Practical Information

Attendance to this conference is free of charge, however subscription is required no later than 21 February 2020:

Online Subscription

Venue

UMONS
Faculté Polytechnique
Salle Académique
31 Boulevard Dolez
7000 Mons

Access Map

Société Belge de Géologie de l'Ingénieur et de Mécanique des Roches
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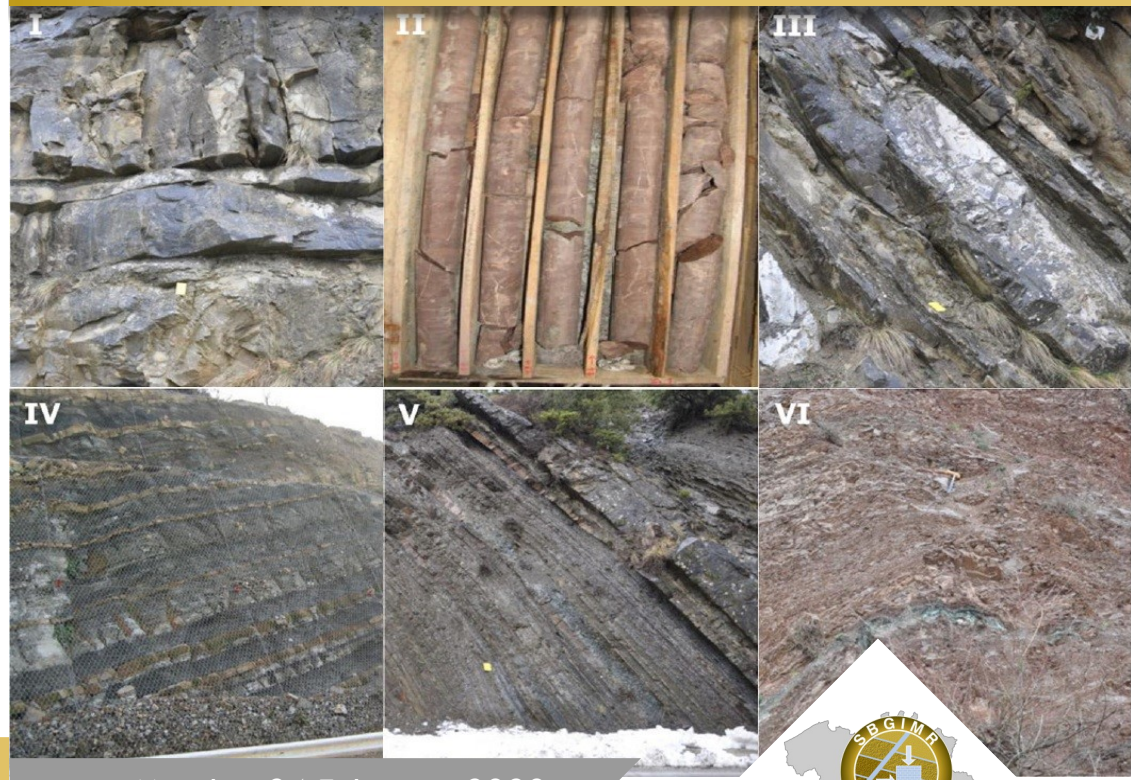
Conference

The importance of the engineering geological differentiations in application of GSI in the Hoek-Brown failure criteria for Rock Engineering Design

Dr Vassilis Marinos



Monday 24 February 2020

Société Belge de Géologie de l'Ingénieur et de Mécanique des Roches

Programme

The speaker: Dr Vassilis MARINOS

Dr. Vassilis Marinos is Associate Professor of Engineering Geology at School of Geology, Faculty of Sciences, Aristotle University of Thessaloniki (recently elected in the National Technical University of Athens, in the Civil Engineering Department). He is the Vice President for the International Association of Engineering Geology and the Environment (IAEG) for the geographic region of Europe for the period 2019-22.

He holds a Doctoral Degree from the National Technical University of Athens (NTUA), an MSc with Distinction from Imperial College and a bachelor degree in Geology from the University of Athens. He teaches Engineering Geology in undergraduate and postgraduate courses and he is director of the MSc program of "Engineering Geology" in the Aristotle University of Thessaloniki.

His area of expertise includes engineering geology in tunnelling, landslide risk assessment, geotechnical classification, assessment of weak and complex rock masses and geotechnical databases. His professional experience includes consulting services in geohazards-landslides risk assessment and microtunnel feasibility assessment along natural gas pipelines, on engineering-geological topics for major engineering projects as for dams on tunnel design and on engineering-geological, geotechnical and hydrogeological issues in the Metro works.

He has published more than 100 papers in international journals and international conferences. He has participated in 18 research contracts in the field of tunnelling, landslide and slope stability. His work has been cited more than 1300 times, while his research results were included in the industry He has been awarded from the International Association of Engineering Geology (IAEG) with a runner-up certificate of the Richard Wolters Prize.

He has been keynote speaker in various international Conferences and Symposiums and acts as editorial member or reviewer in several international journals. He has given several lectures in Universities around the world, and also to the industry.

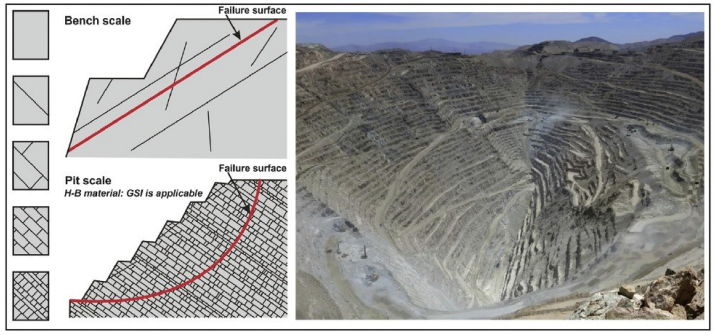
He is in addition a member of the Commission on Soft Rocks of ISRM, the Engineering Geological Committee of Greece (President), the Geological Society of Greece, the Greek Society of Soil Mechanics and Geotechnical Engineering, (member of ISSMGE), the National Committee of Tunnels and Underground structures, and the Hellenic Association of Hydrogeology. As a president or secretary of the Greek national group of IAEG he has organized several workshops and created an informative and technical digital Newsletter. He has also participated in the

Abstract

In rock engineering design, significant advances have occurred in recent years in numerical modelling capability but all too often with little comparative improvement in geologic base data. As a consequence, there is even more need that reliable estimates be available of strength and deformation characteristics of the rock masses on which or within which engineering structures are to be created, be it a tunnel, a foundation or a slope. GSI characterization, linked with Hoek-Brown strength determination as a basis for modelling has been widely adopted by engineers and geologists involved in design and construction of engineering structures.

The need for geological definition of rock mass properties required as inputs into numerical analysis, constitutes one of the greatest reasons for application of the GSI chart, allowing characterization of even difficult-to-describe rock masses, including tackling even the most problematic of weak and complex rock masses. Back-analyses of tunnels, slopes and foundation behaviour using GSI and its reliable application in rock engineering designs attest to its reliability. With continuing use worldwide, the GSI system has continued to evolve, but greater understanding is needed in the definition of input constants, for establishing both GSI and intact rock properties. This need for improved evaluation, particularly from a geological perspective, is addressed in this conference. Geological processes of tectonism, weathering and alteration all affect GSI.

Evaluation of these factors, which are each critical to proper GSI definition, are analysed based on real rock mass cases. Suggested ranges in variability of intact rock parameters σ_{ci} and m_i for common rock masses are presented in the context of a composite new GSI chart. This chart allows selection of appropriate GSI ranges for any specific rock suite. Specific key engineering geological characteristics that differentiate igneous, metamorphic and sedimentary one from each other are highlighted through discussion of various example rock units (including gneisses, granites, ophiolites, limestones, schists, siltstones / mudstones/ shales, and molassic and flysch formations). Illustrations are given of how geological differentiation dictates variability in geotechnical properties of most common rock masses. Examples from the use of the GSI system for several rock masses for the design of slopes and tunnels are provided.



Marinos & Carter (2018)