SCIENCESPRINGDAY

FACULDADE DE CIÊNCIAS E TECNOLOGIA
UNIVERSIDADE NOVA DE LISBOA

Ciências da Terra Department

Modelling of Geological Resources

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CENTRO DE INVESTIGAÇÃO EM CIÊNCIA E ENGENHARIA GEOLÓGICA
UNIVERSIDADE NOVA DE LISBOA

SOMINCOR Sociedade Mineira de Neves Corvo, S.A.

LNEG

FCT

galp energia

COLT resources
A Gold Company Created by Investors for Investors

Objectives

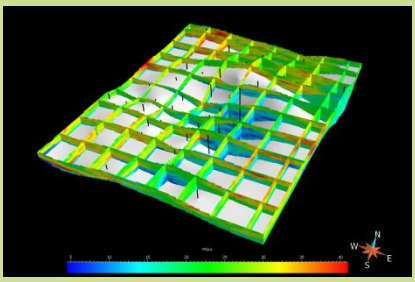
- Manage unequal borehole sample lengths
- Generation of high-resolution 3D stochastic geological models
- Conditional co-simulation of multiple variables
- Parallelization and optimization of algorithms
- Simulation of fractured fields
- Calculation of equivalent permeability in fractured rocks
- Hazard and risk analysis of rockfall events

Methodology

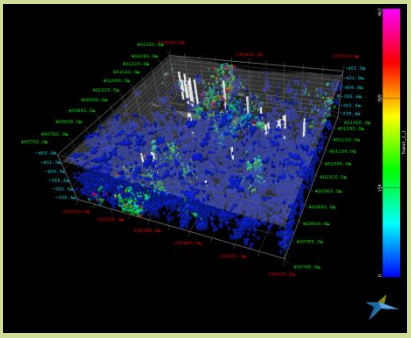
- Improve algorithms to solve new data-driven geoscientific challenges
- Implementation of new workflows that makes optimal integration of all available data with different spatial resolutions with object models and high resolution stochastic models
- Optimization and parallelization of geostatistical software

Expected Results

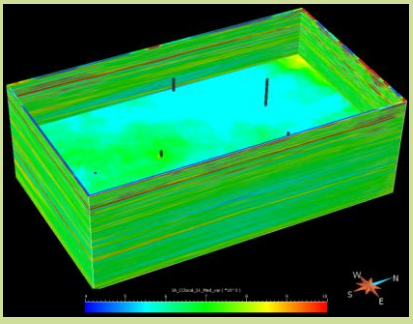
- PhD, MSc thesis supervision and international papers in Geological Engineering
- A prototype software to generate 3D-DFN fractures (F-TRIAN)
- Proposal of a new workflow to characterize fractured reservoirs
- Parallelized version of the sequential simulation software
- Build of 3D stochastic geological models of lithologies using the SIS algorithm with multipoint constrains
- Software for simulation of rockfall pathways
- An improved procedure to generate simulated images of acoustic impedance from seismic data



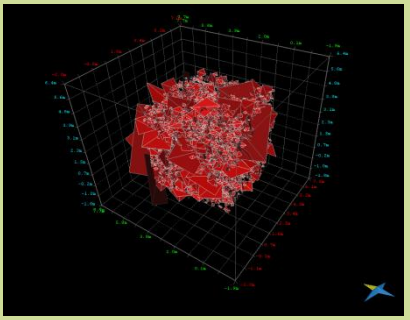
3D mining model of P_2O_5 grades



3D model of transmissitivity of a fractured granite



3D model of acoustic impedance ≡ inverse of porosity



3D model of fractures

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