

# THE VICTORIAN GEOLOGIST



August 2012

THE GEOLOGICAL SOCIETY OF AUSTRALIA  
Victoria Division

## Next General Meeting

Thursday 30th August at 6:15 p.m.

### Student Presentation Night

**Fritz Loewe Theatre, School of Earth Sciences, University of Melbourne**  
Talks will be preceded by drinks from 5:30pm in the 4th floor tearoom, cost \$2

**Exploring the potential of speleoethem paleoclimate records from S.E. Australia**

**Helen Green**  
University of Melbourne

**Using uncertainty simulations and automated 3D geophysical forward modelling to optimise geophysical inversion**

**Mark Lindsay**  
Monash University

**Non-traditional trace element investigations into arc magmatism**

**Matthew Bliss**  
University of Melbourne

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### MESSAGE FROM THE CHAIR

Over the last few months the committee has been working together to get the speakers and planning for the upcoming Selwyn Symposium in place. We hope it will be well attended like past events as we think we have an exciting line up. While I am promoting the Selwyn I would also like to raise the issue of the talks on the last Thursday of the month.

Attendances, particularly in winter, can be low but it is somewhat embarrassing when only a few members turn up for talks by speakers that may have travelled some distance. The low attendance suggests that we are not catering for your needs and if this is the case the committee would like to know, or even better have some new volunteers to come onto the committee.

This month we have a several of the students that we supported with grants report on the grant outcomes. For some of them this is their first experience in talking to a professional audience and they need our support. Last time we held this event it was very well attended by student members but relatively few of our longer term members. Perhaps our advertising led you all to think it was only for the student members. This is not the case and I hope that we will have a good turn out for the student talks on the 30th August.

David

### STUDENT SCHOLARSHIP RECIPIENTS

#### **Jack Simmons**

PhD Candidate

School of Geosciences, Monash University

I departed for Santorini on the 15th of May meeting with my supervisor, Ray Cas for an evening flight over the Greek islands and concluding with a wind influenced landing at the 'local' airport of Santorini. We were met at the airport by Professor Tim Druitt, our 'geo-tour guide' and associate-supervisor of this research. We stayed at Hotel Kalimera, apparently the geologist's hotel of preference, in the small town of Akrotiri in southern Thera, the main island of Santorini. White and blue, relaxed and photogenic are only a few words to describe Santorini. Cheap and broke are also appropriate, but this is all the better for the intrepid traveller. Chapels are dotted, throughout Santorini including Palae Kameni, an uninhabited volcanic island in the centre of the caldera. Many are dotted, apparently at random, at the top of mountains or the base of the cliffs, only accessible by makeshift hunting tracks. Three churches were located within 100m of my hotel room, the third of which I only discovered two weeks into my stay, and actually backed onto my hotel room, 10m from where I slept. According to the hotel managers, almost every family in Santorini have their own chapel or church, and in fact their church was located on top of a remnant spatter volcano.

To travel to my field areas I hired a moped. As it turns out, riding a moped is not all that much different from a bike, but without the physical exertion. The tourists are easily distinguished from the locals, largely by the presence of helmets and the more conservative approach to driving. In Santorini, road rules are interpreted more as a suggestion than a rule. Rarely is the

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speed limit applied or for that matter recognised and at no stage during my trip was a policeman observed. Over the following month, we traversed the caldera cliffs and extremities of Thera, in search of key localities.



Despite the cliff faces, many of the outcrops are readily accessible, primarily via hunting tracks 'manufactured' over the past years. A quick greeting or a poorly pronounced attempt at the word geologist (γεωλόγος), pronounced yeh-logus in Greek, with some finger pointing and the waving of my g-pick was typically sufficient to obtain access via someone's property to my field locality.

As a last resort, a translated letter detailing my research, helped clarify my intentions and mitigated any initial misgivings resulting from what must have appeared to be a stranger in the middle of nowhere running around with a potential weapon. However, generally English is very well spoken and access was really a non-issue with most locals surprised that I had asked for permission.

With the support of the GSAV research scholarship, I was able to undertake fieldwork, including stratigraphic logging at 6 sites, collect samples for further laboratory work, and clarify further thoughts on the direction of my research. To this end, I am extremely grateful to GSAV and Monash University for the opportunity to undertake research in such a spectacular place as Santorini.

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## Dan Uehara

PhD Candidate

School of Geosciences, Monash University

Between May 7th and June 5th 2012, I travelled to Mount Unzen to complete a volcanological study on the block and ash flow deposits and debris flow deposits produced by the lava dome collapse of Unzen volcano during and after the 1990-1995 eruption. The aim of my field trip was to develop detailed graphic logs of the block and ash flow deposits and debris flow deposits, locate key localities and get a better understanding of the volcano's history. Graphic logging also included collecting samples for further volcanological analysis such as sieving and grain size analysis, and geochemistry, and collecting photographs of the deposits studied. **Continued...**

This was my first trip to Japan even though my heritage is Japanese, making this trip very special for me. I arrived in Japan at 8 AM at Narita Airport and was soon at Mount Unzen and able to meet scientists working at the Shimabara Earthquake and Volcanological Survey, Nagasaki Prefecture, Japan. Here I was able to meet other professionals in the field of geology, gain access to books and video footage of the eruption, and most importantly gain an insight into Japanese life and culture. Admittedly Japanese culture and lifestyle is different to living in Australia, however it gave me a rare opportunity to learn about a new culture and live for a month in a new country.

The three most memorable experiences whilst in Japan were 1) having the opportunity to go inside the Elementary School, which was engulfed by several ash cloud surges, 2) visiting the memorial site of the victims who died in the 1990-1995 eruption and 3) a visit to the Debris Flow Museum, which had preserved several buried house. The reason for going inside the Elementary School was to collect ash cloud surge deposit samples. It was dangerous in some parts due to the unstable foundations, however it was amazing to see most of the furniture, books and even school children's bags well preserved after 20 years. The memorial site was particularly special because it reminded me why we need to understand volcanoes. I was also able to speak to several local people who were there during the eruption and had known people who died.



*The severely damaged Elementary school (left) and the summit of Fugendake (right)*

I would like to thank the Geological Society of Australia Victorian Branch for giving me the travel grant to support my fieldwork research at Mount Unzen in Japan. The scholarship helped with buying equipment whilst in Japan such as trowels and scrapers, and paying for the hire car and fuel. The equipment was particularly useful as outcrops were covered by vegetation and scree. Hiring a car was also invaluable because the samples collected each day were extremely heavy and riding a motorbike would have been dangerous. As my accommodation was approximately 5-10 km from my field area, some areas were particularly difficult to get to by motor bike. Without this scholarship fieldwork would have been a great deal harder.

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The Geological Society of Australia Victoria Division is proud to announce

## **Selwyn Symposium: GAGA 2012**

The Great East-Australian Geology Armwave of 2012  
Tectonics, modern analogues/events, mineralisation

Date: Thursday 27th September 2012

Cost: Non-members \$100  
Members \$80  
Students \$50

Location: Fritz Loewe Theatre, School of Earth Sciences  
University of Melbourne

Preliminary Full Day Program:

Session 1: Overview

Session 2: Tectonic models for SE Australia

Session 3: Granites and their implications

Session 4: Implications of the tectonic setting

A diverse group of speakers has been confirmed including Dick Glen, Ross Cayley, Mike Sandiford, John Foden, Frank Bierlein, David Moore and others...

They will be followed by the traditional Selwyn Lecture and dinner.

For registration and catering purposes, please email [secretary@vic.gsa.org.au](mailto:secretary@vic.gsa.org.au) to advise if attending the Symposium and if planning to attend the Selwyn Dinner

## Royal Society of Victoria Symposium:

### **'Climate Change Science: Impacts and Adaptation for Victoria'**

**20-22 September 2012**



**Location:** Basement Theatre, Spot Building, University of Melbourne.  
Corner of Berkeley and Pelham Streets, Carlton (198 Berkeley Street, near the top of Elizabeth St)

**Registration fee:** \$150 (full); \$60 (Student)

**Symposium:** Friday 21 September 9.00 am – 5.00 pm; Saturday 22 September 9.30am – 1 pm.  
Registration at <http://www.icms.com.au/climatechange/>

**Public Lecture (Free):** Thursday 20 September 6.30pm - Chair: Rob Gell  
Register at <http://climatechangelecture.eventbrite.com.au/>

- This is one of a series of annual Royal Society of Victoria Symposia on scientific issues of importance to Victoria. It is relevant to scientists, members of the public and policy makers.
- It will consist of formal presentations and panel discussions on three aspects of the science of climate change.
  - The Physical Science
  - Impacts on Victoria
  - Adaptation to Climate Change
- Speakers are leading academics from Universities, CSIRO, Bureau of Meteorology and the State Government. Most speakers have played leading roles in the assessments of the Intergovernmental Panel on Climate Change (IPCC)

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**SCIENCE NEWS****Scientist Discovers Plate Tectonics On Mars**

Story from ScienceDaily (Aug. 9, 2012; [www.sciencedaily.com](http://www.sciencedaily.com))

For years, many scientists had thought that plate tectonics existed nowhere in our solar system but on Earth. Now, a UCLA scientist has discovered that the geological phenomenon, which involves the movement of huge crustal plates beneath a planet's surface, also exists on Mars.

"Mars is at a primitive stage of plate tectonics. It gives us a glimpse of how the early Earth may have looked and may help us understand how plate tectonics began on Earth," said An Yin, a UCLA professor of earth and space sciences and the sole author of the new research.

Yin made the discovery during his analysis of satellite images from a NASA spacecraft known as THEMIS (Time History of Events and Macroscale Interactions during Substorms) and from the HIRISE (High Resolution Imaging Science Experiment) camera on NASA's Mars Reconnaissance Orbiter. He analyzed about 100 satellite images -- approximately a dozen were revealing of plate tectonics. Yin has conducted geologic research in the Himalayas and Tibet, where two of Earth's seven major plates divide.

"When I studied the satellite images from Mars, many of the features looked very much like fault systems I have seen in the Himalayas and Tibet, and in California as well, including the geomorphology," said Yin, a planetary geologist. For example, he saw a very smooth, flat side of a canyon wall, which can be generated only by a fault, and a steep cliff, comparable to cliffs in California's Death Valley, which also are generated by a fault. Mars has a linear volcanic zone, which Yin said is a typical product of plate tectonics. "You don't see these features anywhere else on other planets in our solar system, other than Earth and Mars," said Yin, whose research is featured as the cover story in the August issue of the journal *Lithosphere*.

The surface of Mars contains the longest and deepest system of canyons in our solar system, known as Valles Marineris (Latin for Mariner Valleys and named for the Mariner 9 Mars orbiter of 1971-72, which discovered it). It is nearly 2,500 miles long -- about nine times longer than Earth's Grand Canyon. Scientists have wondered for four decades how it formed. Was it a big crack in Mars' shell that opened up?

"In the beginning, I did not expect plate tectonics, but the more I studied it, the more I realized Mars is so different from what other scientists anticipated," Yin said. "I saw that the idea that it is just a big crack that opened up is incorrect. It is really a plate boundary, with horizontal motion. That is kind of shocking, but the evidence is quite clear." The shell is broken and is moving horizontally over a long distance. It is very similar to the Earth's Dead Sea fault system, which has also opened up and is moving horizontally. "The two plates divided by Mars' Valles Marineris have moved approximately 93 miles horizontally relative to each other, Yin said. California's San Andreas Fault, which is over the intersection of two plates, has moved about twice as much -- but Earth is about twice the size of Mars, so Yin said they are comparable.

Did the movement of Valles Marineris North and Valles Marineris South create the enormous canyons on Mars? What led to the creation of plate tectonics on Earth? Yin, who will continue to study plate tectonics on Mars, will answer those questions in a follow-up paper that he also plans to publish in the journal *Lithosphere*.

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**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](mailto: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](mailto:wagstaff@unimelb.edu.au))

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### **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](mailto: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.

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|                |                             |
|----------------|-----------------------------|
| September 27th | Selwyn Symposium: GAGA 2012 |
| October 25th   | TBA                         |
| November 29th  | TBA                         |

Please join the GSAV in welcoming our new members



Tyler Stewart  
Scott Ooi

Visit the GSAV on [www.vic.gsa.org.au](http://www.vic.gsa.org.au) or the GSA on [www.gsa.org.au](http://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](mailto:tag@gsa.org.au)



tag

### 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](http://www.vic.gsa.org.au)

#### OFFICE BEARERS

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Noel Schleiger 9435 8408  
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#### SUBCOMMITTEE

#### CONTACTS

Awards: Ingrid Campbell 9486 7160  
Bicentennial Gold: Gerhard Krummei 9820 2595  
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](mailto:mbliss@student.unimelb.edu.au)

GSA Inc - for membership and subscription enquiries or change of address:  
Business Office: Geological Society of Australia, Suite 61, 104 Bathurst Street, Sydney NSW 2000  
Email: [info@gsa.org.au](mailto:info@gsa.org.au) Tel: (02) 9290 2194 Fax: (02) 9290 2198

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The Geological Society of Australia Inc.  
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