



# The Rock Record – April, 2012

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### Please contribute to the SGS Newsletter

The SGS Newsletter is produced by the SGS executive. Letters, announcements, notices, comments, photos, news and information about SGS members, etc. are always welcome. Call an executive member or write to us at:

### Saskatchewan Geological Society

P.O. Box 234

Regina, SK S4P 2Z6

### SGS e-mail address:

[info@sgshome.ca](mailto:info@sgshome.ca)

### SGS Website:

[www.sgshome.ca](http://www.sgshome.ca)

All advertising inquiries should be directed to **Charla Philippon**

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**Tuesday, April 17, 2012**

## A Late Permian Hot, Anoxic, Toxic, Acid Bath

Dr. Stephen Grasby, *Geological Survey of Canada, Calgary*  
*Adjunct Professor, Department of Geoscience, University of Calgary (abstract attached)*

**Legion, Regina**

**Lunch: 11:45 a.m.**

Meeting: 12:00 – 1:00 p.m.

Members: \$10.00 and Non-members: \$15.00 for lunch

For those not having lunch the talk is free

**Please contact Lynn Kelley [lynn.kelley@gov.sk.ca](mailto:lynn.kelley@gov.sk.ca)**

**by Friday, 13<sup>th</sup> if you are planning to have lunch**

New work in the Sverdrup Basin in Canada's High Arctic is helping us understand the major changes in global ocean geochemistry that lead up to, and occurred across the worst extinction event in Earth History. Carboniferous to Early Triassic rocks record a remarkable transition from carbonate to silica dominated shallow shelf ecosystems. The near complete Late Permian eradication of carbonate producers in a clastic starved sedimentary basin created a void filled by siliceous sponges. Previous explanations for the inhibition of carbonate producers, invoking coldwater and nutrient limitations, are not supported by field observations. A new conceptual model suggests Sverdrup Basin waters became progressively more acidic in response to build up of atmospheric CO<sub>2</sub> through the Late Permian. Ocean acidification was initiated in response to amalgamation of the Pangea supercontinent which inhibited the silicate weathering-response through development of thick protective soil blankets, leading to runaway greenhouse conditions.

Around the same time deep-water anoxia initiated after the shelf was flooded by the Late Permian Transgression in mid to Late Changhsingian time, requiring a much more rapid and much greater vertical rise in the chemocline than that associated with relative sea level. Euxinic (H<sub>2</sub>S rich seawater) conditions developed just prior to the main extinction event that was associated with a significant pyrite rain-out event which stripped crucial bio-essential nutrients from anoxic seawater prior to the main disruption of the global carbon cycle. Eruption of the largest igneous provinces in Earth History lead to combustion of thick coal measures leading to massive CO<sub>2</sub> injection and toxic ash fall, causing runaway greenhouse warming, overheating of the world ocean, and widespread toxicity. This tipped the ocean geochemical systems back to a 'recovery mode' which allowed the Earth's ecosystem to begin a long protracted recovery.

## **Announcements and Events**

### **SGS Field Trip Meeting:**

This year's field trip planning meeting will occur on Wednesday April 18<sup>th</sup> at Bushwackers at 7pm. Murray Gingras from the University of Alberta will be leading the trip to Willapa Bay a modern estuary located in Washington State, over August 17-21. There is also the option of visiting Mount St. Helen's. Those interested in being involved should attend the meeting.

### **Luncheon Talk Speakers**

If anyone has any ideas for luncheon speakers please contact Lynn Kelley ([lynn.kelley@gov.sk.ca](mailto:lynn.kelley@gov.sk.ca)) or Kim Kreis ([k.kreis@sasktel.net](mailto:k.kreis@sasktel.net))

### **SGS Merchandise**

The SGS has a variety of reasonably-priced merchandise, mainly clothing, that is posted on the website: [www.sgshome.ca](http://www.sgshome.ca) for viewing. This includes seasonal items such as very nice golf shirts, t-shirts, and hats.

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