



The
Geological
Society

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4D Subsurface Modelling: Predicting the Future

A Workshop for Mining, Civil Engineering & Energy

20 – 21 February 2019

Programme of Talks & Workshops

Wednesday 20 th February 2019	
08.30	Registration & tea, coffee & refreshments
09.00	Welcome – John Booth (Geological Society), Glen BurrIDGE (Conference Co-Chair)
Session I: Keynotes Chairs: John Booth & Glen BurrIDGE	
09.15	Oil & Gas Keynote - Modelling & Monitoring Reservoirs over their Lifetimes M. Oristaglio (SEAM Project/ Yale Univ.)
09.45	Civil Eng Keynote - 4D Ground Modelling in Civil Engineering: Recent Developments R. Talby & E. Russell (Mott MacDonald)
10.15	Mining Keynote - 4D Data Management & Modelling in the Assessment of Deep Underground Mining Hazard W.J. McGaughey (Mira Geosciences)
10.45	Break: Tea, coffee, refreshments and posters
11.10	Geothermal Keynote - The Geothermal Space: What's in it for me? C. Baxter (Intl. Geothermal Assoc.)
Session II: Framing Chair: Dick Plumb	
11.30	The Value of Understanding: No Such Thing as the "Field Model" M. Bentley (AGR-TRACS)
11.50	Influence of Lithology on Fluid-flow, Geomechanical and Seismic Response in an Integrated 4D Earth Model A. Bottrill (MP Geomechanics)
12.10	Co-Visualization and Analysis of Multi-disciplinary Data J. Wheelwright (Dynamic Graphics)
12.30	LUNCH and Poster Session
Workshops Session Introducer: Jorg Herwanger	
13.30	Icebreaker activity: "Draw this Story" Jorg Herwanger (MP Geomechanics)
13.40	The Art of Mixed & Augmented Reality M. Lato (BGC Engineering)
13.40	Co-Visualization of 4D Data: Barriers & Benefits J. Wheelwright (Dynamics Graphics)

13.40	Managing the 5th Dimension in Subsurface Modelling L. Johnson (Cognitive Geology)
13.40	Have Advances in Subsurface Modelling Enabled Higher Quality Decisions? C. Jacquemyn (Imperial College London)
13.40	What Challenges Drive Subsurface Modelling? A Discussion across Sectors C. Baxter (Seequent)
14.40	Workshop Summaries
15.15	Break: Tea, coffee, refreshments and posters
Session III: Workflow Chair: Thomas Finkbeiner	
15.30	Production-mode Geophysical Surveys & Geological Principles Applied to Shallow-Water/Earth 4D Models in Industrial harbours: Murphy's Mapping Method B. Ward (e4 Sciences)
15.50	A Dynamic Model for Solution-Mining Caverns L. te Kamp (ITASCA/GuG)
16.10	Predicting the Future with Subsurface Models: How Well are We Doing Now? K. Heffer (Reservoir Dynamics)
16.30	Q&A and Feedback Session
Drinks Reception	
17.45	Eccentric 19th Century Geologists & their Models L. Scales (Laurence's Walks)
18.05	How Seequent found itself Modelling the Subsurface.... Seequent team
Thursday 21st February	
Session III continued Chair: Thomas Finkbeiner	
9.00	Introduction John Booth (Geological Society) & Glen Burrige (Conference Co-Chair)
9.10	National Surveys Keynote - Modelling the Solid Earth: A Geological Survey Perspective K. Royse (British Geological Survey)
9.40	Translating Compositional Earth Models into Realistic Computational Models with Consideration to the Complexity of Geological Constraints A. Long (Subterrane)
10.00	First History-Matched Full Field Coupled Geomechanics & Reservoir Flow Model of both the Valhall and Hod Fields, including Water Weakening & Re-Pressurisation J. Kato (Rockfield)
10.20	3D Geological Modelling of the Chalk Group in SE England for Engineering & Groundwater Applications: The Future is 4D? C. Cripps (British Geological Survey)
10.40	Break: Tea, coffee, refreshments and posters
11.00	Development & Application of a Dynamic Fracture Growth Approach to Generating Discrete Fracture Network Systems in Sedimentary Rocks S. Baxter (Golder Associates)
11.20	Wellbore Instability & Deformation Risks Highlighted by 4D Seismic & Geomechanical Studies M. Calvert (Total)
Session IV: People Interface Chair: Wolfgang Hohl	
11.40	Technology Keynote: 3D Holographic Visualization of 4D data M. Lato (BGC Engineering)

12.00	Data & Models: How do they Interact? An Example of how Gravity & Seismic Monitoring Constrain Subsurface 4D Models O. Eiken (Quad Geometrics)
12.20	Q&A and Feedback Session
12.30	LUNCH and Poster Session
13.30	Integrated Subsurface Modelling Framework for Unconventional Development R. Guises et al (Baker Hughes)
13.50	A Reliable Organisational & Procedural Framework for Maintenance of an Ongoing Mine Stability Safety Case in 4D D. Beck (Beck Engineering)
Workshop & Panel	
14.10	Framing of Conclusions – Legacy from Event Glen BurrIDGE (Glen BurrIDGE & Assocs, Conference Co-Chair)
14.20	Have Advances in Subsurface Modelling Enabled Higher Quality Decisions? <i>Chair:</i> G. McKinley (Minerals Advisory)
15.20	Break: Tea, coffee, refreshments and posters
Closing Panel Session	
15.45	Wrap-Up Panel Session, Q&A and Feedback <i>Chair:</i> K. Royse (British Geological Survey)
16.15	Close

Poster Programme	
Natural Cosmic Radiation as a Density Probe of the Subsurface T. Botto	
Cornish Lithium: A New Metal from An Old Mining Area. Lithium exploration in SW England A. Matthews (Cornish Lithium)	
Explicit Modelling at the BGS for the Infrastructure Sector S. Thorpe (British Geological Survey)	
The Augmented Reality Sandbox V. Lane (University of Leicester)	