



March 2007

# Los Angeles Basin Geological Society Newsletter

**March 22, 2007 Meeting: Dr. Jacob Lowenstern**

**AAPG Distinguished Lecturer**

*Will speak on*

## **Intrusion, Deformation and Degassing at the Yellowstone Caldera**

### **Speaker Synopsis / Abstract**

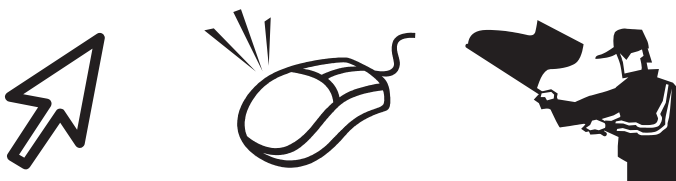
The Yellowstone caldera is well known for its cycles of uplift and subsidence over both historic and geologic timescales. Most models for deformation assume sources due to transport of magma or hydrothermal brine streaming through ruptured permeability barriers. Recent investigations of chemical mass balance at Yellowstone provide critical insights into potential sources of both deformation and heat. Volatile fluxes from the Yellowstone caldera have been calculated by summing the flux of Cl<sup>-</sup>, F, SO<sub>4</sub><sup>2-</sup>, and HCO<sub>3</sub><sup>-</sup> through the major rivers leaving the Yellowstone Plateau. Long-term studies show that Cl<sup>-</sup>, the primary non-H<sub>2</sub>O component of geothermal brines has not changed appreciably in output during recent periods of subsidence and uplift. Instead, Cl<sup>-</sup> flux is dominated by recharge constraints, increasing during periods of greater precipitation. Carbon is much more abundant than sulfur in Yellowstone's waters, but is even more dominant when combined with data on gas flux from fumaroles and diffuse degassing. In fact, CO<sub>2</sub> is about 300 times more abundant than Cl<sup>-</sup> on a molar basis as an effluent from the Yellowstone hydrothermal system. Similarly sulfur flux exceeds Cl<sup>-</sup> by about 25 times what one would expect from the concentrations in degassed volcanic rocks that could be leached. Phase equilibrium constraints imply that the shallow subsurface at Yellowstone (the upper two km) should be saturated with a CO<sub>2</sub>-rich vapor phase under most conceivable P-T conditions. This volumetrically significant (even dominant) phase should have an important role in pressurization of the hydrothermal system and may contribute to ongoing cycles of deformation within the caldera. The volatile "signature" from Yellowstone strongly suggests that gas discharge is controlled not by

the crustal granitic magma chamber but by subjacent basaltic intrusions that provide both heat and mass to the overlying system.

*Dr. Jacob Lowenstern is an AAPG Distinguished Lecturer. He received his BS from Dartmouth College, and an MS and PhD from Stanford University. He has been the Scientist-in-Charge at the Yellowstone Volcano Observatory in Wyoming, a Research Geologist and Postdoctoral Fellow with the USGS, and a Research Associate with the Geological Survey of Japan. He has authored or co-authored over 50 scientific papers and 50 abstracts. Dr. Lowenstern was given the Lindgren Award by the Society of Economic Geologists in 2000, and was a Fulbright Fellow between 1986-7 in Catania, Italy. Dr. Lowenstern is a member of GSA, AGU, the Society of Economic Geologists, and the International Association of Volcanology and Chemistry of the Earth's Interior.*

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Point your browser to [www.aapg.org/longbeach](http://www.aapg.org/longbeach)  
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**APRIL 1-4, 2007  LONG BEACH, CA**



**American Association of Petroleum Geologists**

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## Meeting Time, Place, Cost and Reservations

### Time:

**Thursday, March 22, 2007**

### Typical Meeting Agenda

**Lunch Served: 11:30 AM to 12:00PM**

**Announcements: 11:50 AM to 12:15 PM**

**Guest Speaker: 12:15 PM to 12:45 PM**

### Place:

**The Grand at Willow Street Conference Center** located at 4101 East Willow Street, Long Beach, CA. (562-426-0555). Take Lakewood Boulevard south from the San Diego Freeway (405), turn west onto Willow Street and turn right onto Grand Avenue at the sign for the Center. Park free in the garage structure.

### Cost:

**Lunch and Speaker: \$20.00 with reservations  
\$25.00 without reservations**  
**Student: FREE (Lunch and Speaker)**

### Meeting Reservations:

Make your reservations using our web site at [www.labgs.org](http://www.labgs.org), emailing [iaburto@breitburn.com](mailto:iaburto@breitburn.com) or calling Ivan Aburto at (213) 225-5900 ext. 234. **Reservations must be made prior to Tuesday** before the meeting, but walk-ons are always welcome.

## Upcoming 2007 Speaker Schedule

March 22, 2007 – The speaker will be AAPG Distinguished Lecturer Dr. Jacob Lowenstern speaking on “**The Yellowstone Caldera**”.

April 26, 2007 – The speaker will be Kristen Hepper speaking on “**The Evolution of Great Valley Group Hydrocarbons**”. Ms. Hepper is a UC-Riverside student commended by the Pacific Section AAPG for her work on this subject.

*If you have a speaker suggestion, please mention it to a Board member !!*

## AAPG – National

### Policy Statement: Climate Change Policy

The American Association of Petroleum Geologists, an international organization of over 30,000 earth scientists, supports expanding scientific climate research into the basic controls on climate, specifically including the geological aspects of climate change. This research should be undertaken by appropriate federal agencies involved in climate research and their associated grant and contract programs. Such support includes major research efforts into potential effects of decreasing as well as increasing temperatures and the mitigation of such effects. This research is important to sustain the ability of agriculture to feed the growing global population as well as to understand the effects of a colder climate upon society.

Geologists who study past climate variations understand that current climate warming projections fall well within documented natural variations in past climate. Therefore, for scientific reasons, the American Association of Petroleum Geologists does not support placing a carbon tax upon fossil energy sources as a tool to reduce carbon dioxide emissions, nor do we support any implementation of the Kyoto Protocol prior to Senate ratification.

### Rationale

One of the most contentious debates in American public policy today encompasses proposals to restrict emissions of the minor atmospheric gas carbon dioxide in order to mitigate a perceived human influence on global climate. Current proposals (Kyoto Protocol signed by the executive branch of the U.S. government, but not ratified by Congress) would federally tax crude oil at the rate of about \$43.50 per barrel (1). No reduction in existing levels of carbon dioxide in the atmosphere would result from this massive transfer of wealth from the private sector into the federal government.

Recognizing the potential impact on the United States and world economy of such taxation and restriction of energy use, it is important that greenhouse theories be tested thoroughly and quickly.

Scientific examination of the government case for such draconian taxation does not support the supposition of human-induced global climate change; in fact, the study resulted in recognition that the supposition is neither provable nor disprovable. The following observations are germane to the position:

1. Scientific research has been stimulated by the proposal. Recently published research results do not support the supposition of an anthropogenic cause of global climate change (2).
2. Detailed examination of current climate data strongly suggests that current observations do not correlate with the assumptions or supportable projections of human-induced greenhouse effects.

## Background

Geologists know:

1. Climate is constantly changing, and has varied significantly over human history. Climate changes over any time scale chosen, whether as small as a decade or as long as a geologic era.
2. Natural variability has been demonstrated to exceed any supportable estimate of human-induced variability.
3. Earth is still emerging from the Little Ice Age (A. D. 1250 - 1850). Significant rises in global temperature are a predictable consequence. The current level of global warming is real and natural.
4. Geologic controls on climate are significant. Long term changes can be demonstrated to occur congruently with geologic tectonic changes. Little is truly understood of the controls on short term changes. Solar variability, for instance, is significant in centennial to millennial changes, among other possible controls that should be examined.
5. Attempts to engineer Earth's very complex climate before understanding natural controls on climate are risky, if not impossible.

## Summary

Science requires that all aspects of theory be investigated and that assumptions be tested.

Human-induced global temperature influence is a supposition that can be neither proved nor disproved. It is unwise policy to base stringent controls on energy consumption through taxation to support a supposition that cannot be substantiated.

Climate naturally varies constantly, in both directions, at varying rates, and on many scales. Warming events have been historically good for most human society, while cold events have been deleterious to much of society. It is vital that climate research to examine the effects of a colder climate also be supported. Critical target areas of this research should include the potential impact of climate change on food production. Further research should concentrate on mitigation techniques to combat any serious effects of either colder or warmer climate, naturally or artificially caused, on the ability of the world to feed itself.

The AAPG urges that any actions to implement or to ratify the Kyoto Protocol and any future declarations of climate policy be delayed until there is better understanding of present climate and the impacts of policy implementation, as well as some provision for mitigating errors in policy. There is no current viable substitute for petroleum-based fuels in the world's energy budget and economy.

1. The Energy Information Administration has estimated that implementation of the Kyoto Protocol would result in a carbon tax of \$348 per ton of carbon (E.I.A. SR/OIAF/98-30). Murphy Oil Company estimates of about .12 ton of carbon per barrel of oil (or 8 barrels per ton of carbon) (Oil

and Gas Journal, Nov. 2, 1998, p.30) results in an estimated \$43.50 carbon tax per barrel of oil.

2. All geologists who are interested in the climate debate probably should read two books:
  - Moore, Peter D., Bill Chaloner, and Philip Stott, 1996, Global environmental change: Blackwell Science, Oxford, England, 244 p.
  - Lamb, H. H., 1995, Climate, History, and the Modern World: 2nd Ed., Routledge, NY, 433 p.
  - Three recent papers of interest to scientists are:
  - Bluemle, J. P., J. M. Sabel, and W. Karlen, 1999, Rate and Magnitude of Past Global Climate Changes: Environmental Geosciences, v. 6, n. 2, p. 63-75.
  - Fischer, H., M. Wahlen, J. Smith, D. Mastoianni, and B. Deck, 1999, Ice Core Records of Atmospheric CO<sub>2</sub> Around the Last Three Glacial Terminations: Science, v. 283, p.1712-1714.
  - Fan, S., M. Gloor, J. Mahlman, S. Pacala, J. Sarmiento, T. Takahashi, and R. Tans, 1998, A Large Terrestrial Carbon Sink in North America Implied by Atmospheric and Oceanic Carbon Dioxide Data and Models: Science, v. 282, p. 442-446.

## **LABGS and the 2007 AAPG National Convention field trips**

The LABGS is leading/sponsoring three field trips in conjunction with the national meeting. We need help with some of the trip work. If you have an interest and experience in field trips in the SoCal area please contact an officer to inquire about our needs. Please contact us now. We have day-trips to these areas:

### **The Santa Monica Mts Geology Los Angeles Urban Oil Fields Palos Verde Peninsula Geology**

*A synopsis of each trip is included below. For more information see the AAPG website [www.aapg.org](http://www.aapg.org).*

#### **Santa Monica Mt. Outcrops – Deep Production from the Los Angeles Basin**

*Trip #6                      Saturday 3/31      7:30 AM - 9 PM  
Cost: \$165*

Visit some of the fields and outcrops that have made the Los Angeles Basin one of the world's most prolific basins. Deep marine to shallow marine productive zones crop out in the Santa Monica Mts. The participant will be able to see up close some of the stratigraphy and depositional character of these significant production units.

(continued)

**Urban Oil Fields of the Los Angeles Basin – Geology, History, Oil and Urban Living**

Trip #7 Sunday 4/1 7:00 AM – 4:00 PM

Cost \$125

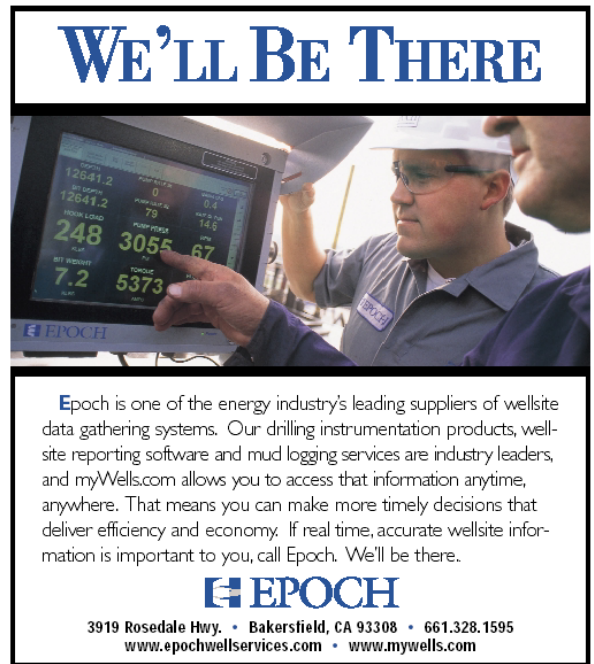
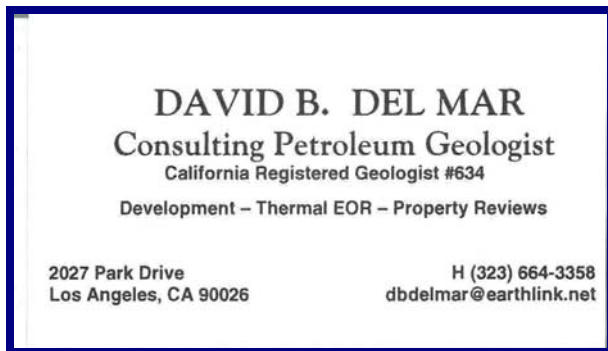
This trip visits some of the fields in the Los Angeles Basin that are along the Newport-Inglewood strike-slip and the Las Cienegas thrust fault trends. The journey will treat you to a sampling of the geology, environment, politics, energy, history and the future of the urban oil fields.

**Geology of the Palos Verdes Peninsula**

Trip #17 Thursday 4/5 7:00 AM – 6:00 PM

Cost: \$150

The Palos Verde Peninsula is a favorite location for field trips in the Los Angeles area for the many universities and college professors and their students and there is lots of geology to interested professional geologists as well. This trip will have stops at classic exposures, landslides, beautiful vistas and urban development, all mixed in with Cretaceous to present-day earth forces.

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**Advertising rates for a business card size ad is \$90 for one year (9 issues). These fees help offset our publishing costs. If interested please contact a Board member.**

**The LABGS Brunton Award**

The LABGS Brunton Award is given to a qualified undergraduate student attending a four-year LA Basin College or University currently pursuing a baccalaureate degree in Geology or the Earth Sciences.

*The Society is currently looking for qualified applicants for the 2007 award.*

SELECTION PROCESS

The above award winner was selected from candidates nominated by a faculty member. The winner was selected based on the following criteria:

- Grade point average in earth science classes.
- An enthusiastic or special recommendation from the college advisor, department chair, or mentor professor

**The Don Clarke Award**

The Don Clarke Brunton Award is given to a qualified student graduating from an LA Basin Community College with an Associate Degree, enrolled in a Geology or Earth Science curriculum with plans to pursue a baccalaureate degree in Geology or the Earth Sciences.

*The Society is currently looking for qualified applicants for the 2007 award.*

*(continued on the next page)*

To qualify for this LABGS award, the student must meet the following criteria:

- Plan to graduate in 2006 with an Associate Degree from a Los Angeles Basin Area Community College.
- Complete a Geology or Earth Science curriculum.
- Must be pursuing plans to enroll in a four-year college or university with Geology, Geological Sciences, or Earth Science as their designated major.

## Student Sponsorship

Both Halliburton and Schlumberger are defraying the cost to the Society of our students-at-the-monthly meetings program. *Students are free at all meetings.* Thank you.

## Elections

The time is fast approaching for two different election needs. Elections will be held in the spring:

- The LABGS needs individuals interested in being Secretary, Treasurer, Program Chair and President. This is a real issue, your elected officers have been in office for close to 4 years. Although the tasks are not great, the need for help is. Please volunteer or nominate somebody.
- We are searching for candidates for the House of Delegates positions. Although we do not have an open spot now I would like to have some staggering of future terms. Names would be appreciated.

## Contact Us – The LABGS Board

President: Jon Kuespert (213) 225-5900  
[jkuespert@breitburn.com](mailto:jkuespert@breitburn.com)

Program Chair: currently vacant

Treasurer: Steve Zigan, (949) 355-4467  
[szigan@eri-us.com](mailto:szigan@eri-us.com)

Secretary: currently vacant

OUR WEB SITE ADDRESS IS:  
[www.labgs.org](http://www.labgs.org)

## President's Note

To all our members,

This month's talk will be by Dr. Jacob Lowenstern on "**Intrusion, Deformation and Degassing at the Yellowstone Caldera**". This is the second of our two-part series on volcano-related subjects (Dr. Gene Fritsche gave a very interesting talk on Santa Monica Mountain volcanics last month). Dr. Lowenstern, an AAPG Distinguished Lecturer, should give another great one ! ! ! !

I have included the AAPG – National Policy statement on **Climate Change** for you to read. Last month in Tulsa (*as in Oklahoma*) there was a heated debate at the Leadership Conference on this formal position. Approximately half of the attendees at the Conference thought the statement should be different. More discussions will take place at Long Beach in the House of Delegates meeting. Your delegates, Don Clarke, Reinhard Suchsland and me need, *no want*, your feedback on this extremely important topic. Your job and lifestyle today will be impacted, and your future generations need a direction today! This is too important of a subject to be evaluated by politicians. Please give us your feedback before the meeting, without it we can only guess, and this is far too relevant an issue for that.

And the Convention is here!! See the ad on the second page. This year the National AAPG Convention, is to be held ~April 2-4 in Long Beach, CA . . . our backyard! **Register now!** This will be the most-sponsored and one of the best attended conventions ever in California.

Thanks!

Jon



# Los Angeles Basin Geological Society Membership Form

**Join the LABGS and become a member of the Pacific Section AAPG all for one low price of \$12.00 per year - 2 West Coast Geoscience Organizations for the price of one**



### Membership Benefits

- LABGS Membership
- Monthly Luncheon Meetings with Strong Technical Programs
- Pacific Section AAPG Membership
- Pacific Section AAPG Bi-Monthly Newsletter
- Discounts for PSAAPG Bookstore Publications
- Bi-Annual West Coast Geoscience Directory - *next edition 6/03*
- Networking and Social Opportunities with Fellow Geoscientists

<b>Current Annual LABGS/PSAAPG Dues</b>	
1 Year Option = \$12.00	\$ _____
3 Year Option = \$36.00	\$ _____

<b>Extended E-Mail Announcement List Fees</b>	
To receive meeting notices from SJGS and CGS	
1 Year Option = \$12.00	\$ _____
3 Year Option = \$36.00	\$ _____

<b>PSAAPG Foundation Contributions</b>	
B. Hacker Publication Fund	\$ _____
Martin Van Couvering Fund	\$ _____
Dibble Map Foundation	\$ _____
California Well Sample Repository	\$ _____
John Kilkenny Scholarship Fund	\$ _____
PSAAPG Foundation Trust Fund	\$ _____

<b>TOTAL PAYMENT</b>	
Total Amount Enclosed	\$ _____

<b>Essential Member Information</b>	
Last Name	_____
First Name	_____
Middle Initial	_____
E-Mail Address	_____
Mail Address	_____
<i>Res or Bus ?</i>	_____
	_____

<b>Additional Directory Information</b>					
Employer	_____				
Position / Title	_____				
Bus Phone #	_____				
Res Phone #	_____				
Fax Phone #	_____				
Spouse's Name	_____				
Education	<table style="width: 100%; border: none;"> <tr> <td style="border: none; text-align: center;"><i>Highest Degree</i></td> <td style="border: none; text-align: center;"><i>Year</i></td> </tr> <tr> <td style="border: none;">_____</td> <td style="border: none;">_____</td> </tr> </table>	<i>Highest Degree</i>	<i>Year</i>	_____	_____
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School	_____				

**Signature** \_\_\_\_\_

*Annual membership is handled through PSAAPG and runs from July 1, through June 30. If you are already a current member of PSAAPG and you selected LABGS affiliation you are already a member of the LABGS.*

**Please Make Checks out to PSAAPG and mail along with member form to:  
PSAAPG P.O. Box 1072, Bakersfield, CA 93302**