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Overpressure by burial

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Preservation of peak metamorphic assemblages cannot be explain by sluggish kinetics only due to high temperatures. Moreover, frequently reported near isothermal decompression from peak conditions testify continuing capacity of lower pressure metamorphic reactions to overcome kinetic barriers. Often these observations come from the same rock sample, or even or from a single host crystal. Natural conclusion on preservation of peak pressures in a 'pressure vessel' in order to preserve the peak mineral assemblages was firmly made already in the first years after convincing identifying of ultra-high pressure minerals in continental rocks. The 'pressure vessels' model is thus the current view on mechanical state during retrogression assuming up to several GPa excess pressure in inclusion maintained by host mineral all the way through retrogression. Same arguments apply to preservation of outcrop scale eclogite boudins in lower pressure amphibolite gneisses. If strength of rocks and minerals is sufficient to keep the pressure difference during retrogression, the same applies to the prograde stage of the metamorphic history of the rock. We investigate and quantify the overpressure development during burial of continental rocks. We show that eclogite lenses are expected to develop over mafic lithology embedded in average crustal rock at lower crustal condition, thus eliminating the need for 'deep continental subduction' as the only mechanism to form it.