Supplementary material:

Table S1: Rheological parameters used for all 3D models presented in this study

Property	Unit	UC	LC	LM
Density	kg/m^3	2800	2800	3300
Thermal diffusivity	m^2/s	1.19×10^{-6}	1.19×10^{-6}	1.33×10^{-6}
Viscosity prefactor	$Pa^{-n}.s^{-1}$	8.57×10^{-28}	8.57×10^{-28}	6.52×10^{-16}
Stress exponent	-	4.0	4.0	3.5
Activation energy	J/mol	$223.\times10^{3}$	$223.\times10^{3}$	$530.\times10^{3}$
Activation volume	m^3/mol	0	0	18.e-6
Thermal expansivity	K^{-1}	2×10^{-5}	2×10^{-5}	2×10^{-5}
Specific heat	$J.Kg^{-1}.K^{-1}$	750	750	750
Heat production	W/m^3	1.5×10^{-6}	0	0
Angles of internal friction	degree	20	20	20
Cohesion	Pa	$20.\times10^{6}$	$20.\times10^{6}$	$20.\times10^{6}$

Note. Cohesion and angles of internal friction decrease for 50% due to strain weakening process. UC: upper crust; LC: lower crust; LM: lithosphere mantle.