

IAGC ANNUAL REPORTS FOR 2007

President's Report (Russell Harmon)

I have the pleasure of making two announcements, both of which are positive news for IAGC.

First, IAGC Treasurer W. Berry Lyons, Director of the Byrd Polar Research Center at Ohio State University and the lead principal investigator for the McMurdo Long-Term Ecological Research Project in Antarctica, recently was honored by New York-based Explorers Club as one of eight recipients of a prestigious Lowell Thomas Award for 2007. Berry was cited for his studies on the geochemistry of global climate change. Please join me in congratulating Berry on this well-deserved honor. Berry can be contacted by e-mail at: lyons142@osu.edu.

Second, the petition campaign to form a new IAGC Working Group on 'Urban Geochemistry' was successful. Now the proposal will go to the IAGC Board for a vote, where endorsement is expected. So, barring any unforeseen circumstances this new Working Group should become reality within a month or so.

2008 will be another very busy year for IAGC. This is a year that new Council Members are elected, . IAGC will have 4 Council vacancies to fill for 2008. This is challenging work for the Nominations Committee, but we are all sure that Jan Kramers and his colleagues will do an excellent job in bring gender and geographic diversity to the Council, which will be officially inducted during the 4-yearly Council meeting that will be held between 10-14 August in Oslo, Norway during the 33rd International Geological Congress (IGC 33). The meetings are:

1. IAGC will have a strong presence at IGC 33 next August. As an IAGC contribution of the "International Year of Planet Earth" and the ICG33 official technical program, Andrew Parker is leading the organization of a special symposium on "Contributions of Geochemistry to the Study of the Planet" that will consist of two parts: (i) historical reviews of geochemistry and its various traditional applications and (ii) a series of presentations on future expected developments in geochemistry and its potential to solve environmental problems in the 21st century. Plans are underway to have the proceedings of these sessions published in book form by Elsevier. This symposium will include both invited and volunteered contributions.

Also, IAGC will sponsor 4 thematic sessions at IGC 33 on Geochemical Mapping from the Global to Local Scale: 1) The Arthur Darnley Symposium, 2) Importance of Landscape Age, Tectonic Setting, and Lithology on Chemical Weathering Rates and River Geochemistry, 3) Frontiers of Stable Isotope Analysis for Environmental Science and Biogeochemistry, and 4) Geochemical Proxies of Paleoenvironmental Change in Terrestrial Environments. IAGC members are encouraged to contribute papers to these sessions.

2. The 8th Conference on Geochemistry of the Earth's Surface will be held in London, UK from 17-22 August 2008, sponsored by the IAGC Working Group on Geochemistry of the Earth's Surface, the UK Mineralogical Society and the British Natural History Museum. Sessions will cover the topics of: Mineral Weathering, Synchrotrons and Environmental Science, Global

Geochemical Cycles and Climate Change, Contaminated Environments, Toxicology, Human Health and Biomineralization.

Registration and abstract submission instructions are given on the web site: <http://www.minersoc.org/GES8.htm>. Deadline for early registration was 15th March 2008. Following review by a scientific panel appointed by the conference organizers, the abstracts will be published in *Mineralogical Magazine*.

3. IAGC will join with the Association of Applied Geochemistry in organizing and conducting the 2009 International Applied Geochemistry Symposium, which will be held in Fredricton, New Brunswick, Canada on 1-4 June 2009. It is also anticipated that an Ingerson International Lecture and the IAGC awards for 2009 will be presented at this meeting. If this initiative turns out to be successful in the opinion of both societies, then the stage will be set for a full IAGC-AAG partnership in future International Applied Geochemistry Symposia.

A call for proposals for Theme Sessions, Special Sessions, and Workshops has just been issued. Proposals should include a detailed title, 3 co-chairs (with representation from academia, government, and industry), and a 1 paragraph description of the session proposed. Please send your submissions to Shaun Frape (shaun@sciborg.uwaterloo.ca), Chair of the IAGC Plans and Program Committee by 15 February, 2009.

Russ Harmon
Interim President, IAGC

SECRETARY'S REPORT (Attila Demeny)

(To be received)

IAGC Publications Committee Report (John Gray)

I last submitted a report for the IAGC Publications Committee in July 2007, so this report summarizes activities of the Publication Committee since that date. The IAGC Publications Committee presently consists of:

John Gray, Chair (U.S. Geological Survey, Denver, USA)

Ron Fuge (University of Wales, UK)

W. Berry Lyons (Ohio State University, USA)

Xiangdong Li (Hong Kong Polytechnic University, China) is also on the committee, but he has not been active with any of the decisions of this committee in 3 years.

1. The most important activity of the publications committee was the nomination for the Hitchon Award (a significant paper published in *Applied Geochemistry*). There were several discussions between myself, Ron Fuge, and Berry Lyons concerning the Hitchon Award. The Publications Committee considered only papers published in 2005 following the recommendations discussed at the *Applied Geochemistry* Board Meeting held in October 2007 at the Geological Society of America Conference in Denver, Colorado. The main reason for considering only papers published in 2005 was to provide at least a two-year period to evaluate citation data, but also

publication download information provided by Elsevier. Friso Veenstra and Lisa Geijtenbeek-Colledge at Elsevier also agreed with this approach. The Publications Committee forwarded the following recommendations to Clemens Reimann (Chairman, IAGC Awards Committee).

Hitchon Award Recommendation:

Seiler R.L., Stollenwerk K.G., Garbarino J.R., 2005. Factors controlling tungsten concentrations in ground water, Carson Desert, Nevada. *Applied Geochemistry*, 20 (2), p. 423-441.

Honorable Mention Papers:

Moncur, M.C., Ptacek, C.J., Blowes, D.W., Jambor, J.L., 2005. Release, transport and attenuation of metals from an old tailings impoundment. *Applied Geochemistry*, 20 (3), p. 639-659.

Pellicori, D.A., Gammons, C.H., Poulson, S.R., 2005. Geochemistry and stable isotope composition of the Berkeley pit lake and surrounding mine waters, Butte, Montana, *Applied Geochemistry*, 20 (11), p. 2116-2137.

Smedley, P.L., Kinniburgh, D.G., Macdonald, D.M.J., Nicolli, H.B., Barros, A.J., Tullio, J.O., Pearce, J.M., Alonso, M.S., 2005. Arsenic associations in sediments from the loess aquifer of La Pampa, Argentina. *Applied Geochemistry*, 20 (5), p. 989-1016.

2. I attended the *Applied Geochemistry* Editor's Board Meeting held in October 2007 at the Geological Society of America Conference in Denver, Colorado. There were several discussions that related to the Publications Committee, the most important of which was suggestions for the nomination of the Hitchon Award.

3. I have made several recommendations to David B. Smith and Martin Goldhaber (USGS, Denver), who are the editor's of a Special Issue to be published in *Applied Geochemistry*, titled "North American soil geochemical survey's." I have been in email contact with Ron Fuge, *Applied Geochemistry* Executive Editor, who reports that there are no problems associated with the journal.

4. I have exchanged several emails with Kim Thonus, Jack Visser, and Majella Corry at Elsevier offering suggestions for modification of the Elsevier Editorial System.

5. As Chairman of the IAGC Publications Committee, I am a member of the Advisory Board of the magazine *Elements*, but there has been little activity on this committee in the past few months.

6. There were no expenditures made by the IAGC Publications Committee in 2007 or 2008.

John E. Gray
Chairman, IAGC Publications Committee

EDITOR'S REPORT (RON FUGE)

Applied Geochemistry is in robust good health. In 2006 in volume 21, 145 full papers were published in 2300 pages. Two special issues one entitled "Frontiers in Analytical Geochemistry – An IGC Perspective" and the second "Mercury: Distribution, Transport, and Geochemical and Microbial Transformations from Natural and Anthropogenic Sources", were published. The second of these arose from the 2005 Goldschmidt meeting in Moscow Idaho. In addition two "half issue" specials were included, one on "Mineralogy and Geochemistry of Acid Mine Drainage and Metalliferous Minewastes" – again arising from the 2005 Goldschmidt meeting, and another on "Archaeological Geochemistry" arising from the EGU meeting in Vienna.

In volume 22 two special issues have been published. One was entitled "Halogens and Their Isotopes in Marine and Terrestrial Systems", yet another deriving from the 2005 Goldschmidt, and a second "Selected papers from the 7th International Conference was on Acid Deposition, Prague, Czech Republic, 12–17 June, 2005.

On 1st November 2006 the journal changed its submissions policy. From that date, authors who wished to do so could submit electronically, while paper copy submissions are still acceptable. In the 10 months prior to this date 208 manuscripts were received. In the period November 1 to 2006 - June 30 2007, 166 manuscripts have been submitted electronically and 71 as paper copies. While this appears to be a very healthy submission rate, it is perhaps pertinent to point out that of the 166 electronically submitted manuscripts, 67 have been rejected, most without review, 11 have been accepted, 22 are being revised and the rest are under consideration. Thus of the submissions with decisions 67% have been rejected! I feel that this is a rather worrying aspect of electronic submission – it seems to encourage authors to submit manuscripts on a chance that they will be acceptable. Of the 71 paper copy submissions to date, only 8 were rejected.

Electronic submission has not been without its problems and several Associate Editors have expressed their concerns regarding its inflexibility. Elsevier are currently changing the system to make it somewhat easier to use.

Ron Fuge, Executive Editor

BUSINESS OFFICE REPORT (Mel Gascoyne)

IAGC Business Meeting for 2007

A formal Business Meeting of the IAGC was held at the University of Cologne Earth Sciences Building at Zùlpicher Strasse 49, Köln, from 8:30am to 5:30 pm on Sunday 19 August 2007. All IAGC members were welcome to attend and time was made available for members to share with the Board any concerns about the Association that they may have had or ideas to improve

the Association, so that it can better serve both its members and the geochemistry community. Minutes of this meeting are given in an appendix at the end of this Newsletter.

M. Gascoyne provided a proposal to continue to operate the Business Office through 2008. Discussion: The \$15,000 office cost is proportional to the membership size, however, additional possibilities should be found to reduce costs. Among the ideas mentioned were shifting some routine correspondence to the Secretary by hiring a low-cost part time assistant in Budapest, finding a volunteer Newsletter Editor, and moving the web site to Hungary under the Direction of the Secretary. It was agreed unanimously by the Council to continue to pay \$5000 US to cover the running cost of the Business Office and to offer M. Gascoyne a yearly fixum of \$10,000 US for his work in 2008, with the Council directing the following prioritization of tasks: (i) Membership matters, (ii) *Elements*-related work, (iii) Student research grant work, (iv) IAGC awards-related work, (v) Other work

Meanwhile, membership is increasing slowly (527 for 2007)

WORKING GROUPS

IAGC has 7 working groups,

- Water/Rock Interactions
- Thermodynamics of Natural Processes
- Geochemistry of the Earth's Surface
- Geochemistry and Health
- Applied Isotope Geochemistry
- Global Geochemical Baselines
- Urban Geochemistry

The Working Groups provide annual reports and the major achievements are published in IAGC's Newsletter and the *Elements* Magazine.

The Urban Geochemistry Working Group was initiated in 2007 and is in a stage of establishment and development. More details will be given on the IAGC website shortly.

GLOBAL GEOCHEMICAL BASELINES: Chairman, David Smith

START-UP MEETING FOR NEW EUROPEAN-SCALE GEOCHEMICAL MAPPING PROJECT (from Clemens Reimann)

The EuroGeoSurveys Geochemistry working group had a meeting in Berlin from March 5-7, 2008. At this meeting the GEMAS-Project (Geochemical Mapping of Agricultural Land and Grazing Land Soils of Europe) was officially started. 34 European Geological Survey Organisations have agreed to collect samples of arable land (ploughing layer, 0-20 cm) and of land under permanent grass cover (0-10 cm) at a density of 1 site per 2500 km² in their territory. The total area covered will be about 5.8 Million km².

The project is a continuation and extension of the Baltic Soil Survey (Reimann et al., 2003) which resulted in a very successful geochemical atlas, one of the few geochemical atlases that is sold out. The meeting in Berlin was used for field training for the new project. More than 40 participants went together into the field to harmonize sampling methods. The project is led by

Clemens Reimann, IAGC Vice President. Clemens managed to obtain substantial industry funding for this project. The European metals industry, represented by EuroMetaux in Brussels, will back this project with 4 x 130.000 Euros, over a period of four years.

Clemens Reimann, Vice-President

Reference

Reimann, C., Siewers, U., Tarvainen, T., Bityukova, L., Eriksson, J., Gilucis, A., Gregorauskiene, V., Lukashev, V.K., Matinian, N.N., & Pasiieczna, A. 2003. *Agricultural Soils in Northern Europe: A Geochemical Atlas*. Geologisches Jahrbuch, Sonderhefte, Reihe D, Heft SD 5, Schweizerbart'sche Verlagsbuchhandlung, Stuttgart, ISBN: 3-510-95906-X

WATER-ROCK INTERACTION (Yousif Kharaka, Halldór Ármannsson)

The Twelfth International Symposium on Water-Rock Interaction (WRI-12), July 31-August 5, 2007.

The twelfth International Symposium on Water Rock Interaction (WRI-12) was held July 31-August 5, 2007, in the garden-like atmosphere of the Yunnan Conference Resort in Kunming the 'spring city' of the ethnically diversified Yunnan Province, the People's Republic of China. The Organizing Committee of WRI-12 was ably led by its Secretary General, Professor Yanxin Wang, School of Environmental Studies and Vice President, China University of Geosciences, Wuhan, China. Wang was greatly assisted by many of his energetic graduate students and colleagues, especially Zhou Yu, Yigun Gan, Dan Wu and Houli Ming.

The WRI-12 Symposium attracted a total of 420 participants from 26 countries. This total included a large number of students (30) and registered accompanying members (69), with the remainder comprising the leading geochemists, hydrologists and geologists from around the World. We were particularly pleased to achieve our goal of attracting a large number of participants (about half of the total) from China, the host country. At registration, participants received two hard cover WRI-12 proceeding volumes, edited by Thomas A. Bullen (USGS, Menlo Park, California) and Yanxin Wang, and published by Taylor & Francis that include 360 papers and a record total of 1705 pages.

Scientifically, WRI-12 continued the excellent traditions of previous WRI conferences. The oral and poster presentations covered the latest research results of water-rock interaction in a wide spectrum of geochemical environments ranging from weathering and low temperature groundwater and mining operations to geothermal, metamorphic and magmatic systems. As expected, many of the presentations covered topics of surface and ground- water pollution, geohazards, and other water-rock interaction topics applicable to Chinese sites. Other topics that attracted large number of presentations included organic-inorganic interactions, geomicrobiology, stable and radiogenic isotopes, contamination from mining operations, climate change and CO₂ sequestration.

The Working Group of WRI encourages student excellence by providing awards to the best student oral and poster presentations. A third award is given to the best poster presentation, which for this conference was won by a Chinese student and her coauthors: Deng, Y., Wang, Y., and Ma, T., for the paper "Hydrogeochemistry of high arsenic groundwater from Hangjinhouqi, Inner Mongolia". The best student poster presentation was given to the Swiss Möri, A., and his coauthors Mazurek, M., and Hu, Q., for the paper "In situ experiments

on matrix diffusion in fractured crystalline rock.” Finally the best oral presentation was awarded to a Turkish student at the U. of California, Davis, Sengor, S.S. and her coauthors, Spycher, N.F., Ginn, T.R., Moberly, J., Peyton, B., and Sani, R.K., for her paper on “Reductive dissolution and metal transport in Lake Coeur d’ Alene sediments”.

Keynote plenary lectures, covering the various themes of WRI were among the highlights of this symposium. The scientific program was started appropriately with Gordon Brown (Stanford University, USA) as the first keynote speaker (with 20 coauthors!) discussing recent advances in surface, interface and environmental geochemistry. He was followed by Shaoyong Jiang’s (Nanjing University, China) presentation on isotope constraints on hydrothermal fluids in massive sulfide deposits. Paul Shand (CSIRO Land & Water, Australia) discussed in some detail the application of Sr isotopes in natural waters. Enrique Merino (Indiana University, USA) was the last keynote speaker providing a unified geodynamics theme using eolian dust to couple the origin of terra rossa and karst systems. WRI-12 had a second plenary session with an additional four outstanding keynote speakers. Kirk Nordstrom (USGS, USA) discussed the issue of water quality before the start of mining as a goal for remediation at the close of operations. Fengchang Wu (Institute of Geochemistry of CAS, China) covered the topic natural organic matter in rivers and lakes in China and its role in mobilizing contaminants to the environment. Lily Young (Rutgers University, USA) gave a comprehensive talk about bacteria and microbial transformations of hazardous metals in the environment. Carlos Ayora (Institut de Ciencies de la Terra, CSIC, Spain) concluded this session with a detailed lecture on acid mine drainage in the classic Iberian pyrite belt.

All the participants attended the one-day long mid-session field trip to the Yunnan Stone Forest (Shilin), covering a total area of 350 km² and located 86 km southeast of Kunming, and praised as the ‘First Wonder Under Heaven’ for its quintessential karst topography and astounding natural beauty. As you wander through the Stone Forest, you will be surrounded by the rising Permian limestone pillars of varying configurations and sizes (up to 30 m high), strange caves, springs and mirror lakes, layer after layer of green hills, and the widespread stone peaks of the forest. Locals have given the stone pillars some fanciful names and have identified one pillar with their national heroine Ashima, who epitomized the best qualities of Sani womanhood. Because of significant precipitation that day, we spent some educational time in the newly opened Stone Forest Museum. We met many Sani men, women and children dressed up in their colorful head dresses and ethnic uniforms, but the rain, while providing a sea of colorful umbrellas, limited our exposure to ethnic dancing and singing that is generally performed outdoors.

The post session field trips (August 6-9) proved very popular as more than a third of all WRI-12 attendees joined one of the three trips offered. The trip to Tibet, a once in a life time opportunity, proved popular, as 52 participants visited the Quokang, Potala Palace and other historic sites and temples in Lhasa, the Yangbajing geothermal field that supplies about 50% of Lhasa electricity and Namucuo Lake, a fresh water alpine lake situated on top of the world at about 5,000 m above sea level.



Water-Rock Interaction Working Group Leader Yousif Kharaka (first row, 4th from left and IAGC Interim President Russell Harmon (first row, 4th from right) together with WRI-12 Secretary General Yanzin Wang (first row, center) and the WRI-12 student assistants. As a token of appreciation for the excellent conference and the hard work of the conference assistants, Prof. Wang and the students all were given gifts of an IAGC membership by a group of IAGC members attending the conference.

The most popular field trip attended by 58 participants and initially planned as a visit to the Tengchong geothermal system (at the border of Yunnan and Myanmar), as well as the historical Heshun Village and Dali had to exchange Tengchong with Lijiang, because of heavy rain and flooding in the Tengchong area. The city of Lijiang, situated in a beautiful valley with stunning backdrop of the Jade Dragon Snow Mountains, is not only the home of the Naxi people but also the cultural cross roads of many other ethnic nationalities

I participated with 43 others in the Three Gorges Dam field trip that included a boat ride down the scenic Yangtze River from Chongqing to Yichang, where the monumental Three Gorges Dam (175 m deep) is located. This was by far the best field trip that I have ever participated in. The massive vertical beds and mountains that tower a kilometer or more above the river not only in the grand Three Gorges areas but for hundreds of kilometers, gigantic historical landslides that have killed thousands of local people, and hundred of new cities constructed to move more than a million Chinese to higher ground, were sights that I will never forget. The visit to the Institute of Geohazards Mitigation (China Three Gorges University) was very informative. We also visited fascinating historical and cultural sites, but the geology, geomorphology and human impacts are truly unique and breathtaking.

In the true spirit of water-rock-human interaction, the Organizing Committee of WRI-12 planned an excellent social, culinary and cultural program for all the participants. A truly Yunnan Chinese experience started when the buses arriving for registration were greeted with drums and beautiful ladies and men dressed in their colorful ethnic clothes and head dresses. This party atmosphere continued during the welcome reception around one of the four swimming pools filled with geothermal water from 2500 meters deep wells. We were treated to an even more sumptuous and varied Chinese dinner than usual with local beer and good Chinese wine together with ethnic minority musical performances at a city restaurant and again at the farewell party. Most of the none-Chinese participants also attended the play "Dynamic Yunnan" a powerful medley of song and dramatic local ethnic dances that tell the story and history of the people of Yunnan. Field trips and cultural activities for the large number of the accompanying members included visits to the Ethnic Minority Village, Lake Dian and Western Hills, temples, museums and local shopping bazaars.

During the General Business Meeting of WRI-12, the attendees voted to select Dr. Halldor Armannsson (Iceland) the new Chairman of the Working Group on Water-Rock Interaction. They also selected Prof. Thomas Kretzschmar (CICESE, Ensenada, Mexico) the

Secretary General for WRI-13. Thomas and his insipient WRI-13 Organizing Committee (Ignacio Torres-Alvarado, UNAM, Temixico, Peter Birkle, IIE and Mahendra Verma, Cuernavaca, and Anne Hansen, IMTA Cuernavaca) have tentatively decided to hold WRI-13 in the resort city of Guanajuato, Mexico in the summer of 2010.

APPLIED ISOTOPE GEOCHEMISTRY

REPORT ON THE 7TH INT. SYMP. ON APPLIED ISOTOPE GEOCHEMISTRY (Jodie Miller, Chairperson)

The Applied Isotope Geochemistry Working Group held its 7th International Symposium in Stellenbosch South Africa from the 10th to the 14th of September 2007. The event was attended by over 110 scientists from 26 different countries covering all the continents (except Antarctica!). Four days of talks were held in the university's Music Conservatory with a mid-conference field trip around the Cape Peninsula, including a visit to Cape Point and the Cape of Good Hope, held on Wednesday.

The talks presented at the conference covered a diverse range of applications, including Palaeoenvironments, Organic Biogeochemistry, Marine and Coastal Systems, Metamorphic and Igneous Systems, Natural and Anthropogenic Pollution, Tracers of Ecosystem Processes, Atmospheric Connections, Isotope Hydrogeochemistry and Novel Techniques, Approaches and Perspectives. Ten keynote presentations complemented these sessions.

After the conference, 38 delegates participated in a six-day field trip to Namibia. This whirlwind field trip looked at many different geological, biogeochemical and environmental problems across west central Namibia and as far north as the world famous Etosha National Park, and how isotopes had been used to contribute to our understanding of these various systems. Sites visited included the desert landscape outside of Swakopmund, Brandberg igneous complex, salt works on the west coast, hydrological environments of the Swakop and Omaruru Rivers, glacial deposits of the Otavi Group and the Tsumeb Pb-Cu-Zn mine. In addition, time was had spending one day game at Etosha National Park where the elephants, rhinoceros and lions stole the show.

Jodie Miller

University of Stellenbosch

Other reports to be added:

GEOCHEMISTRY OF THE EARTH'S SURFACE (Sigurdur Reynir Gislason)

GEOCHEMICAL TRAINING IN THE DEVELOPING COUNTRIES (U. Aswathanarayana)

URBAN GEOCHEMISTRY (Rolf Tore Ottesen and Morten Jartun)

THERMODYNAMICS OF NATURAL PROCESSES (German Kolonin)