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Interactive comment on “Is there a layer deep in the Earth that uncouples heat from mechanical work?” by S. J. Burns and S. P. Burns

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Negative thermal expansion of mantle minerals does not seem to agree with experimental data and thermodynamic calibrations based on these data. For example, calculations (cf. figure) based on calibrated equation of state for periclase (Gerya et al., 2004) suggest that thermal expansion of this mineral decreases from ca. $4e-5$ at 10 GPa to ca. $2e-5$ at 100 GPa. This reduction is likely to have some effect on mantle convection but not very dramatic.

Gerya T.V., Podlesskii K.K., Perchuk L.L., Maresch, W.V. (2004) Semi-empirical Gibbs free energy formulations for minerals and fluids. *Phys. Chem. Minerals*, 31(7), 429-455.

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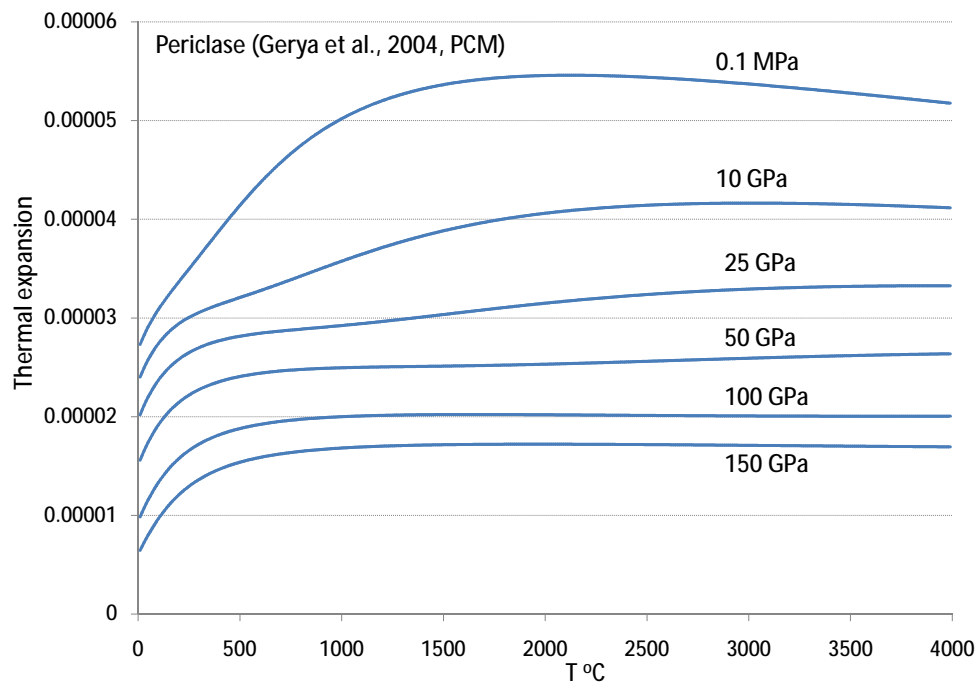
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Fig. 1. Thermal expansion of periclase

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