

# The Rock Record – October 2004

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All advertising inquiries should be directed to **Andre Costa**

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**Thursday, October 21, 2004**

**Patagonia: Fin del Mundo**  
A photographic journey through  
one of the last wildernesses.

**Jason Cosford**

J.D. Mollard and Associates

**Lancaster Room, Royal Canadian Legion**

Cash Bar: 11:30; Lunch: 11:50

Meeting: 12:15 – 13:00

Members \$7.00, Non-members \$11.00

Contact: Andre Costa 787-9104

By NOON, Monday, October 18, 2004

**Tuesday, November 16, 2004  
(Tentative)**

**Energy Supply/Demand Trends and Forecasts:  
Implications for a Sustainable  
Energy Future for Canada and the World**

**J. David Hughes**

Geological Survey of Canada

**Lancaster Room, Royal Canadian Legion**

Cash Bar: 11:30; Lunch: 11:50

Meeting: 12:15 – 13:00

Members \$7.00, Non-members \$11.00

Contact: Andre Costa 787-9104

By NOON, Friday, November 12, 2004

## **Patagonia: Fin del Mundo**

Jason Cosford  
J.D. Mollard and Associates

“The rare meeting with other humans was as startling as looking in a mirror for the first time. We entered Patagonia from the north, in September, and had spent only three days in this zone when we encountered a Swiss traveler coming from the south. He looked normal until we mentioned Patagonia and then a deranged chuckle transformed his face and words, “*You haven’t even begun to experience Patagonia!*” I remember backing away, but I’ve never forgotten him. I wonder if I now get the same crazed look when someone asks me about Patagonia.” Pam Ascario, *South America by Road*

A photographic journey through one of the last wildernesses.

## **Energy Supply/Demand Trends and Forecasts: Implications for a Sustainable Energy Future for Canada and the World**

J. David Hughes  
Geological Survey of Canada, Calgary

### **Abstract**

An analysis of world and North American energy production and consumption over the past several decades indicates strong growth. Even with the growth of "zero emission" nuclear and large hydro, hydrocarbons (oil, gas and coal) made up more than 85% of world primary energy consumption in 2003, and are forecast to make up more than 85% of a greatly expanded energy demand by 2025. Energy demand in the developing world is forecast by the Energy Information Administration to grow by 91% through 2025, when this region will account for nearly half of the world's energy consumption. The question is, are these forecast growth rates sustainable, given the magnitude and distribution of the world's remaining energy reserves, and what are some of the political and social ramifications of maintaining this rate of consumption? Natural gas in North America is of particular concern, as it is largely a Continental market (with the exception of about 2% LNG at present) and demand, particularly for electricity generation, is forecast to grow dramatically over the next two decades. This presentation focuses on the "Big Picture" and how Canada fits into it, as well as what must be considered going forward to assure a sustainable energy future.

## **Bio**

David Hughes is a geologist with more than 30 years experience studying the energy resources of Canada for the Geological Survey of Canada and the private sector. He is the Leader of the National Coal Inventory, which is a digital knowledge base on coal used to determine the availability of resources for conventional and non-conventional uses, including coalbed methane production and the sequestration of CO<sub>2</sub>. He is also Team Leader for Non-conventional Gas for the Canadian Gas Potential Committee. For the past several years, he has developed a keen interest in the "Big Picture", as it relates to the longer term prognosis for continuity of energy supplies and some of the political and environmental ramifications concerning their use.

(**Note:** This talk is tentatively scheduled for November 16<sup>th</sup>. If there is a change of date, you will be notified by email)

## **SGS Annual Summer Field Trip to Montana, August 20-24, 2004.**

This year field trip, lead by Dr. Don Kent and Dr. Ben Rostron (U of A) went to Zortman, Montana during August 20 to 24. This year we had 12 participants. Everything went well with good weather, good fellows, and good geology.



**Participants in the 2004 SGS field trip marvel at the limestone cliffs in Mission Canyon.**

The trip started with a visit to the T-rex Discovery Centre museum in Eastend followed by the K-T boundary outcrop in the Frenchman River Valley. Outcrops from basement to Jurassic were visited while in Zortman, including two potential lamproites. We also visited the Bearpaw and Judith River formations at the Missouri river valley. The last stage of the trip was lead by Dr. Karen Porter

(Montana Bureau of Mines and Geology) to the Cretaceous around Zortman and Bear's Paw Mountain (Chinook).

We would like to thank John Lake for, once again, putting the field trip together and until next year.

-Andre Costa

## **Mount St. Helens Update, October 13**

*Following is a report from the USGS on their ongoing monitoring of Mt. St. Helens in Washington. It is a fairly interesting read, especially the last paragraph.*

*A series of these updates can be read at:*

<http://vulcan.wr.usgs.gov/Volcanoes/MSH/CurrentActivity/framework.html>

Current status is Volcano Advisory (Alert Level 2); aviation color code ORANGE

Seismic activity remained at a low, but slightly increasing level overnight. Yesterday's visual observations and thermal imaging of the 1980-86 lava dome, the intensely deforming and uplifting area on the south side of the dome, and the new lava extrusion first seen on October 11 were hampered by steam clouds. Conditions appeared similar to those of October 11, with high temperatures (up to 600 degrees C)

around the fin-shaped lava extrusion in the western part of the uplift. The area of high temperature appears to have increased in size. Abundant steam continued to rise from the fin area to the crater rim, from which it was dispersed southeastward by strong winds.

A new instrument array was lowered onto the uplifting area on October 12 by helicopter. It contains telemetered seismic, GPS, and tilt instruments, as well as a microphone. It will provide critical information on rate of movement of the uplift as well as a close-in seismic station, which is proving useful in interpreting very small seismic events that do not appear at more distant stations. Today, field crews will take new thermal images of the crater floor and dome, make gas-sensing measurements, perform routine maintenance of GPS sites, and take hydrological measurements.

Wind forecasts from the National Oceanic and Atmospheric Administration (NOAA), combined with eruption models, show generally northerly winds. Any ash clouds will drift southward to southeastward.

As a result of the intense unrest of the past two and one-half weeks and recent observations, we infer that magma is at a very shallow level and is extruding onto the surface. Incandescence from hot rock or gases reflects off steam clouds and is visible from north of the volcano. During times of unrest, Mount St. Helens and similar volcanoes elsewhere typically go through episodic changes in level of unrest over periods of days to weeks, or even months. Such changes are in part driven by variations in the rate of magma movement. We expect fluctuations in the level of unrest to continue during coming days. Escalation in the degree of unrest could occur suddenly or with very little warning. There may be little time to raise

the alert level before a hazardous event occurs. Therefore, we continue to monitor the situation closely and will issue additional updates and changes in alert level as warranted.



**Mount St. Helens crater, dome, and uplift from the northeast. USGS Photograph taken on 11 October 2004, by Mike Poland**

### **Coming Events!**

Our program chairs Mike Gunning and Steve Whittaker have been doing an amazing job of lining up our fall and winter programs. Here are just a few of the events you can expect:

Tim Tokaryk of the Dinosaur Research Station in Eastend SK will be giving a luncheon talk in February about the latest findings with Scotty!

AAPG Distinguished Lecturer Jack Pashin will be giving a talk on Coalbed Methane in the Black Warrior Basin in Alabama in Late January.

Steve Ruff of the Jet Propulsion Laboratory will be the public lecturer in the Spring. He is a scientist with the Mars Lander program.