



Similarities and differences between salt and shale tectonics

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Salt and shale tectonics are similar in many ways, but there are also some important differences. The most important difference is that salt mobility is tied to its mineralogy, so its behavior is largely independent of its geological setting. Shale, on the other hand, is mobile only so long as it is overpressured. Previously mobile shale can become immobile if it loses its overpressure. Furthermore, shale behaves differently depending on the degree of overpressure. Moderately overpressured shale acts like salt, whereas highly overpressured shale is analogous to low-viscosity magma. Moderately overpressured shale and salt both act as décollement/detachment levels, move in response to differential loading to form salt roller and reactive diapirs, can rise in response to shortening, and are too strong to be injected in tight spaces (fault planes or stratigraphic interfaces). Salt can rise above regional datum and extrude, whereas shale cannot. Salt-overburden contacts are lithologic and discrete; the transition between overpressured-shale and overburden is diffuse and progressive. Highly overpressured shale behaves can participate in active rise facilitated by hydrofracturing. It can inject structural or stratigraphic interfaces and weaken the surrounding strata.