

INTERNATIONAL WEBINAR ON ROCK MECHANICS

**Feedback from some injections
carried out in a mixed soft rock
and soil formation**

Aï-Na Blaise

**Experimental and numerical
investigations on rock salt
macroscopic behavior in the
context of underground storage**

Mejda Azabou

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Feedback from some injections carried out in a mixed soft rock and soil formation

Aï-Na Blaise

TRACTEBEL (France)

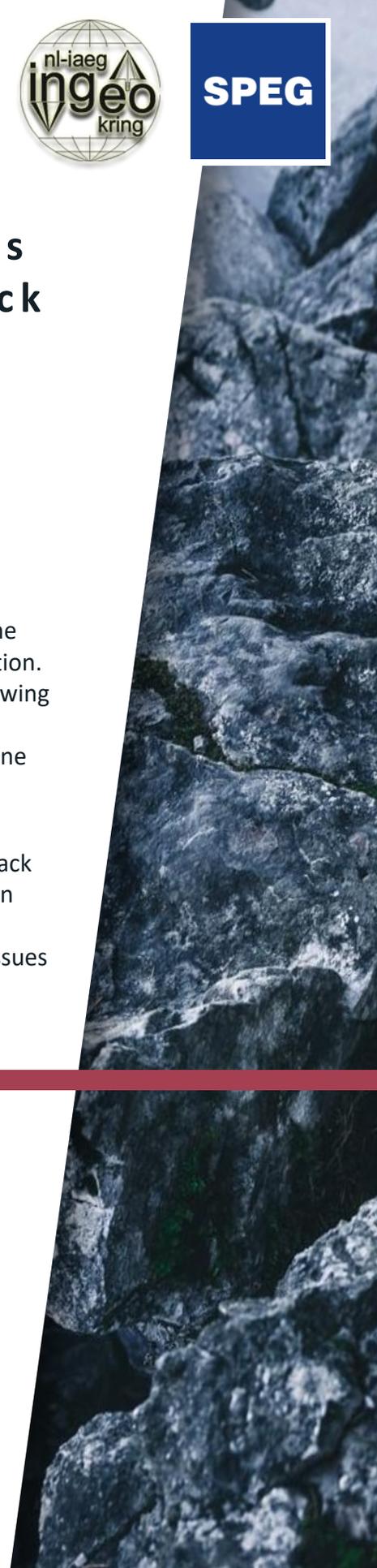
Abstract

Within the framework of the Grand Paris Express metro project some injections have been carried out in a mixed soft rock and soil formation. The goals of these injections were to create a consolidated plug showing a low permeability next to the diaphragm walls outside of a metro station. The objective of the plug is to improve Tunnel Boring Machine (TBM) launch.

This CFMR-YM presentation goes through a review of some of the technics of injections used during the works and shows some feedback of the launch of the TBM through the injected plug. The presentation deals with the challenges arisen during the injection phase and the correlation between the quality of the ground treatments and the issues encountered during the launch of the TBM.

Speaker

Aï-Na Blaise is a Civil / Geotechnical tunnel Engineer from ENTPE (« Ecole Nationale des Travaux Publics de l'Etat ») in Lyon, France. She has attended a specialized master of "Tunnels and Underground Works" in INSA Lyon – ENTPE. Aï-Na is currently a design engineer at TRACTEBEL working on projects of deep tunnels and caverns in a rock mechanics context (e.g. SNOWY 2.0 Hydropower Project).



Experimental and numerical investigations on rock salt macroscopic behavior in the context of underground storage

Mejda Azabou

Storengy (France)

Abstract

The optimal design of underground facilities in salt formations depends on the quality of the experimental measurements used to develop constitutive laws and to calibrate their parameters, as well as on the predictive abilities of these models on the short and long term. A comprehensive experimental campaign was carried out, its analysis along with that of the existing experimental data base in MINES ParisTech, raised questions concerning the assumption of specimens representativity during laboratory tests. The effect of specimens heterogeneity on the macroscopic behavior of rock salt was numerically investigated within a virtual laboratory. This investigation showed that specimens heterogeneity can explain the irregularities often observed in experimental measurements and that the tested specimens can be smaller than the required representative volume element (RVE). In an approach allowing to elaborate a macroscopic constitutive law and to overcome representativity related issues, the required RVE size was correlated to that of the heterogeneities. The pertinence of the predictive abilities of this macroscopic law was addressed and a new law, aiming to overcome the limitations of existing models in terms of the quality of their long term predictions, was proposed.

Speaker

Mejda Azabou is currently working as a specialist consultant at Storengy. She obtained her PhD in geomechanics from MINES ParisTech - PSL University in May 2021 with a thesis entitled "Modeling and prediction of rock salt macroscopic behavior in the context of underground energy storage". She graduated as an engineer specialized in mechanics and structures from Tunisia Polytechnic School in 2017. Her research interests cover rock salt thermomechanical behavior in the context of energy storage in salt caverns.

