



SEG
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Education and Training Curriculum Course Catalog 2014

- **Mentorship**
- **Education**
- **Opportunity**
- **Exploration**
- **Discovery**



SOCIETY OF ECONOMIC GEOLOGISTS



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Welcome to the SEG Education and Training Curriculum!

The Education and Training Committee was established in January 2012 to develop comprehensive curriculum as an improved service to professionals, students, and employers with the desire to expand and upgrade their skills. The curriculum now includes relevant suite of workshops, short courses and field trips addressing the following categories: Basic Field Skills, Exploration and Mine Technical Methods, Ore Deposits and Metallogeny, and Management. The Committee's medium term goal is to offer a core component of this curriculum on a predictable basis to facilitate attendance planning.

As mentioned in this brochure, the 2014 Curriculum currently consists of **thirteen** short courses, **four** workshops, and **eleven** field trips, listed chronologically. These events will be hosted at SEG headquarters as well as various conferences and field sites around the world. Five short courses and seven field trips this year are associated with the SEG 2014 Conference in Keystone, Colorado in September. At least two additional field trips have been proposed for the 2014 Peruvian Geological Congress in October. This brochure is a living document, and details will be added for courses to be held in the second half of the year as information becomes available. Please regularly consult the SEG Website for the latest update of the brochure. Individual course announcements will also be released in the *SEG Newsletter* as usual.

The committee is also keen to get your feedback. Please pass on comments and suggestions to our Education and Training Curriculum coordinator, Elizabeth Holley (elizabethholley@segweb.org).

See you at one of these events!

François Robert

President-Elect, Education and Training Committee Chair



Contents

Preliminary 2014 Education and Training Curriculum 4

Short Course on the Geology of Gold Deposits..... 5

**SEG/PDAC — Exploration in Deeply Weathered Terrains:
Basic to Advanced Concepts and Pragmatic Techniques 6**

**SEG Foundation Student Field Trip No. 12
Major Copper-Molybdenum Porphyry Systems, Southwestern USA 7**

SEG/CSM — Porphyry Copper Deposits: 2-Day Short Course 8

SEG — Key Practical Methods in Mineral Exploration 9

SEG — Sedimentary Rock-Hosted Copper Deposits of the Central African Copperbelt, Brazil 10

UNESCO-SEG-SGA — XXXII Curso Latinoamericano de Metalogenia 11

SEG — Sedimentary Rock-Hosted Copper Deposits of the Central African Copperbelt, Africa..... 12

14th Quadrennial International Association on the Genesis of Ore Deposits Symposium 13

**SEG Foundation Student Field Trip No. 13
Archean Base and Precious Metal Deposits, Southern Abitibi Greenstone Belt, Canada 14**

SEG 2014 Conference — Building Exploration Capability for the 21st Century, Keystone, Colorado.... 15–21





Preliminary 2014 Education and Training Curriculum

The following is a tentative list of courses and field trips scheduled for this year. SEG reserves the right to cancel courses or modify speakers, topics, and locations.

Official registration information will be available three months prior to the courses.

Visit segweb.org/events for the latest updates on courses and events!

Date	Venue	Course	Presenters
Feb 1–2, 2014	Indaba; University of Witwatersrand	Geology of Gold Deposits- POSTPONED	Hartwig Frimmel, Richard Goldfarb, Brian Rusk, Stuart Simmons
Feb 28–March 1, 2014	PDAC	Exploration in Deeply Weathered Terrains	Simon Bolster
March 9–16, 2014	Southwestern USA	*SEGF Student-Dedicated Field Trip: Major Copper-Molybdenum Porphyry Systems	Bill Chávez, Erich Petersen
April 10–11, 2014	Denver, Colorado	CSM-SEG Short Course: Porphyry Copper Deposits	Thomas Bissig, Farhad Bouzari
May 12–17, 2014	Denver and Cripple Creek, Colorado	*Key Practical Methods in Mineral Exploration	Odie Christensen et al.
May 15–16, 2014	Simexmin, Ouro Preto, Brazil	Sedimentary Cu Deposits of the Central African Copperbelt	Murray Hitzman
May 19–22, 2014	Quito, Ecuador	UNESCO-SEG-SGA: Northern Andean Metallogeny	Massimo Chiaradia, Lluís Fontboté, Jeff Hedenquist, Richard Spikings
Aug 17, 2014	Roy Miller Symposium, Namibia	Sedimentary Cu Deposits of the Central African Copperbelt	Murray Hitzman
Aug 19–22, 2014	IAGOD, Kunming China	Classes of Mineral Deposits & Their Exploration Criteria	Rich Goldfarb et al.
Sept 3–11, 2014	Abitibi	*SEGF Student-Dedicated Field Trip	Howard Poulsen, Benoît Dubé, Patrick Mercier-Langevin
Sept 27–Oct 2, 2014	Pre & Post Conference Keystone, Colorado	Short Courses at SEG 2014 Conference	See www.seg2014.org
Sept 21–Oct 5, 2014	Pre & Post Conference Keystone, Colorado	*Field Courses at SEG 2014 Conference	See www.seg2014.org
Sept 29–Oct 3, 2014	Marrakesh, Morocco	SGA-SEG-UNESCO-IUGS African Metallogeny	TBD (2 sessions: Mining in Africa, African Metallogeny)
Oct. 10–11, 2014	Peruvian Geological Congress: Lima, Peru	Structural Geology of Gold Deposits	David Rhys
Trip dates TBD; (pre-Congress Oct. 12–15, 2014)	Peruvian Geological Congress: Southern Peru	*Epithermal Ore Deposits of Southern Peru	Valery Garcia, Jeff Hedenquist
Oct. 7–12, 2014	Peruvian Geological Congress: Southern Peru	*Porphyry Ore Deposits of Southern Peru	Bill Chávez, José Arce, Walter Tejada
Oct. 9–10, 2014,	Denver, Colorado	CSM-SEG Short Course Orogenic Gold	TBD
Oct 17–18, 2014	GSA Annual Meeting, Vancouver, BC, Canada	Structural Geology of Gold Deposits	SRK
November 2014, exact dates TBD	Southwestern USA	*Field Methods in Economic Geology: Southwest USA	Bill Chávez, Erich Petersen
December 2–5, 2014	Denver, Colorado	Senior Exploration Management	WMS

*Course includes a field trip

Short Course on the Geology of Gold Deposits

Dates: February 1–2, 2014, immediately prior to Mining Indaba
 Location: University of the Witwatersrand, Johannesburg, South Africa



COURSE DESCRIPTION

SEG is again offering its highly successful gold short course at the University of the Witwatersrand, Johannesburg on February 1–2, 2014, the weekend immediately prior to the Mining Indaba meeting. The course will focus on the distribution, geology, important characteristics (geochemistry, geophysics, structure, alteration, mineralogy), genesis, and exploration criteria of the most important gold deposit types. Industry geologists, as well as graduate and upper level undergraduate students, will find the course useful. Deposit examples include material from Africa, as well as throughout the world. This course filled up quickly in Cape Town in 2013—We recommend registering early for the 2014 event!

SHORT COURSE REGISTRATION FEES

Registration fees:

SEG Members (US\$995), Non-Members (US\$1095),
 SEG Students (US\$445), Non-Member Students (US\$495)

Maximum number of students allowed —
 20% of registrants

Register at www.segweb.org/events#14RGOLD

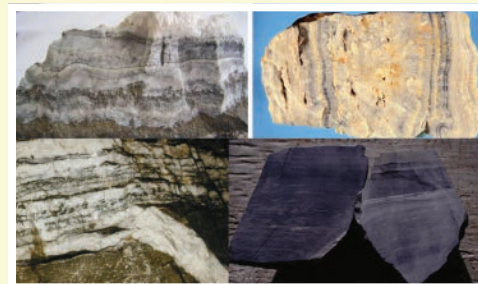
INTERNATIONALLY RECOGNIZED INSTRUCTORS



Hartwig Frimmel is a professor of geology at the University of Würzburg (Germany) and an honorary research associate of the University of Cape Town, where he spent 15 years as lecturer and, eventually, professor. His main research fields include the interplay between tectonics, paleoclimate, ocean chemistry, and ore mineralization, especially in Precambrian times, as well as various aspects of economic geology. More than 20 years of experience with the Witwatersrand goldfields earned him international recognition as leading expert on this mode of mineralization. He has over 140 research papers and book contributions to his credit with over 1,000 citations.



Richard J. Goldfarb is a senior research geologist with the Minerals Program of the US Geological Survey, where he has been employed for more than 22 years. His major expertise is in the area of the geochemistry and geology of ore deposits with emphasis on Phanerozoic orogenic gold. Much of his earlier career work was concentrated on the Tertiary orogenic gold deposits of southern Alaska. Results from this work were used to develop ore genesis



models for giant gold deposits elsewhere in Alaska and in other parts of the North American Cordillera. In recent years, Rick has conducted detailed studies on the understanding of the distribution of orogenic gold deposits through space and time, compiling the most comprehensive global description of their distribution and evaluating the controlling tectonic/geologic features. He has senior-authored and co-authored more than 195 refereed publications in economic geology.

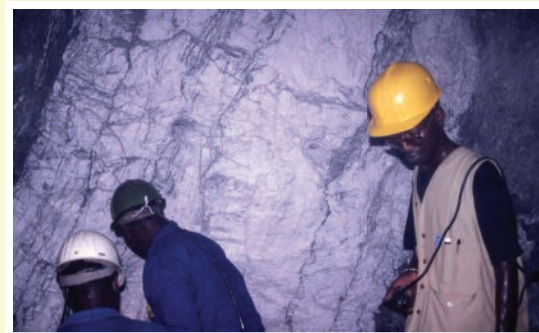


Brian Rusk is a consultant and research geoscientist at Western Washington University. He combines both field and laboratory investigations of hydrothermal ore deposits and specializes in the application of LA-ICP-MS to mineral and fluid chemistry in hydrothermal environments. He received his PhD from the University of Oregon in 2003 and extensive experience working in porphyry-Cu and IOCG ore deposits.

For his contributions Brian has received both the Brian Skinner award and the Waldemar Lindgren awards from the Society of Economic Geologists.



Stuart F. Simmons is a research geoscientist at EGI-University of Utah and a consulting geoscientist, with >30 years of research experience in hydrothermal processes, epithermal mineralization, and geothermal resources. He has a PhD in economic geology (University of Minnesota), and much of his professional career was spent in New Zealand, at the Geothermal Institute, University of Auckland. As a consultant, he serves clients around the Pacific rim in the exploration and development of gold-silver and geothermal resources (website: www.hotsolutions.co.nz).



Please note that SEG reserves the right to cancel this event should minimum attendance numbers not be met by January 6, 2014

Exploration in Deeply Weathered Terrains: Basic to Advanced Concepts and Pragmatic Techniques



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February 28, 2014 - 8:30 am–5:00 pm

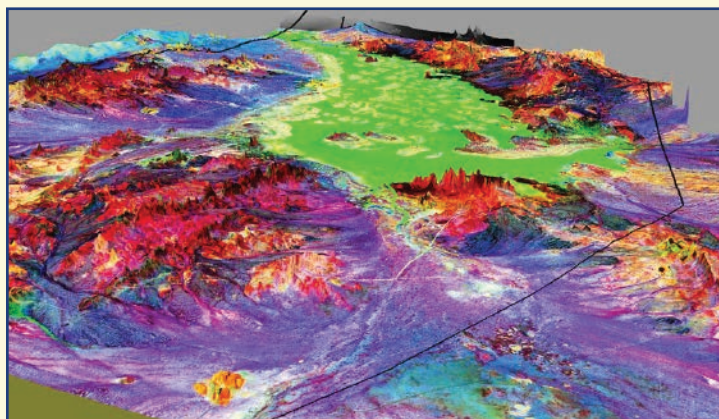
March 1, 2014 - 8:30 am–5:00 pm

Organizer: Society of Economic Geologists



2014

COURSE DESCRIPTION: Effective mineral exploration in regolith dominated terrains, where bedrock can be deeply weathered, masked beneath soil, lateritic weathering profiles or transported overburden requires different techniques and approaches compared to, for example, exploration in mountainous terrain or the tundra. Geologists and exploration managers frequently face considerable challenges when they explore regolith dominated terrains, especially if they were trained in temperate areas of the world. Frequently asked questions are: What should we sample? What depth should we sample? What is the optimum sample density? How do we map the geology and regolith? How do we interpret the geochemistry? What is anomalous? What remote sensing or drilling techniques should we use?



Simon Bolster

Over the last 30 years a considerable amount of research has been completed by CSIRO/CRC LEME in Australia to document, study and understand commonly encountered regolith exploration issues. Contemporaneously there have been advances within the exploration industry to tackle the regolith factor resulting in pragmatic techniques and systems being developed.



Ravi Anand

The short course is intended for exploration geologists, geochemists and managers. It will involve a combination of lectures and practical sessions by highly renowned and respected industry practitioners and researchers with combined experience in excess of 90 years. The course is intended to introduce and advance ideas rarely taught elsewhere so that attendees can leave with fresh ideas and skills that will assist in tackling problems often encountered when exploring regolith dominated terrains. The workshop will draw upon examples and data from Australia, Africa and South America backed up by a wealth of field experience and knowledge.



PRESENTERS: Simon Bolster, Gryphon Minerals Limited; and Ravi Anand, CSIRO

COURSE FEE: (includes course material, lunch and refreshments)

Early Rate (Feb. 7, 2014)		Regular Rate (Feb. 8–21, 2014)		
Member	Non-member	Member	Non-member	Student Rate
\$699*	\$799	\$899*	\$999	\$359

This two-day course will be held prior to the PDAC 2014 International Convention, March 2–5, 2014. Registration is open! **All SEG members must fill out a special registration form** to receive the member rate for this course. However, please note that PDAC meeting registration fees for SEG members will be processed at the non-member rate. **Early Registration Deadline: Friday, Feb. 7, 2014.**

*To qualify for this course rate, you must be a member of PDAC or SEG

For SEG members to receive the discounted course registration rate, please download the registration form at www.segweb.org/pdf/events/2014/14PDAC-SEG-Form.pdf. Your SEG Member ID is required.

SEG Foundation Student Field Trip No. 12

MAJOR COPPER-MOLYBDENUM PORPHYRY SYSTEMS, SOUTHWESTERN USA

March 9 – 16, 2014

Leaders: Dr. William X. Chávez, Jr., New Mexico Institute of Mining and Technology
Dr. Erich U. Petersen, University of Utah

This is No. 12 in the series of SEG Foundation-sponsored student field trips. This trip will examine several economically-significant Co-Mo porphyry systems located in the southwestern United States. Emphasis will be placed on recognition of the porphyry and skarn mineral assemblages, geochemical signatures and hydrothermal processes characteristic of this deposit type. Additionally, small-tonnage, high-grade breccia systems will be placed within the context of large-tonnage, low-grade porphyry deposits. The trip includes examination of in-pit and surface exposures, and visit to a mill complex.

A chartered motor coach (the SEG “mobile classroom”) will be used for all travel, facilitating interaction among trip participants.

This field trip is open to all SEG student members actively enrolled at an accredited university. Participation is limited to 16 students. Eligible SEG student members should complete the Student Application Form to request SEG Foundation financial support. Selected participants will be notified by January 15th, 2014.

Additionally, up-to four professional mentors, who will share their industry perspectives and discuss career opportunities in economic geology, may participate on the trip. Interested SEG Members should email Borden Putnam, Chair, of the SEGF Student Field Trip Program, at: bputnam@mionecapital.com.

A detailed itinerary will be posted on the SEG website in the near future at: www.segweb.org/StudentFieldTripProgram. Please check frequently for updates.

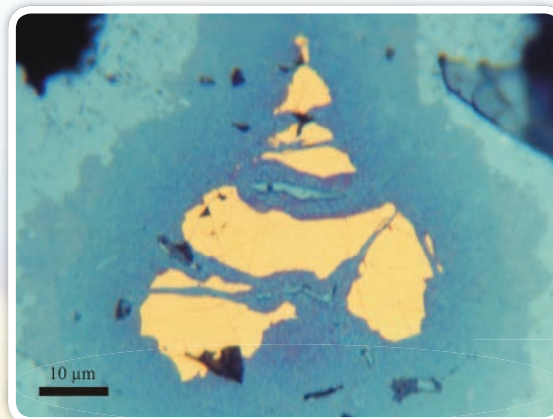
Please direct general inquiries to Vicky Sternicki at: studentprograms@segweb.org.

Application Submission Deadline: January 7, 2014



Porphyry Copper Deposits SEG – CSM 2-Day Short Course

SEG Course Center | Littleton, CO, USA
April 10-11, 2014



DESCRIPTION

Porphyry systems are a major source of Cu, Mo, Au and Ag and host widely distributed mineralization types, including porphyry deposits, skarn and superjacent high- and intermediate-sulfidation epithermal deposits. These deposits define linear belts (>100km) and commonly occur with cluster of stocks or dike bodies above a composite pluton with alteration footprint of over 5-10 km. Understanding metallogenic and ore-genetic processes, igneous rocks, alteration and mineralization footprints at various scales and factors influencing enrichment and preservation of these deposits is essential for discovery of new resources. This two-day course, aimed at exploration geologists and students, provides a practical overview of porphyry deposits emphasizing exploration targeting and includes hands-on exercises using maps and rock samples from selected alkalic and calc alkalic deposits.

PRESENTERS



■ **Dr. Thomas Bissig**

Research Associate at Mineral Deposit Research Unit, University of British Columbia, BC. Thomas has carried out extensive research on the regional scale metallogeny and deposit scale controls on mineralization of both epithermal and porphyry style deposits mostly from the Andes and the north American Cordillera of British Columbia.



■ **Dr. Farhad Bouzari**

Research Associate at Mineral Deposit Research Unit, University of British Columbia, BC, with more than 15 years research experience on porphyry and allied deposits and mineralogical and geochemical techniques in exploration targeting.

SEG-CSM Joint Courses

This course is offered in collaboration with the Professional Master in Mineral Exploration program at Colorado School of Mines. The cutting edge content in this flexible 30-credit degree program is designed to give professionals a competitive advantage in today's mineral exploration industry.

[econgeol.mines.edu/
Economic-Geology-Professional-Master](http://econgeol.mines.edu/Economic-Geology-Professional-Master)



REGISTRATION Online at segweb.org/events#14RPCD

Early Registration (through March 8, 2014)

Member: US\$595
Non-member: US\$695
Student Member: US\$295
Student Non-member: US\$345

Late Registration (after March 8, 2014)

Member: US\$695
Non-member: US\$795
Student Member: US\$345
Student Non-member: US\$395

Please note that SEG reserves the right to cancel this event should minimum attendance numbers not be met by March 8, 2014. For further information on cancellation policy, event photography, and dietary restrictions, visit www.segweb.org/t&c.



Key Practical Methods in Mineral Exploration

SEG Course Center | Littleton, CO, USA
May 12-17, 2014



DESCRIPTION

The course will be of particular value to early-career exploration geologists, advanced students, and managers coordinating multidisciplinary exploration teams. Five days of lectures and class activities culminate in a field day at the Cripple Creek and Victor gold mine. Curriculum includes reviews of important mineral deposit models, exploration program design, geochemical exploration techniques, geophysical exploration methods, drilling and sample recovery, recognition and interpretation of rock alteration, QA/QC protocols, and integrated interpretation of complementary geotechnical data sets. Case studies with a focus on “best work practices” will be highlighted. Instructors have extensive worldwide experience.

INSTRUCTORS

- **Odin Christensen (Coordinator)**
Hardrock Mineral Exploration
- **Craig Beasley**
NEOS GeoSolutions
- **Graham Closs**
Colorado School of Mines
- **Jeff Jaacks**
Geochemical Applications International
- **Dave Johnson**
Bronco Creek Exploration
- **Dave Maher**
Bronco Creek Exploration
- **Denis Rousseau**
Newmont Mining Corporation
- **Tommy Thompson**
University of Nevada, Reno
- **Lori Wickert**
Consultant - Remote Sensing
- **Geological Team**
Cripple Creek and Victor Gold Mine

OBJECTIVES

- Conceptual models of important mineral deposit types, with emphasis on features useful in exploration;
- Geochemical exploration methods from collection through laboratory analysis to interpretation of results;
- Selection, application, interpretation, and integration of various geophysical exploration techniques;
- Q/C and Q/A methods required to verify the integrity of geotechnical data;
- Drilling methods—why each is used; sample collection practices, environmental protection, and safety considerations;
- Brief introduction to logging of drill core and cuttings: observing, recording, communicating;
- Recognition and interpretation of rock alteration in mineral exploration;
- Integrated interpretation of multiple geotechnical data sets to focus exploration; organizing exploration information for effective interpretation and communication;
- Field trip to Cripple Creek and Victor gold mine, a giant epithermal gold deposit in an alkalic magmatic complex, with emphasis on practical skills used by exploration and mine geologists.

REGISTRATION Online at segweb.org/events#14RPMETHOD

Early Registration (through April 12, 2014)

Member: US\$1,950
Non-member: US\$2,100
Student Member: US\$950
Student Non-member: US\$1,050

Late Registration (after April 12, 2014)

Member: US\$2,100
Non-member: US\$2,300
Student Member: US\$1,050
Student Non-member: US\$1,150

Please note that SEG reserves the right to cancel this event should minimum attendance numbers not be met by April 12, 2014. SEG policies on dietary restrictions and event photography should be reviewed in advance at www.segweb.org/t&c.



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Sedimentary Rock-Hosted Copper Deposits of the Central African Copperbelt

Ouro Preto, Minas Gerais, Brazil
May 15–16, 2014



A post-meeting short course following SIMEXMIN 2014

DESCRIPTION

Sedimentary rock-hosted stratiform copper deposits comprise disseminated to veinlet Cu- and Cu-Fe-sulfides in siliciclastic or dolomitic sedimentary rocks. These deposits are common, although rarely as economically significant occurrences. Yet they currently account for ~23% of the world's Cu production and known reserves and are important sources of Co and Ag.

This two-day, post-meeting short course will focus on the geology and ore deposits of the Central African Copperbelt, the world's largest and highest-grade sedimentary copper province, with ~200 Mt of contained copper and the world's largest cobalt reserves. Deposit settings, mineralization controls, and alteration styles in the Zambian Copperbelt, Congolese Copperbelt, and in the North West Province of Zambia will be covered. In analyzing why the Central African Copperbelt is so rich relative to other sedimentary Cu districts, participants will learn exploration strategies for this deposit type.

PRESENTER



- **Dr. Murray W. Hitzman** – Charles F. Fogarty Professor of Economic Geology, Department of Geology & Geological Engineering, Colorado School of Mines, Golden, Colorado; 2005 President of SEG

Murray W. Hitzman worked in the petroleum and minerals industries from 1976 to 1993, receiving a Ph.D. in geology from Stanford in 1983, and was largely responsible for the Lisheen Zn-Pb-Ag deposit discovery in Ireland. Murray served as a policy analyst in both the U.S. Senate (1993–1994) and the White House Office of Science and Technology Policy (1994–1996). In 1996, he accepted a position at the Colorado School of Mines. Murray has been conducting research with students in the Central African Copperbelt for the past 15 years.

REGISTRATION Online at www.adimb.com.br/simexmin2014/programacao/cursos-pos-simposio/

Early Registration (through April 11, 2014)

R\$ 1000 – Professional & Academic associates of ADIMB
R\$ 1350 – Non-associate of ADIMB
R\$ 600 – Students

Late Registration (after April 11, 2014)

R\$ 1300 – Professional & Academic associates of ADIMB
R\$ 1700 – Non-associate of ADIMB
R\$ 800 – Students



XXXII Curso Latinoamericano de Metalogenia UNESCO-SEG-SGA

Quito, Ecuador, 19-22 (curso) y 23-26 (terreno) Mayo 2014

Metallogeny in an accreted continental margin: the Northern Andes ***Metalogenia en un margen continental acrecionado: los Andes septentrionales***

Instructores confirmados:

- Massimo Chiaradia
- Lluís Fontboté
- Jeff Hedenquist
- Richard Spikings

Terreno:

Curipamba (VHMS), Fruta del Norte (Au) y “Mirador” (Cu)

Plazas limitadas. Pre-inscripción y solicitud de becas: **10 de Febrero de 2014**

Contacto:

Ing Daniel Philco Carrión
PRESIDENTE de AIME

Email: presidencia@aimecuador.org

Telf: +59 3 2528087 / 59 3 997721678

Sitio web: <http://www.unige.ch/terre/latinometal>

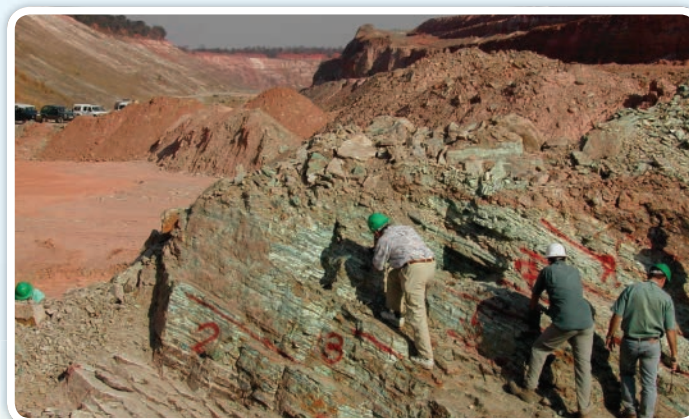


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Sedimentary Rock-Hosted Copper Deposits of the Central African Copperbelt

Windhoek, Namibia, Africa

August 17, 2014



A pre-meeting short course offered in conjunction with The Roy Miller Symposium

DESCRIPTION

Sedimentary rock-hosted stratiform copper deposits comprise disseminated to veinlet Cu- and Cu-Fe-sulfides in siliciclastic or dolomitic sedimentary rocks. These deposits are common, although rarely as economically significant occurrences. Yet they currently account for ~23% of the world's Cu production and known reserves and are important sources of Co and Ag.

This one-day, pre-meeting short course will focus on the geology and ore deposits of the Central African Copperbelt, the world's largest and highest-grade sedimentary copper province, with ~200 Mt of contained copper and the world's largest cobalt reserves. Deposit settings, mineralization controls, and alteration styles in the Zambian Copperbelt, Congolese Copperbelt, and in the North West Province of Zambia will be covered. In analyzing why the Central African Copperbelt is so rich relative to other sedimentary Cu districts, participants will learn exploration strategies for this deposit type.

PRESENTER



- Presenter: Dr. Murray W. Hitzman** – Charles F. Fogarty Professor of Economic Geology, Department of Geology & Geological Engineering, Colorado School of Mines, Golden, Colorado; 2005 President of SEG
 Murray W. Hitzman worked in the petroleum and minerals industries from 1976 to 1993, receiving a Ph.D. in geology from Stanford in 1983, and was largely responsible for the Lisheen Zn-Pb-Ag deposit discovery in Ireland. Murray served as a policy analyst in both the U.S. Senate (1993–1994) and the White House Office of Science and Technology Policy (1994–1996). In 1996, he accepted a position at the Colorado School of Mines. Murray has been conducting research with students in the Central African Copperbelt for the past 15 years.

REGISTRATION Online at www.geolsocnamibia.org

Registration Fees

Member: N\$1800

Student Member: N\$250

Non-member: N\$2800

Student Non-member: N\$400

14th Quadrennial International Association on the Genesis of Ore Deposits Symposium Mineral Resources: Discovery and Utilization

Yunan Convention Resort
Kunming, China
19-22 August 2014

Let's Brainstorm

● Plenary Talks and Thematic Sessions

Plenary talks:

Richard Sillitoe (UK)
Jingwen Mao (IAGOD president, China)
Richard Goldfarb (SEG)
Bernd Lehmann (SGA)
Nigel Cook (IAGOD)
Keiko Hattori (Canada)

Thematic sessions and keynotes:

- Mesozoic ore deposits Eurasia (N. Goryachev, W.D. Sun, G. Collins)
- Giant ore deposits (R.F. Pei, P. Laznicka)
- MVT, SEDEX and VMS deposits through geological history (D. Leach, T. Monecke)
- Black shale-hosted mineral deposits (S.Y. Jiang)
- Mineral deposits associated with mafic and ultramafic rocks (F. Pirajno, Y. Wang)
- IOCG deposits (L. Meinert, H. Hu)
- Critical metals in ore-forming systems: New perspectives (D. Sinclair, A. Williams-Jones, Y.L. Xie)
- Porphyry Cu (\pm Au, Mo) deposits (D. Cooke, B. Rusk)
- Gold deposits: epithermal, orogenic, and Carlin-like (J. Hedenquist, R.Z. Hu)
- Mineral deposit systems of active continental margins (R. Seltmann)
- Metallogensis in the Eastern Tethysian System (Z.Q. Hou, J. Richards)
- Geochronological constraints on ore-forming processes (C. McFarlane, D. Selby)
- Geochemistry of hydrothermal fluids (R. Bodnar, H.R. Fan)
- Mineral exploration and extraction (R. Feng, N. Reynolds)
- Uranium deposits (M. Cuney, Z.Y. Li)
- Ore mineralogy and geometallurgy (C. Ciobanu)
- Proterozoic and Paleozoic Igneous activities and metallogeny (J. Kolb, F.J. Nie)
- Traditional and non-traditional isotopes applied to ore deposits (D. Ishiyama, X.K. Zhu)
- Tectono-Magmatic Activity and Associated Metallogeny (W.M. Fan, G.X. Chi, L. Maslov, A. Ord)

● Pre-Conference Workshops and Short Courses

SEG workshop:

Classes of Minerals Deposits and their Exploration Criteria

Short course:

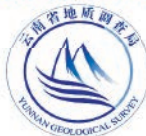
1. Significant Metal Deposits of the World: Today and Tomorrow
2. EXPLORE: new software for mineral assessment, prospecting, and exploration
3. LA-ICP-MS: Geochemistry, Geochronology, and Ore Genesis

● Post-Conference Field Trips

1. Beiya porphyry-skarn Au-Pb-Zn and Jinding Pb-Zn deposits, Yunnan Province
2. Polymetallic tin deposits and related intrusions, Gejiu, SW Yunnan Province
3. Huize MVT-type Pb-Zn deposit, Yunnan Province
4. Carlin-like gold deposits in western Guizhou Province
5. Ban Phuc PGE, Quy Xa iron, Cam Duong phosphorus and Sin Quyen IOCG deposits, Vietnam
6. Phapon Au, Phu Kham porphyry Cu-Au, and a major potash deposit, Laos
7. Black-shale hosted Cambrian Tianzhushan barite and Zhijin phosphorus deposits and Neoproterozoic Mn deposit in western Guizhou Province
8. Au deposits in Jiaodong area, Shandong Province
9. Dexing Cu-Au deposits, Yinshan epithermal Pb-Zn-Ag and Yongping deposit, Jiangxi Province

● Important Dates

Registration opens	15th Dec 2013
Early bird registration closes	15th May 2014
Submission of abstracts opens	15th Dec 2013
Abstract submissions deadline	15th May 2014
Student application for support closes	15th May 2014
Online registration closes	15th Jul 2014



Association of Mineral Deposits,
Geological Society of China

The China Geological Survey warmly invites you to the 14th IAGOD Symposium
For more information please visit the website: www.14iagod.org



PRELIMINARY ANNOUNCEMENT

SEG Foundation Student Field Trip No. 13

ARCHEAN BASE AND PRECIOUS METAL DEPOSITS, SOUTHERN ABITIBI GREENSTONE BELT, CANADA

September 3–11, 2014

DESCRIPTION

This is number 13 in the series of SEG Foundation-sponsored student field trips. This trip will focus on several economically significant base and precious metal deposits of the prolific southern extent of the Abitibi greenstone belt, Canada, from Timmins, Ontario, to Malartic, Quebec, and will provide an opportunity to gain firsthand knowledge of the regional and local geologic settings of select Archean gold and base metal deposits. The trip includes examination of underground and surface exposures, and a visit to a mill complex.

A chartered motor coach (the SEG “mobile classroom”) will be used for all travel, facilitating interaction among trip participants.

This field trip is open to all active SEG student members who are currently enrolled at an accredited university; participation is limited to 16 students. Eligible SEG student members should complete and submit the Student Application Form to request SEG Foundation financial support. Selected participants will be notified by June 30, 2014.

Additionally, up to four professional mentors, who will share their experience and industry perspectives and discuss career opportunities in economic geology, may participate on the trip. Interested individuals, whether SEG members or otherwise, should e-mail their current résumé to Borden Putnam, Chair, SEGF Student Field Trip Program, at bputnam@mionecapital.com.

A detailed itinerary and the Student Application Form will soon be posted on the SEG website at www.segweb.org/StudentFieldTripProgram. Please check frequently for updates. Please direct general inquiries to Vicky Sternicki at studentprograms@segweb.org.

LEADERS

- **Dr. Benoît Dubé**, Geological Survey of Canada
- **Dr. Patrick Mercier-Langevin**, Geological Survey of Canada with Mr. K. Howard Poulsen, Consulting Economic Geologist and Dr. Mark Hannington, University of Ottawa

Application Deadline: June 13, 2014



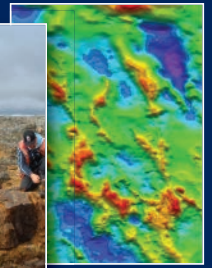
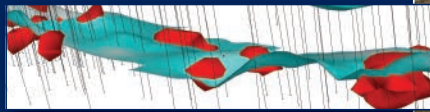
SEG
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SEG 2014 CONFERENCE

Building Exploration Capability for the 21st Century

September 27-30, 2014
Keystone, Colorado, USA

www.seg2014.org



REGISTRATION IS NOW OPEN!

www.seg2014.org/registration.html

PATRON



PREMIER



GOLD



SILVER



BRONZE



Dawn Zhou



The Mather Fund



SEG 2014 Conference Registration Fees

Early Registration (opens April 1)

(Ends August 1, 2014)

Members.....	US\$625
Non-members	US\$725
Student Members	US\$195
Student Non-members.....	US\$245

Late Registration

(August 2 – September 19, 2014)

Members.....	US\$725
Non-members	US\$825
Student Members	US\$245
Student Non-members.....	US\$295

On-site Registration

(On or after September 20, 2014)

Members.....	US\$825
Non-members	US\$925
Student Members	US\$295
Student Non-members.....	US\$345

PRELIMINARY TECHNICAL PROGRAM

INVITED KEYNOTES

Theme 1. Fundamental Advances in Economic Geology

- **Massimo Chiaradia***; coauthors U. Schaltegger and R. Spikings, Timescales of mineral systems – What have we learned in the past decade?
- **Robert Hazen***; coauthors X. Liu, R.T. Downs, J. Golden, E.S. Grew, G. Hystad, C. Estrada, and D.A. Sverjensky, Mineral evolution: Episodic metallogenesis, the supercontinent cycle, and the co-evolving geosphere and biosphere
- **Clinton Scott***; coauthors J.F. Slack and K.D. Kelley, The role of geobiology on the metallogenesis of sediment-hosted mineral deposits
- **Philipp Weis***; The physical hydrology of ore-forming magmatic-hydrothermal systems

Theme 2. Deposit Footprints

- **Ravi Anand***; coauthors M. Lintern, R. Noble, M. Aspandiar, C. MacFarlane, R. Hough, A. Stewart, S. Wakelin, B. Townley, and N. Reid, Geochemical dispersion through transported cover in regolith-dominated terrains – Towards understanding the process
- **David Cooke***; coauthors M. Baker, P. Hollings, G. Sweet, Z. Chang, L. Danyushevsky, S. Gilbert, T. Zhou, N. White, J.B. Gemmill, and S. Inglis, New advances in detecting the distal geochemical footprints of porphyry systems – Epidote mineral chemistry as a tool for vectoring and fertility assessments.
- **Anthony Williams-Jones***; coauthor A.A. Migdisov, Experimental constraints on the transport and deposition of metals in ore-forming hydrothermal systems
- **Ken Witherly***; Geophysical expressions of ore systems, not deposits – Our current understanding [Also presenting a post-conference workshop. See p. 4 for details]

Theme 3. Mineral System Science

- **Hartwig Frimmel***; A Giant Mesoarchean crustal gold-enrichment episode: Possible causes and consequences for exploration
- **T. Campbell McCuaig***; coauthor J.M.A. Hronsky, The mineral system concept: Key to exploration targeting under cover
- **John Miller**; coauthors T.C. McCuaig and M. Jessell, West Africa – Integrated mapping of a mineral system at subcontinental scale
- **John Muntean**; coauthor J. Cline, The Carlin gold system: Applications to exploration in Nevada and elsewhere

Theme 4. Innovations in Exploration Technology

- **Paul Agnew**, Micro-analytical innovation for diamonds exploration and beyond
- **Doug Bryman***; coauthors J. Bueno, K. Davis, V. Kaminski, Z. Liu, D. Oldenburg, M. Pilkington, and R. Sawyer, Muon Geotomography – Bringing new physics to ore-body imaging
- **Richard Hillis***; coauthors A. Baensch, J.S. Cleverley, D. Giles, S.W. Halley, B.D. Harris, S.M. Hill, P.A. Kanck, S.P. Soe, and G. Stewart, Coiled tubing drilling and real-time sensing – Enabling “prospecting drilling” in the 21st Century? [Also presenting a pre-conference workshop. See p. 3 for details]
- **Mark Jessell***; coauthors L. Aillères, E. de Kemp, M. Lindsay, F. Wellmann, M. Hillier, G. Laurent, T. Carmichael, R. Martin, Next generation 3D geological modelling and inversion

Theme 5. Exploration Management and Targeting

- **Randall Oliphant**, Executive Chairman, New Gold; What does the global exploration industry need to deliver in the 21st Century? – A shareholder’s perspective
- **Richard Schodde**; The global shift to undercover exploration – How fast? How effective?
- **John Sykes***; coauthor A. Trench, Finding the copper mine of the 21st Century: Conceptual exploration targeting for hypothetical copper reserves
- **Kaihui Yang**; Mineral exploration industry in China

Theme 6. Case Studies of 21st Century Exploration Success

- **Graham Brown***; Anglo American Exploration – Key ingredients to a decade of success
- **David Broughton**; coauthors D. Kirwin, W. Hayden, and R.E. Flood, The Ivanhoe Group – Two decades of global discoveries
- **Mark Bennett***; coauthors M. Gollan, M. Staubmann, and J. Bartlett, Motive, means, and opportunity: Key factors in the discovery of the Nova-Bollinger magmatic Ni-Cu sulfide deposits of Western Australia

Student Mentoring Forum

Saturday, September 27, 2014

SEG Awards Presentations

Monday, September 29, 2014 (Included in technical program)

SEG Industry Outlook Dinner

Monday, September 29, 2014

Dinner Guest Speaker: **Robert M. Friedland**, Executive Chairman and Founder, Ivanhoe Mines Ltd.

Talk Title — “Urbanization and industrialization: strategies for some of this century’s greatest human challenges presents opportunities for new exploration thinking and discoveries in Africa’s mineral fields.”

*Invited talks to be published as part of SEG Special Publication No. 18 (available at a discounted price when you register).

WORKSHOPS

The number of places available is limited for the following events. Preference will be given to SEG 2014 Conference registrants.

ADVANCED GIS TECHNIQUES – MAXIMIZING YOUR DATA

September 27, 2014
Pre-Conference Workshop

(Keystone Conference Center, Keystone, Colorado, USA)

Organizer:

- Willy Lynch (SEG 1993), Esri

Presenters:

- Willy Lynch (SEG 1993), Esri
- Mike Price, President, Natural Resources & Public Safety GIS Specialist

Description:

This one-day workshop will focus on intermediate to advanced GIS workflow solutions for mining and exploration. Specific topics will include data management, data analysis (2D & 3D), mobile GIS and online GIS.

The morning will concentrate on best practices for effective data management, visualization and analysis of geology, geochemistry, geophysical and drill data in 2D & 3D. Out-of-the-box solutions from Esri and a brief summary of key business partner solutions will be reviewed and demonstrated. The afternoon will review mobile GIS options (Esri ArcPad & ArcGIS for windows mobile, smart phones and tablets) and an introduction to online GIS.

Attendees are encouraged to bring their own hardware (laptops, tablets, smart phones) and GIS software/licenses (ArcGIS for Desktop with 3D analyst extension, ArcPad, ArcGIS for Windows Mobile, ArcGIS & Collector for smart phones and tablets) and can actively participate or just observe.

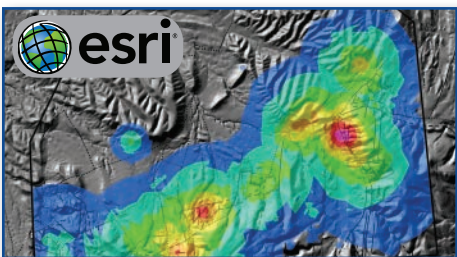
Attendee Maximum: 30

Early Registration:

Members (US\$395), Non-members (US\$495), Student Members (US\$195), Student Non-members (US\$245)

Late Registration:

Members (US\$495), Non-members (US\$595), Student Members (US\$245), Student Non-members (US\$295)



APPLICATION OF MULTI-ELEMENT GEOCHEMICAL DATA: EXPLORING DATASETS FOR BETTER TARGETING AND DOMAINING

September 27, 2014
Pre-Conference Workshop

(Keystone Conference Center, Keystone, Colorado, USA)

Organizer:

- Lynda Bloom, President, Analytical Solutions Ltd.

Presenters:

- Lynda Bloom, President, Analytical Solutions Ltd.
- Pim van Geffen, Senior Geochemist, Imdex Limited
- Gervais Perron, Director of Software, Mira Geoscience
- Peter Winterburn, ACME Industrial Research Chair in Exploration Geochemistry, UBC
- Chris Benn, Benn Consulting
- Juan Carlos Ordóñez, Exploration Geochemist, Hudbay Minerals
- Réjean Girard, Géologist and President, IOS Geoscientific Services

Description:

As we seek deeper buried ore deposits, any surface techniques are subject to the "truth test"—a drill hole. Drilling is costly and deep targets are easy to miss or expensive to evaluate. Maximizing the use of all available data is essential to optimizing drill hole placement and stretching budgets.

Since the 1990s, there has been an explosion of commercially available analytical options and geochemical packages for 40 to 60 elements. This provides an opportunity to use relatively inexpensive geochemical data to improve rock classification, vector to mineralization, or identify metallurgical domains.

The caveat is that geochemical data need to be well managed and data quality needs to be "fit for purpose." The course will emphasize case histories that demonstrate visualization techniques for multi-element data and the importance of understanding the risks associated with using inappropriate data or statistical methods.

Attendee Maximum: 40

Early Registration:

Members (US\$395), Non-members (US\$495), Student Members (US\$195), Student Non-members (US\$245)

Late Registration:

Members (US\$495), Non-members (US\$595), Student Members (US\$245), Student Non-members (US\$295)



FUTURE OF MINERAL EXPLORATION DRILLING & SAMPLING

September 27, 2014
Pre-Conference Workshop

(Keystone Conference Center, Keystone, Colorado, USA)

Presenters:

- James S. Cleverley (SEG 2002), Principal Geochemist at CSIRO & Deep Exploration Technologies CRC, Perth, W. Australia
- Richard Hillis, CEO, Deep Exploration Technologies CRC, Perth, W. Australia

Description:

This one-day workshop will provide exploration geologists and researchers with a background to the current challenges of undercover exploration and the new drilling and sampling technology being developed in the Deep Exploration Technologies Cooperative Research Centre (DET CRC) that will drive change in our exploration industry in the next 10 years. The workshop will provide a state-of-the-art synopsis of drilling for non-drillers followed by an exploration of three developing technology pillars: the drill rig, real-time downhole sensing and real-time top-of-hole sensing. The workshop will provide a mix of presentations, practical demonstrations and discussions led by geologists, engineers, geochemists and application specialists. We aim to demonstrate how geologists will be applying these new technologies in the future and how technology will be providing support to exploration targeting and decision making.

The DET CRC is an 8-year, \$115M, Australian research cooperative with partnerships between the mining industry, MET sector and research providers to develop new technology in minerals exploration drilling. The core purpose of the DET CRC is to develop transformational technologies

WORKSHOPS

for successful mineral exploration through deep, barren cover rocks to be utilized and commercialized by the mineral exploration industry.

Attendee Maximum: 40

Early Registration:

Members (US\$395), Non-members (US\$495), Student Members (US\$195), Student Non-members (US\$245)

Late Registration:

Members (US\$495), Non-members (US\$595), Student Members (US\$245), Student Non-members (US\$295)

EXPLORATION IN 2025: THE TOOLS AND TECHNIQUES TO EXPLORE UNDER COVER

October 1-2, 2014
Post-Conference Workshop

(Colorado School of Mines, Golden, Colorado, USA*)

Organizer:

- Ken E. Witherly (SEG 2008), Condor Consulting, Inc.

Presenters:

- Neil Williams (SEG 1982 FL), Hon. Professorial Fellow, Univ. of Wollongong
- John R. Holliday (SEG 2004), Holliday Geoscience
- Thomas Bissig (SEG 2002 F), MDRU, University of British Columbia
- Jon A. Woodhead (SEG 2012), Condor Consulting, Inc.
- Peter L. Kowalczyk (SEG 2011), Geoscience BC
- Dianne E. Mitchinson, Mira Geoscience
- James S. Cleverley (SEG 2002), Principal Geochemist at CSIRO

Student Coordinator:

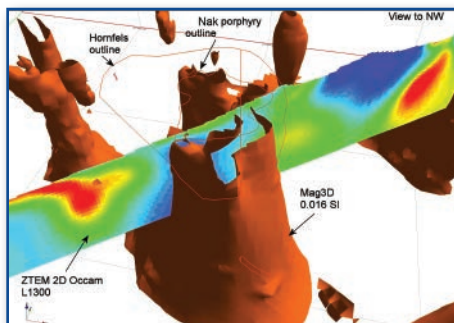
- Douglas T. (Ty) Conner (SEG 2013), Colorado School of Mines

Description:

Exploration continues to face challenges related to identifying and defining targets beneath cover. New strategies and tactics related to area selection, technology selection, target definition, and data collection, management, and interpretation are required to improve probability of success and help our industry meet future demands for metals.

The two-day workshop will focus on the challenges and approaches to exploring under cover on day one and then work on a practical exercise using data from the

*Shuttle from Keystone, Colorado, to Golden, Colorado



Quesnel Trough on day two. The workshop is designed to improve target selection and prioritization skills of exploration geoscientists and managers responsible for exploring through cover.

Attendee Maximum: 36

Early Registration:

Members (US\$595), Non-members (US\$695), Student Members (US\$295), Student Non-members (US\$345)

Late Registration:

Members (US\$695), Non-members (US\$795), Student Members (US\$345), Student Non-members (US\$395)

GETTING MORE FROM DRILL CORE – AUTOMATED, SPECTRAL-BASED MINERAL AND TEXTURE MAPPING

October 1-2, 2014
Post-Conference Workshop

(Keystone Conference Center, Keystone, Colorado, USA)

Organizer:

- Brigette A. Martini (SEG 2014), VP Business Development, Corescan Pty Ltd, USA

Presenters:

- Brigette A. Martini (SEG 2014), VP Business Development, Corescan Pty Ltd, USA
- Ronell Carey (SEG 1993), Spectral Geologist with Corescan Pty Ltd, Australia
- Pending - representatives from Leapfrog, aQuire, and exploration companies

Description:

The logging of drill core, chips and other geological samples is one of the most important aspects of mineral exploration and development. No single expenditure costs more (in both money and time) than drilling and no single piece of data is more important than fundamental rock data (mineralogy and texture). As such, advances in the accuracy, automation and consistency of logging (both mineralogical and textural) of drilled rock material are of prime

concern in today's mining industry. This workshop focuses on the newest, high resolution spectroscopic methods for obtaining consistent, accurate and objective mineralogy, geochemistry and texture of both drill core and chips. We'll discuss the current methodologies (including popular, portable, point-measurement systems) and their historical and existing application and then move on to discussion and demonstration of the newest generation of automated core imaging systems (combining reflectance spectroscopy, visual imagery and 3D laser profiling) as applied to contemporary exploration programs. Numerous deposit types and specific ore systems on several continents will be showcased. We'll delve deeply into the acquisition (preparation, scanning, analysis) and ultimate application, synthesis and cloud-based storage of these data including hands-on manipulation of real core imagery data via easy-to-use online software and database portals. Further modeling and synthesis of spectrally derived, quantitative mineral data will be demonstrated in familiar statistical and modeling software (e.g., Leapfrog, aQuire). While general datasets will be provided, all registered participants are encouraged to provide personal and/or company core samples at least two months prior to the class for scanning and analysis (included in class cost), thereby rendering class instruction and demonstrations more highly applicable to the attendees' current exploration programs.

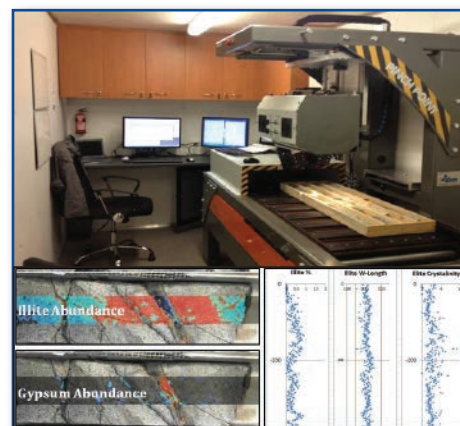
Attendee Maximum: 40

Early Registration:

Members (US\$595), Non-members (US\$695), Student Members (US\$295), Student Non-members (US\$345)

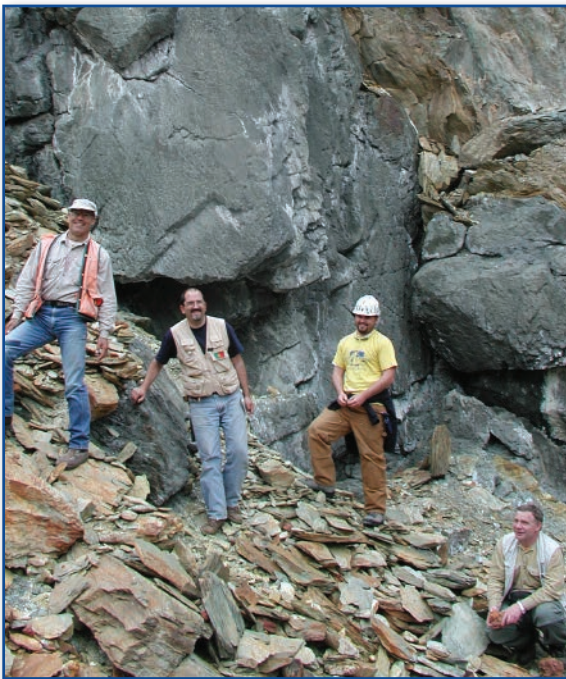
Late Registration:

Members (US\$695), Non-members (US\$795), Student Members (US\$345), Student Non-members (US\$395)



FIELD TRIPS

The number of places available is limited for the following events. Preference will be given to SEG 2014 Conference registrants.



Southwest USA

PORPHYRY AND SKARN SYSTEMS OF THE SOUTHWEST U.S.

September 21–26, 2014
Pre-Conference Field Trip

(Departs from Las Vegas, Nevada, USA
and ends in Tucson, Arizona, USA)

Field Trip Leaders:

- William X. Chávez, Jr. (SEG 1990 F), Professor of Geological Engineering, New Mexico Institute of Mining and Technology, USA
- Erich U. Petersen (SEG 1986 F), Professor, University of Utah, USA

Description:

Beginning in Phoenix, Arizona, this field-based course will examine the geologic settings and geochemical characteristics of large hydrothermal systems, with emphasis on porphyry, porphyry-related breccia “pipes,” and skarn-style ore deposits. Starting in northwest Arizona, participants will visit porphyry systems showing well-developed supergene profiles and deeper, K-silicate assemblages characteristic of well-developed hydrothermal alteration-mineralization. Exposures in the Globe-Miami District and those near San Manuel, Arizona, offer the opportunity to examine early alteration-related veining styles and vein paragenesis assemblages. Skarn-type

systems and their relationships to porphyry ores will be discussed at several ore deposits, allowing participants to compare and contrast porphyry and skarn geochemical features. Visits to key outcrops will reinforce discussions dealing with the importance of regional and local geologic settings for southwestern U.S. hydrothermal systems.

In-the-field and evening presentations will complement field observations and include discussions of the applications of activity and Eh-pH diagrams to exploration, mining, and geometallurgical considerations. As such, this course is designed for exploration and mining professionals who are involved with exploration and ore targeting; this course is also appropriate for graduate students and upper-division undergraduate students with interest in economic geology and the application of geochemistry to minerals exploration.

This course will be given in English and Spanish.

Attendee Maximum: 20

Early Registration:

Members (US\$1,295), Non-members (US\$1,395), Student Members (US\$645), Student Non-members (US\$695)

Late Registration:

Members (US\$1,395), Non-members (US\$1,495), Student Members (US\$695), Student Non-members (US\$745)

NON-FERROUS MINERALIZATION ASSOCIATED WITH THE WAWA-ABITIBI TERRANE AND DULUTH COMPLEX Cu-Ni-PGM DEPOSITS, NORTHEASTERN MINNESOTA

September 22–25, 2014
Pre-Conference Field Trip

(Field Trip departs from and returns to Duluth International Airport, MN, USA)

Field Trip Leaders:

- George Hudak (SEG 2011 F), Director, Minerals Division, NRRI, University of Minnesota, Duluth, MN, USA
- Dean Peterson, Senior Vice President – Exploration, Duluth Metals Limited, Duluth, MN, USA

Description:

After more than 100 years of iron mining, Minnesota is on the cusp of developing a new, non-ferrous mining industry. The world-class Duluth Complex mineral district ranks second in contained copper, third in contained nickel, and second in contained PGM (i.e., platinum, palladium, and gold) worldwide. Successful resource development has the potential to result in an entirely non-ferrous mining district that may be similar in scale to the region’s existing taconite mining and processing industry. Additionally, recent studies indicate that Minnesota’s Wawa-Abitibi Terrane may hold considerable potential for hosting additional non-ferrous and/or precious metals resources, including copper, zinc, and gold.

Attendee Maximum: 22

Early Registration:

Members (US\$895), Non-members (US\$995), Student Members (US\$445), Student Non-members (US\$495)

Late Registration:

Members (US\$995), Non-members (US\$1,095), Student Members (US\$495), Student Non-members (US\$545)



Anorthosite, MN

FIELD TRIPS

COLORADO PORPHYRY-MOLYBDENUM DEPOSITS AND LEADVILLE DISTRICT

September 25–27, 2014
Pre-Conference Field Trip

(Field Trip departs from and returns to Keystone Resort, Keystone, Colorado, USA*)



Climax

Field Trip Leaders:

- Ralph J. Stegen (SEG 1986), VP Exploration, Freeport-McMoRan, USA
- Tommy B. Thompson (SEG 1976 SF), Professor of Economic Geology, University of Nevada, Reno, USA

Field Trip Description:

From Keystone, Colorado, USA, visit the world-class porphyry Mo deposits at Climax and Henderson (Freeport-McMoRan Copper & Gold) and the carbonate-hosted Ag-Zn-Pb manto deposits at Leadville. These deposits have been the focus of leading research in porphyry Mo deposits and development of exploration methods. The Leadville district is noted for its long history of production, research on carbonate-hosted Ag-Zn-Pb-(Au) deposits, and the founding of the Guggenheim mining fortune, including the formation of ASARCO, Inc. The trip will include tours of the Climax and Henderson mines, with updates in geology of both, as well as numerous stops in the Leadville district.

Attendee Maximum: 28

Early Registration:

Members (US\$595), Non-members (US\$695), Student Members (US\$245), Student Non-members (US\$295)

Late Registration:

Members (US\$695), Non-members (US\$795), Student Members (US\$295), Student Non-members (US\$345)

*Two overnight stays in Keystone will be attendee's responsibility.

CRIPPLE CREEK & VICTOR GOLD MINE

September 26, 2014
Pre-Conference Field Trip

(Departs from and returns to Keystone, Colorado, USA)

Field Trip Leaders:

- Timothy R. Brown (SEG 2000), Exploration Manager, Cripple Creek & Victor Gold Mining Co., Colorado, USA
- Sergei A. Diakov (SEG 1993 F), Consultant, California, USA



Cripple Creek

Description:

From Keystone, visit the world's premier alkaline epithermal gold mine at Cripple Creek (Cripple Creek & Victor Mining Co.). The Cripple Creek diatreme complex has produced over 24 Moz gold, continues to produce approx. 250,000 oz Au per annum, and is not only a world-class gold district, but one of the defining examples of alkaline epithermal gold deposits. Field trip leaves from Keystone Resort at 7 am on September 26, returning the same evening. Registration does not include lodging.

Attendee Maximum: 50

Early Registration:

Members (US\$195), Non-members (US\$245), Student Members (US\$95), Student Non-members (US\$115)

Late Registration:

Members (US\$245), Non-members (US\$295), Student Members (US\$115), Student Non-members (US\$145)

THE VIBURNUM TREND: A WORLD-CLASS Pb-Zn-Cu MVT DISTRICT IN SE MISSOURI, USA

October 1–3, 2014
SEG 2014 Post-Conference Field Trip

(Field Trip departs from and returns to St. Louis Airport, Missouri, USA*)

Field Trip Leaders:

- Thomas G. Schott (SEG 1999 F), Senior Exploration Geologist, The Doe Run Company, Missouri, USA
- Anna A. Kutkiewicz (SEG 2013), The Doe Run Company, Missouri, USA
- Harrison J. Ingham (SEG 2013), The Doe Run Company, Missouri, USA
- Kyle Williams, The Doe Run Company, Missouri, USA

Description:

From Salem, Missouri, visit the world-class Viburnum Trend, which has been in production for more than 50 years and generates approximately 250,000 tons of lead concentrate per annum. The trip will include tours of the Casteel and RC West Fork mine and mill complexes with updates on geology. The trip will continue with a stop at the Buick Resource Recycling Division (BRRD), one of the world's largest single-site lead recycling facilities. BRRD processes more than 13.5 million lead-acid batteries per year along with various other lead scrap. The trip will conclude with tours of the Doe Run core logging facility and rotary and diamond drill rigs operating in the Viburnum Trend. Overnight stays in Salem, Missouri, are included.

Attendee Maximum: 16

Early Registration:

Members (US\$695), Non-members (US\$795), Student Members (US\$345), Student Non-members (US\$395)

Late Registration:

Members (US\$795), Non-members (US\$895), Student Members (US\$395), Student Non-members (US\$445)



Bornite, Casteel Mine

*Where applicable, transportation from Keystone, Colorado, USA, to St. Louis, Missouri, USA, to be arranged by participants. However, airport shuttle from St. Louis, Missouri, to Salem, Missouri, where field trip begins, is included in field trip cost.

FIELD TRIPS



Bingham Canyon

The second part of that day will be a trip to look at the mineral occurrences and alteration surrounding the unmined Stockton porphyry Cu system 17 km west of Bingham Canyon from an exploration perspective.

This course would benefit those wishing to view a developed Cu-Au-Mo porphyry system along with a sub-economic buried porphyry system (Stockton) from an exploration perspective.

Attendee Maximum: 20

Early Registration:

Members (US\$595),
Non-members (US\$695),
Student Members (US\$295),
Student Non-members (US\$345)

Late Registration:

Members (US\$695),
Non-members (US\$795),
Student Members (US\$345),
Student Non-members (\$395)

GOLD AND SILVER MINES OF THE SIERRA MADRE OCCIDENTAL, MEXICO

October 1–5, 2014
Post-Conference Field Trip

(Field Trip departs from and returns to Chihuahua, Mexico*)

Field Trip Leader:

- Guillermo Gastelum-Morales (SEG 2002), Northern Mexico Exploration Sub-Director for Fresnillo plc.

Description:

The field trip is focused on visiting gold and silver mines developed on high, intermediate, and low sulphidation epithermal deposits of the Sierra Madre Occidental metallogenic belt of northwestern Mexico. This part of the world has attracted much exploration investment due to its excellent potential and historic track record of precious metals discoveries turning into successful mine operations. Explorers looking for these types of deposits in Mexico or elsewhere are encouraged to attend.

UNCOVERING THE BINGHAM AND STOCKTON Cu-Mo-Au PORPHYRIES

October 1–2, 2014
Post-Conference Field Trip

(Departs from and returns to Salt Lake City, Utah, USA*)

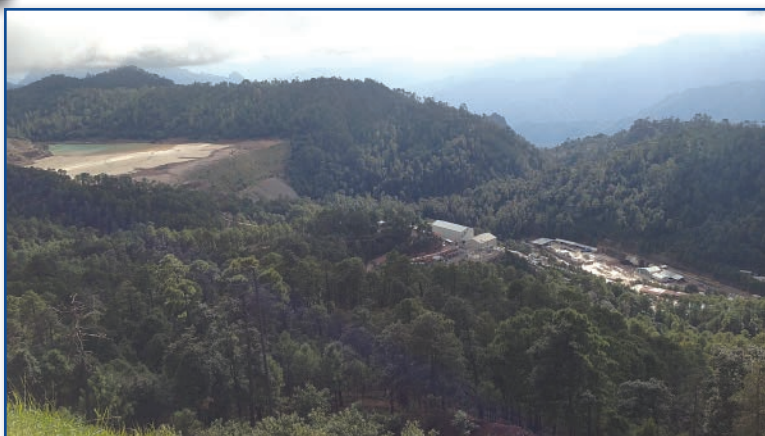
Field Trip Leaders:

- Kim E. Schroeder (SEG 1993), Senior Geologist, Bingham Canyon Mine, Rio Tinto
- Kenneth A. Krahulec (SEG 2002), Senior Economic Geologist, Utah Geological Survey
- Rudy Ganske, Senior Geologist, Rio Tinto Kennecott

Description:

This field trip will include a morning and early afternoon visit to the upper and lower portion of the Bingham Canyon mine and 2013 slide which filled the bottom of the pit. We will make 2 to 3 stops in the pit, followed by a presentation in the 3D room.

*Dinner planned for evening of October 2, 2014. Includes hotel nights on October 1–2.



Ciénega Mine



www.segweb.org

Schedule:

- Day 1: Travel from Keystone to Chihuahua
- Day 2: La India and Pinos Altos mines
- Day 3: Palmarejo mine and surroundings
- Day 4: Ciénega District
- Day 5: Travel from Ciénega to Chihuahua

Attendee Maximum: 15

Early Registration:

Members (\$US1,595), Non-members (US\$1,695), No student discounts

Late Registration:

Members (US\$1,695), Non-members (US\$1,795)

*All transportation from Keystone, Colorado, USA, to Chihuahua, Mexico, and back to be arranged by participants, as well as dinner upon arrival in Chihuahua.

Visit the SEG 2014 Conference website for workshop and field trip updates — www.seg2014.org



SEG
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