AGENDA

Sunday, September 16, 2012	
Icebreaker	
6:00 PM	**Welcome Reception, Hotel Shattuck Plaza**
Monday, September 17, 2012, Morning Sessions	
7:30 AM	**Registration, Building 50 Auditorium**
Welcome and Opening Remarks	
8:30	**Welcome** **Horst Simon, Deputy Director, Lawrence Berkeley National Laboratory (LBNL)**
8:40	**Opening Remarks** **Stefan Finsterle, Karsten Pruess**
8:50	**Announcements** **TOUGH Symposium Organizing Committee**
Session I: Carbon Dioxide Storage I	
Session Chairs: Edward Mehnert, Christine Doughty	
9:00	**Migration of Exsolved CO_2 Following Depressurization of Saturated Brines** **Ronald W. Falta,** Lin Zuo, Sally M. Benson
9:20	**Comparison of a 2D TOUGHREACT Model of CO_2 Injection into a Carbonate Reservoir with Chemical Data from a CO_2 Enhanced Oil Recovery Project** **Maurice Shevalier,** Michale Nightingdale, Bernhard Mayer
9:40	**Influence of Geological Parameters on CO_2 Storage Prediction in Deep Saline Aquifer at Industrial Scale** **Sarah Bouquet,** Dominique Bruel, Chantal de Fouquet
10:00	**Impact of Data Uncertainty on Identifying Leakage Pathways in CO_2 Geologic Storage Systems and Estimating their Hydrogeological Properties by Inverse Modeling** **Yoojin Jung**, Quanlin Zhou, Jens T. Birkholzer
10:20	***Break***
10:50	**Modeling CO_2 Injection at Cranfield, Mississippi: Investigation of Methane and Temperature Effects** **Christine Doughty,** Barry Freifeld
11:10	**Expansion and Migration of Gaseous and Dissolved CO_2 in a Site Specific Shallow Aquifer** **Carla E. Wiegers**, Dirk Schäfer, Ralf Köber, Andreas Dahmke

Session I: Carbon Dioxide Storage I (cont.)	
11:30	**Assessing Pre-Injection In Situ Alteration of Wellbore Cement in a Site for CO_2 Geological Storage: A Numerical Approach** **Fabrizio Gherardi,** Pascal Audigane
11:50	***Lunch***
Session II: Numerical Methods	
Session Chairs: Emily Clearwater, Yu-Shu Wu	
1:20	**Adding Geology to the Equation: Towards Integrating Structural Geological Data into Inverse Modeling with iTOUGH2** **J. Florian Wellmann,** Stefan Finsterle, Adrian Croucher
1:40	**Innovative Tools for Continuum Discretization, Better Management of TOUGH2 Input Data and Analysis of the Numerical Simulation Results** **Carlo Cormio**, Paolo Berry, Stefano Bondua, Villiam Bortolotti
2:00	**Thermal-Hydrologic-Mechanical Model for Fracture Propagation, Fluid Flow, and Transport in Porous Rock** **Daisuke Asahina,** Jim Houseworth, Jens Birkholzer
2:20	**Geophysical Data Improve Stability and Convergence of Hydrological Property Estimation: A Synthetic CO_2 Injection Study** **Joseph Doetsch,** Michael B. Kowalsky, Stefan Finsterle, Christine Doughty, Jonathan B. Ajo-Franklin, Thomas M. Daley
2:40	**Optimizing the Modeling Performance for Safety Assessments of Nuclear Waste Repositories by Approximating Two-Phase Flow and Transport by Single-Phase Transport Simulations** **Philipp Schädle,** N. Hubschwerlen, H. Class
3:00	***Break***
3:30	**Geothermal Model Calibration using a Global Minimization Algorithm Based on Finding Saddle Points as Well as Minima of the Objective Function** **Manuel Plasencia Gutierrez,** Andreas Pedersen, Andri Arnaldsson, Hannes Jónsson
3:50	**iTOUGH2 Global Sensitivity Analysis Module: Applications to CO_2 Storage Systems** **Haruko M. Wainwright,** Stefan Finsterle, Yoojin Jung, Quanlin Zhou, Jens T. Birkholzer
4:10	**Reduced Order Models for Subsurface Flow in iTOUGH2** **George Pau,** Yingqi Zhang, Stefan Finsterle
4:30	**What's New in iTOUGH2?** **Stefan Finsterle**

Evening Poster Session and Reception	
Session Chairs: Dorothee Rebscher, Haruko Wainwright, Michael Kowalsky, George Pau	
5:30 – 8:00	*LBNL Cafeteria*
8:00	**Shuttle Bus leaving for Hotel Shattuck Plaza and Downtown Berkeley BART**

Tuesday, September 18, 2012, Morning Sessions

Session III: Geothermal

Session Chairs: Edda Aradottir, Micol Todesco

8:30	**Improving the Treatment of Saline Brines in EWASG for the Simulation of Hydrothermal Systems** **Alfredo Battistelli**
8:50	**The Deep Roots of Geothermal Systems in Volcanic Areas: Boundary Conditions and Heat Sources in Reservoir Modelling** **Gunnar Gunnarsson,** Edda S.P. Aradottir
9:10	**Modeling the Ohaaki Geothermal System** **Emily K. Clearwater,** Michael J. O'Sullivan, K. Brockbank, W. I. Mannington
9:30	**Simulating Microhole-Based Heat Mining from Enhanced Geothermal System** **Yingqi Zhang,** Lehua Pan, Patrick Dobson, Ken Oglesby, Stefan Finsterle
9:50	***Break***
10:20	**Enhanced Heat Transport Via Simmering Phenomena in Geothermal Models** **Tom Brikowski**
10:40	**Towards Cleaner Geothermal Energy Utilization: Capturing and Sequestering CO_2 and H_2S Emissions from Geothermal Power Plants** **Edda S.P. Aradottir,** Ingvi Gunnarsson, Bergur Sigfússon, Gunnar Gunnarsson, Einar Gunnlaugsson, Hólmfríður Sigurðardóttir, Einar Jón Ásbjörnsson, Eric Sonnenthal
11:00	**Numerical Reservoir Model of the Takigami Geothermal Field, Oita, Japan** **Saeid Jalilinasrabady,** Ryuichi Itoi, Hiroki Gotoh, Toshiaki Tanaka
11:20	**Basin-Scale Geothermal Model Calibration using iTOUGH2** **Lynn B. Reid,** J. Florian Wellmann

Awards

11:40	**Award Ceremony** **TOUGH Symposium Organizing Committee**
12:00	***Lunch***

Tuesday, September 18, 2012, Afternoon Sessions

Session IV: Hydrocarbon Recovery and Reservoir Processes

Session Chairs: Alfredo Battistelli, Matthew Reagan

1:00	**Geochemical Reactive Transport Modeling in Oil & Gas Industry—Business Drivers, Challenges and Solutions** **Guoxiang Zhang,** Esra Inan-Villegas
1:20	**Integrated Reactive Transport Modelling: Challenges and Opportunities for Improved Prediction of Diagenetic Impact on Reservoir Quality** **Fiona Whitacker,** Tatjana Gabellone, Graham Griffiths
1:40	**Massively Parallel Simulation of Production from Field-Scale Oceanic Gas Hydrate Deposits** **Matthew T. Reagan,** George J. Moridis, Katie L. Boyle, C. Matthew Freeman, Lehua Pan, Noel D. Keen, Jarle Husebo
2:00	**Development of the T+M Coupled Flow-Geomechanical Simulator to Describe Fracture Propagation and Coupled Flow-Thermal-Geomechanical Processes in Tight/Shale Gas Systems** **Jihoon Kim,** George J. Moridis
2:20	**Modeling of Flow and Transport Induced by Production of Hydrofracture Stimulated Gas Wells Near the Rulison Nuclear Test** **Rex A. Hodges,** Clay Cooper, Ron Falta
2:40	**The RealGas and RealGasH_2O Options of the TOUGH+ Code for the Simulation of Coupled Fluid and Heat Flow in Tight/Shale Gas Systems** **George J. Moridis,** C. Matthew Freeman, Stephen W. Webb, Stefan Finsterle
3:00	***Break***

Session V: Carbon Dioxide Storage II

Session Chair: Ron Falta, Tim Tambach

3:30	**Simulations of Upward Leakage of CO_2 in Long-Column Flow Experiments: Effect of Lateral Boundary Condition** **Curtis M. Oldenburg,** Christine Doughty, Catherine A. Peters, Patrick F. Dobson
3:50	**Comparison of Supercritical and Dissolved CO_2 Injection Schemes** **Catherine M. Ruprecht,** Ronald W. Falta
4:10	**Behaviour of the CO_2 Injection Well and the Near Wellbore During Carbon Dioxide Injection in Saline Aquifers** **Mohamed Azaroual,** Laurent Andre, Yannick Peysson, Jacques Pironon, Daniel Broseta, Fabien Dedecker, Patrick Egermann, Jean Desroches, Joëlle Hy-Billiot

Session V: Carbon Dioxide Storage II (cont.)	
4:30	**Development of an Advanced Thermal-Hydrologic-Mechanical Model for CO_2 Storage in Porous and Fractured Saline Aquifers** **Philip H. Winterfeld,** Yu-Shu Wu, Karsten Pruess, Curtis Oldenburg
Banquet Dinner	
6:00	**Shuttle Bus Pick up at the Guest House and Hotel Shattuck**
6:30	**Banquet, *Caffe Venezia*, 1799 University Avenue, Berkeley**
8:00	**The Science Behind the Taming of the Deepwater Horizon Oil Spill** **Paul Hsieh**
9:00	**Shuttle Bus leaving for the Guest House and Hotel Shattuck**

Wednesday, September 19, 2012, Morning Sessions

Session VI: Nuclear Waste

Session Chair: James Houseworth, Nicolas Hubschwerlen

8:30	**Extension and Tuning of TOUGH2-MP EOS7R for the Assessments of Deep Geological Repositories for Nuclear Waste: Hydrogen, Arbitrarily Long Decay Chains, and Solubility Limits** **Thomas Kaempfer,** Yury Mishin, Jürgen Brommundt, Jean Roger, Eloi Treille, Nicolas Hubschwerle
8:50	**Multiphase Flow and Interaction Dynamics between Bentonite Clay and Fractured Crystalline Rock** **Benoît Dessirier,** Jerker Jarsjö, Andrew Frampton
9:10	**T2GGM – A Coupled Gas Generation Model for Deep Geologic Disposal of Radioactive Waste** **John Avis,** Paul Suckling, Nicola Calder, Robert Walsh
9:30	**Probabilistic Analysis Based on Simulations of the Long-Term Gas Migration at Repository-Scale in a Geological Repository for High and Intermediate Level Radioactive Waste Disposal in a Deep Clay Formation** Eloi Treille, Jacques Wendling, **Laurent Trenty**, Laurent Loth, Guillaume Pepin and Frédéric Plas
9:50	***Break***
10:20	**Development and Application of a Chemical Osmosis Simulator Based on TOUGH2** **Mikio Takeda,** Tsuyoshi Hiratsuka, Kazumasa Ito, Stefan Finsterle
10.40	**3D Modeling of the Long-Term Behaviour of a Geological Repository for HLW and ILW-LL Nuclear Waste, Considering Heat, Gas, and Radionuclide Release and Transport – Optimizations that Allow for Detailed Large-Scale Modeling** **Carl Philipp Enssle,** Jürgen Brommundt, Thomas U. Kaempfer, Gerhard Mayer, Jacques Wendling

Session VII: Tips & Tricks

Session Chair: Karsten Pruess

11:00	**Short Pop-Ups with TOUGH Tips and Tricks** **All Participants – sign up**
12:00	***Lunch***

Wednesday, September 19, 2012, Afternoon Sessions

Session VIII: Environmental Engineering

Session Chairs: Andrea Borgia, Julia Diessl

1:00	**Importance of Overland Flow in Dentrification of Wastewater Applied to Rapid Infiltration Basins** **Maryam Akhavan,** Paul T. Imhoff, Scott Andres
1:20	**Experimental and Numerical Evaluation of Dual Phase Flow During Liquid Injection in a Coarse Sand** **Tryambak Kaushik,** Milind V. Khire
1:40	**Feasibility Analysis of Underground Compressed Air Energy Storage in Lined Rock Caverns using TOUGH-FLAC Simulator** **Hyung-Mok Kim,** Jonny Rutqvist, Byung-Lee Choi
2:00	**EOS7Rn–a New TOUGH2 Module for Simulating Radon Emanation and Transport in the Subsurface** **Zakaria Saâdi,** Didier Gay, Jérôme Guillevic, Roselyne Améon
2:20	**On Parameterizing Heterogeneity and Incorporating Geophysical Measurements in Hydrogeophysical Inverse Modeling** **Michael B. Kowalsky,** Michael Commer, Kennet H. Williams, Stefan Finsterle
2:40	*Break*

Session IX: Carbon Dioxide Storage III

Session Chair: Fabrizio Gherardi, Mohamed Azaroual

3:00	**Modeling the Geochemical Impact of an Injection of CO_2 and Associated Reactive Impurities into a Saline Reservoir** Laurent Andre**, Mohamed Azaroual**, Christian Bernstone, Andrea Wittek
3:20	**Effect of Gas Field Production And CO_2 Injection on Brine Flow and Salt Precipitation** **Tim Tambach**, Daniël Loeve, Cor Hofstee, Willem-Jan Plug, Jos Maas
3:40	**Near-Well Pressure Distribution of CO2-Injection in a Partially Penetrating Well** **Edward Mehnert,** Roland T. Okwen
4:00	**Simulation of CO_2 Storage in Coal Seams: Coupling of TOUGH2 with the Solver for Mechanics CODE_ASTER®** **Annick Loschetter,** Farid Smai, Sérigne Sy, André Burnol**,** Aurélien Leynet, Stéphane Lafortune, Alain Thoraval

Session X: General	
4:20	**Numerical Modeling of NaCl-H_2O Phase Separation in a Mid-Ocean Ridge Hydrothermal Vent Field** **Benjamin Larson,** Warwick Kissling, Christof Meile
4:40	**To Seep or Not to Seep?** **Some Considerations Regarding Water Infiltration in Volcanic Lakes** **Micol Todesco,** Dmitri Rouwet, Massimo Nespoli, Raul A. Mora-Amador
5:00	**Closing Remarks /Adjourn** **TOUGH Committee**

POSTER SESSION

Monday, September 17th, 5:30–8:00 PM
LBNL Cafeteria

BOARD	Title / Author
Session Chairs: Dorothee Rebscher, Haruko Wainwright, Michael Kowalsky, George Pau	
Carbon Dioxide Storage	
Board 1	**A Fully Coupled Model for Nonisothermal Multiphase Flow, Geomechanics, and Geochemistry during CO_2 Sequestration in Brine Aquifers** **Ronglei Zhang,** Xiaolong Yin, Philips H. Winterfeld, Yu-Shu Wu
Board 2	**A Novel Concept for Long-Term CO_2 Sealing by Intentional Salt Clogging** **Laura J. Wasch,** Jens Wollenweber, Tim J. Tambach
Board 3	**A Preliminary Study on the Applicability of the TOUGHREACT Code to South African Coal Seam CO_2 Storage Operations: A simulation Tool that can Model Potential Regional Groundwater Contamination Risks** **Tshegofatso O.P. Mophatlane**
Board 4	**An improved 2-D Reactive Transport Model of the Fate of CO_2 Injected into a Saline Aquifer in the Wabamun Lake Area (Alberta, Canada)** **Chantsalmaa Dalkhaa**, Maurice Shevalier, Michael Nightingale, Bernhard Mayer
Board 5	**Behavior of Brines Containing Dissolved CO_2 in Abandoned Wellbores** **Kirk M. Ellison,** Ronald Falta, Lawrence Murdoch, Scott Brame
Board 6	**Caprock Integrity Assessment by Reactive Transport Modeling: A Code Intercomparison Approach** **Dimier Alain,** Gherardi Fabrizio
Board 7	**Effects of Groundwater Chemical Compositions in Deep Saline Aquifers on CO_2 Geologic Sequestration** **Hongwu Lei,** Tianfu Xu, Fugang Wang, Yanlin Yang, Hailong Tian, Yan Shi
Board 8	**Efficient Data Assimilation Tool in Conjunction with TOUGH2 for CO_2 Monitoring** **Judith Yue Li**, Sivaram Ambikasaran, Peter K. Kitanidis, Eric Darve
Board 9	**EOS7C-ECBM: Modification of EOS7C to Include Enhanced Coal—Bed Methane and the Dusty Gas Model** **Stephen W. Webb,** Curtis M. Oldenburg
Board 10	**Evaluation of CO2 Storage Potential Focused on CO2 Sealing Efficiency of the Seal Layer at a Feasibility Study Site** **Seiichi Ikeda, Satoshi Tomimori, Masao Ohoka, Mariko Seguchi, Junya Takeshima, Hiroyuki Azuma**

BOARD	Title / Author
Carbon Dioxide Storage (cont.)	
Board 11	**Feasibility of CO_2 Injection in the Deep Saline Aquifers of the Bécancour Region, Québec (Canada)** **Tien Dung Tran Ngoc,** René Lefebvre, Michel Malo, Christine Doughty
Board 12	**Fundamental Analysis of Heterogeneity and Relative Permeability on CO_2 Storage and Plume Migration** **Nathan Moodie,** Brian McPherson, Si-Yong Lee, Prashanth Mandalaparty
Board 13	**Modeling Approaches for Wellbore Boundary Conditions for Simulation of CO_2 Geologic Sequestration in Saline Aquifers** **Keni Zhang,** Lulu Ling Yang Wang
Board 14	**Modeling CO_2-Driven Cement Alteration at Well-Caprock Interface** Frédéric Wertz, **Fabrizio Gherardi**, Philippe Blanc, Anne-Gaëlle Bader, Antonin Fabbri
Board 15	**Modeling of the CO_2 Geological Storage at the S3 Site (Sim-SEQ Comparative Project)** Christophe Chiaberge, Joachim Tremosa, Anne-Gaëlle Bader, **Pascal Audigane**
Board 16	**Preliminary Model-Comparison Results from the Sim-SEQ Project using TOUGH2, STOMP, ECLIPSE, and VESA Approach** **Sumit Mukhopadhyay,** Christine Doughty, Diana Bacon, Giacomo Bacci, Rajesh Govindan, Ji-Quan Shi, Sarah Gasda, Ramya Ramanathan, Jean-Philippe Nicot, Seyyed Hosseini, Jens T. Birkholzer
Board 17	**Simulation of CO_2 Storage in the Basal Aquifer in the Northern Plains – Prairie Region of North America** **Dorothee Rebscher,** Quanlin Zhou, and Jens T. Birkholzer
Board 18	**The Influence of Capillary Entry-Pressure Representation on the Rate of CO_2 Solubility Trapping** **Boxiao Li,** Hamdi A. Tchelepi, Sally M. Benson
Board 19	**TOUGH2 Simulation of CO_2 Leakage from a Geologic Reservoir through Mixed Sandstone/Siltstone Caprock Formation** **Rodrigo Sebastian Iglesias,** Luciano da Silva Müller, Roberto Heemann, João Marcelo Medina Ketzer
Board 20	**TOUGH2 Simulation of the Pumping Tests at Ketzin Site: Heterogeneity Effects and Model Calibration** **Fei Chen,** Quanlin Zhou, Jens Birkholzer
Board 21	**TOUGHVISUAL: A User-Friendly Pre-Processing and Post-Processing Graphical Interface for TOUGHREACT** **Yanlin Yang,** Tianfu Xu, Fugang Wang, Hongwu Lei, Guangrong Jing, Gaofan Yue

BOARD	Title / Author
Environmental Engineering	
Board 22	**A Least-Cost Strategy for Evaluating a Brownfields Redevelopment Project Subject to Indoor Air Exposure Regulations** **Xiaomin Wang,** André J.A. Unger, Beth L. Parker
Board 23	**Hydro-Geochemical Modeling in the Passo a Campalto Phosphogypsum Dump in the Lagoon of Venezia, Italia** **Andrea Borgia,** M. Calcara, L. Cattaneo, M. Kennard
Board 24	**Simulating Migration of CO_2 and CH_4 Generated from Geothermal Treatment and Biodegradation of Sanitation Waste in the Deep Subsurface** **Julia Diessl,** M. S. Bruno, J.T. Young
Geothermal	
Board 25	**A 20 Year Progress in the TOUGH2 Modeling of the Mutnovsky Geothermal Field, Kamchatka, Russia** **Alexey Kiryukhin,** Olga Miroshnik
Board 26	**A Fully Coupled Flow and Geomechanics Model: Application to Enhanced Geothermal Reservoirs** **Perapon Fakcharoenphol,** Litang Hu, Yu-Shu Wu, Sarinya Charoenwongsa, Hossein Kazemi
Board 27	**A Novel, Fully Coupled Flow and Geomechanics Model in Porous and Fractured Geothermal Reservoirs** **Litang Hu,** Philip H. Winterfeld, Perapon Fakcharoenphol, Yu-Shu Wu, Keni Zhang, Tianfu Xu
Board 28	**A Sequential Implicit Algorithm of Chemo-Thermo-Poro-Mechanics for Fractured Geothermal Reservoirs** **Jihoon Kim,** Eric Sonnenthal, Jonny Rutqvist
Board 29	**Coupled MULTIFLUX-TOUGH2-TOUGHREACT T-H-M-C Model for EGS Studies** **George Danko,** Davood Bahrami, Liange Zheng
Board 30	**Implementation of Anisotropic Flow into the TOUGH2 Code** **Andri Arnaldsson,** Jean-Claude Berthet, Snorri Kjaran, Sven Þ. Sigurðsson
Board 31	**Improved Visualization of Reservoir Simulations: Geological and Fluid Flow Modeling of a High-Temperature Geothermal Field in New Zealand** **Sophie C.P. Pearson,** Angela Prieto
Board 32	**Laboratory and Numerical Studies of Heat Extraction from Hot Porous Media by Means of Supercritical CO_2** **Mario Magliocco,** Timothy J. Kneafsey, Karsten Pruess, Steven Glaser

BOARD	Title / Author
Geothermal (cont.)	
Board 33	**Modeling of Calcite Scaling in a Geothermal Well** **Giordano Montegrossi,** Francisco Ernesto Montalvo López
Board 34	**Modeling of Wellbore Flow within Geothermal Reservoir Simulations at Field Scale** **Marica Marcolini,** Alfredo Battistelli
Board 35	**Numerical Modeling of Geothermal Systems: The Effect of Overpressure and Injection Fluid Temperature in Inducing Microearthquakes, with Application to a New Zealand Geothermal Field** **Lauriane Chardot,** Steven Sherburn, Nicolas Fournier
Board 36	**Recent Developments in the AUTOUGH2 Simulator** **Angus Yeh,** Adrian E. Croucher, Michael J. O'Sullivan
Board 37	**Three-Dimensional Modeling of Basin and Range Geothermal Systems using TOUGH2-EOS1SC** **Ann E. Moulding,** Tom Brikowski
Board 38	**TOUGH2 as a Tool for Performance Prediction of the Balcova Geothermal Field, Turkey** **Goker Ertunc,** Mahmut Parlaktuna
Board 39	**TOUGH-FLAC Coupled THM Modeling of Proposed Stimulation at the Newberry Volcano EGS Demonstration** **Antonio Pio Rinaldi,** Jonny Rutqvist, Eric L. Sonnenthal, T.T. Cladouhos
Nuclear Waste	
Board 40	**A Simple Implementation of 1D Hydromechanical Coupling in TOUGH2** Robert Walsh**, Nicola Calder,** John Avis
Board 41	**Development of Geohydrologic Model of the Wildcat Fault Zone** **Kenzi Karasaki,** Christine Doughty, Junichi Goto
Board 42	**The Effect of Stress on Flow and Transport in Fractured Rock Masses Using TOUGH-FLAC and a Modified Crack Tensor Theory** **Zhen Wang,** Jonny Rutqvist, Yuan Wang, Colin Leung, Andrew Hoch, Ying Dai
Board 43	**Two-Phase Flow Modeling with TOUGH2 of a Waste Geological Repository within the FORGE Project** **Manuel Lorenzo Sentís**
Board 44	**Using a Generalized Power Law for Simulating the Feedback Effect of Dissolution/Precipitation on Diffusive Transfer in TOUGHREACT** **André Burnol,** F. Claret

BOARD	Title / Author
Numerical Methods, Pre- and Postprocessors	
Board 45	**A New Library to Improve TOUGH Parallel Development** **Noel Keen,** George Pau, Jeff Johnson, Eric Sonnenthal, Stefan Finsterle
Board 46	**A Simple History-Dependent Nonwetting-Phase Trapping Model for the TOUGH Simulators** **Christopher G. Patterson,** Ronald W. Falta
Board 47	**Advances in Hydrogeophysical Joint Inversion** **Michael Commer,** Michael B. Kowalsky, Stefan Finsterle, Gregory A. Newman
Board 48	**An Approach for Modeling Rock Discontinuous Behavior under Multiphase Fluid Flow Conditions** **Pengzhi Pan,** Jonny Rutqvist, Fei Yan, Xiating Feng
Board 49	**Conceptual Model Tools in the PetraSim Graphical User Interface for the TOUGH2 Suite of Simulators** **Alison Alcott,** Daniel Swenson, Brian Hardeman
Board 50	**Methodology for Assessing Scalability and Optimizing the Usage of TOUGH2-MP on a Cluster – Application Case for a Radioactive Waste Repository** **Nicolas Hubschwerlen,** Keni Zhang, Gerhard Mayer, Jean Roger, Bernard Vialay
Board 51	**Modeling Transport of Water, Ions and Chemical Reactions in Compacted Bentonite – Comparison between TOUGHREACT, Numerrin and COMSOL Multiphysics** **Aku Itälä,** Mika Laitinen, Veli-Matti Pulkkanen, Merja Tanhua-Tyrkkö, Markus Olin
Board 52	**Numerical Simulation of DNAPL Source Zones above and below the Water Table in Fractured Sandstone** **Ken Walton,** Andre Unger, Mario Ioannidis, Beth Parker
Board 53	**Performance Improvement of TOUGH2 Simulation with Graphics Processing Unit** **Yusuke Shimotoku,** Toshiaki Tanaka, Ryuichi Itoi
Board 54	**T2Well—An Integrated Wellbore-Reservoir Simulator** **Lehua Pan,** Curtis M. Oldenburg
Board 55	**mView – A Powerful Pre- and Post-Processor for TOUGH2** **John Avis,** Nicola Calder, Robert Walsh

BOARD	Title / Author
General Modeling Applications	
Board 56	**Borehole and Formation Analyses to Support Compressed Air Energy Storage Development in Reservoirs** **Stephen W. Webb**
Board 57	**Surface Deformation Due to Compressed Air Tunneling using TOUGH2 and FLAC3D** **Avirut Chinkulkijniwat**
Board 58	**Initial Investigations of thee Productive Perched Aquifers on the Volcanic Island of Montserrat** **Brioch Hemmings,** Fiona Whitaker, Joachim Gottsmann
Board 59	**Modeling Brine Reflux using the Pitzer Ion-Interaction Model in TOUGHREACT** **Anwar Al-Helai,** Fiona F. Whitaker, Nicolas Spycher, Yitian Xiao
Board 60	**Modeling Gas Transport and Reactions in Polydimethylsiloxane** **Chuanhe Lu,** Yunwei Sun, Stephen J. Harley, Elizabeth A. Glascoe
Board 61	**Simulation of Soil Water with Different Water Table Depths under Drip Irrigation along the Tarim Desert Highway, China** **Xue Li,** Guomin Li, and Zhimin Wang
Board 62	**Understanding Gas Migration in Unsaturated Fractured Porous Media using Field Experiments and Numerical Simulations** **Sophie Guillon,** E. Pili, J-C. Sabroux, T.M. Vu, P.M. Adler