**Introduction**

This study analyzes water drainage of an initially saturated silt layer in a centrifuge model to determine the flow of water in both liquid and vapor forms, and the transitional point in between. In doing so, the study reveals the hydraulic properties of the silt layer, including the soil water retention curve (SMWC) and the hydraulic conductivity function (HCF). The centrifuge approach provides a unique opportunity to study the transition of flow by speeding up the infiltration and drainage of water in the soil, thus causing the phenomenon to occur much faster than it would be seen in a natural setting.

**Methods**

Here are the methods used to prepare the sample for centrifugation:

1. The sample is further compacted due to the centrifugal force of the centrifuge, which becomes easier for water to drain through the filter paper. This is true because the self-weight of both the water and the soil contained are increased causing more water to drain.

**Results**

As suction increases, the hydraulic conductivity of the soil decreases and then levels off. This is due to the increase in suction pressure, causing the hydraulic conductivity of the soil to decrease. The graph shows that the soil water pressure is lower with suction. As the suction increases, the water profile shifts to the right. When the curves cross the vertical axis, the soil water pressure decreases, and suction starts to occur in the soil. This phenomenon is an indication that the soil has reached its maximum density since it is saturated.

**Conclusion**

Our SWRC did not begin to level off at the end as can be seen in the accepted chart. The drainage of the silt was difficult due to the properties highlighted in the graph of the hydraulic conductivity function. If permeability decreases with suction and levels off, then it will always be hard to reach a steady level on the soil water retention curve. Given more time to sample the soil it is possible that results may reach a desired level. However, given the general trend of our SWRC it does seem that the data was consistent with the accepted data making future tests in drainage of unsaturated soils a definite option. This approach would significantly reduce the amount of time required to run such tests.

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