Geophysical Research Abstracts
Vol. 19, EGU2017-18584, 2017
EGU General Assembly 2017

Discrete Fracture Networks Groundwater Modelling at Bedding Control Fractured Sedimentary Rock mass

Yeh Pin (1) and Wu Yuan-Chieh (2)
(1) Taiwan (chrissonic2000@iner.gov.tw), (2) Taiwan (ycwu@iner.gov.tw)

Groundwater flow modelling in fractured rock mass is an important challenging work in predicting the transport of contamination. So far as we know about the numerical analysis method was consider for crystalline rock, which means discontinuous are treated as stochastic distribution in homogeneous rock mass. Based on the understanding of geology in Taiwan in past few decades, we know that the hydraulic conductivities of Quaternary and Tertiary system rock mass are strongly controlled by development of sedimentary structures (bedding plane). The main purpose of this study is to understand how Discrete Fracture Networks (DFN) affects numerical results in terms of hydraulic behavior using different DFN generation methods.

Base on surface geology investigation and core drilling work (3 boreholes with a total length of 120m), small scale fracture properties with in Cho-lan formation (muddy sandstone) are defined, including gently dip of bedding and 2 sub-vertical joint sets. Two FracMan/MAFIC numerical modellings are conducted, using ECPM approach (Equivalent Continuum Porous Media); case A considered all fracture were Power law distribution with Poisson fracture center; case B considered all bedding plans penetrate into modelling region, and remove the bedding count to recalculate joint fracture parameters.

Modelling results show that Case B gives stronger groundwater pathways than Case A and have impact on flow field. This preliminary modelling result implicates the groundwater flow modelling work in some fractured sedimentary rock mass, might be considerate to rock sedimentary structure development itself, discontinuous maybe not follow the same stochastic DFN parameter.