



Association of Applied Geochemists

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KURT KYSER NEW EDITOR-IN-CHIEF FOR GEEA

It is with great pleasure that the AAG and the Geological Society of London announce Dr. Kurt Kyser as the new Editor-in-Chief of our journal, *Geochemistry: Exploration, Environment, Analysis (GEEA)*. Kurt is a professor in the Department of Geological Sciences and Geological Engineering at Queen's University in Kingston, Ontario (Canada) and is internationally renowned. He is currently the director of the well-equipped Queen's Facility for Isotope Research (QFIR), which provides a means for interdisciplinary research by university, government, industry, or private agencies on a global basis. Kurt's own research interests include isotope geochemistry, the origin and chemical evolution of the Earth, mass spectroscopy, evolution of fluids in basins, low-temperature geochemistry, geochronology, environmental geochemistry, and fluid-rock interactions. His work has been widely published, including ~300 papers in refereed journals (including *GEEA* of course!), 200 in conference proceedings, and 50 chapters in books. Kurt has also provided invaluable expertise to his numerous undergraduate and graduate students, as well as to the field of exploration geochemistry.



Kurt Kyser

Amongst the numerous honours awarded to Kurt are the Killam Research Fellowship (Canada Council for the Arts), the Willet G. Miller Medal (Royal Society of Canada, for outstanding research), a Queen's University Research Chair, Fellow of the Royal Society of Canada, and the AAG Distinguished Lectureship. He has held the posts of President of the Mineralogical Association of Canada, President of Earth-Oceans-Atmosphere Sciences, and Chair of the Selection Committee on Research Grants, amongst others.

Clearly, the journal is in very capable hands and we look forward to exciting new ventures with Kurt at the helm!

Gwendy Hall (gwendyhall@gmail.com)
Outgoing Editor-in-Chief, *GEEA*

REGIONAL COUNCILLORS UPDATE

Regional councillors ensure strong, representative coverage of our members and provide a good understanding of current, regional applied geochemistry-related activities. A brief synopsis of recent updates follows, but for more details go to www.appliedgeochemists.org.

Northern Europe (by Pertti Sarala): The interest in minerals that host so-called high-technology elements (e.g. In, Li, the REEs, Sc and Y) has increased in the European Union. Regions hitherto largely ignored are now being studied as potential areas for mineralization. As part of this strategy, the Geological Survey of Sweden has completed its soil geochemical mapping project and published *The Geochemical Atlas of Sweden* (2014). The atlas includes the maps of geochemistry of agricultural soil based on 179 sampling points. In Finland, the environmentally conscious Green Mining Programme of the Finnish Funding Agency for Technology and Innovation has progressed well towards developing intelligent and minimum-impact mines and for finding new mineral resources (www.tekes.fi/programmes/GreenMining).

Brazil (by João Larizzatti): Over the last two years, the Geological Survey of Brazil (CPRM) has conducted regional multi-element geochemical surveys from Santa Catarina (in the south) to Roraima States (north), and from Rondônia (west) to Pernambuco (east). The focus is on regional geochemical mapping, geochemical exploration, and environmental geochemistry. CPRM sampled 4130 soils, 20,523 stream sediments and 19,742 heavy mineral concentrates across

continental Brazil. These were analysed for multi-element geochemistry and mineralogy. An additional 1592 marine sediments off Brazil's north-east shore were also analysed. The resulting geochemical atlases, composed of maps and databases, provide regional coverage for a given sampling media at the 1:100,000 map scale. These data are available free of charge or at low cost. Please visit www.cprm.gov.br.

Australia and New Zealand (by Ryan Noble and Tony Christie): UNCOVER is a major new initiative between the Australian state geological surveys, Geoscience Australia, and the Commonwealth Scientific and Industrial Research Organisation (CSIRO): it is universities and industry working to improve the success rate of mineral exploration in Australia under covered areas. Other, separate, activities include the Deep Exploration Technologies Cooperative Research Centre developing rapid drilling and real-time analysis; the Distal Footprints of Giant Ore Systems project in Western Australia; and the Advanced Resource Characterisation Facility (ARCF), a technological hub capable of analysing rock from drill-core down to the atomic scale. The ARCF will be internationally unique for the range and proximity of access to facilities that include a new NanoSIMS, an Atom Probe TEM and the prototype Maia mapper.

The New Zealand-based GNS Science regional soil geochemical survey collected 400 sample sites, 8 km apart across south Otago and Southland for which multi-element geochemistry, isotopes of S, Sr and Pb and magnetic susceptibility will be determined. The GNS will assist in developing the concept and benefits of a national survey.

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RECENT ARTICLE PUBLISHED IN EXPLORE

N. TURNER (2015) Optimised detection limits for multi-element geochemical analysis. *Explore* 166 (March 2015)

The concept of detection limit has always been difficult to explain because it can be expressed in so many ways. It is also a somewhat controversial subject in geochemistry as there is a commercial advantage to having lower reporting limits, thereby seemingly offering the geologist better information about their samples. However, what constitutes a method detection limit as opposed to an instrumental detection limit, and what is the best way of determining the detection limit for multi-element analyses are not well understood.

An investigation of detection limits was undertaken using the multi-element method MMI® – a weak leach used in soil exploration that uses ICP-MS to measure concentrations of 53 elements in solution extracts. Typically, detection limits are measured from method blank data in a single test combined with knowledge of elemental crustal abundance. Whilst this does give justifiable limits, it suffers from drawbacks such as method performance over time and relative sample concentrations. A more holistic approach to the detection limit was performed by analysing a large database of randomised method blanks and duplicate analyses. Detection limits were calculated from the levels that can both be seen and are seen using real samples over time. This technique results in optimised detection limits that allow the geologist to use analytical data to its fullest extent by providing true reporting limit capabilities that are appropriate for targeting anomalies.

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