

# NORTHERN CALIFORNIA GEOLOGICAL SOCIETY



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## MEETING ANNOUNCEMENT

**DATE:** Wednesday, February 28, 2007

**LOCATION:** Orinda Masonic Center, 9 Altarinda Rd., Orinda

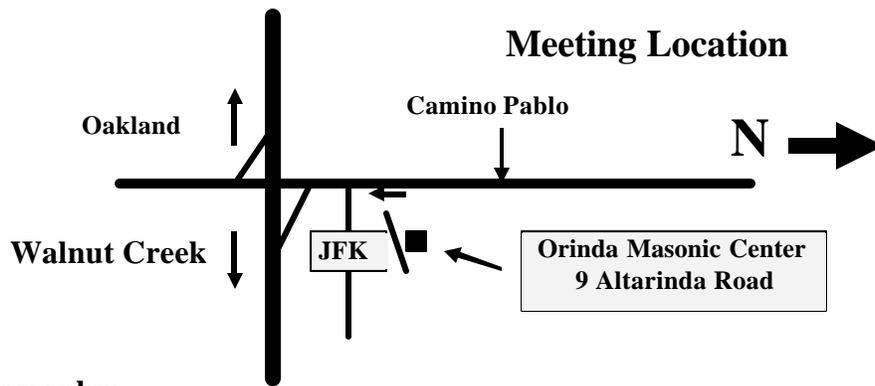
**TIME:** 6:30 p.m. Social; 7:00 p.m. talk (no dinner) Cost: \$5 per regular member; \$1 per student member

**RESERVATIONS:** Leave your name and phone number at 925-424-3669 or at [danday94@pacbell.net](mailto:danday94@pacbell.net) before the meeting.

**SPEAKERS:** *Dr. Paul Belasky, Ohlone College, Fremont*

*The real “geopoetry,” and the “poets of the soil”:  
Geological school of 20<sup>th</sup> century poetry in St.  
Petersburg, Russia, explores why we are geologists*

This talk will be about “geopoetry”, but not the one by Harry Hess. It will be about real “geopoetry” - modern Russian poetry on earth science themes. Few outside of Russia know that an important movement in 20th century poetry was started in St. Petersburg by geology students at the Leningrad Mining Institute in the 1950’s and was called the “geological school of poetry”. Some of their poems laid foundation to a new genre of unofficial, brutally honest, and often politically risky songs that were sung in the kitchens, scientific research institutes, and around campfires throughout the Soviet Union. These poems and songs played a big role in changing attitudes and opening up Soviet society in the 1960’s. The earth and soil represents one of the main themes for the poets of the geological school. So much so that other poets have nicknamed them “pochvenicks”, which in Russian translates to “poets of the soil”. This talk explores reasons why they (and perhaps we also) have become geologists. It includes my translations of about a dozen of their poems on geological themes (many of them translated for the first time) and cultural and biographical context for this remarkable phenomenon in the history of geology.



### Biography:

Dr. Paul Belasky is an Associate Professor of Geology at Ohlone College, Fremont. Paul Belasky was born in St. Petersburg, Russia and moved to the U.S. in 1974 at the age of 14. He grew up in California and studied geology, paleontology and, specifically, Late Paleozoic paleobiogeography at UC Berkeley, San Jose State, and UCLA. He traveled and did field work in many parts of Russia, Kazakhstan, and other former republics of the Soviet Union. He has worked as a Russian-English translator for a variety of organizations (including oil companies and Yu Luzhkov, the current Mayor of Moscow) and has written (and occasionally published) songs and poetry in Russian. So he jumped at the chance to translate and write about the work of the geologist poets of St. Petersburg, "the poets of the soil".

**Have You Renewed? NCGS Observes an "Academic" Year (September to June). Dues are payable beginning in September. If you have not yet paid for the 2006 – 2007 year, this will be your last newsletter!!**

Northern California Geological Society  
c/o Mark Detterman  
3197 Cromwell Place  
Hayward, CA 94542-1209

*Would you like to receive the NCGS newsletter by e-mail?* If you are not already doing so, and would like to, please contact **Dan Day** at [danday94@pacbell.net](mailto:danday94@pacbell.net) to sign up for this service.

# NCGS 2006 Calendar

Wednesday February 28, 2007

**Dr. Paul Belasky**, Ohlone College, Fremont  
*The real "geopoetry," and the "poets of the soil":  
Geological school of 20<sup>th</sup> century poetry in St.  
Petersburg, Russia, explores why we are geologists*  
7:00 pm at Orinda Masonic Center

March 15, 2007 **AAPG Distinguished Lecture**

**Dr. Jean-Laurent Mallet**, Ecole Nationale  
Supérieure de Géologie, Nancy, France,  
*Integrated earth modeling: From seismic  
interpretation to flow simulation in reservoirs*  
1:00 pm; Room D-2193; Chevron, 6001 Bollinger  
Canyon Rd., San Ramon

To arrange for a visitor tag, please contact Beverly  
Reynolds at [BeverlyReynolds@chevron.com](mailto:BeverlyReynolds@chevron.com) by 4:00  
PM March 14<sup>th</sup>. For a map of Chevron Park: [\[PDF\]](#)

Wednesday March 28, 2007 (tentative)

**Jeff Unruh**, UC Davis & William Lettis and Assoc.  
*Geologic History of Mt. Diablo*  
7:00 pm at Orinda Masonic Center

Wednesday April 25, 2007

**Isabel Montanez**, UC Davis  
*Evidence for Rapid Climatic Variation in the  
Geologic Past*  
7:00 pm at Orinda Masonic Center

Wednesday May 30, 2007

**TBA**  
7:00 pm at Orinda Masonic Center

Wednesday June 27, 2007

**Jeffery P Schaffer**, Napa Valley College  
*Constraints on Sierra Nevada Uplift and Glaciation*  
7:00 pm at Orinda Masonic Center

**Summer Break**

Wednesday September 26, 2007

**TBA**  
7:00 pm at Orinda Masonic Center

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## Upcoming NCGS Field Trips

April 21, 2007 *Field Trip to the World's  
Smallest Mountain Range:  
The Sutter Buttes*  
**Dr. Brian Hausback**  
**Martin Steinpress,**  
**Organizer**

May 12, 2007

*Devils Slide, Thomas  
Whitman, Cal-Trans*

Spring 2007  
(Tentative)

*Extraordinary Fluid  
Pressure Release at Cantua  
Creek,*  
**Dr. Mel Erskine**, Consultant

Spring / Summer  
2007 (Tentative)

*Modern Geophysical  
Techniques for Site  
Characterization,*  
**Dr. Mitchell Craig**, Cal State  
University East Bay

July 7 & 8, 2007

*Crustal Deformation of the  
Eastern Sierra Frontal  
Fault, Dylan Rood, LLNL  
and UC Santa Barbara*

Do you have a place you've wanted to visit for the  
geology? Let us know. We're definitely interested in  
ideas. For those suggestions, or for questions  
regarding, field trips, please contact Rob Nelson at:  
[rlngeology@sbcglobal.net](mailto:rlngeology@sbcglobal.net)

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## Peninsula Geologic Society

### Upcoming meetings

For an updated list of meetings, abstracts, and field  
trips go to <http://www.diggles.com/pgs/>. The PGS has  
also posted guidebooks for downloading, as well as  
photographs from recent field trips at this web  
address. Recent field trips include: *The 1906  
Earthquake and the San Andreas Fault on the San  
Francisco Peninsula* (2006), *Granites in the  
Franciscan* (Fall 2005), *San Andreas Fault - Carrizo  
Plain* (Spring 2005), *Panoche and Tumey Hills*  
(2004), *White-Inyo Range* (2002), *Napa Wine County*  
(December 2001), *Mount Shasta and the Klamath  
Mountains* (May 2001), *Big Sur (Salina / Nacimiento  
Amalgamated Terrane, Big Sur coast Central  
California, 2000)*, and the *Northern Sierra Nevada  
(Geologic Transect of the Northern Sierra Nevada  
Along the North Fork of the Yuba River, 1982)*.  
Posted upcoming meetings include the following  
topics and dates:

- March 13, 2007, Ross S. Stein, USGS Earthquake  
Hazards Team, *Earthquake Hazards of Tokyo -- A  
Global Problem*. Dinner in Hartley. Lecture in  
320-105
- April 10, 2007, TBA. Dinner in 320-109. Lecture  
in 320-105

- May 8, 2007, Jacob B. Lowenstern, USGS, Scientist In-Charge, Yellowstone Volcano Observatory - *What's cooking at Yellowstone*. Dinner in 320-109. Lecture in 320-105
- June 5, 2007, Elizabeth Miller, VP address, *on the Wrangell connection*. Also, Elections. Dinner in Hartley. Lecture in 320-105

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## NCGS Website Used by Local Student

The NCGS was recently contacted by a student at the Berkeley City College conducting web research on the Point Reyes National Seashore for a term paper. Ms. Laralyn Lee was interested in using the photos and descriptions of the pillow basalts along Pt. Reyes-Petaluma Road from the NCGS Pt. Reyes Field Trip page.

Previously the NCGS has been contacted by a student in geology from a university in North Carolina that was interested in using photos and information on the Brewshcist II field trip page (the Jenner Blueschists and Eclogites).

The NCGS is pleased that not only is the website of interest to members, but is also useful and educational to students (and even non-students!) in a much wider region (at least across the country).

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## *Geology of the San Francisco Bay Region Wins Award*

The Society for Technical Communication (STC) has named *Geology of the San Francisco Bay Region* a Distinguished Award winner in its recent Northern California Technical Communication Competition.

The book by **Professor Doris Sloan** and **photographer John Karachewski** was published this fall by the University of California Press as part of its California Natural History Guide series. The authors, both members of the NCGS, gave a presentation based on their work at the September 2006 NCGS meeting.

The award was presented by NCGS Member **Patrick Lufkin**, co-chair of the competition, at the January meeting of the NCGS. According to Lufkin, the judges felt that the book was beautifully written, and that it did an exemplary job of explaining the Bay Area's complex geology to its intended audience. The judges were especially impressed by how skillfully the book marshaled the various tools of technical communication,

organization, navigation, text, photographs, illustrations, maps, tables, glossaries and the rest to make its points.

The STC is an international professional association of technical writers, editors, publication managers, academics, and others interested in improving the quality of technical communication. As part of the STC's mission, many of its local chapters hold regional technical communication competitions each year. This year the Northern California competition was sponsored by the Berkeley STC chapter and managed by the Kenneth M. Gordon scholarship for technical communication.

Lufkin said that as a regional winner, *Geology of the San Francisco Bay Region* has also been entered in the STC's international competition. Winners at the international level will be announced at the STC's annual convention in Minneapolis in May.

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## ***THIS WEEK IN SCIENCE***

November 17 2006, 314 (5802)

### **Cold Snap**

The shattering of rock by ice freeze has long been thought to be caused by volumetric expansion when water distributed within the rock freezes. However, **Murton *et al.*** (p. [1127](#); see the Perspective by [Hallet](#)) demonstrate experimentally an alternative mechanism, called ice segregation, which operates when there is a temperature gradient. As the freezing front moves through the rock, it squeezes water from its pores into pockets where ice lenses form, which causes the rock to crack. Cold-room experiments quantified this process by monitoring heave, temperature, moisture, and pore-pressure for two distinct thermal regimes. The results are verified with numerical modeling and are consistent with field observations. In warming climates, such fracturing may increasingly destabilize permafrost in polar regions.

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## ***THIS WEEK IN SCIENCE***

November 24 2006, 314 (5803)

### **Reevaluating Greenland Ice Sheet Melting**

The rate at which Greenland Ice Sheet is melting appears to be accelerating. **Luthcke *et al.*** (p. [1286](#), published online 19 October; see the Perspective by [Cazenave](#)) report results from an analysis of data collected by GRACE (Gravity Recovery and Climate Experiment), the pair of satellites launched in 2002, that can follow melting by measuring tiny variations in gravity caused by the redistribution of Earth's mass. Like other recent studies, they find that Greenland is losing ice at an alarming rate,  $101 \pm 16$  gigatons (Gt) of ice per year

from 2003 to 2005, compared to the average of about 12 Gt of ice per year for the decade between 1992 and 2002, and they see that ice sheet appears to be losing mass along its southern edges and gaining slightly in its interior. However, the rate they have calculated is much less than other recent estimates, which are closer to 240 Gt of ice per year for the same period. Why the method used in this estimate is so much less than in other stories, and which estimate is correct, has yet to be resolved.

CREDIT: LUTHCKE *ET AL.*

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## ***EDITORS' CHOICE: HIGHLIGHTS OF THE RECENT LITERATURE***

### **GEOPHYSICS: Rumbles After Rain**

Water buried in the earth has appeared to cause earthquakes beneath certain reservoirs and in other areas with fluctuating groundwater levels. The fluid is thought to lubricate faults and alter pressure, thus making it easier for rocks to slip. Hainzl *et al.* have monitored seismic signals from the landscape surrounding Mount Hochstaufen in southeastern Germany, and they find that minor earthquake swarms tend to follow periods of high precipitation there. Seismic activity has been observed in this range of limestone and dolomite mountains for some 600 years, although such behavior is unusual in the wider region. The earthquakes tend to be small but numerous: approximately 1100 small shallow earthquakes (with moment magnitudes less than 2.4) were detected by a seismic array in 2002. Most earthquakes occurred in the summer months, particularly after wet periods in March and August. The resulting seismic events correlate in space and time with the calculated distribution of pore pressure changes due to diffusing rainwater and the frictional behavior of faults. The seismicity data indicate the sensitivity of the Earth's crust to local disturbances and offer a potential means of predicting earthquakes on the basis of weather patterns in such regions. -- Joanne Baker

*Geophys. Res. Lett.* **33**, L19303 (2006).

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## **Canon National Parks Science Competition**

The Canon National Parks Science Scholars Program has announced its 2007 competition. The program is a collaboration among Canon, the American Association for the Advancement of Science and the US National Park Service. **The program will award eight \$80,000 scholarships to Ph.D. students** to conduct research critical to conserving the national parks of the region.

Research projects in the biological, physical, social and cultural sciences are eligible, as well as projects in technology innovation in support of conservation science. Applications must be received by May 3, 2007. For information about the program and a copy of the application guide, please visit the website: [www.canonscholars.org](http://www.canonscholars.org).



## **San Luis Basin of Colorado and New Mexico September 7-9, 2007**

**Preliminary Announcement February 1, 2007**

The 2007 Friends of the Pleistocene—Rocky Mountain section is pleased to announce our 48<sup>th</sup> (pseudo-annual) field trip to be conducted in the San Luis Valley of southern Colorado and northern New Mexico from Friday Sept. 7th to Sunday Sept. 9th, 2006. This section of the FOP has been dormant for 3 years, so we are hoping to restimulate our Friends in the Rocky Mountains.

**Thursday, Sept. 6th:** Registration and overnight [group camping at Great Sand Dunes National Park](#).

- [Motels in Fort Garland or Alamosa](#)
- Registration fee of \$40 (tentative) includes FOP guidebook, Friday evening dinner, and T-shirt

**Friday, Sept. 7th:** Field Trip Day 1. Andrew Valdez, Steve Forman, Jim McCalpin, and others

- Eolian processes, landforms, and late Holocene chronology of the [Great Sand Dunes National Park](#)
- Sand sheets and sabkas
- Sangre de Cristo fault zone in the Park
- Late Pleistocene to early Holocene paleospring

Group Dinner at Calvillo's (Mexican Buffet) in Alamosa (included in reg. fee) Infamous Soil Circle and camping at the Bachus Pit (SW of Alamosa), KOA, or motels.

**Saturday, Sept. 8th:** Field Trip Day 2. Michael Machette, David Marchetti, Ren Thompson and Bob Kirkham

- Orientation for Lake Alamosa studies

- Deposits of Lake Alamosa at the Bachus Pit (prior night's campground)
- Soils and dating of Spits on Saddleback Mountain
- Overview of the Rio Grande outlet and [Lunch stop](#)
- Fluted ventifacts on the shores of Lake Alamosa (optional)
- Lagoons and bars of Lake Alamosa (optional)
- La Mesita volcanic cone (1.0 Ma)-exhumed or relict
- San Pedro Mesa: Quaternary Landslides and Faulting

Camping at the Wild Rivers State Park, west of Cerro, NM, or motels in San Luis, CO or Questa, NM.

**Sunday, Sept. 9th:** Field Trip Day 3. Cal Ruleman, Ralph Shroba, Ren Thompson and David Marchetti

- Orientation for Sunshine Valley studies
- The rim of the Rio Grande its Quaternary history
- Quaternary stratigraphy and chronology of the Sunshine Valley
- Piedmont geology along the Sangre de Cristo Mountains
- The Sangre de Cristo fault zone-a review

Trip ends near Costilla, NM (CO border) ca. 3 pm.

**Please RSVP if you plan to attend to [Michael Machette](#) at ([machette@usgs.gov](mailto:machette@usgs.gov)).**

**Looking for More Geologic Field Trip Ideas?**

**Look into this Source:**

**GEOLOGY AND MINING HISTORY  
FIELD TRIPS**

**Sponsored by**

**BUREAU OF LAND MANAGEMENT**

**and**

**BUENA VISTA MUSEUM OF NATURAL  
HISTORY**

The Bureau of Land Management and Buena Vista Museum of Natural History have initiated a program of earth science field trips to points of mineralogic, geologic, paleontologic and historic interest throughout central California. These trips are designed for persons of high school age and older. It is not necessary to have a technical background to attend or benefit from the trips. These field trips are recommended for teachers and many of them can be taken for in service continuing education credit through California State University Bakersfield. Each trip includes a full spectrum of environmental and land management topics. A field guide is prepared for some of the field trips which include maps and directions which can be used by anyone for self guided investigation of the geology along the field trip route.

California is ever-changing. The Geology Field Trip Program explores the changes that have occurred throughout California's complex and fascinating geologic history and focuses on the human interaction with this geology over the past 150 years. Since the discovery of gold at Sutter's Mill in 1848, the landscape of California has never been the same. We live in an environment today with a range of social issues that are directly linked to our geologic past. Symposia and field trips of this interpretive outdoor program are designed to bring this message to residents of all parts of California.

Visit our web site at:

<http://www.ca.blm.gov/bakersfield/geologytrips.html>

The Buena Vista Museum of Natural History web site is at <http://www.sharktoothhill.com>. For additional information, comments or suggestions, contact Dr. Gregg Wilkerson at 661-391-6081 or at [gwilkerson@blm.gov](mailto:gwilkerson@blm.gov).

**March 22-24, 2007: Owens Valley-Mono Basin**

Water management, historic mining, glacial and volcanic geology are the main topics of this field trip Stops or topics of discussion include Cinder Hill, Owens Lake, Alabama Hills, Mazourka Canyon, American Perlite Mine, Tinnemaha Reservoir, June Lake, Devil's Post Pile, Inyo Craters, Mono Lake, Bode State Park and Travertine Hot Springs. We camp at Red Rock Canyon Friday Night and at Bishop on Saturday night.

**May 11-13, 2007: Mother Lode III: Northern Mines**

This 3 day field conference looks at the structure, stratigraphy and geologic history of the Northern Mines of the Mother Lode in Sierra and Plumas Counties. Friday's trip will be from Camptonville to Taylorsville by way of La Porte. Saturday's trip will be from Taylorsville to Downieville by way of the Walker Mine. Sunday's trip will be from Downieville to Grass Valley. There will be a Friday Evening Lecture at the Taylorsville Town Hall, 6:00 to 9:00 p.m.

**September 29-30, 2007: San Andreas Fault: Hollister to Carrizo Plain**

This 2-day field conference examines the segment of the San Andreas Fault between Hollister and Wallace Creek in the Carrizo Plain. On Saturday the field trip commences in Hollister. We will hike the Pinnacles at the National Monument and explore the hot springs near Coalinga. The day ends with a tour of the Baker Oil Museum. Saturday evening we will camp in Coalinga. On Sunday we go on to Parkfield, "Earthquake Capitol of the World", look at fault scarps in Cholame Valley, and end the day at Wallace Creek, a world-famous off-set steam that is shown in all geology textbooks.

# NORTHERN CALIFORNIA GEOLOGICAL SOCIETY



## NCGS FIELD TRIP TO THE WORLD'S SMALLEST MOUNTAIN RANGE, THE SUTTER BUTTES

**Saturday April 21, 2007**

**Leader: Dr. Brian Hausback, CSU Sacramento**

**Trip Organizer: Martin Steinpress**

This trip is being conducted under the auspices of the Middle Mountain Foundation ([www.middlemountain.org](http://www.middlemountain.org)), a non-profit working to protect the Buttes. This trip is difficult if not impossible to do on your own. Bring boots, long pants, hat, water, lunch, rock hammer, hand lens, etc. We will meet at the Pleasant Hill BART station at 7:00 am sharp and carpool to the Buttes. The trip will involve a somewhat strenuous hike over 3 to 4 miles of rough and steep terrain. We will depart the Buttes around 4:00 pm and arrive back at about 7:00 pm. See Brian Hausback's website for references on Sutter Buttes Geology at [www.csus.edu/indiv/h/hausback/](http://www.csus.edu/indiv/h/hausback/)

An alternate meeting point will be Highway 20 and West Buttes Road (7-8 miles east-southeast of Colusa on Highway 20) at 10:00.

\*\*\*\*\***Field Trip Logistics**\*\*\*\*\*

**THIS FIELD TRIP WILL BE LIMITED TO 25 PEOPLE.**

**Time & Departure:** April 21, 2007, 7:00 am (sharp), at Pleasant Hill BART Station

**Cost:** \$50/person (\$30.00 goes to Middle Mountain Foundation)

\*\*\*\*\***REGISTRATION FORM (Sutter Buttes Field Trip)**\*\*\*\*\*

Name: \_\_\_\_\_ E-mail: \_\_\_\_\_

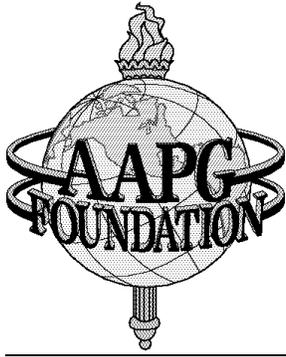
Address: \_\_\_\_\_ Phone (day): \_\_\_\_\_ Phone (evening): \_\_\_\_\_

Lunch: Regular: \_\_\_\_\_ Vegetarian: \_\_\_\_\_ (Please check one) Check Amount: \_\_\_\_\_

Please mail a check made out to NCGS to: **Rob Nelson**  
**269 College View Drive,**  
**Rohnert Park, CA 94928**

**Carpool and vanpool is a must for this fieldtrip. Please let us know if you can drive and NCGS can reimburse your gasoline expenses.**

Questions: e-mail: [rlngeology@sbcglobal.net](mailto:rlngeology@sbcglobal.net) Phone: (707) 795-8090 (evening)  
(707) 548-3268 (day – emergency)



## 2006-07 AAPG Distinguished Lecture

### Abstract

**JEAN-LAURENT MALLET**

Ecole Nationale Supérieure de Géologie  
Nancy, France



*Funded by the AAPG Foundation through the Allan P. Bennison  
Endowment*

## Integrated Earth Modeling: From Seismic Interpretation to Flow Simulation in Reservoirs

The modelling of fluid flow in oil and gas reservoirs is a critical element in the successful and cost effective development and production of oil and gas fields. This is a complex task which requires input from a broad range of technical disciplines and can be very time consuming. During the 90s, many people in the oil and gas industry advocated an integrated approach to geo-modelling which led to the concept of “Shared Earth Model” (SEM), which was more hope than reality. Unfortunately, due to the lack of a unified vision, most solutions (both software and methods) offered so far have focused on one particular step of the modelling process rather than on the entire process from interpretation to flow simulation and beyond. As a consequence, all these “Shared” Earth Models are not sharable and therefore must be downgraded to the status of “Earth Models” (EMs). For example, in the early 90s all the so-called SEMs were mainly focused on seismic tomography but are now focused on flow grid construction implying severe (and dangerous) approximations of the real structures and properties of the studied geological domains.

The first part of this talk reviews some of these (non sharable) Earth Models (EM), stressing their respective weaknesses and showing why they cannot reasonably be considered as “Sharable” between the different disciplines involved in the modelling process from seismic interpretation to flow simulation.

The second part of this talk focuses on the concepts of “Fine Geostatistical Grid” (FGG) and “Rough Flow Grid” (RFG) and the needs for upscaling FGG’s into RFG’s. An analysis of the real needs of geostatisticians and reservoir engineers leads to the conclusion that the two grids are irreconcilable... at least using current technologies based on regular structured grids whose cells all are hexahedral.

The final part of this talk aims to provide a clear definition of an “actually sharable” Shared Earth Model and then offers a new paradigm reconciling the demands of seismic interpreters, structural geologists, geostatisticians and

reservoir engineers. This has the potential to streamline integrated earth modelling and reduce the cycle time for the modelling of fluid flow in oil and gas reservoirs.

#### Education:

1974 PhD – Supérieure de Géologie Institut, Nancy, France

1968 B.S. – National Poly-technique de Lorraine, Nancy, France

#### Experience:

1981-Present Professor at the Ecole Nationale Supérieure de Géologie

1968-81 French CNRS in the field of numerical data analysis and automated mapping

#### Publications and Awards:

2003 *Doctor Honoris Causa*” University of Freiberg, Germany

2003 *Grand Prix Dolomieu*

2000 *SPE Anthony Lucas Gold Medal*

1997 *“Italgaz prize”* for his work in computer science.

Developed gOcad, the first 3D Modeler in Earth Science.

Several *“Best Paper”* awards for his scientific papers (IAMG, SEP, etc.)

#### Professional Memberships:

Member of the steering committee of the Ecole Nationale Supérieure de Géologie.

#### Professional Interests:

In 1989 he launched the gOcad research consortium dedicated to 3D modeling and visualization of the geometry, topology and physical properties of the subsurface currently sponsored by more than 20 companies and 75 universities. Jean-Laurent Mallet continues to lead the gOcad research consortium and his personal research is at the frontier of applications in the geosciences, computer sciences and applied mathematics. He is also consultant and scientific advisor for Earth-Decision, the company in charge of the industrial version of gOcad. Jean-Laurent Mallet is a member of several scientific associations related to geomodeling such as SPE, EAGE, IAMG, SEG.