RÉPUBLIQUE FRANÇAISE
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2024, May 21-23

Hôtel Dupanloup, Orléans

PAUQ

International Workshop : Practical Data Assimilation and Uncertainty Quantification

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Géosciences pour une Terre durable
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PAUQ (Practical data Assimilation and Uncertainty Quantification) is an international workshop on data assimilation and uncertainty in the geosciences.

At the crossroads between subsurface georesource utilisation and digital twins building era, it is now time to connect advanced research tools in data assimilation with a practical twist, to drive an operational decision making.

One of the main difficulty to accelerate the development of subsurface usage is the design and use of practical solutions. Very advanced computational methods already exist but are not in use in industry due to their lack of applicability on real datasets, mainly due to the uncertainty attached to them. In fact, there is a lack of proper identification and characterisation of those uncertainty in real datasets, and how to handle them on the data assimilation workflow.

The very aim of the workshop is to gather experts in their respective fields and lay out real data peculiarity and sophisticated computational tools to address the timely georesource topic.

PROGRAM
FOR MAY 21, 2024

13:30 > Welcome desk

14:00 **Introduction**
Romain Chassagne, Jérémy Rohmer (BRGM)

14:45 [UNCERTAINTY IN GEOMODELING] **Practical integration of surface-based geomodelling methods into inversion and data assimilation frameworks**
Florian Wellmann (Aachen university)

15:15 [GEOTHERMAL] **Challenges of quantitative geophysical imaging of deep geothermal resources**
Mathieu Darnet (BRGM)

15:45 > Coffee break

16:15 [BAYESIAN OPTIMISATION] **Surrogate-assisted complexity reduction strategies for the Bayesian calibration of the costly model**
Olivier Lemaitre (CNRS, CMAP)

16:45 **Concluding remarks**

18:30 > Cocktail dinner

21:00 > End of the dinner

PROGRAM FOR MAY 22, 2024

9:00 > Welcome coffee

9:30 [GEOTHERMAL] **Multi-physical integrated exploration strategy to detect fault-bound hydrothermal convection as target zones for deep geothermal exploitation**
Kristian Bär (Vulcan Energy)

10:00 [INVERSE PROBLEM] **Multiple-Fold Cross Validation for Model Selection in Universal Inversion**
David Ginsbourger (Berne university)

10:30 > Coffee break

11:00 [SHORELINE EVOLUTION AND ASSIMILATION] **Data assimilation in reduced-complexity shoreline models**
Bruno Castelle (Bordeaux University, EPOC)

11:30 [UNCERTAINTY AND DATA ASSIMILATION] **TBD**
Arthur Vidard (Grenoble university)

12:00 > Lunch break

14:00 [IA IN GEOSCIENCES] **Joint inversion and machine learning for multi-scale/multi-domain data assimilation, integration and uncertainty quantification in geosciences**
Paolo Dell'Aversana (ENI)

14:30 [GEOMODELING] **Uncertainty quantification and calibration for the modeling of sedimentary processes**
Véronique Gervais-Couplet (IFPEN)

15:00 [INVERSE PROBLEM] **Bayesian Inversion of Seismic Data at the Alvheim Field**
Jo Eidsvik (NTNU)

15:30 > Coffee break

16:00 [ASSIMILATION] **Characterising the Fitness Landscapes for Subsurface Reservoir Models**
Paul Mitchell (Heriot-Watt University)

16:30 [HYDROGEOLOGY] **Data assimilation for calibration and uncertainty quantification in regional distributed hydrogeological models: challenges and Illustrations with the MONA model**
Ryma Aissat, Etienne Buscarlet (BRGM)

17:00 **Concluding remarks**

PROGRAM
FOR MAY 23, 2024

9:00 > Welcome coffee

9:30 [ASSIMILATION] **On the formulation of the ensemble history-matching problem**
Geir Evensen (NORCE)

10:00 [HYDROGEOLOGY] **Data assimilation, uncertainty quantification and management optimization under uncertainty to support groundwater management in island aquifers**
Cécile Coulon (INTERA)

10:30 **> Coffee break**

11:00 **Workshop closure**
Romain Chassagne, Jérémy Rohmer (BRGM)

12:00 > End of the workshop

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