

Wednesday, October 10, 2018

Hôtel du Département: Room 1006/7

**8:15 Registration and coffee****8:45 Welcome statement:** *J. Schmittbuhl, T. Kohl, I. Berre, M. Loewer***SESSION 1: ASSESSMENT OF GEOTHERMAL RESOURCES (SP1)****9:00 KEYNOTE SPEECH: Geothermal assessment: a regional approach. Available tools and research frontiers***presented by Eugenio Trumpy (Istituto di Geoscienze e Georisorse, Pisa)*9:30 Towards a porosity-independent permeability update model for large-scale reactive transport simulations  
- *J. Delort Ylla, A. M. M. Leal, M.O. Saar*9:50 Geothermal potential of Anticosti sedimentary basin, Canada - *V. Gascuel, K. Bédard, F-A. Comeau, J. Raymond, M. Malo*10:10 Interdependencies between physical, design and operational parameters in a two doublet configuration for direct use geothermal heat - *A. Daniilidis, H. Nick, and D. Bruhn***10:30 Coffee break and poster exhibition****SESSION 2: RESERVOIR ENGINEERING (SP4)****11:00 KEYNOTE SPEECH: Flexible parallel implicit modelling of coupled thermal–hydraulic–mechanical processes in fractured rocks** *presented by Antoine Jacquy (GFZ German Research Centre for Geosciences, Potsdam)*11:30 Systematically changes in MT signal during deep drilling operations - *N. Haaf, E. Schill, R. Karlsdottir, K. Arnason*11:50 Using the Pressure While Drilling Data to inform drilling decisions in the Kawerau and Rotokawa field, NZ  
- *M. Le Brun and L. Azwar*12:10 Experimental observations and constitutive description of the effect of compaction banding on the hydraulic properties of porous rock - *J. Leuthold and T. Triantafyllidis***12:30 Lunch and poster exhibition**14:00 Modelling of thermal shock induced fracture growth - *I. Stefansson, A. Paluszny, I. Berre, E. Keilegavlen*14:20 Multi-fracture propagation in porous medium under shear stimulation of fluid flow  
- *H. Trung Dang, I. Berre, E. Keilegavlen***SESSION 3: OPERATION OF GEOTHERMAL SYSTEMS (SP6)****14:40 KEYNOTE SPEECH: The in-situ stimulation experiment at the Grimsel test site – an overview***presented by Florian Amann (RWTH Aachen)*15:10 Energetic balancing of the cyclic operation of a high temperature aquifer storage - *J. Meixner, M. Jäggle, I. Stober, T. Kohl***15:30 Coffee break and poster exhibition**16:00 Geothermal District Heating and Power Generation Experience in Turkey - *O. Mertoglu and N. Basarir***SESSION 4: CONSTRUCTING GEOTHERMAL WELLS (SP3)****16:20 KEYNOTE SPEECH: The challenges in drilling, testing and operating the latest make-up wells for Hellisheidi and Nesjavellir power plants, SW-Iceland** *presented by Bjarni Reyr Kristjánsson (Orkuveita Reykjavíkur)*16:50 Full-Scale Horizontal Test-Rig for Simulation of Deep Geothermal Drilling - *R. Freifer, L. Hayn, J. Oppelt*17:10 A combined thermo-mechanical drilling method: Field implementation and demonstration  
- *E. Rossi, M.O. Saar, P.R. von Rohr***17:30 Poster session and beer****19:30 Workshop dinner at L'Ancienne Douane Restaurant**

# POSTERS

## SESSION 1: ASSESSMENT OF GEOTHERMAL RESOURCES (SP1)

- S1.1** Conductivity anomaly under GRT1-2 geothermal project of Rittershoffen as revealed by magnetotelluric. *Abdelfettah et al.*
- S1.2** Thermal retardation and decay in fractured rock: theory and field measurements from joint heat and solute tracer tests. *de La Bernardie et al.*
- S1.3** Induced seismicity in a geothermal reservoir: a case study in the Reykjanes peninsula in Iceland. *Duboeuf et al.*
- S1.4** Recent valorization of data distributed by the CDGP (Data center for deep geothermal energy). *Frémand et al.*
- S1.5** Effective stress drop of injection induced seismicity. *Fischer*
- S1.6** Flow and heat transfer numerical modelling in the Hainaut limestone geothermal reservoir: study at local and regional scales. *Gonze et al.*
- S1.7** Petrophysical characterization of Nubian Sandstone reservoirs and their potential for geothermal applications; central Gulf of Suez, Egypt. *Hefny et al.*
- S1.8** Thermal properties of the Muschelkalk and Buntsandstein from the EPS-1 borehole at the Soultz-sous-Forêts (France). *Kushnir et al.*
- S1.9** The impact of pore-occluding cementation and chemical compaction on the reservoir quality of deeply buried sandstones. *Monsees et al.*
- S1.10** Signature of the hydrothermal circulation in a deep geothermal reservoir: insights from THM modelling. *Vallier et al.*
- S1.11** Outcrop fracture characterization for geothermal reservoirs: Optimized inputs for reservoir models. *Zuluaga et al.*

## SESSION 2: RESERVOIR ENGINEERING (SP4)

- S2.1** Visualizing flow interactions between fracture and matrix using a temporo-ensemble PIV method. *Ahkami et al.*
- S2.2** Thermo-hydraulic modeling of a deep fault-related fracture system in the Upper Rhine Graben using MOOSE/TIGER. *Egert et al.*
- S2.3** Feasibility of combining natural gas recovery and CO<sub>2</sub>-based geothermal in deep natural gas reservoirs. *Ezekiel et al.*
- S2.4** MOOSE/TIGER: New High-Performance Simulator for Nonlinear Coupled THMC Processes. *Gholami Korzani and Kohl*
- S2.5** Impact of effective normal stress on two-phase flow through a single fracture with rough surfaces. *Grimm Lima et al.*
- S2.6** Anisotropy and flow channeling with shearing in rough single fractures. *Marchand et al.*
- S2.7** Fluid pressure drops during stimulation of segmented faults in deep geothermal reservoirs. *Piris et al.*
- S2.8** Probabilistic analysis of fault stability within the Bavarian Molasse basin. *Seithel and Kohl*

## SESSION 3: OPERATION OF GEOTHERMAL SYSTEMS (SP6)

- S3.1** Coda wave interferometry during the heating of deep geothermal reservoir rocks. *Azzola et al.*

## SESSION 4: CONSTRUCTING GEOTHERMAL WELLS (SP3)

- S4.1** Thermally induced Laser rock drilling: fundamental laser-rock interaction lab tests and its integration into a full-scale drilling Process. *Jamali et al.*

## SESSION 5: SUSTAINABILITY, ENVIRONMENT, REGULATION FRAMEWORK, AND SOCIETAL ACCEPTABILITY (SP7)

- S5.1** Earthquake size controlled by hydraulic injection parameters: case study of the 1993 Soultz-sous-Forêts injection. *Cauchie et al.*
- S5.2** State of knowledge about the risks and impacts associated with deep geothermal. *Gombert et al.*
- S5.3** Similarity of natural swarms and induced seismicity earthquake catalogue. *Mazanec Lima et al.*
- S5.4** Microgravity monitoring of the Soultz-sous-Forêts and Rittershoffen geothermal reservoirs (Alsace, France). *Portier et al.*
- S5.5** Conceptual model assessment for sustainable direct use of geothermal resources: The case of Los Andes – San Felipe basin (central Chile). *Taucare et al.*

Abstracts available online: <http://labex-geothermie.unistra.fr/>

(click on the EGW 2018: 6<sup>th</sup> European Geothermal Workshop)

Wifi code: See welcome package for instructions.

# POSTERS

## SESSION 6: EXPLORATION OF GEOTHERMAL RESERVOIRS (SP2)

- S6.1** Comparison between land gravity and thermal gradient in geothermal area to discriminate potential zones. *Abdelfettah et al.*
- S6.2** Geochemical characterization of a low-enthalpy shallow hydrothermal system as a proxy for a non-conventional deep geothermal potential, an example from the southeastern Sierra Madre Occidental, Mexico. *Billarent-Cedillo et al.*
- S6.3** Performance of Ground Source Heat Pump system and energy migration assessment around Deep Borehole Heat Exchanger. *Chen et al.*
- S6.4** Geophysical signature of the transition zone between the sedimentary cover and the basement: an analogue approach to help de-risking geothermal prospects. *Darnet et al.*
- S6.5** Crustal fault zones: new targets for geothermal exploration? Preliminary numerical simulations of the Pontgibaud fault (French Massif Central). *Duwiquet et al.*
- S6.6** Passive seismic monitoring of the Los Humeros (Mexico) geothermal field. *Gaucher et al.*
- S6.7** Neogene deformation in the Upper Rhine Graben area: Implications from GIS-based LiDAR-DEM5 lineament analysis and fault-slip data from the Kaiserstuhl volcanic edifice. *Grimmer*
- S6.8** Comprehensive fault zone characterization: Identification of Liquiñe-Ofqui fault zone next to Villarrica volcano using gravimetric techniques. *Held et al.*
- S6.9** Template matching applied to the seismicity induced in the Rittershoffen deep geothermal reservoir. *Köpke et al.*
- S6.10** Towards monitoring deep geothermal reservoirs in Alsace with ambient seismic noise. *Kula et al.*
- S6.11** Predictive Mechanical model for fracture stimulation in an enhanced geothermal system (EGS) context. *Lepillier et al.*
- S6.12** Improvement of Geothermometric Methods to Reduce Exploration Risk. *Nitschke et al.*
- S6.13** High-conductivity zones linked with fluid pathways in the Villarrica geothermal system, S-Chile. *Pavez et al.*
- S6.14** Resistivity imaging of an analogue of the transition zone between the sedimentary cover and the basement of deep sedimentary basin for geothermal exploitation in Alsace. *Porté et al.*
- S6.15** Petrothermal Geothermal Energy in Bavaria: First Laboratory Results of an Analogue Study. *Potten et al.*
- S6.16** Identification of the deep hydrothermal reservoir in the Acoculco Caldera, Mexico. *ProL-Ledesma and Granados-Pastrana*
- S6.17** Premium treatment system for granite and sandstone formations - Fluid development and field trial in a geothermal well. *Recalde Lummer et al.*
- S6.18** New insights on geothermal rock properties of the Los Humeros geothermal field, Mexico. *Weydt et al.*
- S6.19** Sensitivity analysis of reservoir temperatures based on mineral phase saturations. *Ystrom et al.*

## SESSION 7: ENERGY CONVERSION SYSTEMS (SP5)

- S7.1** Performance simulation of geothermal power plants. *Bombarda et al.*

### GEOTHERMAL SITE VISITS

*Note: pre-registered participants only*

**Friday, October 12, 2018**

- 7:50** Bus departs Hôtel du Département
- 9:00 Sultz-sous-Forêts geothermal site visit
- 10:30 Travel to Rittershoffen
- 11:00 Rittershoffen geothermal site visit
- 12:30** Travel to Merckwiller-Pechelbronn and pack lunch
- 13:00 Visit Musée français du pétrole
- 15:30 Travel to Strasbourg
- 16:30** Arrive in Strasbourg, drop off at Hôtel du Département

# PROGRAMME

Thursday, October 11, 2018

Hôtel du Département: Room 1005

8:15 Coffee and poster session

9:00 **SPECIAL FOCUS: Investigation of the November 15, 2017, Pohang earthquake (South Korea) leveraging on seismic data and space borne DInSAR**

*presented by Andrea Manconi (ETH Zürich)*

9:45 General Discussion

10:00 Coffee break and poster exhibition

**SESSION 5: SUSTAINABILITY, ENVIRONMENT, REGULATION FRAMEWORK, AND SOCIETAL ACCEPTABILITY (SP7)**

10:30 **KEYNOTE SPEECH: Sharing benefits as a key for social acceptability – experiences around the world**

*presented by Renato Papale (Steam Group SRL)*

11:00 Social acceptability of deep geothermal energy: overview of an online survey from five European and American countries - *J. López-Sánchez, D. Blesent, M. Malo, J. Raymond, C. Dezayes, P. Goderniaux, L. Daniele, T. Le Borgne, E. Ramírez, J.P. Portela, J.E. Hernandez*

11:20 Consumer's perception of company's Corporate Social Responsibility in the context of a geothermal energy facility development - *M. Contini, E. Annunziata, F. Rizzi, M. Frey*

11:40 Where and when do energy benefits from EGS outweigh induced seismicity risk? Findings from private and social cost benefit analysis. - *E. Trutnevyte and T. Knoblauch*

12:00 Lunch and poster exhibition

**SESSION 6: EXPLORATION OF GEOTHERMAL RESERVOIRS (SP2)**

13:30 **KEYNOTE SPEECH: Exploration of geothermal reservoirs: A review and future challenges**

*presented by Philippe Jousset (GFZ German Research Centre for Geosciences, Potsdam)*

14:00 Quantitative Seismic Interpretation of Geothermal Reservoirs in the Copenhagen Area, Denmark  
- *K. Bredesen, E. Dalgaard, A. Mathiesen, N. Balling*

14:20 Is the basement-sediment transition zone in the Rhine graben a good geothermal reservoir? An analogue approach in the CANTARE-Alsace project. - *C. Dezayes, C. Lerouge, A. Kushnir, M. Heap, P. Baud, JF. Girard, M. Darnet, J. Porté, F. Chabaux, J. Ackerer, A. Genter, V. Maurer*

14:40 How to better estimate temperature in a geothermal reservoir: A pilot study using the thermal conductivity of sedimentary rocks at near in situ conditions

- *P. Harlé, A. Kushnir, C. Aichholzer, V. Maurer, R. Hehn, M. Heap, A. Richard, P. Baud, A. Genter, P. Düringer*

15:00 Coffee break and poster exhibition

15:30 Applying geochemical and reactive transport modeling for abiotic H<sub>2</sub> generation in the Soultz-sous-Forêts geothermal system, Rhine graben, France - *J. Murray, A. Clément, B. Fritz, J. Schmittbuhl, V. Bordmann, JM. Fleury*

15:50 Exhumed geothermal systems as the key for understanding active geothermal fields: The case of Las Minas (Mexico)  
- *E. Olvera-García, C. Bianco, V. H. Garduño-Monroy, D. Liotta, A. Brogi, A. Jiménez-Haro, J. A. Guevara-Alday*

16:10 Continuous high resolution gravity measurements at a geothermal field in Northern Iceland

- *F. Schäfer, P. Jousset, J. Hinderer, M. Brehme, K. Erbas, A. Jolly, M. Mikolaj, N. Portier, M. Reich, S. Rosat, T. Schöne, S. Schröder, R. Warburton, A. Güntner*

**SESSION 7: ENERGY CONVERSION SYSTEMS (SP5)**

16:30 Economic feasibility of low-temperature geothermal CHP plants - *S. Van Erdeweghe*

16:50 Closing statement and poster award

17:00 Poster session and beer

19:00 End of Workshop