

Graduate Seminar

The State of Models for Subsurface Geophysical Interpretation

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Abstract- Geophysical observations of the subsurface are intended to add value by understanding and predicting geology and fluid dynamics. This cannot be done without implicit or explicit models which can take on forms that are conceptual, illustrative, or numerical. Substantial advances in geophysical subsurface modeling have occurred in the past 10 years and the application of advanced modeling has begun to expand from generating benchmark models which are intended to improve imaging, toward the generation of models intended to illustrate or benchmark interpretation.

Recent advances in geophysical modeling are a direct consequence of improvements in: Compute memory, CPUs / GPUs, Elastic seismic modeling codes, Vendors and Model construction capabilities. But there remain significant challenges to numerical modeling which include: Accuracy of elastic modeling codes, Cost of elastic modeling, Acquisition geometry, Purpose of the models and Representation of noise, variation and uncertainty.

Bio- This talk illustrates examples of the historical influence of modeling for interpreting oil and gas development of the subsurface, a view of the present state, and projections for the future. A special focus is given to the experiences of industry co-op projects operated by the Society of Exploration Geophysicists (SEG) Advanced Modeling Company (SEAM). William L. (Bill) Abriel is a geophysical consultant at Orinda Geophysical LLC., Bill began his work in the industry with Chevron in New Orleans in 1978, and was the geophysical lead for Chevron in many oil and gas basins around the world for over 37 years. His expertise lies in the application of new technology to active projects including geophysical acquisition, processing, interpretation, integration, team building, project management and strategic research.



Abriel has participated in a variety of SEG activities and is currently the president elect. He has performed editorial work for GEOPHYSICS, TLE and INTERPRETATION, served on numerous SEG committees, including Development, Membership, Research, Global Affairs, and Distinguished Lecturer, was the SEG Spring Distinguished Lecturer in 2004, and the Distinguished Instructor in 2008. Abriel is a founding and past board chair of the SEG Advanced Modeling Corporation (SEAM). He was named a life member of SEG in 2007. Bill received a B.S. in geosciences and an M.S. in geophysics, both from Pennsylvania State University, where he was a founding member of the SEG student section and earned four varsity letters in lacrosse.

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