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Titolo	Thermo-Hydro-Mechanical-Chemical Processes in Fractured Porous Media: Modelling and Benchmarking [[electronic resource]] : Benchmarking Initiatives / / edited by Olaf Kolditz, Uwe-Jens Görke, Hua Shao, Wenqing Wang, Sebastian Bauer
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2016
ISBN	3-319-29224-2
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (245 p.)
Collana	Terrestrial Environmental Sciences, , 2363-6181
Disciplina	550
Soggetti	Geology—Statistical methods Computer simulation Hydrogeology Geotechnical engineering Fossil fuels Environmental sciences Quantitative Geology Simulation and Modeling Geotechnical Engineering & Applied Earth Sciences Fossil Fuels (incl. Carbon Capture) Environmental Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Benchmarking Initiatives -- Thermal Processes -- Flow Processes -- Deformation processes -- Variable Density Flow -- Multiphase Flow -- Hydro-Mechanical (Consolidation) Processes -- Thermomechanics -- Coupled THM-Processes -- Reactive Transport -- Mechanical-Chemical (MC) Processes -- THC Processes in Energy Systems.
Sommario/riassunto	This book presents a new suite of benchmarks for and examples of porous media mechanics collected over the last two years. It continues the assembly of benchmarks and examples for porous media mechanics published in 2014. The book covers various applications in

the geosciences, geotechnics, geothermal energy, and geological waste deposition. The analysis of thermo-hydro-mechanical-chemical (THMC) processes is essential to many applications in environmental engineering, such as geological waste deposition, geothermal energy utilisation, carbon capture and storage, water resources management, hydrology, and even climate change. In order to assess the feasibility and safety of geotechnical applications, process-based modelling is the only tool that can effectively quantify future scenarios, a fact which also creates a huge burden of responsibility concerning the reliability of computational tools. The book shows that benchmarking offers a suitable methodology for verifying the quality of modelling tools based on best practices, and together with code comparison fosters community efforts. It also provides a brief introduction to the DECOVALEX, SeSBench and MOMAS initiatives. This benchmark book is part of the OpenGeoSys initiative – an open source project designed to share knowledge and experience in environmental analysis and scientific computation.