Some format issues inherent in the e-media version may also appear in this print version.
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reservoir Engineering</td>
<td>23</td>
</tr>
<tr>
<td>Geothermal Resource Assessment of Alasehir Geothermal Field</td>
<td></td>
</tr>
<tr>
<td>Serhat AKIN</td>
<td></td>
</tr>
<tr>
<td>Improved PetraSim/TOUGH2 Capabilities for the Simulation of Geothermal Reservoirs</td>
<td>33</td>
</tr>
<tr>
<td>Alfredo BATTISTELLI, Daniel SWENSON, Alison ALCOTT</td>
<td></td>
</tr>
<tr>
<td>Approach to Develop a Soft Stimulation Concept to Overcome Formation Damage – A Case Study at Klaipeda, Lithuania</td>
<td>46</td>
</tr>
<tr>
<td>Maren BREHME, Guido BLÖCHER, Simona REGENSPURG, Harald MILSCH, Sigitas PETRAUSKAS, Robertas VALICKAS, Markus WOLFGRAMM, Ernst HUENGES</td>
<td></td>
</tr>
<tr>
<td>Correlations for Joule-Thomson Coefficients of Geothermal Waters Containing CO2</td>
<td>51</td>
</tr>
<tr>
<td>Murat CINAR, Yildiray PALABIYIK, Mustafa ONUR</td>
<td></td>
</tr>
<tr>
<td>Development of a Downhole Tool for Measuring Enthalpy in Geothermal Reservoirs</td>
<td>63</td>
</tr>
<tr>
<td>William C. CORBIN, Grzegorz CIESLEWSKI, Ryan F. HESS, Bonnie E. KLAMM, Lauren GOLDFARB, Timothy J. BOYLE, William G. YELTON</td>
<td></td>
</tr>
<tr>
<td>Data Fusion for Hydrothermal Reservoir Characterization Through Use of Bayesian Statistical Inference and MCMC Maximum Likelihood Models</td>
<td>71</td>
</tr>
<tr>
<td>Cari D. COVELL, Ágúst VALFELLS, María S. GUDJONSDOTTIR, Hlynur STEFANSSON, Egill JULÍUSSON, Halldór PALSSON, Birgir HRAFNKEILSSON</td>
<td></td>
</tr>
<tr>
<td>Applying Decline Cumulative Production Analysis (DCPA) to Geothermal Resources</td>
<td>77</td>
</tr>
<tr>
<td>Hermas Alberto DAVILA JOSE</td>
<td></td>
</tr>
<tr>
<td>Geomechanics Effect on Geothermal Reservoir Modelling</td>
<td>87</td>
</tr>
<tr>
<td>Ichwan ELFAJRIE, Zaher SYIHAB</td>
<td></td>
</tr>
<tr>
<td>Algorithm for Optimal Well Placement in Geothermal Systems Based on TOUGH2 Models</td>
<td>100</td>
</tr>
<tr>
<td>Dagur HELGASON, Ágúst VALFELLS, Egill JÚLÍUSSON</td>
<td></td>
</tr>
<tr>
<td>Monitoring Injection Wells Injectivity Using Pressure Tubing in the Kawerau Field, New Zealand</td>
<td>110</td>
</tr>
<tr>
<td>Morgane LE BRUN, Lutfie AZWAR, Paul SIRATOVICE</td>
<td></td>
</tr>
<tr>
<td>Assessment of Sand-face Pressure and Temperature Behaviors of Single-Phase Liquid-Water Geothermal Reservoirs During Injection and Falloff Tests</td>
<td>119</td>
</tr>
<tr>
<td>Yildiray PALABIYIK, Murat CINAR, Ihsan Murat GOK, Mustafa ONUR</td>
<td></td>
</tr>
<tr>
<td>Effect of Carbon Dioxide Content on the Well and Reservoir Performances in the Kizildere Geothermal Field</td>
<td>132</td>
</tr>
<tr>
<td>Abdurrahman SATMAN, Omer Inanç TUREYEN, Emine Didem Korkmaz BASEL, Aygun GUNEY, Erdinc SENTURK and Ali KINDAP</td>
<td></td>
</tr>
</tbody>
</table>
Field Studies

Characteristics of the Cove Fort - Dog Valley - Twin Peaks Thermal Anomaly, Utah 139
Rick ALLIS, Mark GWYNN, Christian HARDWICK, Stefan KIRBY, Roger Bowers, Joseph MOORE, Stuart SIMMONS, Phil WANNAMAKER

Revision of the Conceptual Model for the Olkaria Geothermal System, Kenya 149
Gudni AXELSSON, Valdis GUDMUNSDÓTTIR, Andri ARNALDSSON, Halldór ÁRMANSSON, Knútur ÁRNASON, Gunnaugur M. EINARSSON, Hjalti FRANZSON, Saemund HALLDÓRSÓTTIR, Gylfi Páll HERSIR, Kennedy KAMUNYA, Steinbör NÍELSSON, Joyce OKOO, Amnon OMITI, Peter OUMA, Finnbogi ÓSKARSSON and Daniel SAITET

Imaging Reservoir Structure of Mt. Pancar Geothermal Prospect Using Audio-frequency Magnetotelluric (AMT) and Gravity Technology 158
Yunus DAUD, Syamsu ROSID, Wambra Aswo NUQRAMADHA, Fikri FAHMI, Anugrah Indah LESTARI, Diajeng LIATI, Adila ARMANDO, Tri Widjaya PUTRANTO, Fitriyani Mustika RUSLITA

The Case of Geothermal Energy from Productive, Depleted and Abandoned Oil and Gas Wells 165
Humera FARAH

Comprehensive Production Casing Stress Evaluation in Directional Geothermal Well 171
Bonar MARBUN, Eldy RUSLYANA, Jalu NUGROHO, Dodi DUHA, Edis JABBAR

Community Supported Geothermal Projects 177
Masami NAKAGAWA, Luci DUNNINGTON, Qifei NIU, Hiromi KUBOTA, Juan Felipe FURTADO, Molly BARRON, Michelle FRANKE

Conceptual Model of Geothermal Resources of Alaşehir in the Continental Rift Zone of the Gediz Within the Menderes Massif, Western Anatolia, Turkey 182
Nevzat OZGUR

Early Identification and Management of Calcite Deposition in the Ngatamariki Geothermal Field, New Zealand 190
Jaime Jose QUINAO, Etienne BUSCARLET and Farrell SIEGA

Hg Air Survey at Makaroyen Village in Kotamobagu Geothermal Field, North Sulawesi, Indonesia 199
Hendra RIOGILANG

Conceptual Models of Geothermal Resources in the Eastern Great Basin 204
Stuart SIMMONS, Rick ALLIS, Joe MOORE, Mark GWYNN, Christian HARDWICK, Stefan KIRBY

Harnessing Geothermal Energy from Mature Onshore Oil Fields- the Wytch Farm Case Study 213
Harkaran SINGH, Gioia FALCONE, Alexandre VOLLE, Laurent GUILLON
The Identification of Geothermal Reservoir from Exploration Data in Bang Hot Spring, Central Vietnam

TRAN Anh Vu, DOAN Van Tuyen, TRAN Tuan Anh, DINH Van Toan

The Humboldt and Dixie Valley High-Temperature Geothermal Trends, Nevada, USA

Al WAIBEL

Phase II Play Fairway Analysis Activities for Structurally-Controlled Geothermal Systems in the Eastern Great Basin Extensional Regime, Utah, USA

Philip WANNA MAKER, Kristine PANKOW, Joseph MOORE, Gregory NASH, Virginie MARIS, Stuart SIMMONS, Christian HARD WICK, and Rick ALLIS

Tutuila, American Samoa: A Case History of Geothermal Exploration on a Deep Sea Island

Maxwell WILMARTH, Jill HAIZLIP, William CUMMING

Assessment of the Early Development Work for Kuyucak Geothermal Field, Turkey

Gözde YAL, Arif Mert EKER, Selim CAMBAZOGLU, Osman SEN, Haluk AKGUN
Tracers

Improving the Conceptual Understanding Through a Recent Injection of 200 GBq of Iodine-125 at the Rotokawa Geothermal Field, New Zealand

Simon ADDISON, Lutfie AZWAR, Jonathon CLEARWATER, Dario HERNANDEZ, Bruce MOUNTAIN, Andrea BLAIR, Paul SIRATOVICH

On the Visibility of Non-Intersected 'Nearby' Fractures in Inter-Well Tracer Tests: Scoping Simulations, I

Julia GHERGUT, Horst BEHRENS, Martin SAUTER, Sebastian SCHMIDT, Bianca WAGNER

On Some Fluid-Based Monitoring Tasks Within the EU Project FracRisk (2015-2018)

Julia GHERGUT, Horst BEHRENS, Jac BENSABAT, Chris I. McDERMOTT, Martin SAUTER

An Inverse Model for Predicting Reservoir Structure and Thermal Lifetime Using Inert and Adsorbing Tracers

Adam J. HAWKINS, Don FOX, Matthew M. BECKER, and Jefferson W. TESTER

The Use of Amino-Substituted Naphthalene Sulfonates as Tracers in Geothermal Reservoirs

Peter ROSE and Scott CLAUSEN

The pH Dependent Thermal Stability of the Naphthalene Sulfonic Acids 1, 5-NDS and 2-NSA

Lucjan SAJKOWSKI, Bruce W. MOUNTAIN, Terry M. SEWARD

DNA Barcoding for Fractured Reservoir Analysis–an Initial Investigation

Yuran ZHANG, Kewen LI, Roland N. HORNE
# Modeling

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investigation of Physical Mechanisms That Influence Injection-Induced Earthquake Sequence Statistics</td>
<td>366</td>
</tr>
<tr>
<td><em>Lauren ABRAHAMS, Jack NORBECK, and Roland HORNE</em></td>
<td></td>
</tr>
<tr>
<td>Numerical Modelling of Geothermal Reservoirs with Multiple Pore Media</td>
<td>377</td>
</tr>
<tr>
<td><em>Musa D. ALIYU, Hua-Peng CHEN, Ouahid HARIRECHE, and Colin D. HILLS</em></td>
<td></td>
</tr>
<tr>
<td>Towards a Better Understanding of the Impact of Fracture Roughness on Permeability-Stress Relationships Using First Principles</td>
<td>389</td>
</tr>
<tr>
<td><em>Carla CO, David POLLARD, Roland HORNE</em></td>
<td></td>
</tr>
<tr>
<td>Effect of Injected Cold Water on the Bottomhole Temperature Behavior</td>
<td>403</td>
</tr>
<tr>
<td><em>Ceylan Name GURSES, Omer Inanc TUREYEN, Abdurrahman SATMAN</em></td>
<td></td>
</tr>
<tr>
<td>A Tool for Thermo-sensitive Tracer Selection and Evaluation in Field Experiments</td>
<td>415</td>
</tr>
<tr>
<td><em>Yulan JIN, Mario SCHAFFER, Tobias LICHA</em></td>
<td></td>
</tr>
<tr>
<td>Simulation of Reinjection of Non-Condensable Gas-Water Mixture Into Geothermal Reservoirs</td>
<td>421</td>
</tr>
<tr>
<td><em>Eylem KAYA, Sadiq J. ZARROUK</em></td>
<td></td>
</tr>
<tr>
<td>Numerical Simulation of the Sumikawa Geothermal Reservoir, Japan, Using iTOUGH2</td>
<td>435</td>
</tr>
<tr>
<td><em>Kenta KONDO, Ryuichi ITOI, Toshiaki TANAKA, Takaichi IWASAKI</em></td>
<td></td>
</tr>
<tr>
<td>Inferring Geothermal Reservoir Processes at the Raft River Geothermal Field, Idaho, USA Through Modeling InSAR-measured Surface Deformation</td>
<td>445</td>
</tr>
<tr>
<td><em>Fang LIU, Pengcheng FU, Robert J. MELLORS, Mitchell PLUMMER, Tabrez ALI, Elena C. REINISCH, Qi LIU, Kurt L. FEIGL</em></td>
<td></td>
</tr>
<tr>
<td>Extending the Application of the Constrained Interpolation Profile (CIP) Scheme from Single-Phase to Two-Phase Hydrothermal Reservoir Simulations</td>
<td>456</td>
</tr>
<tr>
<td><em>Mitsuo MATSUMOTO</em></td>
<td></td>
</tr>
<tr>
<td>Numerical Approach for Temperature Estimation in Geothermal Drilling Operation</td>
<td>464</td>
</tr>
<tr>
<td><em>Heneka PRIYANGGA, Auzan SOEDARMO, Konark OGRA, Aliya ZHABAGINA</em></td>
<td></td>
</tr>
<tr>
<td>Modeling Microseismic Activity in the Newberry Enhanced Geothermal System</td>
<td>472</td>
</tr>
<tr>
<td><em>Christopher SHERMAN, Joseph MORRIS</em></td>
<td></td>
</tr>
<tr>
<td>A Fully Coupled Radial Flow Poroelastic Model with Local Thermal Non-Equilibrium</td>
<td>479</td>
</tr>
<tr>
<td><em>Mario-César SUÁREZ-ARRIAGA</em></td>
<td></td>
</tr>
<tr>
<td>Potential Utilizations of 3D Printed Fracture Network Model</td>
<td>493</td>
</tr>
<tr>
<td><em>Anna SUZUKI, Kewen LI, Roland, HORNE</em></td>
<td></td>
</tr>
<tr>
<td>The Onset of Convection in Faulted Aquifers</td>
<td>500</td>
</tr>
</tbody>
</table>
Rebecca TUNG, Thomas POULET, Manolis VEVEAKIS, Sotiris ALEVIZOS, Klaus REGENAUER-LIEB

Outcomes from a Collaborative Approach to a Code Comparison Study for Enhanced Geothermal Systems
M.D. WHITE, P. FU, and M.W. MCCLURE

Comparison of a Fully Implicit and Sequential Formulation for Geothermal Reservoir Simulations
Zhi Yang WONG, Ruslan RIN, Hamdi TCHELEPI and Roland HORNE

Study of EGS Heat Recovery by Multi-Parallel Fracture Model at Desert Peak Field, USA
Haizhen ZHAI, Zheng SU, Nengyou WU

Quanlin ZHOU, Curtis M. OLDENBURG, Jens T. BIRKHOLZER, and Jonny RUTQVIST

Modeling of Hydraulic Fracture Propagation at the kISMET Site Using a Fully Coupled 3D Network-Flow and Quasi-Static Discrete Element Model
Jing ZHOU, Hai HUANG, Earl MATTSON, Herb F. WANG, Bezalel C. HAIMSON, Thomas W. DOE, Curtis M. OLDENBURG and Patrick F. DOBSON
Production Engineering

Deliverability Output Curve Linearization Analysis: Matching the Power Equation with the Offset Elliptical Equation
Hermas Alberto DAVILA JOSE

The Influence of Remedial Cementing on Thermal Well Design with Applications to Wellbore Integrity
Adonis ICHIM, Catalin TEODORIU, Gioia FALCONE

Numerical Analysis of Transient Steam-Water Two-Phase Flow in Geothermal Production Wells with Multiple Feed Zones
Keisuke YAMAMURA, Ryuichi ITOI, Toshiaki TANAKA, Takaichi IWASAKI
In this paper, we present the injection enhancement of a geothermal reservoir through varying acidizing operation procedures in the Aydın-Kuyucak Geothermal Field, Turkey. The authors, Arif Mert EKER, Gözde YAL, Selim CAMBAZOGLU, Osman SEN, and Hüseyin DUNYA, discuss the potential for ground water contamination and possible effects of Olkaria geothermal developments on Lake Naivasha. The experimental investigation of injection-driven shear slip and permeability evolution in granite for EGS stimulation is conducted by Zhi YE, Michael JANIS, Ahmad GHASSEMI, and Stephen BAUER.
Enhanced Geothermal Systems

Unconventional Geothermal Technology to Help the Climate Change Issue in the Densely Populated Areas of the World with a Demand for Higher Energy
Roy BARIA, Joerg BAUMGAERTNER, Hilka GLASS, Dimitra TEZA, Tony BENNETT, and Andrew JUPE

Rate of Penetration of Geothermal Wells: a Key Challenge in Hard Rocks
Clément BAUJARD, Régis HEHN, Albert GENTER, Dimitra TEZA, Jörg BAUMGARTNER, Frédéric GUINOT, Antony MARTIN, Sepp STEINLECHNER

An Update on the Proposed Frontier Observatory for Research in Geothermal Energy (FORGE) at Fallon, NV
Doug BLANKENSHIP, Mack KENNEDY, James FAULDS, Andrew SABIN, John AKERLEY, Ann ROBERTSON-TAIT, Kelly BLAKE, Drew SILER, Nicholas HINZ, Andrew TIEDEMAN, Mike LAZARO, Jonathan GLEN, Steve HICKMAN, Colin WILLIAMS, Will PETTIT

Simulations of Carbon Dioxide Injection, Seismic Monitoring, and Well Logging for Enhanced Characterization of Faults in Geothermal Systems
Andrea BORGIA, Curtis M. OLDENBURG, Rui ZHANG, Yoojin JUNG, Kyung Jae LEE, Christine DOUGHTY, Thomas M. DALEY, Nikita CHUGUNOV, Bilgin ALTUNDAS, T.S. RAMAKRISHNAN

The Use of 222Rn to Constrain Fracture Characteristics: Experiments Conducted at the Meso-scale Model Geothermal Reservoir Site at Altona, New York
John N. CHRISTENSEN, Adam HAWKINS, Shaun T. BROWN, Eric SONNENTHAL, Neil STURCHIO, Donald J. DEPAOLO

Supercritical Geothermal Systems - A Review of Past Studies and Ongoing Research Activities
Patrick DOBSON, Hiroshi ASANUMA, Ernst HUENGES, Flavio POLETTO, Thomas REINSCH, Bernard SANJUAN

Automatic Moment Tensor Analyses, In-Situ Stress Estimation and Temporal Stress Changes at the Geysers EGS Demonstration Project
Douglas S. DREGER, O. Sierra BOYD, Roland GRITTO

Dependency of EGS Development on the Alignment Between Natural Fracture Set Orientations and Regional Stress State
Aleta FINNILA, Thomas DOE, Robert MCLAREN

Experimental Investigation of Hydraulically Induced Fracture Properties in Enhanced Geothermal Reservoir Stimulation
HU Lianbo, Ahmad GHASSEMI, John PRITCHETT, Sabodh GARG

An Innovative Computational Approach for Enhanced Geothermal System
Kamran JAHANBAKHSH, Masami NAKAGAWA, Mahmood ARSHAD, Lucila DUNNINGTON
Probabilistically Assessing the Efficacy of Stimulation Strategies

Dimitrios KARVOUNIS, Stefan WIEMER

Role of Fluid Injection Pressure in Inducing Seismicity

Zoheir KHADEMIAN, Masami NAKAGAWA, Ryan GARVEY, Ugur OZBAY

Analysis of Magma Injection Beneath an Active Volcano Using a Hydromechanical Numerical Model

Alexey KIRYUKHIN, Jack NORBECK

Comparison of Experimental and Modeling Results of Fracture Sustainability in EGS Systems

Timothy KNEAFSEY, Seiji NAKAGAWA, Eric L. SONNENTHAL, Marco VOLTOLINI, Patrick F. DOBSON, J. Torquil SMITH, Sharon E. BORGLIN

Use of the Experience Curve to Understand Economics for At-Scale EGS Projects

Tim LATIMER, Peter MEIER

Modelling Wellbore Observed Fracture-Borne Fluid Heat Advection – Application to EGS Stimulation in Basement Rock

Peter LEARY, Peter MALIN and Rami NIEMI

Analysis and Numerical Modelling of Pressure Drops Observed During Hydraulic Stimulation of GRT-1 Geothermal Well (Rittershoffen, France)

Gabriel MEYER, Clément BAUJARD, Régis HEHN, Albert GENTER, Mark MCCLURE

Hydraulic Fracturing Experiments in a Deep Mine at 1500 m Depth: Results from the kISMET Project

Curtis M. OLDENBURG, Patrick F. DOBSON, and The kISMET team

First Hydraulic Stimulation in Fractured Geothermal Reservoir in Pohang PX-2 Well

Sehyeok PARK, Linmao XIE, Kwang-II KIM, Saeha KWON, Ki-Bok MIN, Jaiwon CHOI, Woon-Sang YOON, Yoonho SONG

Methods for Selective Plugging of Geothermal Short Circuits

Mitchell PLUMMER, Earl MATTSON, Yuran ZHANG, Yidong XIA

Increasing Energy Efficiency of Geothermal Circulating Systems

Andriy REDKO, Sergii PAVLOVSKIY, Nataliia KULIKOVA, Oleandr REDKO
Geochemistry

Development of a Downhole Technique for Measuring Enthalpy
Xuhua GAO, Grzegorz CIESLEWSKI, Roland HORNE 838

Enhancement of Silica-Enthalpy Mixing Model to Predict Enthalpy of Geothermal Reservoir
Jodhi P. GIRIARSO, M. Husni THAMRIN, Eben Ezer SIAHAAN 845

The Flow Path of Geothermal Fluid Identification and the Reservoir Temperature Evaluation in the Geothermal Area of Ilan, Taiwan
Ching-Huei KUO, Chia-Mei LIU, Chia-Jung CHIANG, Yu-Wei TSAI 850

Geothermal Projects in Turkey: Extreme Greenhouse Gas Emission Rates Comparable to or Exceeding Those from Coal-fired Plants
Erik B. LAYMAN 857

Assessing the Scaling Potential in Hot Rejection Wells in the Olkaria Geothermal Field, Kenya
Catherine Ndinda LEECH 873

The Characteristics of Petrography and Fluid inclusions of Vein in Geothermal System of Ilan Plain, Taiwan
Chia-Mei LIU, Ching-Huei KUO, Yu-Huai CHEN, Yu-Wei TSAI, Huei-Fen CHEN, Sheng-Rong SONG 883

Geothermometry of the Breitenbush Hot Springs Area, Oregon, USA
Donnel MALKEMUS, Robert B. PERKINS, Carl D. PALMER 887

Geochemical Evaluation of Geothermal Resources of Camas Prairie, Idaho

In-situ Temperature Determination at the Villarrica Geothermal System, Southern Chile: Implications from Laboratory Experiments for Geothermometry
Fabian NITSCHKE, Sebastian HELD, Ignacio VILLALON, Thomas NEUMANN, Thomas KOHL 909

Aqueous Rare Earth Element Patterns and Concentration in Thermal Brines Associated with Oil and Gas Production
Charles NYE, Scott QUILLINAN, Ghanashyam NEUPANE, and Travis L. MCLING 917

Geochemical Analysis for Understanding Prospectivity of Low Enthalpy Geothermal Reservoirs of Dholera
Manan SHAH, Prakhar SARKAR, Darshan SHARMA, Shivani GARG, Yatharth SHUKLA, Trisha MISHRA, Anirbid SIRCAR, Shreya SAHAJPAL 928
Geophysics

Microseismic Event Relocation Based on PageRank Linkage at the Newberry Volcano Geothermal Site
Ana C. AGUIAR and Stephen C. MYERS

Three Dimensional Inversions of MT Resistivity Data to Image Geothermal Systems: Case Study, Korosi Geothermal Prospect
Mathew ARTHUR

Improved Image of Intrusive Bodies at Newberry Volcano, Oregon, Based on 3D Gravity Modelling
Alain BONNEVILLE, Trenton T. CLADOUHOS, Kelly ROSE, Adam SCHULTZ, Chris STRICKLAND and Scott URQUHART

Multi-scale Elastic-Waveform Inversion for Geothermal Reservoir Characterization
Benxin CHI, Kai GAO and Lianjie HUANG

Correlation Between Joint Roughness Anisotropy on Deep Cores and Seismic Propagation Direction in Pohang EGS Site, Korea
Melvin DIAZ, Sehyeok PARK, Sun YEOM, Kwang Yeom KIM, Ki-Bok MIN

Continental Heat Flow Data Update for México – Constructing a Reliable and Accurate Heat Flow Map
Orlando Miguel ESPINOZA-OJEDA, Rosa María PROL-LEDESMA and Eduardo R. IGLESIAS

Overview and Preliminary Results from the PoroTomo Project at Brady Hot Springs, Nevada: Poroelastic Tomography by Adjoint Inverse Modeling of Data from Seismology, Geodesy, and Hydrology
Kurt L. FEIGL and PoroTomo Team

High-Resolution Subsurface Imaging at Soda Lake Geothermal Field
Kai GAO and Lianjie HUANG

Geophysical Investigations and Structural Framework of Geothermal Systems in West and Southcentral Idaho; Camas Prairie to Mountain Home
Jonathan M.G. GLEN, Lee LIBERTY, Erika GASPERIKOVA, Drew SILER, John SHERVAIS, Brent RITZINGER, Noah ATHENS, Tait EARNEY

Subsurface Imaging of Raft River Geothermal Field Using 2010 Walkaway VSP Data
David LI, Kai GAO, Yunsong HUANG, Miao ZHANG, Benxin CHI, Joseph MOORE, and Lianjie HUANG

Geomechanics-Based Stochastic Analysis of Microseismicity for Analysis of Fractured Reservoir Stimulation
Jianrong LU, Ahmad GHASSEMI

Seismic Interferometry Using the Dense Array at the Brady Geothermal Field

Monitoring Geothermal Reservoir Depletion Using Time-dependent Seismic Tomography
Najwa MHANA, Bruce R. JULIAN and Gillian R. FOULGER

Virtual Seismometers for Induced Seismicity Monitoring and Full Moment Tensor Inversion
Christina MORENCY and Eric MATZEL

Enhanced Characterization of Induced Seismicity
Gregory NEWMAN and Petr PETROV

Seismic Zone at East Africa Rift: Insights Into the Geothermal Potential
Ezer PATLAN, Aaron A. VELASCO, Antony WAMALWA, and Galen KAIP

Geothermal Exploration of Mount Baker Hot Springs Through Ground-Based Magnetic and Gravity Surveys
William D. SCHERMERHORN, Brent RITZINGER, Megan ANDERSON, Jeff WITTER, Jonathan GLEN, Corina FORSON, Pete STELLING, Dominique FOURNIER

Iterative Complexity Addition: A Method to Estimate Uncertainty in Geophysical Inversions
D Keith SMITHSON, Hlynur STEFANSSON, Egill JULIUSSON, Sam PERKIN

Subsurface Structure in Oita Hot Spring Area Inferred from Gravity Data, Eastern Kyushu, Japan
Takashi ZAIZEN, Yasuhiro FUJIMITSU, Jun NISHIJIMA

High-resolution Shallow Structure Revealed with Ambient Noise Tomography on a Dense Array
Xiangfang ZENG, Clifford THURBER, Herb WANG, Dante FRATTA, Eric MATZEL, PoroTomo Team

Anisotropic Reverse-Time Migration for Imaging Fracture Zones at Eleven-Mile Canyon
Miao ZHANG, Kai GAO, Lianjie HUANG
Geology

Geotectonics and Heat Flows  

Vladimir BELOUSOV, Edward ERLICH, Yury KUZMIN

1135

Applied Tectonic Geomorphology to Geothermal Exploration in the Tularosa Basin, New Mexico  

Adam BRANDT, Brian PFAFF, Greg NASH

1147

Fracture Mechanical Properties of Damaged and Hydrothermally Altered Rocks, Dixie Valley, NV: Implications for Fault Conduit Development in Geothermal Systems  

Owen A. CALLAHAN, Peter EICHHUBL, Jon OLSON, Nicholas C. DAVATZES

1160


James E. FAULDS, Mark F. COOLBAUGH, Nicholas H. HINZ, Andrew SADOWSKI, Lisa A. SHEVENELL, Emma MCCONVILLE, Jason CRAIG, Drew L. SILER

1169

Re-Evaluating Thermal Conductivity from the Top Down: Thermal Transport Properties of Crustal Rocks as a Function of Temperature, Mineralogy and Texture  

Jesse MERRIMAN, Alan WHITTINGTON, Anne HOFMEISTER

1180

Effects of Hydrothermal Alteration on Petrophysics and Geochemical Mobility of Reservoir Rocks in Olkaria Northeast Geothermal Field, Kenya  

Michael MWANIA

1192

Mafic Heat Sources for Snake River Plain Geothermal Systems  

Dennis L. NIELSON, John W. SHERVAIS, Sabodh K. GARG

1205

Control on the Occurrences Thermal Springs at Southeastern Area of Singkarak Lake, West Sumatra, Indonesia: Preliminary Study Results  

Mochamad NUKMAN, Salahuddin HUSEIN, Riando Elang DESILVA

1213


Victor OTIENO, Xavier MUSONYE

1218

Occurences of Clay Minerals in Permeable Fracture Zones in the Granitic Basement of Geothermal Wells at Rittershoffen, France  

Jeanne VIDAL, Patricia PATRIER, Albert GENTER, Daniel BEAUFORT

1228
Direct Use

Study on Cascaded Direct Use Application Using Geothermal Fluids in Wayang Windu Field

Nursanty BANJARNAHOR, Prihadi DARMANTO, Jooned HENDRARSAKTI

Seasonal High Temperature Heat Storage with Middle Deep Borehole Heat Exchangers – a Coupled-Modelling Study

Kristian BÅR, Ingo SASS, Bastian WELSCH, Daniel SCHULTE, Wolfram RÜHAAK

Performance, Cost, and Financial Parameters of Geothermal District Heating Systems for Market Penetration Modeling Under Various Scenarios

Koenraad F. BECKERS, Katherine R. YOUNG

Geothermal in Mine Closure: Visualizing the Hydromechanical Properties of a Geothermally Facilitated Bioreactor

Lucila DUNNINGTON, Masami NAKAGAWA, Kamran JAHDAN BAKHSH

The Impact of Geothermal Direct Use Applications on the Sustainable Development Goals

Michelle FRANKE, Masami NAKAGAWA

Direct Applications of Geothermal Energy; Economic and Environmental Assessment: Meshkin-Shahr, Iran

Soheil ROUMI, Hossein YOUSEFI, Younes NOOROLLAHI, Kaveh BEKHRAD, Sadiq J. ZARROUK

Update on Geothermal Direct-use Installations in the United States

Diana M. SNYDER, Koenraad F. BECKERS, Katherine R. YOUNG
Low Temperature

Hybrid Ground-Source Heat Pumps for Cooling Cellular Tower Shelters: from Campus Living Laboratory to Nationwide Deployment

Gloria Andrea AGUIRRE, Koenraad F. BECKERS, Maciej Z. LUKAWSKI, and Jefferson W. TESTER

A New Method for Constant Temperature Thermal Response Tests

Murat AYDIN, Mustafa ONUR, Altug SISMAN

Engineering Thermophilic Microorganisms to Selectively Extract Strategic Metals from Low Temperature Geothermal Brines

Marimikel M. CHARRIER, Caroline M. AJO-FRANKLIN

Integration of Ground Source Heat Pump Systems and Gas Turbine for Heating Purpose of GT Surrounding Buildings

Babak DEHGHAN


Eloisa DI SIPIO; David BERTERMANN

Binary Power Plant CO2 Life Cycle Emissions Including Isobutane Fugitive

Earl MATTSON, Lucia MALLOZZIA, Greg MINES

Utilization of Abandoned Coal Mines as a Low Enthalpy Geothermal Resource and Subsequent Energy Exploitation

Manan SHAH, Dwijen VAIDYA, Anirbid SIRCAR, Shreya SAHAJPAL

Space Heating and Cooling Application Based on Low Enthalpy Geothermal Reservoirs with a Focus on Indian Subcontinent

Dwijen VAIDYA, Manan SHAH, Anirbid SIRCAR, Shreya SAHAJPAL

Transported Low-temperature Geothermal Energy for Thermal End Uses

Zhiyao YANG, Xiaobing LIU, Kyle R. GLUESENKAMP, Ayyoub M. MOMEN

Economic and Thermodynamic Evaluations of Using Geothermal Heat Pumps in Different Climate Zone (Case Study: Iran)

Hossein YOUSEFI, Maryam HAMLEHDAR, Sanaz TABASI, Younes NOOROLLAHI
General

Petrographic and Thermal Evidence of High-Temperature Geothermal Activity from the MH-2B Slimhole, Western Snake River Plain, Idaho 1393

Trevor A. ATKINSON, Dennis L. NEWELL, John W. SHERVAIS

P³ - International PetroPhysical Property Database 1398

Kristian BÄR, Thomas REINSCH, Judith SIPPEL, Alexander STROM, Philipp MIELKE, Ingo SASS

A Case Study of the Development and Optimization of Geothermal Information Systems in Tianjin 1404

Cheng BIAN

Assessment of the Geothermal Potential of the Gediz Graben, Manisa, Turkey 1410

Selim CAMBAZOGLU, Arif Mert EKER, Gözde YAL, Osman SEN, Hüseyin DUNYA, Haluk AKGUN

A Baseline Study of Nonproductive Time Related to Lost Circulation in Geothermal Drilling 1420

Patrick COLE, Katherine YOUNG, Clayton DOKE, Neel DUNCAN, Bill EUSTES

Tln-SFT – the Computer System to Apply the Log-Transformation Regression Method for the Estimation of Static Formation Temperatures of Geothermal Boreholes 1433

Orlando Miguel ESPINOZA-OJEDA, Eduardo PACHECO and Edgar SANTOYO

Exploration and Development of the Plataanres, Honduras Geothermal System 1442

Steven FERCHO, Enrique PORRAS, Doug PERKIN, Lara OWENS, Greg RHODES, Ben DELWICHE, Paul SPIELMAN, Patrick WALSH

Greenhouse Gas Emissions from Geothermal Power Production 1452

Thrainn FRIDRIKSSON, Almudena MATEOS, Yaseen ORUCU, Pierre AUDINET

Use of Supercritical and Subcritical Binary Models for Geothermal Power Plants and Effects of Geothermal Resource Temperature on Power Plant Design 1464

Hilal KIVANC ATES, Umran SERPEN, Niyazi AKSOY

Improving a 2015 Map of Geothermal Resource Probability Across the State of Hawaii 1471

Nicole LAUTZE, Donald THOMAS, Robert WHITTIER, Stephen MARTEL, Garrett ITO, Neil FRAZER, Graham HILL, Thomas MARTIN, Phil WANNAMAKER, Nicholas HINZ

Implications of Drilling Technology Improvements on the Availability of Exploitable EGS Resources 1479

Thomas S. LOWRY, Adam FORIS, John T. FINGER, Stephen PYE, Douglas A. BLANKENSHIP

Probability of Drilling Success and Conceptual Well Design 1483

Glenn MELOSH
Assessment of Mineral Resources in Geothermal Brines in the US
Ghanashyam NEUPANE and Daniel S WENDT

Preliminary Corrosion Testing of Nickel Alloys in Simulated High Temperature Geothermal Environment
Andri Í. THORHALLSSON, Tindur JONSSON, Andri STEFANSSON, Sigrún Nanna
KARLSDOTTIR

Creating a Geothermal Atlas of Hungary
Aniko TOTH

Case Study of Geothermal Power Plant in Metropolitan Paris Using NREL SAM
Patricia WASSEM, Kevin R. ANDERSON

The Material Corrosion Test Using Small Loop System at Geothermal Power Plant in Japan
Norio YANAGISAWA, Yoshio MASUDA, Kazumi OSATO, Masatake SATO, Kaichiro KASAI, Koji SAKURA, Toshihiko FUKUI

A Review of Solar–Geothermal Hybrid Systems for Water Desalination
Hossein YOUSEFI, Seyed Mostafa MORTAZAVI, Younes NOOROLLAHI, Seyed Mohammad MORTAZAVI, Parisa RANJBARAN

An Improved 2 m Survey Device and Its Application in Southeast Fujian in China
ZHANG Yanjun, XIE Yangyang, YU Ziwang, HU Zhongjun, Zhang Tong
Emerging Technology

A Tiny Solution to a Big Problem: the Use of Nanobubbles in Scale Reduction
Molly BARON, Masami NAKAGAWA, Michelle FRANKE

Noble Gas Release and Flow Through a Granite and Basalt
Stephen BAUER, Payton GARDNER, Hyunwoo LEE

Trial Deployment of a Surface Heat Flow Probe Over the Los Azufres Geothermal Region, Mexico
Graeme BEARDSMORE, Luis GUTIÉRREZ-NEGRÍN, Víctor GARDUÑO-MONROY, Orlando ESPINOSA-OJEDA, Salvador ALMANZA-ÁLVAREZ, Anson ANTRIASIAN, Shannon EGAN

A Biotechnology Application for Rare Earth Extraction from Geothermal Brines
Yongqin JIAO, Dan PARK, Aaron BREWER, Congwang YE, Laura LAMMERS, Tianyi KOU, and Yat LI

Improved Test Method for Slim Hole and Microbore Exploration Drilling
Dennis KASPEREIT, William L. OSBORN

Breaking Down Development Cost Barriers for Geothermal Reservoir Monitoring Systems
‘Anyone’ Can Program
Randy NORMANN

Research and Utilization of Silica from Hydrothermal Solution
POTAPOV V.V., GOREV D.S., SHUNINA E.V., ZUBAHA S.V

Boosting of Electrical Power System Transient Stability with Application of FACTS Devices
Joel SUTTER, Peter MBURU

Design Optimization of Geothermal Wells Using an Improved Overall Heat Transfer Coefficient
Catalin TEODORIU, Adonis ICHIM, Gioia FALCONE

Direct Downhole Temperature Measurement and Real Time Pressure-Enthalpy Model Through Photon Counting Fibre Optic Temperature Sensing
Anggoro WISAKSONO, Andrea PIZZONE, Nathan R. GEMMELL, Paul L. YOUNGER, Robert H. HADFIELD
Drilling

Analysis of Stuck Pipe in Menengai Geothermal Field in Kenya
Billy AWILI

Thermal Spallation Drilling an Alternative Drilling Technology for Deep Heat Mining - Performance Analysis, Cost Assessment and Design Aspects
Michael A. KANT, Edoardo ROSSI, Dragana HÖSER, Philipp RUDOLF VON ROHR

Enhancing the Drilling Process for Geothermal Resources by Combining Conventional Drilling and the Spallation Technology
Michael A. KANT, Edoardo ROSSI, Dustin BECKER, Philipp RUDOLF VON ROHR

Innovative Drilling Technology for Supercritical Geothermal Resources Development
Shigemi NAGANAWA, Noriyoshi TSUCHIYA, Takashi OKABE, Tatsuya KAJIWARA, Kuniaki SHIMADA, Norio YANAGISAWA

A Case Study of Radial Jetting Technology for Enhancing Geothermal Energy Systems at Klaipeda Geothermal Demonstration Plant
Rohith NAIR, Lies E.PETERS, Saulius SLIAUPA, Robertas VALICKAS, Sigitas PETRAUSKAS

Mitigating Problem in Geothermal Drilling Case Studies of Stuck Pipe and Lost Circulation
Wisnu Adi NUGROHO, Satria HERMAWAN, Brian Harits LAZUARDI

Analysis of Non-Productive Time in Geothermal Drilling Operations - A Case Study of Olkaria
Brenda NYOTA, Moses MURIGU