THE VICTORIAN GEOLOGIST

May 2012

THE GEOLOGICAL SOCIETY OF AUSTRALIA
Victoria Division

# Next General Meeting

Thursday 31th May at 6:15 p.m.

## The Neogene evolution of the Murray Basin

**Dr. Sandra McLaren**

**School of Earth Sciences, University of Melbourne**

Fritz-Loewe Theatre, Earth Sciences Building, The University of Melbourne
Preceded at 5:30 p.m. by drinks and nibbles in the tea-room, 4th floor. Cost $2

The Murray Basin is a low-lying but extensive intracratonic depocentre in southeastern Australia, preserving an extraordinary record of Late Neogene sedimentation. A recent project at the University of Melbourne has seen the collection of new stratigraphic, sedimentologic and geochronologic data across the Murray Basin.
This new work has enabled a detailed re-evaluation of the basin's history to be completed.

Of particular interest are new data which suggest a significant role for: (1) tectonism in controlling basin evolution, and (2) progressive and step-wise climatic change that began in the early Pleistocene. This talk will present a summary of the project, with a particular emphasis on the implications of the new results for understanding the timing of onset of arid climatic conditions in southeastern Australia.

## AGM Reports

Details of the 2012-2013 Committee

| | |
|---|---|
| Chair; | David Cantrill |
| Treasurer; | Barbara Wagstaff |
| Secretary; | Adele Seymon |
| Monash Student Representative; | Syed Amir |
| Melbourne Student Representative and Newsletter Editor; | Matthew Bliss |
| Website and electronic newsletter distribution; | Ken McLean |
| Investment Portfolio; | David Moore, Barabara Wagstaff, David Cantrill |
| Geological heritage; | Sue White. |

Please note that James Llorca did not get nominated as deputy Chair as he is moving interstate. This position is still vacant and applications are welcomed.

## Heritage Subcommittee Annual Report 2011-2012

The Geological Heritage subcommittee continues to work towards better understanding of geological heritage in the state. The past year has again seen a continuation of the work we have been doing for some years. We have not had many meeting but email contact has been adequate.

The data-base of sites has been maintained. New sites continued to be added from previously published geological significance site reports and some recent consultancy reports. This data-base has had a number of requests for information.

The committee continues to be heavily involved with the Bacchus Marsh Council Trench management committee. Through this committee it was involved in a school presentation for Earth Science week.

It has also given advice to consultants and people wishing to object to particular development projects. The convenor was approached regarding the extensive works at Beaumauris but the major degradation occurred there some decades ago and the investigation insisted on this time was very extensive.

We are always very careful regarding objections as the GSA is not opposed to development per se. However some advice on the significance of particular sites continues to be useful.

There was an increase in the interest shown by local municipal planners in sites of geological significance in 2010 but this has not continued in 2011. The Parks Victoria enquiry is still in progress.

There has been an increase in the number of groups, including Parks Victoria who have been assisted with information on signage.

I wish to thank the members of the subcommittee for their work throughout the year.

Susan White

Heritage Convenor

## Have your say on Australia's Heritage Strategy

The Australian Government is seeking public input to help develop a new strategy for the identification, management and celebration of Australia's heritage. The new strategy will cover natural, Indigenous and historic heritage and set the direction for heritage policies and programs at all levels of government for the next 10 years. Public consultation is a critical step in the development of the strategy and comment is invited from the community about how we can best recognise, manage and celebrate our heritage. The feedback received in response to the public consultation paper now available will help inform the development of the Australian Heritage Strategy. For information on how to make a submission and to download the public consultation paper visit http://www.environment.gov.au/heritage/strategy/submissions.html Media releases from the Department and the Australian Heritage are available at http://www.environment.gov.au/about/media/dept-mr/index.html
**Submissions will be accepted up until 15 June 2012.**

## Awards Committee 2011 Annual Report

### 2011 Awards

I wish to thank the members of the Awards Committee for their continued support during the year.

The following awards were given:

### 2011 Selwyn Medal

The **2011 Selwyn Medal** was awarded to **Dr Gary Gibson,** Seismology Principal Research Fellow, School of Earth Sciences, University of Melbourne for his outstanding contribution to the understanding of the relationship between earthquakes and geological structure and processes, including the establishment of high-resolution seismograph networks throughout Australia to delineate active faults, and non-random seismicity (earthquake clustering in time and space) to understand more about the character of earthquakes.

With a professional career spanning over 40 years which includes teaching geophysics, and, in conjunction with his long-standing involvement with the Seismic Research Centre in areas such as modelling of the Victorian Crust, earthquake hazard and risk assessment, earthquake source and attenuation parameters in Victoria, earthquake alarm systems, earthquake recurrence models, ground motion models in SE Australia, Gary's work has had far-reaching impact and helped in our understanding of geological processes at depth.

His main interests continue to concern the relationship between earthquakes and geological structure and processes, including high-resolution seismograph networks to delineate active faults, and non-random seismicity (earthquake clustering in time and space) to understand more about the character of earthquakes. He is currently planning the developments needed for the next generation earthquake recurrence model for Victoria.

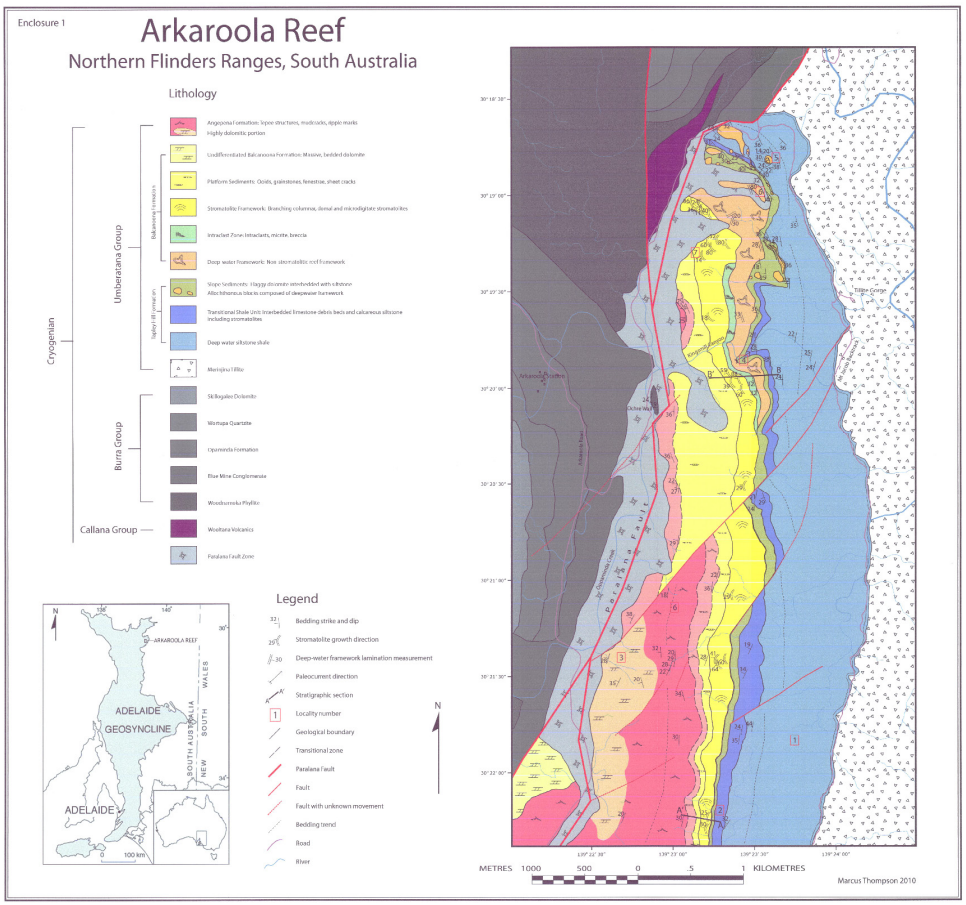
**The 2011 Canavan Prize** was awarded to **Sinead Ellen Gough** (Monash University) who achieved the highest marks for a second year student in an Earth Science related course in Victoria.

## The 2011 Thomas Awards

Two 2011 D E. Thomas Medals were awarded this year as the committee considered both submitted theses contained mapping components of a very high standard as required by the guidelines of the award together with original structural and stratigraphic interpretations of their field areas. Both study areas presented the students with very challenging field conditions.

**1. Marcus Thompson (University of Melbourne)** B.Sc. (Hons) thesis entitled: *Cryogenian Reefs and the Origin of Metazoan Life.*

Marcus Thompson conducted a detailed mapping project on an interglacial, Cryogenian reef in the Northern Flinders Ranges in South Australia. Preserved as dolomite, this reef is considered to have more similarities to reefs of the Phanerozoic Eon than to those of the Proterozoic. Through detailed field mapping, thin section analysis, a model for reef growth is presented in which a stromatolite framework prograded basinward over a non-photosynthetic chambered framework, with possible metazoan affinity. The extreme climate during the Marinoan is believed to have resulted in the extinction of this unique reef building organism, which is possibly the oldest metazoan structure in the fossil record by 75 million years.

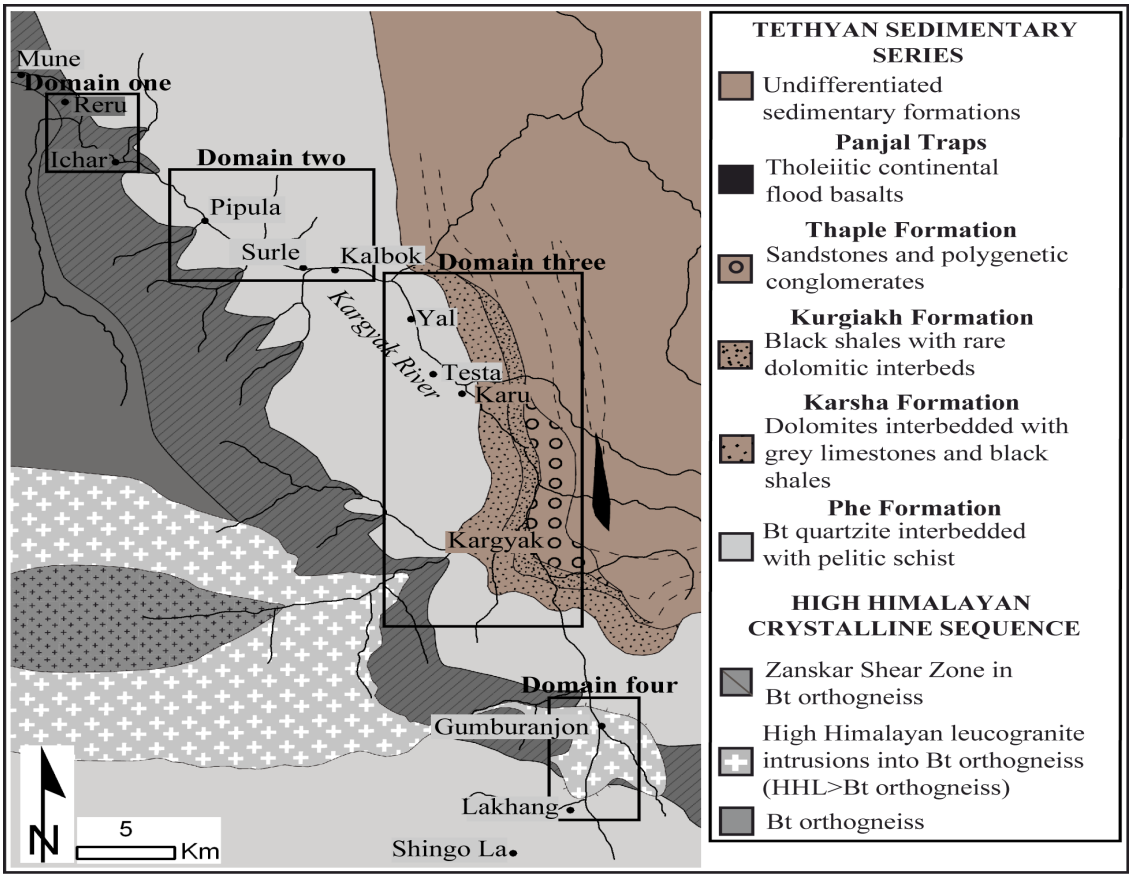



**Geological map of the study area from the thesis, Northern Flinders Ranges South Australia**

**2. Melanie Finch (Monash University):** B.Sc. (Hons) thesis entitled: *Extension in an active convergent setting: The South Tibetan Detachment System, NW Himalaya.*

The South Tibetan Detachment System (STDS) is a normal shear zone that crops out along the entire length of the 2400 km Himalaya. Simultaneous movement on the STDS and a parallel thrust fault to the south extruded the High Himalayan Crystalline Sequence (HHCS) in the Miocene. In the Zanskar Range the STDS is known as the Zanskar Shear Zone and overprints an earlier stage of thrusting.

Through use of field mapping in SE Zanskar combined with structural, textural, and fabric analysis, and metamorphic petrography, Melanie Finch's study details the structural evolution of the Zanskar Shear Zone. In this region, the Zanskar Shear Zone is a 2.7 km normal shear zone and its expression is dependent on structural position and lithology. Less competent lithologies were at deeper structural positions during normal movement record ductile normal movement only, while more competent lithologies at shallower positions preserved earlier ductile thrusting with brittle normal movement overprint.




**Regional geological map of the study area from the thesis, NW Himalaya.**

Congratulations to all the 2011 GSA awards recipients.

I. B. Campbell.

**Ingrid Campbell,**

**Chair, Awards Committee**

## Bicentennial Gold 88 Endowment

**Report for the Year 2011**

Applications by tertiary students in support of activities during 2012 from this Endowment in the realm of geoscience as applied to economic geology were again sought and assessed during the year.

Most of the applications received were focused on support for research and education/training at universities in WA, Tasmania and Victoria.

The sum of $10,000 was again made available for distribution for the year 2012.
As usual, the total value of applications far exceeded the funds available.

Our congratulations go to the recipients involved with the following projects at the tertiary institutions below:

- University of Tasmania – CODES:
  Assistance with Ph.D. research focused on aspects of sea-floor black smoker chimneys at Brothers volcano of the Kermadec Arc.

- The University of Melbourne:
  (a) Partial assistance with costs to present an annual lecture and field course on the Geology of Gold.

  (b) To assist a Ph.D. student using SEM methods to investigate magmatic fluids in mantle xenoliths entrained by kimberlite magmas.

- Monash University:
  Support for two Ph.D. students with training in the use of advanced computer software for 3-D modelling of complex geometries of geological structures.

Thanks for their valuable contribution to the assessment process are due to Ms Ingrid Campbell and to Mr Peter Forwood who agreed at short notice to stand in for Prof. Chris Wilson on the Working Group.

We also gratefully acknowledge the efficient secretarial support and effective promotion efforts provided by Ms Xanthus Weber of the AusIMM, as well as the continuing support given to this Endowment by the Director and its Trustees.

GERHARD K. KRUMMEI
Chairman – Working Group
BG88 Endowment

## Treasurer's Report 2011 (Audited)

*GSAV BALANCE SHEET 2011*
*Balance sheet as at the 31 December 2011*

| *CURRENT ASSETS* | *2011* | *2010* |
|---|---|---|
| ***Cash and equivalents*** | | |
| *Cash at bank NAB* | *$13,879.83* | *$ 4,498.61* |
| *Cash at bank Bank of Queensland a/c#998752674* | *$ 4,040.18* | *$ 8,968.61* |
| *Bank of Queensland Fixed Term deposit* | | *$ 10,000.00* |
| ***Cash receivable*** | | |
| *Publications* | *$ 2,365.50* | *$ 11,337.92* |
| *Capitation fees* | *$ 2,100.00* | *$ 5,700.00* |
| *Other debtors-franking credits receivable* | *$ 7,180.99* | *$ 5,029.98* |
| ***Stock on hand 2010 figures adjusted after stock take*** | | |
| *Selwyn symposium 1999* | *$ 5.00* | *$ 5.00* |
| *Selwyn symnposium 2007* | *$ 1,578.00* | *$ 1,578.00* |
| *Extended abtracts: Selwyn symposium 2008* | *$ 339.27* | *$ 339.27* |
| *Extended abtracts: Selwyn symposium 2009* | *$ 849.00* | *$ 909.00* |
| *Roadside geology Melbourne-Ballarat* | *$ (36.12)* | *$ (36.12)* |
| *Geology of Victoria* | *$32,966.40* | *$ 36,441.07* |
| *Total stock* | *$35,701.55* | *$ 39,236.22* |
| | *$65,268.05* | *$ 84,771.34* |
| ***Interest Bearing Securites*** | | |
| *Australian Foundatation Investment Company Unsec.Red.Conv Notes* | *$ 10,490.00* | |
| *ANZ Banking Group Limited Convertible Preference Shares (CPS3)* | *$ 10,330.00* | |
| *Macquarie CPS Trust* | *$ 11,799.00* | *$ 12,190.00* |
| *National Australia Bank Income Security* | *$ 16,394.70* | *$ 17,451.00* |
| *Westpac Stapled Preferred Security11* | *$ 20,494.50* | *$ 20,962.70* |
| *Woolworths WOWHC* | *$ 2,200.80* | |
| ***Shares in listed companies*** | | |
| *Australian Foundation Investment Company Ltd* | *$ 33,549.75* | *$ 41,208.75* |
| *AIX Australian Infrastructure Fund stapled securities* | *$ 34,213.11* | *$ 33,326.76* |
| *Australian and New Zealand Banking Group* | *$-* | *$ 14,710.50* |
| *BHP Billiton Ltd* | *$ 34,729.78* | *$ 51,947.00* |
| *Commonwealth Bank of Australia* | *$ 32,878.96* | *$ 33,914.36* |
| *CSL Limited* | *$ 5,120.00* | *$ 5,806.40* |
| *National Australia Bank Ltd* | *$ 35,040.00* | |
| *Westfarmers limited* | *$ 9,735.00* | |
| *Westpac Banking Corporation* | *$-* | *$ 24,431.00* |
| *Woolworths Limited* | *$ 18,574.00* | *$ 19,957.80* |
| *Total Assets-Net Assets* | *$340,817.65* | *$360,677.61* |
| *Loss in value of investments/assets* | *$(19,859.96)* | *$ (5,200.86)* |
| ***MEMBERS FUND*** | *$340,817.65* | *$360,677.61* |

*Profit and Loss Statement for the year ended 31 December 2011*

| | 2011 | 2010 |
|---|---|---|
| ***Income*** | | |
| Capitation fees | $ 3,464.17 | |
| Capitation fees recievable | $ 4,465.50 | $ 5,700.00 |
| Franking Credits | $ 4,267.86 | $ 5,029.98 |
| ***Profit/(loss) on disposal of investments*** | | |
| Australian and New Zealand Banking Group | -$ 1,193.14 | |
| Bendigo Bank Limited | | -$ 2,693.52 |
| BHP Billiton Ltd | $ 2,351.28 | |
| National Australia Bank Ltd | | -$ 1,351.75 |
| Telstra | | -$ 6,123.06 |
| ***Bank Interest*** | | |
| Bank of Queensland a/c#998752674 | $ 689.32 | $ 372.21 |
| ***Dividends received*** | | |
| Other debtors-franking credits receivable | $ 7,180.99 | |
| ***Equity income*** | | |
| Australian Foundation Investment Company Ltd | $ 1,748.25 | $ 1,748.25 |
| AIX Australian Infrastructure Fund stapled securities | $ 1,772.70 | $ 224.37 |
| Australian and New Zealand Banking Group | $ 403.20 | $ 466.20 |
| Bendigo Bank Limited | | $ 584.64 |
| BHP Billiton Ltd | $ 1,173.85 | $ 1,091.98 |
| Commonwealth Bank of Austalia | $ 2,137.60 | $ 1,135.60 |
| CSL Limited | $ 128.00 | $ 119.55 |
| National Australia Bank Ltd | $ 2,580.00 | $ 1,036.00 |
| Telstra | | $ 2,485.72 |
| Westfarmers limited | $ 280.50 | |
| Westpac Bank | $ 836.00 | $ 1,529.00 |
| Woolworths limited | $ 902.80 | |
| ***Interest Bearing Securites*** | | |
| JB Were Deposit notes | | $ 699.30 |
| Macquarie CPS Trust | $ 632.71 | $ 632.71 |
| MQG Convertible PS | | $ 643.20 |
| National Australia Bank Income Security | $ 1,620.76 | $ 1,198.51 |
| Westpac Stapled Preferred Security11 | $ 892.46 | $ 843.16 |
| Woolworths WOWHC | $ 21.08 | |
| ***Gross profit/loss from trading*** | $ 36,355.89 | $ 15,372.05 |
| | | |
| ***Expenditure*** | | |
| Audit and review of financial reports | $ 1,140.00 | $ 1,150.00 |
| Bank charges | $ 162.40 | $ 205.80 |
| Conference expenses | | |
| Educational outreach | $ 860.00 | $ 735.00 |
| Investment consultant fees | | $ 1,043.84 |
| Investment commisssion | $ 1,104.12 | $ 1,926.78 |
| Major purchases-medals | $ 4,338.00 | $ 5,620.00 |
| Meeting supplies etc. | | $ 217.57 |
| Meetings-other costs | $ 154.44 | $ 1,498.99 |

| | | |
|---|---|---|
| *Newsletter printing* | *$ 1,152.00* | *$ 1,633.00* |
| *Newsletter posting* | *$ 370.95* | *$ 429.15* |
| *Other postage, printing and stationary* | *$ 287.75* | *$ 311.68* |
| *Prizes to students and grants* | *$ 2,900.00* | *$ 5,550.00* |
| *Storage facility* | *$ 1,828.90* | *$ 652.50* |
| *Transfer to investment account* | *$ 4,148.00* | |
| ***Total expenditure*** | *$ 14,298.56* | *$ 20,974.31* |
| | | |
| *Profit/loss before income tax* | *$ 22,057.33* | *-$ 5,602.26* |
| *Profit/loss after income tax* | *$ 22,057.33* | *-$ 5,602.26* |

## Conference Report

**GSAV Student Scholarship Recipient**
**Helen Green, School of Earth Sciences, University of Melbourne**

I recently visited Europe on a multi-purpose trip aimed at both developing my knowledge of the techniques and theory associated with specific aspects of my project and presenting some of the initial results of my PhD project.

The first part of my three week trip involved a visit to Birmingham University in the UK where I met with Professor Ian Fairchild, an expert in the field of speleothem research and the head of the School of Geography, Earth and Environmental Sciences. Here I was able to meet some of Ian's Post Doctorate and Post Graduate students and toured the facilities and laboratories used at the university for geochemical analysis of speleothem deposits. Experiencing another University's set-up for Speleothem research and discussing experiences with other students was very important for me as I begin to think about what I might progress to once my PhD is submitted.

From here I travelled to Innsbruck in Austria where I attended the 2nd International Cave Monitoring Workshop, a gathering of 26 scientists and fellow PhD students from 14 different countries across the world.

Hosted by some of the leading experts in the field of cave monitoring, the workshop provided a forum for a detailed exchange of individual's experience of the practical aspects of cave monitoring in caves set in a wide range of geological environments.

The workshop provided me with some hugely beneficial information at the critical, preliminary stages of implementing my own cave monitoring system in Buchan caves here in Australia and as one of very few projects outside of Europe it also allowed me to put Australia on the map in terms of cave monitoring research!

Meeting with other scientists working on projects similar to my own made me feel part of a scientific community and also allowed me to fully appreciate the range of expertise from all over the world despite this being a relatively new field. I now have many contacts from which I can learn and with whom I can discuss the results of my monitoring data over the coming year.

The meeting was concluded with a day trip to Spannagel Cave, an 11 km-long high-alpine marble cave hosting Europe´s highest show cave, an experience which was vastly different to the caves I have visited here in Australia and one I will remember for many years to come.

The monitoring workshop was scheduled back-to-back with the EGU General Assembly in Vienna where along with a session dedicated to the scientific results of a range of monitoring studies, a separate "Speleothems and Paleoclimate" session allowed me the opportunity to present some of my own work. The session itself was extremely interesting and my poster generated a lot of useful discussion with both the cave monitoring scientists I had met at the Innsbruck workshop and other experts in my field. I was able to meet with Professor Frank McDermott, a paleoclimate researcher who carried out the original analysis on the Buchan stalagmite I have reanalysed as part of my PhD project.


Overall I found my trip to Europe extremely useful and constructive for the progression of my project of the next 18 months. I feel I learnt a lot from both the workshop and the conference, gathering knowledge and gaining experience in presenting and networking with other scientists in my field. I am also hugely grateful for the opportunity to visit a country I have never visited before and the chance to see a cave site in the Austrian Alps only made the experience all the more spectacular!

I can't thank the GSA enough for their kind support towards funding my trip and I am extremely grateful for both the experience it afforded me in Europe and the increased knowledge and heightened enthusiasm for my project I have brought back with me!

## Science News

### Chocolate and Diamonds: Why Volcanoes Could Be 'a Girl's Best Friend'

Science Daily May 16, 2012 (www.sciencedaily.com)

Scientists from the University of Southampton have discovered a previously unrecognised volcanic process, similar to one that is used in chocolate manufacturing, which gives important new insights into the dynamics of volcanic eruptions. The scientists investigated how a process called 'fluidised spray granulation' can occur during kimberlite eruptions to produce well-rounded particles containing fragments from Earth's mantle, most notably diamonds. This physical process is similar to the gas injection and spraying process used to form smooth coatings on confectionary, and layered and delayed-release coatings in the manufacture of pharmaceuticals and fertilisers.

Kimberlite volcanoes are the primary source of diamonds on Earth, and are formed by gas-rich magmas from mantle depths of over 150 km. Kimberlite volcanism involves high-intensity explosive eruptions, forming diverging pipes or 'diatremes', which can be several hundred metres wide and several kilometres deep. A conspicuous and previously mysterious feature of these pipes are 'pelletal lapilli ' -- well-rounded magma coated fragments of rock consisting of an inner 'seed' particle with a complex rim, thought to represent quenched magma.

*Pelletal lapilli. Diamond in kimberlite rock, Jwaneng Diamond Mine, Botswana*

These pelletal lapilli form by spray granulation when kimberlite magma intrudes into earlier volcaniclastic infill close to the diatreme root zone. Intensive degassing produces a gas jet in which the seed particles are simultaneously fluidised and coated by a spray of low-viscosity melt.

In kimberlites, the occurrence of pelletal lapilli is linked to diamond grade (carats per tonne), size and quality, and therefore has economic as well as academic significance.

Dr Thomas Gernon, Lecturer in Earth Science at the University of Southampton, says: "The origin of pelletal lapilli is important for understanding how magmatic pyroclasts are transported to the surface during explosive eruptions, offering fundamental new insights into eruption dynamics and constraints on vent conditions, notably gas velocity."

"The ability to tightly constrain gas velocities is significant, as it enables estimation of the maximum diamond size transported in the flow. Gas fluidisation and magma-coating processes are also likely to affect the diamond surface properties."

Dr Gernon and colleagues studied two of the world's largest diamond mines in South Africa and Lesotho. In the Letseng pipe in Lesotho, pelletal lapilli have been found in association with concentrations of large diamonds (up to 215 carat), which individually can fetch up to tens of millions of pounds. Knowledge of flow dynamics will inform models of mineral transport, and ultimately could improve resource assessments.

Dr Gernon, who is based at the National Oceanography Centre at Southampton's waterfront campus, says: "This multidisciplinary research, incorporating Earth sciences, chemical and mechanical engineering, provides evidence for fluidised granulation in natural systems which will be of considerable interest to engineers and chemical, pharmaceutical and food scientists who use this process routinely. The scale and complexity of this granulation process is unique, as it has not previously been recognised in natural systems."

## Student Funding Opportunities

# Geological Society of Australia (Victoria Division) Student Research Scholarships

The GSAV are pleased to offer up to $10,000 per year in scholarships available to honours and postgraduate students for assistance with travel costs associated with conferences and field work.

The scholarship is valued at up to $500 for travel within Australia and $700 for travel outside of Australia. The number of and value of the scholarships awarded each year is made at the discretion of the GSA(Vic) committee.

Funding will not be granted retrospectively and applicants are asked to submit forms no later than 6 weeks prior to their trip to give the committee time to consider the application.

Students that receive this scholarship are required to submit a report for publication in the newsletter, "The Victorian Geologist", following their trip. A presentation may also be requested by the committee, which will consist of a short, 10-15 minute presentation prior to the monthly seminar.

Applications forms can be scanned and emailed to: secretary@vic.gsa.org.au

or mailed to:

Geology Research Scholarships Victoria
Geological Society of Australia (Victoria Division)
GPO Box 2355
Melbourne VIC 3001

More information including eligibility criteria can be found on the form and by contacting Barbara Wagstaff (wagstaff@unimelb.edu.au)

## Something interesting to share? Want to see your name in print?

Don't be bashful, contribute to the GSA(V) monthly newsletter!

If there are any events, happenings, news, or views that would be of interest to the membership, please send your details and information to Matt Bliss at mbliss@student.unimelb.edu.au

**We'd be glad to hear from you**

## FORTHCOMING SEMINARS AND EVENTS

to be presented at

GSA (Victoria Division) meetings

Note: unless otherwise indicated, all 2011 talks will be held in the Fritz Loewe Theatre, Earth Sciences Building, University of Melbourne.

| | |
|---|---|
| June 28 | **NO MEETING!!!** |
| July 12 | The Annual A.W. Howitt Lecture<br>in conjunction with the Royal Society of Victoria<br>Speaker: Guy Holdgate<br>Topic: The Port Phillip Bay Story<br>**more details in next months newsletter** |
| July 26 | Nicole Cox<br>Topic: TBA |
| August 30 | TBA |

Please join the GSAV in welcoming our new members

Dan Uehara
Alessandra Pensa

Visit the GSAV on www.vic.gsa.org.au or the GSA on www.gsa.org.au
• Renewing your GSA membership is easy - it can now be done online. •

### Consider Contributing to TAG!

It is member contributions which make TAG a member magazine – please keep the contributions coming and assist with informing all of the membership (not just your Division) about your activities.

Please send your news to: tag@gsa.org.au

## GSA (VICTORIA DIVISION) COMMITTEE

Please address all correspondence to the GSA Victoria Division
GPO Box 2355, Melbourne, VIC, 3001
Internet address: www.vic.gsa.org.au

| OFFICE BEARERS | | | COMMITTEE | |
|---|---|---|---|---|
| Chair: | David Cantrill | 9252 2301 (BH) | David Moore | 0409 977 120 |
| Vice-chair: | | | Noel Schleiger | 9435 8408 |
| Secretary: | Adele Seymon | 0403 269 462 | Susan White | 9328 4154 |
| Treasurer: | Barbara Wagstaff | 8344 6537 (BH) | Matthew Bliss | 8344 9980 (BH) |
| | | | Syed Amir Mahmud | 9902 4206 (BH) |
| | | | Helen Green | 8344 7672 (BH) |

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|---|---|---|
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| Education: | Noel Schleiger | 9435 8408 |
| Heritage: | Susan White | 9328 4154 |
| Newsletter: | Matthew Bliss | 8344 9980 |
| Webmaster: | Ken McLean | 9905 1120 |

| OTHER CONTACTS | | |
|---|---|---|
| Geology of Victoria: | Bill Birch | 9270 5049 (BH) |

Newsletter deadline:
First Friday of the month except Dec & Jan
mbliss@student.unimelb.edu.au

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