



San Joaquin Geological Society

Date: Tuesday, October 22nd, 2013

Time: 11:30 AM Lunch
12:00 PM Lecture

Place: Petroleum Club of Bakersfield
5060 California Ave., Suite 1200

PSAAPG Members & Mesozoics
\$25 w/ reservation
\$30 without reservation

Non PSAAPG Members
\$30 w/ reservation

Full-time Students with ID:
Free, Courtesy of Chevron & Occidental

SJGS WEBSITE

<http://www.SanJoaquinGeologicalSociety.org/>

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The Earth is Cleverer than You Are - Learnings in Earth & Seismic Modeling

Joseph Stefani

Senior Consultant at Chevron Energy Technology Company
AAPG Distinguished Lecturer

Earth modeling, from the construction of subsurface structure and stratigraphy, to the accurate understanding of rock physics, through the simulation of seismic and nonseismic responses, is an enabling technology to guide decisions in acquisition, processing, imaging, inversion and reservoir property inference, for both static and time-lapse understanding. So it is crucial to capture those earth elements that most influence the geophysical phenomena we seek to study. This is notoriously difficult, probably because we regularly underestimate how clever the earth can be in producing various geophysical phenomena.

The main part of the talk focuses on methods we have used in building complex earth models (both overburden and reservoirs) and their seismic simulations, emphasizing the challenge to reproduce the appropriate features observed in real data. Questions to consider are the quality of the seismic data that will act as a guide in the model building, and that of the well logs used to quantify the rock physics. Another consideration is the amount of physics to include in the geophysical response simulation, which is a tradeoff between computational load and acceptable characterization of the data features.

Finally, the industry workhorse for seismic modeling continues to be the time-domain finite-difference (FD) algorithm, mainly because of its balance between accuracy and efficiency, simple concept and gridding, and ease of programming on various hardware platforms. Because of this simplicity, and the growing interest in time-lapse and geomechanical problems, a short treatment is included of how FD modeling can be adapted to problems in rock physics and geomechanics from core to basin scales.

Joseph Stefani – Bio

AAPG Foundation J. Ben Carsey and AAPG/SEG Inter-Society Distinguished Lecturer Joe Stefani received degrees in engineering and geophysics from Cal and Stanford. Since 1984, he has worked for Chevron Energy Technology Company, during which time he has been involved in a range of geophysical R&D, including high fidelity earth and seismic modeling, acquisition, anisotropy, inversion, and general Aki & Richards stuff. Most recently he has helped to build the SEG SEAM Phase 1 and Phase 2 earth models.

*** RSVP ***

By: Monday, October 21st,
2013

By Replying to this email
or by phone 412-5143

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