

# THE VICTORIAN GEOLOGIST



June 2010

THE GEOLOGICAL SOCIETY OF AUSTRALIA  
Victoria Division

## Next General Meeting for 2010

Thursday 17th June at 7:30 p.m.

*The Geological Society of Australia (Victoria Division) and the Royal Society of Victoria present **The Annual AW Howitt Lecture***

### **Supermountains Superlife: clues from Victoria's geology on the rise of animals, humans and human civilisation**

**Rick Squire**

School of Geosciences, Monash University

*Royal Society of Victoria, 8 La Trobe Street Melbourne, 7:00pm*

*Pre-lecture refreshments 6:15pm, cost \$20*

*RSVP essential by 12 noon, 15th June 2010*

*([rsv@sciencevictoria.org.au](mailto:rsv@sciencevictoria.org.au)) or (03) 96635259*

Victoria's geology has influenced our lives in more ways than we realise. When our state was only a few months old, the discovery of huge and abundant gold nuggets lying in river beds like potatoes in a field triggered one of the greatest gold rushes in history. The Victorian Gold Rush not only drove an explosive rise in the state's population, attracting hordes of young enthusiastic and hard-working people from around the world, but it also generated immense wealth and prosperity. And it was on the back of that prosperity that The Royal Society of Victoria was founded in 1854.

But what is less known about our state's geology, is how the same rocks that played a crucial role in the Victorian Gold Rush played an even more important role in three of the most-remarkable events in Earth's history: the rise of animals between 575 and 520 million years ago; the rise of humans some 6 to 8 million years ago and the rise of human civilisation in the last 14.5 thousand years. In my talk I will show how the ancient sedimentary rocks that contain the unusually large gold deposits of the Bendigo-Ballarat-Stawell region played a key role in generating the conditions necessary for the rise of animals and humans, as well as influencing several of the key technological and cultural innovations associated with the rise of human civilisation. Come along and find out how.

## FORTHCOMING EVENTS

**12-14 July 2010**



### **Resources Victoria Conference and Technical Forum**

Melbourne Hilton on the Park

Hosted by GeoScience Victoria, the MCA - Victorian Division and PESA  
Day 3 (Technical Forum) is FREE

<http://www.resourcesvictoriaconference.com/>

**5-9 September 2010**



### **5ias Evolving Early Earth**

5th International Archean Symposium

Burswood Entertainment Complex Perth, WA

Presented by Geoconferences (WA) Inc

Final submission date for Abstracts is 12 February 2010. Authors  
informed of acceptance by 30 April 2010

<http://www.5ias.org/>

## **Monash University upcoming seminars**

### **Fri 11th June 2011, 12 noon, S10, Building 25, Clayton Campus:**

Dr. Margarete Jadamec (Postdoctoral Research Fellow, Monash University) will be presenting a seminar on *"Reconciling Surface Plate Motions with Rapid Three-dimensional Mantle Flow"*.

### **Fri 16th July 2011, 12 noon, S10, Building 25, Clayton Campus:**

Dr Hamish Campbell (Senior Scientist, Institute of Geological and Nuclear Sciences, New Zealand) will be presenting a seminar on *"The sinking of Zealandia: a significant geological constraint on the antiquity and origin of the native terrestrial biota of New Zealand?"*

Abstract: Landis et al. (2008, Geological Magazine 145: 173-197) drew attention to the possibility that the New Zealand region of Zealandia may have been totally submerged 23 million years ago. This geological suggestion has proved somewhat contentious, especially within the biological world. For various reasons, this idea is not easily tested but molecular biological research does seem to support it. The overwhelming DNA evidence from modern studies of diverse New Zealand native terrestrial biota indicates an Australian origin, not a Gondwanan origin. This talk will explain the geological basis for daring suggest possible total submergence of Zealandia, and will also attempt to address some of the biological concerns such a suggestion raises.

For more information please contact **Simon Jowitt**.

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### **GEOLOGIST AT LUNCH**



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What did the boy volcano say to the girl volcano?

I Lava You!



**AESC**  
australian earth sciences  
convention

**Earth Systems:**

change  
sustainability  
vulnerability

**4-8 July 2010**

**National Convention Centre  
Canberra**

## The Saltiest Body of Water on Earth - A Pond in Antarctica that Never Freezes!

Don Juan Pond, Antarctica could serve as a model for liquid water on other planets.

In so many ways, Don Juan Pond in the Dry Valleys of Antarctica is one of the most unearthly places on the planet. An ankle-deep mirror between mountain peaks and rubbled moraine, the pond is an astonishing 18 times saltier than the Earth's oceans and virtually never freezes, even in temperatures of more than 40 degrees below zero Fahrenheit.



The pond, which is a roughly 1,000- by 400-meter basin, is the saltiest body of water on Earth by far, some eight times saltier than the Dead Sea. While researchers more than 30 years ago reported finding abundant and varied microflora of fungi, bacteria, blue-green algae and yeasts, since then and during the Joye team's work, such life has been non-existent. Since the depth level and area covered by the pond (which is fed by hypersaline groundwater) have demonstrably varied over the years, this wasn't unexpected. What did surprise the team was that even with no life-forms present, they were able to measure nitrous oxide, perhaps best known to most people as the "laughing gas" used in dental procedures. (The amounts measured in the air were beneath a level that could make a person light-headed or giddy, as "laughing gas" can). "What we found was a suite of brine-rock reactions that generates a variety of products, including nitrous oxide and hydrogen," said Joye. "In addition to Don Juan Pond, this novel mechanism may occur in other environments on Earth as well and could serve as both an important component of the Martian nitrogen cycle and a source of fuel [hydrogen] to support microbial chemosynthesis."

<http://geology.com/press-release/don-juan-pond/> Republished from an April, 2010 press release by The University of Georgia.

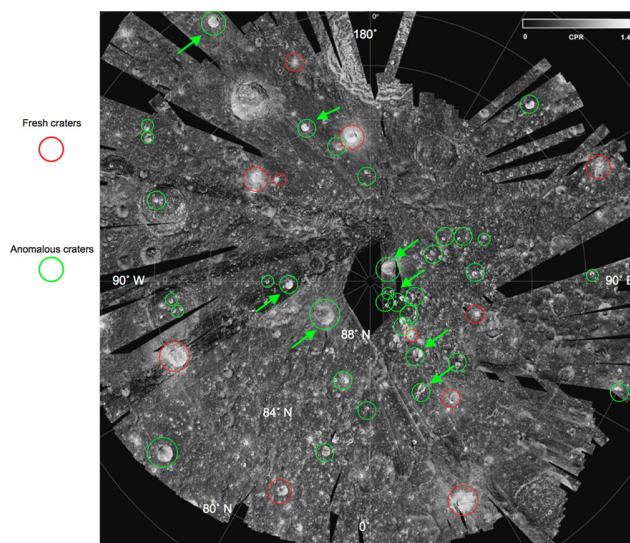


## Water Ice Discovered at the Moon's North Pole

The ice is in craters protected by permanent sun shadow

### At Least 40 Small Craters Contain Ice

Using data from a NASA radar that flew aboard India's Chandrayaan-1 spacecraft, scientists have detected ice deposits near the moon's north pole. NASA's Mini-SAR instrument, a lightweight, synthetic aperture radar, found more than 40 small craters with water ice. The craters range in size from 1 to 9 miles (2 to 15 km) in diameter. Although the total amount of ice depends on its thickness in each crater, it's estimated there could be at least 1.3 trillion pounds (600 million metric tons) of water ice.



The Mini-SAR has imaged many of the permanently shadowed regions that exist at both poles of the Moons. These dark areas are extremely cold and it has been hypothesized that volatile material, including water ice, could be present in quantity here. The main science object of the Mini-SAR experiment is to map and characterize any deposits that exist.

Read more at: <http://geology.com/press-release/water-on-the-moon/> (Republished from a March, 2010 press release by NASA)

## WELCOME TO OUR NEW MEMBERS

### Student membership:

*Julie Boyce Amy Cockerton*

*Ebony Hill*

*Kathryn Owen*

*Dean Baker*

*Mark Grujic*

*Ken McLean*

*Joanna Kowalczyk*

*Jackson van den Hove*

*Katherine Fox*

*Courtney Brown*

*Shannon Burnett*

### Member:

*Barbara Wagstaff*

## FORTHCOMING SEMINARS AND EVENTS

to be presented at  
GSA (Victoria Division) meetings

Note: unless otherwise indicated, all 2010 talks will be held in the  
Fritz Loewe Theatre, Earth Sciences Building, University of Melbourne.

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June 17      Royal Society of Victoria and the Geological Society of Australia (Victoria Division) present:

The **ANNUAL AW HOWITT LECTURE**

**Rick Squire**, Supermountains Superlife: clues from Victoria's geology on the rise of animals, humans and human civilisation

**\*Please note this is NOT the last Thursday of the month\***

July 29      TBA

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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 Alison Fairmaid ([a.fairmaid2@pgrad.unimelb.edu.au](mailto:a.fairmaid2@pgrad.unimelb.edu.au))

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

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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)



### GSA (VICTORIA DIVISION) COMMITTEE

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 Vice-chair: position vacant  
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#### OTHER CONTACTS

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#### Newsletter deadline

First Friday of the month except Dec & Jan  
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