

# IAGOD

---

## NEWSLETTER

### 2002

THE INTERNATIONAL ASSOCIATION  
ON THE GENESIS OF ORE DEPOSITS



Geological Survey of Norway  
Trondheim

Published on the occasion of the 11<sup>th</sup> Quadrennial IAGOD Symposium and  
GEOCONGRESS 2002, 22<sup>nd</sup>-26<sup>th</sup> July Windhoek, Namibia

## **International Association on the Genesis of Ore Deposits (IAGOD)**

IAGOD is an international association of both individual and national members. The object of the IAGOD is to promote international cooperation in the study of the genesis of ore deposits and to further the growth of knowledge in this field. The IAGOD was established during the IGC in New Delhi, India, 1964. The Association continues to expand its international activities and membership.

IAGOD membership privileges include:

- Participation in an international association focussing on ore deposit studies.
- Preference on IAGOD symposia, workshops and meetings.
- Annual IAGOD Newsletter.
- Work in the IAGOD commissions and working groups.
- Reduced registration fees at IAGOD symposia.

Membership of the Association is open to applicants interested in genetic problems of ores if (1) he or she has graduated in earth sciences, chemistry or physics at a University, Technical University, or Mining Academy, (2) if he or she has at least three years of post-graduate experience in earth sciences, (3) if membership is recommended by two individual members of IAGOD, and (4) if he or she has published valuable results important for the study of the genesis of ore deposits. Applicants who are members of SEG or SGA need not submit a Sponsorship Form. The annual membership dues for individual IAGOD members are US \$ 10 plus bank charges.

*Inquiries concerning membership (including national groups and corporate membership) should be addressed to: Dr. R. Seltsmann, IAGOD Membership Secretary, Natural History Museum, Dept. Mineralogy, Cromwell Road, London SW7 5BD, UK, Phone: +44 207 942 5042, Fax: +44 207 942 5537, e-mail: rs@nhm.ac.uk*

**New IAGOD website (available Summer 2002):**

**<http://www.geology.cz/host/iagod.htm>**

The **IAGOD Newsletter** is an informative bulletin of IAGOD, is published by the IAGOD Secretary General at the Geological Survey of Norway annually and sent free to all IAGOD members. The IAGOD Newsletter contains the reports of the officers of IAGOD commissions and working groups. The IAGOD Newsletter is open to all IAGOD members. As well as the various columns in the newsletter in which IAGOD activities are reviewed, the newsletter can also contain previously unpublished results may be published here in the form of short abstracts (maximum 1 page of A4 format). All IAGOD members are also encouraged to send to contributions for the IAGOD newsletter 2003 to the editor. The deadline for the next newsletter is 15<sup>th</sup> April 2003.

Editor: Nigel John Cook, IAGOD Secretary General  
Geological Survey of Norway, N-7491 Trondheim, Norway  
Phone: (+47) 73 90 42 03 Fax: (+47) 73 92 16 20  
e-mail Nigel.Cook@ngu.no

Pre-press: Jaroslav Aichler, IAGOD Associate Secretary general  
Czech Geological Survey, 790 01 Jeseník, Czech Republic

Printing: Zubalík Printing Office  
793 26 Vrbno pod Pradědem, Czech Republic

### **IMPORTANT NOTICE!**

Please inform the IAGOD Secretary General and/or Membership Secretary of any errors or changes in addresses / phone numbers / e-mail addresses

**THANK YOU!**

## Editorial

At the time of writing this editorial, I, like many of the readers of this newsletter, are looking very much forward to the forthcoming 11<sup>th</sup> Quadrennial IAGOD Symposium and Geocongress in Windhoek, Namibia, 22<sup>nd</sup>-26<sup>th</sup> July. We in IAGOD Council extend a warm thank you to the local organising committee and their host organisations (Geological Society of Namibia, Geological Survey of Namibia, Council for geoscience and the Geological Society of South Africa) for much hard work over the past months to make this conference an excellent one.

During 2001, several IAGOD working groups convened sessions at the Joint 6th Biennial SGA-SEG Annual Meeting 'Mineral Deposits at the Beginning of the 21st Century', August 26-29<sup>th</sup> 2001 in Krakow, Poland. IAGOD also co-sponsored XVI ECROFI in Porto, Portugal, 2<sup>nd</sup>-4<sup>th</sup> May 2001.

Several national groups (NG) and working groups (WG) were involved in organization of scientific conferences and field workshops during 2001. WGTT participated and co-sponsored the IGCP-373 field conference "Paleozoic geodynamics and intrusion-related Au deposits in the Altai (Kyrgyzstan)" in Bishkek and the Tien Shan, 18<sup>th</sup>-25<sup>th</sup> August 2001. The Russian Far East Group were involved with the International Scientific Conference 'Problems of Development of Georesources of the Russian Far East and Countries of APR'. May 30<sup>th</sup>-June 2<sup>nd</sup>, 2001 in Vladivostok.

IAGOD publications during 2001 included the volume 'Paleozoic geodynamics and gold deposits in the Kyrgyz Tien Shan' in the IAGOD Guidebook series and the monograph 'Ore-Bearing Granites of Russia and Adjacent Countries', edited by A.A. Kremenetsky et al. IAGOD's map series has been expanded to include: 'Gold mineralization map of the Southern Urals, Scale 1:1,000,000' (Shatov et al.), 'Mineral deposits map of Central Asia, Scale 1:1,500,000' (Seltmann et al.). The Russian Far East IAGOD Group published the book 'Ore Deposits of Continental Margins, Issue 2'. That 2001 has been a good year for IAGOD and its various commissions and working groups can be seen by the long list of achievements reported in this newsletter.

Like any scientific or cultural organisation, IAGOD depends upon its members for support. We are always looking for new members and are especially keen that young scientists join IAGOD. I call on all members to convince their professional friends and colleagues to join IAGOD. We are also looking for volunteers for future IAGOD Councils, WGs and Commissions. Candidates should preferably have a stable position or tenure, at least guaranteed salary from project funds, support of their host institution to work within IAGOD, communication skills and good English. Two letters of recommendation from VIPs (IAGOD members or IAGOD councillors) should be supplied.

Last but not least, my sincere thanks to all the many individuals who have contributed items for this newsletter. With best wishes for a pleasant and prosperous Summer.

Nigel Cook, Secretary General IAGOD  
Trondheim, Norway, 8<sup>th</sup> June 2002

---

## IAGOD Membership

### 1) National members (12 countries):

China, Czech Republic, Kazakhstan, Kyrgyzstan, Mongolia, Russia, Slovakia, Spain, Tajikistan, Georgia, Uzbekistan, (Ukraine).

### 2) Honorary Life Members: 9

(Ridge), Kautsky, Stemprok, Tischendorf, Kutina, Foerster, Vanecek, Sclar, A. Heyl, R. Boyle.

### 3) Corporate (Institutional) Members (11):

Anglo American plc UK (C. Carlon), Aur Resources (James Gill), Barrick (C. J. Hodgson), Billiton (Gordon Koll), Blackwell publishg (Judy Cornish), Cominco (Cameron Allen), Cyprus Amax (David H. Watkins), Falconbridge (P.W.A. Severin), INCO (R. Horn), Ivanhoe Mines (Douglas Kirwin), Randgold (D. M. Bristow).

## NEW IAGOD MEMBERS

**Prof. Franco Pirajno**, Geological Survey of Western Australia 100 Plain Street, East Perth WA6004, Australia. Tel. 61+8+92223155, Fax +61+8+92223633 e-mail: f.pirajno@dme.wa.gov.au

**Dr Stephen J. Westhead**, BSc, MSc, PhD, C.Geol, FGS, MIMM. Chief Geologist Amantaytau Goldfields (Oxus Resources Corporation) Tel/Fax (International) : + 998 79 572 0159 Tel / Fax (Within Uzbekistan): 8 436 572 0159 e-mail: steve@oxus.prv.uz

**Michel G. Dumont**. NRCAN (Natural Resources Canada) MMBD/IDMPD/MMPB/MMS Minerals and Metals Sector, 580 Booth Street, 10A-9, Ottawa, Ontario, Canada, K1A 0E4 e-mail: mdumont@nrca.gc.ca, Tel. +1 (613) 995 2917, Fax +1 (613) 943 2079.

**Federica Zaccarini** Dept. of Earth Sciences, University of Modena, Via S. Eufemia, 19 41100 Modena, Italy. Tel- +39 0592055814, e-mail: fzaccarini@unimo.it

**Peyman Ghasemi**, P.O. Box 81785-179 Esfahan, Iran e-mail: p\_ghasemi@yahoo.com

**Dra. Maria José Mesquita**, Departamento de Geologia - Centro Politécnico, Caixa Postal 19001 - CEP 81531-990 Curitiba - PR Brazil, e-mail: mesquita@setuva.geologia.ufpr.br

**Avrom E. Howard**, Executive Vice President ODYSSEY Resources Ltd., 92 Winnet Ave., Toronto, Ontario M6C 3L5, CANADA, Tel.: +1 416 362 6955, Fax: +1 416 362 6830 e-mail: aehoward@odysseyresources.com, avil@on.aibn.com

**Marc Nally**, TRANS-SIBERIAN GOLD Ltd., Parkmore, Port Na Blagh, County Donegal, EIRE. Tel: +353-86-804 0396, Fax: +353-865-804 0396, e-mail: mdbnally@aol.com

**Miles Widnall**, exploration consultant. 42, Michael Pym's Road, Malmesbury, Wiltshire SN16 9TY, UK Phone/Fax +44 1666 822 160 e-mail: mwidnall@compuserve.com, www.mwidnall.freemove.co.uk

**Martin Fairclough**, PO Box 79, James Cook University, QLD, Australia, 4811, Phone +61 (0) 747815226, mail: martinfairclough@hotmail.com; martin.fairclough@jcu.edu.au

**Prof. Ricardo Castroviejo**, E.T.S.I. Minas / Univ. Politécnica de Madrid, C/ Rios Rosas, 21 - 28003 Madrid, Spain Tel. +34 91 336 6465, Fax +34 91 336 6977, e-mail: ricardoc@minas.upm.es

**Dr Jaroslav Reif**, Palackeho 9 Olomouc 77200 Czech Republic, e-mail: urga@urga.cz. Tel. +420603-835901

**Wolfram D. Schuh** Senior Project Manager European Exploration. Phelps Dodge Exploration Corporation, Rosenstr. 20 83254 Breitbrunn Germany. Tel/Fax +49 8054 902 781 Mobile +49 170 976 0596, E-mail: wschuh@phelpsdodge.com

**Dr. Oemer Gunduz**. Dept. of Geology, Karadeniz Technical University, 61080 Trabzon, Turkey, Tel. +90-462-377-3505, Fax. +90-462-325-7405, e-mail: gunduz@ktu.edu.tr

**Vinod Kumar**, Dept. Earth Sciences, IIT Bombay, Powai Mumbai, India. Tel. 022-5722545-7281 and 022-5720093, Fax. 022-5721017. e-mail: vinod\_nfp@rediffmail.com

**Dr. Azim Djangiev**, Precious Metal Committee of Tajikistan, Apt. 24, Mushfiki str. 103 Dushanbe-25, Tajikistan Tel. 992-372-248164, Fax. 992-372-248164

**Blackwell Publishing Ltd.** (corporate member) 108 Cowley Road, Oxford OX4 1JF United Kingdom. Tel. +44-1865-382361, Fax. +44-1865-381361

**The following new members were included in the previous newsletter, without full addresses. These are:**

**Dr. Hanaa Mahmoud Salem Soliman**, Department of Geology, Faculty of Sciences, Giza 12612 Egypt. Phone: (202) 554-0593, Fax: (202) 554-0593, e-mail: hanaasalem@orex.org

**Dr. Yves Haerberlin**, Department de Mineralogie, Université de Genève, Rue des Maraichers 13 CH-1211 Genève 4 Switzerland. Tel. +41-22-702-66-35, Fax. +41-22-320-57-32, e-mail: yves.haerberlin@terre.unige.ch

---

## In memoriam

IAGOD regrets to learn of the recent death of IAGOD Member Bruce A. Bouley 1947-2001 (USA)

---

## MISSING IAGOD MEMBERS

The last newsletter and 'Windhoek' circulars addressed to the following were returned as undeliverable. Please kindly IAGOD know about changes of address.

Dr. Cameron Allen	Dr. García Pascual Inaki	Dr. Noyoung Park
Dr. Boris Bartalský	Dr J.J. Hemley	Mr Duane Poliquin
Dr. Ross Burns	Dr Chet Idziszek	Dr Richard Charles Scrivener
Dr. José M. Cabello	Dr Jiri Janatka	Dr. Andrey B. Volkov
Prof. Cai Xinping	Dr L Jurak	Ross Withers
José Casas Ruiz	Dr Peter C Lightfoot	Prof Guangrong Xu
V.B. Churnizin	Dr Jesus Martinez Frias	Prof. Zhang Baolin
Prof. Batysh Dosanova	Dr German Pavlovic Nachtigal	Dr Zhijian Zhang

## PAYMENT FORM

## *IAGOD Membership Fees*

The annual dues are \$10 US per year. Please consider paying for four to five years at a time. That will save a considerable amount of money in bank fees. Also, please kindly return this invoice with your payment.

**CREDIT CARD:**        All charges will be in US Dollars.

I authorize the "International Association on the Genesis of Ore Deposits" (IAGOD) to charge the
TOTAL AMOUNT DUE in US dollars _____ for _____ years membership to my (check)

VISA

MASTERCARD

Card No.:

Expiry Date:

Name as appears on credit card:

Signature

Date

Although payment by Credit card is preferred, payment may also be made by cheque payable in US Dollars. All cheques must be made out to **IAGOD**.

Receipts: If you require a receipt, please check here  and enclose with your payment an additional 1 (one) US dollar to cover the additional processing/mailling costs. If you choose to pay by credit card, your normal statement will be sufficient.

**Please kindly remember to include your name and address with all correspondence**

Please send your payment to:

IAGOD Chief Treasurer

Dr. Richard I. Grauch, United States Geological Survey, Denver Federal Center  
Mailstop 973, PO Box 25046 Colorado 80225 USA

Tel. +1 303 236 5551, Fax. +1 303 236 3200, e-mail: [rgrauch@usgs.gov](mailto:rgrauch@usgs.gov)

---

## Report of the IAGOD Working Group on Tin and Tungsten Deposits (WGTT)

### Main results in 2001:

WGTT continued its close cooperation with the IGCP-373 Project (Correlation, Anatomy and magmatic-hydrothermal evolution of ore-bearing felsic igneous systems).

- 1) The WGTT cooperated in the preparation of the GSC World Minerals Database project coordinated by D. Sinclair from the Geological Survey of Canada.
- 2) It participated along with the project IGCP 373 at the preparation of the session "Mineralizing systems associated with felsic magmas" of the SGA-SEG Meeting / Krakow / Poland, 26<sup>th</sup>-29<sup>th</sup> August 2001. The section included 37 contributions presented at the meeting and published in the "Mineral Deposits at the Beginning of the 21<sup>st</sup> Century" A.A.Balkema publishers. IAGOD/WGTT members were among active participants.
- 3) The WGTT started to prepare the programme of a session devoted to mineralization associated with felsic magmatism together with the IGCP project 373 at the 11<sup>th</sup> Quadrennial IAGIOD Symposium and Geocongress 2002 in July 22-26, 2002, Windhoek in Namibia.
- 4) The WGTT officers suggested the topic "New developments in tin, tungsten and other rare/metal deposits" to be included in the programme of the IGC-2004 in Florence, Italy to represent the themes of the WGTT.

### Future activities:

During 2002, IGCP-373 "Ore-bearing granites", closely collaborating with WGTT, will terminate its activities. We will organize/convene a final session in Windhoek, jointly WGTT and IGCP-473. WGTT specialists will contribute papers and will help with reviews.

A special monograph in the Spec Pub Geol Soc London series is under preparation and WGTT members contribute and help review the papers to be published in 2003.

WGTT will play an active role in preparing the Interim IAGOD conference in Vladivostok in September 2004.

WGTT will contribute to represent IAGOD at the IGC-2004 and WGTT officers will co-sponsor/convene one session (Stemprok, Sinclair, Seltmann).

*Contributed by M. Stemprok (Chairman of the WGTT) and R. Seltmann (Vice-Chairman)*

---

## Report of CTOD Working Group No.4: Tectono-Magmatic Activation and Metallogenesis (DIWA) for 2001

### 1. Chief activity of the group

On October 29-31, 2001, a conference "The 21<sup>st</sup> Century International Symposium on Activated Tectonics and Metallogeny" was held in Changsha City, China. This International symposium is authorized by the Ministry of Science and Technology of China and the Chinese Academy of Science, and jointly sponsored by Changsha Institute of Geotectonics and Central South University. More than 100 scientists and government officials were invited to present, reviewing and looking forward to the latest and future development of the activated tectonics and metallogenic theory. Scholars from America, Japan, Australia, Canada, Mongolia, New Zealand and Poland made lectures on this symposium. From different aspects, they studied geologic phenomena related to the activated tectonics and metallogenesis all over the world respectively. The main scientific topics for discussion are as follows:

- (1) Retrospect of development and application for the activated tectonics and metallogeny in the twentieth century;
- (2) Opportunities and challenges for the activated tectonics and metallogeny in the 21<sup>st</sup> century, which is subdivided into three aspects: Innovations and advances; Geodynamics and the activated tectonics; and Computer technology application for crustobody geotectonics.

In the meantime, we also warmly congratulated Mr. Chen Guoda's ninetieth birthday. Prof. Chen Guoda has devoted himself to geologic research for nearly seventy years. On the other hand, the twentieth Diwa Award had been issued, altogether five scholars won the award.

This symposium had achieved fruitful achievements, which mainly embodies the following monograph and papers.

## 2. Monograph and papers

Prof. Chen Guoda has published his new monograph: *DIWA THEORY-Outline on Activated Tectonics and Metallogenic Theoretic System* (English edition), which is published by Central South University Press. And Prof. Chen Guoda also published his paper:

Acta Geologica, Vol.74, No.3. Chen Guoda, Peng Shenglin & Dai Tagen, 2000. Crustobody evolution-movement and geotectonic metallogenesis.

The Symposium received about 100 papers and abstracts, the scientific committee of this symposium published a symposium (in Chinese) and two special issues of **Geotectonica et Metallogenia** (Chinese and English editions), in which different papers were carried. From Vol.25, No.3 on, **Geotectonica et Metallogenia** will successively publish the conference papers, partial papers also will be carried in China Journal of Geology (former Scientia Geologica Sinica) (Chinese edition) Vol.37, No.2 and No.3. The titles of these symposium contributions are too many to be listed one by one here.

There are three member's address changes:

Secretary Dr. Yi Jianbin of this group (the former secretary) emigrated to New Zealand, similarly, Dr. Chen Zilong of this group also emigrated to Australia last year, their addresses are not yet available.

*Contributed by Zeng Qiaosong (Secretary) and Prof. Chen Guoda (Chairman)*

## SOCIETY OF ECONOMIC GEOLOGISTS (SEG)

### OFFICERS FOR 2002:

President	Hugo T. Dummett
Vice President	William X. Chavez, Jr.
Past President	David I. Groves
V.P.-Regional Affairs	Jeffrey W. Hedenquist
Executive Director	Brian G. Hoal
Past Vice President	Murray W. Hitzman
Treasurer	George R. Ireland
President-Elect	Jonathan G. Price
Chair-Publications Board	Brian J. Skinner
Foundation President	Richard L. Nielsen

For details of the society, membership, publications and bulletin board, visit the SEG Web Page at

<http://segweb.org>

**I.A.G.O.D. PUBLICATIONS 2002 ORDER & PAYMENT FORM**

*Attention: For IAGOD members 10.-USD discount per ordered copy!!!*  
(tick boxes, multiply prices x number of copies for each book, add prices for TOTAL)

**IAGOD Guidebook Series**

1998 - Anatomy and Textures of Ore-Bearing Granitoids of Sikhote Alin (Primorye Region, Russia) and Related Mineralization
--

<input type="checkbox"/>	<b>USD 40.- (minus 10.- USD member discount)</b>
--------------------------	--

1999 - Au, Ag and Cu Deposits of Uzbekistan (Excursion Guidebook)
---

<input type="checkbox"/>	<b>USD 40.- (minus 10.- USD member discount)</b>
--------------------------	--

2000 – Granitoids and Related Ore Deposits of the Urals (Excursion Guidebook)
---

<input type="checkbox"/>	<b>USD 40.- (minus 10.- USD member discount)</b>
--------------------------	--

2001 – Paleozoic geodynamics and gold deposits in the Kyrgyz Tien Shan	<b>New!</b>
--	-------------

<input type="checkbox"/>	<b>USD 50.- (minus 10.- USD member discount)</b>
--------------------------	--

**IAGOD Monographs**

Seltmann et al. (1994) Metallogeny of Collisional Orogens
---

<input type="checkbox"/>	<b>USD 50.- (minus 10.- USD member discount)</b>
--------------------------	--

Shatov et al. (1996) Granite-Related Ore Deposits of Central Kazakhstan and Adjacent Areas
--

<input type="checkbox"/>	<b>USD 50.- (minus 10.- USD member discount)</b>
--------------------------	--

Kremenetsky et al. (2000) Ore-Bearing Granites of Russia and Adjacent Countries	<b>NEW!</b>
---	-------------

<input type="checkbox"/>	<b>USD 60.- (minus 10.- USD member discount)</b>
--------------------------	--

**IAGOD Maps (on CD CorelDraw9 or as printed version)**

Shatov et al. , Gold mineralization map of the Southern Urals, Scale 1 : 1 000 000	<b>NEW!</b>
--	-------------

<input type="checkbox"/>	USD 80.-
--------------------------	----------

Seltmann et al., Mineral deposits map of Central Asia, Scale 1 : 1 500 000	<b>NEW!</b>
--	-------------

<input type="checkbox"/>	USD 110.-
--------------------------	-----------

-----  
**TOTAL** amount to be paid in US dollars (Price includes shipping and packaging): ..... **USD**

\* PAYMENT BY CREDIT CARD (All charges will be in US dollars): YES / NO

I authorize the International Association on the Genesis of Ore Deposits to charge the price of .....US dollars for the above ordered book copy/copies.

Please debit my            Mastercard-EuroCard        Visa        (tick valid box)

card number:

expiry date:

name as appears on credit card:

signature:

date:

\* PAYMENT BY CHECK: YES / NO

I attach a certified Bank Draft made payable to „IAGOD” (in US dollars!).

Completed and signed original of this payment form must be sent to:

Dr. Richard I. Grauch, U.S. Geological Survey, Denver Federal Center, MS 973, P.O. Box 25046, Colorado 80225, U.S.A. Phone +1 303 236 5551; Fax +1 303 236 3200; e-mail: rgrauch@usgs.gov (if you pay by cheque, please attach the Certified Bank Draft)

To receive the book, copies of this completed form (and in case of payment by cheque, also a copy of the bank draft) must be sent to: Dr. R. Seltmann, Natural History Museum, Dept. Mineralogy, Cromwell Road, London SW7 5BD, UK, Phone: +44 207 942 5042, Fax: +44 207 942 5537, <rs@nhm.ac.uk>

Name:

Signature:

Date:

Delivery address:



## Report from Kazakhstan National IAGOD Group

### Conferences 2001:

1. XXXIV Tectonic Conference "Tectonics of Neogee: General and Regional Aspects" (30 January – 3 February 2001, Moscow, Russia). IAGOD group member O.A. Fedorenko participated with an oral presentation.
2. First International Conference "Problems of Complex Development of Ore and Non-metallic deposits of East-Kazakhstan Region (15-16 May, Ust-Kamenogorsk, Kazakhstan). Member of the Organizing Committee: Prof. B.A. Dyachkov. The participants: the IAGOD members B.A. Dyachkov, M.S. Rafailovich (oral presentations).
3. First International Conference "Presence of Oil and Gas in Kazakhstan" (19-22 September, Almaty-Atyrau, Kazakhstan). IAGOD group members O.A. Fedorenko and B.A. Dosanova participated with oral presentations.

### Participation in other International Scientific Conferences 2001:

International Field Conference "Paleozoic Geodynamics and Gold Deposits in the Kyrgyz Tien Shan", organized by IUGS/UNESCO (IGCP Project 373), Inst. of Geology (National Academy of Sciences, Kyrgyz Republic), National History Museum (London, UK) / Bishkek, Kyrgyz Republic, 16-25 August 2001. IAGOD group members M.S. Rafailovich and O.A. Fedorenko participated and delivered oral presentations.

### Monographs

One of the main forms of Kazakh National IAGOD Group activity was publication of the monograph "Greit Altai. Vol. 2. Metallogeny." Almaty, Kazakhstan, 2000. 400p.

This book was published by the Academy of Sciences of Kazakhstan, Ministry of National Resources of the Republic of Kazakhstan and Satpaev Inst. of Geological Sciences Executive Editor Academician G.N. Sherba. Authors G.N. Sherba, Kh.A. Bespaev, B.A. Dyachkov, A.V. Mysnic, G.D. Ganzhenko, E.M. Sapargaliev.

There are described Gercinian ore belts of Great Altai: Rudnoaltai – copper-lead-zinc with gold and silver; Kalba-Narim – tin-tungsten with rare metals; West Kalba – gold ore; Zharma-Saur – multimetal. Different composition of these ore-bearing belts is explained by geochemical mantle-crust specialization. There are known more than 2500 manifestations including 150 metalliferous deposits and more than 200 various non-metalliferous ones. Within the ore belts formational-metallogenic zones, ore-bearing regions, ore knots, main ore fields were identified. Stages of metallogeny development, primary and secondary ore-bearing structures, ore material composition, different geological and genetic models and some ecological problems are characterized. Conclusions related to mineral resources potential development were proven.

The book is intended for scientists, geologists, state and private investors.

### Selected publications 2000-2001:

- Berikbolov B.R., Dolgoplov V.F. (2001)** Uranium-bearing Formations of Sediment Basins of Central Eurasia. – In: Geology of Kazakhstan. №4, 28-36.
- Daykeev S.Zn., Bykadorov V.A., Militenko N.V., Fedorenko O.A., Uzhkenov B.S. (2001).** Comparative Evaluation of Hydrocarbon Potential of Sediment Basins of Kazakhstan and Surrounding Territories of Central Eurasia. – In: Presence of Oil and Gas in Kazakhstan (Materials of the 1-st International Conference). Almaty-Atyrau, Kazakhstan, 40-41.
- Dolgoplov V.F. (2001).** Main Particularities of Placers Forming on Kazakh Shield. – In: Geology Protection of Mineral Resources of Kazakhstan. №1, 15-19.
- Dosanova B.A., Aitieva H.T. (2001).** Experience of Geochemical Searches of Oil in Prekasian. – In: Presence of Oil and Gas in Kazakhstan (Materials of the 1-st Inter. Conf.). Almaty-Atyrau, Kazakhstan, 138-140.

- Dyachkov B.A., Sherba G.N. (2001).** Principal Directions of Development of Great Altai Mineral Raw Materials Base. – In: Problems of Complex Development of Ore and Non-metallic Deposits of East-Kazakhstan Region (Materials of the 1-st Inter. Conf.). Ust-Kamenogorsk, Kazakhstan, 64-66.
- Fedorenko O.A., Uzhkenov B.S. et al. (2001).** Main Features of Minerageny of Central Eurasia (in the light of Geochemical and Paleogeographical Reconstructions). – In: Tectonic of Neogee: General and Regional Aspects. V.2. Moscow, Russia, 246-249.
- Glukhan I.V., Serykh V.I. (2000).** Clarks for Siltstones and Argillites of Central Kazakhstan. – In: Geochemistry. №9, 922-940.
- Glukhan I.V., Serykh V.I. (2001).** Mean Chemical Compositions of Carbonate and Siliceous Rocks of Central Kazakhstan. – In: Geochemistry. №6, 607-620.
- Heinhorst J., Lehmann B., Ermolov P., Serych V., Zhurutin S. (2000).** Paleozoic Crustal Growth and Metallogeny of Central Asia: Evidence from Magmatic-Hydrothermal Ore Systems of Central Kazakhstan. – In: Tectonophysics 328, 69-97.
- Rafailovich M.S., Alexeyeva L.K., Alexeyev V.A. (2000).** Kazakhstan Gold-bearing Metasomatic Formations. – In: Uralian Geological Journal. №5 (17), 41-83.
- Rafailovich M.S., Vostroknutova A.I.** Large Gold Deposits of Kazakhstan: Conditions of Formation, Geological-Genetic and Computer Models, New Forecast Technology. – In: Problems of Complex Development of Ore and Non-Metallic Deposits of East-Kazakhstan Region (Materials of the 1-st International Conference). Ust-Kamenogorsk, Kazakhstan, 120-122.
- Rafailovich M.S. (2001).** Platinum and Platinum-bearing Ore Formations of Kazakhstan. – In Uralian Geological Journal. №1 (19), 121-139.
- Shatov V., Seltmann R., Rafailovich M. (2001).** The Mironovskoe Copper-Bismuth-Gold Deposit. – In: Paleozoic Geodynamics and Gold Deposits in the Kyrgyz Tien Shan (Excursion Guidebook of IGCP-373 Field Conference in Bishkek and the Kyrgyz Tien Shan, 16-25 August 2001).
- Yartseva L.A. (2000).** Identity of Structural and Geochemical Particularities of Oil and Ore Deposits. – In: Oil and Gas. №3, 51-59.

### **Planned activities for 2002-2003**

1. New publications (articles, monographs, methodical recommendations) in the sphere of the genesis of ore deposits (national and international magazines and journals).
2. Participation in International Scientific Meetings, Conferences and Field Excursions (Kazakhstan, Russia, Kyrgyzstan, China and others).
3. Cooperation with other IAGOD National Groups (Kyrgyz, Uzbekistan, Russia et al.) on the basis of International project "Geology, Geodynamics and Metallogeny of Central Eurasia".

### **Current list of the members of the Kazakhstan IAGOD National Group (May 2002)**

Chairman: Prof. Mikhail Rafailovich (Scientific Institute of Natural Resources YUGGEO, Bogenbay Batyr Str., 168, 480012 Almaty, Republic of Kazakhstan; tel: (3272) 692240; fax (3272) 621284; e-mail:rafail@astel.kz

Prof. Bespaev K.A. (Almaty), Dr. Fedorenko O.A. (Almaty), Dr. Glukhan I.V. (Karaganda), Prof. Djachkov B.A. (Ust-Kamenogorsk), Dr. Dolgoplov V.F. (Almaty), Dr. Dosanova B.A. (Almaty), Dr. Nachtigal G.P. (Ust-Kamenogorsk), Prof. Serykh V.I. (Karaganda), Dr. Sapargaliev E.M. (Ust-Kamenogorsk), Yartseva L.A. (Almaty).

*Contributed by Mikhail Rafailovich, chairman, e-mail:rafail@astel.kz*

---

## **The Paragenesis Commission (PaC) for 2002**

PaC have planned three sessions for the 12<sup>th</sup> Quadrennial IAGOD meeting in Windhoek:

- 1) "Mineralogy, Paragenesis, and Origin of Carbonatite-Related Ore Deposits" (MX2). This is one of seven sessions listed under the theme: "Magmatism and Mineralisation in Extensional Environments (MX)", which is one of seven themes for the meeting.

2) "Paragenesis and Paragenetic Sequence of Ores and Minerals in Mineral Deposits" (MXC3). This is one of five sessions listed under the theme "Topics Applicable to Mineral Deposits in both Extensional and Compressional Environments" (MXC) and

3) "Cathodoluminescence of Gems and Other Minerals" (01). This is one of four sessions listed under "Open sessions" (O).

PaC members are typically involved in many other meetings at international (e.g. IMA, IGC, ICAM), and in national meetings.

*Contributed by Dick Hagni*

---

## **Report of the Russian Far East IAGOD Group for 2001**

The Russian Far East IAGOD Group being a part of the National IAGOD Group of Russian Federation consists of 18 members.

The main events in activity of Far East Russian IAGOD group in 2001 were:

### **1. 2004 Interim IAGOD Conference:**

Preparation of the 2004 Interim IAGOD Conference on Metallogeny of the Pacific Northwest: Tectonics, Magmatism, and Metallogeny of Active Continental Margins Venue: Vladivostok, Russia Dates: 11-19 September, 2004. The first circular for the conference is now completed (see elsewhere in this newsletter). During the remaining time before the conference, the group will prepare and publish the book of extended abstracts, six guide booklets for the planned field tours, the second circular of the conference, and other organizational materials.

### **2. Participation in conferences etc.:**

Organization and participation in scientific conferences and symposiums and participation in International projects.

The First International Scientific Conference "Problems of Development of Georesources of the Russian Far East and Countries of APR". May 30-June 2, 2001, Vladivostok. IAGOD member V.G. Chomich was the scientific chief of the seminar "Mining geology".

The joint 6<sup>th</sup> Biennial SGASEG Meeting "Mineral Deposits at the Beginning of the 21<sup>st</sup> century in Krakov, Poland, August 26-29, 2001. Chairman of the Russian Far East IAGOD Group A.I. Khanchuk and IAGOD member V.V. Ivanov took part in it.

Symposium "Geological and mineragenetic correlation in the contiguous region of Russia, China, Mongolia", October, 16-20, Chita, Russia." IAGOD member V.G. Chomich was in Organizing Committee of this symposium.

Second International Symposium "Siberian Gold' 2001: Geology, Geochemistry, Technologies, Economics. December 4-6, 2001, Krasnoyarsk, Russia. IAGOD member V.V. Ivanov was its participation.

### **3. Participation in international projects:**

The Chairman of our IAGOD group A.I. Khanchuk as one from leaders took part in International project "Mineral Resources, Metallogenetic and Tectonics of NE Asia" in which collaborating agencies from U.S., Russian, Mongolian, China, Korea, Japan and other countries.

G.A. Gonevchuk, V.G. Gonevchuk, V.I.Gvozdev, P.g. Korostelev, B.I.Semenjak took part in joint project between the Geological Survey of Canada and IAGOD Working Group on Tin and Tungsten Deposits (WGTT) under title "Tin and Tungsten Deposits of the World". The group will continue its activity within the International Project: World Distribution of Tin and Tungsten Deposits - Digital Database Documentation.

Many members of the group are involved into the projects of the Russian Fundamental Studies Foundation studying the ore deposits genesis.

Dr. Alexander I. Khanchuk (Corresponding Member of Russian Academy of Sciences) is the leader of Project “Geological-genetic models of polygenic and polychromic tin and tungsten deposits formation in the Sikhote-Alin accretionary-folded system” (Russia, the Far East).

Dr. Valery G. Gonevchuk is the leader of Project “Study and modeling of tin mineralization evolution in the history of Primorye”(Russia, the Far East).

#### 4. Book publication:

During the last two years the Russian Far East IAGOD Group published two books of selected papers: Ore Deposits of Continental Margins (in Russian with English abstract), issue 1, 2000, issue 2, 2002. The next book of selected papers will be prepared for publication in 2003 (in English). This book will be published by September 2004, by the beginning of the 2004 Interim IAGOD Conference.

The book **Ore Deposits of Continental Margins. Issue 2**, Vladivostok, Dalnauka, 2001, 420 pp. (in Russian with abstracts in English) published by members of the Far Eastern Branch of Russian Academy of Sciences Far East Geological Inst., Russian Far East IAGOD group. This book is a compilation of articles contributed by the Russian Far East Group of IAGOD. New mineralogical and geochemical data on the conditions of ore formation from deposits of the Russian Far East have been considered, specifically the relationship between mineralization and magmatism. On the basis of original research results some problematic aspects of ore formation related to the continental margin are discussed. The impact of changing paleo-geodynamic conditions on the formation of different types of mineralization and regional metallogenic zoning is taken into consideration. The book is of interest to geologists studying endogenic metallogeny. Executive Editor: Alexander Khanchuk; Responsible secretary: G.A. Gonevchuk; Editorial Council: L.N. Khetchikov, V.G. Gonevchuk, I.I. Fatjanov.

#### Contents:

- Martynov Yu.A., Kovalenko S.V., Rasskazov S.V., Saranina E.V. Geochemistry and problems of metallogeny of the Cenozoic post subduction calc-alkaline volcanic rocks of the southwest Primorye
- Trunilina V.A., Orlov U.S., Babushkina S.A. Latite ore bearing magmatic systems of the Polousny range (northeast Verkhoyano-Kolyma Mesozoic geological structures)
- Roev S.P. The fluid regime of forming and ore-bearing magmatite of the Derbeke-Nelgekhe belt (northeast Yakutia)
- Nedashkovsky P.G. Origin of Proterozoic rare-metal deposits from Ulkan depression (Khabarovsk region)
- Sterkhov K.G. Ore content of alkaline granites of Tomtokan massif (South-East Aldan shield)
- Nevolin P.L, Utkin V.P., Kovalenko S.V., Kutub-Zade T.K., Mitrokhin A.N. Geodynamics of structural formation of the Uspensky granitoid massif and placement control of dikes and mineral occurrences
- Gonevchuk V.G., Gonevchuk G.A., Nozdrachev E.A. Petrogenetic and geodynamic typification of magmatic rocks of the Mopau ore field (Northern Sikhote-Alin)
- Mitrofanov N.P. Geodynamics of pre-ore stage of tin deposit formation in Northwestern sector of Pacific ore belt
- Gonevchuk G.A., Gonevchuk V.G. Genetic and metal-bearing features of magmatic rocks of the Komsomolsk ore district implied by biotite composition
- Korostelev P.G., Gonevchuk B.G., Semenyak B.I., Suchkov V.I., Kokorin A.M., Gonevchuk G.A., Gorelikova N.V., Kokorina D.K. Solnechnoe deposit (Komsomolsk district, Khabarovsk territory) as the sample object of the cassiterite-silicate formation
- Kokorin A.M., Gonevchuk V.G., Kokorina D.K., Orekhov A.A. The Vysokogorskoe tin deposit: peculiar genesis and mineralization
- Kokorin A.M., Kokorina D.K. Matter composition and formation conditions of the deposits of the Pio Oak tin-ore district (Vietnam)
- Zvereva V.P. The morphology and mineralogy of hypergenesis zone of nonferrous deposits of Dalnegorsk ore district (Primorye)
- Ivanov V.S., Shnay G.K. Petrochemical features of Mesozoic intrusive magmatites and mineral types

(Lebedinskyi , Karanakhskiyi, Ryabinovyi) of gold mineralization on Central Aldan

- Zimin S.S., Oktyabrskiy R.A., Molchanov V.P., Tishkin B.M., Gvozdev V.I., Baturin S.G., Sapin V.I. Prospects of ultrabasites of Ust'-Depskaya ophiolite zone (Middle Priamurye) for chromites and native metals
- Molchanov V.P., Zimin S.S., Gvozdev V.I., Malakhov V.V., Oktyabrskiy R.A. Role of apoultrabasites in formation of platinoid-gold placers of Gar'sky node (Middle Priamurye)
- Oktyabrskiy R.A., Lennikov A.M., Shnai G.K., Zalizhchak B.L., Moskalenko E.Yu., Rahmatulin A.A., Shcheka G.G., Shcheka S.S. Chromian spinellides of the Inagli platinum-bearing alkaline-ultrabasic massif (north part of the Aldan shield)
- Vysotskiy S.V., Shcheka G.G., Lehmann B. First occurrence of platinum group minerals (PGM) in the gold-sapphire bearing placer accumulation of the Kedrovka River (Bolshaya Ussurka River basin, Primorye)
- Kazachenko V.T. A significance of fluid pressure in formation of Dukat gold-silver deposit
- Khomich V.G. Pokrovskoe gold deposit (geological structure and ore distribution)
- Fatyanov I.I., Khomich V.G. Structural-matter elements of vein-metasomatic zones of Mnogovershinnoe gold-silver deposit (Lower Priamurye) as indicators of hydrothermal ore-forming system evolution
- Rostovskiy F.I. Milogradovskoye gold-silver deposit (South Sikhote-Alin)
- Chashchin A.A., Khetchikov L.N., Ivanov V.V., Rasskazov S.V., Tsurikova L.S., Konovalova N.P. Fluid regime of magmatic rocks and Au-Ag mineralization forming in Viluchin volcano-tectonic structure (Southern Kamchatka)
- Gvozdev V.I. Geological structure, mineralogy, and genesis of Agylkinsky copper-tungsten deposit in Yakutia

### **Selected publications:**

- Boriskina N.G., Khomich V.G., Molchanov V.P. Qi Jianzhong. 2001. Comparative isotopic-geochemical characteristic of gold mineralisation of volcano-plutonic zones of the Russian far-east and south-eastern China. Geological and mineragenetic correlation in the contiguous region of Russia, China, Mongolia. Papers of the IV Int. symposium, Chita, Russia. p.100-101.
- Gonevchuk G.A., Gonevchuk V.G., Gerasimov N.S., Seltmann R. 2001. Komsomolsk ore district: new geochemical and isotopic geochronological (Rb-Sr) data. Geology of the Pacific Ocean. Vol.20. № 4. p.76-86
- Ivanov V.V., Vrzhosek A.A. Molchanova G.B., Liandeng Liu, Yongzheng Zhu.2001. Gold metallogeny of the Laelin-Grodekovo terrane. Siberian Gold' 2001: Geology, Geochemistry, Technologies, Economics. Press.
- Khanchuk A.I., Ivanov V.V. 2001. Mesozoic and Cenozoic evolution of the Russian Far East: Implications for geodynamics and gold deposits. Mineral Deposits at the Beginning of the 21st century. p.1113-1116.
- Khanchuk A.I., Parfenov L.M., Nokleberg W.J. 2001. Geodynamic map of Northeast Asia. Mineral Deposits at the Beginning of the 21st century. p.1117-1119.
- Khanchuk A.I. 2001. Pre-Neogene Tectonics of the Sea-of-Japan Region: a view from the Russian Site. Earth Science. Japan. November.
- Khanchuk A.I., Zalizhchak B.L., Pakhomova V.A., Odarichenko E.G., Sapin V.I. 2001. Sapphire Genesis and Gemology of the Nezametnoe Deposit (Primorye, Russia). Gemological Journal. AIGS. Hongkong
- Khomich V.G., Krilova V.V. 2001. Geological structure and ores mineral composition of the gold- argental Khakandzha deposit (Northeast Russia). Geology of ore deposits, Vol. 43. № 2. p. 152-168.
- Nekrasov I.Ja. Ivanov V.V., Lennikov A.M., Sapin V.I., Safronov P.P., Oktjabrskiy R.A., Molchanova G.B. 2001. Infrequent multicomponent alloys of gold and copper from the platinum placer of the alkali ultrabasic Konder massif (Aldan shield , Russia). Geology of ore deposits. Vol.43. № 5.
- Pakhomova V.A., Zalizhchak B.L., Odarichenko E.G., Ribin A.V., Gvozdev V.I., Sapin V.I., Chepkaja. N.A. 2001. The nature of plagioclases in basalt magmas of the Kudrjavii volcano by results of studies of inclusions. (Iturup island, Kuril islands). Proceeding of IX International conferences on thermobarogeochemistry. Aleksandrov. P.79-96.

*Contributed by Secretary: of the Russian Far East IAGOD Group G.A. Gonevchu, Far East Geological Institute of FEB of Russian Academy of Sciences, 159, Prospect 100-letya, Vladivostok, 690022, e-mail: gonevchuk@hotmail.com or fegi@online.marine.su*

## **Report of the Commission on Ore Deposits in Mafic and Ultramafic Rocks (CODMUR) for 2001**

Activities have been carried out within the framework of IGCP 427. Within the framework of this project, meetings have been held as follows:

- 1998 - Quebec City associated with GAC-MAC
- 1998 - Rustenburg 8<sup>th</sup> International Pt conference.
- 1999 - Sudbury associated with GAC-MAC
- 1999 - Rouyn-Noranda komatiites and Cape Smith Ni-deposits
- 2000 - Brazil - International Congress
- 2001 - Field trip to Skaergaard, Meeting at SEG-SAG Krakow, Special session of Goldschmidt.
- 2002 - 9<sup>th</sup> Platinum conference to be held in Billings Montana.

*(Excerpts from the annual report of IGCP 427 for 2001 are given below – ed.)*

### **Report on excursion to the Skaergaard igneous complex in West Greenland – September 2001:**

A group of IGCP project 427 researchers interested in igneous and/or platinum geology hired an ice strengthened ship to travel from Iceland to Greenland where the ship formed accommodation while we made excursions to the shore to examine the classic Skaergaard layered intrusion famous for:-

- (i) its extreme iron enrichment in the magma,
- (ii) its closed system fractionation,
- (iii) its relatively newly discovered Pd and gold mineralisation.

The weather was good and we undertook 6 days fieldwork looking at every aspect of the layered intrusion.

We examined the layered structure of the complex and the platinum-group element mineralisation. This mineralisation is in an unusual position compared to more conventional platinum enriched complexes such as the Bushveld in which mineralisation occurs with chromitites and sulphides. In Skaergaard the mineralisation is much higher in the layered sequence than is usual in layered complexes and is associated with plagioclase-rich layers devoid of sulphides. There are also a few, recently described complexes in which platinum-group element mineralisation has been discovered with magnetite layers. In the Skaergaard the magnetites are not the units that have been described as having the mineralisation despite their abundance in the sequence. This unusual occurrence in the Skaergaard intrusion raises interesting questions concerning the processes concentrating the platinum-group elements in different layered intrusions and these can only be truly appreciated by standing on the mineralisation site at Skaergaard and observing the host lithologies first hand. Thirteen days were spent on the boat including travel time and field days lost due to bad weather; most of the scientists gave talks. The interaction between scientists with igneous and mineralisation expertise and between industry representatives and academics was very productive in generating ideas.

The next IGCP 427 meeting will be the 9th International Platinum Symposium to be held in Billings, Montana, USA in 21st - 25th July 2002. There will be field excursions associated with this to Stillwater and Duluth and Lac des Isles. The web site address for this meeting is [www.platinumsymposium.org](http://www.platinumsymposium.org)

*Contributed by Hazel Prichard (CODMUR Secretary; [sglhmp@cardiff.ac.uk](mailto:sglhmp@cardiff.ac.uk))*

---

### **Other IGCP 427 Activities in 2001:**

20-24 May 2001, 11th Annual Goldschmidt Conference, Roanoke, Virginia, USA. IGCP Project 427 co-sponsored a *Symposium on the Mafic Magma-Ore Deposit Link* with the Geochemical Society. The symposium was organized by J. Brenan, J. Mungall, and A. Boudreau and included 18 talks and 3 posters by 20 presenters on various aspects of the geology, geochemistry, experimental petrology, and genesis of magmatic Ni-Cu-(PGE)

and PGE-(Cu)-(Ni) deposits associated with mafic magmas. It was attended by ~50 participants from at least 8 countries (Australia, Canada, Russia, USA, China, Germany, South Africa and England).

26-29 August 2001, *6th Biennial SGA-SEG Meeting* (Mineral Deposits at the Beginning of the 21st Century), Kraków, Poland. IGCP Project 427 jointly-sponsored *Session 6.1 on the Genesis of PGE Deposits* (Organizer: O.A.R. Thalhammer) with SGA and SEG. The session was dedicated to Professor E.F. Stumpfl in appreciation for his 4 decades of research in PGE deposits and included 10 talks and 2 posters on various aspects of the geology, geochemistry, experimental petrology, and genesis of magmatic PGE, Ni Cu(PGE), and Cr deposits. It was attended by ~100 participants from 17 countries (Australia, Austria, Canada, Denmark, Finland, Germany, Greece, Italy, Poland, Romania, Russia, Slovakia, South Africa, Czech Republic, Ukraine, UK, and USA).

17-21 September 2001, *XXI Spanish Mineralogical Society Meeting*, Malaga, Spain. The Spanish Working Group of IGCP Project 427 sponsored a special session (Organizer: F. Gervilla) that included ~12 presentations and was attended by ~25 participants (at any one time) from Spain, Portugal, Canada, Denmark, and the UK. The meeting was preceded by a 2-day field excursion to the Ronda Massif (Leader: F. Gervilla) that was attended by ~20 participants from the same countries.

01-10 September 2001, *4th International Archean Symposium*, Perth, Western Australia. IGCP Project 427 participants contributed to several theme sessions, including *Theme 5: Mineralization*, *Theme 2: Magmatic Processes*, and the *David I. Groves Symposium*. There were 205 papers (94 oral, 111 posters), the Symposium was attended by almost 500 participants from 20 countries, and a 7-day pre-conference excursion to *Komatiites of the Norseman-Wiluna Greenstone Belt* (Leader: S.J. Barnes) was attended by 12 participants (6 additional registrants were unable to attend due to the 11 September events and the collapse of Ansett Airlines, the domestic carrier). We are especially grateful to Dr. Susan Ho of the IAS Organizing Committee for her logistical assistance.

01-13 September 2001, *Field Excursion to the Skaergaard Complex and Platinova Reefs*, Kangerdlugssuaq, East Greenland. This was a stand-alone IGCP Project 427 field conference that was organized and led by J.C. Andersen, T.N. Irvine, and C.K. Brooks, and jointly sponsored with the Camborne School of Mines and SGA. The excursion departed from and ended in Keflavik, Iceland, and was attended by 32 participants from 11 countries (Canada, Denmark, France, Germany, Italy, Scotland, South Africa, Spain, UK, USA). A IGCP Project 427 *Business Meeting* was held during the voyage. A conference report (Andersen, J.C.Ø., 2001) has been submitted to *Episodes*.

01-05 October 2001, *Annual European Short Course in Metallogeny*, Brest, France. This short course was supported by the French CNRS, GEODE (the European Science Foundation metallogeny network), and the Universities and City of Brest. The IGCP Project 427 component was organized by N.T. Arndt. It was delivered in two parts, the second of which included sessions on Ni, Cr and Pt deposits in komatiites, the Bushveld complex, and ophiolites that were relevant to this project. The twelve lecturers came from France, Germany, Portugal, Canada, and USA, and the 45 students came from 12 countries.

26-27 October 2001, *Workshop on PGE Exploration*, Sudbury, Ontario, Canada. This workshop was jointly-sponsored with the Laurentian University SEG Student Chapter (Organizers: G. Dessureau, M. Huminicki, and M. Lévesque) and the Mineral Exploration Research Centre. It included a 2-day symposium with 15 talks and a 2-hour open (and very lively) discussion on various aspects of the geology, geochemistry, experimental petrology, and genesis of magmatic Ni-Cu-(PGE) and PGE-(Cu)-(Ni) deposits, two 1-day field trips to the East Bull Lake and River Valley PGE prospects near Sudbury, and surface/underground tours of several Ni-Cu-PGE deposits in the Sudbury Basin. It was attended by ~110 participants from 3 provinces (Ontario, Québec, British Columbia) and 3 countries (Canada, United States, Brazil).

The goals of the project, all past and planned activities, and all publications resulting from the project are posted on the *IGCP Project 427 Web Site* <http://www.laurentian.ca/www/geology/IGCP/IGCP.htm>

*(edited from IGCP Annual report 2001, contributed by Sarah-Jane Barnes)*

---

## **Report of the Tajik National IAGOD group for 2001**

### **Output and plans:**

Animation of group and finding of finance sources was the red line of the past year for us. Some members have left the group but new (and younger) members became involved. Attempts to search for

sponsors for mining or scientific program in Pamir or Northern Tajikistan were done but the decrepit apparatus of old geological departments cannot work reliably under modern market conditions. Investors spending some time in the country were going away again.

INTAS's projects for Metallogeny of Central Asia (Dr. Reimar Seltmann) or Geodynamics of Tibet – Eastern Pamir Region (Prof. Lothar Ratschbacher) with our participation were stopped: they received decent evaluations, but could not succeed because of the very low pass mark of about 3%. So, under stress to find money (Academy and State Tajikgeologia branches are poor now) and to involve new members, we have undertaken the following:

1. Presentations in the Seminar of Industry Government Committee (June 2001), in “Contribution of Tajikistan Scientists in the Industry” – Dushanbe: IGC Industry Institute, 2001 (extended abstracts are published):
  - B.A.Volnov, Yu.Y.Valiev. Yokunj deposit as the object of immediate exploration and exploitation.
  - V.E.Minaev. Unconventional gold occurrences as additional resource and method of it preliminary evaluation.
2. V.E.Minaev, A.R.Fayziev. Mineral base for development of GBAO economics. – Presentation in International Conference “Development of mountain territories of Central Asia at XXI century”. Khorog (Pamir): GBAO Administration & Khorog State University, 2001 (extended abstracts).
3. Anniversary Conference of Tajikistan Academy (50 years) & Geology Institute (60 years of foundation), presentations and publication in proceedings “Geology and Minerals of the Republic of Tajikistan” – Dushanbe, 2001:
  - V.S.Lutkov. On diamond problem in Tajikistan. p. 167–174.
  - I.N.Matveeva, V.E.Minaev. Mobile structures of Pamir – Tien-Shan as criteria of prognosis for large deposits in Tajikistan territory. P.p. 114–123.
  - V.E.Minaev, I.N.Matveeva. Metamorphic schist belts as ore-bearing structures. p. 175–185.
  - A.R.Fayziev. The Big Kanimansur as etalon of silver-polymetal deposit in Central Karamazar. p.147-158.

V.E. Minaev was a participant of field conference in Bishkek (Kyrgyzstan), due to the help of Dr. Reimar Seltmann – thanks to him and to IAGOD Council for support. We wait for better times in Tajikistan to prepare and to pilot such a programme through our region.

Future plans are concentrated around our attempts to search finance for field works with appropriate laboratory analytic prolongation which will rise us to modern level. Objects and ideas are present. Basement from former USSR geology remains. Politic situation becomes better. To join with world geological community is our main task.

#### **Current members of the IAGOD National Group of Tajik Republic (9 members)**

Chairman: Dr. Vladislav E. Minaev (P.O. Box 198, Dushanbe 734025, Tajikistan; tel: +992 372 243658; fax: +992 372 510037; e-mail: [geol@ac.tajik.net](mailto:geol@ac.tajik.net), [minaev@cada.tajik.net](mailto:minaev@cada.tajik.net))

Bahtdavlatov, Rahmonbek D. (FHA); Djangiev, Azim I. (MIMB); Hudobakhshева, Sharifa (KSU); Volnov, Boris A. (TGG); Lutkov, Valery S. (GI TAS); Matveeva, Irina N. (GI TAS); Minaev, Vladislav E. (GI TAS); Revazov, Boris A. (GI TAS); Fayziev, Abdoulkhak R. (GI TAS).

Explanations: FHA: Focus Humanitarian Assistance, Dushanbe-Khorog; GI TAS: Geological Institute of the Tajikistan Academy of Sciences, Dushanbe; KSU: Khorog State University, Khorog; MIMB: Ministry of Industry, Mining Branch, Dushanbe; TGG: Tajikglavgeologia, Dushanbe.

#### **New members:**

1. Djangiev, Azim Ibragimovich, year of birth **1962**, **Deputy Minister of Industry** (Mining Branch) of the Republic of Tajikistan, Ph.D.; home: Dushanbe, Mushfiki st., 103, apt. 24; tel. + 992 372 335120. Languages: Tajik, Russian, English.



2. Hudobakhsheva, Sharifa, year of birth 1970, Senior lecturer in Khorog University, temporary is Ph.D. student in Geological Institute AS RT; home: apt. 34, Sherozi st. 35, Dushanbe, Tajikistan; tel. + 992 372 360223; e-mail: [pish@ac.tajik.net](mailto:pish@ac.tajik.net) Languages: Tajik, Uzbek, German.
3. Bahtdavlatov, Rahmonbek D., year of birth 1959, Focus Humanitarian Assistance (instead of Tajikglavgeologia before); home: Apt. 29, Klagenfurt st. 1, Dushanbe, Tajikistan; tel. + 992 372 326332; e-mail: [ikar@ac.tajik.net](mailto:ikar@ac.tajik.net). Languages: Tajik, Russian, English.

I.N. Matveeva and A.R. Fayziev have now moved to the Geological Institute, where they hold the posts of Senior Investigator and Institute Director respectively.

*Contributed by Vladislav Minaev, Chairman of TajIAGOD Group, PO Box 198, Dushanbe 734025, Tajikistan ([geol@ac.tajik.net](mailto:geol@ac.tajik.net)) and Irina Matveeva ([petro@ac.tajik.net](mailto:petro@ac.tajik.net)) Fax: + 992 372 510037 for both.*

### IAGOD Council (2000–2004)

Position	Person	Country	e-mail Address
President	E. Hammerbeck	Republic of South Africa Council for Geoscience, Private Bag X112, Pretoria 0001, South Africa. Tel. (+27) 12-841-1130 Fax. (+27) 12-8411140	<a href="mailto:ehammerb@geoscience.org.za">ehammerb@geoscience.org.za</a>
Past President	C. L. Stanley	United Kingdom Natural History Museum, Cromwell Road, London SW7 5BD, UK Tel. (+44) 171-938 9361 Fax (+44) 171-938 9268	<a href="mailto:C.Stanley@nhm.ac.uk">C.Stanley@nhm.ac.uk</a>
Honorary Past President	I. R. Plimer	Australia University of Melbourne, Department of Geology, Parkville, Victoria 3052, Australia; Tel (+61) 3-9344 6520 Fax (+61) 3-9344 7630	<a href="mailto:ianrp@unimelb.edu.au">ianrp@unimelb.edu.au</a>
First Vice President	I. Kigai	Russia IGEM, RAS, Staromonetny per. 35, Moscow 109017 Russia. Fax: (+7) 095 238 2513	<a href="mailto:kigai@igem.ru">kigai@igem.ru</a>
Second Vice President	G. Schneider	Namibia Geological Survey, POB 2168, 1 Aviation Road, Windhoek 9000, Namibia; Fax. (+264) 61 249 146	<a href="mailto:gabi@mme.gov.na">gabi@mme.gov.na</a>
1 <sup>st</sup> Vice President at Large	S. Ishihara	Japan Geological Survey of Japan, 1-1-3 Higashi, Tsukuba 305, Japan. Tel. (+81) 298-519345 Fax. (+81) 298-553286	<a href="mailto:shunso@gsj.go.jp">shunso@gsj.go.jp</a>
2 <sup>nd</sup> Vice President at Large	Yuchuan Chen	China Chinese Academy of Geological Sciences, 26 Baiwanzhuang Road, 100037 Beijing, P.R. China; Tel. (+86) 1-891928; Fax. (+86) 1- 8310894	
Secretary General	N. J. Cook	Norway Geological Survey of Norway N-7491 Trondheim, Norway; Tel. (+47) 73 90 42 03; Fax. (+47) 73 92 16 20	<a href="mailto:Nigel.Cook@ngu.no">Nigel.Cook@ngu.no</a>
Assoc. Secretary General	J. Aichler	Czech Republic Czech Geological Survey, P.O. Box 65, 79001 Jeseník, Czech Republic Tel. (+420) 645-412081	<a href="mailto:aichler@cgu.cz">aichler@cgu.cz</a>

		Fax. (+420) 645-412081	
Membership Secretary	R. Seltmann	United Kingdom Natural History Museum, Department of Mineralogy, Cromwell Road, London SW7 5BD, UK; phone: +44 207 942 5042; fax: +44 207 9425537	<a href="mailto:rs@nhm.ac.uk">rs@nhm.ac.uk</a>
Chief Treasurer	R. Grauch	USA U.S. Geological Survey, Federal Center, MS 973, Denver, Colorado 80225, USA Tel. (+1) 303-2365551 Fax (+1) 303-2363200	<a href="mailto:rgrauch@usgs.gov">rgrauch@usgs.gov</a>
<b>Regional Councillors</b>			
Africa	S.O. Akande	Nigeria	
Asia	Mao Jingwen	China Institute of Mineral Deposits, CAGS 26 Baiwanzhuang Road, Beijing 100037, China. Tel. (+86) 10 6832 7333 Fax. (+86) 10 6831 0894	<a href="mailto:maojingwen@china.com">maojingwen@china.com</a> <a href="mailto:jingwenmao@263.net">jingwenmao@263.net</a>
SW Pacific	P. K. Seccombe	Australia	
Europe	V. Shatov	VSEGEI, Sredny Prospect 74, 199106 St. Petersburg, Russia, Tel (+7) 812 328 9106; Fax (+7) 812 328 9216	
North America	I. R. Jonasson	Geological Survey of Canada, 601 Booth Str., Ottawa, Ontario, K1A 0E8 Canada Tel. (+1) 613-996-2766 Fax. (+1) 613-996-9820	<a href="mailto:ijonasson@nrcan.gc.ca">ijonasson@nrcan.gc.ca</a>
South America	F.R.D. Andrade	Brazil	<a href="mailto:dias@usp.br">dias@usp.br</a>
SGA Ex-officio members	J. Pašava, SGA Executive Secretary	Czech Republic	<a href="mailto:pasava@cgu.cz">pasava@cgu.cz</a>
	P. Herzig, SGA Treasurer	Germany	<a href="mailto:herzig@mineral.tu-freiberg.de">herzig@mineral.tu-freiberg.de</a>

*IAGOD Council Nominating Committee: Chairman: Miroslav Stemprok; Members: M.K. Brodtkorb, E. Horikoshi, G. Kautsky, N. I. Eremin*

### IGCP 443



### *Magnesite and Talc Geological and Environmental Correlations*

International Geological Correlation Programme of UNESCO and IUGS led by

**Martin Radvanec**, Slovak Republic; [radvanec@gsresnv.sk](mailto:radvanec@gsresnv.sk)

**Walter Prochaska**, Austria; [prochask@unileoben.ac.at](mailto:prochask@unileoben.ac.at)

**Antonio C. Gondim**, Brazil; [gondim@geologia.ufpr.br](mailto:gondim@geologia.ufpr.br)

**Basile Christaras**, Greece; [christar@geo.auth.gr](mailto:christar@geo.auth.gr)

**Website available on: <http://www.gssr.sk/igcp443/index.html>**

Correspondence address: **Zoltan Nemeth**, the Project secretary, Geological Survey of Slovak Republic, Werferova 1, 040 11 Košice, Slovak Republic, [nemeth@dodo.sk](mailto:nemeth@dodo.sk)

## Report of the Working Group on Ores and Metamorphism (WGOM) for 2001

During the last year, WGOM participated in the "Joint Society of Geology Applied to Ore Deposits (SGA)-Society of Economic Geologists (SGE) Meeting" in Krakow, Poland (August 26-29). The WGOM session, "Metamorphism Affecting Mineral Deposits" included 14 papers that were edited by Nigel Cook and Ksenia Mochacka. The topics of the papers were varied but they focussed mainly on the nature of gold complexes in metamorphic fluids, the origin of metallic skarns (Burdigalian (Algeria), Madan and Central Rhodopes (Bulgaria), Ocna de Fier Dognecea (Romania), Los Santos (Spain) Bonya Block (Australia), and the effects of metamorphism on massive sulphides (Aggeneys (South Africa), Langban (Sweden), a non-sulphide Zn deposit (Skorpion (Namibia) and magmatic iron ores (Pena Colorada (Mexico), as well as the geology of various vein deposits in metamorphic rocks (Rheinisches Schiefergebirge (Germany), Cerro Espero (Argentina), Svratka Dome (Czech Republic).

The WGOM have convened a session 'Metamorphism of Mineral Deposits' at the up-coming International Association on the Geology of Ore Deposits Geocongress in Windhoek. One of the chairs of the session is Nigel Cook. We will also convene a session at the 7th Biennial Meeting SGA in Athens (August 24-28, 2003). Apart from our participation in symposia associated with the SGA, IGC, and IAGOD meetings, it is hoped that, in the future, WGOM can also convene sessions at national meetings (e.g. Geological Association of Canada-Mineralogical Association of Canada, Geological Society of America, Australian Geological Convention, Geocongress) and other international meetings organized by, for example, the International Mineralogical Association. The study of metamorphosed and metamorphogenic ore deposits is alive and well.

The Newsletter remains the main vehicle of communication with members of the Working Group and the 14-page Newsletter no. 11 was sent out in January 2002. Adrienne Larocque now takes over as secretary of WGOM, in place of Nigel Cook, and will edit the next newsletter at the end of 2002.

Twelve papers presented during the WGOM session at the 31<sup>st</sup> IGC in Rio (2000) are now being prepared for a special volume of Ore Geology Reviews.

### *Executive Committee*

Chair	P. G. Spry, Ames, U.S.A. (first appointed 1999) e-mail: pgspry@iastate.edu
Co-Chair	A. Mookherjee, Calcutta, India (first appointed 1999)
Co-Chair	W. Prochaska, Leoben (first appointed 1994) e-mail: prochaska@grz08u.unileoben.ac.at
Secretary	Adrienne Larocque, Manitoba, Canada / Manilla, Phillipines jstimac@i-manila.com.ph (first appointed 2002)

*Contributed by Paul G. Spry, Chair, WGOM*

### **The Mineral Deposit Studies Group**

MDSG is an affiliate of the Geological Society (London) and the Applied Mineralogy Group of the Mineralogical Society. Visit the webpage at <http://mdsg.org.uk/> The website together with the MDSG listserver aims to provide economic geologists (academics and industry) with up to date information concerning research initiatives, published abstracts, conference dates and pointers to contents pages of relevant journals. The MDSG Annual Winter Meeting will be held between 5<sup>th</sup> and 7<sup>th</sup> January 2003 at the University of Leicester (U.K.). The meeting will be followed by a fieldtrip on the 8th to the Peak District - "Locating blind MVT orebodies? - the UK perspective."

Geo-mineralisation is the MDSG's listserver that provides an email discussion forum for academia, students and industry professionals interested in mineral deposits.

# ANNOUNCEMENT

**International Workshop** organized by the Czech Group of the IAGOD

## URANIUM DEPOSITS

### FROM THEIR GENESIS TO THEIR ENVIRONMENTAL ASPECTS

**Prague, Czech Republic, September 10 -11, 2002**

**GENERAL INFORMATION:** The workshop will be held in Prague, Czech Republic, from Tuesday 10<sup>th</sup> to Wednesday, 11<sup>th</sup> September, 2002. One-day pre-workshop field trip is being planned for the Příbram historical uranium district and a two-days post-workshop field trip for the Straz uranium deposit and the Rozna uranium mine.

**First Circular and Call for Papers:** You are cordially invited to present the results of your work at the international workshop organized by the Czech Group of the IAGOD in cooperation with the Czech Geological Survey, Prague, Faculty of Science, Masaryk University, Brno, Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, Diamo state enterprise, Straz p. Ralskem, and the Society for Geology Applied to Mineral Deposits (SGA).

**ORGANIZING COMMITTEE:** **Chairman: Bohdan Kříbek**, *Czech Geological Survey, Prague*; **Co-Chairman: Josef Zeman**, *Masaryk University, Brno*; **Honorary members: Miloš Růžička**, *Director of the Czech Geological Survey, Prague*; **Jiří Jež**, *Director of the Diamo s.e., Stráž p. Ralskem*; **Jan Slovák**, *Dean of the Faculty of Science, Masaryk University, Brno*; **Karel Balík**, *Director, Institute of Rock Structure and Mechanics, Academy of Science, Prague*. **Members: Jaroslav Aichler**, *Czech Geological Survey, IAGOD representative*; **Marian Böhm**, *Diamo, state enterprise, Stráž p. R.*; **Jan Pašava**, *Czech Geological Survey, SGA representative*; **Miloš René**, *Institute of Rock Structure and Mechanics, Academy of Science, Prague*; **Eva Riedlová**, *Czech Geological Survey*; **Karel Žák**, *Czech Geological Survey*

#### MEETING TOPICS:

- Uranium deposits and tectonic processes with special emphasis on the Late-Hercynian evolution of Europe
- Modelling of physical and chemical conditions of uranium migration and mobilization in hydrothermal processes geochemistry of rock alterations
- Uranium in supergene processes
- Chemistry of water-rock interaction after the closure and
- Flooding of uranium mines
- Chemistry and mineralogy of uranium mine tailings
- Hydrogeochemistry of radionuclides in aquatic environment

**INVITED SPEAKERS:** Invited lectures will be presented by **Maurice Pagel**, *Université de Paris XI, Orsay, France*; **Michel Cuney**, *Université Henri Poincaré, Nancy, France*; **Lutz Hecht**, *Technischen Universität, München, FRG*

**ABSTRACTS:** Extended abstracts (4-6 printed pages) will be published in a special volume. The abstract in electronic form should be submitted by 31. 02. 2002. Each abstract will be reviewed and final version should reach the organizing committee by 30. 04. 2002. Instructions for authors will be included in the 2<sup>nd</sup> Circular.

**LANGUAGE:** The official language of the workshop will be English.

**CONFERENCE PLACE:** Hotel ILF\*\*\*, Budějovická st. 15/743, 140 00 Prague 4-Michle, Czech Republic.

#### IMPORTANT DATES

**September 1, 2001** – Pre-registration

**February 31, 2002** – Submission of Abstracts

**April 30, 2002** – Final Version of Abstracts – Registration and Payment

**September 9, 2002** – Pre-workshop excursion

**September 12 – 13, 2002** – Post-workshop excursion

**November 2001** – Second Circular

**March 31, 2002** – Acceptance of Abstracts

**September 10 – 11, 2001** – Workshop

**PRE-WORKSHOP EXCURSION****Monday, September 9, 2002:**

*Morning:* Departure from Prague, Upper Proterozoic Formations of the Teplá-Barrandian Zone, Příbram historical U-ore district, Příbram Mining and Mineralogical Exposition, reclamation of uranium mine dumps.  
*Afternoon:* Příbram Holy Hill Monastery, geology of the Central Bohemian Pluton, evening return to Prague.

**POST-WORKSHOP EXCURSION****Thursday, September 12, 2002**

*Morning:* Stráž uranium deposit, environmental problems after closure of the mine, desalination of the contaminated Cenomanian waters. *Afternoon:* Kutná Hora medieval mining town, mining exhibition, the Saint Barbara gothic church, accommodation in Kutná Hora.

**Friday, September 13, 2002**

*Morning:* Arrival to the Rožná uranium mine, Underground excursion. *Afternoon:* Reclamation of uranium dumps, monitoring system at the Olší mine.

**REGISTRATION FEES**

**Registration for the workshop** (inc. transport from and to airport, abstract volume, ice-breaker party, lunches, refreshments, evening banquet and visit to the Prague castle) **USD 135**

**Pre-workshop excursion** (incl. transport, excursion guide, full board) **USD 40**

**Post-workshop excursion** (inc. transport, excursion guide, one-night accommodation, full board) **USD 120**

(Note: After April 30, 2002, a late registration surcharge of 10 % will apply to all above prices.)

**Return by September 1, 2001 to:** B. Kříbek, Czech Geological Survey, Prague 5, Czech Republic. Tel., Fax: 420-2-5817390, E-mail: kribek@cgu.cz

<http://xrd.cgu.cz/uranium.htm>

**ACCOMMODATION:** Accommodation will be arranged at **Hotel ILF\*\*\***: Single room – USD 65 /night, Double room – USD 91 /night and in **students' dormitory**: Single room – USD 20 - 30 /night

**MEETINGS CALENDAR:****2002**

**21-25 July Billings, Montana 9th International Platinum Symposium.** Information: Roger Cooper, Lamar Univ. email: cooperrw@hal.lamar.edu Website: www.platinumsymposium.org

**17–23 August Davos, Switzerland. 12th V.M. Goldschmidt Conference** For info: Prof. A. Halliday, Institut für Min. und Petrographie, ETH-Zentrum, CH-8092, Zurich Switzerland E-mail: halliday@erdw.ethz.ch

**10–11 September, Prague, Czech Republic. Uranium 2002 — Uranium deposits from their genesis to their environmental aspects** For Info: Contact Bohdan Kribek E-mail kribek@cgu.cz or Josef Zeman E-mail jzeman@sci.muni.cz Website: <http://xrd.cgu.cz/uranium.htm>

**1-6 September, Edinburgh, U.K. IMA 2002** 18th General Meeting of the International Mineralogical Association. <http://www.minersoc.org/IMA2002>

**16-18 September Novosibirsk, Russia International Conference on Tectonics and Metallogeny of Northeast Asia** Website: [www.uiggm.nsc.ru/uiggm/geology/admin/](http://www.uiggm.nsc.ru/uiggm/geology/admin/) Email: berzina@uiggm.nsc.ru

**18–20 September, Ky'iv, Ukraine.** Conference on "Metallogeny of Precambrian shields" (see advertisement in this newsletter)

**25-28 September Lima, Peru XI Peruvian Geological Congress.** Website: [www.ingemmet.gob.pe/sgp](http://www.ingemmet.gob.pe/sgp), e-mail: [sgp@inictel.gob.pe](mailto:sgp@inictel.gob.pe)

**27-30 October Denver, Colorado Geological Society of America Annual Meeting and Exposition, "Science at the Highest Level".** E-mail: [meetings@geosociety.org](mailto:meetings@geosociety.org), Tel: 1-800-472-1988

## 2003

**22-24 March 2003 GEODE Alpine-Balkan-Carpathian-Dinaride (ABCD) project, Final Workshop,** Seggauberg, Austria, with pre- and post-Workshop excursions. <http://www.gl.rhul.ac.uk/geode/news.html>

**16-22 August Oslo, Norway SCANDIUM 2003: An International Symposium on the Mineralogy and Geochemistry of Scandium.** Website: [www.nhm.uio.no/geomus/scsymp/](http://www.nhm.uio.no/geomus/scsymp/)

### Geodynamics and Ore Deposit Evolution

The GEODE scientific programme is built upon five projects, each relating to metallogenic provinces in Europe which contain world class ore deposits. These are supported by projects in South America and the SW Pacific region specifically aimed at providing insights that can be applied to give a better understanding of ore deposit types in Europe and a project to make global comparisons between the world's major VHMS districts. The programme divides into studies of metallogenic provinces in orogenic systems active at the present day and studies of metallogenic provinces from the geological past. Only with modern systems is it reasonable to relate the mineralising processes to the present day large scale structure and properties of the lithosphere, which are determined from geophysical information, although the lithospheric structure of the Urals orogen does appear to have been preserved since the time it was active.

Find out about GEODE Research Objectives, the Main Projects of GEODE (Alpine–Balkan–Carpathian–Dinaride Chain; Basin Hosted deposits; Fennoscandian and Ukrainian Shields; Southwestern Variscides; Urals and GEODE 'Global' projects, with all contact people and addresses on the GEODE website: <http://www.gl.rhul.ac.uk/geode/>

New on the website is **LODE**, a database in which the largest ore deposits in Europe are described in this database to indicate the extent and range of major ore deposits. They have been chosen by the co-ordinators of the five main projects in GEODE.

### Global Tectonics and Metallogeny

A bulletin published by the Laboratory of Global Tectonics and Metallogeny, Washington, D.C. in cooperation with the Commission on Tectonics of Ore Deposits (CTOD) of the International Association on the Genesis of Ore Deposits (IAGOD)

Editor: Jan KUTINA, The American University, Washington, D.C. 200016, USA

Global Tectonics and Metallogeny provides a forum for a systematic discussion of selected questions, focusing on factors controlling the genesis and distribution of ore deposits on different scales. Special attention will be paid to the relationships between metallogenesis and global tectonics.

For subscription rates contact Schweizerbart'sche Verlagsbuchhandlung, Johannesstraße 3 A, D-70176 Stuttgart, Germany; fax: (0711) 625005; e-mail: [order@schweizerbart.de](mailto:order@schweizerbart.de)

Special reduced price for private persons ordering and paying their subscription personally: US\$ 81,- plus postage.

## Report of the Russian IAGOD National group activity in 2001 (and early part of 2002)

Recent scientific meetings organized by the members of Russian IAGOD group.

1. XIV Russian National Conference on Experimental Mineralogy was held on October 2-4, 2001 in Chernogolovka. The Organizing committee included the following IAGOD members: V.A. Zharikov (Chairman), D.V. Grichuk, G.P. Zaraisky, F.A. Letnikov, B.N. Ryzhenko and I.D. Ryabchikov. The conference contributions were divided into 5 sessions: (1) Magmatic systems under high pressures. (2) Mineral equilibria. (3) Hydrothermal and fluid systems. (4) Kinetics and dynamics of mineral formation. (5) Experiment in solving geological and ecological problems.
2. Seminar "Rhythm and Cyclic Recurrence in Geology as a reflection of General Regularities of Evolution" was held on February 7-8, 2002 in the Vernadsky State Geological Museum (Prof. D.V. Rundkvist – Chairman). 49 oral contributions were presented and discussed.
3. Symposium "Problems of Fluid Flows in the Earth's Crust and Mantle" was held in IGEM RAS on February 26-28, 2002. It was organized by IGEM RAS and Inst. of Experimental Mineralogy RAS, V.A. Zharikov and N.P. Laverov – Co-Chairmen. 28 oral contributions were presented and discussed, and a quite opposite opinions on possibility of independent (from magmas) fluid flows migration from mantle were expressed.
4. X International Conference on Thermobarogeochemistry (Fluid Inclusion Research) was held in VNIISIMS, Alexandrov city, Russia, on September 10-14, 2001. Prof. F.P. Mel'nikov and Dr. E.V. Poliansky, Co-Chairmen. It was attended by 60 Russian scientists and one from Uzbekistan. Two volumes (of Abstracts and Proceedings) were issued in Russian (some papers with English summaries) before the meeting. The next conference is planned to be held in 2003 at the same place.

Forthcoming meetings in Russia.

1. International Conference "Outgassing of the Earth: geodynamics, geofluids, oil and gas" in memory of late Academician P.N. Kropotkin. May 20-24, 2002, Moscow. Hosted by the Inst. of Oil and Gas Problems. Contact addresses: rodkin@wdeb.ru, valyb@mail.ru, Webpage: <http://www.wdeb.rssi.ru/~rodkin/conf.htm>.
2. Bacterial Paleontology. May 21-23, 2002, Moscow. Hosted by Paleontological Inst. of RAS, contact person – Aleksey Yu. Rosanov (vtopor@paleo.ru). Main topics to be discussed: (1) Fossil bacteria, their morphogenetic and geochemical investigation. (2) Methods of fossil bacteria investigations. (3) Fossil bacteria and Mineralogy, Crystallography, and Biomineralogy. (4) Fossil bacteria, sedimentology and Paleogeography. (5) Fossil bacteria and Ore Deposits.
3. International Symposium "Mantle Plumes and Metallogeny", September 4-7, 2002, Petrozavodsk, Karelia, with one field trip before and four trips after the meeting. Contact persons: Andrey F. Grachev in Moscow (grachev@uipe-ras.scgis.ru) and Golubev in Petrozavodsk: golubev@krc.karelia.ru, fax: (7-8142) 770-602, tel: (7-8142) 782-753.
4. International Conference "Deep Structure and Geodynamics of Fennoscandian, marginal and intraplateform transitional zones". September 16-20, 2002, Petrozavodsk, Karelia. Academicians N.P. Laverov and F.P. Mitrofanov, Co-Chairmen. Contact persons: Kim I. Heiskanen, Director of Geological Inst., Head of Organizing Committee (geology@krc.karelia.ru), Nikolay V. Sharov, Deputy Director (sharov@krc.karelia.ru) and Aelita V. Pervunina, Secretary (aelita@krc.karelia.ru).

New e-mail addresses of Russian IAGOD members:

Alekseyev, V.A. (Russia, Moscow) [alekseyev@geokhi.ru](mailto:alekseyev@geokhi.ru)

Antipin, V.S. (Russia, Irkutsk) antipin@igc.irk.ru  
 Bortnikov, N.S. (Russia, Moscow) bns@igem.ru, bortnikov@ras.ru  
 Distanov, E.G. (Russia, Novosibirsk) distanov@uiggm.nsc.ru  
 Dolzhenko V (Russia, Apatity) doljenko@arcticsu.ru  
 Eremin, N.I. (Russia, Moscow) neremin@mail.ru  
 Gonevchuk, G.A. (Russia, Vladivostok) gonevchuk@hotmail.com  
 Goncharov, V.I. (Russia, Magadan) director@neisri.magadan.ru  
 Ignatiev, A.V. (Russia, Vladivostok) ignatiev@fegi.ru  
 Kontar, E.S. (Russia, Ekaterinburg) kontar@ugse.parad.ru  
 Kovalenko, V.I. (Russia, Moscow) vik@igem.ru  
 Mironov, A.G. (Russia, Ulan-Ude) mir@bsc.buryatia.ru  
 Nasedkin, V.V. (Russia, Moscow) nasdi@orc.ru  
 Naumov, V.B. (Russia, Moscow) naumov@geokhi.ru  
 Okrugin, V.M. (Russia, Petropavlovsk-Kamchatka) okrugin@emsd.iks.ru  
 Pavlovsky, A.B. (Russia, Moscow) vims@df.ru  
 Polyansky, E.V. (Russia, Alexandrov) polyansky@vniisims.elcom.ru  
 Roev, S.P. (Russia, Yakutsk) roev@diamond.ysn.ru  
 Ryabchikov, I.D. (Russia, Moscow) iryab@igem.ru  
 Safonov, Yu.G. (Russia, Moscow) safonov@igem.ru  
 Seredin, V.V. (Russia, Moscow) seredin@igem.ru  
 Shatov, V.V. (Russia, St-Petersburg) shatov@mail.wplus.net  
 Stepanov, V.A. (Russia, Blagoveshchensk) amurknii@asc.blg.ru  
 Trunilina, V.A. (Russia, Yakutsk) trunilina@diamond.ysn.ru

### **Recent papers of Russian (±other) IAGOD members:**

**Zharikov, V.A. & Rusinov, V.L. (Eds.) (1998).** *Metasomatism and Metasomatic rocks.* // Moscow: Scientific World. 492 p. (in Russian).

The theoretical base and common types of metasomatic processes are discussed in the light of D.S. Korzhinskii's theory. Thermodynamics, dynamics, and ideas concerning selforganization of metasomatic processes are developed according to current theoretical level. Results and technics of experimental study of metasomatism are observed. The relation of metasomatism to ore depositions is discussed, and a new concept of formation of ore-concentrating dense salt melts and related light metasomatizing fluids is proposed. The significant part of the monograph contains characteristics of metasomatic rocks, facies, and genetic assemblages with special attention to their geological setting, petrography, mineralogy, physico-chemical conditions and relations to ores. The monograph may be interesting for petrologists, geologists studying ore deposits, and specialists in metasomatism. It can be used as a textbook of metasomatism for students and postgraduate students.

**Borisov, M.V. (2000)** *Geochemical and Thermodynamic Models of Hydrothermal Vein Ore-Formation* // Moscow: Scientific World, 360 pp. (in Russian).

The monograph represents an attempt to consider systematically conditions of formation and principal features of zoning of ore bodies and related haloes for low- and middle-temperature vein-type hydrothermal deposits with the use of thermodynamic computer simulation of ore-forming processes. The main strategy of research lays in equilibrium-dynamic approach when a process is described as a succession of thermodynamically stable steps, though with the use of some dynamic elements. The generalized models of hydrothermal ore-forming systems for vein-type base-metal and uranium deposits are constructed; their consideration includes a realm of initial ore-forming solutions formation and the sites of ore and haloes formation. The book can be useful as a textbook on computer simulation of ore-formation processes.

**Grichuk, D.V. (2000)** *Thermodynamic models of Submarine Hydrothermal systems* // Moscow: Scientific World, 304 pp. (in Russian).

The book describes a method of constructing thermodynamic models of convective hydrothermal systems with an exogenous source of solutions. On the example of modeling the modern hydrothermal seafloor systems, the book shows the potential of the method in interpretation and prediction of hydrothermal ore formation. A method of constructing isotope-chemical models (on the example of sulfur isotopes) is described. The influence of boiling in the interior of hydrothermal oceanic systems on their metallic productivity is considered. The book is intended for geologists studying hydrothermal ore deposits, geochemists and marine geologists. It also can be useful for students as a textbook on computer simulation of ore-formation processes.



**Kontar', E.S. (2001)** Location environments and formation history of copper, zinc and lead deposits in the Urals. Explanatory notes for 'The Map of Copper, Zinc and Lead Deposits Location in the Urals' of 1:1 000 000 scale // Ekaterinburg: Department of Natural Resources of Urals Region, Open Joint-Stock Company 'The Urals Geological Mapping Expedition'. 133 pp. 13 illustrations, 3 Tables, 149 Ref.

The map is available as CD ROM, explanatory notes (in Russian)– as a book, both in 100 copies. It is a first published 1:1 000 000 scale Map of Copper, Zinc and Lead Deposits Location in the Urals. Map was made on formational-geodynamic base. It reflects the location environments of copper, zinc and lead deposits of the following ore-formation families: massive-sulfide, vanadium-iron-copper, skarn-copper, copper sandstones, porphyry-copper, stratiform lead-zinc and copper-nickel ones. Each of these ore-formation families occupies a certain position in the structures and in geological evolution of Eastern rim of the East-European platform, the Urals Paleozoic geosynclinal system and Valerianov volcanic-plutonic belt. Paleotectonic (geodynamic) environments of their formation are analyzed on the base of paleometallogenic sketches for Early Proterozoic, Riphean, Vendian-Cambrian, Ordovician-Silurian-Early Devonian, Early-Middle-Late Devonian, Late Devonian-Early Carboniferous, Early-Middle Carboniferous, Middle-Late Carboniferous-Permian. Directions and goals of geological-prospecting and scientific research works for copper, zinc and lead are defined. Persons interested in obtaining a copy of this book and CD may contact Professor E.S. Kontar' (kontar@ugse.parad.ru).

**Varnavsky, V.G., Galichanin, Ye.N., Besspalov, V.Ya., Gagaev, V.N., Emel'yanov, N.V., Kirillova, G.L., Kopylov, M.I., Krapiventseva, V.V., Kuznetsov, V.E., Rodionov, S.M., Troyan, V.B. (2001)** Natural oil/gas resources of the Khabarovsk Territory: state, problems of investigation and exploration // Vladivostok: Dalnauka, 2001. 138 p. (in Russian). ISBN 5-8044-0132-7.

A necessity to initiate exploration for oil and gas in the Khabarovsk Territory is substantiated in terms of social and economic aspects. Areas promising for oil and gas have been distinguished on the continental part and adjacent shelf of the territory. Oil and gas potential is evaluated and expected reserves are estimated. The authors drew recommendations for follow-up scientific researches, prospecting and geological exploration works for oil and gas, as well as the concept of their development till 2005 and also as far as 2025.

**Rodionov, S.M. (2001)** Petrogeochemical evolution of tin-bearing ore-magmatic systems of Eastern Russia // In: Tectonics, Deep Structure, and Geodynamics of East Asia. Proceedings of the III<sup>rd</sup> Scientific Conference dedicated to memory of Academician Yu.A.Kosygin (Khabarovsk, January 23-25). Khabarovsk, ITIG FEB RAS, p.225-238.

The ages of tin-bearing intrusive rocks and associated Sn deposits of the Far East Russia vary from Devonian to Miocene with the maximum in Cretaceous. Two types of multi-phase tin producing magmatic complexes (granodiorite-granite and diorite-granodiorite types) are identified in this region. The complexes differ from each other in the style of tin content evolution from early to late phases, and in petrographic composition of the main phase. However, both of them are characterized by similar evolution of  $Al_2O_3/Na_2O+K_2O+CaO$  and  $Fe_2O_3/FeO$  ratios and initial ratio  $^{87}Sr/^{86}Sr$ . Both magmatic complexes have the same differentiation trend on AQP diagram. Initial magmatic melts of both magmatic complexes are assumed to have been similar.

**Nokleberg, W.J., Rodionov, S.M., Badarch, G., Yan, H., Hwang, Duk-Hwan (2001)** Mineral resources database for Northeast Asia: Mineral Deposits at the Beginning of the 21st Century // A.Piestrzynski et al. (eds.) // Swets and Zeitlinger Publishers, Lisse, 2001, p.1125-1127.

A major new mineral resource database is being compiled for an international collaborative project on the mineral resources, metallogenesis, and tectonics of Northeast Asia. The database, that is a new English compilation of data on lode deposits and placer districts of the region, contains comprehensive data on locations, major and minor metals, mineral-deposit models, geological characteristics, and references. The project is being conducted by the Russian Academy of Sciences, the Mongolian Academy of Sciences, Jilin University (China), the China Geological Survey, the Korean Inst. of Geology, Mining, and Materials, the Geological Survey of Japan, and the U.S. Geological Survey.

**Obolenskiy, A.A., Rodionov, S.M., Parfenov, L.M., Kuzmin, M.I., Distanov, E.G., Sotnikov, V.I., Seminskiy, Zh.V., Spiridonov, A.M., Stepanov, V.A., Khanchuk, A.I., Nokleberg, W.J., Tomurtogoo, O., Dejidmaa, G., Yan, H., Fengyue, S., Hwang, D.H., Ogasawara, M. (2001)** Metallogenic belt map of Northeast Asia: Mineral Deposits at the Beginning of the 21st Century // A.Piestrzynski et al (eds.) // Swets and Zeitlinger Publishers, Lisse, p.1133-1135.

The metallogenic belt map of Northeast Asia at a scale 1:5 M is constructed on the base of geodynamic (terrane and overlap assemblages) map of the same scale. Metallogenic belts are outlined based on the analyses of geodynamics and metallogeny of each main structural unit.

**Rodionov S.M., Khanchuk A.I. (2001)** Mesozoic and Cenozoic metallogeny and geodynamics of Russian Far East: Mineral Deposits at the Beginning of the 21st Century // A.Piestrzynski et al (eds.) // Swets and Zeitlinger Publishers, Lisse, p.1137-1140.

About 80% of known mineral deposits of different types in Russian Far East were formed during the Mesozoic and Cenozoic. Important metallogenic events are related to consecutive accretion of various tectonic-stratigraphic terranes to North Asian Craton that started in the early Mesozoic. After accretions, the craton margin and accreted terranes were stitched by granitoid batholith belts and overlapped by volcano-plutonic belts. Numerous metallogenic belts are spatially related to these magmatic belts and genetically related to the processes of accretion and subduction.

**I.D.Ryabchikov. (2001)** Deep Geospheres and Ore Genesis // Geology of Ore Deposits, v. 43, No. 3, 2001, p. 173-183.

This paper addresses the problems of ore metal mobilization and concentration and volatile component behavior in the Earth's mantle. Diamond crystallization and the formation of chromitite bodies upon interstitial melt infiltration in mantle rocks are examples of mineralization processes occurring in the Earth's mantle. Depending on the formation conditions, mantle magmas can be intrinsically enriched in various ore components (PGE, chromium, and rare metals). Their further concentration occurs in crustal magma chambers as a result of the processes of magma mixing, prolonged crystal fractionation, and the separation of immiscible salt melts (mainly carbonatitic) at late stages of the magma system evolution. In subduction zone regions, ascending flows of deep-derived fluids selectively transport a number of ore metals into the growing continental crust and prepare continental crust material as a source of the material of ore deposits. It is possible that some of these fluids took part in the formation of certain deposits. In hydrothermal ore-forming systems with nonmagmatic sources of metals and solutions, the source of heat energy was most likely represented by magma masses intruded into the upper crust.

*Contributed by I.N. Kigai*

---

### **Report of the Georgian IAGOD National Group in 2001**

Some of members of the National Group participated in INTAS-GEORGIA Joint Project 1416 entitled "Elaboration and quantification of metallogenic evolution of Alpine fold systems: the Pontides-Lesser Caucasus sector of the Tethyan Eurasian metallogenic belt". Duration: 1999-2001. Objectives:

- to investigate structure, mineralogy and geochemistry and conditions of formation of some of the more important, and representative, mineral deposits in both the Turkish and Georgian parts of the belt;
- to establish the conditions, timing and chemistry of the hydrothermal systems that formed the deposits;
- to establish the regional structural and paleogeographical factors controlling the distribution of volcanism, plutonism and mineralization;
- to elaborate the reconstruction of the metallogenic evolution of the regions of the East Pontic metallotect, NE Turkey and its prolongation in the Lesser Caucasus using GIS techniques;
- to predict areas with a high probability of occurrence of undiscovered deposits and recommend effective methods for their exploration.

Project participants: Dr. C. Moon (coordinator), Prof. Dr. N.Ozgur (team leader), Dr. S.Kekelia (team leader), Dr. R.Migineishvili (team leader), Dr. V.Gugushvili, Dr. M.Kekelia, Dr. Z.Otkhmezuri, Dr. G.Gotsiridze, M.Asatashvili.

#### **Publications:**

**Buadze V. (2001)** Metallogeny problems of gold in the light of Academician George Dzotsenidze's scientific heritage. Proc. Geol. Inst. Georg. Acad. Sc., New Series, 117. p.443-455. (in Russian)

**Buadze V. (2002)** Impulses of gold in ore-forming systems. Transactions of the scientific session dedicated to the 100-th anniversary of prof. A.B.Pek.

**Gugushvili V. (2001)** Crust and mantle influence on the origin of various types of sulfide deposits. Bull. Georg. Acad. Sc. 163, 3. p.488-491.

- Gugushvili V., Hurt I., Natsvlishvili M., Akhvlediani R. (2001)** Origination of the gold mineralization and wall rock alteration at the Sakdrisi deposit (Bolnisi mining district). *Bull. Georg. Acad. Sc.* 163, 1. p.96-99.
- Gugushvili V., Kekelia M. (2001)** Crustal and mantle sources of Cretaceous volcanism and sulfide mineralization in the Bolnisi mining District. *Proc. Geol. Inst. Georg. Acad. Sc., New Series*, 117. p.412-419. (in Russian)
- Kekelia S., Kekelia M. (2001)** Geology and forming conditions of volcanogenic deposits of nonferrous metals of Pontides and Caucasus. *Proc. Geol. Inst. Georg. Acad. Sc., New Series*, 117. p.430-442. (in Russian)
- Migineishvili (2001)** A possible model of formation for the Madneuli copper-gold deposit. *Proc. Geol. Inst. Georg. Acad. Sc., New Series*, 117. p.472-479
- Migineishvili R. (2001)** Contemporaneous factors controlling formation of the Madneuli Cu-Au volcanogenic massive sulfide deposit. In A.Piestrzynski (ed), *Mineral Deposits at the Beginning of the 21st Century; 6th Biennial SGA Meeting, Krakow, Poland, 26 - 29 August, 2001*. p.301-304.
- Moon C.J., Gotsiridze G., Gugushvili V., Kekelia M., Kekelia S., Migineishvili R., Otkhmezuri Z., Ozgur N. (2001)** Comparison of mineral deposits between Georgian and Turkish sectors of the Tethyan metallogenic belt. In A.Piestrzynski (ed), *Mineral Deposits at the Beginning of the 21st Century; 6th Biennial SGA Meeting, Krakow, Poland, 26 - 29 August, 2001*. p.309-312.

### Members of the Georgian IAGOD group are:

Dr. Vaja I. Buadze, Geological Department of Georgia, 24, Mosashvili str., Tbilisi 380062, GEORGIA, Phone: 995-32-231227

Prof. Vladimir I. Gugushvili, Geological Institute, Georgian Academy of Sciences, 1/9, M.Alexidze str., Tbilisi 380093, GEORGIA, phone: 995-32-332633, e-mail: chiragdani@caucasus.net

Prof. Sergo A. Kekelia, Caucasian Institute of Mineral Resources, 85, Paliashvili str., Tbilisi 380062, GEORGIA, phone: 995-32-226400, e-mail: kekelia@posta.ge

Dr. Maren A. Kekelia, Georgian Academy of Sciences, 1/9, M.Alexidze str., Tbilisi 380093, GEORGIA

Dr. Ramaz R. Migineishvili, Georgian Academy of Sciences, 1/9, M.Alexidze str., Tbilisi 380093, GEORGIA, phone home: 995-32 393596, e-mail: ram\_migi@yahoo.com

Prof. Alexander G. Tvalchrelidze, Georgian Academy of Sciences, 1/9, M.Alexidze str., Tbilisi 380093 GEORGIA, Phone/Fax: 995-32-22 35 75, e-mail: sandro@kheta.ge

---

## Report of the Chinese National IAGOD Group for 2001

The Chinese National IAGOD Group will hold a workshop on 16<sup>th</sup>-22<sup>nd</sup> September 2002, jointly with the 7th National Meeting on Mineral Deposits of China. The title of the workshop of 7th National Meeting on Mineral Deposits of China is the Sustainable Development of Mineral Resource in 21st Century. The contents of the Workshop will include:

- (1) Geochemical kinetic evolution and metallogeny in major metallogenic belt;
- (2) Mineral Deposits related to magma-volcanism;
- (3) Mineral Deposits of SEDEX and VHMS type;
- (4) Mantle fluid and metallogeny;
- (5) Non-metalliferous mineral deposits;
- (6) Mineral Resources of sea floor;
- (7) New theory, method and technology of exploration for concealed ore deposits;
- (8) Others

Geological excursion include:

- (1) Molybdenum deposits of Jinduicheng and Huashan granite;
- (2) Maanqiao, Shouangwang, Baguamiao gold deposits and metamorphic terrain of North Qinling.
- (3) Changba PbZn ore deposits
- (4) Topography of loess in North Shaanxi
- (5) Zhongtiaoshan copper deposits in Shanxi

The 7th National Meeting of China is a large meeting held once every four years. It is expected that 400-500 participants will attend.

Chairman of the Chinese IAGOD Group, Pei Rongfu, together with other members of China National IAGOD Group participated in the workshop of "Deep Structure of the Earth and Concentration of Metals in the Lithosphere: A Geodynamic Approach" in Washington on September 2001. Details have been reported elsewhere in this newsletter.

Pei Rongfu, together with other members completed a national project "Geological Assessment of Mineral Resources Potential for Hard-identified Concealed Large and Rich Ore Deposits" which has been published by Geological Publishing House of China. The abstract of this project is:

#### GEOLOGICAL ASSESSMENT OF MINERAL RESOURCES POTENTIAL FOR HARD-IDENTIFIED CONCEALED LARGE AND RICH ORE DEPOSITS

1. Four-hierarchy metallogenic mechanism: Metallogenic province is defined as the area in which the metallic ore deposits and their series are concentrated regularly. A metallogenic province means the integration of metallogenic geological setting, metallogenic structural convergence, metallic metallogenic phase and ore deposits with specific texture, that is to say the integration of setting, convergence, phase and ore deposits. The coupling of the above-mentioned factors result in the formation of ore deposits at different levels. The concept of hierarchy metallogenic is similar to that of study on diagenic evolution and sedimentary cycle in the petrological and stratigraphic hierarchy. The metallogenic history witnesses the evolution from micro-metallogenesis through middle-sized metallogenesis to macro-metallogenic tectonic background, then the ore-controlling field of useful ore-controlling factors, finally the physicochemical metallogenic phases constraining metallization and formation of ore deposits with certain texture and structure. The identification of four-hierarchy metallogeny and analysis of the northern margin of North China Platform and the area north to it perfect the scientificity, overall view and application.

2. Isopycnic maps of ore deposits (occurrences) used for geological assessment of mineral resources: The ore-concentrated area is brought back by drawing of the known ore deposits (occurrences) on a map. Because the super large ore deposit is based on the huge accumulation of metals, the ore-concentrated area represents the huge ore source and huge accumulation site for ore-forming material. In addition, most super large ore deposits are associated with the same types of small or large ore deposits. Consequently, the analysis on the configuration, intensity, scale and concentration trend of ore-concentrated area is conducive to the strategic prognosis of large or super large ore deposits. In the compilation of isopycnic map of gold deposits in China, the natural points labeling method in which information might be lost was not adopted, but the logical variables were set and comprehensive information processing method was adopted to divide the density area into high-middle-low-graded 36 areas. The studies analyzed the coupling relation between structure and regional ore belts, enhanced the comparison between configuration and quantity, and selected the prospects of mineral resources.

3. Orientation of derivative ore deposits and metallogenic path assessment of mineral resources: like the inheritance and variance of biologic multiplication, inheritance and affinity exist in the formation of ore deposits. The new ore deposits inherit the features of the old ore deposits, or the new ore deposits derive from the old ore deposits. Because the old ore deposits derive from mantle or crust, both of them have affinity with mantle or crust. The scientific identification of cause and effect of ore deposits, their evolution path, orientation of those ore deposits with different configuration but affinity is conducive to tracing the other various ore deposits.

4. Assessment of mineral resources in the ore-concentrated area: It focuses on the assessment of the initial ore source. According to the types of crust and its relations to supply of ore-forming material, ore sources are divided into four types: final source-ore elements of mantle; initial source-ore-forming elements in the initial crust; intermediate source-ore-forming elements of the mobilized reconstituted crust or sedimentary reconstituted crust. The initial source mostly reflects the characteristics of geochemical blocks and their metallogenic potential. The ore-concentrated area takes the geochemical blocks rich in some metals easy to be leached out as source rocks. The initial source can be recognized by the following ways: at first it should be determined which kind of mafic volcanic rocks and metamorphic rocks represents the initial crust; then the petrologic formation should be geochemically studied; finally, the abundance and concentration coefficient should be determined and the metallogenic potential be analyzed. In general, the higher the elementary abundance and concentration coefficient, the greater the metallogenic potential. It is shown that the eastern Shandong, Xiaoqinling, Jiapigou and Zhangjiakou gold ore-concentrated areas bear higher elementary abundance and concentration coefficient, which lays fundamentals for metallization. As for the large ore deposits, it is needed for the intensive thermal and

tectonic events to mobilize gold for further enrichment. The objects for assessment of ore-concentrated areas are the landmass or active belt-scaled tectonic units. It designates the prospecting orientation of western Shandong, northern Taihangshan and northern Hebei without clear metallogenic scale.

5. Assessment method of metallization by “three-source” hydrothermal solution metasomatism: Source of thermal solution is the main determination of origin and prognosis of ore deposits. Metasomatic hydrothermal solution is defined as the product of interaction between water and rocks, which forms the metasomatic ore deposits. Around such ore deposits are the large area of negative metal halo, which indicates that wall rocks provide ore-forming material for metallization. The negative O isotope of wall rocks within orebodies indicates that it is meteoric water that interacts with rocks. Some orebodies are hosted in the circular or radiate structures in the intrusives. Accordingly, the metallogenic theory points out that three factors, ore-forming material, water and heat are respectively derived from wall rocks, meteoric water and magma. The distribution of ore deposits is controlled by the scale and location of ore source, water source and heat source. The mid-large ore deposits are generally located on the intersection of “three source”. Assessment method of metallization by “three-source” hydrothermal solution metasomatism suites the assessment of map of different scales in areas with different studying-level. Determination of three sources is the key. Since the application of the three-source assessment method in the prospecting of the northern margin of North China Platform, many prospects and targets have been delineated. It has been approved that the industrial orebodies had been outlined in some ore deposits.

6. Rifting-basin-evolution assessment of gold deposits: Based on the analysis on strata and tectonic setting, this method takes the fine-grained gold deposits in Yunnan-Guizhou-Guangxi as the examples to establish a metallogenic model of early extensional depression of NS-trending central settlement and late face-to-face collision of two landmasses. In the early stage, the depression controls the distribution of deep-water area and shallow water area. The contemporaneous faults are developed in the isolated mesa in the basin or around the dome under water where the high Au background value of marginal slope reflects the initial Au enrichment. In the later stage, several large or small nappe structures are formed in the process of face-to face collision along the slide plane of Middle Permian coal horizon and Lower Tertiary shale and siltstone. Gold deposits are located in the front of nappe. Gold deposits are generally apt to be located near the central depression, in the intensive strain area of the weak strain area, or in the weak strain area of intensive strain area. The recognition of uplift under water is the key for prospecting of large karlin-type gold deposits.

7. Geochemical prospecting of Pb isotope used for prognosis of deep concealed ore deposits: Unlike the traditional geochemical prospecting method, it is based on the transform data processing to obtain the eigenvalue V1 and V2 of three-dimension topology. The eigenvalue can be used to make intermediate-detailed scale map, classify geochemical blocks, reveal the sharp transition of Pb isotope which represents the controlling boundary of large-super large ore deposits. The sharp turning point of the sharp transition generally represents the location of the ore-concentrated area. On the one hand, the great importance should be attached to the searching of reformed ore deposits on the obvious sharp structural transition, and to the prospecting of thermal sedimentary ore deposits in the foreland basin on the concealed sharp structural transition. On the other hand, the systematic profile of Pb isotope eigenvalue can be used for the prediction of depth of the concealed ore deposits. Based on the systematic profile of Pb isotopic geochemical prospecting, the Pb isotope assessment of mineral resources was developed, the theory of positive deep prospecting-oriented anomaly and diatropism-orientated negative anomaly was put forward. Consequently, the three-dimension location method of ore deposits by Pb isotope was developed, the model of prediction of metallogenic depth and reserves was established. Based on the Pb isotope assessment method, the prospecting strategy of the Tangdan coppers deposit in Dongchuan, Daping gold deposit in Yunayang, Longbohe copper deposit in Jinping was worked out. It was successfully approved by drilling engineering in the Longbohe copper deposit. This method can be used in the exploration of ore deposits and prospective prognosis of deep ore reserves in the mining area.

---

## **Report of the Mongolian National IAGOD Group for 2001**

### **Workshops, Symposia:**

Symposium “Problems of Mongolian Geology” hold on October 19-20 in Ulaanbaatar, School of Geology, Mongolian University of Science & Technology. Forty-eight presentations related to petrology, mineralogy, neotectonics, ore deposits and metallogeny, hydrogeology and geophysics were discussed. Scientific Journal “Geology”, No. 4 was published in October 2001.

Workshop GOLD 2002 hold on February 25-28 in Ulaanbaatar, Mongolian University of Science & Technology, sponsored by Mongolian University of Science & Technology, Mongolian Geological Society, Mongol Alt Ltd and Ivanhoe Mongolia Ltd. Invited speaker Mr. Douglas Kirwin, vice-president of Ivanhoe Mongolia Ltd presented 5 lectures on epithermal gold-silver, porphyry gold-copper deposits, hydrothermal breccia pipes, iron oxide-copper-gold and mesothermal gold deposits, and economic geology of SE Asia. 75 geologists from School of Geology, Mongolian University of Science and Technology, Mongolian State University, Geological Survey of Mongolia, Geological Information Center and about 10 private companies attended this Workshop. After Workshop geologists visited a new discovered porphyry Cu-Au deposit of Oyu Tolgoi in South Gobi.

#### **Attendance in IGCP and other International Projects:**

\* IGCP 420 Continental Growth in the Phanerozoic: Evidence from Central Asia. 2001 Field Workshop III in Novosibirsk, Russia.

\* Mineral Resources, Metallogeneses and Tectonics of Northeast Asia.

#### **Published:**

Distribution Map of Mineral Deposits and Occurrences in Mongolia, scale 1:1,000,000 with Tables of significant Mineral Deposits and Occurrences (14 sheets), 340 pages, including 417 deposits and 3663 occurrences, with compiled by **G. Dejidmaa**, B. Bujinlkam, T. Ganbaatar, N. Oyuntuya and B. Enkhtuya. Edited by **J. Lkhamsuren, G. Dejidmaa, O. Gerel, S. Dandar, Sh. Batjargal, B. Bold-Erdene and D. Batbold**. In 2001 were additionally included and described non-metal mineral resources (construction stone, sulfur, salt, precious stones, mineral pigments, quartz, etc.)

#### **Selected publications:**

**D. Bat-Ulzii (2001)**. Late Paleozoic-early Mesozoic post-collisional magmatism and mineralization. *Geology* 2-3. 104-113. (In Mongolian)

**Bat-Ulzii D. & Gerel O. (2001)**. Tsav Pb-Zn ore-magmatic system. *Geology*. No. 4. 59-70. (In Mongolian).

**Batjargal Sh. & Lkhamsuren J. (2001)**. Problems of metallogenic regioning of Mongolia. *Geology* No.4 183-209. (in Mongolian).

**Bold-Erdene B. & Gantumur Kh. (2001)**. Gold deposit types. *Geology*. No.2-3. 400-411. (In Mongolian)

**Gerel O. (2001)**. Magmatism and metallogeny of Khentey Range. *Problems of Geology* No. 3-4 Ulaanbaatar. 236-246. (in Mongolian).

**Gerel O., Batkhisig B. & Dandar S. (2001)**. Granitic magmatism and mineralization in Mongolian Altai. IGCP 420. Continental growth in the Phanerozoic: Evidence from Central Asia. Novosibirsk, 46-49 p.

**Gerel O, Sharkhuhen D. & Badarch G. (2001)**. PGE-Au Occurrence at Altan Uul-Tamgat in South Gobi, Mongolia. *Mineral Deposits at the Beginning of the 21<sup>st</sup> century* (Ed. By Adam Piestrzynski et al.) Balkema Publishers. 1105-1108).

**Dandar S., Dejidmaa G. & Enkhbaatar Sh. (2001)**. Post-collisional metallogeny of Mongolia. *Geology*. No.2-3. 196-233. (In Mongolian).

**Dashdavaa s. and Oyungerel S. (2001)**. Mineralogical study of of Ikh-Hairkhan tungsten deposit. 307-317. (In Mongolian).

**Dejidmaa G & Gerel O. (2001)** Metallogeneses of Mongolia. *Geology*. No. 4. 209-214.

**Lkhamsurn J. & Voinkov D.M. (2001)**. Geology of fluorite deposits. Smirnov Collection-2001. 71-109 (In Russian).

**Todbileg M. & Gantumur Kh. (2001)** Gold mineralization of the Uhaa Hudag (Dayangar) occurrence, South Mongolia. *Geology*. No.2-3. 411-413.

**IAGOD National Group of Mongolia:** Chairwoman: Prof. Ochir Gerel (Mongolian University of Science & Technology, S. Dandar (secretary, MUST), J. Lkhamsuren (MUST), S. Dashdavaa (MSU), Sh. Batjargal (MUST), G. Dejidmaa (Geol. Inform. Center). N. Amitan, (Togs Buiant Ltd); D. Bat-Ulzii (MUST), J. Ganbold (Mong. Acad Sci, IGMR), B. Delgertsogt (Geoinformation Center), B. Munkhtsengel (MUST), Sunjidmaa (MRAM), M. Todbileg (MUST), D. Sharkhuukhen (M & Diamond Ltd), D. Altankhuyag (MRAM), A. Tsend-Ayush (M & Diamond Ltd). A. Gotovsuren (Mongol Gazar Ltd, Mongolia) B. Batkhisig (Tohoku University, Japan), O. Chuluun (MRAM), D. Batbold (MRAM), D. Bold-Erdene (MRAM), H. Gantumur (MRAM), B. Chuluun (MRAM) and S. Oyungerel (MSU), G. Ukhna (MUST)

**New members:** O. Chuluun Mineral Resources Authority of Mongolia (MRAM), D. Batbold, MRAM, D. Bold-Erdene, MRAM, Kh. Gantumur, MRAM, B. Chuluun, MRAM, H. Enkhtuvshin. Harrods Minerals Mongolia Ltd., S. Oyungerel, National University of Mongolia, Faculty of Earth Science, Dept. of Geology & Mineralogy, G. Ukhna (Dept of Mineral Exploration, Mongolian University of Science & Technology)

*Contributed by Prof. Ochir Gerel, Dept. of Geology & Mineralogy, Mongolian University of Science & Technology, P.O. 46, Box 520, Ulaanbaatar 46, Mongolia. Tel: 976-11-326425; Fax: 976-11-324121. e-mail: gerel@mtu.edu.mn*

## Report of the Czech IAGOD National Group for 2001

IAGOD group members participated in the Certificated Postgraduate Training Course GEOCHIM 2001 which was held in Prague and Dolní Rožínka (Czech Republic) from September 4 to 18, 2001. This course was organized by the Czech Geological Survey and IGCP 429. Thirteen participants from Albania, Canada, Jordan, Kazakhstan, Mongolia, Russia and Zambia were trained both theoretically and practically in geochemical exploration methods and their environmental application.

Moreover, IAGOD group members participated in the SGA biennial meeting in Krakow and in the International workshops Phosphorus. and Fluorine-rich Granites in Podlesí, Czech Republic and in the International Meeting in honour of Hans Closs (1885-1951) in Bautzen, Germany.

### Selected publications:

- Boiron, M. C., Barakat A., Cathelineau M., Banks D. A., Ďurišová J. & Morávek P. (2001).** Geometry and P-V-T-X conditions of microfissural ore fluid migration: the Morksko gold deposit (Bohemia).- *Chem. Geology*, 173, 207-225.
- Dobeš P. (2001).** Post-magmatic hydrothermal fluid flow in granites: A study of fluid inclusions in rocks and veins of the Melechov massif (Czech Republic).- In: Breiter K. (ed.) Phosphorus- and fluorine-rich fractionated granites, Abstract volume, Podlesí, October 16-19, 2001, p. 10-11. Czech Geological Survey, Prague.
- Dolejš D. & Štemprok M. (2001)** Magmatic and hydrothermal evolution of Li-F granites: Cínovec and Krásno intrusions, Krušné hory batholit, Czech Republic. - *Bull. Czech Geol. Survey* 76, 2, 77-99.
- Fojt B., Hladíková J. & Kalenda F. (2001)** Zlaté Hory in Silesia-The largest ore district in the Jeseníky Mts., Czech Republic. – *Acta Mus. Moraviae, Sci. Geol.* LXXXVI, 3-58.
- Kříbek B., Hladíková J. & Holeczy, D. (2000)** Anhydrite-bearing rocks from the Rožná district (Moldanubian Zone, Czech Republic): high -grade metamorphosed exhalites.- *Mineralium Deposita*, 37, 424-430.
- Malý K. & Dobeš P. (2001)** Stable isotope and fluid inclusion study of epithermal polymetallic mineralization near Štěpánov nad Svratkou (Svratka Dome, Moravicum).- *Bull. Czech Geol. Survey*, 76, 1, 15-21.
- Morávek P. (2001).** Precious metals, nature, people and state administration. Newsletter, International Liaison Group on Gold Mineralization (ILGGM), 32, 47-48. Southampton.
- Novák J. K., Pivec E., Holub F. V. & Štemprok M. (2001)** Greisenization of lamprophyres in the Krupka Sn-W district in the eastern Krušné hory/Erzgebirge, Czech Republic. In: A. Piestrzyński et al. (eds.): *Mineral Deposits at the Beginning of the 21<sup>st</sup> Century*, 465-468. Balkema Publishers, Lisse.
- Pašava J., Dobeš P., Fan Delian, Zhang Tao & Boiron M.C. (2001)** Character of ore fluids in the eastern part of the Dachang ore district, south China.- In: Piestrzyński et al (eds), *Mineral Deposits at the Beginning of the 21<sup>st</sup> Century*, Proceedings of the joint sixth biennial SGA-SEG meeting, Krakow, Poland, 26-29 August 2001, 81-84. Balkema.
- Seltman R. & Štemprok M. (2001)** Fabric evidence in mineralized granites. – p. 88-91. *Tectonics and Magma 2001. Meeting in honour of Hans Closs (1885-1951)*, 22-24 June 2001 in Bautzen. Abstract Volume and Excursion Guide. In: Bankwitz et al. (eds), *Exkursionsführer und Veröffentlichungen der GGW*, Berlin 212.
- Štemprok M., Holub F. V. & Novák J. K. (2001)** Phosphorus contents in Late Variscan magmatites of the Eastern Krušné Hory/Erzgebirge pluton (Czech Republic). - In: Breiter K. (ed.), *International Workshop Phosphorus- and Fluorine-rich Granites, Podlesí 2001*, 30-31. Czech Geol. Survey, Prague.
- Žák K., Dobeš P., Kříbek B., Pudilová M., Hájek A., & Holeczy D. (2001)** Evolution of fluid types at the Rožná uranium deposits, Czech Republic: Stable isotope and fluid inclusion study. - In: Piestrzyński et al (eds), *Mineral Deposits at the Beginning of the 21<sup>st</sup> Century*, Proceedings of the joint sixth biennial SGA-SEG meeting, Krakow, Poland, 26-29 August 2001, 109-113. Balkema.

**In press:**

- Holub M. (2002)** Estimate of sulfur and arsenic amounts in polymetallic and rare metals ores worked out in Bohemia and Moravia until the end of 19<sup>th</sup> century. – Geologický průzkum a rudy (in Czech).
- Lhotský P. & Morávek P. (eds.) (2002)** Gold in Novoknínsko: Geology, history and geological guide. Okresní muzeum v Příbrami (in Czech).
- Suchý V., Dobeš P., Filip J., Stejskal M. & Zeman A. (2002)** Conditions for veining in the Barrandian Basin (Lower Palaeozoic), Czech Republic: Evidence from fluid inclusion and apatite fission track analysis. Tectonophysics.
- Pašava J., Kříbek B., Dobeš P., Vavřín I., Žák K., Fan Delian, & Zhang Tao (2002)** The role of black shales in the formation of tin-polymetallic deposits in the eastern part of the Dachang tin field (South China). (submitted to Mineralium Deposita)

**Future activities:**

The Czech IAGOD group will organize International Workshop: Uranium deposits: From their genesis to their environmental aspects. The workshop will be held in Prague, from September 10 to September 11, 2002. Pre- and post-workshop field trips are particularly focused on visiting uranium-mining districts including the last operated uranium mine in central Europe at the Rožná deposit. Information are available from Dr. B. Kříbek, Czech Geological Survey, Klárov 3, P.O.B. 85, 118 21 Prague 1, Czech Republic ([kribek@cgu.cz](mailto:kribek@cgu.cz)).

IAGOD group members will participate at the International Meeting in honour of Zdenek Pouba and Jaromír Koutek: Czech Economic Geology at the Beginning of the 21<sup>st</sup> Century, May 20, 2002. Information available from Dr. Richard Příkryl, Faculty of Sciences, Charles University, Albertov 6, 128 42 Prague 2. ([prikryl@mail.natur.cuni.cz](mailto:prikryl@mail.natur.cuni.cz)).

IAGOD group members will participate at the organization of the, Certificated Postgraduate Training Course GEOCHIM 2002 which will be held in Prague and Rozna from September 4 to September 18, 2002. Information are available from Dr. Jan Pašava, director of GEOCHIM ([pasava@cgu.cz](mailto:pasava@cgu.cz)).

*Contributed by Bohdan Kříbek, Chairman of the Czech IAGOD Group (Czech Geological Survey, Klárov 3, P.O.B. 85, 118 21 Praha 1, phone +420-2-51085518, fax: +420-2-5817390, E-mail:kribek@cgu.cz)*

---

## Report of the Slovak IAGOD National Group for 2001

**Conferences 2001:**

Members of the Slovak IAGOD group took effectively part at the Congress of the Slovak Geological Society 2001 “**Banská Štiavnica – City Upon Volcano**“ at Banská Štiavnica, on June 27–29<sup>th</sup> 2001. Together 10 papers have been presented there: The main topics of the conference: 1. Neogene volcanism in central Slovakia, 2. Structure and evolution of the Štiavnica stratovolcano, 3. Character of the Pleistocene volcanic activity, 4. Metallogeny of the Štiavnica stratovolcano, 5. Model of epithermal ore mineralization of the Banská Štiavnica ore district, 6. Banská Štiavnica-Hodruša region - the most significant centre of the mining activities in Europe in the past. As a part of this symposium was realized excursion at the Štiavnica stratovolcano and too the visit of the Hodruša gold deposits was organized. Many experts (cca 160 participants) from Slovakia and Czech republic took part at this symposium. The articles and abstracts of the contributions have been completely published in the journal of Slovak Geological Society - Mineralia Slovaca 33 (2001) No. 3.

Members of the Slovakian IAGOD group actively took part also at the conference “**Heavy mineral prospecting and accessory minerals**” performed on November 14<sup>th</sup>-16<sup>th</sup> 2001 in Banský Studenec near Banská Štiavnica. The aim of the conference was to present the latest results of recent works on the project “Reinterpretation of exploration results of heavy mineral prospecting on the territory of Slovakia”. The conference and the excursions were attended by 80 participants from Slovak and Czech republic, together 22 papers and 6 posters have been presented here.



Regional heavy mineral prospecting in Slovakia brought also new data about distribution of kassiterite, scheelite, wolframite and REE minerals, as well as essentially in clastogenic sediments and allowed to find again the Au placers being already exploited by Celtic miners in the past.

The special volume of Mineralia Slovaca 33 (2001) No. 5 contains the brief communications, papers and posters from the conference.

**Current members of the Slovakian IAGOD group (up to December 31<sup>th</sup> 2001):**

1. **Ďud'a Rudolf Dr.**, Východoslovenské múzeum, Hviezdoslavova 3, 04136 Košice, t.:421/55/6220309,f.: 421/55/6228696, [rduda@ke.telecom.sk](mailto:rduda@ke.telecom.sk)
2. **Franzen Jozef Dr.**, Ministry of Environment Slovak Republic, Nám. L. Štúra 1, 812 35 Bratislava, t.:421/02/5162132 f. 421/02/5162248
3. **Gargulák Milan Dr.**, State Geological Institute of Dionyz Stur, Bukureštská 4, 811 04 Bratislava, t.: 421/02/496255, [gargulak@gssr.sk](mailto:gargulak@gssr.sk)
4. **Grecula Pavol Dr.**, State Geological Institute of Dionyz Stur, Jesenského 8, 04001 Košice, t.: 421/55/6437859, [grecula@dodo.sk](mailto:grecula@dodo.sk)
5. **Háber Milan Dr.**, Geological Institute of SAS, Severná 5, 97404 Banská Bystrica, t.: 421/48/4123943, f.: 421/48/4124182, [haber@savbb.sk](mailto:haber@savbb.sk)
6. **Hurai Vratislav Dr.**, Department of Mineralogy and Petrology Faculty of Natural Sciences, Comenius University, Mlynská dolina G, 842 15 Bratislava, t.: 421/02/796 365, f.: 421/02/375663, [hurai@fns.uniba.sk](mailto:hurai@fns.uniba.sk)
7. **Chovan Martin Doc.Dr.**, Department of Mineralogy and petrology Faculty of Natural Sciences, Comenius University, Mlynská dolina G, 842 15 Bratislava, t.: 421/07/796 365, f.: 421/07/375663, [chovan@fns.uniba.sk](mailto:chovan@fns.uniba.sk)
8. **Jeleň Stanislav Dr.**, Geological Institute of SAS, Severná 5, 97404 Banská Bystrica, t.: 421/48/4123943, f.: 421/48/4124182, [jelen@savbb.sk](mailto:jelen@savbb.sk)
9. **Knésl Juraj Ing.**, KKA - Disseminated State Geological Institute of Dionyz Stur Slovak Gold Consulting, Salgorjanska 3, 97401 Banská Bystrica, t./f.: 421/48/423 08 55
10. **Michálek Jozef Dr.**, ENVIGEO, s.r.o., Kynceľovská 10, 974 01 Banská Bystrica, t./f.:421/48/4144195.
11. **Radvanec Martin, Ing. Ph.D.**, State Geological Institute of Dionyz Stur, Markušovská cesta 1, 05240 Spišská Nová Ves, t.: 421/53/410486, f.: 421/53/426709, [radvanec@gsrscsnv.sk](mailto:radvanec@gsrscsnv.sk)
12. **Rojkovič Igor Prof. Dr.**, Department of Geology of Mineral Deposits Faculty of Natural Sciences, Comenius University, Mlynská dolina G, 842 15 Bratislava G, t.: 421/02/796 279, f.: 421/02/729 064, [rojkoVIC@fns.uniba.sk](mailto:rojkoVIC@fns.uniba.sk)

Contributed by Milan Háber, Geological Institute Slovak Academy of Sciences Severná 5, 97404 Banská Bystrica, Slovak Republic, T.: 421/48/4123943; F.: 421/48/4124182; e-mail: [haber@savbb.sk](mailto:haber@savbb.sk)

## Mineralogy for the New Millennium

IMA2002 - Edinburgh 1st - 6th September

18th GENERAL MEETING OF THE  
INTERNATIONAL MINERALOGICAL ASSOCIATION  
1st – 6th September 2002 EDINBURGH, SCOTLAND  
AT THE EDINBURGH INTERNATIONAL CONFERENCE CENTRE



Website at: <http://www.minersoc.org/>

## IAGOD PROCEEDINGS STILL AVAILABLE.....

**Proceedings of the Ninth Quadrennial IAGOD Symposium** held in Beijing, China, Aug. 12-18, 1994. Edited by Richard D. Hagni (Dept. of Geology and Geophysics, University of Missouri-Rolla, Rolla / Missouri, USA) 620 pages with 300 figures and 108 tables, 17 x 24 cm. 1998. Clothbound, **123 Euros**. ISBN 3-510-65180-4.

The 9th IAGOD volume contains papers on 13 topics concerning ore deposits: 1) Ore-forming theory for superlarge ore deposits, 2) Structure of ore fields and ore deposits, 3) paragenesis and paragenetic sequence, 4) experimental modeling of metallogeny, 5) kinetics and thermodynamics in ore-forming hydrothermal systems, 6) isotopic and trace element geochemistry of mineral deposits, 7) gold, silver, and uranium deposits, 8) stratiform and strata-bound deposits, 9) skarn deposits, 10) tin and tungsten deposits, 11) ore deposits in mafic and ultramafic rocks, 12) fluorite, and 13) manganese deposits.

Important aspects discussed in this unique volume include the minerogenic (metallogenic) series of ore deposits, a concept developed especially from investigations of ore deposits in China during the past four decades. The setting and affiliation of giant ore deposits is treated in detail. Genetic interpretations for the formation of ore deposits included: 1) structural controls by cratonic margins, 2) transition zones between cratons and continental margins, 3) intersections of deep-seated mantle-rooted structures, 4) involvement of magmatism and sedimentation on the stable margins of the intraplate, 5) involvement of abundant volatiles and alkali metals, and 6) importance of rejuvenation in the formation of ore deposits.

Other highlights of this volume include: 1) sulfide morphology and potassic alteration in Mississippi Valley ore deposits, 2) multiple generations of sulfide deposition, 3) the roles of liquid immiscibility, and immiscible salt-rich melts, and fluid mixing in ore deposition, 4) magmatic and greisen zonations, 5) REE fractionation in copper, fluorite, and massive sulfide deposits, 6) carbonatite-related fluorite ores, 7) ore fluid controls on trace element contents in wolframite, and 8) origin of reduced sulfur in Kupferschiefer ores.

## ALSO STILL AVAILABLE.....

**Proceedings of the Fifth Quadrennial Symposium, Snowbird, Utah, August 13-19, 1978.** Edited by John Drew Ridge. Volume I. Papers presented at the Symposium on topics related to general problems on the genesis of ore deposits and on studies of the ore geology of specific districts or deposits and on studies of the ore geology of specific districts or deposits (exclusive of Western N. America). 1980. XII. 795 pages, 327 figures, 72 tables. Cloth **50 Euros**. (ISBN 3-510-65094-8)

**Proceedings of the Sixth Quadrennial Symposium, Tbilisi, USSR, September 6-12, 1982.** Volume I. Papers presented at the Symposium on topics related to general problems on the genesis of ore deposits and on studies of the ore geology of specific districts or deposits and on studies of the ore geology of specific districts or deposits. Edited by Tamaz V. Janelidze and Alexander G. Tvalchrelidze. 1984. VIII, 544 pages, 210 figures, 59 tables. Cloth **63 Euros**. (ISBN 3-510-65095-6)

**Proceedings of the Seventh Quadrennial Symposium, Lulea / Sweden, August 18-22, 1986.** Edited by Ebbe Zachrisson. 1988. X, 694 pages, 380 figs., 57 tables. Cloth **122 Euros**. (ISBN 3-510-65137-5)

**Proceedings of the Eighth Quadrennial IAGOD Symposium, Ottawa, Canada, August 12-18, 1990.** Edited by Yvon T. Maurice. 1993. XIV, 894 pages, 448 figures, 117 tables. Cloth **174 Euros**. (ISBN 3-510-65153-7)

### To order any of the above publications, please contact:

Gebrüder Borntraeger, (E. Schweizerbart'sche Verlagsbuchhandlung, Johannesstraße 3 A, D-70176 Stuttgart, Germany), Fax: (0711) 625005, e-mail: [order@schweizerbart.de](mailto:order@schweizerbart.de). Details are available on: <http://www.schweizerbart.de/>

The volumes are available in the USA from: Balogh Scientific Books, 1911 North Duncan Road, Champaign, Illinois 61821 1 phones: +1 217 3559331 and 355 1704; fax: +1 217 355 9413; e-mail: [balogh@balogh.com](mailto:balogh@balogh.com)

## Report of the IAGOD Commission on Placer Deposits (COPD) for 2000-2002

The Commission on Placer Deposits (COPD) is a new IAGOD unit created in 2000 at the 31<sup>st</sup> International Geological Congress in Rio. The background for its creation was determined as the following: Placers are one of the largest genetic groups of the sedimentary mineral deposits. They play also an important role as a sources for many raw materials – more than 70 % of titanium, more than 70 % of zircon, about a half of gold (including metamorphic placers and weathered rocks), about 20 % of diamonds, 70 % of niobium, 50 % of tin, and about 10% of tantalum (including weathered rocks) are developed from placer deposits. 35 minerals occur in placers in economically important contents, and about 25 from them form self-dependent commercial types.

The following activities were carried out over the biennial period of its activity:

*2000-2001* - The 12<sup>th</sup> International Symposium on placer and weathered rocks deposits (RKW-2000) titled “Natural and Technogenic Placer and Weathered Rock Deposits at the Turn of the Millenium”, September 25-29, 2000, Moscow, Russia). 230 participants from 12 countries. 150 oral presentations, more than 65 posters. Two volumes of abstracts - in Russian (442 pages) and in English 237 pages). Three field geological excursions.

*2001-2002* – International Symposium “Technogenic (artificial) Placer Deposits: Goals and Solutions”(The 2nd Biennial Scientific-Practical Conference”. September 24-29. 2001. Simferopol-Sudak, Crimea, Ukraine. Organizer – Crimean Branch of Ukrainian Scientific Inst. on Mineral Resources. More than 60 participants from Ukraine, Slovakia, Russia, China, Canada.

The IAGOD PDC took part in the organization of the special meeting “ Quaternary Placer Deposits” in the frame of the CanQUA Congress (August 2001, Whitehorse, Yukon Territory, Canada) with the assistance of PDC. The meeting included 10 oral presentations, including 8 on placer deposits, and gathered more than 60 participants.

PDC put forward the proposal to include the special Symposium on placer deposits in the Program of IAGOD Conference 2002 titled “Placers: from sources to sea “.

### Some publications on placer deposits issued after the 31<sup>st</sup> IGC Congress (Rio):

- Natural and technogenic placer and weathered rock deposits at the turn of the Millenium, 2000.** XII International Symposium on Placers and Weathered Rock Deposits. Abstracts. September 25-29.2000. Moscow: IGEM RAS. Vol. 1 (in Russian): 442 pp.; Vol. 2 (in English): 237 pp.
- Shilo N.A. (2000).** Teaching on Placer Deposits. Moscow: Academy of Mining Sciences, Publishing House, 632 pp. (in Russian)
- Konstantinovsky A.A. (2001).** Paleoplacers on evolution of sedimentary cover of continents. Moscow: Scientific World; 288 pp. (in Russian)
- Quaternary Placer Deposits, 2001. Guest editors: A.Duk-Rodkin, N.Patyk-Kara & N.R. Catto.** Quaternary International. Vol. 82, 127 pp.
- Patyk-Kara N.G., Gorelikova N. V., Bardeeva E.G., Shevelev A.G. (2001).** Mineralogy of Placers: Modern Approaches and Solutions// Lithology and Mineral Resources. Vol. 36, N 5: 393-405.
- Patyk-Kara N.G., Ivanova A.M., Ushakov V.I. (2002).** Placer mineralization of shelves and inner seas of Russia// Geology and mineral resources of Russian shelves. Moscow: GEOS.- 185-205.

### Officers of COPD:

Chairman: Academician Nikolay A. Shilo, Russian Academy of Sciences, Moscow, Russia, Tel. (office) +007 095 230 8427, Tel (home): +007 095 959 0591, fax: +007 095 230 2179

Vice-Chairman: Dr. Jan Krasson, Geoexplorers International Inc., 5701 East Avenue, Denver, Colorado 80222, USA, Tel +1 303 759 274; fax: +1 303 759 0553, e-mail: [geoexpl@eazy.net](mailto:geoexpl@eazy.net); [geoexplorers@geoexplorers.com](mailto:geoexplorers@geoexplorers.com)

**Secretary: Doctor of Sciences Natalia G. Patyk-Kara, Inst. of Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry off Russian Academy of Sciences (IGEM RAS),**

Staromonetny per., 35. phone. (office): +007 095 230 8427, (home): +007 095 276 2514, fax: +007 095 230 2179, e-mail: [pkara@igem.ru](mailto:pkara@igem.ru).

*Contributed by Nikolay A. Shilo and Natalia G. Patyk-Kara*

## **Report of the IAGOD Commission on Industrial Minerals and Rocks (COIMR)**

This new group was formed in 2000 and its activities are beginning to develop. An e-mail newsletter sent out in 2001 set out the aims and objectives of the group, and these are reproduced below. The feedback suggested that the group might organise a new IGCP project with a purpose of assessing the demand for industrial mineral and rocks (IMRs) in the future, matching this with the current availability of raw materials on the world market, and examining the geological environments where future resources are likely to be located. It is a very broad topic and possibly would need to be rather more focussed by specifying individual IMRs or groups with a similar geological setting. It would involve developing a further understanding of the geological processes which creates an industrial mineral resource of the quantity **and quality** required by the consuming industries. With all IMRs, quality parameters (i.e. the physical and/or chemical properties of the mineral or rock) are critical in establishing whether a resource exists or not. Engineered non-metal based materials are increasing in importance, especially replacing metals in numerous applications. They require high quality consistent IRMs as raw materials. The Chairman will co-ordinate further feedback on this topic and will take it forward to IGCP if there appears to be support. A project of this type will need to involve several organisations in several countries, probably with further additional funding outside IGCP. Ideas and support are welcomed!

It is intended to set up an e-mail newsgroup for COIMR, so that meetings, conferences and other activities relevant to industrial minerals and rocks can be publicised. Hopefully, this will be achieved before IAGOD meets in Windhoek in July 2002. I am sure that there are several national meetings on IMRs held each year, which do not receive much, if any, publicity outside the country where it is held. Yet, it would be attractive to many IAGOD members. One example is the Forum on the Geology of Industrial Minerals held annually in North America (except for 2000, when it was held in UK). This conference is now in its 38th year, yet few people outside North America attend. The 39th Forum on the Geology of Industrial Minerals will be held in Nevada in spring 2003 (see [www.industrialmineralsforum.org](http://www.industrialmineralsforum.org)). Books have been produced from all previous Forums. These are a valuable source of information on a very wide range of industrial minerals and rocks, especially those in North America. Other useful sites for information and events involving industrial minerals are [www.smenet.org](http://www.smenet.org), [www.mineralsuk.com](http://www.mineralsuk.com) and [www.indmin.com](http://www.indmin.com).

The aims and objectives of COIMR are:

1. To promote international cooperation in the study of industrial minerals and rocks (IMRs). This includes studying their geology, genesis, mineralogy, geochemistry, physical and chemical properties, procedures for exploration and evaluation, environmental effects and benefits, and the relationships among these aspects and the utilisation of IMRs. Other aspects of their study are not excluded by definition.
2. To provide a mechanism for discussion of IMRs through sponsoring sessions at conferences, workshops and field meetings.
3. To raise awareness of the importance of industrial minerals and rocks in the world's economy, social development, and environmental sustainability, and to promote academic and other research on IMRs.
4. To form working groups of specialists, which can focus on particular aspects of the study of IMRs and/or concentrate on solving particular problems related to the study of IMRs, as the need arises.
5. To develop and support a network of communication between those interested in the study of IMRs.
6. To provide a pathway through which multinational research projects can be initiated.

**Officers of COIMR**

Chairman: Peter W. Scott, Camborne School of Mines, University of Exeter, Redruth, Cornwall TR15 3SE, UK. [pscott@esm.ex.ac.uk](mailto:pscott@esm.ex.ac.uk)

Vice-Chairman: Ronghua Zhang, Chinese Academy of Geological Sciences, [zrhsm@phu.edu.cn](mailto:zrhsm@phu.edu.cn)

Secretary: Joseph Briskey, United States Geological Survey, [jbriskey@usgs.gov](mailto:jbriskey@usgs.gov)

*Contributed by Peter W. Scott*

---

### **The IAGOD Working Group on Skarns**

The www-site of the IAGOD Skarn Working Group continues to be the main activity of the group and can be found at: <http://www.wsu.edu:8080/~meinert/skarnHP.html> This web site is designed to coordinate research and interest in skarns. It is continually being updated (most recently in the Spring of 2002) and is a source of much information on skarn deposits, their classification and characteristics. An extensive bibliography accompanies the text and illustrations.

A skarn list server has been established to facilitate discussion among researchers. To subscribe, send a message to: [listproc@listproc.wsu.edu](mailto:listproc@listproc.wsu.edu).

Contact: Larry Meinert, Chairman of the IAGOD WG on Skarn Deposits, Department of Geology, Washington State University, Pullman, WA 99164-2812; phone: 509-335-2261(office); 509-335-3009 (secretary); fax: 509-335-7816; e-mail: [Meinert@wsu.edu](mailto:Meinert@wsu.edu)

### **SOCIETY FOR GEOLOGY APPLIED TO ORE DEPOSITS (SGA)**

#### **Executive Committee (2001)**

President:	P. Fenoll-Hach Alí (Spain)
Vice-President:	D. Leach (USA)
Executive Secretary:	J. Pašava (Czech Republic)
Treasurer:	P. Herzig (Germany)
Promotion Manager:	G. Borg (Germany)
Chief Editors:	B. Lehmann (Germany) - MD European Office R. Goldfarb (USA) - MD North American Office M. Chiaradia (Switzerland) - SGA News

#### **Regional Vice-Presidents**

North America:	Georges Beaudoin (Canada)
South America:	José Cabello (Chile)
Asia:	M. Shimizu (Japan)
Australia:	R. Hill (Australia)
Africa:	Richard Viljoen (South Africa)

#### **Councillors through December 31, 2003**

D.Eliopoulos (Greece), A. Bjorlykke (Norway), D. Eliopoulos (Greece), B. Gemmel (Australia)  
I.R. Jonasson (Canada), F. Mitrofanov (Russia), H. Stein (USA)

#### **Councillors through December 31, 2005**

Nick Arndt (France), F. Barriga (Portugal), Adrian Boyce (UK), Hartwig Frimmel (South Africa), Ch. Heinrich (Switzerland), Jingwen Mao (China), Pär Weihed (Sweden)

**Ex officio Members (SEG):** D. Groves (Australia), B. Hoal (USA)

**Ex officio Members (IAGOD):** N.J. Cook (Norway), R.Seltmann (UK)

SGA News on Internet: <http://www.immr.tu-clausthal.de/sga.htm>

Free copies of SGA NEWS for IAGOD Members on request (fax +41-22-3205732; e-mail [sganews@sc2a.unige.ch](mailto:sganews@sc2a.unige.ch)).

The SGA journal is Mineralium Deposita. An electronic edition of Mineralium Deposita is available via the LINK Information Service <http://link.springer.de>

## Report of the Working Group on Thermodynamics of Natural Ore-Forming Fluids

The Working Group on the Thermodynamics of Natural Ore-Forming Fluids started in 2001 in the framework of the IAGOD (International Association on the Genesis of Ore Deposits). Themes under consideration include:

- Experimental study and thermodynamic description of mineral-fluid equilibria over a wide range of temperature (25–1000 °C) and pressure (1–10000 bars):
- Experimental investigations of thermodynamic properties of ore elements
- Properties and specialities of low density fluids
- Properties and specialities of mixed (H<sub>2</sub>O – volatile) fluids
- Properties and specialities of H<sub>2</sub>O near critical region
- Development of new software for computing equilibria in complex heterogeneous systems.
- Computer modelling of transport and deposition of ore elements under hydrothermal conditions.

The 4<sup>th</sup> - 6<sup>th</sup> April 2001 the Fifth International Conference "New Ideas in Earth Sciences" took place within the precincts of the Moscow State Geological Prospecting Academy, Moscow, Russia. During the section on "Physical Chemistry of Natural Ore Forming Fluids" at this Conference, the full range of the problems mentioned above problems were discussed. The list of topics of scientific oral presentations is given below.

1. Akinfiyev N.N. Equation of state for aqueous non-electrolytes in the wide range of temperatures and pressures.
2. Akinfiyev N.N., Ezhov S.V. Thermodynamic modelling of co-skarn ore formation.
3. Barsukov V.L., Ryzhenko B.N. Modelling of composition and properties of porous solutions of intrusive rocks at temperatures 25-800°C and pressures 1-5000 bar.
4. Borisov M.V., Bychkov D.A., Shvarov Yu.V. Analysis of conditions of formation of vein ore bodies from potential ore-bearing fluid.
5. Bychkov A.Yu., Golikova G.V. As speciation in vapour phase and role of gaseous transport in formation of ore deposits.
6. Dadze T.P. Solubility, transport and deposition of gold in sulfur-bearing systems.
7. Grichuk D.V., Abramova E.E. Exhalation-recycling model of sulfur deposit formation
8. Gushchina L.V., Obolenskii A.A. Sb (speciation and metalliferosity) in hydrotherms
9. Kolonin G.R., Shironosova G.P. Thermodynamic model of behaviour of REE during phosphate - fluorine ore-bearing fluid evolution.
10. Kol'tsov A.B., Baranova N.N., Kozerenko S.V., Mironova O.F. Some peculiarities of nitrogen fluid regime in hydrothermal metamorphic systems.
11. Kovalenker V.A. Physical chemical environment of gold and silver ore formation in various epithermal deposits.
12. Kozerenko S.V., Fadeev V.V., Organova N.I., Rusakov V.S., Chistyakova N.I., Kolpakova N.N., Senin V.G. Composition, structural peculiarities and phase equilibria of ferriferous and ferriferous - magnesia tochilinites.
13. Laptev Yu. V., Pal'yanova G.A. Influence of H<sub>2</sub>O-CO<sub>2</sub> fluids on equilibria in the systems H<sub>2</sub>O-CO<sub>2</sub>-SO<sub>2</sub> and H<sub>2</sub>O-CO<sub>2</sub>-NaCl-HCl-Ag at 300-400 °C.
14. Matveeva S.S., Bychkov A.Yu. Sushchevskaya T.M. Isotopic evolution of carbon while forming Spokoininskoe deposit.
15. Mironenko M.V., Akinfiyev N.N., Melikhova T.Yu. Code and database *GEOCHEQ* for computing equilibria in non ideal heterogeneous systems.
16. Pavlova G.G., Borisenko A.S. Ag - speciation and metalliferosity of ore forming fluids.
17. Stepanchikova S.A., Kolonin G.R. Complexing of Nd, Sm and Ho in chloride solutions at 100–250 °C
18. Sushchevskaya T.M., Ryzhenko B.N., Prisyagina N.I. Ore elements in high temperature fluids: correlation of data on fluid inclusions and physical chemical modelling.

### Recent publications of the members of our working group in 2001:

- Akinfiyev N. N., Zotov A. V. Thermodynamic Description of Chloride, Hydrosulfide, and Hydroxo Complexes of Ag(I), Cu(I), and Au(I) at Temperatures of 25-500 °C and Pressures of 1-2000 bar. *Geochem. Intern.*, 2001, v. 39, No 10, p. 990-1006
- Akinfiyev N.N. Equation of state for aqueous non electrolytes. Proc. of the 10<sup>th</sup> Int. Symp. on Water-Rock Interaction. Villasimius, Italy. Balkema Publishers. 2001. p. 227-230.
- Akinfiyev N.N. Equation of State of SiO<sub>2aq</sub> for Description of Silica Dissolution at Temperatures of 0-600 °C and Pressures of 1-1000 bar. *Geochem. Intern.*, 2001, v. 39, No 12, p. 1242-1244.
- Baksheev I. A., Prokof'ev V. Yu., & Ustinov V. I. Genesis of metasomatic rocks and mineralized veins at the Berezovskoe deposit, Central Urals: evidence from fluid inclusions and stable isotopes. *Geochem. International* 2001. V. 39. Suppl. 2. p. S129-S144.
- Kovalenker V. A., Prokof'ev V. Yu., Kozerenko S. V., Mironova O. F., Kolpakova N. N., Zalibekyan M. A. Mineralizing fluid composition and genesis of gold-sulfide-telluride mineralization at the Megradzor deposit: Evidence from fluid inclusion. *Geochemistry International*. 2001. V. 39. Suppl. 2. p. S145-S159.
- Nikolai N. Akinfiyev, Mikhail V. Mironenko, Steven A. Grant Thermodynamic Properties of NaCl Solutions at Subzero Temperatures *J. Solution Chemistry*, 2001, v. 30, № 12, p. 1065-1080.
- Prokof'yev V. Yu., Distler V. V., and Yudovskaya M. A. Formation conditions of hydrothermal platinum mineralization of the Waterberg deposit (Transvaal, South Africa) // XVI ECROFI European Current Research On Fluid Inclusions, Porto 2001 Abstracts (Eds. F. Noronha, A Doria and A. Guedes). Faculdade de Ciencias do Porto, Departamento de Geologia, Memoria n° 7. Porto, 2001. p. 377-378.
- Konstantinov M.M., Vargunina N.P., Kosovets T.N., Strujkov S.F., Syngaevsky Ye.D., Shishakova L.N. Gold-silver deposits. Series: Models of precious and base metal deposits. Editor: A.I.Krivtsov. Moscow, TsNIGRI, 2001. 239 p.
- Krivtsov A.I., Zvezdov V.S., Migachev I.F., Minina O.V. Porphyry copper deposits. Series: Models of precious and base metal deposits. Editor: A.I.Krivtsov. Moscow, TsNIGRI, 2001. 232 p.
- Krivtsov A.I., Kochnev-Pervukhov V.I., Konkina O.M., Stepanov V.K., Zaskind Ye.S. Cu-Ni-PMG Noril'sk type deposits. Series: Models of precious and base metal deposits. Editor: A.I.Krivtsov. Moscow, TsNIGRI, 2001. 180 p.
- Krivtsov A.I., Abramova Ye.Ye., Volchkov A.G., Minina O.V. Volcanic-hosted massive sulfide deposits. Series: Models of precious and base metal deposits. Editor: A.I.Krivtsov. Moscow, TsNIGRI, 2002. (in print).
- Ruchkin G.V., Donets A.I. Carbonate-hosted lead-zink stratobound deposits. Series: Models of precious and base metal deposits. Editor: A.I.Krivtsov. Moscow, TsNIGRI, 2002. (in print).

*Contributed by Prof. Nikolai Akinfiyev*

---

### International Geological Correlation Programme

The IGCP was founded in 1972 at the 24th International Geological Congress in Montreal, Quebec, Canada and is therefore now 30 years old! The goal was to create an ambitious global program of scientific collaboration between working scientists, rather than between governments. From the beginning, the program has operated as a joint initiative of the International Union of Geological Sciences (IUGS) and the United Nations Educational, Scientific, and Cultural Organization (UNESCO). The IUGS serves as a scientific guide, while UNESCO handles operational and administrative matters.

Projects are selected and annually reviewed by the IGCP Scientific Board. Visit the IGCP website for more information about the IGCP, a full listing of current projects and details of application procedures at: <http://www.unesco.org/science/earthsciences/igcp/>

### IGCP Projects active in 2001/2002 on issues concerning ore deposit geology:

# 373 – **Correlation, Anatomy and Magmatic-Hydrothermal Evolution of Ore-Bearing Igneous Systems in Eurasia** – R. Seltmann (Germany), 1997-2002 (on extended time)  
<http://www.nhm.ac.uk/mineralogy/seltmann/IGCP/index.html>

# 408 – **Rocks and Minerals at Great Depth and on the Surface** – F.P. Mitrofanov, D.M. Guberman (Russia) & H.-J. Kümpel (Germany), 1998-2002

<http://icdp.gfz-potsdam.de/html/kola/news.html>

# 427 – **Ore-Forming Processes in Dynamic Magmatic Systems** – C.M. Lesher, S.-J. Barnes (Canada), H.M. Prichard (UK) 1998-2002 (for recent activities see the CODMUR Report)

<http://www.laurentian.ca/www/geology/IGCP/IGCP427.htm>

# 429 – **Organics in Major Environmental Issues** – J. Pašava (Czech Republic), 1998-2002

<http://www.min.tu-clausthal.de/www/sga/news6/art6.html>

# 443 - **Magnesite and Talc-Geological and Environmental Correlations** M. Radvanec (Slovak Republic), W. Prochaska (Austria), A. C. Gondim (Brazil), C. Kequin (China) 2000-2004. <http://www.gssr.sk/igcp443>

# 450 - **Proterozoic Sediment-Hosted Base Metal Deposits of Western Gondwana** S. S. Iyer (Canada), A. Misi (Brazil), A. F. Kamona (Namibia), J. Cailteux (Democratic Republic of Congo) 2000-2004 <http://www.ucalgary.ca/~iyer/igcp450/unesco/catalog.htm>

# 473 - **GIS Metallogeny of Central Asia** R. Seltmann (United Kingdom), 5 young scientists 2002-2006

## **“Deep Structure of the Earth and Concentration of Metals in the Lithosphere: A Geodynamic Approach”**

*With a Discussion on New Ways for Mineral Exploration*

An international workshop organized by the  
IAGOD Commission on Tectonics of Ore Deposits (CTOD)  
and the Geodynamics Branch of the NASA Goddard Space Flight Center.  
Held at the U.S. Geological Survey, Reston, Virginia  
September 18-20, 2001

Conveners: Patrick T. Taylor and Jan Kutina

The 5-year UNESCO-sponsored project “*Economic Superaccumulations of Metals in the Lithosphere*” (IGCP-354) was tasked to study the origin and relationships between large concentrations of metals in the crust and the deep structure of the lithosphere. This recent meeting extended the discussion of ore genesis to deeper parts of the Earth. Geophysicists, involved with the study of the dynamics of the Earth’s core, the core-mantle-boundary and the structure and processes in the mantle were invited to represent a more interdisciplinary approach. An introductory paper at the 2001 Workshop by J. Kutina and Rongfu Pei presented examples of “mantle-rooted” ore-controlling structures.

This report is a summary of the recent workshop. A more complete report with selected presentation and extended abstracts will appear in “*Global Tectonics and Metallogeny*”- a journal published by Schweizerbart in Stuttgart, Germany.

### **1. The satellite altitude magnetic anomalies**

Global magnetic anomaly maps (POGO, MAGSAT) – one of the main research topics of the Geodynamics Branch of the NASA Goddard Space Flight Center and collaborating institutions (R.D.Regan et al., 1975; R.A. Langel et al., 1982; P.T. Taylor et al., 1992; J. Ridgway & W.J. Hinze, 1986; and others) is a source of important information:

Using the magnetic anomaly map of South America by Ridgway & Hinze (1986) a prominent change in magnetic amplitude of an east-west belt can be seen in the state of Rondonia in western Brazil. These changes occur where Proterozoic granitic rocks, with associated tin deposits, have intruded along an intersecting north-south structure. Hence, the latitudinal belt should have existed there as early as Proterozoic or earlier. It was determined that changes in magnetic amplitude of the latitudinal belts of magnetic highs and lows could be used to estimate the geologic time at which these belts were formed. The pattern of the latitudinal belts of magnetic



highs and lows is in general agreement with the east-west trending trans-regional, mantle-rooted structural discontinuities revealed by combination of geologic and geophysical criteria. When projected on the surface geology, both the E-W belt of satellite magnetic anomalies and structural discontinuities extend across the boundaries of rock units of different ages in the very heterogeneous upper crust. Consequently, these belts become markers providing information on later processes of evolution, possibly also on changes in the orientation of lithospheric plates. J. Kutina and P.T. Taylor discussed this idea in more detail.

A.V. Pertsov et al. presented a map of preferential location of giant ore deposits of Russia at the intersections of EW-trending structural lineaments with fracture zones of other trends.

## **2. Regional magnetic and gravity interpretations**

T. Hildenbrand and Byron Berger have demonstrated, in their 'state-of-the-art' analysis, that regional gravity and magnetic data, as well as high resolution potential-field data can reveal the structures and igneous bodies which control large concentrations of metals (shown by examples from Battle Mountain District in Nevada and Butte District in Montana). Using gravity anomalies, the authors calculated the thickness of both the lithosphere and the magnetic layer presumably related to the Curie point isotherms (noting the thickness has changed in the course of geological evolution). An episodic reactivation of deep-seated zones of fracturing, related to subsequent stages of evolution, has also been revealed.

In another paper, S. Parker Gay demonstrated the use of regional aeromagnetic data to define the fault pattern in the Precambrian basement, calling it "the plumbing system for mineral concentrations in the lithosphere".

## **3. Studies of the dynamics of the core, core-mantle boundary and processes in the mantle**

Xiaodong Song, extending his 1996 pioneering study with P.G. Richards, gave the latest evidence of a faster rotation of the inner core relative to the outer core and mantle.

Weijia Kuang discussed the interaction between the solid earth and liquid outer core, outlining a promising field of research that includes: (1) Influence of the relative rotation of the inner core on global gravity field variation, noting the inner core is in hydrostatic equilibrium with the solid mantle. Misalignment between the axes of the inner core (elliptical) and the solid mantle can result in gravity variations; and (2) The effect of non-hydrostatic pressure on deformation of the mantle. The non-hydrostatic pressure at the core-mantle boundary results from flow motions in the outer core and varies in space and time. The (inelastic) mantle responds to the pressure in the form of deformation.

Edward J. Garnero studied deep mantle structure of shorter wavelengths (100 – 1000 km) revealing a thin (5 – 50 km) ultra-low velocity zone (ULVZ) at the core-mantle boundary where compression and shear velocity waves may be reduced to 10 and 30 %. This ULVZ may represent a large magma chamber and a source of mantle plumes. Alternately, the ULVZ might be related to core-mantle reaction.

Fenglin Niu and Lianxing Wen researched the seismic structure of uppermost 100 km of the inner core and their results revealed a difference in seismic velocity and Q structure between "the eastern hemisphere" (40°E – 180°E) and "the western hemisphere" (180° W – 40° E), the 'eastern' having faster isotropic velocities and higher attenuation.

## **4. Other studies.**

L.M. Cathles, S.V. Cherkasov and N.A. Vishnevskaya have used deep seismic sounding, earthquakes and nuclear explosions to calculate convective models related to three episodes of igneous intrusions in the Yenisei Ridge metallogenic province of Siberia. They defined zones of seismic transparency in the vertical section, coinciding with zones of density variations, and defined places favorable for large gold concentrations.

Jeff Wynn and co-workers have demonstrated, with an example from southeastern Alaska, that a combination of ground and airborne geophysical data can be used to develop a *matrix of geophysical signatures* for geologic mapping and they used their method in difficult, inaccessible or covered areas to define lithological boundaries and zones favorable for the world-class mineral deposits.

V. Hanus J. Vanek and A. Spicak have demonstrated that metallic ore deposits in the continental wedges overlying convergent plate margins are not distributed randomly, but preferentially concentrated in a pattern of seismically active fracture zones.

A study of seismic anisotropy of the continental mantle lithosphere, performed by V. Babuska and J. Plomerova in the Bohemian Massif and the French Massif Central, has revealed major *lithospheric domains* with different seismic anisotropy. Suture zones, developed along the boundaries of these domains, partly rejuvenated, served as important pathways for the ascent of mantle fluids and volcanic activity.

Shear wave anisotropy, based on teleseismic data, which has been used in the study of upper mantle structure in the Tibet Plateau and neighboring regions (Mei Jiang et al.) indicated the possible presence of anisotropy materials at depths below the upper mantle.

S. Kravchenko and N. Kochneva reported success in mineral exploration in the Northern Siberian Platform by mapping mantle convection cell boundaries using seismic methods and finding ridges of up to 15 km high on the MOHO boundary.

C.B. Archambeau focused on the Basin and Range Province in the western United States, using gravity data, heat flow and crust-mantle seismic velocities, he found a correlation between the extent of low compression wave velocity zones, heat flow and Bouguer gravity anomalies to be indicative of partial melting in the upper mantle. The author calculated the depth of partial melting in the mantle, assuming that the continent is decoupled from the rest of the mantle at a depth of about 150 km and drifted over an ancient East Pacific Rise convective zone.

Two major metallogenic case studies were presented. Rongfu Pei showed a 3-D map of China illustrating how deep mantle roots were involved with the subsequent development of metallic zones having exceptionally large ore deposits. The other metallogenic study was by I. Kh. Khamrabaev, I. Sidorova and co-workers from Uzbekistan, they indicated a relationship between major ore deposits with deep lithospheric structure and, separately, the geothermal conditions in the super-large gold concentration at Muruntau.

### **List of workshop papers**

[Titles as used in final submission for publication]

- Jan Kutina (USA) & Rongfu Pei (P.R. of China): The role of deep lithospheric structures in the genesis and distribution of giant and super giant concentrations of metals in the crust. Review of the main data generated by the IGCP-354.
- Thomas G. Hildenbrand & Byron Berger (USA): Regional structures related to mineral deposit clusters in western United States, based on magnetic and gravity interpretations.
- S. Parker Gay, Jr. (USA): The use of regional, but detailed, aeromagnetic data to define the fault pattern in Precambrian basement, the plumbing system for mineral concentrations in the lithosphere.
- Rongfu Pei (P.R. of China): Deep tectonic processes and super-accumulation of metals.
- Thomas G. Hildenbrand & Byron Berger (USA): Structural model for the Battle Mountain District based on magnetic and gravity interpretations.
- Vladislav Babuska & Jaroslava Plomerova (Czech Republic): Major boundaries in the continental mantle lithosphere detected by seismic anisotropy and their role in accumulation of metals in the crust.
- S. Kravchenko & N. Kochneva (Russia): Mantle plumes and other structures of Siberian and East-European Platforms related to localization of giant mineral deposits.
- Mei Jiang, Hui Qian & Yingjun Ma (P.R. of China): Teleseismic anisotropy and corresponding features of the upper mantle in the Tibet Plateau and neighboring areas.
- Jan Kutina & Patrick T. Taylor (USA): Satellite altitude magnetic anomalies – implications for mineral exploration.
- Xiaodong Song (USA): Inner core superrotation: recent observations and future challenges.
- Fenglin Niu & Lianxing Wen (USA): Difference in seismic velocity between the eastern and western hemispheres in the top of the earth's inner core.
- Weijia Kuang (USA): Multidisciplinary studies of deep Earth: From geodynamo to geodesy.
- Ed J. Garnero (USA): The structure of Earth's dynamic deep mantle and core-mantle boundary region.
- Paul D. Lowman, Jr. (USA): Terrane accretion vs. re-working: An evaluation based on geology of the Sudbury area.
- Lawrence Drew, Byron R. Berger & David M. Sutphin (USA): Strike-slip fault tectonics and the occurrence of porphyry copper deposits – Application to the Banat-Timok-Srednogie region in Romania, Serbia and Bulgaria.
- L.M. Cathles (USA), S.V. Cherkasov & N.A. Vishnevskaya (Russia): Convective modelling based on geophysical imaging of deep crustal intrusions – A new foundation for mineral exploration?
- Vaclav Hanus, Jiri Vanek & Ales Spicak (Czech Republic): Deep lithospheric structure and hypogene metallogeny at convergent plate margins.
- I.Kh. Khamrabaev, I.P. Sidorova, A.A. Kustarnikova, S.S. Seiduzova & A.A. Polikarpov (Uzbekistan): The role of deep lithospheric structure in the genesis of large and superlarge ore deposits in Uzbekistan.
- Jeff Wynn, Susan Karl, Bruce Smith, Anne McCafferty, & Jon Doucette (USA): Using ground and airborne geophysical methods to constrain geologic mapping, and identify new mineral prospective zones in southeast Alaska.

- A.E. Egorkin (Russia): Upper mantle structure below the Siberian kimberlite field.  
 Friedemann Freund (USA): Electric charge carriers in crustal rocks and what they may tell us about the solid Earth.  
 Patrick T. Taylor & James J. Frawley (USA): Satellite-altitude-magnetic data and the search for mineral resources – the Kiruna region of Sweden.  
 A.V. Pertsov, V.S. Antipov, V. Galperov & S.I. Turchenko (Russia): Continental lineament net of Russia: Remote sensed detection, superlarge mineral deposits and geodynamic linkages.  
 A.A. Polikarpov & I.P. Sidorova (Uzbekistan): The heat conditions of Muruntau gold field's interior, Kyzylkum desert, western Uzbekistan.  
 Jan Kutina & Jeff Grossman (USA): Geochemical health hazards above the intersections of orogenic belts by deep-rooted structural discontinuities, and in areas adjacent to orogenic belts: Example from the Appalachians.

#### **Written contributions**

- Laurence Robb (South Africa): Time, episodicity and the generation of world class ore deposits.  
 Charles Archambeau (USA): Passive seismic tomography: 3D imaging in tectonically active regions.  
 Charles Archambeau (USA): A dynamic mantle-lithospheric interaction model for mature stage continental tectonics: Implications for the Basin and Range Province in the western U.S.  
 Gennady G. Kochemasov (Russia): Coherent structurization of Earth's geospheres from core to atmosphere and lithospheric weakness zones favorable for concentration of metals.  
 S.G. Skolotnev & A.E. Fedorov (Russia): The cube features in the Earth's structure.  
 F.A. Usmanov (Uzbekistan): Statistical hypsometrical metallogenic analysis. Vertical distribution of endogenic deposits of Central Asia.

For more information, please contact:

Jan Kutina, Laboratory of Global Tectonics & Metallogeny, c/o Dept. of Chemistry, American University, Washington, D.C. 20016-8014, U.S.A., Fax: 202-885-1750, E-mail: [jkutina@USGS.gov](mailto:jkutina@USGS.gov)

Patrick T. Taylor, Geodynamics Branch, NASA Goddard Space Flight Center, Greenbelt, Maryland 20771, U.S.A. Fax: 301-614-6522. E-mail: [ptaylor@ltpmail.gsfc.nasa.gov](mailto:ptaylor@ltpmail.gsfc.nasa.gov)

Additional information in: EOS, Transactions, American Geophysical Union, Vol. 83, No.10, March 5, 2002.

*Contributed by Jan Kutina*

---

## **Episodes - International Geoscience Newsmagazine**

Episodes is the quarterly science and news journal of the International Union of Geological Sciences (IUGS). It focuses on the publication of results of scientific research and other information addressing issues of interest to the global earth-science community. Special emphasis is given to topics involving geological aspects of population growth and economic development and their resulting impacts on or implications for society. As the principal publication of the IUGS, Episodes also carries information about IUGS scientific programs and activities. Contributions of the following types of manuscripts are here solicited: I scientific articles I conference reports I news and views I letters to editor, book reviews I information on training courses (esp. those geared to participants from developing countries) I noteworthy new publications I including national or regional geologic maps. Episodes also invites photos or other images for the front cover. Photos must be of high technical quality and tell an interesting geological story. A colour transparency and one-colour print (at least 9 cm x 12.6 cm) are required for submissions, which should be supplemented with a short explanatory paragraph (no more than 100 words).

All IAGOD members are urged to support 'Episodes'. Guidelines for contributors are published annually and are always available at the IUGS web site: <http://www.iugs.org/iugs/pubs/epiguide.htm>. The annual subscription is US\$24.00, which includes air-mail postage.

Contact: Prof. Zhang Hongren, Editor, Episodes, P.O. Box 823, 26 Baiwanzhuang Rd., Beijing 100037, China; phone: +86-10-68320827; fax: +86-10-68328928; e-mail: [episodes@public2.bta.net.cn](mailto:episodes@public2.bta.net.cn)

## **The Joint 7th Biennial SGA-SEG Meeting**

## 24-28 August 2003, Athens, Greece

The 7th Biennial SGA Meeting "Mineral Exploration and Sustainable Development" will be held in Athens, Greece (August 24-28, 2003). Athens is the historical capital of Greece, a scientific and cultural centre and the Host City of the Summer Olympic Games in 2004.

The meeting will be organized by the Society for Geology Applied to Mineral Deposits (SGA) in cooperation with the Institute of Geology and Mineral Exploration, Athens Technical University, University of Thessaloniki and Geological Society of Greece (Section of Economic Geology and Geochemistry).

Under the general theme "Mineral Exploration and Sustainable Development" the organizers would like to bring together economic geology scholars and professional exploration and mining geologists to discuss current issues on ore geology, exploration and sustainable development. Participants are kindly invited to offer papers for oral and poster presentations. There is an opportunity to have meetings and sessions of ongoing and planned Projects and Working Groups. Proposals for conveners and topics of sessions are welcome.

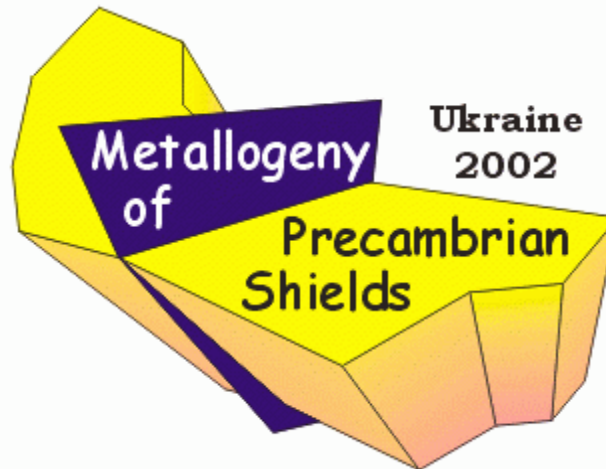
Several pre- and post-meeting field trips will be organized and the participants will have the opportunity to visit different metallogenic provinces of Greece and neighboring countries.

The first circular will be available under the following address: [www.igme.gr/sgaconference.html](http://www.igme.gr/sgaconference.html)

Contact address: 7th SGA Biennial Meeting, Secretary: Dr. Demetrios Eliopoulos, Institute of Geology and Mineral Exploration, 70 Messoghion Str., GR-115 27 Athens, Greece, Fax: 0030 - 1 77 73 421, e-mail: [Eliopoulos@igme.gr](mailto:Eliopoulos@igme.gr)

## INTERNATIONAL SYMPOSIUM

The organizing committee, representing the State Geological Survey of Ukraine and the National Academy of Sciences of Ukraine, in co-operation with the GEODE Program, has the pleasure to present the 2<sup>nd</sup> Circular of the International Symposium "Metallogeny of Precambrian Shields"



The Symposium will be held in **Kyiv, Ukraine**, on **September 18 - 20<sup>th</sup>, 2002**. The symposium will include technical and poster Sessions, a pre-symposium workshop as well as pre- and post- symposium field trips to mineral deposits of interest and typical bedrock complexes. The meeting is designed to create a forum for a broad debate on the most significant advances in the geology and metallogeny of Precambrian Shields.

**The second circular can be viewed at <http://www.geofuel.lviv.net/MISCEL/MPSsymp.htm>**

For general enquiries including registration, accommodation and further program information please contact:

Scientific Responsible Committee Member  
Dr. Boris Malyuk  
Box 78, Autozavodska Str., 78  
KYIV, 04114, UKRAINE  
Tel./FAX (380) 44-295-72-98  
e-mail: [borimalyuk@hotmail.com](mailto:borimalyuk@hotmail.com)

Symposium Secretariat  
Dr. Tetyana Yaskevich  
Box 128, Tymoshenka Str., 13a  
KYIV, 04212, UKRAINE  
Tel./FAX (380) 44-295-72-98  
e-mail: [bt@ukrdgri.gov.ua](mailto:bt@ukrdgri.gov.ua)



**32nd International Geological Congress, Florence, Italy, August 20-28, 2004  
In collaboration with and under the sponsorship of the IUGS**

-----  
**From the Mediterranean toward a Global Renaissance**  
Geology, Natural Hazards and Cultural Heritage

**The first circular for the next IGC is available on the website: <http://www.32igc.org/>**

IAGOD have proposed several several symposia and workshops, including:

**SYMPOSIUM** "Mineral deposits and tectonics of Central Asia".

**SYMPOSIUM** "Tin and Tungsten Deposits of the World - Contribution towards the World Minerals Project Digital Database and Global Distribution Map" (WGTT).

**SYMPOSIUM** "Heterogeneous ore-forming systems: geological, fluid inclusion and physico-chemical evidence, genetic models and application to ore prospecting".

**SYMPOSIUM** "Metamorphosed and metamorphogenic ore deposits - The role of metamorphic fluids" (WGOM)

**WORKSHOP** "Super Accumulation of Metals in Lithosphere" (CTOD)

**More details in the next newsletter.**

---

**Report of the IAGOD National Group of Kyrgyzstan for 2001**

Chairwoman: Rosalia J. Jenchuraeva (Corr.Member of NAS, Prof., Institute of Geology National Academy of Sciences, 30 Erkindik, 720481 Bishkek, Kyrgyzstan; tel. 996 (312) 66 26 80; Fax: 996 (312) 62 00 47; E-mail: [djam@freenet.kg](mailto:djam@freenet.kg); [rodjen@netmail.kg](mailto:rodjen@netmail.kg);

The group has 21 members:

Djamila Aitmatova, (Inst. Physics & Rock Mechanics NAS),

Bakirov, Apas (IG NAS),

Bogdetsky, Valentin (CVP),

Kabaev, Omorkul (MRI),

Kim, Vlas (KMMI),

Litvinov, Pavel (KOC),

Maksumova, Rena (IG NAS),

Nataly Malyukova (*Kyrgyz Mining and Metallurgical Institute, Bishkek*),

Alexander Mikolaichuk (*- Inst. of High Temp, Russian Acad. of Sc., Bishkek*),

Valentin Nikonorov (*State Agency on Geology and Mineral Resources of Kyrgyz Republic, Bishkek*),

Kubat Osmonbetov (*Kyrgyz Mining and Metallurgical Institute, Bishkek*),

Nikolay Pak (*Institute of Geology National Academy of Sciences, Bishkek*),

Orunbay Shamshyev (*Osh Technic Univers., town Osh*),

Gennady Savchenko (*State Agency on Geology and Mineral Resources of Kyrgyz Republic, Bishkek*),

Sorokin, Timofey (*Institute of Geology National Academy of Sciences, Bishkek*),

Vitaly Stavinsky (*Kyrgyz Mining Association, Bishkek*),

Iskander Turdukeev (*Institute of Geology National Academy of Sciences, Bishkek*),

Iltызar Usmanov (*Institute of Geology National Academy of Sciences, Bishkek*),

Viktor Yakimov (ME&ES),

Alexander Yarkov (–“Kyrgyz Altyn” State Concern, Bishkek),  
Tourat Usabaliev, (Kumtor Operating Company, Kumtor Mining).

**Explanations:** CVP – Councillor of Vice President, Bishkek; IG NAS – Institute of Geology National Academy of Sciences, Bishkek; IHT - Inst. of High Temp, Russian Acad. of Sc., Bishkek; KMMI – Kyrgyz Mining and Metallurgical Institute, Bishkek; KMA – Kyrgyz Mining Association, Bishkek; KOC – Kumtor Operating Company, Kumtor Mining; MRI – Mineral Resources Inst., Bishkek; SC KA –“Kyrgyz Altyn” State Concern, Bishkek; SAG&MR – State Agency on Geology and Mineral Resources of Kyrgyz Republic, Bishkek; OTU – Osh Technic Univers., town Osh.

*E-mail addresses of Kyrgyz Group IAGOD Members:*

Aitmatova, Djamila	djam@freenet.kg;
Bakirov, Apas	bakirov@geol.freenet.bishkek.su
Litvinov, Pavel	Pavel_Litvinov@kumtor.com
Maksumova, Rena	rmaks@geol.freenet.bishkek.su
Malyukova, Nataly	Natasha@diamond.freenet.bishkek.su
Mikolaichuk, Alexander	mav@tiger.gdirc.ru; IVTANgora@mail.ru
Pak, Nikolay	pak@geol.freenet.bishkek.su
Usmanov Iltizar	usmanov@geol.freenet.bishkek.su
Usabaliev, Tourat	toorat_usabaliev@kumtor.com

1. IGCP-373 Field Conference in Bishkek and Kyrgyz Tien Shan: 16-25 August 2001 & Pre-meeting Field Trip A5 of the Joint 6<sup>th</sup> Biennial SGA-SEG Meeting in Krakow, Poland.

Excursion Guidebook: “Paleozoic geodynamics and intrusion-related Au deposits in the Althaid”  
Excursion Guidebook, 2001, Bishkek-London, 182p.

**Recent papers:**

- Jenchuraeva R., Maliukova N. & Solomovich L. Rapakivi granites and ore mineralisation in Kyrgyzstan // Abstracts, Helsinki, 2000, p.35.
- Jenchuraeva R., Transregional deep-seated structures and role in formation of large ore deposits // Journal “Geology and Metallogeny”, Novosibirsk, Russia, v. 42, #10, 2001, c.1476-1483.
- Seltmann R., Shatov V.V., Cole A., Yakubchuk S. & Jenchuraeva R. Paleozoic geodynamics and gold deposits in the Althaid sector of Kyrgyzstan. // Paleozoic geodynamics and intrusion-related Au deposits in the Althaid. Excursion Guidebook. London, 2001, p.1-5,
- Jenchuraeva R. Paleozoic geodynamics and metallogeny. // Paleozoic geodynamics and intrusion-related Au deposits in the Althaid. London, 2001, pp.29-49.
- Jenchuraeva R., Nikonorov V, Litvinov P. Kumtor ore deposit. // Paleozoic geodynamics and intrusion-related Au deposits in the Althaid. London, 2001, pp.139-150
- Jenchuraeva R., Pak N., Usmanov I. Gold deposit Makmal. // Paleozoic geodynamics and intrusion-related Au deposits in the Althaid. IAGOD Guidebook. London, 2001, pp. 82-96.
- Jenchuraeva R., Oakes B. Ore deposit Jeroo. // Paleozoic geodynamics and intrusion-related Au deposits in the Althaid. London, 2001, pp. 153-160
- Malyukova N. The Taldy Bulak Levoberezhny gold deposit // Paleozoic geodynamics and intrusion-related Au deposits in the Althaid. London, 2001, pp. 97-110
- Usmanov I. The Boordu zinc-lead deposit // Paleozoic geodynamics and intrusion-related Au deposits in the Althaid. London, 2001, pp. 111-114



**VLADIVOSTOK - 2004**  
**INTERIM IAGOD CONFERENCE**  
**Metallogeny of the Pacific Northwest:**  
**Tectonics, Magmatism & Metallogeny**  
**of Active Continental Margins**

**27 August – 4 September, 2004**  
 Vladivostok, Khabarovsk, Magadan  
***RUSSIAN FAR EAST, RUSSIA***

*Russian National IAGOD Group*  
*Federal Far East Geological Institute*  
*Far Eastern Branch of Russian Academy of Sciences*

Far East Geological Institute, FEB RAS  
 159, Prospekt 100-letiya, Vladivostok, 690022, Russia  
 Ph: 7 (4232) 31- 87- 50; Fax: 7 (4232) 31- 78- 47;  
 E-mail: [iagodconf@fegi.ru](mailto:iagodconf@fegi.ru) or [fegi@online.marine.su](mailto:fegi@online.marine.su)  
 URL: <http://www.fegi.ru/IAGOD/index.htm>

## INVITATION

The 2004 Interim IAGOD Conference presents an opportunity to bring together the geologists from all over the world in Vladivostok, one of the major cities of the Russian Far East. This area known for its tremendous mineral wealth ranks among the most geologically interesting territories of the Russian Federation, whose geological history has been conditioned by the interacting Pacific and Eurasian plates. Ancient geological structures of Asia and young structures of the Pacific Belt, that is the transit zone from continent to ocean, are present here.

The proposed program comprises pre- and post-conference field tours, scientific and social programs, rock, map, and publication displays, and trade exhibition. The program presents an opportunity for delegates to visit several famous large and unusual ore deposits of the Russian Far East and Pacific Rim.

## FIELD EXCURSIONS

**Trip 1:** Dalnegorsk ore district: polymetallic (Pb, Zn, Ag) and boron skarns, tin-sulfide veins, and coastal belt granitoids. (Details: accommodation at a hotel in Dalnegorsk-town, 35 people, bus or plane (?) transportation).

**Trip 2:** Komsomolsk ore district: tin (tin-sulphide) deposits and ore-bearing magmatism (Details: accommodation in Solnechnii-town, 25 people, plane and bus transportation). Alternative: North Primorye : scheelite skarns - (Vostok-2) and zinnvaldite tin-tungsten greisens (Tigrinoe). (Details: accommodation in Vostok-settlement, 25 people, plane or bus transportation).

**Trip 3:** Geology, magmatism, and gold deposits of South Primorye (Sergeevka) (Details: accommodation in the city of Nakhodka or at «Avangard» camping area, 35 people, bus transportation).

**Trip 4 :** Gold deposits of the Russian Northeast "Kolyma Golden Ring" (Details: accommodation in the city of Magadan, 25 people, plane transportation).

**Trip 5:** Konder deposit: alkali-ultrabasic rocks of the Konder intrusion and the related platinum and gold placers. (Details: accommodation in Nelkan or Konder villages, 25 people, plane transportation).





## International Union of Geological Sciences

The International Union of Geological Sciences (IUGS) is one of the largest, non-governmental, non-political, and non-profit making scientific organizations in the world. It addresses earth-science problems of broadly international scope through its own activities and those co-sponsored with other agencies. IUGS encourages the highest levels of international co-operation and participation in its activities, many of which deal increasingly with the Earth and human welfare. Since its founding in 1961, IUGS has been a member of ICSU (International Council for Science, <http://www.icsu.org>).

### Activities

IUGS undertakes day-to-day work through its Commissions, Subcommissions, Task Groups, Joint Programs and its Initiatives. The Union is the scientific sponsor of the quadrennial International Geological Congress and advises and assists the organizers in formulating the scientific program for this event.

Commissions and their component subcommissions address topics requiring long-term study. Existing Commissions include Environmental Planning, Global Sedimentary Geology, History of Geological Sciences, Igneous and Metamorphic Petrogenesis, the handling of Geoscience Information, Stratigraphy, Systematics in Petrology, Geological Education and Training, and Tectonics.

Task Groups deal with topics needing immediate action or short-term studies. They are appointed directly by the Union and deal with: Decay Constants in Geochronology, Global Geosites, Global Continental Geochemical Baselines, Fossil Fuels and Public Affairs.

Joint Programs are sponsored by IUGS and other organizations. Existing programs in collaboration with UNESCO are: the International Geological Correlation Programme (IGCP), Geological Applications of Remote Sensing, and Mineral and Energy Deposit Modelling. The ICSU Scientific Committee on the Lithosphere (SCL) was born as an inter-Union initiative between IUGS and the International Union of Geodesy and Geophysics.

Two new Initiatives were established by the IUGS Executive Committee in 2002: The Initiative on Medical Geology, and the Initiative on Geoinicators.

### Accomplishments of IUGS

As the broadest ranging international forum for the geological sciences, IUGS has established an effective and highly respected global network for communicating across disciplines, across political and geographical boundaries, across levels and gaps of knowledge. This has led to countless examples of improved resolution of scientific problems, establishment of better standards and techniques, more enlightened definition of fields requiring future scientific inquiry - in short, the strengthening of the scientific base on which geological research rests and without which geoscience cannot be effectively applied toward improving human welfare.

**Find out more on <http://www.iugs.org/>**

### IUGS Executive Committee (2000-2004)

President: Dr. E.F.J. de Mulder, Netherlands Institute of Applied Geoscience TNO, P.O. Box 157 2000 AD Haarlem, THE NETHERLANDS. Tel. (Office): +31-23 530 0292; Fax: +31-23 526 2709; Telex: 71105 geold nl; E-mail: [demulder@worldaccess.nl](mailto:demulder@worldaccess.nl)

Secretary General: Dr. Werner Janoschek, Geological Survey of Austria, Rasumofskygasse 23, Po box 127, A-1031 Vienna, Austria. Tel: (+43-1) 712 56 74, ext. 400; Fax: (+43-1) 712 56 74 56; E-mail: [wjanoschek@cc.geolba.ac.at](mailto:wjanoschek@cc.geolba.ac.at)

Vice President (with responsibility for liason with affiliate organisations): Dr. Peter T. Bobrowsky, Geological Survey of Canada, 601 booth street, Ottawa, Ontario, Canada K1A 0E8. Tel +1 613 947 0333. fax. +1 613 992 0190 [pbobrows@nrcan.gc.ca](mailto:pbobrows@nrcan.gc.ca)



## IAGOD COMMISSIONS & WORKING GROUPS

### Commission on Tectonics of Ore Deposits (CTOD)

Chairman: A.V. HEYL

U.S.Geological Survey, Federal Center, Bldg 25, MS 905, Box 25046, Denver, Colorado 80225, USA; phone (+1) 303-6745829

Secretary: A.G. FABBRI

ITC, 350 Boulevard 1945, P.O. Box 6, 7500 AA, Enschede, The Netherlands; phone: (+31) 53-874 282; fax: (+31) 53-874 336

Vice-Chairmen: I.N.TOMSON (Russia), P. LAFFITTE (France), A. Bhaskara RAO (Brazil), A. OLANTUNJI (Nigeria), Chen GUODA (P.R. China), Pei Rongfu (P.R. China).

### Working Groups of CTOD

#### WG1: Global Tectonics & Metallogeny

Chairman: Jan KUTINA

The American University, c/o Department of Chemistry, 4400 Massachusetts Avenue, N.W., Washington, D.C. 20016-8014, USA; phone (+1) 202-966-0143; fax (+1) 202-885-1752

Secretary: Peter LAZNICKA

Vice-Chairman: D.V. RUNDQVIST (Russia)

#### WG2: Structure of Ore Fields & Ore Deposits (currently inactive)

#### WG3: Statistical Treatment of Tectonic & Mineral Deposit Data (currently inactive)

#### WG4: Tectono-Magmatic Activization (DIWA)

Chairman: Chen GUODA

Changsha Institute of Geotectonics, Academia Sinica, 410013 Changsha, P.R.China; phone (+86) 731-8912600; fax (+86) 731-8912637; e-mail [cgd@ms.csig.ac.cn](mailto:cgd@ms.csig.ac.cn)

Secretary: Yi JIANBIN

Changsha Institute of Geotectonics, Academia Sinica, 410013 Changsha, P.R. China; phone (+86) 731-8912650; fax (+86) 731-8912637; e-mail [yjb@ms.csig.ac.cn](mailto:yjb@ms.csig.ac.cn)

Vice-Chairmen:

Zhou YUFAN

Changsha Institute of Geotectonics, Academia Sinica, 410013 Changsha, P.R.China; phone (+86) 731-82735; fax (+86) 731-8912637

Ochir GEREL

Department of Geology and Mineralogy, Mongolian Technical University, C.P.O. Box 249, 210613 Ulaanbaatar 13, Mongolia; fax (+976) 1-324121; e-mail [gerel@mtu.edu.mn](mailto:gerel@mtu.edu.mn)

V.G. MOISYENKO (Russia)

Yukinori FUJITA (Japan)

#### WG5: Remote Sensing Methods for Tectonics & Ore Prospecting

Secretary: A. PERTSOV

VNIKAM Institute of Remote Sensing Methods for Geology, Birjevoy proyezd 6, 199034 St. Petersburg, Russia; phone (+7) 218-3916; fax (812)-315-1701

Chairman: Alexey V. PERTSOV

Institute of Remote Sensing Methods for Geology (VNIKAM), 6 Birzhevoy Proyezd, St.Petersburg 199034, Russia; phone (+7) 812-328-2801; fax (+7) 812-328-3916; e-mail: [sur@vniikam.spb.su](mailto:sur@vniikam.spb.su)

Vice-Chairman: V.S. Antipov

Institute of Remote Sensing Methods for Geology (VNIKAM), 6 Birzhevoy Proyezd, St.Petersburg 199034, Russia; phone (+7) 812-328-1906; fax (+7) 812-328-3916; e-mail: [sur@vniikam.spb.su](mailto:sur@vniikam.spb.su)

Secretary: S.I. Turchenko

Institute of Precambrian Geology and Geochronology, Russian Academy of Sciences, 2 Makarova emb., St.Petersburg 199034, Russia; phone (+7) 812-328-5306, fax (+7) 812-328 4801, e-mail: [tur@ad.igpp.ras.spb.ru](mailto:tur@ad.igpp.ras.spb.ru)

### Commission on Paragenesis (PaC)

Chairman: Richard D. HAGNI

Department of Geology and Geophysics, University of Missouri - Rolla, 125 McNutt Hall, Rolla, Missouri 65401, USA; phone (+1) 314-341-4657; fax (+1) 314-341-4192; e-mail rhagni@umr.edu

Secretary: Werner H. PAAR

University, Institute of Geosciences, Hell-brunnerstr. 34, 5020 Salzburg, Austria; phone (+43) 662-80445421; fax (+43) 662-80445485

Officers: Chris J. STANLEY (UK), Rongfu PEI (China), Alex D. GENKIN (Russia)

### **Commission on Ore-Forming Fluids in Inclusions (COFFI)**

Chairman: Robert J. BODNAR

Department of Geological Sciences, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061, USA; fax (+1) 703-9617826

Vice-Chairman: He ZHILI

Department of Geology, University of Sciences and Technology, 100083 Beijing, China; phone (+86) 1-201994, ext. 2918; fax (+86) 1-2017283; e-mail CKL402@www.ustb.edu.cn

Secretary: F.P. MEL'NIKOV

Geological Faculty, Moscow State University, Len. Gory, 110900 Moscow, Russia; phone 7-095-9395125; fax 7-095-9328889

### **Commission on Industrial Minerals and Rocks (COIMR)**

Chairman: Peter W. SCOTT

Camborne School of Mines, University of Exeter, UK pscott@csm.ex.ac.uk

Vice Chairman: Ronghua ZHANG,

Chinese Academy of Geological Sciences zrhhs@pku.edu.cn

Secretary: Joseph BRISKEY

US Geological Survey jbriskey@usgs.gov

### **WG1: Working Group on Physical Chemistry (currently inactive)**

### **WG2: Working Group on Isotope Geochemistry (IGWG)**

Chairwoman Secretary

Jana HLADÍKOVÁ Karel ŽÁK

Czech Geological Survey, Geologická 6, 15200 Prague (Barrandov), Czech Republic; phone (+420) 2 590287; fax (+420) 2 5816748; e-mail hladika@cgu.cz; Zak@cgu.cz

### **Commission on Placer Deposits**

Chairman: Nikolay A. SHILO Institute of Geology of Ore Deposits, Petrography, Mineralogy, and Geochemistry, Russian Academy of Sciences (IGEM RAS), Staromonetny Per., 35, Moscow 109017, Russia; Phone: (7-095) 230-8427, Fax: (7-095) 230-2179.

Secretary: Natalia G. PATYK-KARA, also IGEM RAS, identical phone and fax numbers; e-mail: pkara@igem.ru.

Vice-Chairman: Jan KRASON, USA.

### **Commission on Thermodynamics of Ore Forming Fluids**

Chairman: Nikolay N. AKINFIEV Chemistry Department, Moscow Geological-Prospecting University (MGGRU), Muklukho-Maklay Str., 23, Moscow 117485, Russia. Phone: (7-095) 472-1395, Fax: (7-095) 472-7886, e-mail: akinfiev@mtu-net.ru.

(During 2002: Institut für Geowissenschaften, Abteilung Mineralogie und Petrologie, Peter Tunner Str., 5, Leoben, A-8700, Austria; phone: (43-3842) 402-453, Fax: (43-3842) 47016, e-mail: akinfiev@unileoben.ac.at).

### **Commission on Manganese (COM)**

Chairman: Yu HARIYA

Hokkaido Institute of Technology, Sapporo, Japan

Vice-Chairman: N.J. BEUKES

Department of Geology, Rand Afrikaans University, P.O. Box 524, Auckland Park, 2006, South Africa; phone 27-11-4892301; e-mail njb@na.rau.ac.za

Vice-Chairman: B. BOLTON

BHP Minerals Exploration, 229 Shepards Bush Rd, Hammersmith, London W67AN, UK; fax +44-181-5630427; e-mail bolton.barrie.br@bhp.com.au

**Commission on Ore Deposits in Mafic & Ultramafic Rocks (CODMUR)**

Chairman: Heikki PAPUNEN

Department of Geology, University of Turku, Vesilinnantie Str., 20500 Turku, Finland; phone (+358) 21 6335480; fax (+358) 21 331167; e-mail papunen@utu.fi

Secretary: Hazel PRICHARD

Department of Geology, The Open University, Walton Hall, Milton Keynes MK7 6AA, U.K.; phone (+44) 0908 665 053; fax 908 653 744; e-mail sglhmp@cardiff.ac.uk

**Working Group on Skarn Deposits**

Chairman: L.D. Meinert

Department of Geology, Washington State University, Pullman, WA 99164-2812, USA phone (+1) 509-3352261; fax (+1) 509-3357816; e-mail meinert@wsu.edu

**Working Group on Tin & Tungsten Deposits (WGTT)**

Chairman: David SINCLAIR

Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario, Canada K1A 0E8. Canada; phone +1 613 992 9810; fax. +1 613 996 9820; e-mail: sinclair@gsc.nrcan.gc.ca

Vice-Chairman: Reimar SELTMANN

Natural History Museum, Department of Mineralogy, Cromwell Road, London SW7 5BD, UK; phone: +44 171 938 9353 (Secretary); fax: +44 171 938 9268; e-mail: rs@nhm.ac.uk

**Working Group on Ores and Metamorphism (WGOM)**

Chairman: Paul. G. SPRY

Geological Sciences, Iowa State University, 253 Science Hall I, Ames Iowa 50011-3210, USA phone (+1) 515-2949637; fax (+1) 515-2946049; e-mail: pgspry@iastate.edu

Co-Chairman: A. MOOKHERJEE, Calcutta, India

Co-Chairman: Walter PROCHASKA

Institute of Geological Sciences, Montanuniversität Leoben, Franz-Josef-Strasse 18, A-8700 Leoben, Austria; phone (+43) 3842-42555/900; fax (+43) 3842 42555; e-mail prochask@grz08u.unileoben.ac.at

Secretary: Adrienne LAROCQUE

Department of Geological Sciences, University of Manitoba, Winnipeg, Manitoba, Canada R3T 2N2. e-mail: alaroque@bldwall.lan1.umanito

**Working Group on Experimental Geochemistry and Modelling of Ore Genesis (EGMOG)**

Chairman: Peter Möller, GeoForschungsZentrum Potsdam, Telegrafenberg A50, D-14473 Potsdam, Germany phone (+49) 331-2881430; fax (+49) 331-288 1436; e-mail pemoe@gfz-potsdam.de

**THE NATIONAL GROUPS OF IAGOD****IAGOD National Group of China (57 members)**

Chairman: Prof. Pei Rongfu (Institute of Mineral Deposits, Chinese Academy of Geological Sciences, 26 Baiwanzuang Road, Beijing 100037, P.R. China; phone +86-1-8311138-342; fax +86-1-8310894)

Ai, Yonde (Beijing), Bai, Wancheng (Langfang), Cao, Ronglon (Guangzhou), Chen, Guoda (Changsha), Chen, Shiyi (Changsha), Chen, Yuchuan (Beijing), Chen, Zilong (Changsha), Cheng, Shoude (Urumqi), Cheng, Yuqi (Beijing), Cui, Bin (Beijing), Dai, Tagen (Changsha), Delian, Fan (Beijing), Du, Letian (Beijing), Feng, Benzhi (Jilin), Feng Ming (Changchun), He, Ying (Xid'an), He, Zhili (Beijing), Hong, Jinyi (Changsha), Hou, Zonglin (Tianjin), Huang, Zhilong (Beijing), Ji, Kejian (Beijing), Li, Zuohua (Xi'an), Liu, Bingguang (Beijing), Liu, Daizhi (Changsha), Liu, Jiayuan (Guilin), Ma, Wen Nian (Tianjin), Mao, Jingwen (Beijing), Ni, Ruoshui (Nanjing), Pan, Zhong-Hua (Wuhan), Pei, Rongfu (Beijing), Peng, Shenlin (Changsha), Shaobin, Liu (Xizhi Men), Shi, Mingkui (Yichang), Sun, Fengyue (Jilin), Sun, Xiaoming (Guangzhou), Sun, Zhenjia (Changshai), Tan, Keren (Changsha), Tang, Zhongli (Lanzhou), Tu, Guangzhi (Beijing), Wang, Anjian (Changchun), Wang, Si Yuan (Wuhan), Wang, Xuekun (Kunming), Wen, Chun Qi (Chengdu), Wu, Jieren (Xi'an), Xu, Guangrong (Changchun), Xu, Jiuhua (Beijing), Xu, Keqin (Nanjing), Xu, Qidong (Wuhan), Yang, Chaoqun (Guangdong), Yufan, Zhou (Changsha), Zhai, Yusheng (Beijing), Zhang, Lisheng (Chengdu), Zhang, Shaohua (Beijing), Zhang Ronghua (Beijing), Zhang, Yixia (Changchung), Zhang Zhijan (Wuhan), Zhou Weixun (Changsha), Zhou, Yufan (Changsha).

**IAGOD National Group of Czech Republic (29 members)**

Chairman: Doc. RNDr. Bohdan Křibek, DrSc. (Czech Geological Survey, Klárov 3, 128 21 Praha 1, Czech Republic; tel. +420-2-5817390; fax +420-2-5818748; e-mail: kribek@cgu.cz).

Aichler, Jaroslav (Jeseník), Bernard, Jan Hus (Praha), Dobeš, Petr (Praha), Drábek, Miroslav (Praha), Fojt, Bohuslav (Brno), Havelka, Jaroslav (Ostrava), Hladíková, Jana (Praha), Holub, Milan (Malý Beranov), Hron, J. (Praha), Janatka, Jiří (Praha), Jurák, L. (Praha), Kalenda, František (Zlaté Hory), Kopecký, Luboš (Praha), Křibek, Bohdan (Praha), Losos, Zdeník (Brno), Mixa, Petr (Jeseník), Morávek, Petr (Praha), Palas, Miroslav (Ostrava), Pašava, Jan (Praha), Pecina, Vratislav (Jeseník), Pertold, Zdeněk (Praha), Pertoldová, Jaroslava (Praha), Piša, M. (Praha), Pouba, Zdeník (Praha), Sattran, Vladimír (Praha), Štemprok, Miroslav (Praha), Vaněček, Miroslav (Praha), Zimák, Jiří (Olomouc), Žák, Karel (Praha).

**IAGOD National Group of Kazakhstan (11 members)**

Chairman: Prof. Mikhail Rafailovich (Scientific Institute of Natural Resources YUGGEO, Bogenbay Batyr Str., 168, 480012 Almaty, Republic of Kazakhstan; tel: (3272) 692240; fax (3272) 621284; e-mail: rafail@astel.kz Prof. Bespaev K.A. (Almaty), Dr. Fedorenko O.A. (Almaty), Dr. Glukhan I.V. (Karaganda), Prof. Djachkov B.A. (Ust-Kamenogorsk), Dr. Dolgopolov V.F. (Almaty), Dr. Dosanova B.A. (Almaty), Dr. Nachtigal G.P. (Ust-Kamenogorsk), Prof. Serykh V.I. (Karaganda), Dr. Sapargaliev E.M. (Ust-Kamenogorsk), Yartseva L.A. (Almaty).

**IAGOD National Group of Kyrgyzstan (21 members)**

Chairwoman: Jenchuraeva Rosalia J. (Corr. Member of NAS, Prof., Institute of Geology National Academy of Sciences, Erkindik 30, 720468 Bishkek, Kyrgyzstan; tel: (33 12) 66-47-26, 22-08-27; fax: (33 12) 62-00-47; e-mail: rjench@geol.freenet.bishkek.su)

Djamila Aitmatova, (Inst. Physics & Rock Mechanics NAS), Bakirov, Apas (IG NAS), Bogdetsky, Valentin (CVP), Kabaev, Omorkul (MRI), Kim, Vlas (KMMI), Litvinov, Pavel (KOC), Maksumova, Rena (IG NAS), Nataly Malyukova (Kyrgyz Mining and Metallurgical Institute, Bishkek), Alexander Mikolaichuk (- Inst. of High Temp, Russian Acad. of Sc., Bishkek), Valentin Nikonorov (State Agency on Geology and Mineral Resources of Kyrgyz Republic, Bishkek), Kubat Osmonbetov (Kyrgyz Mining and Metallurgical Institute, Bishkek), Nikolay Pak (Institute of Geology National Academy of Sciences, Bishkek), Orunbay Shamshyev (Osh Technic Univers., town Osh), Gennady Savchenko (State Agency on Geology and Mineral Resources of Kyrgyz Republic, Bishkek), Sorokin, Timofey (Institute of Geology National Academy of Sciences, Bishkek), Vitaly Stavinsky (Kyrgyz Mining Association, Bishkek), Iskander Turdukeev (Institute of Geology National Academy of Sciences, Bishkek), Iltyzar Usmanov (Institute of Geology National Academy of Sciences, Bishkek), Viktor Yakimov (ME&ES), Alexander Yarkov ("Kyrgyz Altyn" State Concern, Bishkek), Tourat Usubaliev, (Kumtor Operating Company, Kumtor Mining).

**IAGOD National Group of Georgia (6 members)**

Chairman: Dr. Ramaz R. Migineishvili (Geological Institute of Academy of Sciences of Georgia, M. Rukhadze str. 1/9, 380093 Tbilisi. Tel. (home): 995-32 393596; e-mail: [ram\\_migi@yahoo.com](mailto:ram_migi@yahoo.com)

Dr. Vaja I. Buadze (Tbilisi), Prof. Vladimir I. Gugushvili (Tbilisi), Prof. Sergio A. Kekelia (Tbilisi), Dr. Maren A. Kekelia (Tbilisi), Prof. Alexander G. Tvalchrelidze (Tbilisi)

**IAGOD National Group of Mongolia (33 members)**

IAGOD National Group of Mongolia: Chairwoman: Prof. Ochir Gerel (Mongolian University of Science & Technology, S. Dandar (secretary, MUST), J. Lkhamsuren (MUST), S. Dashdavaa (MSU), Sh. Batjargal (MUST), G. Dejidmaa (Geol. Inform. Center). N. Amitan, (Togs Buiant Ltd); D. Bat-Ulzii (MUST), J. Ganbold (Mong. Acad Sci, IGMR), B. Delgertsogt (Geoinformation Center), B. Munkhtsengel (MUST), Sunjidmaa (Mineral Resources Authority of Mongolia), M. Todbileg (MUST), D. Sharkhuukhen (M & Diamond Ltd), D. Altankhuyag (MRAM), A. Tsend-Ayush (M & Diamond Ltd). A. Gotovsuren (Mongol Gazar Ltd, Mongolia) B. Batkhashig (Tohoku University, Japan), O. Chuluun (Mineral Resources Authority of Mongolia), D. Batbold (MRAM), D. Bold-Erdene (Mineral Resources Authority of Mongolia), H. Gantumur (MRAM), B. Chuluun (Mineral Resources Authority of Mongolia) and S. Oyungerel (MSU), G. Ukhna (MUST), O. Chuluun (Mineral Resources Authority of Mongolia), D. Batbold (Mineral Resources Authority of Mongolia), D. Bold-Erdene (Mineral Resources Authority of Mongolia), Kh. Gantumur (Mineral Resources Authority of Mongolia), B. Chuluun (Mineral Resources Authority of Mongolia), H. Enkhtuvshin (Harrods Minerals Mongolia Ltd.), S. Oyungerel (National University of Mongolia, Faculty of Earth Science, Dept. of Geology & Mineralogy), G. Ukhna (Dept of Mineral Exploration, MUST)

**IAGOD National Group of Russia (161 members)**

Chairman – Eremin, Nikolai I. (Moscow State University, Moscow)

Vice-Chairmen: Kigai, Ingrid N. (IGEM RAS, Moscow); Bushmin, S.A. (IGGD RAS, St.-Peterburg); Volkov, R.I. (Nat. Committee of Rus. Geologists, Moscow); Distanov, E.G. (Inst. of Geology, Siber. Branch RAS, Novosibirsk); Kazansky, V.I. (IGEM RAS, Moscow); Moiseyenko, V.G. (Amur Division, RAS, Blagoveshchensk); Popov, V.Ye. (VSEGEI, St.-Peterburg); Rundquist, D.V. (Vernadsky Geological Museum, Moscow); Sazonov, V.N. (Inst. of Geology and Geochemistry, Urals Branch RAS, Ekaterinburg); Safonov, Y.G. (IGEM RAS, Moscow); Tomson, I.N. (IGEM RAS, Moscow); Ahmukhamedov, A.I. (Irkutsk), Akinfiyev N.N. (Moscow), Aksyuk, A.M. (Chernogolovka), Alexandrov, S.M. (Moscow), Alexeyev, V.A. (Moscow), Andreyev, G.V. (Ulan-Ude), Andreyeva, O.V. (Moscow), Antipin, V.S. (Irkutsk), Antipov, V. S. (St.Petersburg), Baksheev, I.A. (Moscow), Bakulin, Y.I. (Khabarovsk), Baskina, V.A. (Moscow), Bogdanov, Yu.V. (St.Petersburg), Borisenko, A.S. (Novosibirsk), Borisov, M.V. (Moscow), Bortnikov, N.S. (Moscow), Buryak, V.A. (Khabarovsk), Bushmin, S.A. (St.Petersburg), Buslaev, F.P. (Ekaterinburg), Demidova, N.G. (Moscow), Denisenko, V. (St. Petersburg), Dergachov, A.L. (Moscow), Distanov, E.G. (Novosibirsk), Distler, V.V. (Moscow), Dobrovol'skaya, M.G. (Moscow), Dolomanova, E. I. (Moscow), Vitaly Dolzhenko (Apatity), Dombrovskaya, Zh.V. (Moscow), Dyuzhikov, O.A. (Moscow), Eremin, N.I. (Moscow), Evstigneeva, T.L. (Moscow), Favorskaja, M. A. (Moscow), Fedkin, A.V. (Chernogolovka), Fedorchuk, V. P. (Moscow), Fedorov, D.T. (Moscow), Fedotov, M.V. (Yakutsk), Fremd, G.M. (Vladivostok), Gavrilenko, V.V. (St.Petersburg), Genkin, A.D. (Moscow), Gonevchuk, V.G. (Vladivostok), Gonevchuk, G.A. (Vladivostok), Gongal'sky, B.I. (Moscow), Goncharov, V.N. (Magadan), Gorbachev, N.S. (Chernogolovka), Goryachev, N.A. (Magadan), Grichuk, D.V. (Moscow), Grokhovskaya, T.L. (Moscow), Gvozdev, V.I. (Vladivostok), Chashchin, A.A. (Vladivostok), Chernizin, V. B. (Ordjonikidze), Chernyshev, I.V. (Moscow), Ignatiev, A.V. (Vladivostok), Ivanov, V.V. (Vladivostok), Ivanova, G.F. (Moscow), Ivanova, A.A. (St.Petersburg), Kanchuk, A.I. (Vladivostok), Kasatkin, S.A. (Vladivostok), Kazansky, V.I. (Moscow), Khanchuk, A. (Vladivostok), Khodanovich, P. (Ulan Ude), Kholodonov, V.V. (Ekaterinburg), Khomich, V.G. (Vladivostok), Kigai, I.N. (Moscow), Kislov, E.V. (Ulan Ude), Kokorin, A.M. (Vladivostok), Konkin, V.D. (Moscow), Konnikov, G.R. (Ulan-Ude), Konstantinov, M.M. (Moscow), Kontar, E.M. (Ekaterinburg), Korobeinikov, A.F. (Tomsk), Korostelev, P.G. (Vladivostok), Koroteyev, V.A. (Ekaterinburg), Kovalenker, V.A. (Moscow), Kovalenko, G.G. (Moscow), Kovalenko, S.M. (Moscow), Kravtsov, V.A. (Moscow), Kremenetsky, A.A. (Moscow), Krivolutskaya, N.A. (Moscow), Krivtsov, A.I. (Moscow), Krupenin, M.T. (Ekaterinburg), Kurbanov, N.K. (Moscow), Kurovskaya, A.A. (Moscow), Kuzmin, A.I. (Moscow), Letnikov, F.A. (Irkutsk), Levin, V.Ya. (Ekaterinburg), Likhachev, A.P. (Moscow), Lobanov, K. (Moscow), Melnikov, F.P. (Moscow), Migachev, F.A. (Moscow), Mitrofanov, F.P. (Apatity), Mitrokhin, A.N. (Vladivostok), Moiseyenko, V.G. (Blagoveshchensk), Moralev, G.V. (Moscow), Myznikov, I.K. (Moscow), Narseyev, V.A. (Moscow), Naumov, G.B. (Moscow), Naumov, V.B. (Moscow), Necheukhin, V.M. (Ekaterinburg), Neimark, L.A. (St.Petersburg), Nekrasov, I.Ya. (Chernogolovka), Nevolin, P.L. (Vladivostok), Obolensky, A.A. (Novosibirsk), Okrughin, V.M. (Petrovavlovsk), Orsoev, D.A. (Ulan Ude), Ovchinnikov, L.N. (Moscow), Ozerova, N.A. (Moscow), Pakhomova, V.A. (Vladivostok), Patyk-Kara, N.G. (Moscow), Pavlovsky, A.B. (Moscow), Pek, A.A. (Moscow), Pertsov, A.V. (St. Petersburg), Pokalov, V.T. (Moscow), Poltavets, Yu.A. (Ekaterinburg), Polyansky, E.V. (Alexandrov), Popov, V.Ye. (St.Petersburg), Prokin, V.A. (Ekaterinburg), Rekharsky, V.I. (Moscow), Reyf, F.G. (Ulan-Ude), Roev, S.P. (Yakutsk), Rouchkin, G.V. (Moscow), Rundquist, D.V. (Moscow), Rusinov, V.L. (Moscow), Ryabchikov, I.D. (Moscow), Rybakov, S.I. (Petrozavodsk), Ryzhenko, B.N. (Moscow), Safonov, Yu.G. (Moscow), Sakhno, V.G. (Vladivostok), Sayadyan, G.R. (Vladivostok), Sazonov, V.N. (Ekaterinburg), Semenyak, B.I. (Vladivostok), Seredin, V.V. (Moscow), Shakhtyrov, V.G. (Magadan), Sharkov, E.V. (Moscow), Shatov, V.V. (St. Petersburg), Shilo, N.A. (Moscow), Shpikerman, V.I. (Magadan), Sidorov, A.A. (Moscow), Skripchenko, N.S. (Novocherkassk), Smirnova, O.K. (Ulan Ude), Sorokin, A.P. (Blagoveshchensk), Sotnikov, V.I. (Novosibirsk), Spiridonov, E.M. (Moscow), Starostin, V.I. (Moscow), Stepanov, V.A. (Blagoveshchensk), Sushchevskaya, T.M. (Moscow), Terentiev, V.M. (St.-Peterburg), Ternovoy, V.I. (St.-Peterburg), Tishkin, B.M. (Vladivostok), Tomson, I.N. (Moscow), Trunilina, V.A. (Yakutsk), Turchenko, S.I. (St.Petersburg), Varentsov, I.M. (Moscow), Velichkin, V.I. (Moscow), Vikentyev, I. (Moscow), Volkov, R.I. (Moscow), Volkov, A.B. (Moscow), Voroshin, S.V. (Magadan), Yudovskaya, M.A. (Moscow), Zaikov, V.V. (Miass), Zaraisky, G.P. (Chernogolovka), Zharikov, V.A. (Chernogolovka), Zoloyev, K.K. (Ekaterinburg).

**IAGOD National Group of Slovak Republic (12 members)**

Chairman: Milan Háber (Geological Institute of the Slovak Academy of Sciences, Severná 5, 97404 Banská

Bystrica, Slovak Republic; tel. +421-88-723943; fax +421-88-724182; e-mail: haber@gu.bb.sanet.sk

Đuďa, Rudolf (Košice), Franzen, Jozef (Bratislava), Gargulák, Milan (Bratislava), Grecula, Pavol (Bratislava), Háber, Milan (Banská Bystrica), Hurai, Vratislav (Bratislava), Chovan, Martin (Bratislava), Jeleň, Stanislav (B.

Bystrica), Knésl, Juraj (B. Bystrica), Michálek, Jozef (Bánská Bystrica), Radvanec, Martin (Spišská Nová Ves), Rojkovič, Igor (Bratislava),

#### **IAGOD National Group of Spain (AEGYM) (55 members)**

Chairman: Prof. Antonio Arribas (Dept. Engineering Geology, School of Mines, Rio Rosas 21, 28006 Madrid, Spain; phone/fax +34-1-5764707), Vicepresident: Prof. Fernando Vázquez Guzmán (School of Mines, Madrid), Secretary: Prof. José Mangas Viñuela (Fac. de Ciencias del mar, Campus Tafira Baja. Universidad, 35017 las Palmas de Gran Canaria), Treasurer: Casilda Ruiz (Metalogenia, ETSI Minas, C/ Rios Rosas 21, 28003 Madrid, phone: 91-336-69-86)

Alonso, Garcia Manuel (Madrid), Amor Herrera, Jose-Manuel (Almadén), Arias Prieto, Daniel (Oviedo), Arribas Moreno, Antonio (Salamanca), Arribas Rosado, Isabel (Salamanca), Ayora Ibañes, Carlos (Barcelona), Bauluz Lázaro, Blanca (Zaragoza), Bisbal Cervello, Leopoldo (Valencia), Canals y Sabater, Angels (Barcelona), Cardellach López, Esteben (Bellaterra Barcelona), Casas Ruiz, José (Madrid), Crespo Ramon, José-Luis (Valladolid), Fenoll-Hach-Allí, Purificación (Granada), Fernandez Carrasco, Jesús Angel (Madrid), Fernández Nieto, Constanza (Zaragoza), Florido Laraña, Pedro (Salamanca), Franco San Sebastian, Alejandro (Bilbao, Vizcaya), García Iglesias, Jesús (Oviedo), García Pascual, Iñaki (Bilbao), Garcia Portero, Juan (Bilbao), Gil Crespo, Pedro-Pablo (Bilbao), Gonzalo Corral, Francisco (Zaragoza), González, Isabel Fanlo (Zaragoza), Gonzalez del Tanago, Jose (Madrid), Gumiel Martínez, Pablo (Madrid), Gutierrez Villarias, Juan Luis (Aznalcollar Sevilla), Herrero Rubio, José-Miguel (Bilbao), Higuera, Pablo Higuera (Puertollano), Loredó Pérez, Jorge (Oviedo), Lunar Hernández, Rosario (Madrid), Mangas Viñuela, José (Las Palmas de Gran Canaria), Martin-Izard, Agustin (Oviedo), Martínez Frias, Jesús (Madrid), Martinez Garcia, Enrique (Oviedo), Monterrubio Perez, Serafin (Madrid), Moro Benito, Ma Candelas (Salamanca), Palero Fernández, Fernando (Puertollano, Ciudad Real), Pujals Latorre, Ognacio (Barcelona), Quilez Valdevira, Encarnación (Madrid), Reguilón Bragado, Rosa María (Salamanca), Rey de la Rosa, Jesus (Madrid), Rios Aragües, Luis María (Madrid), Roda Robles, Encarnación (Bilbao), Rodriguez Pevida, Luis (Salas), Ruíz García, Casilda (Madrid), Ruíz-Almodovar Sel, Gabriel (Huelva), Sierra López, Josefina (Madrid), Soler Gil, Albert (Barcelona), Subías Pérez, Ignacio (Zaragoza), Tornos Arroyo, Fernando (Salamanca), Vázquez Guzmán, Fernando (Madrid), Velasco Roldán, Francisco (Bilbao), Villa Iglesias, Luis (Madrid), Vindél Catena, Elena (Madrid).

#### **IAGOD National Group of Tajik Republic (9 members)**

Chairman: Dr. Vladislav E. Minaev (P.O. Box 198, Dushanbe 734025, Tajikistan; tel: +992 372 243658; fax: +992 372 510037; e-mail: geol@ac.tajik.net, minaev@cada.tajik.net)

Bahtdavlatov, Rahmonbek D. (FHA); Djangiev, Azim I. (MIMB); Hudobakhshева, Sharifa (KSU); Volnov, Boris A. (TGG); Lutkov, Valery S. (GI TAS); Matveeva, Irina N. (GI TAS); Minaev, Vladislav E. (GI TAS); Revazov, Boris A. (GI TAS); Fayziev, Abdoulkhak R. (GI TAS).

Explanations: FHA: Focus Humanitarian Assistance, Dushanbe-Khorog; GI TAS: Geological Institute of the Tajikistan Academy of Sciences, Dushanbe; KSU: Khorog State University, Khorog; MIMB: Ministry of Industry, Mining Branch, Dushanbe; TGG: Tajikglavgeologia, Dushanbe.

#### **IAGOD National Group of Uzbekistan (15 members)**

Chairman: Prof. Bahtiar Isakhodaev, Tashkent (mineral@cu.uz)

Vice.Chairman: Prof. I. Golovanov, (Tashkent) (im\_golovanov@yahoo.com)

Antonov, A.E. (Tashkent), Babajanov, A.A. (Tashkent), Babayev, K.L. (Tashkent), Divaev, F.K. (Tashkent), Djuraev, A.D. (Tashkent), Islamov, F. (Tashkent), Juraev, A. (Tashkent), Kozlov, V.V. (Tashkent), Mansurov, M.M. (Tashkent), Pankratyev, P.V. (Tashkent), Savchuk, Y.S. (Tashkent), Shayakubov, T.S. (Tashkent), Smirnova, S.K. (Tashkent)

**IAGOD Council invites also other national groups to join IAGOD!**

## **Report on activity of IAGOD CTOD WG5 “Remote Sensing Methods for Tectonic and ore Prospecting” during 2001**

### **Discussions and workshop meetings**

Scientific reports of WG5 members and colleagues:

1. 5<sup>th</sup> International Conference “New ideas in the Earth’s Sciences”, Moscow, April 2001:

Antipov V.S., Danilov V.V., Klepikov A.S.: Infrared anomaly detected by satellite mapping around copper ore district in Southern Ural.

Antipov V.S.: Remote sensed endodynamic anomaly in Bodaybo ore district? Eastern Siberia – a base for prospecting of new uranium province.

2. International Symposium “Deep structure of the Earth and concentration of metals in the lithosphere: A Geodynamic approach”. September 2001, Virginia, USA, NASA Goddard Space Flight Centre, Geodynamic branch:

Pertsov A.V., Antipov V.S., Galperov G.V., Turchenko S.I.: Continental lineaments of Russia: Remote sensed detection, superlarge mineral deposits and geodynamic linkages.

3. 15<sup>th</sup> International Airborne Remote Sensing Conference and Exhibition, San Francisco, California, September 2001:

Surin V., Popova T. Antipov V.: Possibilities of the field photometry method for a study of burnt areas.

4. International Scientific-Technical Conference “Actual problems of the development of mineral deposits”. Tashkent, Uzbekistan, October 2001:

Turchenko S.I., Vostroknutov E.P., Brusnichkina N.A.: Computer prognoses of PGE mineralization on a base application of expert system to remote sensing data.

Antipov V.S.: On perspectives of geological remote sensing detection and evaluation of oil, gas, and ore potential resources in Uzbekistan Republic.

5. Bilibin’s memory lectures. St.-Petersburg University, November 2001:

Antipov V.S.: Metallogeny in XXI century - metallogeny of endodynamic anomalies.

6. 8<sup>th</sup> International Mining-Geological Forum “Natural resources of FSU countries”, November 2001, St.-Petersburg, Russia:

Turchenko S.I., Vostroknutov E.P., Brusnichkina N.A.: Computer modeling of platinum ore clusters within black shale riftogenic formation by using of expert system and remote sensing data.

#### **Plans and special research for 2002 and next year are:**

1. Special section of research: Remote sensing application to regional geological and metallogenic studies, monitoring and environment protection.
2. Developing of Internet-telecommunicative technology using of remote sensing data NOAA AVHRR and MODIS for mineragenic prognoses.
3. Creation of structural-geological remote sensed models of the metallogenic taxons for Pt, Au, Cu, and Ni-Cu deposits.
4. High-level education program: seminars and learning of modern methods of the computer processing remote sensing data for geological mapping and ore deposits prognoses.

---

#### **Abstract**

#### **Global-Transregional Structural Lineaments Net of Russia: Remote Sensed Detection, Superlarge Mineral Deposits and Crustal-Mantle Linkages**

**Pertsov A.V, Antipov V.S., Galperov G.V., Turchenko S.I.** Remote Sensed Institute for Geology (NIIKAM), St.-Petersburg, Russia

Structural deciphering of space image, that have been composed from NOAA AVHRR images of EROS Data Center within spectral bands at 580-680 and 720-1100 nm, of the territory of Russian Federation (RF) allowed to reveal transregional, partly global, deep-rooted lineaments extending from 3000 up to 8-10 thousands km in latitude, longitude and diagonal directions over Russian territory and neighboring countries. These lineaments suggest significant heterogeneity of upper crust, its also approach to deep lithosphere layers and were inheriting from position of old fault-lineament systems which origin were linked with tectonic processes evolved over Precambrian to Paleocene. Some of these structural discontinuities are poorly expressed in surface geology, but can be detected by magnetic and gravity anomalies. The lineaments, when projected over surface geological frame, extend across boundaries of crustal blocks, modern stress provinces or across allochthonous and folded terranes. The distribution of lineaments in RF territory is uneven: maximum concentration of complex

constructed combinations of differ directed lineaments are observed within sector limited by 80-140°E (region of East Siberian plate and its folded frame) in compare with East European and West Siberian plates. Besides, latitudinal global lineaments are typical for Russia within Northern hemisphere limited by 60-64°N, which can be similar to 38-24°S known in USA and Australia (Kutina, 1999).

The mentions lineaments can be correlated with global system of upper crustal stretching caused by age-long earth's rotation and accordingly fluctuations of deep geospheres rotation. The existence of transregional lineaments, possible touching sublithospheric mantle horizons, can be explain by an uplift of seismic low-speed high-temperature masses come from core/lower mantle boundary which in one's turn caused upwelling of giant streams - plums of hot lower mantle substance. These phenomena are fixed by global seismotomographic investigations, which show the role of mantle convective cells and possible motions of lithospheric plates over latter as well as the role of such "mantle-rooted" channells in metallogenesis. That kind geodynamic approach can explain coinciding of large and superlage concentration of metals as mineral deposits (heterogeneous in genesis, mineral substance and age of forming from Precambrian to Paleocene) to the ore clusters located within places of the crossing transregional lineaments differ directions. More then 30 such kind mineral deposits (Au, Ag, Pt, REE, U, Sn, Pb, Zn, Cu, Ni, Cr, Fe and diamonds) of Russia and some neighboring countries are overviewed in presented investigation.

(Presented at International Symposium "Deep structure of the Earth and concentration of metals in the lithosphere: A Geodynamic approach". September 2001, Virginia, USA, NASA Goddard Space Flight Centre, Geodynamic branch).

*Contributed by S. Turchenko (Secretary WG5 CTOD)*

### Recent publications of interest

- Angeli, N., Fleet, M.E., Thibault, Y., Candia, M.A.F. (2001): Metamorphism and PGE-Au content of chromitite from the Ipanema mafic/ultramafic Complex, Minas Gerais, Brazil. *Mineral. Petrol.* 71: 173-194.
- Azaroual, M., Romand, B., Freyssinet, P., Disnar, J.R. (2001): Solubility of platinum in aqueous solutions at 25 degrees C and pHs 4 to 10 under oxidizing conditions. *Geochim. Cosmochim. Acta* 65: 4453-4466.
- Baker, T., Perkins, C., Blake, K.L., Williams, P.J. (2001): Radiogenic and stable isotope constraints on the genesis of the Eloise Cu-Au deposit, Cloncurry District, NW Queensland. *Econ. Geol.* 96: 723-742.
- Ballhaus, C., Tredoux, M., Spaeth, A. (2001): Phase relations in the Fe-Ni-Cu-PGE-S system at magmatic temperature and application to massive sulphide ores of the Sudbury igneous complex. *J. Petrology* 42: 1911-1926.
- Bierlein, F.P., Cartwright, I., McKnight, S. (2001): The role of carbonaceous "indicator" slates in the genesis of lode gold mineralization in the Western Lachlan Orogen, Southeastern Australia. *Econ. Geol.* 96: 431-451.
- Bierlein, F.P., Maher, S. (2001): Orogenic disseminated gold in Phanerozoic fold belts - examples from Victoria, Australia and elsewhere. *Ore Geol. Rev.* 18: 113-148.
- Boiron, M.C. et al. (2001): Geometry and *P-V-T-X* conditions of microfissural ore fluid migration: the Mokrsko gold deposit (Bohemia), *Chem. Geol.* 173: 207-225.
- Cann, J.R., Banks, D.A. (2001): Constraints on the genesis of the mineralization of the Alston Block, Northern Pennine Orefield, northern England. *Proceedings of the Yorkshire Geological Society* 53: 187-196.
- Craw, D., (2001): Tectonic controls on gold deposits and their environmental impact, New Zealand, *Journal of Geochemical Exploration* 73: 43-56.
- Cruse, A.M., Seewald, J.S. (2001): Metal mobility in sediment-covered ridge-crest hydrothermal systems; experimental and theoretical constraints. *Geochim. Cosmochim. Acta.* 65: 3233-3247.
- De Ronde, C.E.J., Sibson, R.H., Bray, C.J., Faure, K. (2001): Fluid chemistry of veining associated with an ancient microearthquake swarm, Benmore Dam, New Zealand. *Geol. Soc. Am. Bull.* 113: 1010-1024.
- Dini, A., Benvenuti, M., Costagliola, P., Lattanzi, P. (2001): Mercury deposits in metamorphic settings: the example of Levigliani and Ripa mines, Apuane Alps (Tuscany, Italy). *Ore Geol. Rev.* 18: 149-167.
- Eilu, P., Mikucki, E.J., Dugdale, A.L. (2001): Alteration zoning and primary geochemical dispersion at the Bronzewing lode-gold deposit, Western Australia. *Mineral. Dep.* 36: 13-31.
- Essarraj, S., Boiron, M.C., Cathelineau, M., Fourcade, S. (2001): Multistage deformation of Au-quartz veins (Laurieras, French Massif Central); evidence for late gold introduction from microstructural, isotopic and fluid inclusion studies. *Tectonophysics* 336: 79-99.
- Foley, N.K., Ayuso, R.A., Seal, R.R. (2001): Remnant colloform pyrite at the Haile gold deposit, South Carolina: A textural key to genesis. *Econ. Geol.* 96: 891-902.



- Gena, K., Mizuta, T., Ishiyama, D., Urabe, T. (2001): Acid-sulphate type alteration and mineralization in the Desmos Caldera, Manus back-arc basin, Papua New Guinea. *Resource Geology* 51: 31-44.
- Goldfarb, R.J., Groves, D.I., Gardoll, S. (2001): Orogenic gold and geologic time: a global synthesis. *Ore Geol. Rev.* 18: 1-75.
- Goldfarb, R.J., Groves, D.I., Gardoll, S. (2001): Rotund versus skinny orogens: Well-nourished or malnourished gold? *Geology* 29: 539-542.
- Helba, H.A., Khalil, K.I., Abdou, N.M.F. (2001): Alteration patterns related to hydrothermal gold mineralization in meta-andesites at Dungash area, Eastern Desert, Egypt. *Resource Geology*, 51: 19-30.
- Höfer, C., Kraus, S., Miller, H., Alfaro, G., Barra, F. (2001): Chromite-bearing serpentinite bodies within an arc-backarc metamorphic complex near La Cabaña, south Chilean Coastal Cordillera, J. *South American Earth Sci.* 14: 113-126.
- Huston, D.L., Brauhart, C., Driehberg, S.L., Davidson, G.J., Groves, D.I. (2001): Metal leaching and inorganic sulfate reduction in volcanic-hosted massive sulfide mineral systems: Evidence from the paleo-Archean Panorama district, Western Australia. *Geology* 29: 687-690.
- J.K. Vry, J.K., Storkey, A.C., Harris, C. (2001): Role of fluid in the metamorphism of the Alpine Fault Zone, New Zealand. *Journal of Metamorphic Geology* 19: 21-31.
- Kay, S.M., Mpodozis, C. (2001): Central Andean ore deposits linked to evolving shallow subduction systems and thickening crust. *GSA Today* 11 (3): 4-9.
- Kholodov, V.N., Paul, R.K. (2001): Geochemistry and metallogeny of phosphorus in the Russian Platform during the Jurassic-Cretaceous. *Lithology and Mineral Resources* 36: 195-210.
- Kitajima, K., Maruyama, S., Utsunomiya, S., Liou, J.G. (2001): Seafloor hydrothermal alteration at Archean mid-ocean ridge. *Journal of Metamorphic Geology* 19: 583 - 600.
- Lin, S. (2001): Stratigraphic and structural setting of the Hemlo gold deposit, Ontario, Canada. *Econ. Geol.* 96: 477-507.
- McQueen, K.G., Aung Pwa, Van Moort, J.C. (2001): Geochemical and electron paramagnetic characteristics of quartz from a multi-stage vein environment, Cowarra gold deposit, New South Wales. *J. Geochem. Expl.* 72: 211-221.
- Mernagh, T.P. (2001): A fluid inclusion study of the Fosterville Mine: a turbidite-hosted gold field in the Western Lachlan Fold Belt, Victoria, Australia. *Chem. Geol.* 173: 91-106.
- Oliver, N.H.S. (2001): Linking regional and local hydrothermal systems in the mid-crust by shearing and faulting. *Tectonophysics* 335: 147-161.
- Paulick, H., Franz, G. (2001): Greenschist facies regional and contact metamorphism of the Thalanga volcanic-hosted massive sulfide deposit (Northern Queensland, Australia). *Mineral. Dep.* 36: 786-793.
- Rothery, E. (2001): Tectonic origin of the shape of the Broken Hill lodes supported by their structural setting in a high-grade shear zone. *Austr. J. Earth Sci.* 48: 201-220.
- Scotese, C.R. (with co-authors) (2001): Dynamic computer model for the metallogensis and tectonics of the Circum-North Pacific. Open-File Report, US Geological Survey.
- Shoufa Lin (2001): Stratigraphic and structural setting of the Hemlo gold deposit, Ontario, Canada. *Econ. Geol.* 96: 477-507.
- Singoyi, B., Zaw, K. (2001): A petrological and fluid inclusion study of magnetite-scheelite skarn mineralization at Kara, northwestern Tasmania; implications for ore genesis. *Chem. Geol.* 173: 239-253.
- Singoyi, B., Khin Zaw (2001): A petrological and fluid inclusion study of magnetite-scheelite skarn mineralization at Kara, northwestern Tasmania; implications for ore genesis. *Chem. Geol.* 173: 239-253.
- Smith, P.E., Evensen, N.M., York, D., Szatmari, P., Custodio de Oliveira, D. (2001): Single-crystal  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  dating of pyrite: No fool's clock. *Geology* 29: 403-406.
- Staudé, J., Mark, G., Barton, M.D. (2001): Jurassic to Holocene tectonics, magmatism, and metallogeny of northwestern Mexico. *Geol. Soc. Am. Bull.* 113: 1357-1374.
- Tremblay, A. (2001): Postmineralization faults in the Beaufor gold deposit, Abitibi greenstone belt, Canada; geometry, origin, and tectonic implications for the Val-d'Or mining district. *Econ. Geol.* 96: 509-524.
- Vallance, J., Cathelineau, M., Marignac, C., Boiron, M.C., Fourcade, S., Martineau, F., Fabre, C. (2001): Microfracturing and fluid mixing in granites; W-(Sn) ore deposition at Vaulry (NW French Massif Central). *Tectonophysics* 336: 43-61.
- Waters, D.J. (2001): The significance of prograde and retrograde quartz-bearing intergrowth microstructures in partially melted granulite-facies rocks. *Lithos* 56: 97-110.
- Witt, W.K. (2001): Tower Hill gold deposit, Western Australia: an atypical, multiply deformed Archaean gold-quartz vein deposit. *Austr. J. Earth Sci.* 48: 81-100.
-

## Contents of this Newsletter

Editorial	page 1
IAGOD Membership	page 1
New IAGOD Members	page 2
Payment form for IAGOD Membership Fees	page 3
Report of the IAGOD Working Group on Tin and Tungsten Deposits (WGTT)	page 4
Report of CTOD Working Group No. 4	page 5
IAGOD Publications order form	page 6
Report from Kazakhstan National IAGOD Group	page 7
The Paragenesis Commission	page 8
Report on activity of the Russian Far East Group in 2001	page 9
Report of activities from the CODMUR	page 12
Report on activity of the Tajik National Group in 2001	page 14
IAGOD Council (2000 – 2004)	page 15
IGCP Project 443 'Magnesite and talc – Geological and Environmental Correlations	page 16
Report of the Working Group on Ores and Metamorphism (WGOM) 2000	page 17
Mineral Deposits Studies Group	page 17
Meetings calendar	page 19
Geodynamics and Ore Deposit Evolution	page 20
Global Tectonics and Metallogeny	page 20
Report of activity from the Russian IAGOD National Group in 2001	page 21
Report on activity of the Georgian National Group in 2001	page 24
Report on activity of the Chinese National Group in 2001	page 25
Report on activity of the Mongolian National Group in 2001	page 27
Report on activity of the Czech Republic National Group in 2001	page 30
Report on activity of the Slovak National Group in 2001	page 30
IAGOD Proceedings volumes available ....	page 32
Report from the Commission on Placer Deposits	page 33
Report from the Commission on Industrial Minerals (COIMR)	page 34
The IAGOD Working Group on skarns	page 35
IAGOD Working Group on the Thermodynamics of Natural Ore-Forming Fluids	page 36
"Deep Structure of the Earth and Concentration of Metals in the Lithosphere: A Geodynamic Approach" (meeting report, CTOD)	page 38
7th Biennial SGA-SEG Meeting 2003, Athens, Greece	page 41
International Symposium "Metallogeny of Precambrian Shields"	page 42
Report on activity of the Kyrgyz National Group in 2001	page 43
Vladivostok 2004 – Interim IAGOD Conference	page 45
The IAGOD Commissions and Working Groups	page 47
The National Groups of IAGOD	page 49
Report on activity of IAGOD CTOD WG5	page 53
Recent publications of interest	page 54

The next IAGOD newsletter will be published in the Spring of 2003

All contributions are welcome!  
Please send to Nigel Cook ([Nigel.Cook@ngu.no](mailto:Nigel.Cook@ngu.no))  
by 15<sup>th</sup> March 2003 at the latest

# Join IAGOD

## IAGOD MEMBERSHIP BENEFITS

- o Participation in an international association focussing on ore deposits studies
- o Work in the IAGOD Commissions and Working groups
- o Preference and reduced registration at IAGOD symposia, workshops and meetings, and at IAGOD co-sponsored congresses
- o the annual IAGOD newsletter
- o member discounts on IAGOD publications

Institutional members may order copies of the IAGOD fieldguide books and monographs produced under the auspices of the IAGOD Council at the same conditions as individual IAGOD members (excludes Proceedings volumes published by E. Schweizerbart'sche Verlag)

Institutional members can delegate their geologists and experts at the same conditions as individual members to participate in IAGOD field meetings and excursions

*For further information on IAGOD membership, contact:*

*Dr. R. Seltmann, IAGOD Membership Secretary  
Department of Mineralogy  
Natural History Museum  
Cromwell Road SW7 5BD  
United Kingdom*