

ore solutions



UNIVERSITY OF TASMANIA

**Newsletter of the Centre for Ore Deposit Research, an
ARC Special Research Centre at the University of Tasmania**

In this issue:

January - April 2001

- **VHMS Conference Highlights**
- **National Masters Course**

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New, National Masters program open for business

The new National Master of Economic Geology, supported by the Minerals Tertiary Education Council, will ensure that industry professionals stay at the cutting edge of advances in ore deposit models, minerals exploration and mining geology. CODES SRC is responding to the challenge of providing relevant education to international geoscientists.

The eagerly awaited National master's degree in Economic Geology gets under way in 2001. The new degree is a combination of the successful Masters courses at the University of Tasmania, the University of Western Australia, and James Cook University in Townsville. The new program will be enhanced by additional courses taught by the Victorian Institute of Earth and Planetary Science, and the CRC for Landscape, Evolution and Mineral Exploration. Students will be able to choose from 17 coursework units offered across the network of universities.

Ross Large, Director of CODES SRC, says that the flexible, new degree program has been developed in response to the 1998 discussion paper, *Back from the Brink: Reshaping Minerals Tertiary Education*, prepared by the Minerals Council of Australia. A key concern of industry is that professionals are unable to keep up with the rapid changes occurring in the minerals sector, and therefore relevant continuing education is required.

Professor Large says that this will be the best Masters in Economic

Geology available in the world. "We have combined our best offerings from the three Australian Research Centres (CODES, EGRU and CGM) to produce a world class program."

Two options are available to students:

Option 1: 6 short course units, and a research thesis (18 months full-time, 30 months part-time)

Option 2: 8 short course units and no thesis (12 months full-time, 30 months part-time)

Participants in the program will enrol at one of the three, G3 Universities, U Tas, UWA or JCU, as their "home" university, and study the majority of units there. The remaining units will be studied at the other universities in the network.

From 2001, CODES SRC offers the following units to participants:

1. Geochemistry, Hydrology and Geochronology 23 April - 4 May 2001
2. Exploration Geophysics, Remote Sensing and GIS 2 July - 13 July 2001
3. Ore Deposits of South America 6 Nov - 18 Nov 2001

4. Volcanology and Mineralisation in Volcanic Terrains, March 2002

5. Ore Deposit Models and Exploration Strategies, July 2002

As with previous units in the Masters program, internationally recognised experts from around the world will lead different aspects of the short course units.

Enrolments are now being taken for the new Masters program, with the first unit at CODES SRC, Geochemistry, Hydrology and Geochronology, starting on 23 April.

Details of the course structure can be found on page 9.



From the Editor

Welcome to the first edition of Ore Solutions for 2001. As we go to press, production of the 2000 Annual Report is in full swing, so expect to receive your copy in the near future. In this issue, we feature the new National Masters in Economic Geology, which looks set to become the world standard for professionals wanting to upgrade their skills. The short course dates are found on the back page and for those who would like to register for the first short course of 2001, Ore Deposit Geochemistry, Hydrology and Geochronology, an application form is included. A final wrap up, together with pictures, of our successful Volcanic Hosted Massive Sulfide Deposit conference, held in Hobart in November is on page 4. CODES did well in the latest ARC grant round, with two SPIRT grants and a Post-doctoral fellowship. The new projects are profiled on page 5. There have been several staffing changes at CODES in recent months as well as a new addition to the junior ranks of the CODES family.

OS

Staffing Changes

David Selley joins CODES as a post-doctoral fellow from North Exploration and will be working with Stuart Bull and Peter McGoldrick on AMIRA P544.

CODES administrative assistant, **Angela Hockington**, left recently to take up another position.

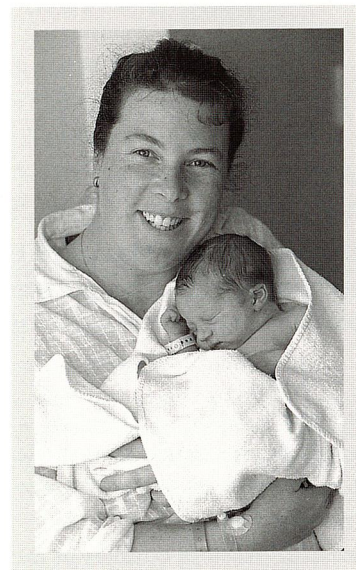
Darren Turner, our computer systems operator has also left to further his career. We wish them both well in their new jobs.

Awards

Congratulations to Jocelyn McPhie, who has been awarded the title of Associate Professor from the University of Tasmania. Jocelyn joined CODES as a Lecturer in Volcanology in 1990, the first such lecturer at the University of Tasmania, before being promoted to Senior Lecturer in 1994, and gaining tenure in 1995. Her internationally recognised research focuses broadly on physical volcanology, with particular interests in field-based volcanic facies analysis, and exploring the links between volcanic and ore-forming processes. The senior author of the successful book, *Volcanic Textures*, Jocelyn was co-convenor of the recent VHMS Conference in Hobart, and has presented numerous short courses around the world.

New Arrivals

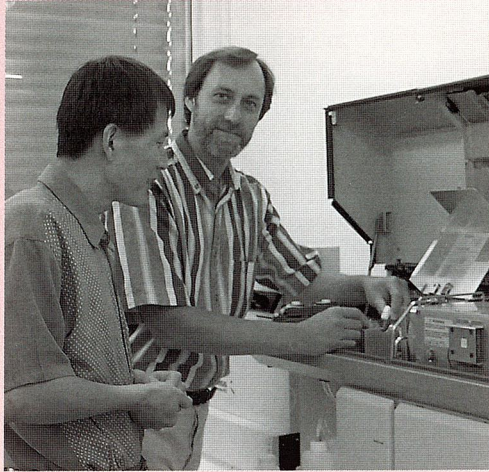
Jessica Tyler, gave birth to Clara Lindi on 30 October 2000. Jessica will be on maternity leave until October 2001.



AngloAmerican visited CODES in October, meeting to discuss research. Attending the meeting were (from left): Tony Crawford (Program 1), John Landmark, Ralph Rushton, Ross Large, Owen Bavington. (Front): Peter McGoldrick, Khin Zaw.

From the Director

I would like to report to you two exciting developments at CODES that are likely to have a significant impact on mineral exploration in the future. Both relate to recent breakthroughs in research at CODES using the new Laser Ablation ICP-MS. The first project involves the use of LA-ICPMS to fingerprint the low level trace element composition of sulfides. Although this technique has been known for several years, no reliable standards have been available to obtain quantitative analyses on a range of sulfide host minerals. We have recently developed and tested such standards and can now provide high quality analyses for a wide range of trace elements (Cu, Ni, Co, Zn, As, Mo, Ag, Sn, Tl, Pb, Bi, PGE, Ti, V and Mn) on different sulfide minerals. Other advantages of this technique are the high spatial resolution (5-100 micron spots), low detection limits (0.01-1ppm) and the rapid analysis (5 min per spot). This



Zongshou Yu (L) and Marc Norman demonstrate the ICPMS - set to produce rapid, inexpensive zircon dating.

development will open many doors of relevance to mineral exploration. It has the potential to provide vectors to ore in disseminated pyritic halos surrounding deposits, to distinguish fertile from barren pyritic alteration systems, and to discriminate deposit styles. A research proposal has recently been circulated to CODES corporate sponsors to seek funding

for a three year Industry Linkage Project to determine the trace element characteristics of sulfides from a spectrum of ore deposit types and develop applications to exploration.

The second exciting new development has been our testing of the CODES LA-ICPMS system to produce rapid and inexpensive age dates on zircons. Marc Norman, Sebastien Mefre and Ron Berry have been working together to develop this technique and have produced very encouraging results that indicate we have the capacity to determine good quality zircon age dates, rapidly and at low cost.

For further information on these two developments, contact Marc Norman, Garry Davidson or Ross Large (sulfide trace elements) or Marc Norman and Tony Crawford (Zircon dating).

OS

GEODE Workshop: First for Hobart

A GEODE workshop was held in Hobart on 19 November, convened by Ross Large and Derek Blundel, and attended by 55 researchers including key players from Europe, North America and Japan. The major outcome of the workshop was the selection of specific research topics that required a new collaborative effort in order to resolve relevant genetic and mineral exploration issues, related to VHMS deposits. It was resolved at the workshop to seek funding from both industry and government research agencies in Europe, Australia, North America and Japan to establish a coordinated and collaborative 3-year program of research.

For more information contact Ross Large or Alan Goode (AMIRA)



News

VHMS CONFERENCE: A huge success

This very successful conference, co-convened by CODES Program Leaders, Bruce Gemmell and Jocelyn McPhie, was held in Hobart from 16 – 19 November 2000. Over 120 volcanologists and

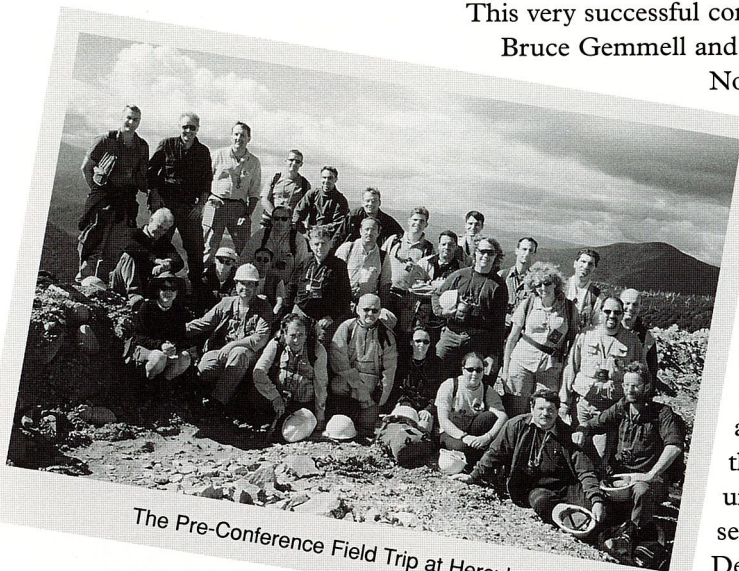
economic geologists from 17 nations attended the three day conference. Universities, geological surveys and the mining and exploration industries were represented at the conference, which focussed on current issues in research into VHMS deposits and the physical volcanology of their host successions. Particular emphasis was placed on parallels between modern, active seafloor hydrothermal systems and their ancient analogues. From the presentations it is clear that economic geologists are now gaining a greater understanding of the volcanological and sedimentological environments of ore formation.

Deposition of ore in sub-seafloor environments and the VHMS-epithermal transition were hot topics at the conference and generated lively discussion. Extended

abstracts from both oral and poster presentations were published in CODES Special Publication No. 3.

One highlight was the satellite phone link with the ODP drill ship, the Joides Resolution on site in the Manus Basin, Papua New Guinea. The conference participants heard the results of drilling into the PACMANUS hydrothermal system from co-chiefs Ray Binns and Fernando Barriga.

The conference dinner was held at Moorilla Estate, on the Derwent River. The Deputy Premier of Tasmania, and Minister for Industry, Energy and



The Pre-Conference Field Trip at Hercules



The display at Hellyer was popular



National and international delegates enjoyed the sunshine at the conference. From left: Bruce Gemmell, Tetsuro Urabe, Emile Pascual, Peter Herzog, Richard Herrington, Harold Gibson, Jocelyn McPhie, Ray Cas, Kathy Busby

Resources, the Hon. Paul Lennon, addressed the delegates, highlighting some of the benefits of working in Tasmania's mining industry.

West Coast Field Trips

Two seven day field trips to western Tasmania introduced 60 participants from the conference to the volcanic lithologies of the Mt Read Volcanics, the world-class Cambrian VHMS deposits (Mt Lyell, Rosebery, Hercules, Henty and Hellyer) and the Devonian Sn-replacement deposit at Renison. CODES would like to take this opportunity to thank all sponsor companies who assisted with the field trips.

Many of the results and ideas to emerge from the conference have particular relevance to future mineral exploration strategies to find the next generation of gold and base metal deposits in western Tasmania.

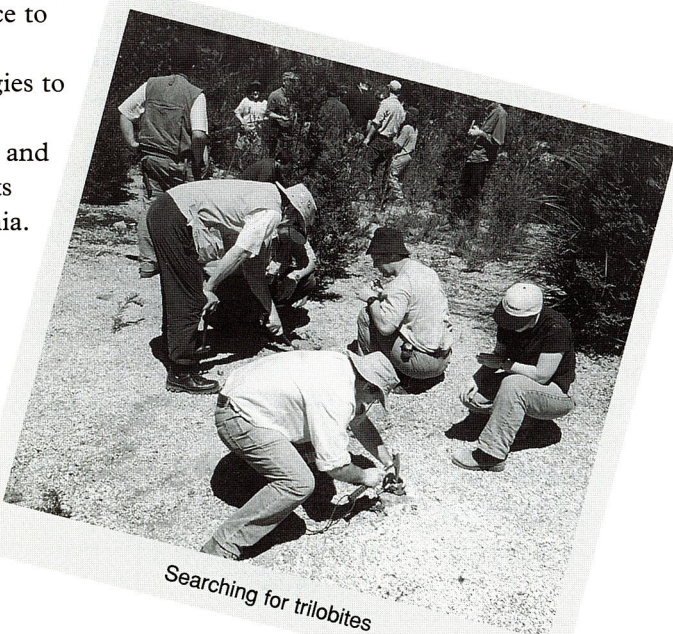
OS



Last night of the field trip



Richard explains



Searching for trilobites

Latest ARC Grants

The latest round of successful Australian Research Council grants was announced at the end of October, and saw CODES and the School of Earth Sciences rewarded with 3 ARC-SPIRT grants and a Post-Doctoral Fellowship.

Geology and Geochemistry of Proterozoic Sedimentary Copper Deposits

Peter McGoldrick, Stuart Bull, Murray Hertmann & David Selley,

Funded from 2001-2003

Amount Awarded: \$394,000

Groundwaters in Wet, Temperate, Sulfide Mining Districts: Delineation of Modern Fluid Flow, and Predictive Modelling to Improve Management after Mine Closure (Rosebery, Tasmania)

Garry Davidson, Jianwen Yang, David Cooke & Chapman, Mr R

Funded from: 2001-2003

Amount Awarded: \$66,876

Experimental Simulations and Textural Analysis of Submarine Volcaniclastic Mass Flow Deposits that Result from Large-scale Eruption and Failure Events

Sharon Allen

Awarded: Post Doctoral Fellowship

The Palaeogeographic, Structural and Hydrological Development of the Onshore Tasmania Basin Jianwen Yang, Clive Burrett

Funded from: 2001-2003

Awarded: \$375,000

OS

Experimental simulations of submarine volcanoclastic mass flow deposits that result from large-scale eruption and failure events

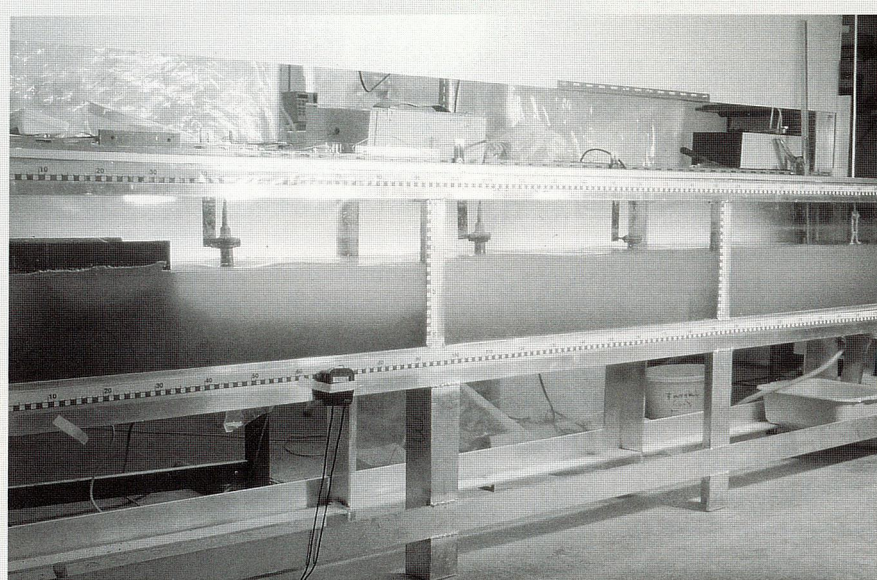
Sharon Allen

A new collaborative research project involving experimental volcanoclastic sedimentology is underway between the CODES Volcanology Program and Armin Freundt at the GEOMAR Research Centre, Germany.

Explosive eruptions and mass failure events on volcanic cones can deliver large quantities of volcanic particles into the sea. Deposits from such events are found throughout ancient submarine volcanic successions, yet presently there are no physical constraints linking deposit features with origin. One aspect of this research is to use experimental simulations to characterise a variety of such submarine deposits and clarify relationships between their characteristics and source circumstances.

An initial pilot study, funded by the Australian Academy of Science, was undertaken in September-October 2000. This study was used to establish the experimental design to enable reproducible experiments of submarine volcanoclastic gravity flows to be undertaken using different starting conditions. Further experiments will be undertaken in 2001.

The experiments involved monitoring the resedimentation of stagnant volcanic material (contained in a box) into a water-filled flume (3-m-long x 36-cm-wide x 51-cm-high). The pilot study involved undertaking 12 different experiments with different starting conditions. Starting conditions varied in terms of the type



3 m-long water flume in Volcanology Laboratory at the GEOMAR Research Centre. In this experiment dry, ash-rich, poorly sorted, unwelded ignimbrite was released from the box (left) at a 0° slope into the water-filled flume. Shallow water waves, generated at the right end of the flume, were monitored by pressure sensors.

of material (sand, ash-rich poorly sorted unwelded ignimbrite, dense poorly sorted unwelded ignimbrite), coherency of the starting material (whether dry or wet, hot or cold), height of the water column, slope of floor, and the influence of shallow-water waves. The timing of the experiments ranged from tens of seconds (sand) to hours (wet, ash-rich ignimbrite in still water). Video cameras, temperature and pressure sensors monitored the experiments. In addition, the resedimented material was photographed and carefully sampled for grain size analysis and structure (grading, bedding).

On release of the starting material into the flume (through a sliding door) an initial turbidity current was

produced. This was followed by a slower disintegration of the starting material by grain flows. Preliminary results show that starting conditions that allowed the volcanic material to remain dry, loosely consolidated or hot, produced a resedimented deposit that was moderately-well hydraulically-sorted. In comparison, resedimented wet, water-saturated volcanic material was more poorly sorted. In addition, the wet, ash-rich ignimbrite was very slow to resediment even from slopes of 90 degrees.

Education News

HONOURS STUDENTS - RESULTS 2000

First Class (HF)

Close, David	A geophysical study of the Ridgeway gold-copper deposit, New South Wales. Support from Newcrest. AUSIMM Scholarship holder.
Harper, Ben	Hydrothermal alteration at Ridgeway porphyry gold-copper deposit, NSW. Support from Newcrest.
Howlett, Ashley*	Hydrogeology of the Cape Portland area, NE Tasmania.
Williams, Nicholas*	Basin Lake hydrothermal system, W Tasmania (completed in May 2000).

Upper Second Class (HU)

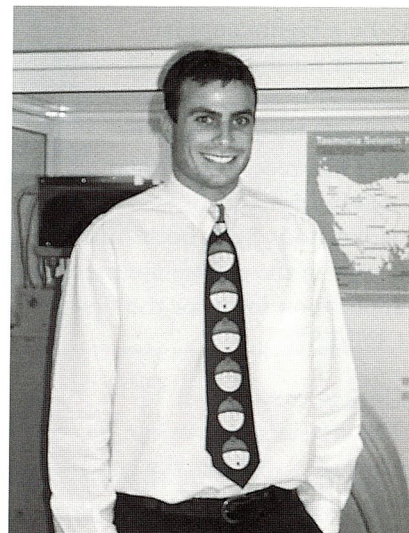
Carpenter, Noël	Geophysical evaluation of potential waste disposal sites, Georgetown, N Tasmania. Support from Georgetown Council and Newcrest.
Jackman, Carl*	Stratigraphy, structure and volcanic facies in the Mount Read Volcanics, Huxley Road area, South Queenstown, W Tasmania.
Perri, Gavin	Land utilisation of the Camelot Park area, Droughty Point, Hobart, Tasmania (completed in May 2000).
Polglase, Kate	King River environmental geophysics and hydrology, W Tasmania.
Russell, Jacob*	Geophysics of the Comstock prospect, W. Tasmania. Support from Bass Resources.
Thompson, David*	Geology of the Sidling Range, NE Tasmania. Support from Esso.
Vallerine, Ben*	Precious metal distribution in K lens, Rosebery Mine, W Tasmania. Support from Pasminco.
von Lichtan, Isabella	Xenoliths in the Tertiary Midland volcanoes, Tasmania.
Woolford, Adrian*	Geology and isotope geochemistry of Browns Tunnel, W Tasmania.

Lower Second Class (HL)

Scott, Helen*	The character and origin of the Howard's Basalt in the Mount Read Volcanics, W Tasmania. Support from Goldfields Exploration.
Meskanen, Unnikki	Acid mine drainage at the Comstock Pb-Zn mine, W Tasmania. Support from Bass Resources.

*Tasmanian Government Mining Scholarship holders.

Congratulations to a Rhodes Scholar



David Close, a year 2000 honours student in the School of Earth Sciences at the University of Tasmania, is the Tasmanian Rhodes Scholar for the year 2001. David was the recipient of an AusIMM scholarship throughout his undergraduate and honours degree. His exceptional scholastic achievements are even more impressive when one considers his extensive sporting commitments. David's honours project involved a study of the geophysics response of the Cadia Ridgeway Au-Cu system in NSW, supported by NewCrest Exploration. This study involved acquisition of detailed in-situ petrophysical measurements, numerical modelling of the expected geophysical response of the ore system and comparison of the numerical results with observed geophysical anomalies. David's thesis was awarded First Class Honours, and he received a University Medal, based on his undergraduate and honours results. David will commence a PhD in geophysics at Oxford University in July 2001, specialising in earthquake seismology.

New Masters Course

The new Australian Master of Economic Geology is already proving to be a highly popular option for those geoscientists wishing to upgrade their skills, with CODES receiving a flood of enquiries and applications from both Australia and overseas. More details of the course are presented here, as well as an application form for the first 2001 short course at CODES.



Course structure:

The Masters course can be completed in one of two ways: **Option 1** requires the completion of six units of coursework and a minor research thesis. At least three of the units must be completed at CODES, the remainder are completed at other participating universities. Duration 18-24 months full time; up to 30 months part time.

Option 2 requires the completion of eight units of coursework. Three to five coursework units must be undertaken at CODES. Duration 12-18 months full time; up to 30 months part time.

Course content:

Each of the participating universities will offer up to five courses in rotation over a two year period. Each course is of two weeks' duration.

Units offered by CODES are:

- ♦ Volcanology and Mineralisation in Volcanic Terrains
- ♦ Ore Deposit Models and Exploration Strategies
- ♦ Ore Deposit Geochemistry, Hydrology and Geochronology
- ♦ Ore Deposits of South America
- ♦ Exploration Geophysics, Remote Sensing and Geographic Information Systems.

Fees

Each unit costs \$2000. The research thesis is equivalent to two coursework units. The Federal Government has recently announced a fees loans scheme for coursework Masters. The total course fee for international students is \$13,500 pa. There are some additional costs associated with field-based courses.

Field Costs:

Some coursework units are either partly or fully field-based. Students should contact CODES one-two months before the course for exact costs. Estimated field costs for the Volcanology course are approx. \$1600, and for the

South American field trip, approx \$3500.

Entry qualifications to CODES

BSc (Hons) or BSc with at least two years' industry experience.

Units offered by participating universities:

University of Western Australia (CGM)

- ♦ Ore Deposit Models
- ♦ Computer Applied Exploration Techniques
- ♦ Management for Exploration and Mining Geologists
- ♦ Applied Structural Geology and Field Mapping
- ♦ Ore Deposit Field Trip to South Africa

James Cook University (EGRU)

- ♦ Advances in Ore Genesis
- ♦ Resource Definition: Theory and Practice
- ♦ Business and Financial Management
- ♦ Advanced Field Training
- ♦ Exploration Techniques in Ore Search

CRC Leme

- ♦ The Australian Regolith: Landscape, Evolution, and Exploration Geochemistry

Student Financial Support:

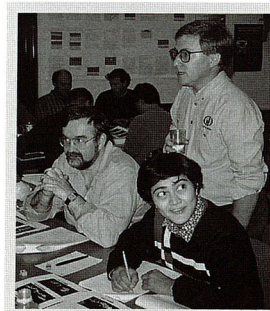
- ♦ Students who are not supported financially by a company or government may apply for reimbursement of Australian air travel expenses to attend CODES courses or courses at other universities in the network.
- ♦ Students undertaking the thesis option may apply for reimbursement of fees up to \$4000 on final completion of thesis. These will be considered on a case by case basis.

For more information about the Masters Program

- ♦ Contact Bruce Gemmell by email: Bruce.Gemmell@utas.edu.au, or Ross Large, Ross.Large@utas.edu.au

To apply for the Master of Economic Geology at CODES:

- ♦ Contact Lynne Vaudrey, Executive Officer by email: L.Vaudrey@utas.edu.au, or fax: (+61 3) 6226 7662, to receive an application pack.



2001 SHORT COURSE TIMETABLE

January 22-Feb 2:	Ore Deposit Studies (UWA)
Feb 20 - March 2:	Exploration Techniques in Ore Search (JCU)
April 23 - May 4:	Geochemistry, Hydrology and Geochronology (CODES)
June 4 - 14:	The Australian Regolith: Landscape, Evolution, and Exploration Geochemistry (CRC LEME)
June 20-29:	Computer Applied Exploration Techniques (UWA)
July 2-12:	Exploration Geophysics, Remote Sensing and GIS (CODES)
July 25 - Aug 3:	Advanced Field Training (JCU)
November 6-18:	Ore Deposits of South America (CODES)
November 26 - Dec 7:	Management for Exploration and Mining Geologists (UWA)

New PhD Projects in CODES

CODES has a new range of PhD projects on offer to interested students. Applications for all projects close 31 March 2001. Detailed information about these projects can be found by contacting Tony.Crawford@utas.edu.au, phone: 03 6226 2490, or by visiting our website: www.geol.utas.edu.au/codes.

Fluid flow and fluid chemistry related to the generation of major stratiform Zn-Pb-Ag deposits in the northern Mt Isa Basin.

Supervisors: Dr Jianwen Yang, Dr David Cooke, and Professor Ross Large

Scholarship: \$17,000 plus cover of international fees if required.

Contact: Ross.Large@utas.edu.au

The PhD project, on fluid flow in the Mt Isa Basin, forms part of an industry funded, collaborative AMIRA program between CODES, AGSO, UQueensland, Queens University and CSIRO. This component of the project involves developing a coupled 3D fluid flow chemical model to determine the source, transport, and deposition of metals within the basin evolution. Suitable applicants will have a background in geochemistry,

hydrology, and computing, or the skills (chemistry, mathematics and geology) to develop this background.

Groundwaters in wet, temperate, sulfide mining districts: delineation of modern fluid flow, and predictive modelling to improve management after mine closure (Rosebery, Tasmania).

Supervisors: Drs G. Davidson, Jianwen Yang & D. Cooke

Scholarship: SPIRT ~\$22000/year for three years.

Contact: D.Cooke@utas.edu.au

Base metal sulfide mining is important to the Australian and Tasmanian economies, but the interaction of the mining process with natural groundwaters needs to be better understood. In this project, we will work with Pasminco EZ at the Rosebery mine, Tasmania, to (1) define the current fluid flow regime in young natural and man-made deposits; (2) define the regional flow patterns from the west coast range to the coastal strip which influence local fluid flow; (3) identify the chemical effects of the mine-site waters on the natural system; and (4) use hydrodynamic modelling to predict the chemical and fluid flow regime that will exist once mining

ceases. This will provide a useful framework for the management of base metal mining sites in wet, temperate, mountainous regions.

Structural controls on gold mineralisation in the Henty System (Zone 15 and Mt Julia Zone)

Supervisor: Dr Rob Scott

Scholarship: \$17,000 per year for 3 years.

Contact: Robert.Scott@utas.edu.au

The fundamental aim of the proposed PhD project at Henty is to investigate the structural and stratigraphic controls on the distribution of gold mineralisation within the recently identified, deeper parts of the Henty system (from Zone 15 to the Mt Julia Zone).

At all stages, the student is expected to work closely with mine staff and facilitate practical application of research result. It is envisaged that the results of the research will directly assist mine geologists with mine planning and design improving the efficiency, profitability and potentially extending the life of the mining operation.

ConferenceTalks

UTas Presentations

VHMS Conference, Hobart 16-19 November 2000

Crawford, A.J., Giffkins, C.C. & Allen, R.L. - Tectonic setting of mineralisation, Mt Read Volcanics, Western Tasmania

Large, R.R. - The significance of hybrid deposits in the continuum of VHMS-epithermal and porphyry systems: an example from the Mt Read Volcanics

Giffkins, C., Allen, R. & McPhie, J. Textural characteristics of diagenetic and hydrothermal alteration in glassy volcanic rocks: examples from the Mount Read Volcanics, Tasmania

Doyle, M.G., McPhie, J. & Huston, D.L. - Volcanic setting and sub-seafloor origin of the Highway-Reward deposit, Mount Windsor Subprovince, Queensland, Australia

Davidson, G.J., Stolz, A.J. & Eggins, S.M. - Iron-silica exhalites as windows to massive sulfide infancy; Mt Windsor Volcanic Subprovince, Australia

Sharpe, R & Gemmell, J.B. - The Archaean Gossan Hill VHMS deposit, Western Australia: genesis of a structurally focussed, subseafloor replacement and exhalative sulfide-magnetite system

Sinclair, B.J., Gemmell, J.B. & Berry, R.F. - Formation of the Battle mine massive sulfide deposits, Myra Falls, VHMS district, Vancouver Island, B.C., Canada

Solomon, M., Tornos, F., Gaspar, O.C. & Inverno, C. - Constructing the massive pyritic ore deposits of the Iberian Pyrite Belt: an explanation involving brine pools, sulfur-deficient ore fluids, and tin granites

Yang, J. - Hydrothermal fluid circulation in modern seafloor massive sulfide deposits and geophysical response: example of the TAG mound

Agnew, M. - Lewis Ponds - a shallow marine polymetallic massive sulfide deposit, Hill End Trough, N.S.W. Australia

Corbett, K.D. - Features of the of Mt Lyell alteration zone - a large silica-pyrite-rich copper-gold system with an exhalative lead-zinc top

Gemmell, J.B. & Fulton, R. - Exploration implications of the geological and geochemical characteristics of footwall and hangingwall alteration, Hellyer VHMS deposit, Tasmania, Australia

Hollings, P., Crawford, A.J. & Whitford, D. - Isotopic composition of the felsic volcanics of the Mt Read Volcanics, Western Tasmania

Jones, S.A., Gemmell, J.B., Davidson, G.J. & Geological Staff - Geological and geochemical characteristics of siliceous 'cap rocks', Myra Falls VHMS Camp, Vancouver Island, BC, Canada

Kamentzky, V.S., Solomon, M., Pornyagin, M.V., Gemmell, J.B. & Maas, R. - Lead in seafloor mineralised systems as a function of magma composition and degassing: constraints from Troodos (Cyprus) and PACMANUS (eastern Manus Basin)

Monecke, T., Herzig, P.M., Kleeberg, R., Kohler, S. & Gemmell, J.B. - Zonation of dioctahedral true mica species in the footwall alteration halo of the Waterloo VHMS deposit, northern Queensland, Australia

Monecke, T. Gemmell, J.B. & Monecke, J. - Power-law thickness distributions of veins at the Hellyer VHMS deposit, Australia

Schardt, C., Cooke, D.R., Gemmell, J. B. & Large, R. R. - Geochemical modeling of the zoned footwall alteration pipe to the Hellyer VHMS deposit, Western Tasmania, Australia

Sinclair, B.J., Berry, R.F. & Gemmell, J.B. - Mineralogy and textures of the Battle Zone massive sulfide lenses, Myra Falls district, British Columbia, Canada

Wyman, D. & Hollings, P. - A new tectonic model for the southern Abitibi Belt: factors contributing to a VHMS-rich metallogenic province

Yang, J. & McPhie, J. - Hydrothermal fluid migration in complex submarine volcanic successions

Centre for Global Metallogeny, Perth, October 2000

Crawford, A.J., Kamenetsky, D. & Danyushevsky, L. - The use of melt inclusions to elucidate fluid evolution from magmatic systems.

112th GSA Meeting, Reno, Nevada, 9-18 November 2000

Cooke, David, R. - Oxidised Magmas, Oxidised Fluids and their Controls on Alteration Assemblages and Metal Distribution in the Porphyry Cu-Au Deposits of Goonumbla, NSW, Australia.

Davies, Andres G.S. - Hybrid Phreatomagmatic and Phreatic Breccias at the Kelian Gold Deposit, East Kalimantan, Indonesia - Triggering Mechanisms and Implications for Ore Genesis in Magmatic-Hydrothermal Systems.

Lickfold, Vanessa - The Intrusive History of the Endeavour Porphyry Cu-Au Deposits, Goonumbla District, NSW, Australia

Masterman, Glenton.J. - Collahuasi Copper-Molybdenum-Silver Deposits, Chile.

Australian Crustal Research Centre - Mountains and Metals Symposium 14 December 2000

Crawford, A.J. - Tectonic Setting of the Mt Read Volcanics in Western Tasmania, and Implications for the Tasman Line in SE Australia.

National Institute of Geological Sciences 2000 Colloquium, University of Philippines, 22 Nov 2000.

Crawford, A.J. - Melt inclusions: A new technique to study magmatic volatile and chalcophile element budgets



Society of Economic Geologists
University of Tasmania
Student Chapter
sponsored by CODES SRC

Annual General Meeting

The annual general meeting of the University of Tasmania, Student Chapter of the SEG was held in November. At the meeting outgoing president, Rick Squire gave an outline of the Chapters events during the year and expressed thanks to the outgoing committee for their support. Everyone was unanimous in their approval of the previous years SEG run events and glowing in their support of the Chapter. It was very encouraging to see such a big and enthusiastic turnout!

One of the main reasons for the meeting was to elect a new committee and discuss ideas for events for 2001.

The new committee elected was:

President: Andrew Wurst
Vice President: Andrew Stewart
Secretary: Sarah Jones
Treasurer: James Cannell

The meeting was followed by an SEG Christmas party, which was enjoyed by all!

Several SEG members provided assistance at CODES successful VHMS conference as well as organizing drinks at the Earth Sciences Christmas Show

A limited number of member-designed SEG T-Shirts are currently on sale for \$20 each. So please support the chapter and get in contact with Andrew Wurst, James Cannell, or anyone of the committee members for your T-shirt!

A follow-up committee meeting was held to select events and discuss timing and organizers for the first half of 2001. If anyone feels that they may be able to help with the events in any way please get in contact with one of the committee or organizers of the events. At this stage, dates are yet to be fixed by the relative organizers, for more up to date information please use the SEG Student Chapter Link on the CODES web site.

The following events have been proposed for the year 2001:

January

Golf Day and BBQ at Bellerive

February

Social Cricket Match

March

Access Database Professional Development Session.

April and July

Presentation/ Power Point Professional Development Session.

April

West Coast trip to Savage River, Apt Railway, Crocoite Mines and Savage River, Osmiridium areas.

May

Ten Pin Bowling/ Broom Ball/ Go-Karts

June

Pasminco visit and BBQ at Cornelian Bay

August

Gemstone fossicking and colliery trip and wine tasting in the North East.

New Books

Volcanic Environments and Massive Sulfide Deposits Program and Abstracts

International conference and field meeting

16-19 November 2000 Tasmania, Australia



Edited by J. Bruce Gemmell and June Pongratz

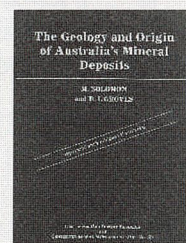
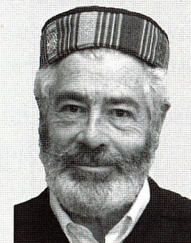


Sponsored by CODES SRC and the Society of Economic Geologists



The Program and Abstracts volume from the Volcanic Environments and Massive Sulfide Deposits Conference is now available from CODES publications.

Cost: \$AUD45 (ex GST)



Also available is the newly released second edition of the popular text, The Geology and Origin of Australia's Mineral Deposits, but Mike Solomon (CODES) and David Groves (CGM).

Cost: \$AUD150 + GST

Information about all CODES publications can be found at www.geog.utas.edu.au/geol/bookshop/html

Fax to (03) 6226 7662
Mail to GPO Box 252-79
Hobart Tas 7001

short course dates

ore deposit geochemistry, hydrology and geochronology

23 April - 4 May 2001 Leader: David Cooke

The first week concentrates on the basic principles of ore fluid chemistry, ore fluid hydrology, fluid/rock interaction, stable isotopes and geochronology. The second week starts with lead isotopes and fluid inclusion basics, and is followed by a series of case studies, which discuss the application of various geochemical, isotopic and dating techniques to the genesis and exploration of three important styles of ore deposits.

exploration geophysics, remote sensing and geographic information systems

2 -12 July 2001 Leader: Mike Roach

Focuses on the theory and application of potential field and electrical geophysical techniques in exploration geology. The uses, problems and pitfalls of each methods will be covered. Both prospect evaluation and regional geophysical studies will be discussed, as well as structural interpretations of airborne geophysical data, remote sensing, data integration and the application of GIS systems to exploration geology.

Ore Deposits of South America

6-18 November 2001 Leader: Andrew Tunks

A short course on Ore deposits of South America is offered to geologists interested in completing a field based course to visit the major porphyry Cu and epithermal Au provinces of the Andes. The trip will include mine visits and regional geology in order to put the deposits within a volcanologic and tectonic framework. Further details on deposits and provinces will be developed by mid 2001.

Contacts

Director

Ross Large
Tel: (03) 6226 2819
Ross.Large@utas.edu.au

Deputy Director

Leader, Program 1
Education & PhD Coordinator

Tony Crawford
Tel: (03) 6226 2490
Tony.Crawford@utas.edu.au

Leader, Program 2

Jocelyn McPhie
Tel: (03) 6226 2892
J.McPhie@utas.edu.au

Leader, Program 3

Masters Coordinator

Bruce Gemmell
Tel: (03) 6226 2893
Bruce.Gemmell@utas.edu.au

Leader, Program 4

Assist. Honours Coordinator

Peter McGoldrick
Tel: (03) 6226 7209
Email: P.McGoldrick@utas.edu.au

Leader, Program 5

Honours Coordinator

David Cooke
Tel: (03) 6226 7605
D.Cooke@utas.edu.au

Short Courses

CODES Secretary
Tel: (03) 6226 2472
secretary@codes.utas.edu.au

Book Sales

Nilar Hlaing
Tel: (03) 6226 2472
publications@codes.utas.edu.au

Public Relations

Michaela Patel
Tel: (03) 6226 1863
Michaela.Patel@utas.edu.au

Executive Administration

Lynne Vaudrey
Tel: (03) 6226 2819
L.Vaudrey@utas.edu.au

Publications

June Pongratz
Tel: (03) 6226 2479
June.Pongratz@utas.edu.au



CODES SRC

Centre for Ore Deposit Research
School of Earth Sciences
University of Tasmania
GPO Box 252-79
Hobart Tas 7001

Tel: (03) 6226 2472 Fax: (03) 6226 7662
CODES Secretary:
secretary@codes.utas.edu.au
WebSite
<www.geol.utas.edu.au/codes>

Address/Contact Update

Title First Name

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Country

Company

Position

Last Name

Publications I wish to receive are (tick)

Δ OreSolutions

Δ Short Course flyers

Δ Annual Report