TECHNICAL PROGRAMME

Oral Presentations | Monday 14 September 2020

Please note that the times in the programme below are all in British Summer Time (BST) / GMT+1

12:00	**Opening Session**		
12:15	**Keynote Talk - "Digital Twins: the next phase of the AI revolution?" by Prof. Mark Girolami (The Alan Turing Institute)**		
13:00	**Break 1 Monday**		
Flow and Mechanics in Fractured Media I Chair: H. Hajibeygi (Delft University of Technology), Co-Chair: T. Ait-Ettajer (Repsol)		**History Matching and Production Optimization I** Chair: L.J. Durlofsky (Stanford University), Co-Chair: P. Sarma (Tachyus)	
13:15	**MoA01 - Extended Finite Volume Method (XFVM) for Flow Induced Tensile Failure in Fractured Reservoirs -** A.A. Habibabadi[1], R. Deb[2]*, P. Jenny[1] [1]Institute of Fluid Dynamics, ETH Zurich; [2]Laboratory of Physical Chemistry	**13:15**	**MoB01 - A Robust, Multi-Solution Framework for Well Location and Control Optimization -** M. Salehian[1]*, M. Haghighat Sefat[1], K. Muradov[1] [1]Heriot-Watt University
13:30	**MoA02 - Projection-based Embedded Discrete Fracture Model (pEDFM) on Corner-point Grid Geometry for Subsurface Flow and Geothermal Modeling -** M. HosseiniMehr[1]*, J.P. Piguave Tomala[1], C. Vuik[1], H. Hajibeygi[1] [1]TU Delft	**13:30**	**MoB02 - The Express Method of Well-Control Optimization for the Associated Gas Recycling Process -** V. Babin[1]*, N. Glavnov[1], E. Shel[1] [1]Gazpromneft Science & Technology Center
13:45	**MoA03 - The Undrained Split Iterative Coupling Scheme in Fractured Poro-elastic Media -** T. Almani[1]*, K. Kumar[2] [1]Saudi Aramco; [2]University of Bergen	**13:45**	**MoB03 - Refined Ensemble-Based Method for Waterflooding Problem with State Constraints -** J. Tueros[1]*, B. Horowitz[1] [1]Federal University of Pernambuco
14:00	**MoA04 - Novel Stabilizations for A Piecewise Constant Lagrangian Formulation of Frictional Contact Mechanics with Hydraulically Active Fractures -** A. Franceschini[1]*, N. Castelletto[2], J. White[2], R. Settgast[2], H. Tchelepi[1] [1]Stanford University; [2]Lawrence Livermore National Laboratory	**14:00**	**MoB04 - Optimizing Sealing of CO_2 Leakage Paths with Microbially Induced Calcite Precipitation Under Uncertainty -** S. Tveit[1]*, P. Pettersson[1], D. Landa Marban[1] [1]NORCE Norwegian Research Centre
14:15		**14:15**	**MoB05 - Consistent Formulation and Error Statistics for Reservoir History Matching -** G. Evensen[1,2]* [1]NORCE; [2]NERSC
14:30	**Break 2 Monday**		
Flow and Mechanics in Fractured Media II Chair: R. Masson (Université Côte d'Azur), Co-Chair: D. Gunasekera (Schlumberger)		**History Matching and Production Optimization II** Chair: R. Schulze-Riegert (Schlumberger), Co-Chair: P. Sarma (Tachyus)	
14:45	**MoA06 - Multiscale Matrix-Fracture Transfer Functions for Naturally Fractured Reservoirs Using an Analytical Discrete Fracture Model -** R. Hazlett[1]*, R. Younis[2] [1]Nazarbayev University; [2]University of Tulsa	**14:45**	**MoB06 - Selecting Representative Models for Ensemble-Based Production Optimization in Carbonate Reservoirs with Intelligent Wells and WAG Injection -** S.M.G. Santos[1]*, A.A.S. Santos[1], D.J. Schiozer[1] [1]University of Campinas
15:00	**MoA07 - Coupled Forward Simulation of Seismicity: a Stick-Slip Model for Fractures and Transient Geomechanics -** Z. Han[1]*, G. Ren[1], R. Younis[1] [1]The University of Tulsa	**15:00**	**MoB07 - Well Location Optimisation by Using Surface-Based Modelling and Dynamic Mesh Optimisation -** P. Salinas[1]*, C. Jacquemyn[1], C. Heaney[1], C. Pain[1], M. Jackson[1] [1]Imperial College London
15:15	**MoA08 - Adaptive Nonlinear Solver for a Discrete Fracture Model in Operator-Based Linearization Framework -** K. Mansour Pour[1]*, D. Voskov[1] [1]Delft University of Technology	**15:15**	**MoB08 - Geoengineering Tool for Field Development: A Decision-Making Tool for Deviated Well Placement -** S. Bouquet[1]*, A. Fornel[1] [1]IFP Energies nouvelles
15:30	**MoA09 - Turbulent Flow Effects in A Slickwater Fracture Propagation in Permeable Rock -** E. Kanin[1]*, D. Garagash[2,1], A. Osiptsov[1] [1]Multiphase Systems Lab, Skolkovo Institute of Science and Technology (Skoltech); [2]Dalhousie University	**15:30**	**MoB09 - Distributed Quasi-Newton Derivative-Free Optimization Method for Optimization Problems with Multiple Local Optima -** G. Gao[1]*, Y. Wang[1], J. Vink[2], T. Wells[2], F. Saaf[1] [1]Shell Global Solutions (US) Inc.; [2]Shell Global Solutions International B.V
15:45	**MoA10 - Particle Transport Scheme for Embedded Discrete Fracture Models -** R. Monga[1]*, R. Deb[2], D.W. Meyer[1], P. Jenny[1] [1]Institute of Fluid Dynamics, ETH Zürich; [2]Laboratory of Physical Chemistry, ETH Zürich	**15:45**	**MoB10 - An Automatic Well Planner for Efficient Well Placement Optimization Under Geological Uncertainty -** B.S. Kristoffersen[1]*, T. Silva[1], M. Bellout[1], C.F. Berg[1] [1]NTNU
16:00	**Break 3 Monday**		
16:15	**Poster Session 1**		
17:15	**End of Day 1**		

E-Poster Presentations 1 | Monday 14 September & Thursday 17 September 2020

This E-Poster Session 1 will take place on Monday 14 September from 16:15 until 17:15 (BST/GMT+1) and on Thursday 17 September from 12:00 until 13:00 (BST/GMT+1)

POSTER SESSION 1

PS1 - Physical & Statistical Modelling

An Investigation into the Upscaling of Mineral Dissolution from the Pore to the Core Scale - A.N. Faris[1], J. Maes[1]*, H.P. Menke[1]
[1]Heriot-Watt University

Albite-Anorthite Synergistic Effect on the Performance of Nanofluid Enhanced Oil Recovery - R. Nguele[1]*, E.O. Ansah[2], K. Nchimi Nono[3], K. Sasaki[1]
[1]Kyushu University; [2]University of Melbourne; [3]The University of Yaounde

Analytical Pore Network Approach (APNA) for Rapid Estimation of Capillary Pressure Behaviour in Rock Samples - H. Rabbani[1]*, D. Guerillot[1], T. Seers[1]
[1]Texas A&M University At Qatar

Lattice Boltzman Method Assisting WAG Hysteresis and Trapped Non-Wetting Phase Simulations - F. Munarin[1], H. Vasquez[1], S. Lucena[1], L. G. Rodrigues[1]*
[1]University Federal of Ceará

PS1 - IOR/EOR and Unconventional

Numerical Effects of Fluid Flow Modelling in Surfactant Chemical Flooding - O. Akinyele[1]*, K. Stephen[1]
[1]Heriot-Watt University

A Mathematical Model for Scaling and Wettibility Alteration in ASP Flooding - G. Chen[1]*, X. Zhang[1], M. Ma[1], X. Su[1], K. Lu[1], C. Wei[1]
[1]E&D Research Institute, Daqing Oilfield Company Ltd.

Modeling Transport and Retention: Simultaneous Evaluation of Dispersion and Retention Parameters - J. Rios[1]*, A. Santos[1], S. Lima[1]
[1]Universidade Federal do Rio Grande do Norte

PS1 - Geomechanics & Fracture Simulation

Assessment of Interaction Between Natural and Tecnogenic Fractures During Multi-Stage Fracturing - A. Gula[1]*, A. Bochkarev[1], A. Vishnivetskiy[1], A. Glazyrina[2], R. Nikitin[3]
[1]Phystech Geoservise; [2]Gazpromneft STC; [3]MIPT Center of Engineering and Technology

A Novel Method for Quickly Obtaining SRV in Multi-Stage Fracturing Reservoirs with Different Fracturing Radii - W. Shi[1]*, Y. Yao[1], M. Wang[2], J. Zhang[1]
[1]China Univeristy of Petroleum; [2]University of Leeds

PS1 - Reservoir Characterization

UNISIM-III: Benchmark Case Proposal Based on a Fractured Karst Reservoir - M. Correia[1], V. Botechia[1], L. Pires[1]*, V. Rios[1], S. Santos[1], V. Rios[1], J. Hohendorff[1], M. Chaves[1], D. Schiozer[1]
[1]University of Campinas

Studying the Effects of Heterogeneity on Dissolution Processes Using Operator Based Linearization and High-Resolution LiDAR Data - S. De Hoop[1]*, D. Voskov[1,2], G. Bertotti[1]
[1]Delft University of Technology; [2]Stanford University

Fractured Reservoir Characterization in Brazilian Pre-Salt Using Pressure Transient Analysis with a Probabilistic Approach - C.K. Quispe Cerna[1,2]*, D.J. Schiozer[1,2], G. Soares Oliveira[1,2], A. De Lima[1,2], R. B. Z. L. Moreno[2]
[1]Center for Petroleum Studies; [2]University of Campinas

PS1 - Machine Learning and Proxy Models

Incorporating Uncertainties in A Model-Based Data-Driven Framework Using Transfer Learning - T. Van de Poll[1], E. Barros[1], W. Langenkamp[1], R. Fonseca[1]*
[1]TNO

Engineering Design of Neural Network Architectures for Estimation of Inter-Well Connectivity and Production Performance - J. Yu[1]*, A. Jahandideh[1], B. Jafarpour[1]
[1]University of Southern California

Cube2Vec: Self-Supervised Representation Learning for Sub-Surface Models - P. Lang[2]*, T. Adeyemi[2], R. Schulze-Riegert[1]
[1]Schlumberger Norwegian Technology Center; [2]Schlumberger Abingdon Technology Center

A Surrogate-Based Approach to Waterflood Optimisation under Uncertainty - P. Ogbeiwi[1]*, K. Stephen[1], A. Arinkoola[2]
[1]Heriot-Watt University; [2]Ladoke Akintola University of Technology

Kogen-Combined Koval/Gentil Fractional Flow Model - D. Santos Oliveira[1]*, B. Horowitz[1], J.A.R. Tueros[1]
[1]Federal University of Pernambuco

PS1 - Production Optimization

Adaptive Moment Estimation Framework for Well Placement Optimization - Y. Arouri[1]*, M. Sayyafzadeh[1]
[1]The University of Adelaide

Analytical Production Optimization with Modified NPV: Application to 2D Gas-Cone Reservoirs - A. Bizzi[1]*, E. Fortaleza[1], F.P. Munerato[2]
[1]Universidade de Brasilia; [2]Repsol Sinopec

Fast Robust Optimization Using Mean Field Bias Correction - L. Wang[1,2]*, D.S. Oliver[1]
[1]Norwegian Research Centre; [2]University of Bergen

PS1 - Uncertainty Analysis & History Matching

Optimization of Reservoir Surveillance Strategies Under Uncertainty: An Application to the Design of Sparse Monitoring Surveys - E. Barros[1]*, O. Leeuwenburgh[1]
[1]TNO

How Does the Definition of the Objective Function Influence the Outcome of History Matching? - G. Eremyan[1]*, I. Matveev[1], G. Shishaev[1], V. Rukavishnikov[1], V. Demyanov[2]
[1]Tomsk Polytechnic University; [2]Heriot-Watt University

Stochastic Closed-Loop Reservoir Management under Uncertain Predictions and Development Plans - A. Jahandideh[1]*, B. Jafarpour[1]
[1]University of Southern California

Geology Realism Control in Automated History Matching - I. Matveev[1]*, G. Shishaev[1], G. Eremyan[1], D. Konoshonkin[1], V. Demyanov[2], S. Kaygorodov[3]
[1]Tomsk Polytechnic University; [2]Heriot-Watt University; [3]Gazpromneft STC

A Novel Approach to Multilevel Data Assimilation - M. Nezhadali[1,2]*, T. Bhakta[1], K. Fossum[1], T. Mannseth[1]
[1]Norwegian Research Center (NORCE); [2]University of Bergen (UiB)

Identification of Critical Operational Uncertainties in Field Development Planning Using Stochastic Gradients - E. Barros[1], R. Hanea[2]*, L. Hustoft[2], O. Leeuwenburgh[1], R. Fonseca[1]
[1]TNO; [2]Equinor

History Matching under Uncertain Geologic Scenarios with Variational Autoencoders - A. Jiang[1]*, B. Jafarpour[1]
[1]University of Southern California

Calculation of Well Productivity Index in Stochastic Porous Media - D. Posvyanskii[1]*, A. Novikov[2]
[1]Roxar Services AS; [2]TU Delft

PS1 - Upscaling & Discretization Methods

Glimm and Finite Volume Schemes for Polymer Flooding Model with and Without Inaccessible Pore Volume Law - G. Dongmo[1], B. Braconnier[1]*, C. Preux[1], Q. Tran[1], C. Berthon[2]
[1]IFP Energies nouvelles; [2]Université de Nantes, Laboratoire de Mathématiques Jean Leray, UMR 6629, Département de Mathématiques

High-Resolution Hydraulic Fracture Network Modeling on Adaptive PEBI Grids - D. Filippov[1]*, B. Vasekin[1], D. Maksimov[1], D. Mitrushkin[1], A. Roshchektaev[2]
[1]MIPT Center for Engineering & Technology; [2]Gazpromneft Science & Technology Center

Fragmented Algorithm for Construction of Adapted Structured Computational Grids Based on Inverted Beltrami Equation - O. Turar[1]*, D. Akhmed-Zaki[1], G. Khakimzyanov[3], B. Daribayev[2], D. Lebedev[1]
[1]University of International Business; [2]Al-Farabi Kazakh National University; [3]Novosibirsk State University

Higher Resolution Hybrid Unstructured Spectral Finite-volume Methods For Flow In Porous Media - Y. Xie[1], M. Edwards[2]*
[1]Henan University; [2]Swansea University

Oral Presentations | Tuesday 15 September 2020

Please note that the times in the programme below are all in British Summer Time (BST) / GMT+1.

12:00	**Poster Session 2**		
13:00	**Break 1 Tuesday**		
	Geomechanics, Compaction, Subsidence Chair: P. Samier (Total), Co-Chair: A. Cominelli (Eni)		**History Matching and Production Optimization III** Chair: A. Skorstad (Resoptima), Co-Chair: L.J. Durlofsky (Stanford University)
13:15	**TuA01 - Hydro-Mechanical Coupling for Flow Diagnostics: A Fast Screening Method to Assess Geomechanics on Flow Field Distributions -** L. Gutierrez Sosa[1]*, S. Geiger[1], F. Doster[1] [1]Heriot-Watt University	**13:15**	**TuB01 - A Bayesian Optimisation Workflow for Field Development Planning Under Geological Uncertainty -** R. Bordas[1]*, J.R. Heritage[1], M.A. Javed[1], G. Peacock[1], T. Taha[1], P. Ward[1], I. Vernon[2], R.P. Hammersley[1] [1]Emerson Exploration & Production Software; [2]Department of Mathematical Sciences, Durham University
13:30	**TuA02 - Multi-scale Nonlinear Modeling of Subsurface Energy Storage: Cyclic Loading with Inelastic Creep Deformation -** K. Ramesh Kumar[1]*, H. Hajibeygi[1] [1]Delft University of Technology	**13:30**	**TuB03 - Large-Scale Field Development Optimization Using a Two-Stage Strategy -** Y. Nasir[1]*, O. Volkov[1], L.J. Durlofsky[1] [1]Stanford University
13:45	**TuA03 - Multiscale Extended Finite Element Method for Deformable Fractured Media -** F. Xu[1]*, H. Hajibeygi[1], B. Sluys[1] [1]Delft University of Technology	**13:45**	**TuB04 - Optimizing Low Salinity Waterflooding with Controlled Numerical Influence of Physical Mixing Considering Uncertainty -** L. Ladipo[1]*, M. Blunt[1], P. King[1] [1]Imperial College London
14:00	**TuA04 - Modeling of Water-Induced Fracture Growth Pressure Using Poroelastic Approach -** P. Kabanova[1]*, E. Shel[1] [1]Gazpromneft Science & Technology Centre	**14:00**	**TuB05 - Bayesian Inference of Covariance Parameters in Spectral Approach to Geostatistical Simulation -** N. Ismagilov[1]*, I. Azangulov[2], V. Borovitskiy[2], M. Lifshits[2], P. Mostowsky[2] [1]Gazpromneft Science & Technology Center; [2]Saint Petersburg State University
14:15	**Break 2 Tuesday**		
	Multiphysics & High-performance Computing Chair: P. Sarma (Tachyus), Co-Chair: A.H. Elsheikh (Heriot-Watt University)		**History Matching and Production Optimization IV** Chair: T. Ait-Ettajer (Repsol), Co-Chair: J. Vink (Shell Global Solutions Intl. B.V.)
14:45	**TuA06 - High Performance Framework for Modelling of Complex Subsurface Flow and Transport Applications -** M. Khait[1]*, D. Voskov[1,2], R. Zaydullin[3] [1]Delft University of Technology; [2]Stanford University; [3]Total E&P Research and Technology	**14:45**	**TuB06 - History Matching of Time-Lapse Deep Electromagnetic Tomography with A Feature Oriented Ensemble-Based Approach -** K. Katterbauer[1], A. Marsala[1], M. Maucec[1], Y. Zhang[2]*, I. Hoteit[2] [1]Saudi Aramco; [2]King Abdullah University of Science and Technology
15:00	**TuA07 - Upscaling of Nanoparticle Retention Rate for Single-Well Applications From Pore-Scale Simulations -** N. Bueno[1]*, M. Icardi[2], F. Municchi[2], H. Solano[1], J. Mejía[1] [1]Universidad Nacional de Colombia; [2]University of Nottingham	**15:00**	**TuB07 - Novel Ensemble Data Assimilation Algorithms Derived from A Class of Generalized Cost Functions -** X. Luo[1]* [1]Norwegian Research Centre (NORCE)
15:15	**TuA08 - Pore-Scale Modeling of Microbial Growth in A Two-Phase Saturated Porous Medium -** G. Strobel[1]*, B. Hagemann[1], M. Wirth[1], L. Ganzer[1] [1]Clausthal University of Technology	**15:15**	**TuB08 - Application of Dynamic Parametrization Algorithm for Non-Intrusive History Matching Approaches -** A. Mukhin[1], M. Elizarev[1]*, N. Voskresenskiy[1], A. Khlyupin[1] [1]Moscow Institute of Physics and Technology
15:30	**TuA09 - Effects of Lumping on the Numerical Simulation of Thermal-Compositional-Reactive Flow in Porous Media -** M. Cremon[1]*, M. Gerritsen[1] [1]Stanford University	**15:30**	**TuB09 - Efficient Adjoint-Based Well-Placement Optimization Using Flow Diagnostics Proxies -** S. Krogstad[1]*, H. Møll Nilsen[1] [1]SINTEF
15:45	**TuA10 - Importance of Improving Support Material Removal from Polyjet 3D-Printed Porous Models -** S. Lopez-Saavedra[1]*, S. Ishutov[1], R. Chalaturnyk[1], G. Zambrano-Narvaez[1] [1]University of Alberta	**15:45**	**TuB10 - History Matching with Generative Adversarial Networks -** S. Mohd Razak[1]*, B. Jafarpour[1] [1]University of Southern California
16:00	**Break 3 Tuesday**		
16:15	**Panel Discussion 1 - "Data Assimilation and Optimization of Mathematical models"**		
17:15	**End of Day 2**		

E-Poster Presentations 2 | Tuesday 15 September & Wednesday 16 September 2020

This E-Poster Session 2 will take place on Tuesday 15 September from 12:00 until 13:00 (BST/GMT+1) and on Wednesday 16 September from 16:15 until 17:15 (BST/GMT+1)

POSTER SESSION 2

PS2 - IOR/EOR and Unconventional

A Simplified Mechanistic Population Balance Model for Foam Enhanced Oil Recovery (EOR) - L. Ding[1]*, D. Guerillot[1]
[1]Texas A&M University at Qatar

Modelling Porosity and Permeability Alteration during CO_2 WAG Injection in Carbonate Oil Reservoirs - A. Ribeiro[1]*, L. Guimarães[2], E. Mackay[3]
[1]University of Queensland; [2]Federal University of Pernambuco; [3]Heriot-Watt University

A Coupled Geomechanics and Flow Model for Enhanced Gas Recovery and CO_2 Storage in Shale Reservoirs - X. Yan[1]*, L. Liu[1], J. Yao[1], D. Fan[1]
[1]China University of Petroleum

PS2 - GeoEnergy and CO_2 Storage

The Impact of Numerical Discretisation on the Correct Simulation of CO_2 Convective Flow Patterns - M. Awag[1]*, S. Ghanbari[1], E. Mackay[1]
[1]Heriot-Watt University

Modified RAND Algorithms for Multiphase Geochemical Reactions - F. De Azevedo Medeiros[1]*, W. Yan[1], E.H. Stenby[1]
[1]Center for Energy and Resources Engineering, Department of Chemistry, Technical University of Denmark

A Modeling Workflow for Geological Carbon Storage Integrated with Coupled Flow and Geomechanics Simulations - J. Torres[1]*, I. Bogdanov[1], M. Boisson[2]
[1]Computational Hydrocarbon Laboratory for Optimized Energy Efficiency, University of Pau and Pays de l'Adour; [2]Total SA, Centre Scientifique et Technique Jean Féger (CSTJF)

Optimization of CO_2 Storage under Geomechanical Risk with Coupled-Physics Models - F. Zheng[1]*, A. Jahandideh[1], B. Jha[1], B. Jafarpour[1]
[1]University of Southern California

PS2 - Multiscale Methods & NonLinear Solvers

Investigation of the Accuracy and Efficiency of the Operator-based Linearization through an Advanced Reservoir Simulation Framework - A. Al-Jundi[1], L. Li[1], A. Abushaikhaa[1]*
[1]Hamad Bin Khalifa University

An Advanced Parallel Framework for Reservoir Simulation with Mimetic Finite Difference Discretization and Operator-based Linearization - L. Li[1]*, A. Abushaikhaa[1]
[1]Hamad Bin Khalifa University

PS2 - HPC and GPU Computing

GPU-Based Parallel Algorithm for Solving Multiphase, Multicomponent Fluid Filtration Problem - T. Imankulov[1], D. Akhmed-Zaki[1], B. Daribayev[1]*, O. Turar[1]
[1]Al Farabi Kazakh National University

GMRES Based Numerical Simulation of Multicomponent Multiphase Flow in Porous Media on LuNA Fragmented Programming System - N. Kassymbek[1]*, B. Matkerim[1], D. Lebedev[2], T. Imankulov[1], D. Akhmed-Zaki[2]
[1]Al-Farabi Kazakh National University; [2]University of International Business

Testing of Vulkan Visualization for Geo-Models on Mobile Devices and Desktop Systems with Ray Tracing GPUs - M. Mustafin[2], O. Turar[1]*, D. Akhmed-Zaki[1]
[1]University of International Business; [2]Kazakh National University

PS2 - Upscaling & Discretization Methods

Upscaling Low Salinity Water Flooding in Heterogenous Reservoirs - H. Al-Ibadi[1]*, K. Stephen[1], E. Mackay[1]
[1]Heriot-Watt University

Discrete Fracture-Matrix Simulations Using Cell-Centered Nonlinear Finite Volume Methods - W. Zhang[1]*, M. Al Kobaisi[1]
[1]Khalifa University of Science & Technology

Using SVD Algorithm to Solve Oil Displacement Problem - T. Imankulov[1], D. Akhmed-Zaki[1], B. Matkerim[1]*, L. Zhumakhan[1]
[1]Al Farabi Kazakh National University

PS2 - Uncertainty Analysis & History Matching

Estimation of the Chance of Success of A Four-Dimensional Seismic Project for A Developed Oil Field - A.T.F.S. Gaspar[1]*, S.M.G. Santos[1], C.J. Ferreira[1], A. Davolio[1], D.J. Schiozer[1]
[1]University of Campinas

Consistent Update of Well Path, Grid Structure and Grid Model Parameters Using an Iterative Ensemble Smoother - J. Saetrom[1], L. Gourc[1]*
[1]Resoptima

Two-Stage Ensemble Kalman Filter Approach for Data Assimilation Applied to Flow in Fractured Media - M. Liem[1]*, P. Jenny[1]
[1]Institute of Fluid Dynamics, ETH Zurich

Accounting for Model Discrepancy in Uncertainty Analysis by Combining Numerical Simulation and Bayesian Emulation Techniques - H. Nandi Formentin[1,2]*, I. Vernon[1], M. Goldstein[1], C. Caiado[1], G. Avansi[2], D. Schiozer[2]
[1]Durham University; [2]University of Campinas

Application of Sector Modeling Approach in a Probabilistic Study of a Giant Reservoir - L.O. Pires[1]*, V.E. Botechia[1], D. Schiozer[1]
[1]University of Campinas

Gauss-Newton Trust Region Search Optimization Method for Least Squares Problems with Singular Hessian - G. Gao[1], F. Saaf[1], J. Vink[2]*, M. Krymskaya[2], T. Wells[2]
[1]Shell Global Solutions (US) Inc.; [2]Shell Global Solutions International B.V

Flow Diagnostics for Model Ensembles - F. Watson[1]*, S. Krogstad[1], K. Lie[1]
[1]Sintef Digital

Deep-Learning Inversion to Efficiently Handle Big-Data Assimilation: Application to Seismic History Matching - C. Xiao[1]*, A. Heemink[1], H. Lin[1], O. Leeuwenburgh[1,2]
[1]Delft University of Technology; [2]TNO

PS2 - Production Optimization

A Bayesian Statistical Approach to Decision Support for TNO OLYMPUS Well Control Optimisation under Uncertainty - J. Owen[1]*, I. Vernon[1], R. Hammersley[2]
[1]Durham University; [2]Emerson Automation Solutions

A Derivative-Free Trust-Region Algorithm for Well Control Optimization - T. Silva[1]*, M. Bellout[1], C. Giuliani[2], E. Camponogara[2], A. Pavlov[1]
[1]Department of Geoscience and Petroleum, NTNU; [2]Department of Automation and Systems Engineering, UFSC

PS2 - Well and Facility Optimization

The Influence of the Petrophysical Properties' Heterogeneity on the Well Tests Interpretation Results - R. Khusainov[1]*, A. Nekrasov[1], C. Aitov[1]
[1]National University of Oil And Gas «Gubkin University»

PS2 - Machine Learning and Proxy Models

Data-Driven Models Based on Flow Diagnostics - M. Borregales[1]*, O. Møyner[1], S. Krogstad[1], K. Lie[1,2]
[1]SINTEF Digital; [2]Norwegian University of Science and Technology (NTNU)

Feature Selection for Reservoir Analogues Similarity Ranking As Model-Based Causal Inference - A. Voskresenskiy[1]*, N. Bukhanov[1], Z. Filippova[1], R. Brandao[2], V. Segura[2], E. Vital Brazil[2]
[1]LLC "GazpromNeft STC"; [2]IBM Research

Using Machine Learning Methods for Oil Recovery Prediction - B. Daribayev[1], D. Akhmed-Zaki[2], T. Imankulov[1], Y. Nurakhov[1], Y. Kenzhebek[1]*
[1]Al-Farabi Kazakh National University; [2]University of International Business

Data-Driven, Physics-Driven and Analytic Models for Waterflooding Optimisation Under Uncertainty - D.L. Moreno Bedoya[1]*, G. Garcia[2]
[1]None; [2]Ecopetrol

Improving the Predictive Ability of A Geomechanical Model Using Neural Networks (Deep Learning) - N. Zakharenko[1], A. Gula[1]*, A. Bochkarev[1], Y. Ovcharenko[2]
[1]Phystech Geoservice; [2]Gazpromneft STC

Oral Presentations | Wednesday 16 September 2020

Please note that the times in the programme below are all in British Summer Time (BST) / GMT+1.

12:00	**Panel Discussion 2 - "Mathematical & Computational Geosciences for Energy Transition: Challenges & Opportunities"**		
13:00	**Break 1 Wednesday**		
Machine Learning and Data Analytics Chair: R. Schulze-Riegert (Schlumberger) Co-Chair: A. Skorstad (Resoptima)		**Mesh Generation and Discretization Schemes I** Chair: D. Gunasekera (Schlumberger), Co-Chair: R. Masson (Université Côte d'Azur)	
13:15	**WeA01 - Conditioning Surface-Based Geological Models to Well Data Using Neural Networks -** Z. Titus[1]*, C. Pain[1], C. Jacquemyn[1], P. Salinas[1], C. Heaney[1], M. Jackson[1] [1]Imperial College London	**13:15**	**WeB01 - Discontinuous Control Volume Finite Element Method for Multiphase Flow in Porous Media on Challenging Meshes -** J. Al Kubaisy[1]*, H. Osman[1], P. Salinas[1], C. Pain[1], M. Jackson[1] [1]Imperial College London
13:30	**WeA02 - Deep-Learning-Based 3D Geological Parameterization and Flow Prediction for History Matching -** M. Tang[1]*, Y. Liu[1], L. Durlofsky[1] [1]Stanford University	**13:30**	**WeB02 - Comparing Three DFN Simplification Strategies for Two-Phase Flow Applications -** P. Anquez[1], M. Zakari[1]*, G. Caumon[1] [1]GeoRessources-ENSG, Université De Lorraine, CNRS
13:45	**WeA03 - Deep-CRM: A New Deep Learning Approach for Capacitance Resistive Models -** A. Yewgat[1]*, D. Busby[1], M. Chevalier[2], C. Lapeyre[3], O. Teste[2] [1]Total SA; [2]Université Paul Sabatier - Toulouse III (IRIT); [3]CERFACS	**13:45**	**WeB03 - An Efficient Implementation of the Discontinuous Galerkin Method for Multiphase Flows through Heterogeneous Porous Media -** N. Dashtbesh[1,2]*, B. Noetinger[1], G. Enchéry[1] [1]IFP Energies nouvelles; [2]Sorbonne University
14:00	**WeA04 - Physics Based Deep Learning for Nonlinear Two-Phase Flow in Porous Media -** O. Fuks[1]*, H. Tchelepi[1] [1]Stanford University	**14:00**	**WeB04 - Modeling Compressible Gas Flow in Anisotropic Reservoirs Using A Nonlinear Finite Volume Method -** W. Zhang[1]*, M. Al Kobaisi[1] [1]Khalifa University of Science & Technology
14:15	**WeA05 - Machine Learning for Fast EOR Flooding Simulation -** B. Samson[1]*, C. Marooney[1], S. Godefroy[1], S. Sheth[1] [1]Schlumberger	**14:15**	**WeB05 - Adaptive Mesh Refinement for Thermal-Reactive Flow and Transport on Unstructured Grids -** E. Jones[1]*, S. De Hoop[1], D. Voskov[1,2] [1]Delft University of Technology; [2]Stanford University
14:30	**Break 2 Wednesday**		
Model Reduction and Emulators of Dynamical Systems Chair: A. Cominelli (Eni), Co-Chair: A.H. Elsheikh (Heriot-Watt University)		**Mesh Generation and Discretization Schemes II** Chair: D. Gunasekera (Schlumberger)	
14:45	**WeA06 - Evaluation of A Data-Driven Flow Network Model (FlowNet) for Reservoir Prediction and Optimization -** A. Kiær[1], O.P. Lødøen[1], W. De Bruin[1]*, E. Barros[2], O. Leeuwenburgh[2,3] [1]Equinor; [2]TNO; [3]Delft University of Technology	**14:45**	**WeB06 - Modified Peaceman Correction for Improved Calculation of Polymer Injectivity in Coarse Grid Numerical Simulations -** I. Tai[1]*, A. Muggeridge[1], M.A. Giddins[2] [1]Imperial College London; [2]Schlumberger
15:00	**WeA07 - Nonlinear State Constraints Handling in Waterflooding Optimization Through Reduced Order Models -** A. Souza[1]*, A. Castro[1], M. Dall'Aqua[2], J. Tueros[1], B. Horowitz[1], E. Gildin[2] [1]Federal University of Pernambuco; [2]Texas A&M University	**15:00**	**WeB07 - A Multi-Timestep Domain Decomposition Method Applied to Polymer Flooding -** R.S. Tavares[1]*, R.B.D. Santos[1], S.A.D. Lima[1], A. Dos Santos[1], J.H.D.S. Mariano[1] [1]Universidade Federal Do Rio Grande Do Norte
15:15	**WeA08 - Two-Stage Scenario Reduction Process for An Efficient Robust Optimization -** S.K. Mahjour[1]*, A.A.D.S. Dos Santos[1], M.G. Correia[1], D.J. Schiozer[1] [1]CEPETRO/FEM – University of Campinas (UNICAMP)	**15:15**	**WeB08 - Numerical Modelling of CO_2 Migration through Faulted Storage Strata with a New Asynchronous FE-FV Compositional Simulator -** Q. Shao[1,2]*, S. Matthai[1] [1]The University of Melbourne; [2]The University of Queensland
15:30	**WeA09 - Physics-Based Data-Driven Model for Production Forecast -** A. Blinovs[1], M. Khait[1], D. Voskov[1,2]* [1]TU Delft; [2]Stanford University	**15:30**	**WeB09 - Two-Phase Darcy Flows in Fractured and Deformable Porous Media, Convergence Analysis and Iterative Coupling -** F. Bonaldi[1], K. Brenner[1], J. Droniou[2], R. Masson[1]* [1]Université Côte d'Azur, CNRS, Inria, LJAD; [2]Monash University
15:45	**WeA10 - Deep-DCA A New Approach for Well Hydrocarbon Production Forecasting -** D. Busby[1]* [1]Total	**15:45**	**WeB10 - Quasi-K-Orthogonal Grid Generation for Quasi-Positive CVD-MPFA -** S. Manzoor[1]*, M. Edwards[2], A. Dogru[1] [1]Aramco; [2]Swansea University
16:00	**Break 3 Wednesday**		
16:15	**Poster Session 2**		
17:15	**End of Day 3**		

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12:00	**Poster Session 1**		
13:00	**Break 1 Thursday**		
	Multiscale Modeling and Simulation Chair: A. Cominelli (Eni), Co-Chair: H. Hajibeygi (Delft University of Technology)		**Enhanced Oil Recovery** Chair: A.H. Elsheikh (Heriot-Watt University) Co-Chair: P. Samier (Total)
13:15	**ThA01 - Application of Diffuse Source Basis Functions for Improved Near Well Upscaling -** C. Liu[1]*, K. Nunna[1], M.J. King[1] [1]Texas A&M University	**13:15**	**ThB01 - Analysis of Low Salinity and Polymer Synergies in a Dynamic Pore-Scale Network Simulator -** E. David[1]*, S. McDougall[1], A. Boujelben[2] [1]Heriot-Watt University; [2]Roxar-Emerson Ltd
13:30	**ThA02 - Dynamic Saturation Reconstruction for Multiphase Flow by Time-Of-Flight Fill Functions -** O. Moyner[1]* [1]SINTEF Digital	**13:30**	**ThB02 - On the Robust Value Quantification of Polymer EOR Injection Strategies for Better Decision Making -** M. Oguntola[1,2]*, R. Lorentzen[2] [1]University of Stavanger; [2]NORCE - Norwegian Research Centre AS
13:45	**ThA03 - Comparison Between Algebraic Multigrid and Multilevel Multiscale Methods for Reservoir Simulation -** H. Nilsen[1]*, A. Moncorge[2], K. Bao[1], O. Møyner[1], K. Lie[1], A. Brodtkorb[1] [1]Sintef; [2]Total E&P	**13:45**	**ThB03 - A Novel Nanoparticle Retention Model in Porous Media for IOR & EOR Applications -** H. Solano[1]*, M. Icardi[2], N. Bueno[1,3], J. Mejia[1] [1]Universidad Nacional De Colombia; [2]University of Nottingham; [3]Copérnico S.A.S.
14:00	**ThA04 - Fast Time-Stepping Scheme for Streamline-Based Transport Simulations -** F. Keller[1], D. Meyer[1]* [1]ETH Zurich	**14:00**	**ThB04 - Scaling Foam Flow Models in Heterogeneous Reservoirs for A Better Improvement of Sweep Efficiency -** F. Douarche[1]*, B. Braconnier[1], B. Bourbiaux[1] [1]IFP Energies nouvelles
14:15	**ThA05 - Free-Space Well Connection Method for Efficient Coupling of Wells and Grid Cells of Arbitrary Geometry -** R. Pecher[1]* [1]Emerson Roxar	**14:15**	**ThB05 - Inclusion of Variable Characteristic Length in Microemulsion Flash Calculations -** D. Magzymov[1]*, R.T. Johns[1] [1]The Pennsylvania State University
14:30	**Break 2 Thursday**		
	Linear and Non-linear Solvers Chair: J. Vink (Shell Global Solutions Intl. B.V.), Co-Chair: A.H. Elsheikh (Heriot-Watt University)		**Unconventional Resources and CO_2 Sequestration** Chair: T. Ait-Ettajer (Repsol), Co-Chair: R. Schulze-Riegert (Schlumberger)
14:45	**ThA06 - Additive Schwarz Preconditioned Exact Newton Method as a Nonlinear Preconditioner for Multiphase Porous Media Flow -** Ø. Klemetsdal[1]*, A. Moncorgé[2], O. Møyner[1], K. Lie[1] [1]SINTEF Digital; [2]Total E&P	**14:45**	**ThB06 - Simulation of Foam-Assisted CO_2 Storage in Saline Aquifers -** X. Lyu[1]*, D. Voskov[1,2], W. Rossen[1] [1]Delft University of Technology; [2]Stanford University
15:00	**ThA07 - A Novel and Efficient Preconditioner for Solving Lagrange Multipliers-Based Discretization Schemes for Reservoir Simulations -** S. Nardean[1]*, M. Ferronato[2], A.S. Abushaikha[1] [1]Hamad Bin Khalifa University; [2]University of Padova	**15:00**	**ThB07 - Compositional Modelling of Petroleum Reservoirs and Subsurface CO_2 Storage with the MUFITS Simulator -** A. Afanasyev[1]* [1]Moscow State University
15:15	**ThA08 - Machine-Learning Informed Prediction of Linear Solver Tolerance for Non-Linear Solution Methods in Numerical Simulation -** E. Oladokun[1,3], S. Sheth[1]*, T. Jönsthövel[2], K. Neylon[1] [1]Schlumberger Oilfield UK plc; [2]Schlumberger Norway; [3]The University of Oxford	**15:15**	**ThB08 - Improved Extended Blackoil Formulation for CO_2EOR Simulations -** T.H. Sandve[1]*, O. Sævareid[1], I. Aavatsmark[1] [1]NORCE AS
15:30	**ThA09 - Algebraic Wavefront Parallelization for ILU(0) Smoothing in Reservoir Simulation -** S. Gries[1]* [1]Fraunhofer Institute SCAI	**15:30**	**ThB09 - Huff-n-Puff (HNP) Pilot Design in Shale Reservoirs Using Dual-Porosity, Dual-Permeability Compositional Simulations -** H. Hamdi[1]*, C.R. Clarkson[1], A. Esmail[2], M. Costa Sousa[1] [1]University of Calgary; [2]Encana Corporation; [3]Rock Flow Dynamics Inc.
15:45	**ThA10 - Non-Linear Solver Optimisation for Multiphase Porous Media Flow Based on Machine Learning -** V.L.S. Silva[1]*, P. Salinas[1], C.C. Pain[1], M.D. Jackson[1] [1]Imperial College London	**15:45**	**ThB10 - Impacts of Gas Trapping and Capillarity on Oil Recovery by Near-Miscible CO_2-WAG -** G. Wang[1]*, G. Pickup[1], K. Sorbie[1], E. Mackay[1], A. Skauge[2] [1]Heriot-Watt University; [2]University of Bergen
16:00	**Break 3 Thursday**		
16:15	**Panel Discussion 3 - "Scope of future ECMOR conferences" & Closing Remarks**		
17:15	**End of the Online Conference**		