

EGS Collab Rock Mechanics and Fracturing Studies at SURF

Wednesday, May 11, 2022 5:00 PM (20 minutes)

SURF has proven to be an excellent venue for studying the effects and prediction of fracturing of rocks under pressure. Beginning in 2015, kISMET (Permeability (k) and Induced Seismicity Management for Energy Technologies) followed by the EGS Collab project (Enhanced Geothermal Systems) have determined a wide range of rock mechanical properties of the Poorman Formation carbonate mica phyllites and the Yates amphibolite unit. The kISMET project and Test Bed 1 of EGS Collab were developed on the 4850 Level in the West Drift, whereas the experiment site for EGS Collab Test Bed 2 is constructed on the 4100 Level near the Yates Shaft Station. The goals of the current project include refinement of the understanding of rock mass response due to stimulation by injection of fluids and performance of experiments at the 10 m spatial scale under stresses relevant to EGS. The investigations support validation of thermal-hydrological-mechanical-chemical (THMC) modeling approaches and provide a platform for testing and improving conventional and novel field monitoring tools. This work is furthering the ability to predict permeability enhancement in crystalline rock and will lead to improvements in the creation of sustained and distributed permeability to extract heat by generating new fractures that complement existing fractures within the rock.

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Track Classification: Geology