SMI JKMRC
Julius Kruttschnitt Mineral Research Centre

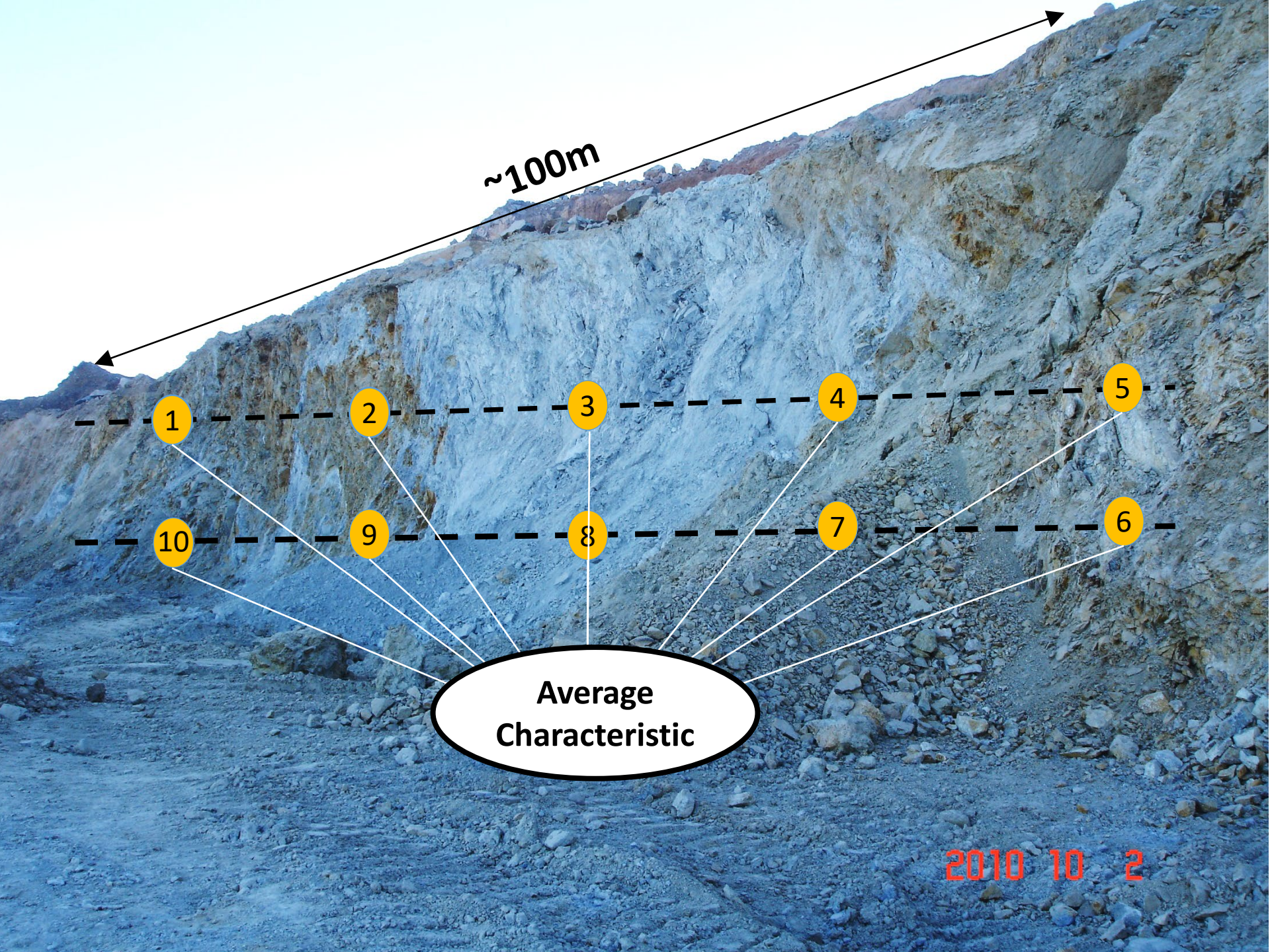
PhD Thesis

22th Feb 2017

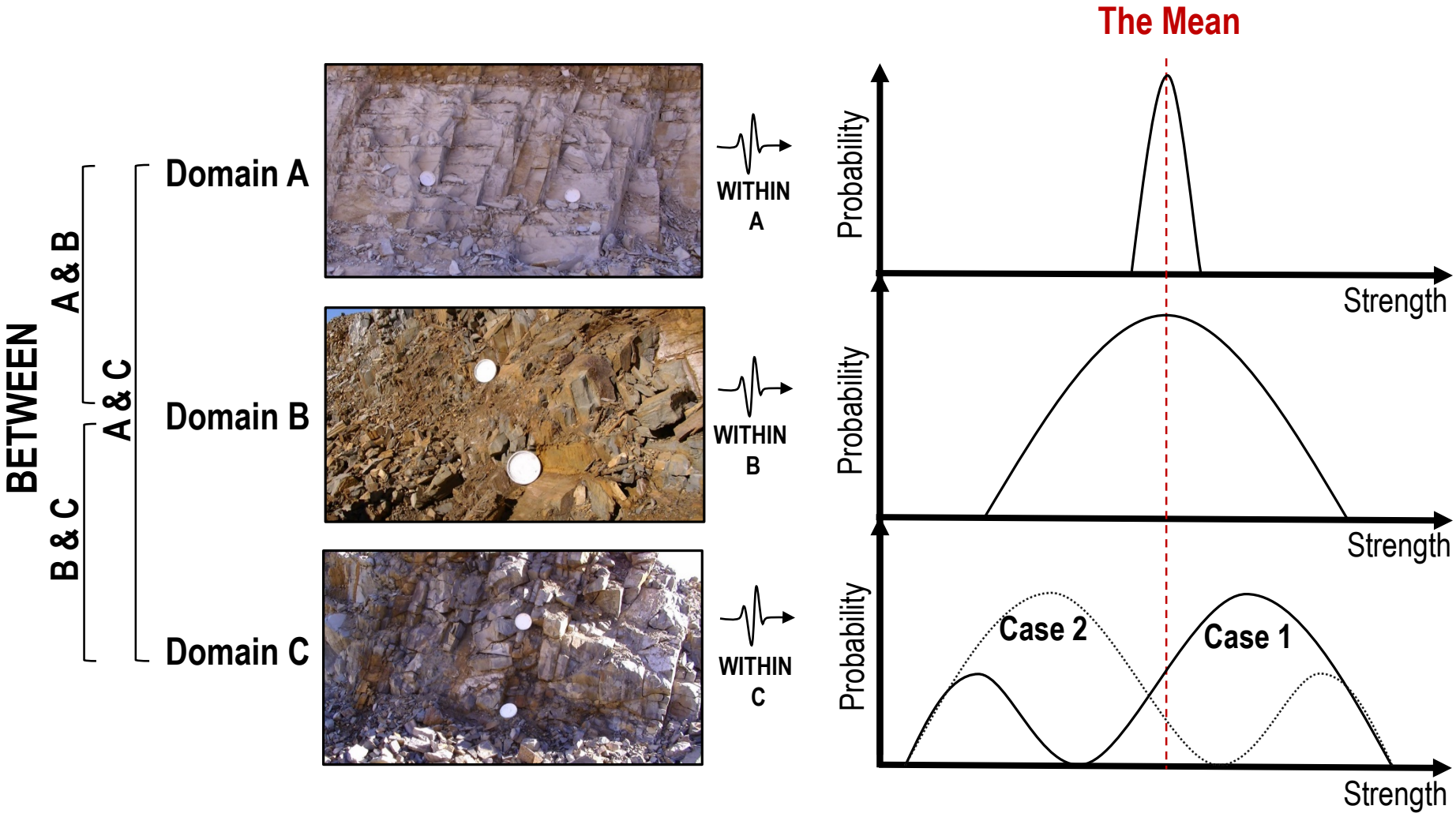
Understanding the Breakage Behaviour of Rocks in the Context of Weathering

Presenter: Farhad Faramarzi

Advisors: Prof. Sarma Kanchibotla and Dr. Robert Morrison


~100m
1
2
3
4
5
10
9
8
7
6
Average
Characteristic
2010 10 2

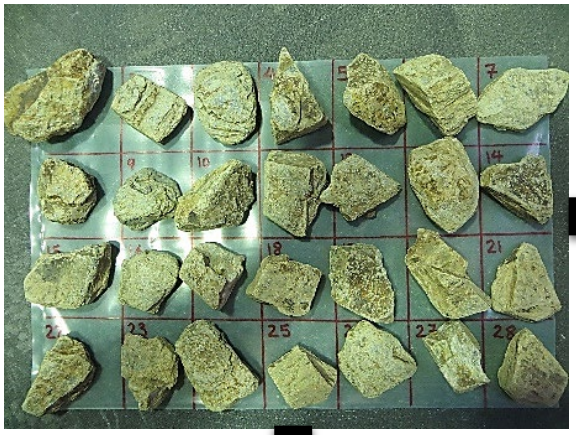
Statement of Problem



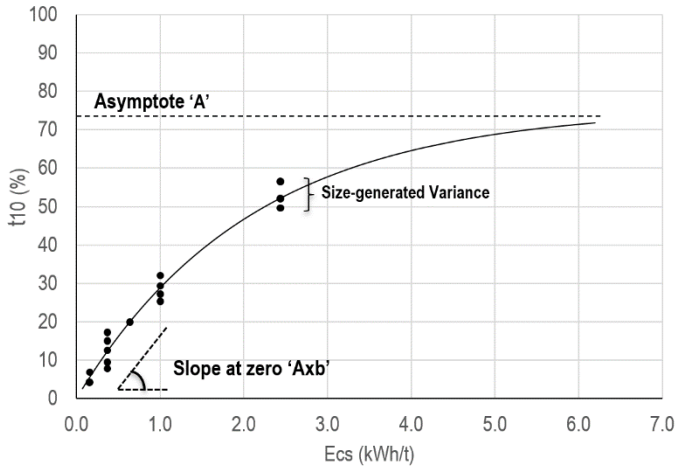
Standard JKDWT

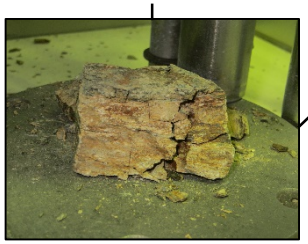
$$t_{10} = A\left[1 - e^{-bEcs}\right]$$

For a given Energy level



Particle 1





Particle 'N'

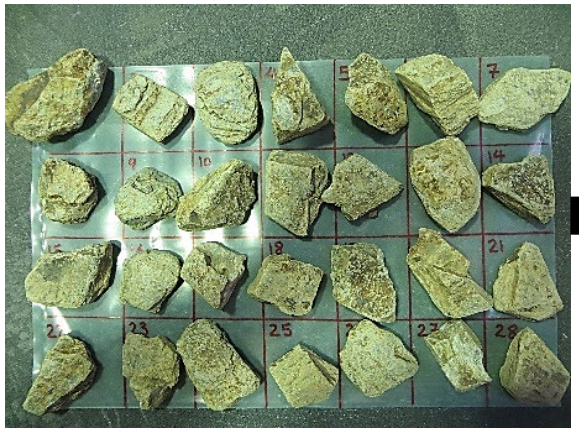
Total MASS/Np

tn (%)

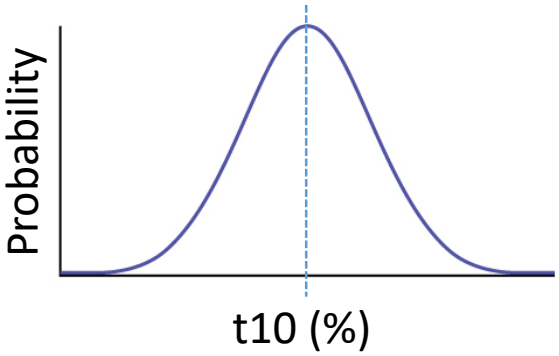
Assumed Ecs

Quantifying Breakage Variability – The 'New' approach

For a given Energy level



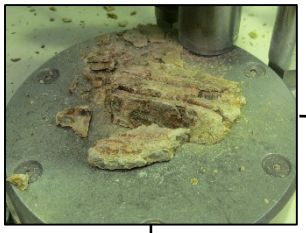
Mass of each Particle



Particle 1

tn (1) Ecs (1)

Particle 2

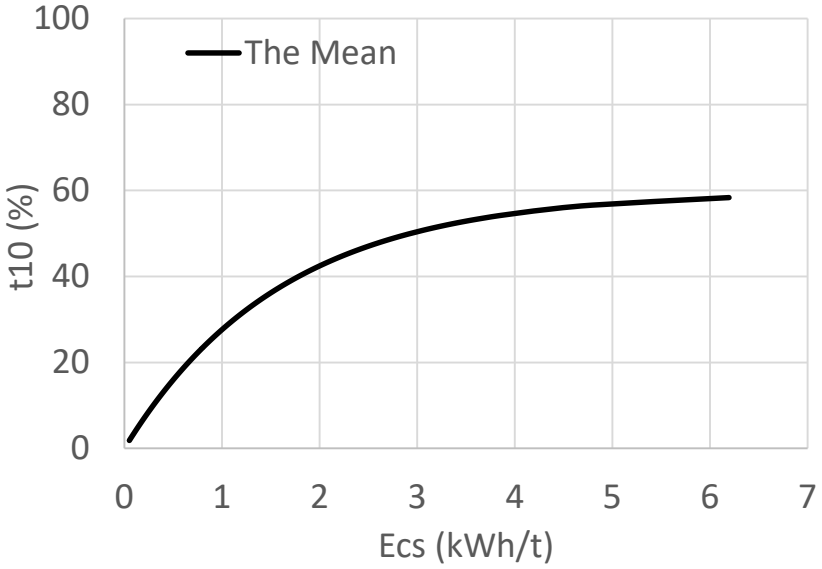


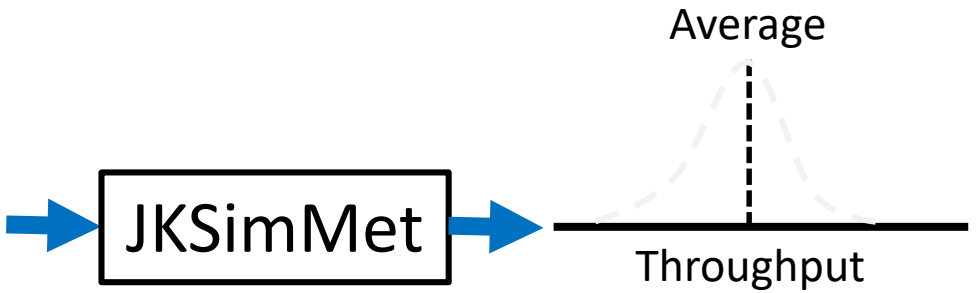
tn (2) Ecs (2)

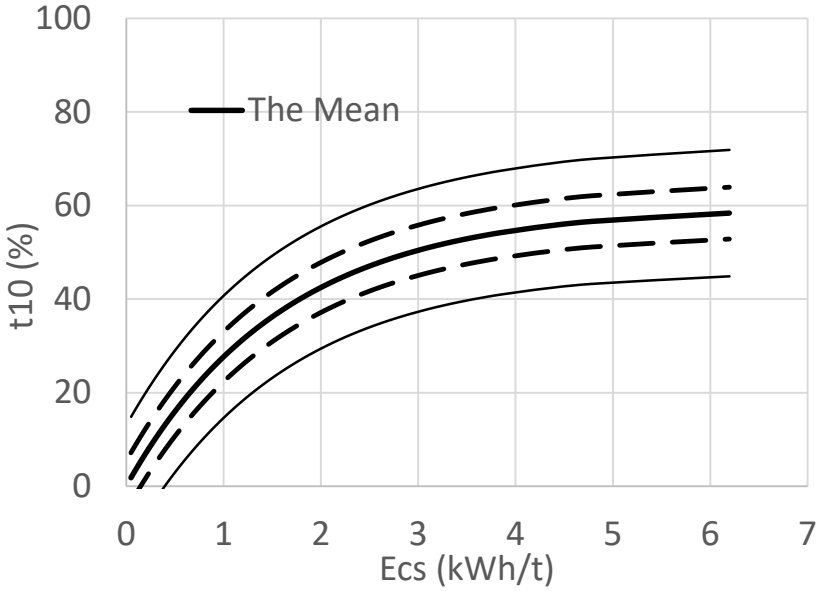
tn (n) Ecs (N)

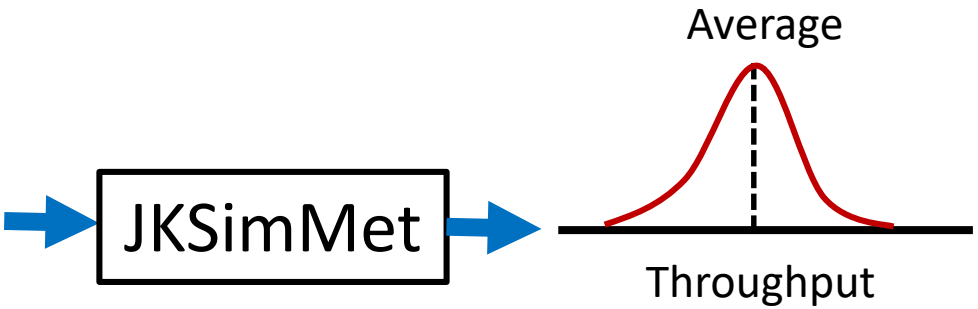
Particle 'N'

Potential Application of the New DWT Approach

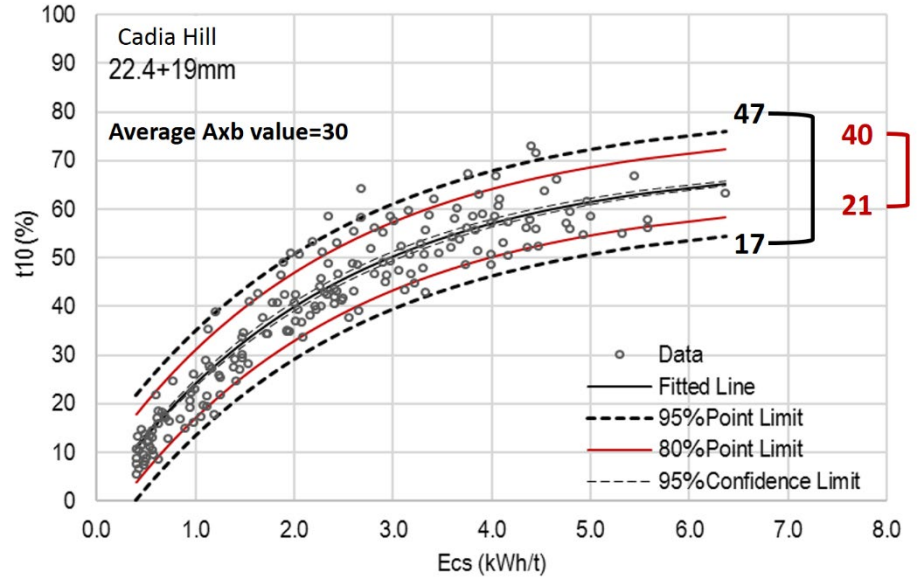


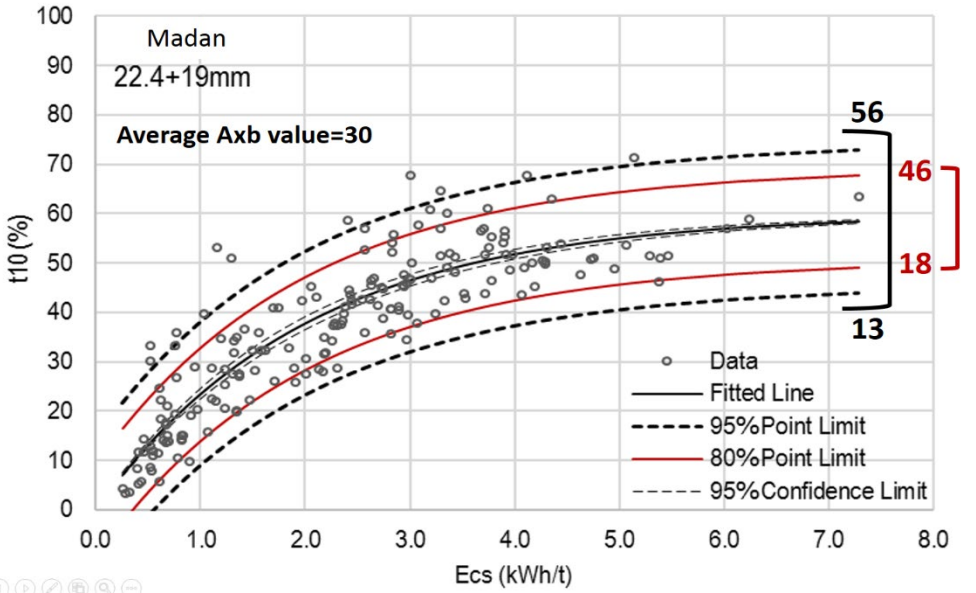


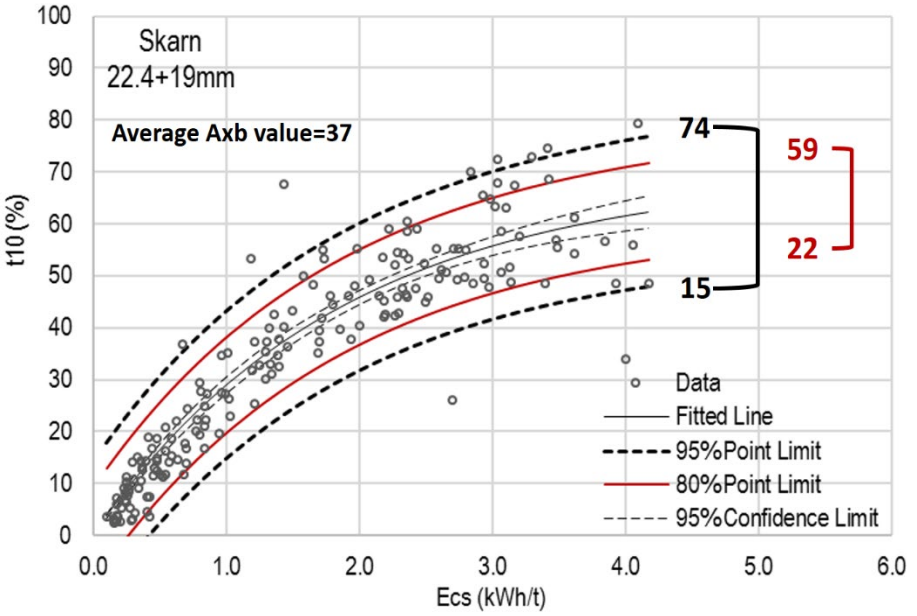


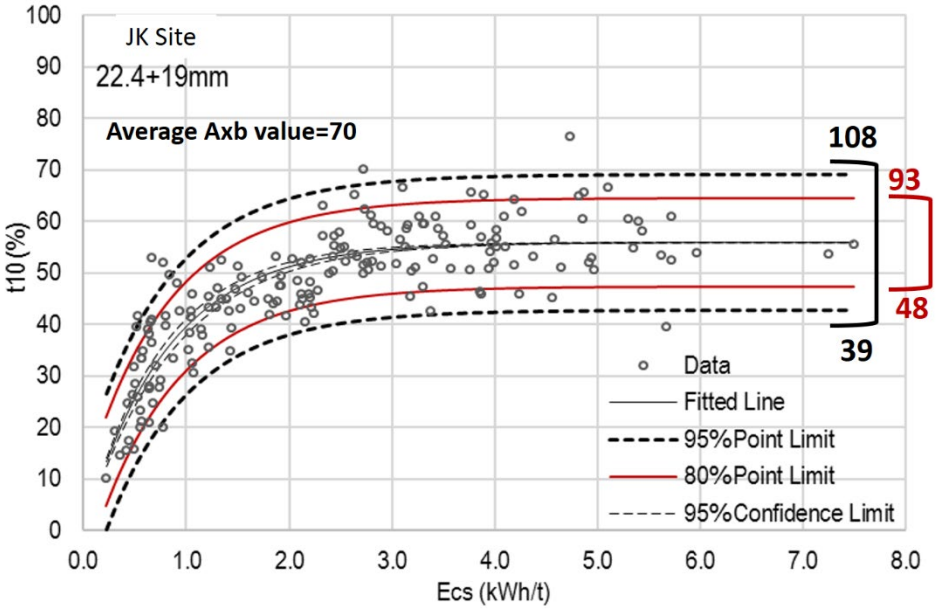


RESULTS - Percentile Comminution Envelopes

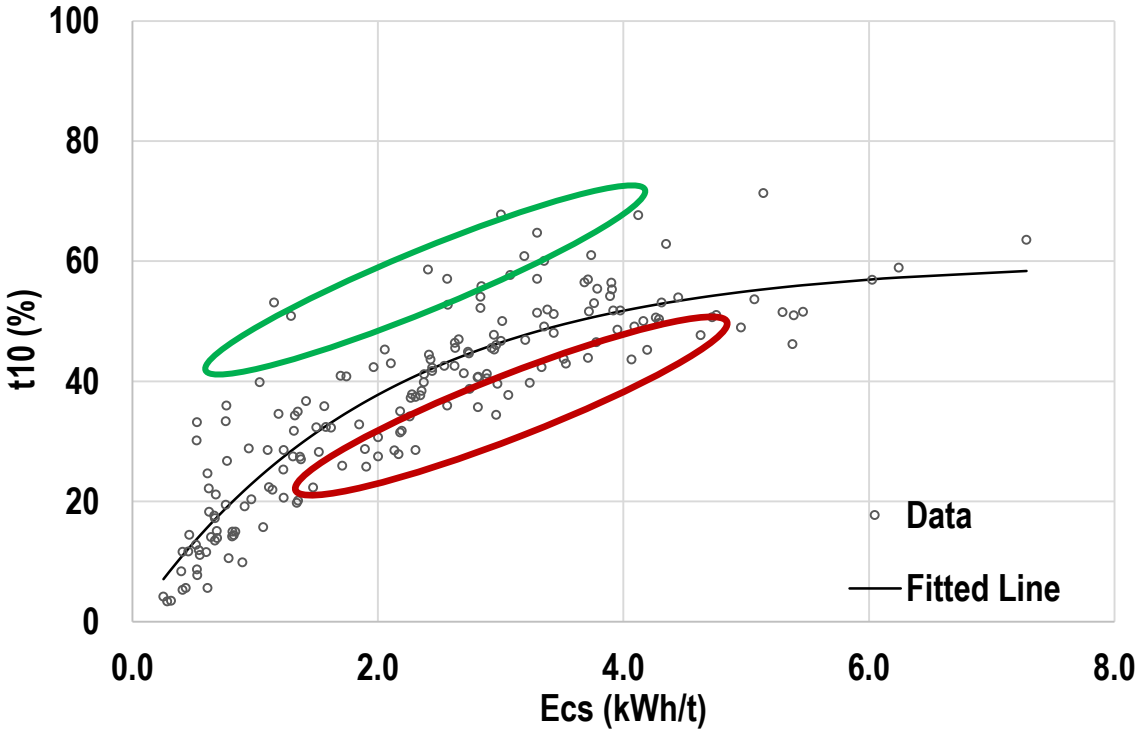


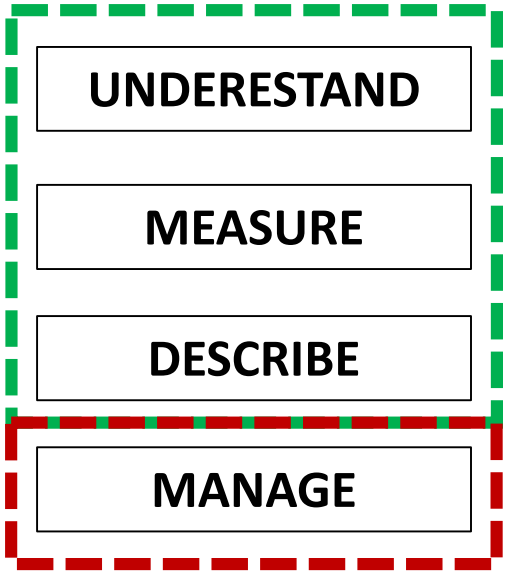






Future Works





- Mineralogical study of the hard and soft ends.
- To accommodate ore intrinsic variability into the JK comminution models.