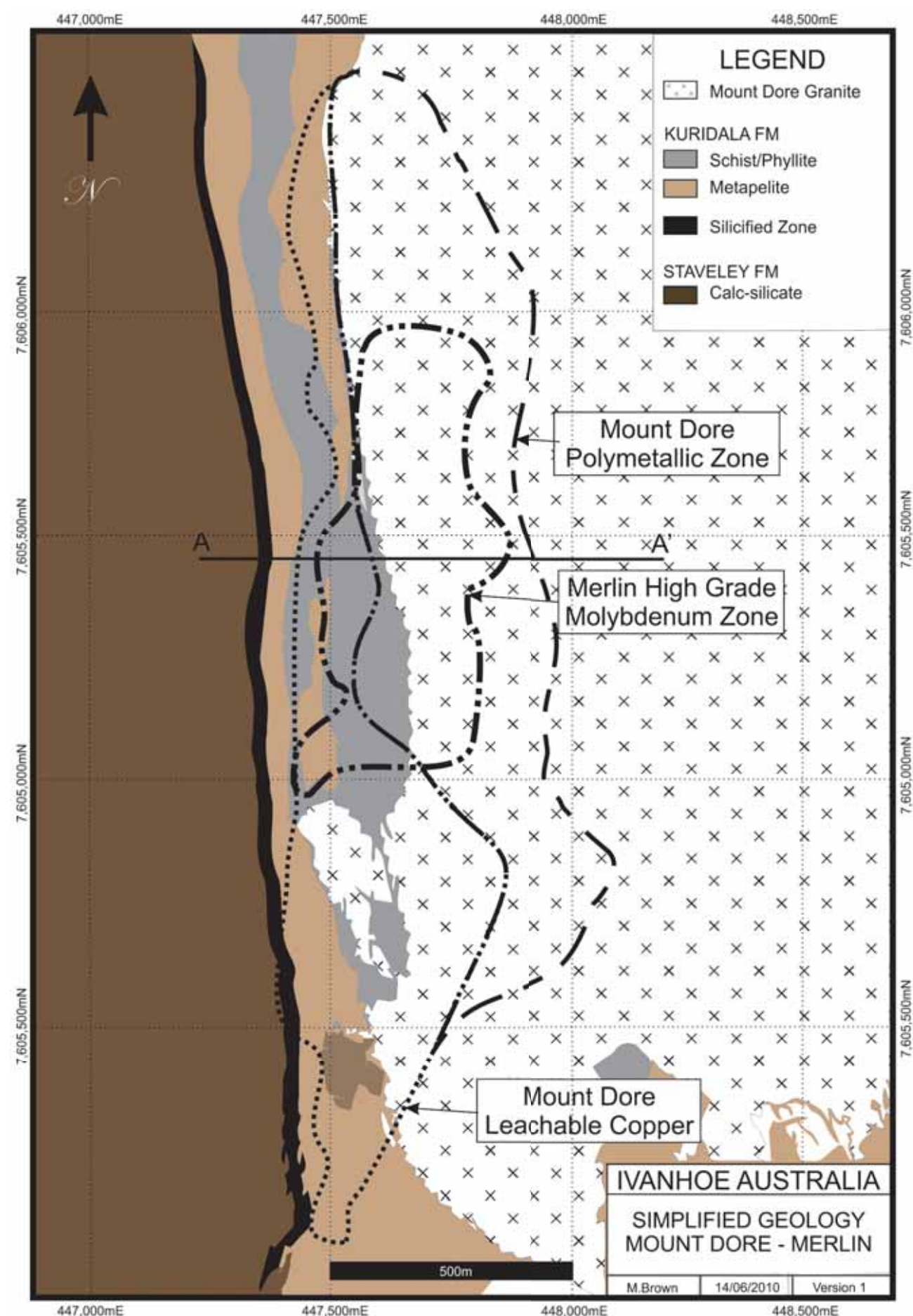


Figure 2: Simplified geology of the Mount Dore - Merlin area. Outlines show the three main ore styles, leachable copper, polymetallic sulphide and molybdenum-rhenium.

This pod was dubbed “Little Wizard” and a JORC compliant inferred mineral resource of 15,000 tonnes @ 13% Mo and 160 g/t Re was released in late October for Little Wizard (IAL Market Release, 21 October 2009); followed by an independent NI 43-101 mineral resource estimate (IAL Market Release, 5 November 2009).

Deposit Geology

The oldest unit within the Merlin-Mount Dore area is the carbonaceous metapelite and phyllite of the Kuridala Formation (Figs 2 and 3). The carbonaceous metapelites consist of black, folded and brecciated, massive to laminated metamorphosed shales and slates interbedded with chloritic phyllite units. This package of carbonaceous metasediments is interpreted to have been thrust over the top of the calcareous units of the Staveley Formation during early compression (Betts et al. 2000). At Merlin, the Staveley Formation consists of a package of fine- to medium-grained, cream to pink and red banded to laminated calc-silicate rocks. To the east, the Mount Dore Granite is faulted against the Kuridala Formation (Fig. 3). While the western margin of the Mount Dore Granite is structural,

the northern, southern and eastern margins of the granite display igneous contacts indicating the granite body has not been faulted any great distance.

The Mount Dore Fault Zone (MDFZ) represents the major structural feature within the deposit area. Interpreted to represent an early thrust, this fault has been folded and reactivated during many of the subsequent deformation events. The MDFZ can be traced within the regional geophysics some 50 km to the north where it appears to be truncated by the Straight Eight Fault and over 20 km south of Mount Dore where it becomes obscured by Mesozoic cover rocks. Reactivation of the MDFZ within the Merlin area has been enhanced by strong rheological variations created by the Mount Dore Granite and the prominent silicified zone within the footwall of the deposit. These competent bodies have helped partition strain within the less competent metasediments of the Kuridala Formation enhancing dilation and brecciation.

The earliest observable alteration event within the Merlin area consists of a stratiform silica alteration associated with brecciation and silica flooding within the early MDFZ. This silicification was historically

mapped as a stratigraphic quartzite unit; however, breccia fragments, pyrite casts and relic carbonaceous metapelites indicate a metasomatic and structural control. This silicified unit is located in the footwall to mineralisation at Merlin and drilling data suggests it is folded beneath the deposit. Overprinting the early silica alteration is a pervasive albitisation of the carbonaceous metapelites and phyllite. A potassic alteration event (K-feldspar) is observed overprinting albitisation and appears to be associated with the primary copper mineralisation at Mount Dore. Localised tourmaline and silica alteration occurs directly adjacent to the Mount Dore Granite. Additionally, andalusite and anthophyllite have been observed within the carbonaceous metapelites adjacent to the granite contact.

The Merlin zone represents a part of the Mount Dore Deposit which is divided into three domains or zones. The secondary copper zone, primary polymetallic zone and the Merlin molybdenum-rhenium zone. Mineralisation within the secondary copper zone at Mount Dore is made up of a body of copper oxides and carbonates, characterised by chrysocolla, cuprite, chalcotrichite, pseudomalachite and trace azu-

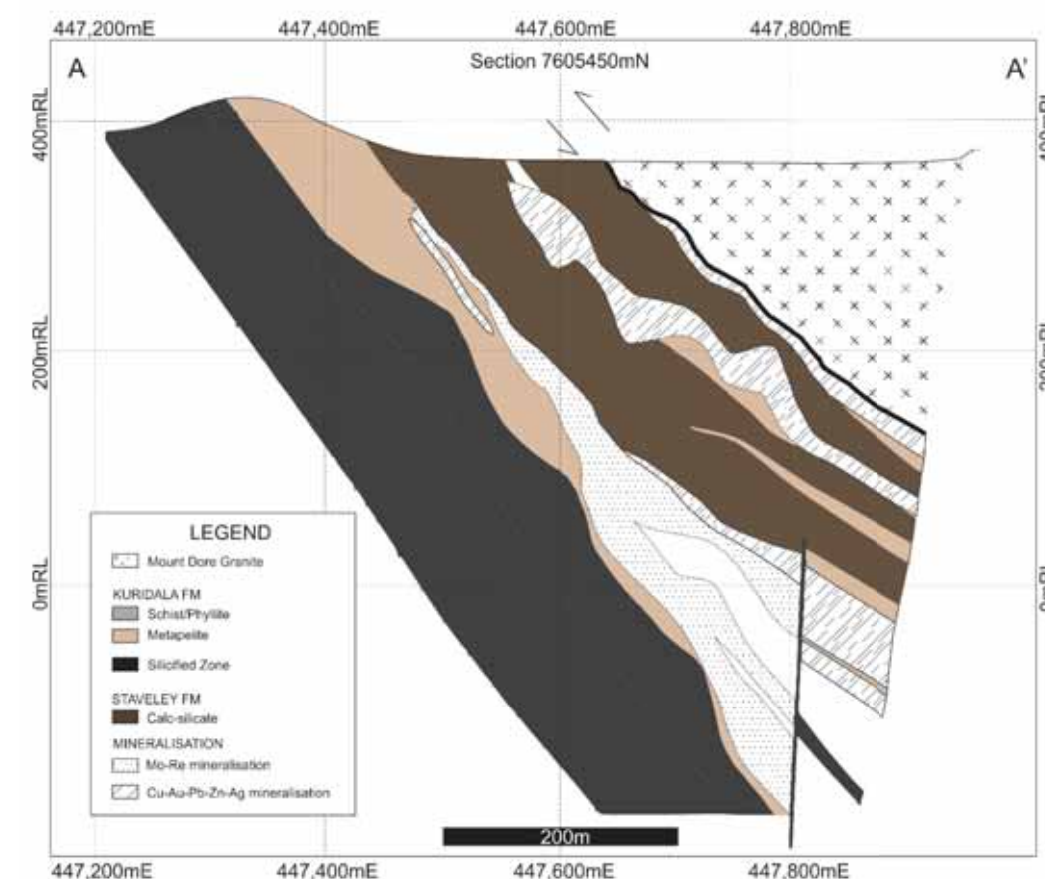


Figure 3: Simplified cross section 7605450mN showing lithology and mineralisation domains. Looking north.

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rite and malachite. This secondary copper zone grades downwards into a transitional zone of chalcocite and trace covellite (Lazo and Pal 2009). Native copper is more commonly associated with the copper oxides and carbonates but can occur as fracture infill in the transitional zone. The primary polymetallic zone consists of a sulphide-bearing carbonate breccia. The dominant sulphides are chalcopyrite and pyrite with lesser sphalerite, bornite, galena, cobaltite and arsenopyrite. Associated with this brecciation is a potassic alteration event that affects the breccia fragments (carbonaceous metapelite and phyllite). Mineralisation at Merlin crosscuts the polymetallic zone, is structurally controlled and broadly forms a tabular sheet striking north-northeast and dipping moderately to the east. Within this sheet molybdenite occurs as massive infill to breccias, infill to veins and veinlets, disseminations and stylolites (Fig. 4). The structural host is capped by a phyllitic unit which appears to have acted as a barrier to further dissipation of mineralising fluids thus effectively trapping much of the molybdenite, resulting to extremely high ore

grade. The high-grade breccias within the mineralised zone are up to 4 m thick and contain over 10% molybdenum. Rhenium occurs within the lattice of molybdenite and a direct geochemical correlation is observed between rhenium and molybdenum (Fig. 5).

Conclusions

The Merlin Zone of the Mount Dore deposit represents a previously unknown style of mineralisation within the Mount Isa Inlier, if not globally. The mineralisation consists predominantly of molybdenite, with only minor chalcopyrite and pyrite, and is hosted within a series of altered carbonaceous metapelites and phyllite. This mineralisation is devoid of any common gangue mineral. Molybdenite occurs as massive infill to veins, breccias and stylolites and as disseminations. The bulk of the mineralisation has been confined within a moderately dipping north-northeast trending fault zone that crosscuts earlier polymetallic mineralisation at Mount Dore. Much of the deposit remains concealed under the Mount Dore Granite and is still currently open to the north, south and at depth.

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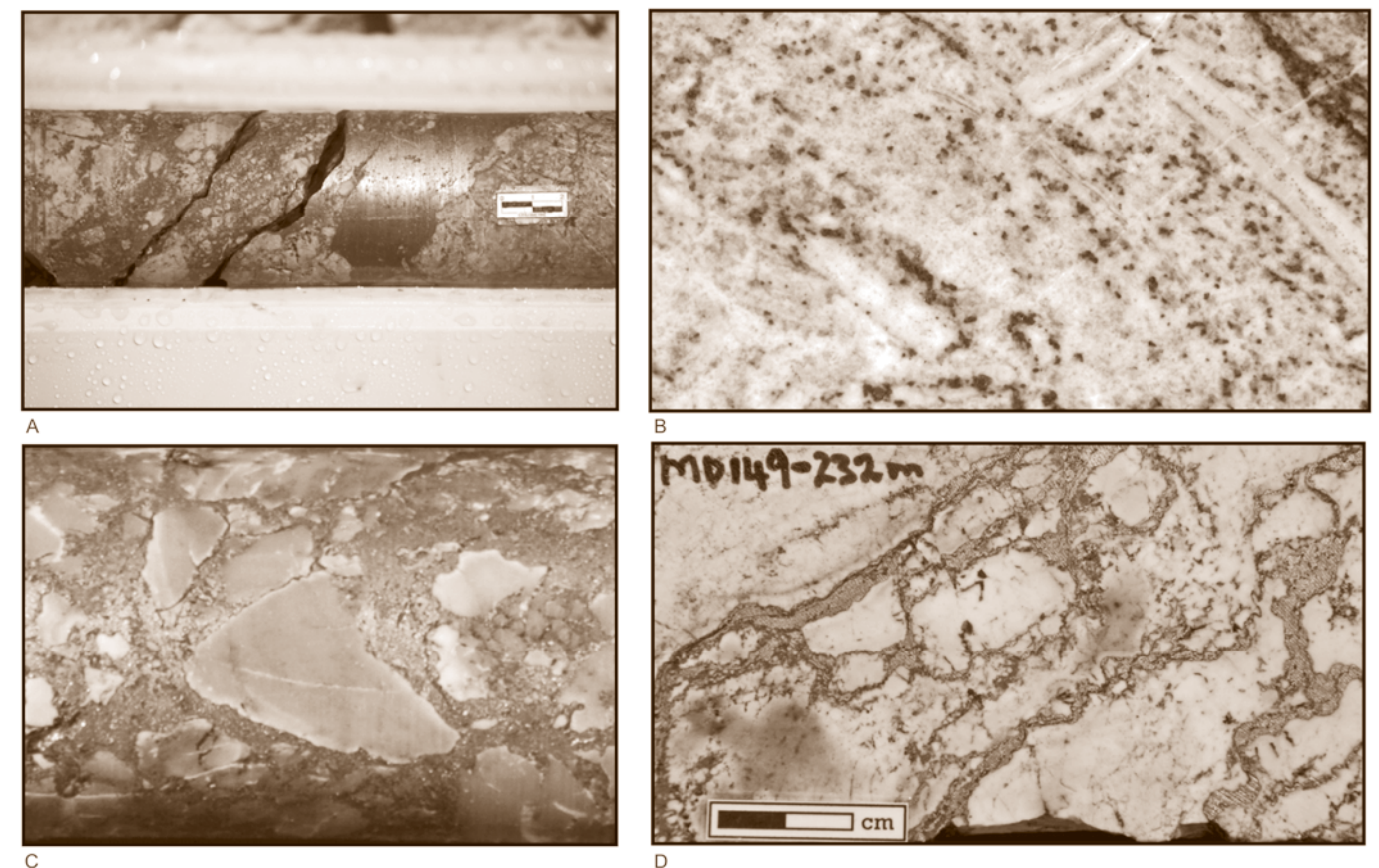


Figure 4: The four main styles of Mo-Re mineralisation within Merlin. (A) Massive molybdenite as vein infill. These veins can be up to 80 cm wide. (B) Disseminated molybdenite within feldspar altered metapelite. Field of view is 9 cm. (C) Massive molybdenite as breccia infill. Breccia fragments are altered metapelite. Field of view is 8 cm. (D) Molybdenite as stylolites cross cutting altered metapelite.

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Call for SGA award nominations

Dave Huston

Chair SGA Award Committee, Geoscience Australia (David.Huston@ga.gov.au)

At Antofagasta 2011, the Society for Geology Applied to Mineral Deposits will promote the achievements of two scientists for geological research applied to mineral deposits. The SGA-Barrick Young Scientist Award, which recognises scientists at the beginning of their careers, consists of a citation, prize money of EUR1500 and travel to Antofagasta 2011. Previous award winners have included Noreen Vielreicher (2003), Alexandre Raphael Cabral (2005), Gilles Levresse (2007) and David Holwell (2009).

The SGA-Barrick Young Scientist Award is based mostly upon senior-authored papers published early in the candidate's career. To be eligible for this award, the awardee must be less than 40 years on 01 January 2011 (i.e. born before 01 January 1971). Eligibility is not restricted by the candidate's nationality, place of employment, or membership in the Society. Nomination forms can be downloaded from the Society's web site (e-sga.org/index.php?id=111). Nominations should include a biographical summary of the candidate, a list of publications upon which the award is based, a statement explaining the significance of the research, other scientific contributions and accomplishments and the name and contact details of the nominator. In addition, copies of abstracts for most important (maximum five) papers upon which the nomination is based should be attached to the application.

The SGA-Newmont Gold Medal recognises the career of the awardee involving "unusually original work in the mineral deposit sector, which shall be broadly interpreted to encompass major contributions to (1) the science through research and (2) the deve-

lopment of mineral resources through mine geology, exploration and discovery." The award consists of a citation, a 999.99 fine gold medal, and travel to Antofagasta 2011. Previous medallists include Zdenek Johan (2007) and Shunso Ishihara (2009).

The SGA-Newmont Gold Medal is based upon career accomplishments. It must be stressed that published scientific research is only one measure; other measures include leadership, both in research and in industry; success in exploration or mining geology; and service to SGA and like organisations. The award covers all aspects of research applied to mineral deposits, from field geology and mineral exploration, through development of analytical techniques, ore system models and metallogeny, and to the management of research and exploration projects and institutions. Eligibility is not restricted by the candidate's nationality, place of employment, or membership in the Society, and nomination forms can be downloaded from the Society's web site (e-sga.org/index.php?id=133). Nominations must include the name and address of the candidate as well as a summary of the candidate's education, significant accomplishments and publications, and the name and address of the nominator.

For both awards, letters of support from three SGA members are required. All nomination forms and letters should be sent to the SGA Executive Secretary with a copy to the Chairman of the Awards Committee, whose addresses can be found on the nomination form. **All nominations and letters of support (either digital or hard copy) must be received by 31 March 2011.**

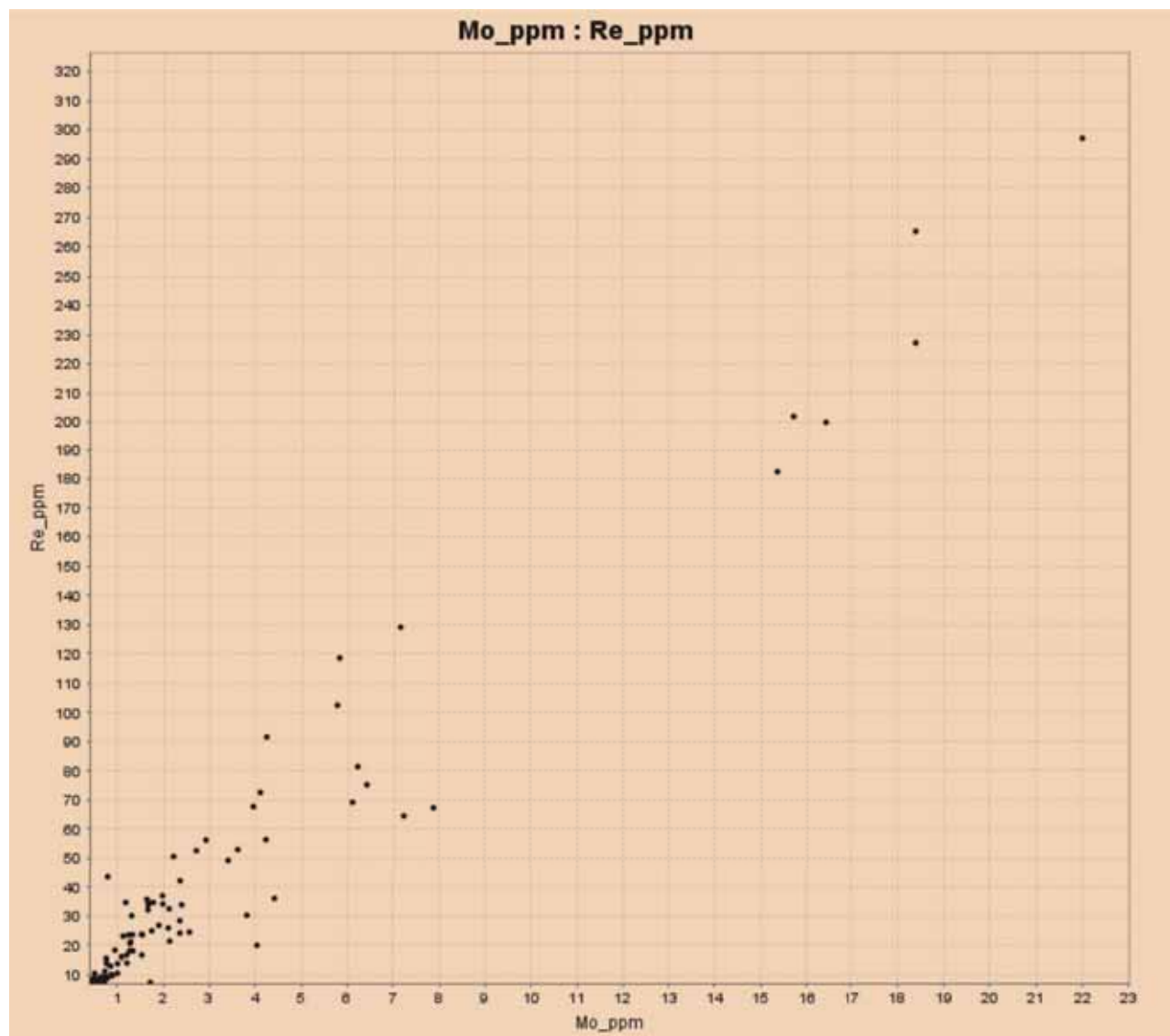
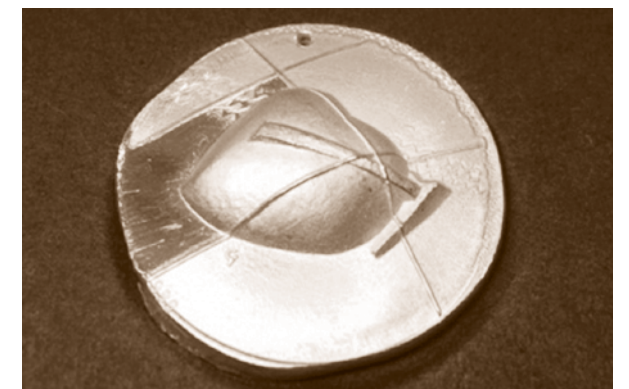


Figure 5: Plot showing the ratio of molybdenum versus rhenium within the Merlin zone. Assays from the top 100 m have been excluded to remove weathering effects.



The SGA-Newmont Gold Medal



News from the SGA Student Network: SGA Student Meeting Halle (Saale), Germany

Mareike Decker

Martin-Luther-University, Halle-Wittenberg (mareike.decker@googlemail.com)

From February 19th to February 23rd 2010 a group of German SGA student members organized an international Student Meeting at the Martin-Luther-University Halle-Wittenberg. Students of the University of Prague (Czech Republic) and Germany (LMU Munich, TU Freiberg, MLU Halle) took the chance to meet with the students of Halle University, to get to know each other and possibly to start stronger international relations.

The meeting started on February 19th with the Ice-breaker-party where all the participants came together to get to know each other. While drinks and food were served an active discussion took place concerning problems at the different universities, the SGA, the last Biennial Meeting in Townsville and also other different topics. Accommodation was organized at the Institute of Geosciences in Halle, so that the participants could stay together overnight, which brought to further interesting talks between the different student groups.

On Saturday, February 20th, talks took place concerning the regional geology of Germany, Sachsen-Anhalt and Halle. Great interest was given to topics concerning: the economic geology of Germany; the importance of historical mining in the vicinity of Halle; and Ice Age art in caves of Central Europe. Eight scientists and students from Martin-Luther-University Halle, the Geological Survey of Sachsen-Anhalt, the State Museum of Prehistory Sachsen-Anhalt and the CEZ Archeometry Mannheim presented talks (see programme on p. 17).

The geological topics of most of the presented talks had practical counterparts in the field trips that took place on Sunday, 21st and Monday, 22nd (see p. 17). Thus, the attending students could choose between two different field trips on both days.

On Sunday the field trips were to the Barbarossa Cave, and to the Sangerhausen Mining District, where the historical Kupferschiefer mine at Wettelrode was visited. The Barbarossa Cave in the Kyffhäuser Mountains was formed due to subsrosion processes in mainly anhydritic rocks. Nowadays it is one of Germany's famous tourist caves and the students were able to see the results of subsrosion processes underground. The cave was discovered in 1865 during exploration for the Kupferschiefer. During their guided tour the students were able to see parts of the cave that normal visitors are usually not allowed to see and even were allowed to visit the underground exposures of the Kupferschiefer.

The second trip on Sunday led to the historical mining district of the Sangerhausen Syncline. Here at the former underground mine of Wettelrode the participating students got a guided tour. During their three hours underground historical mining sides were visited, as well as typical characteristics shown of the Kupferschiefer mineralization (shale and carbonate hosted ores as well as Rote Fäule occurrences).

Field trips on Monday, the last official day of the meeting, led the students to one of the active mines in Sachsen-Anhalt - the ESCO salt mine close to Bernburg (a small town in the NNW of Halle). Here the students attended a guided tour through the different mining sites and enjoyed a trip in the "cavern cars" through a big part of the salt mine. The second field trip on Monday led to the Harz

Mountains. Here the Büchenberg mine was visited by the attending students where iron ores of the Lahn-Dill type are excavated. The open pit of the Felsenwerke was also part of this field trip. Here Devonian carbonate rocks (reef limestones) are mined and so the participants of this field trip got an impression of concrete mining in Germany. Afterwards some more exposures of Devonian rocks, e.g. Devonian sediments as well as submarine volcanics, provided more information on the regional geology of the Harz Mountains.

In conclusion: the first international SGA student meeting (organized by SGA student members of the Martin-Luther-University Halle-Wittenberg) was a great possibility for all participants to get to know each other and also to see some aspects of the scientific work being undertaken at Martin-Luther-University. We thank the SGA as well as the "Fachschaft" of Geoscience of the Martin-Luther-University for their financial support to enable this meeting.



Barbarossa Cave



Dorothee Mertmann



Ian Lerche



Büchenberg Mine

Programme of the SGA Student Meeting held on 19.2 – 23.2.2010 at the Institute of Geosciences, Martin-Luther-University Halle-Wittenberg, Von-Seckendorff-Platz 3, 06120 Halle, Germany

Talks - 20.02.2010

08:50 – 09:00 Welcoming address

09:00 – 9:45 Ian Lerche – Institute of Geosciences, MLU Halle-Wittenberg - „Tsunamis, Volcanoes, Plate Tectonics, and did the Earth Move for you too?“

9:45 – 10:30 Dorothee Mertmann - Institute of Geosciences, MLU Halle-Wittenberg - “Catching a Brief Geological Glimpse of Germany and Sachsen-Anhalt“

11:00 – 11:45 Jochen Mezger - Institute of Geosciences, MLU Halle-Wittenberg - “The Geology of the Harz Mountains and its Ore Deposits – an Overview!“

11:45 – 12:30 Carl-Heinz Friedel – Geological Survey of Sachsen-Anhalt - “Geology and Mineral Deposits of the Elbingerode Complex, Harz Mts.“

14:00 – 14:45 Kai Fischer - Institute of Geosciences, MLU Halle-Wittenberg - “The Eckergneiss of the Harz Mts.“

14:45 – 15:30 Sabin Walther - Institute of Geosciences, MLU Halle-Wittenberg - “The Kupferschiefer and its Economic Importance“

16:00 – 16:45 Anja Ehser (Institute of Geosciences, MLU Halle-Wittenberg) & Nicole Lockhoff (CEZ Archeometry Mannheim)

“ Archaeometry: Scientific Techniques to study the Discworld of Nebra and its ore deposits“

16:45 – 17:30 Ingmar Braun – State Museum of Prehistory Sachsen-Anhalt - “Traces of the First Art - Cave Art and Portable Art of Pleistocene Europe“

Regional Geological Field Trips 21.02./22.02.2010

Sunday, 21.02.2010

1. Barbarossa Cave with underground Kupferschiefer outcrop on Kyffhäuser Basement Block
2. Sangerhausen Mining District, historical Kupferschiefer Mine Wettelrode, underground visit (shale-hosted ore and Rote Fäule alteration)

Monday, 22.02.2010

1. Underground visit to active ESCO salt mine (Zechstein, Upper Permian) at Bernburg
2. Tourist mine Büchenberg (Devonian iron ore of Lahn-Dill type), open pit of the Fels-Werke GmbH and further outcrops (Devonian reef limestones and submarine volcanics, Lower Carboniferous olistostromes and turbidites)

REDUCED PRICES FOR SGA PROCEEDINGS

BEIJING (2005) - Mao and Bierlein (eds) - Mineral Deposit Research: Meeting the Global Challenge, 2 Volume, over 1600 pages incl. CD-ROM

NOW available for 30 EUR plus shipping costs

DUBLIN (2007) - Andrew et al. (eds): Digging Deeper, 2 Volumes, over 1600 pages incl. CD-ROM
NOW available for 50 EUR plus shipping costs

Please contact Sabine Lange, Rixenweg 2, D-24147 Klausdorf, GERMANY, phone +49-431-7993303, fax +49-431-7993420, email: sabine-klausdorf@t-online.de

News from the SGA Student Chapter in Prague SGA-Students Meeting in Halle, Germany

Nikola Denisová and Radim Jedlika

Charles University in Prague, Faculty of Science, Institute of Petrology & Structural Geology

At the end of February, four of our members visited a student meeting organized by Mareike Decker from the SGA Chapter in Halle (see p. 16, this issue). Besides students from SGA Student Chapter Prague, only students from the SEG Chapter in Freiberg were able to arrive. The low number of participants helped to create a very friendly atmosphere. After a train journey from Prague via Dresden and Leipzig, we arrived to Halle on Friday the 19th, where we were welcomed at the Institute Of Geosciences, Martin Luther University Halle-Wittenberg. After a tour of the Institute and its many

modern laboratories, an Ice Breaker Party organized by students from Halle took place.

The first day of the conference was dedicated to lectures and talks given by the teachers and students from the Institute and the Geological Survey of Sachsen-Anhalt. The talks covered various topics from regional and local geology of the Harz Mountains to archaeometry and its connection to geology. We ended the day with an evening tour of the city centre and an unofficial get-together with the organizers.

On Sunday, we departed on our first field trip to the historical Kupferschiefer Mine Wettelrode in the Sangerhausen Mining District. Copper mining has a long tradition in the region, ever since the Middle Ages, when copper-rich ore was mined from outcrops on the surface. Kupferschiefer is a thin shale layer right above the Zechstein unit (upper Permian), rich in copper. Because of the uplift of the Harz Mountains during the Variscan orogeny, the Kupferschiefer was moved closer to – sometimes right to – the surface. The field trip was described

to us as adventurous: for the first hour we crawled through tunnels high 1.5 m at maximum, to see how copper was mined some 300 years ago, then we went down a drainage tunnel where water was pouring out from everywhere to the first level, 300 meters below the surface. On both levels we were able to see the shale-hosted ore and the Rote Fäule alteration. In the second part of the excursion, we were shown various mining techniques as they changed throughout the centuries, we enjoyed a typical miners' meal and a ride on the underground train.

On the third and last day of the conference, we chose a field trip to the active esco salt mine Bernburg. The salt deposits

are evaporates of Permian age, prevailing zones of almost pure rock salt alternate with anhydrite and potash zones. Fully equipped for the excursion, we descended 530 meters below the surface and after a short lecture about the history of the mine and mining techniques, we started our jeep ride through the labyrinth of connecting tunnels that are 20 meters wide and 5 meters high. We visited the working face, where holes for explosives were just being drilled by a drilling jumbo that can drill to the depth of 30 meters in minutes. Then we drove down to the salt chambers to collect some rock salt samples and the view of 35 meter high chamber was amazing. On the way

we observed closely the machines used for loading and transporting of the rock salt, as well as the crushers and conveyor belts. We also passed to the anhydrite zone, where we looked for boracites crystals in the evaporate rocks. We ended the excursion and the conference in the university café, where we thanked our guides for an amazing geological experience.

Our SGA Student Chapter would like to invite all interested students to attend our meetings. For more information about us, please visit our web page: <http://sga.cuni.cz>. We look forward to meeting and greeting you.

Invitation to students to participate in the 11th SGA Biennial Meeting “Let's talk Ore Deposits” 27th–30th September, 2011 Antofagasta, Chile

The SGA Student Committee

Anna Vymazalová (anna.vymazalova@geology.cz), Jorge Relvas (jrelvas@fc.ul.pt) and Andres Veloso (eveloso@ucn.cl)

SGA warmly invite students from all over the world to submit abstracts and participate in the 11th SGA Biennial Meeting that will be held in September 2011 in Antofagasta, Chile. SGA is committed to encouraging student participation in our Biennial Meetings and other programs.

SGA commitment to student involvement in our activities was clearly visible in the recent SGA Biennial Meeting in Beijing, Dublin and Townsville.

It is clear that the future of economic geology demands a growing involvement of graduate students and young researchers. Your active involvement in our Biennial Meetings is essential to a healthy future for mineral deposit research and exploration.

The information concerning the meeting will be updated at www.sga2011.ucn.cl.

Please continue to visit the Website to have the updated information on the 11th SGA Meeting in Antofagasta.

Student grants

A limited number of student grants may be available to support student participation in the conference. A specific application form for student financial support will be provided in the Second Circular and in the Website. The award of student grants requires the acceptance of an abstract for oral or poster presentation, and will be based on financial need and scientific quality of the submitted presentation.

Awards

We strongly encourage you to submit an abstract and participate in this important and highly visible international conference. Awards will be given to the best oral and poster presentations authored by students.

Free field trip

Several pre- and post-meeting Field Trips to some of the world's largest ore deposits will

be offered. Students are invited to get involved in these activities. A limited number of free participations in selected field trips will be offered.

Social evening Student & Industry

We will also provide opportunities for you to meet with corporate sponsors and representatives from mining companies from around the world. You will have many valuable opportunities to discuss your future plans with leading economic geologists in industry, government and academia.

Do not hesitate to contact the members of the Student Committee of the 11th SGA Biennial Meeting. Your questions, comments and suggestions are welcome. We look forward to meeting you in Antofagasta in 2011!



Figure 1: Underground visit by students and members of the Prague Student Chapter in the historical Kupferschiefer Mine Wettelrode, Sangerhausen Mining District (shale-hosted ore and Rote Fäule alteration).

News from the Baltic Student Chapter

Bartłomiej Bil, Gabriela Lato, Marta So nicka

SGA Baltic Student Chapter, AGH University of Science and Technology, Cracow

Janne Hokka

SGA Baltic Student Chapter, University of Helsinki

In April 2009, Professor Adam Piestrzyński and Dr. Eilu Pasi came up with an idea to create a SGA Student Chapter in the Baltic Sea region. The Baltic Student Chapter was officially set up in autumn 2009 and it gathers both PhD and undergraduates from Poland, Finland and Sweden. We immediately decided to organize an SGA students meeting at the University of Science and Technology (AGH) in Cracow, Poland. The main part of the meeting was the Student Scientific Session and the Miners Day celebration.

On the first day we visited the Bochnia Salt Mine (40 km away from Cracow), which was opened in 1248. There are signs that salt mining there dates back to the Neolithic Period. The discovery of salt is related to the legend about St. Kinga's

ring. She threw her ring into a salt mine in Hungary and later on found it in a block of salt in Bochnia. Salt deposits are a part of two Miocene anticlines that form an approximately 7 km long, 200 m wide and 460 m deep structure. The tour began from the Campi shaft. In the tunnel walls enormous accumulation of salt folds were seen which were formed under high pressure from the movements of the Carpathian Mountains to the north. The salt level is divided into 3 complexes: north salts, south salts and middle salts with andyrite, anhydritic claystones, marly claystones and zuber. Nowadays the Bochnia Salt Mine provides an underground museum with many tourist attractions such as the wooden slide, gym, pub and many sleeping places. Brave ones can take a gondola ride in the salt tunnel.

Large chambers like the St. Kinga's Chapel with salt sculptures of all saints associated with mining, linked to Bochnia or Wazyn Chamber (the biggest one where the coffee break is recommended), are visited by 200 000 tourists yearly. The level of the mine was set to Adriatic Sea level.

On the second day we visited the Rudna Mine in the Polish Kupferschiefer, near Lubin in the south-west of Poland. From 1971 to 1972 a first drift was cut and in 1974 the exploitation achieved 1,9 million tons and have reached 13 million tons recently. The main purpose of our trip was to confirm the genetic model of Kupferschiefer. This area covers 467,6 square kilometres and was discovered in March, 23 1957 by Dr. Jan Wyżykowski. It is a sediment-hosted stratiform copper-silver deposit in

the Permian strata. Mineralization crossed the sedimentary sequence and is developed as numerous mineralogical variations, which seem to undergo later alterations. The samples that we collected 1000 metres underground are sandstones with chalcocite – covellite mineralization. The cut-off grade for the ore level is estimated at 0.7% Cu. Exploited rocks are sandstones, shales and dolomites. The average copper content in 32 million tons of the annual production is close to 2%. The ore contains also significant amounts of silver. After the underground visit we got permission to visit the flotation plant. The whole process consists of six stages: crushing – milling and classification – flotation+purification of both waste and concentrate before loading of concentrate disposed in the Żelazny Most Tailings Pond. The recovery of copper, silver and other metals from the extracted rock is about 93% with 30% of copper content in concentrate. There are more than 820 million tons waist deposited in the Tailings Pond that occupies an area of 1394 hectares

with the total length of the surrounding dam close to 14 kilometres. The beaches inside the pond are protected by bitumen emulsion sprayed from helicopters to prevent dust pollution. The chemistry and stability of the water level are being monitored. These activities ensure high quality safety standards for people and animals living around the Żelazny Most.

On the third day the members of the Baltic Chapter and the guests from the Prague Chapter took part in the Student Scientific Session hosted by the University of Science and Technology (AGH) in Cracow. Our presentations were focused on the orogenic gold deposit model in Finland, mineral prospecting in Mongolia and uranium deposits in Rožná in the Czech Republic. This part was prepared by the students from Prague. The wide knowledge of the participants and high level of presentations is a good start for future scientific meetings.

The next day we took part in the “Miners Day” celebration, which is part of a very old tradition in Poland. Program included also sightseeing in Cracow, including the market square with the Cloth Hall and the Mariacki Church, the Royal Castle at the Wawel Hill and the Memorial Museum Auschwitz Birkenau in Oświęcim.

We wish to thank Mr. Jarosław Suchan from KGHM Polish Copper Company and professor Adam Piestrzyński for the guided tour. Mr Andrzej Bezkorowajny and authorities of Bochnia Salt Mine and SGA for financial support.

Overall the meeting was a good opportunity to learn new geology and to meet students from Helsinki, Cracow, and Prague. There is definitely a place for interaction amongst the student member in SGA and creating network to share the scientific knowledge and connect the future scientists together.



St. Kinga's Chapel in Bochnia Salt Mine, Poland (photo by G.Lato)



Chalcocite epigenetic mineralization in Weissliegende sandstone.



Field participants inside the Rudna copper Mine, Poland (photo by T.Ćwiertnia)



Rudna Copper Mine, about 1000 meters depth, Poland (photo by T.Ćwiertnia)



Salt folds inside the Bochnia Salt Mine, Poland (photo by N. Denisova)



Celebration of the Miner's Day at the AGH University of Science and Technology, Cracow, Poland (photo by M. Sośnicka)

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:

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Rixenweg 2, D-24147 Klausdorf
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University of Ottawa
May 25-27, 2011

Ottawa 2011
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Navigating Past & Future Change





Ottawa will host the 2011 joint annual meeting of the Geological Association of Canada, the Mineralogical Association of Canada, the Society of Economic Geologists, and the Society for Geology Applied to Mineral Deposits. Canada's Capital offers a unique blend of culture, history, and natural beauty, all in the heart of the city. It lies at the junction between the rocky edge of the Canadian Shield and the Cambrian and Ordovician deposits of an ancient sea, and is ideally situated for its two universities and the Geological Survey of Canada. The painting by artist Judi Pennanen shows the majestic limestone banks of the Ottawa River at Parliament Hill and highlights this meeting's opportunity to showcase the societal relevance of the Earth Sciences to federal decision makers.

Committed to exploring both the scientific and societal aspects of Earth Sciences, Ottawa 2011 will feature symposia and sessions that revolve around Navigating Past & Future Change. Join us May 25-27th, on the downtown University of Ottawa Campus, to make this meeting a success!

Details on registration, programs, and events are available on our website:
www.gacmacottawa2011.ca

Contact us:
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André Lalonde (Co-Chair)
University of Ottawa
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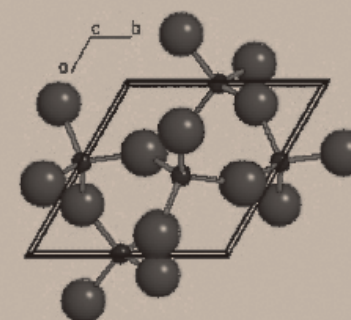
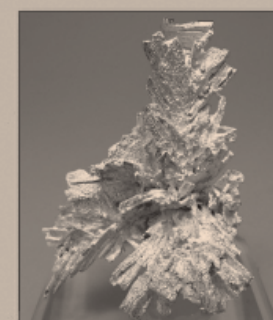
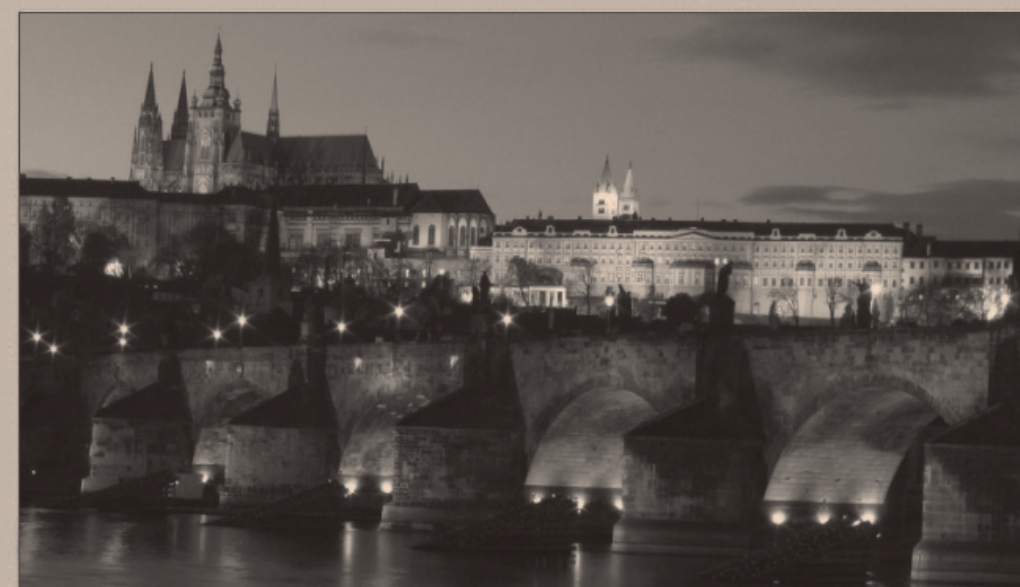


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“Mineral resources for the society”

PRAGUE, CZECH REPUBLIC, 15 - 18 APRIL 2011



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Contact: Kateřina Schlögllová (schlloglo@gmail.com)

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>>> FORTHCOMING EVENTS <<<

* marks a new entry

2010

July 7-11

EMU School: High-resolution electron microscopy of minerals, Nancy, France. weblink: <http://www.lcm3b.uhp-nancy.fr/emu10/>

July 10-18

ZEOLITE 2010 — 8th International Conference on the Occurrence, Properties, and Utilization of Natural Zeolites, Sofia, Bulgaria. weblink: <http://www.zeolite2010.org/>

*July 21-22

AUSTRALIAN URANIUM CONFERENCE, Fremantle, Australia - Contact: weblink: <http://www.verticalevents.com.au>. Contact: Vertical Events, Suite 15/186 Hay Street, Subiaco, 6008 Western Australia; phone: +61 8 9388 2222

August 8-13

2010 AGU Joint Assembly, Iguassu Falls, Brazil. Contact: Meeting Department 2000 Florida Avenue, NW Washington D.C. U.S.A. 20009; phone: (+1-202-777-7329); email: ja-help@agu.org

August 14-18

Uranium 2010 Conference, Saskatchewan, Canada. weblink: http://Ed_Lam.com

*August 15-18

U2010 Uranium 2010, Saskatoon, Canada - Contact: weblink: <http://metsoc.org/u2010>

August 21-27

20th GENERAL MEETING OF THE INTERNATIONAL MINERALOGICAL ASSOCIATION. Budapest, Hungary. weblinks: <http://www.ima2010.hu/>, http://www.univie.ac.at/Mineralogie/IMA_2010/

*September 6-7

AUSTRALIAN MINING CONGRESS 2010, Sydney, Australia - Contact: weblink: <http://www.terrapinn.com/2010/amc/index.stm>

September 6-10

XXV International Mineral Processing Congress 2010, Brisbane, Australia. weblink: <http://www.impc2010.org/>

*September 19-22

National Association of Abandoned Mine Land Programs (NAAML) Conference, Scranton, Pa., United States - Contact: weblink: <http://NAAML2010.com> contact: M. Korb c/o PA DEP BAMR, 2 Public Square, 5th Floor Wilkes Barre Pa. U.S.A. 18711-0790; phone: (+1-570-826-5486)

*September 27- October 1

XV Peruvian Geological Congress, Cusco, Peru - Contact: tel. +511 4441180; e-mail: congreso@sgp.org.pe; weblink: <http://www.congresosgp.com/>

October 2-5

SEG 2010 — Society of Economic Geologists Conference, Keystone, Colorado, United States. weblink: <http://www.seg2010.org/>

October 31-November 3

GEOLOGICAL SOCIETY OF AMERICA: 122 ANNUAL MEETING, Denver, Colorado, 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; website: <http://www.geosociety.org/meetings/index.htm>

November 8-9

Zinc Processing '10 — 2nd International Symposium on the Processing of Zinc Ores and Concentrates, Cape Town, South Africa. weblink: <http://www.min-eng.com/zincprocessing10/index.html>

November 10-12

Process Mineralogy '10 — 1st International Symposium on Process Mineralogy, Cape Town, South Africa. weblink: <http://www.min-eng.com/processmineralogy10/index.html>

*November 13-14

Bio- & Hydrometallurgy '10 — 5th International Symposium on Bio- & Hydrometallurgy, Cape Town, South Africa - Contact: weblink: <http://www.min-eng.com/biohydromet10/index.html>

*December 9-18

MODULAR COURSE IN EXPLORATION GEOCHEMISTRY, Laurentian University, Sudbury, Ontario, Canada – Contact: Dr. Michael Leshner, Mineral Exploration Research Centre, Department of Earth Sciences, Laurentian University, Willet Green Miller Centre, 935 Ramsey Lake Road, Sudbury, ON, Canada, P3E 2C6; Tel. +1 (705) 675-1151 x2276; Fax +1 (705) 675-4898; E-mail: mlesher@laurentian.ca; website: <http://earthsciences.laurentian.ca> <<http://earthsciences.laurentian.ca/>>

December 13-17

American Geophysical Union — 2010 Fall Meeting, San Francisco, California, United States. Contact: AGU Meetings Department 2000 Florida Avenue, NW Washington DC USA 20009; phone: (202-777-7333); email: meetinginfo@agu.org; weblink: <http://www.agu.org/>

2011

*April 4-8

AMC 2011 — Asia Mining Congress 2011, Marina Bay Sands, Singapore - Contact: weblink: <http://www.terrapinn.com/2011/asiamining/index.stm>

*April 15-18

MINERAL RESOURCES FOR THE SOCIETY, SGA Student Chapter Conference with field trip, Division of Geology, Charles University, Prague, Czech Republic - Contact: <http://sga.cuni.cz/>, Katerina Schloglová, schloglo@gmail.com

May 9-10

SRCR '11 — Sustainability through Resource Conservation and Recycling '11, Falmouth, United Kingdom. weblink: <http://www.min-eng.com/srcr11/>

May 11-12

CCMI '11 — Climate Change and the Minerals Industry '11, Falmouth, United Kingdom. weblink: <http://www.min-eng.com/climate-change11/index.html>

*May 25-27

GAC-MAC-SEG-SGA Conference, University of Ottawa, Ottawa, Canada - Contact: Simon Hanmer (Chair), Geological Survey of Canada, shanmer@nrcan.gc.ca, tel. 613 992 4704; André Lalonde (Co-Chair), University of Ottawa, dean-scl@uottawa.ca; www.gacmacottawa2011.ca

*June 21-22

Computational Modelling '11 - Contact: weblink: <http://www.min-eng.com/modelling11/>

June 27-July 8

IUGG 2011 — XXV IUGG General Assembly: Earth on the Edge: Science for a Sustainable Planet, Melbourne, Australia. Organizer: International Union of Geodesy and Geophysics (IUGG). weblink: <http://www.iugg2011.com/>

July 20-27

INQUA — XXVIII Congress of the International Union for Quaternary Research, Bern, Switzerland. weblink: <http://www.inqua.tcd.ie/>

*September 6-9

AIMEX06, Sydney, New South Wales, Australia - Contact: weblink: <http://www.aimex.reedexhibitions.com.au/>

September 27-30

11th SGA Biennial Meeting, Antofagasta, Chile. Contact: Av. Angamos 0610, Antofagasta, Chile, Tel. +56 (55) 355967, Fax +56 (55) 355977; weblinks: www.e-sga.org, www.ucn.cl; e-mail: edcampos@ucn.cl

Obituary
Dr. Ricardo Davis Presnell (1958–2010)

Karen Duttweiler Kelley (SGA Council member) USGS Denver, kdkelley@usgs.gov

Ricardo Presnell, 51, Chief Geologist for Underworld Resources Inc. and Full Metal Minerals Ltd., died in an avalanche on Wednesday, January 27, 2010 while backcountry skiing near Salt Lake City, Utah.

Dr. Ricardo Presnell was a world-renowned Economic Geologist with over twenty-five years of experience in exploration. In 1981 he received a B.A. in Geology from Middlebury College in Vermont with a Senior Thesis on the metamorphic petrology of marble, anorthosite and amphibolite near Gore Mtn., New York. From there he spent six months with Sohio Petroleum in Denver before attending the University of Michigan. In 1983 he received a M.S. in structural geology from the University of Michigan with a thesis on 'A Structural Model for the Sevier Desert and Environs, Utah'. He then worked for Sohio Petroleum from 1983-1986 as a structural geologist in the Overthrust Belt of the western United States.

In 1986 he joined Kennecott Exploration as an exploration geologist responsible for drilling out the Barney's Canyon Gold deposit near the world-class Bingham porphyry Cu-Mo-Au deposit. Kennecott subsequently funded his PhD at the University of Utah which he completed in 1992. From 1992 to 1994 he searched for Cu-Mo porphyries in the Southwest US and Northern Mexico before working on porphyry and Au exploration in Central America. In 1996 he became responsible for Au and Cu deposit area selection in Alaska and the Yukon while based in Anchorage, Alaska. From 1999 to 2006

he was a Principal geologist in Kennecott's New Opportunities Group based in Salt Lake City with a focus on area selection for Cu and U. From 2006 to 2008 he was a Principal Geologist with Rio Tinto's Project Generation Group responsible for worldwide area selection for copper.

In 2009, Ricardo joined Full Metal Minerals and Underworld Resources as Chief Geologist. With Underworld, he was part of the team that discovered the million ounce Golden Saddle deposit at the White Gold Project. During his career, Ricardo worked throughout the globe in the search for world-class base and precious metal deposits.

He was a very active Council member for the Society for Geology Applied to Mineral Deposits (SGA) where he was elected in 2008. He was also Council member of the

Society of Economic Geologists (SEG), and an Associate Editor for Geosphere. He published a variety of papers and abstracts on Carlin-type gold deposits, the structural control of porphyries, and on the tectonics and metallogeny of North America.

Ricardo's passing is a loss not only to his family and many friends but also to the mineral exploration community. He will not be forgotten.

Underworld Resources, Inc. and Full Metal Minerals Ltd., together with Ricardo's wife Caroline have established a scholarship fund in Ricardo's memory at the University of Utah for Minorities who are studying sciences. Friends of Ricardo can send donations to: 'The Dr. Ricardo Davis Presnell Memorial Scholarship Fund' at Suite 1500 - 409 Granville Street, Vancouver B.C. Canada, V6C 1T2.



>>> page 20 *Forthcoming events*

October 9-12

GEOLOGICAL SOCIETY OF AMERICA: 123rd Annual Meeting, Minneapolis, Minnesota, USA. 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, <http://www.geosociety.org/meetings/index.htm>

2012

August 5-15

34th International Geological Congress, Bris-

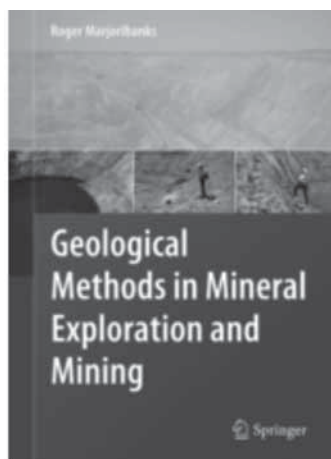
bane, Queensland, Australia. Contact: phone: (+61 62499556); weblink: <http://www.ga.gov.au/igc2012>

December 14-18

American Geophysical Union — 2012 Fall Meeting, San Francisco, California, United States. Contact: AGU Meetings Department 2000 Florida Avenue, NW Washington DC USA 20009; phone: (202-777-7333); email: meetinginfo@agu.org; weblink: <http://www.agu.org/>



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R. Marjoribanks, Industry Consultant, Perth, Australia
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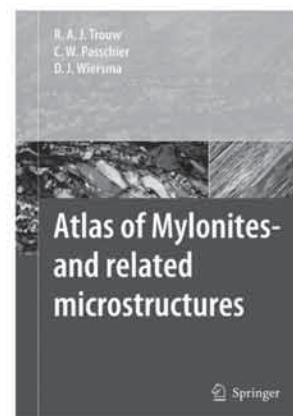
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Society for Geology Applied to Mineral Deposits (www.e-sga.org)

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I would like to become a member of the **Society for Geology Applied to Mineral Deposits** and to receive my personal copy of **Mineralium Deposita**. Membership fees will be due after acceptance of the membership application by the SGA Council.

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11th Biennial Meeting

Let's Talk Ore Deposits

26-29th September 2011

Antofagasta, Chile

Convenors: Eduardo Campos and M. Soledad Bembow



Hosted by:
Universidad Católica del Norte

ANTOFAGASTA, located in the Atacama desert with a population of over 300.000 inhabitants, is the largest Chilean city north of Santiago de Chile. Historically, it has been the main gate to the richest mining region of South America.

PROGRAM

The main technical program will be held over four days from Monday, September 26th to Thursday, 29th September, 2011, with the following daily structure:

- Monday, 26th and Tuesday, 27th September: Morning plenary sessions, afternoon concurrent technical sessions.
- Wednesday, 28th and Thursday, 29th September: Concurrent technical sessions.

SHORT COURSES AND WORKSHOPS

The meeting will offer a wide variety of short courses and workshops before and after the main conference. Those interested in offering short courses or workshops, please feel free to contact the organizing committee.



CONFERENCE VENUE

The conference will be held at the Enjoy Casino and Resort, about 500 m south of the Universidad Católica del Norte.



PROVISIONAL SESSION THEMES INCLUDE THE FOLLOWING:

- Large Scale Controls on Ore Genesis
- Dating of Ore Deposits
- Porphyry Systems and related mineralization styles
- IOCG and Magnetite-Apatite Deposits
- Hydrothermal Processes and the Genesis of Ore Deposits
- Orogenic Gold Deposits
- Mineralization Associated with Mafic and Ultramafic Rocks
- Sedimentary- and Volcanic-hosted Ore Deposits
- Supergene Alteration and Modification of Primary Ores
- New Developments in Cordilleran Evolution and Metallogeny
- Ore Deposits in South American Shields
- New Discoveries in Latin America
- Lithium, Salars and Industrial Mineral Deposits
- Energy Resources
- Geometallurgy
- Mining and Related Environmental Issues



Let's Talk Ore Deposits

26 -29th September 2011

Antofagasta, Chile



Hosted by:
Universidad Católica del Norte

The Atacama Desert in northern Chile hosts one of the world's largest concentrations of ore deposits. Porphyry copper, magnetite-apatite and IOCG systems, manto-type copper deposit, Au-Ag epithermal systems and large supergene copper deposits coexist in the same area with large salars, geyser fields and one of the world's most active volcanic belts, all less than 300 km from Antofagasta.



PROVISIONAL LIST OF FIELD TRIPS

- Porphyry Copper Deposits, Central Chile
- Copper Deposits, Calama Area
- Epithermal Deposits, La Serena Area
- Porphyry Copper and Manto-type Copper Deposits, Antofagasta Area
- Supergene Copper Deposits, Antofagasta Area
- Epithermal Deposits, Antofagasta Area
- Active Volcanoes and Geothermal Fields
- Salar Deposits
- IOCG and Magnetite-Apatite Deposits, Copiapo Area
- Porphyry Copper Deposits in Northern Argentina
- Ore Deposits in Southern Peru
- Bolivia to Northern Chile: a Metallogenic Transect

Other field trips to ore deposits in Brazil and southern Peru are also being considered.

For further information please contact the Organizing Committee at:

WWW.SGA2011.UCN.CL, SGA2011@ucn.cl
Av. Angamos 0610, Antofagasta, Chile.
Tel. 56 (55) 355967, Fax 56 (55) 355977

IMPORTANT DATES

• Second circular and call for papers	November 30 th , 2010
Registration	
• Registration opens	January 15 th , 2011
• Early registration closes	May 27 th , 2011
• Payment due from accepted authors	May 27 th , 2011
• Field trip registration	May 27 th , 2011
Conference paper	
• Open submission of papers	January 28 th 2011
• Paper submissions deadline	March 7 th 2011
• Acceptance of papers	May 1 st , 2011
• Submission of final papers	May 27 th , 2011
Students	
• Student application for support	March 7 th , 2011
• Notice of student grant	May 15 th , 2011



TRAVELLING TO ANTOFAGASTA

Antofagasta is easily reached via Santiago de Chile and connecting flights with Europe, America and Australasia. Alternative means include bus from nearby major cities.

ACCOMMODATION AND RESTAURANTS

Antofagasta offers a wide variety of lodging from luxury first class hotels to student accommodation. It also hosts a wide range of catering possibilities including local and international restaurants, and a vivid nightlife.

TOURISM

Antofagasta is the gateway to the Atacama desert and its fascinating attractions, including San Pedro de Atacama, El Tatio geysers, the salars, and several astonishing national parks, a large coastline and high peaks. Bolivia, Argentina and Southern Peru are within easy reach.

For visitors information see: <http://www.welcomechile.com/antofagasta>
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