

1. Record Nr.	UNINA9910742481803321
Autore	Welch Michael John
Titolo	Geomechanical Controls on Fracture Development in Chalk and Marl in the Danish North Sea : Understanding and Predicting Fracture Systems / / edited by Michael John Welch, Mikael Lüthje
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2023
ISBN	3-031-35327-7
Edizione	[1st ed. 2023.]
Descrizione fisica	1 online resource (273 pages)
Collana	Petroleum Engineering, Sustainable Geoenergy Engineering and Technology, , 2366-2654
Altri autori (Persone)	LüthjeMikael
Disciplina	624.151
Soggetti	Geotechnical engineering Petrology Rock mechanics Soil mechanics Mining engineering Mathematical models Geotechnical Engineering and Applied Earth Sciences Soil and Rock Mechanics Mining and Exploration Mathematical Modeling and Industrial Mathematics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Chapter 1. Introduction -- Chapter 2. Establishing a high resolution 3D fracture dataset in chalk: possibilities and obstacles working with outcrop data -- Chapter 3. Calibration and applications of a rate-dependent geomechanical model for Danian and Maastrichtian reservoir chalk (Danish North Sea) -- Chapter 4. Deformation induced variations in porosity of the Chalk Group in the North Sea Basin -- Chapter 5. Strain evolution of the Kraka Chalk inferred from stratigraphic reconstruction -- Chapter 6. Improved visualization of structural deformation on the Kraka structure (Danish Central Graben) with color-processed seismic data -- Chapter 7. Using geomechanical models to simulate the growth of the fracture network in the Ekofisk

Formation of the Kraka structure, Danish Central Graben -- Chapter 8. Geomechanical modelling the evolution of a connected natural fracture network to explain fluid flow variations across a fractured chalk-marl reservoir -- Chapter 9. Numerical study on the influence of induced hydraulic fractures on oil production in a line drive -- Chapter 10. Conclusions.

Sommario/riassunto

This book summarizes new discoveries on fracturing in chalk. Based on studies on the Danish North Sea, this book shows how observations from outcrop analogues, core and seismic data can be used to characterize the density, distribution and geometry of natural fractures in chalk and marl. Laboratory experiments on chalk samples reveal the controls on the geomechanical properties of chalk and thus on the growth of natural fractures. Finally, various modeling techniques are employed to investigate the mechanical deformation in the chalk structures of the Danish North Sea and to predict fracture distribution and geometry in the subsurface. An understanding of fracture density, distribution and geometry is essential for planning efficient fluid extraction or injection strategies and CO₂ sequestration. This book provides the necessary knowledge.
