

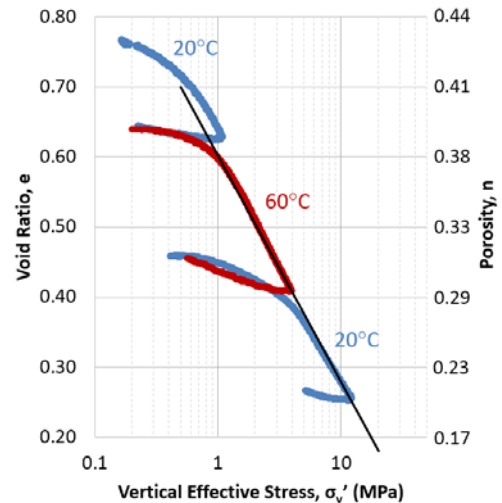
## 08.06: Effect of Temperature on Compression Properties of Clay

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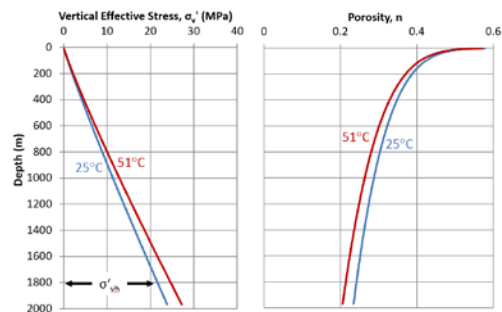
### ABSTRACT

The objective is to evaluate the effect of high temperatures on the compression properties of mudrocks. The positive temperature gradient below the mudline results in in-situ temperatures that are much higher than the temperatures tested at in the lab. Existing constant rate of strain equipment was modified to heat soil specimen to constant temperatures of up to 90°C. The literature and test results suggest that the effect of temperature on the compression properties is greater at lower stress levels and increases with an increase in liquid limit. Figure 1 is the compression curve for a Resedimented Gulf of Mexico – Eugene Island (RGoM-EI) specimen that was tested at room temperature (20°C) and 60°C. The RGoM-EI specimen is a high plasticity mudrock and a shift in the curve is observed at the lower vertical effective stress range (approximately 1 MPa). Figure 2 is a vertical effective stress and porosity depth profile. The change in porosity is due to the shift in the compression curve and the increase in vertical effective stress at a particular depth.

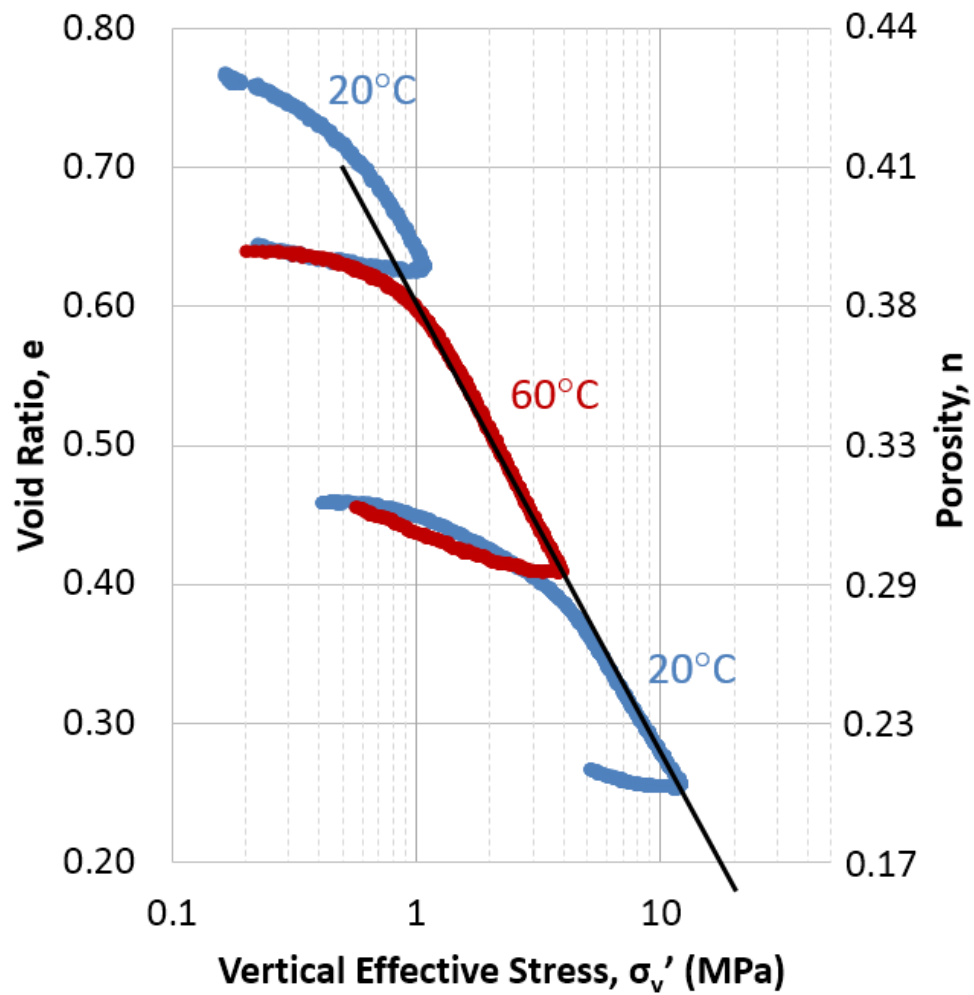
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**Fig 1:** Compression curve of RGoM-EI material. The test was run at 20°C for two load cycles and 60°C for one cycle. There is a shift in the curve at the lower stress level, 1MPa.



**Fig 2:** Vertical effective stress and porosity depth profiles.



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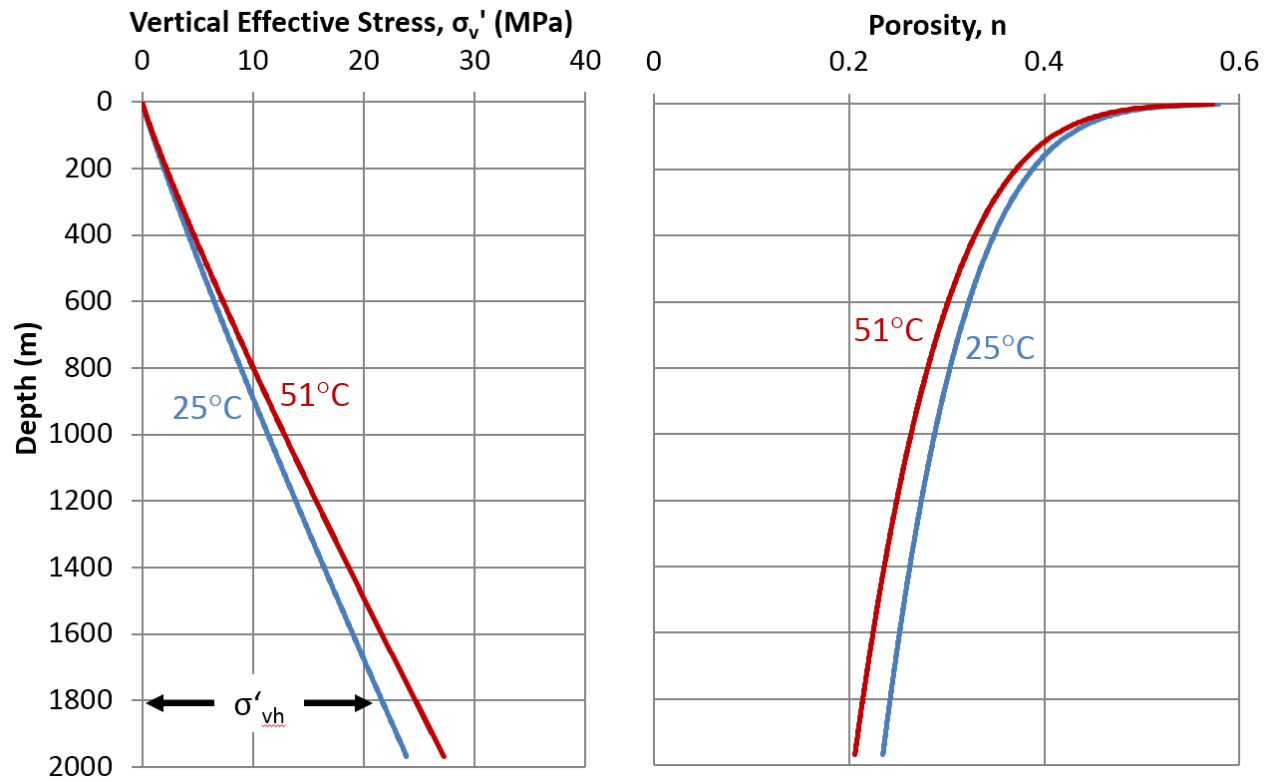


Fig. 2: Vertical effective stress and porosity depth profiles.

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