

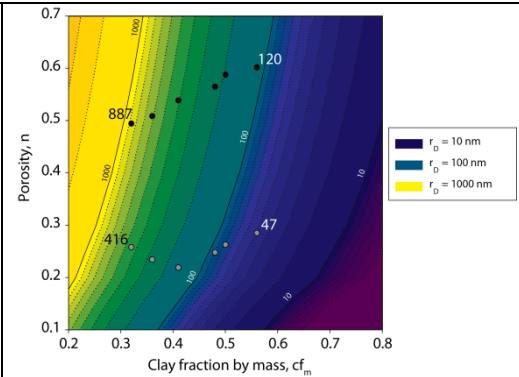
# Seal capacity in mudrocks: the impact of silt fraction

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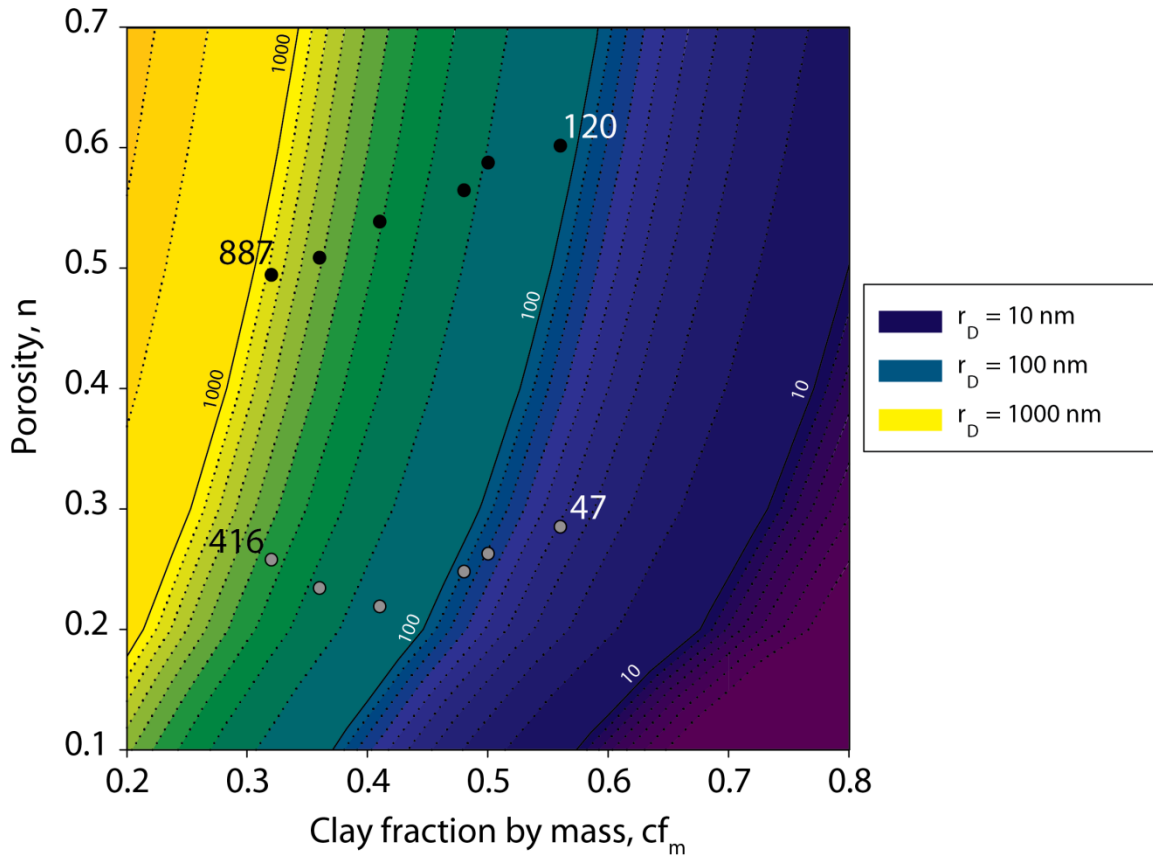
## ABSTRACT

We study the seal capacity of resedimented mudstones with varying silt fraction that are consolidated to effective stresses of 100 kPa (14.5 psi) and 21 MPa (3045 psi). Seal capacity is estimated from capillary entry pressure derived from mercury porosimetry data. We show that trap integrity increases by up to an order of magnitude as clay fraction is increased from 32% to 56% by mass. For a given composition, we show that trap integrity increases up to threefold as vertical effective stress increases from 100 kPa to 21 MPa. We develop a relationship between breakthrough pressure pore throat radius, porosity, and clay fraction by mass.

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**Fig. 1:** Predicted relationship between breakthrough pressure pore throat radius ( $r_D$ ), derived from mercury injection capillary pressure (MICP) data, and porosity and clay fraction for Nankai mudrocks. The six MICP measurements of Nankai-silt mixtures at vertical effective stresses of 0.1 MPa (black circles) and 21 MPa (gray circles) are overlain.



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