

1.2 Interpreting Geochemical Data

Two day course and workshop

Date: 17-18th September 2005 (Sat and Sun before the IGES)

Place: Perth Sheraton

Course Presenters: Mark Arundell, Simon Gatehouse, Paul Agnew, Dave Lawie and Mike Whitbread

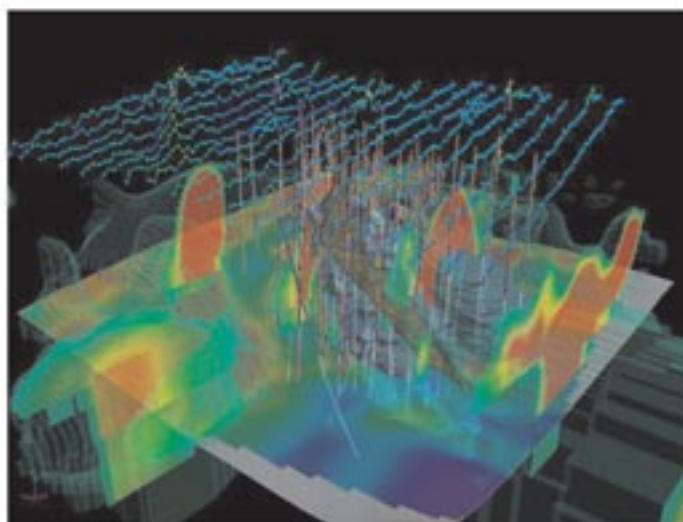
Course Registration A\$495

Max 20 attendees

Multi-element geochemistry is now common in mineral exploration. Masses of data are generated but not fully used by project geoscientists. Anomaly definition has tended to focus on the highest numbers in selected target elements. However, in many circumstances, the highest numbers may not be the most significant. This course will provide more informative techniques of interpreting and visualising geochemical data. This style of targeting places the geochemical data into a richer geological context so the natural multi-element geochemical associations in most geochemical data sets can be explored. The techniques will be demonstrated using surficial and drill-hole data from around the world. This hands-on course will be suitable for geologists and geochemists of all levels of experience who are involved in mineral exploration, academia or government research.

Contents

- How to look at data, basic data analysis, leveling of historic data
- Drainage, soil, rock, lag, and drill samples. Interpretation of data for each illustrated with case histories
- Local scale variation, advanced data analysis, zonation
- Signature-based interpretation, factor analysis, additive indices, multi-element data visualisation
- Robust principal component analysis, discriminant analysis, regression
- Interpreting partial leach data
- Litho-geochemistry for rocktype identification and quantifying metasomatic effects



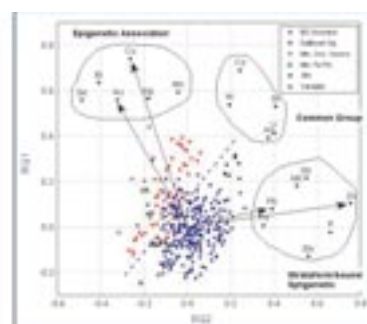
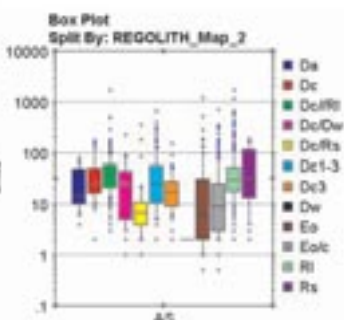
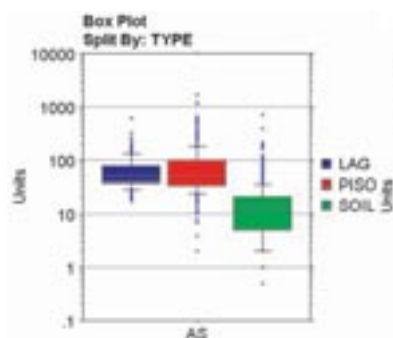
Presenters:

Mark C. Arundell (BSc(Hons), MAAG) (Course leader)

Arundell Geoscience, Belmont, Western Australia

Email: arundell@bigpond.com

Mark graduated from the University of Melbourne in 1985 and completed a Masters in Economic Geology at CODES in 1998. During ten years with RGC, he worked as an exploration geologist throughout Australia and a mine geologist at Mt Lyell (Tasmania), Pine Creek (NT) and Lucky Draw (NSW). Mark joined North Ltd in 1995 and worked on a number of projects including Goonumbla/Northparkes, Lake Cowal Gold and Yakabindie Nickel. Since early 2000, he has been working as a consultant geologist and geochemist for various clients including Rio Tinto Exploration, Newcrest, North Ltd, Peak Gold Mines, PIRSA, ERA and SRK.



Projection of samples and elements on to the same graph for interpretation

Simon G. Gatehouse (BSc Hons MAAG)

Hellman and Schofield, Belmont, NSW, Australia

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Simon graduated from the University of Tasmania. Most of his geoscience career was in exploration, with Geopeko, RGC and North Ltd. Though his work has been dominantly across most of Australia and its near northern neighbours, he has also worked in China, SE Asia, West Africa, South America, USA and Sweden. In April 2001, Simon joined the Ores Deposit processes group of CSIRO Exploration Mining to develop new approaches and models for the measurement of primary zonation around mineralisation. Since 2004, he has been a consultant geochemist and geologist with Hellman and Schofield and lectures on Ore Deposit Geology and on Environmental and Exploration Geochemistry at the University of NSW.

Paul D. Agnew (BSc (Hons))

Rio Tinto Exploration Pty. Limited, Bundoora, Australia

Email: Paul.Agnew@riotinto.com

Paul graduated from the University of New South Wales in 1987 in Applied Geology. He joined CRA Exploration Pty Ltd as a field geologist, conducting geochemical surveys in PNG, Northern Territory and Western Australia for 7 years before taking on a geochemical exploration technical support and development role for the last 9 years. Currently he is a consultant geochemist for Rio Tinto Exploration, and provides global technical support to RTE's exploration projects and other Rio Tinto Business Units, specialising in geochemical data visualisation and interpretation, GIS, data management and field practices in a wide range of geological, geomorphological and climatic regimes.

Dave Lawie (BSc(Hons),PhD)

ioGeochemistry, West Perth, Western Australia

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Dave graduated from the University of New England. He has extensive international experience in exploration geochemistry. Prior to starting ioGeochemistry, Dave was Chief Geochemist with Pasminco Exploration, then joined Anglo American, initially as coordinator of multi-commodity geochemical research conducted globally, then as Coordinator of Geochemistry based out of Vancouver. One area that Dave has worked on extensively is the application of robust multivariate techniques to the interpretation and integration of geochemical data. Currently, Dave is the General Manager of ioGeochemistry, a new geochemical consultancy division of ioGlobal where he is responsible for strategic development and daily operations. Dave is also a Director of ioGlobal, and has significant input into the development of the ioDigital data management division.

Mike Whitbread (BSc (Hons), Ph.D)

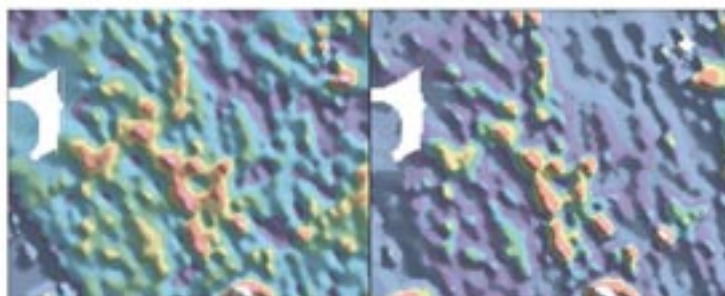
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Michael Whitbread graduated from the University of Queensland in 1995 in geology and chemistry. He worked for two years with Pasminco Exploration in Cobar, searching for Zn-Pb-Ag sediment hosted deposits, followed by over a year as a mining geologist at Pasminco's Rosebery mine. He completed a PhD in the use of litho-geochemistry in detecting and quantifying alteration around the Century and Elura base metal deposits. During and subsequent to his PhD, he has applied his expertise to a variety of deposits in varying geological settings (sediment hosted base metals, porphyry copper, Irish-style Pb-Zn, iron oxide copper and manto deposits). Michael currently works for ioGeochemistry as a geochemical consultant, and also undertakes part-time research with Cliff Stanley of Acadia University, Canada.

Raw Data Double levelled to a combination of geology and regolith Background Suppression



Arundell
Geoscience

H&S

