



Pattern formation in freezing clays

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When clay soils freeze the ice tends to segregate into a variety of striking patterns. Despite more than a century of experimental and theoretical research, the physical mechanisms governing the pattern formation process remain mysterious. Recent research suggests the phenomenon is related to a morphological instability of the ice–clay interface. Here we show that nonlinearities in soil physical properties (soil diffusivity, freezing characteristic) are essential components of a quantitative description.