The Rock Record Nov 2007

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:

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All advertising inquiries should be directed to Nadene Hagen

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Athabasca Oil Sands: Understanding the Oil Sands from the Regional Scale to the Project Scale, Kearl. - A Case History

AAPG Distinguished Lecturer
Dr. Mike Peacock

Wednesday November 28th, 2007

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: Nadene Hagen 790-4160
By NOON, Tuesday, November 27th

Student – Industry Social at SIR Open House

Tuesday Dec. 4th,
5:30-7:00 pm
Delta Bessborough Hotel
Saskatoon

Students: come out and meet potential employers
bring your resume

Exploration Company Reps: come out and meet students interested in a career in mineral exploration

Refreshments will be served!

Sponsored by SGS, SMA and APEGS

Lessons from the geologic record

Dr. Ellen Morris Bishop
Oregon Paleo Lands Institute
Fossil, Oregon

Tuesday Dec. 4th
7:30-9:00 pm
Battlefords rm
Delta Bessborough Hotel
Saskatoon, SK.

SGS Annual Field Trip Talk

Stillwater Igneous Complex (Montana) and Yellowstone National Park (Wyoming)

By: Nadene Hagen

Thursday Dec. 20th

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: Nadene Hagen 790-4160
By NOON, Tuesday, November 27th

2007 SGS Student Career Night

The annual SGS U of R student career night was held on November 1st. We had two excellent and complimentary talks. The first was by Rebecca Hunter of Cameco Corp, which focused on employment opportunities in the Uranium exploration industry, and with Cameco in particular. Unfortunately Steve Halabura was unable attend and Bob Munday graciously agreed to speak on short notice. Bob gave an entertaining talk on his long and varied experience as a consulting geologist. We had a very good turnout and a fun and informative time was had by all.

We would like to thank our co-sponsors of this important event:
APEGS Student Development Committee
Saskatchewan Mining Association

Saskatchewan Geological Society Annual General Meeting will be held Saturday January 26th at Hotel Saskatchewan. Mark it on your calendar. More details will follow.

TALKS:

NOV 28TH, 2007

Athabasca Oil Sands: Understanding the Oil Sands from the Regional Scale to the Project Scale, Kearl. - A Case History

Dr. Mike Peacock
Imperial Oil, Calgary
AAPG Distinguished Lecturer

Abstract: The Lower Cretaceous McMurray Formation in the Athabasca area of northern Alberta, contains Canada's strategically important oil sands resource with an estimated 800 billions barrels in place. Approximately 120 billion barrels can be exploited through surface mining. Kearl is a mining opportunity operated by Imperial Oil with regulatory approval to develop 4.4 billion barrels. The development would be a truck and shovel operation similar to other current mine developments.

The regional geology of the Western Canada basin and the Athabasca area will be reviewed with Kearl positioned within that framework. The regional reservoir distribution of the McMurray formation is critical to understanding oil sands opportunities. The source and migration model for the Athabasca oil sands will also be presented.

The reservoir for the Kearl deposit, are the unconsolidated fluvial and estuarine sands of the Lower Cretaceous McMurray formation. These form complex reservoir channel systems with significant reservoir heterogeneity. Net pays range from 25 to 75 meters with excellent reservoir parameters. The bitumen has an 8-degree API and a viscosity of 1.7 million cp.

Fluvial-estuarine point bar reservoirs represent a large fraction of the resource that can be developed. Similar facies from the Syncrude mine can be organized into a hierarchy that subdivides channel-fills into bedsets, stories, bars and barsets. Inclined heterolithic stratification (IHS) surfaces can be identified.

Significant resource delineation drilling has occurred and some regional 2D seismic lines acquired, prior to project approval, to reduce the reservoir uncertainty and improve resource definition. This allows for a unique opportunity to analyze a complex depositional system with abundant well and core control. Software techniques that quickly interpret large datasets have been successfully tested on an analogue dataset. Laser imaging of the mine face, will also be useful for recording stratigraphy and determining the mined volume of ore.

DEC 4TH, 2007

Ancient Climates, Future Challenges:
Lessons from the geologic record

Dr. Ellen Morris Bishop
Oregon Paleo Lands Institute
Fossil, Oregon

Abstract: The accelerating recognition of climate change marks the rise of a new paradigm and new priorities for the 21st century. Despite its critical import and impact, many people are unsure of climate change's mechanisms, effects, past history, and may even doubt its reality. But the record is now unequivocal.

Mechanisms that have driven past global climate shifts are diverse. They arguably include changes in solar influx, orbital cycles, and meteorite impact. Throughout geologic time, greenhouse gas has also undeniably served as instigator or accomplice in abrupt climate shifts. Compelling evidence for the role of carbon dioxide and methane in past warming and cooling is provided by stable oxygen isotopes as well as atmospheric carbon measured with the dual parameters of stable carbon isotopes (carbon 12 and carbon 13) and leaf stomata. We are also aware of the timing, amount and types of gas emitted by past major volcanic eruptions.

Four well known, large geologic climatic shifts serve as guideposts for today. Each was accompanied by major extinctions, or major shifts in planetary life: The causes and effects of each of the following events will be discussed: 1) The Devonian extinction, 370 million years ago; 2) The Permian extinction, 250 million years ago; 3) The Triassic extinction event, 210 million years ago; and 4) The Paleocene – Eocene extinction, 55 million years ago. The geologic record may seem remote; however, it offers compelling lessons for today's climate crisis. First, greenhouse gases DO affect climate--and life on Earth--dramatically and lethally. Second: Greenhouse gas is being added to the atmosphere at geologically unprecedented rates. Third, whereas volcanoes were common villains in the past; today, WE are the sole major source of greenhouse gas. Oregon State University's Jane Lubchenco said, a year ago: "If society wishes to avoid catastrophic disruption of our lives, the time for action is now." The past global geologic record seems strong motivation to heed these words.

Biography: An accomplished geologist, writer, photographer, environmental advocate, and teacher, Ellen Morris Bishop presently serves as the Executive Director of the Oregon Paleo Lands Institute in Fossil, Oregon. This new non-profit is dedicated to connecting residents and visitors with the causes and effects of global climate change through time. With more than two decades of experience in geological research in the northwest and abroad, Dr. Bishop is well qualified to put climate change in the perspective of geologic time. She has earned degrees in geology from Dickinson College (B.S.) and Oregon State University (M.S. and Ph.D.) and completed postgraduate studies with the

geological research division of the Scripps Institution of Oceanography. Her research helped define Oregon's exotic terranes, including the Baker Terrane, and the terranes of the Blue Mountains. An avid educator, Ellen has held both research and teaching positions at Marylhurst University, the University of Arkansas, and Oregon State University. In these roles she has authored multiple technical publications and inspired future geologic researchers. She has lived and worked in communities throughout Oregon and regularly hikes the diverse backcountry of the Pacific Northwest. She specializes in field-based education. Ellen also has substantial training and experience as a professional photographer and science photojournalist. Her landscape photos have been used and displayed by the Sierra Club, Oregon Natural Resources Council, and the Nature Conservancy, and also grace earth science exhibits in many museums and visitors centers. While geologists have a mantra that the present is the key to the past, Ellen strongly believes that the past is also a key to the future. This has led her to use her expertise about geology, climates, and past ecosystems to inform the public about our critical role in influencing climate—and its potential severe consequences. As a science writer, Ellen has regularly informed the public about scientific, environmental, and technological issues. Her most recent book, *In Search of Ancient Oregon: A Geologic and Natural History,* won the Oregon Literary Arts award for best nonfiction work in 2004. As Director of the Oregon PaleoLands Institute, Ellen has developed a variety of classes and experiences that reveal the landscape’s history, its past ecosystems, and ancient climates to visitors. Her experience, insight, and passion have helped people understand their intimate connections to the past, the lessons of ancient climate changes, and the critical importance of today’s challenges.