

## Programme

### Tuesday, October 3

18:00-19:00 Welcome and registration, Hof, Akureyri

### Wednesday, October 4

08:00 Registration

#### Opening Session - Chair : Jan Hopman, IMAGE coordinator, TNO

- 09:05 Welcome - **Ólafur G. Flóvenz**, ÍSOR-Iceland GeoSurvey
- 09:15 Welcome - **Helgi Jóhannesson**, CEO Norðurorka Ltd. - Utility Company
- 09:30 EC geothermal policy & funding - **Filippo Gagliardi**, European Commission officer
- 09:50 Introduction to IMAGE Final Conference - **Jan Hopman**, IMAGE coordinator, TNO
- 10:00 IMAGE in magmatic settings - **Gylfi Páll Hersir**, ÍSOR-Iceland GeoSurvey
- 10:20 IMAGE in sedimentary/basement settings - **Chrystel Dezayes**, BRGM
- 10:40 COFFEE BREAK

#### Session I - Structures an Fluid Flow - Chair David Bruhn, GFZ Potsdam

- 11:00 Multi-Faceted Approach for Harnessing the Vast Geothermal Potential of Nevada  
- **James Faulds**, University of Nevada
- 11:20 Permeability and hydraulic conductivity - **Domenico Liotta**, University of Bari
- 11:35 A Fracturing Point of View in Geothermal Fields. Case Study: The Trans-Mexican Volcanic Belt  
- **Victor Hugo Garduño Monroy**, Universidad Mochoacana de San Nicolas de Hidalgo
- 11:55 The 3D in-situ stress field and its induced changes in a geothermal reservoir - **Moritz Ziegler**, GFZ Potsdam
- 12:10 Geomechanical Play-Fairway Analysis - **Nicholas Davatzes**, Temple University
- 12:30 LUNCH

#### Session II - Geophysical methods 1 - Chair Adele Manzella, CNR

- 13:30 Innovative Geophysical Tools for Monitoring Geothermal Production and ReInjection Adapted to Exploration Objectives - **Chris Bromley**, GNS Science
- 13:50 Ambient seismic noise monitoring during the injection phases at the deep geothermal projects in Basel and St. Gallen, Switzerland - **Anne Obermann**, ETH Zurich
- 14:05 Seismic imaging in the Krafla high-temperature, volcanic geothermal field, NE-Iceland: Results from the VSP experiment in well K-18 - **Felix Kästner**
- 14:20 Surface-Wave Tomography by Ambient Noise Seismic Interferometry to image volcanic and geothermal systems in South Iceland - **Joana Martins**, TNO
- 14:35 Analysis of seismological data on Reykjanes peninsula, Iceland - **Hanna Blanck**, ÍSOR-Iceland GeoSurvey
- 14:50 Exploring the potential of imaging a peri-urban geothermal site by using teleseismic receiver functions  
- **Afifa Imtiaz**, BRGM
- 15:10 COFFEE BREAK

**Session III - Geophysical methods 2** - Chair **Gylfi Páll Hersir**, ÍSOR-Iceland GeoSurvey

- 15:40 Enhanced Characterization of Induced Seismicity - **Gregory A. Newmann**, Lawrence Berkeley National Laboratory
- 16:00 High resolution gravity models for sedimentary basins and underlying basement - **Jan-Diederik van Wees**, TNO
- 16:15 Hybrid gravity monitoring of Soultz-sous-Forêts and Rittershoffen - **Nolwenn Portier**, IPGS EOST
- 16:30 Active and passive electromagnetic measurements in a deep fractured sedimentary basin in peri-urban context in NE Belgium - **Virginie Harcouet-Menou**, VITO
- 16:45 MT-inversion techniques with external constraints - **Ásdís Benediktsdóttir**, ÍSOR-Iceland GeoSurvey
- 17:00 A surface-hole deep electrical resistivity acquisition in the Larderello geothermal field (Italy) - **Enzo Rizzo**, CNR-IMAA
- 17:15 **Keynote: Drilling toward Supercritical Fluid: The DESCRAMBLE experience at Larderello**  
- **Ruggero Bertani**, Enel Green Power

**Thursday, October 5****Session IV - Processes and Properties** - Chair **Chrystel Dezayes**, BRGM

- 09:00 Heat flow measurements in the Acoolco Caldera, Mexico  
- **Rosa Maria Prol-Ledesma**, Universidad Nacional Autonoma de Mexico
- 09:20 Use and development of auxiliary chemical geothermometers for geothermal fluids from crystalline and sedimentary reservoirs - **Bernard Sanjuan**, BRGM
- 09:35 The electrical structure of Icelandic deep geothermal - **Franck Laurel Nono Nguendjio**, Pau University - DMEX
- 09:50 Physical rock properties and their relation to fluid-rock interactions at supercritical conditions  
- **Juliane Kummerow**, German Research Centre for Geosciences
- 10:05 New (Zealand) perspectives on continental arc geothermal systems - **Greg Bignall**, GNS Science
- 10:20 COFFEE BREAK

**Session V - Posters** - Chair **Brynja Jónsdóttir**, ÍSOR-Iceland GeoSurvey

- 10:30 Poster Session - (List of Abstracts on page 10-12)
- 12:30 LUNCH - Poster Session continues
- 14:10 COFFEE BREAK

**Session VI - Integration and Advanced Modelling** - Chair **Jan-Diederik van Wees**, TNO

- 14:30 Regional 3D structural and (hydro)thermal modelling of the Upper Rhine Graben - **Jessica Freyemark**, GFZ Potsdam
- 14:45 Optimum geothermal doublet placement in fractured reservoirs - **Jan ter Heege**, TNO
- 15:00 Integrated coupled modelling and microseismic mapping: identifying and targeting volumes with higher potential for transmissivity enhancement in unconventional geothermal applications - **Stefano Benato**, Cranfield University
- 15:15 A 3D Geological Static Field Model of the Krafla Geothermal Area, NE-Iceland – constructing a workflow applied to the Pico Alto Geothermal Area, Azores - **Unnur Þorsteinsdóttir**, ÍSOR-Iceland GeoSurvey
- 15:30 Conceptual model of the supercritical geothermal system in the Larderello area (Italy) using multidisciplinary exploration data - **Adele Manzella**, CNR
- 15:45 Thoughts on integrated application in magmatic settings geothermal field models - **Simon Lopez**, BRGM

**16:00 Panel - What next for geothermal energy?**- Chair **Mike Sandiford**, University of Melbourne

**Egill Júlíusson**, Landsvirkjun  
**Adele Manzella**, CNR

**Ómar Sigurðsson**, HS-Orka  
**Ruggero Bertani**, Enel Green Power

- 17:00 Closing remarks - **Jan Hopman**, IMAGE coordinator, TNO

## List of Abstracts - Poster Session - Display no, alphabetical order of presenter

1. How to establish a very precise chrono-lithostratigraphic log based on cuttings, core samples, gamma ray logs and analogues: application on the Soultz-sous-Forêts and the Rittershoffen geothermal wells (Rhine Graben, France)  
- **Aichholzer, Coralie**. EOST
2. 3D Groundwater flow model at the Upper Rhine Graben scale to help locating the deep geothermal resource  
- **Armandine les Landes, Antoine**. BRGM
3. A methodology for delineating preferential target areas for geothermal projects based on 3D mechanical and 3D groundwater flow model  
- **Armandine les Landes, Antoine**. BRGM
4. A 3D mechanical model to help locating the deep geothermal resource - **T. Guillon**, BRGM – DGR/DES, presenter:  
- **Armandine les Landes, Antoine**.
5. Micro-seismicity in Námafjall high temperature area, NE-Iceland  
- **Ágústsson, Kristján**. ÍSOR
6. P<sup>3</sup> - PetroPhysical Property Database – comprehensive dataset enhancing the determination of empirical correlations between thermal and other petrophysical properties  
- **Bär, Kristian**. TU Darmstadt
7. Geological and structural setting of the Eastern Elba Island exhumed geothermal system (Italy)  
- **Bianco, Caterina**. University of Bari
8. Vertical seismic profiling survey at the Thonex Well (Geneva)  
- **Bitri, Adnand**. BRGM
9. Seismotectonics of the Geysir area in South Iceland during the years 1995 to 2001, revealed with relative earthquake locations  
- **Bjarnason, Ingi Þ.** University of Iceland
10. Temperature in the subsurface of the Netherlands from new data and novel modelling methodology  
- **Bonté, Damien**. Utrecht University
11. Characterizing permeable structures in geothermal fields – A case study in Lahendong  
- **Brehme, Maren**. GFZ Potsdam
12. 3D reconstruction of the electric resistivity with land CSEM Numerical developments and application to geothermal prospection  
- **Bretonneau, François**. BRGM
13. Stress field from fault data inversion in North-East Iceland,  
- **Brogi, Andrea**. University of Bari
14. Kinematic data of the NE-trending shear zone affecting the Larderello geothermal area (southern Tuscany, Italy) and comparison with local focal mechanisms  
- **Brogi, Andrea**. University of Bari
15. Controlled-Source Electromagnetic surveying for geothermal exploration in deep sedimentary and basement areas  
- **Darnet, Mathieu**. BRGM
16. Imaging the resistivity structure of the Reykjanes high-enthalpy geothermal field with the Controlled-Source Electro-Magnetic method  
- **Darnet, Mathieu**. BRGM
17. Advances in geophysical methods for geothermal exploration in deep sedimentary and basement areas  
- **Darnet, Mathieu**. BRGM
18. Improving the depth penetration of seismic surface wave based methods with H/V methods for sedimentary basins  
- **Delatre, Mickael**. BRGM
19. 3D Geological and temperature models in the Strasbourg area (Upper Rhine Graben, France)  
- **Dezayes, Chrystel**. BRGM



20. Impact of thermal stressing on the strength and permeability in reservoir rocks at Krafla volcano  
- **Eggertsson, Guðjón Helgi**. University of Liverpool
21. New tracers: Krafla field test  
- **Gadalia, Alain**. BRGM
22. A new research project on interaction of geothermal, tectonic, and magmatic processes in the Hengill area  
- **Geirsson, Halldór**. Institute of Earth Sciences
23. Petrophysical and mineralogical characterization of IDDP-2 mini-core samples from depths of 3650 to 4650 m  
- **Escobedo, David**. Laboratoire Géosciences Montpellier,  
presenter: **Benoit, Gibert**.
24. Electrical conductivity of basaltic and rhyolitic melts from Krafla central volcano, Iceland  
- **Benoit, Gibert**. Géosciences Montpellier
25. Exploring the geothermal heat: Seismic properties as a function of reservoir conditions  
- **Grab, Melchior**
26. Wave-length of the crustal stress pattern in Western Europe and the Mediterranean  
- **Heidbach, Oliver**. VITO NV
27. Alteration Minerals and Fluid Inclusions in Garnet from Geitafell, SE-Iceland  
- **Helgadóttir, Helga Margrét**. ÍSOR
28. Low-temperature geothermal exploration in Hoffell, southeastern Iceland. Hot water for the municipality of Hornafjörður  
- **Ingimarsson, Heimir**. ÍSOR
29. Validation of the Influence of Cation-exchange Capacity on Resistivity Logs within Hydrothermal Systems  
- **Weisenberger, Tobias Björn**. ÍSOR, presenter: **Ingimarsson, Heimir**
30. Structural-geological impact on soil gas composition at Los Humeros Volcanic Complex  
- **Jentsch, Anna**. Helmholtz-Zentrum Potsdam Deutsches GeoForschungsZentrum GFZ
31. Integrated geophysical imaging of Reykjanes, SW Iceland  
- **Jousset, Philippe**. GFZ
32. Injection-induced surface deformation and seismicity at the Hellisheidi geothermal field, Iceland  
- **Juncu, Daniel**. Institute of Earth Sciences
33. The role of smectites in the electrical conductivity of active hydrothermal systems: electrical properties of core samples from Krafla volcano, Iceland  
- **Lévy, Léa**. ÍSOR
34. Thermo-mechanical characterization of the European lithosphere for geothermal exploration  
- **Limberger, Jon**. Utrecht University
35. Normal faults and transfer zones during Late Miocene mineralization in eastern Elba Island (Italy)  
- **Liotta, Domenico**. University of Bari
36. Fractures analysis and hydrothermal mineralization in the Neogene Geitafell central volcano (Iceland): insights for fluid pathways in the fossil geothermal system  
- **Liotta, Domenico**. University of Bari
37. NW-Trending tectonic structures in Krafla geothermal area  
- **Liotta, Domenico**. University of Bari
38. Supercritical geothermal resources in Europe: how to IMAGE them?  
- **Manzella, Adele**. CNR
39. Surface-Wave Tomography by Ambient Noise Seismic Interferometry to image volcanic and geothermal systems in South Iceland  
- **Martins, Joana**. TNO
40. The importance of borehole imaging logs in revealing volcanic facies and structure: Examples from Hawai'i and Iceland  
- **Millett, John**. VBPR

41. Supercritical fluid flow close to shallow magma intrusions: suggestions from analogue modelling  
- **Montanari, Domenico**. Institute of Geosciences and Earth Resources, National Research Council of Italy (CNR)
42. Geochemical model of high temperature gas-water-rock interaction  
- **Montegrossi, Giordano**. CNR-IGG
43. 3D Numerical Model of Larderello Area  
- **Montegrossi, Giordano**. CNR-IGG
44. What can we learn from laboratory experiments on tracer behavior?  
- **Muller, Jiri**. Institute for Energy Technology (IFE)
45. Ambient seismic noise monitoring during the injection phases at the deep geothermal projects in Basel and St. Gallen, Switzerland  
- **Obermann, Anne**. ETH Zurich
46. 3D-ambient noise Rayleigh wave tomography of Snaefellsjökull volcano, Iceland  
- **Obermann, Anne**. ETH Zurich
47. Probabilistic sensitivity kernels to image lapse time changes  
- **Obermann, Anne**. ETH Zurich
48. What seismic studies reveal about LUSI, a clastic dominated geysiring system in Java, Indonesia  
- **Obermann, Anne**. ETH Zurich
49. Synthesis of tourmaline under upper crustal conditions: a clue to understand processes occurring in both fossil and active geothermal areas  
- **Orlando, Andrea**. CNR- Istituto di Geoscienze e Georisorse, Firenze
50. Practical methods to transfer rock mass fracturing field data to quantifiable values for modelling  
- **Peter-Borie, Mariane**. BRGM
51. Key situations to lead an optimized and adapted exploration  
- **Peter-Borie, Mariane**. BRGM
52. 3-D geological-geophysical model and synthetic seismic reflection modelling along CROP-18A line in the Larderello area - **R. de Franco**, CNR-IDPA,  
presenter: **Petracchini, Lorenzo**
53. Seismic imaging and interpretation of basaltic complexes - **Planke, Sverre**. VBPR
54. General stratigraphy, volcanic evolution and geomechanical characterization of Pleistocene hydrothermal-altered rhyolitic lavas of the Acoculco Caldera Complex, central Mexico  
- **Pola, Antonio**. Escuela Nacional de Estudios Superiores - Unidad Morelia. UNAM
55. Geological expression on Flores Island in Indonesia: the transition from oceanic to continental plateau subduction  
- **Purwandono, Ahmad Fauzi**. Utrecht University
56. Testing vertical seismic profiling (VSP) as a subsurface mapping method at the Krafla volcanic geothermal field in Iceland  
- **Reiser, Fabienne**. ETH Zurich
57. Temperature measurement tests in geothermal wells by using synthetic fluid inclusions  
- **Ruggieri, Giovanni**. CNR-IGG
58. Deep exploration of the Larderello geothermal field (Italy) by means of electromagnetic methods: integrated models and inversion  
- **Santilano, Alessandro**. CNR-IGG
59. Surface and body waves ambient noise tomography near Soultz-sous-forêts (France) using the dense EstOF seismic array - **Lehuteur, Maximilien**. EOST-IPGS, Université de Strasbourg/CNRS,  
presenter: **Schmittbuhl, Jean**
60. Influence of the geothermal fluid rheology in the large scale hydro-thermal circulation in Soultz-sous-Forêts reservoir, France - **B. Vallier**, EOST, Université de Strasbourg,  
presenter: **Schmittbuhl, Jean**
61. Real-time seismic monitoring of operational changes at the Hellisheiði geothermal power plant  
- **Sigfússon, Bergur**. Reykjavik Energy



62. Geodetic imaging of changes in geothermal reservoirs and magma transfer: Towards improved modeling of volcanic and geothermal processes  
- **Sigmundsson, Freysteinn**. Nordvulk, Institute of Earth Sciences, University of Iceland
63. The Characteristic of Sumatran Geothermal Systems from Geological Perspective  
- **Sutrisno, Lukman**. Utrecht University
64. Topography, faults, and lithology control the non-magmatic hydrothermal system of the Têt Valley, Eastern Pyrénées (France)  
- **Taillefer, Audrey**. Géosciences Montpellier
65. Seismic network survey design and performance  
- **Toledo Zambrano, Tania**. GFZ-Potsdam
66. Characterization of deep geothermal reservoir using fractal models and linking observed fractures, stress heterogeneities and micro-seismic observations - **Moein, Mohammad**. Geological Institute, presenter: **Valley, Benoît**
67. Novel noise based seismic acquisition and processing techniques, de-risking geothermal exploration and monitoring  
- **Vandeweyer, Vincent**. TNO
68. Low-cost geothermal exploration through reprocessing of vintage seismic data with a new edge-preserving de-noising algorithm - **Carpentier, Stefan**. TNO, presenter: **Vandeweyer, Vincent**
69. Passive seismic reflection interferometry at Reykjanes peninsula, SW Iceland  
- **Verdel, Arie**. TNO
70. Imaging and structural analysis of the Geyser field, Iceland, from underwater and drone based photogrammetry  
- **Walter, Thomas R**. GFZ
71. Continuous MT monitoring: Resistivity variations related to the large March 9, 1998 eruption at La Fournaise Volcano  
- **Wawrzyniak, Pierre**. BRGM
72. MT and CSEM data robust processing techniques. New developments  
- **Wawrzyniak, Pierre**. BRGM
73. Crustal Stress Pattern of Iceland  
- **Ziegler, Moritz**. GFZ Potsdam
75. Fractures and mineralizing fluid paths in the eastern Elba Island exhumed geothermal system (Italy)  
- **Zucchi, Martina**

## Posters from speakers presentations are from no 76

- 76 Active and passive electromagnetic measurements in a deep fractured sedimentary basin in peri-urban context in NE Belgium - **Harcouët-Menou, Virginie**