Supplementary items to:

Emergence of modern-style continental subduction modulated by rifted margin-subduction feedback

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Table 1. Material parameters used in this study. Additional parameters constant accross all materials are the elastic shear modulus G= 5×10^{10} Pa, the thermal expansivity α= 3×10^{-5} K^{-1}, the heat capacity C_p= 1050 JK^{-1}, and the thermal conductivity κ = 3.0 Wm^{1} K^{-1}. The minimum and maximum viscosities are capped to 5×10^{18} and 1×10^{23} Pa s^{1}, respectively. 1, Hirth & Kohlstedt (2003). 2, Mackwell et al. (1998). 3, Ranalli, (1995).

Unit	ρ (kg m^{-3})	Rheology	A (Pa^{-n} s^{-1})	E (J mol^{-1})	n	V (m^{-3} mol^{-1})	ϕ (°)	C (MPa)	Cp (J K^{-1})
Upper Mantle	Peridotite	Dry olivine[1]	1.1×10^{5}	530×10^{3}	3.5	14.75×10^{-6}	20	30	1050
Sediments	Sediments	Wet quartzite[3]	3.2×10^{-4}	154×10^{3}	2.3	-	20	30	850
Upper continental crust	UCC	Wet quartzite[3]	3.2×10^{-4}	154×10^{3}	2.3	-	20	30	900
Lower continental crust	LCC	Anorthite 75[3]	3.3×10^{-4}	238×10^{3}	3.2	-	20	30	950
Upper oceanic crust	NMORB	Diabase[2]	8	485×10^{3}	4.7	-	0	5	1000
Lower oceanic crust	NMORB	Anorthite 75[3]	3.3×10^{-4}	238×10^{3}	3.2	-	20	30	1050
Serpentinite	Serpentinite	Isoviscous 5×10^{18} Pa.s	-	-	-	-	20	30	1050

48 Table 2. Bulk compositions used in the density phase diagrams.

	Average continental crust	Average mid-ridge ocean basalt	Sediments	Lherzolite KB-1
	Andesite	Oceanic crust (N-MORB)	Average greywacke	Peridotite
Wt.%/REF	Rudnick & Gao, 2003	Gale et al., 2013	Pettijohn, 1963	Davies et al., 2009
SiO2	60.60	50.42	68.85	44.48
TiO2	0.72	1.53	0.74	0.11
Al2O3	15.90	15.13	12.05	3.51
FeO	6.71	9.81	4.75	8.2
MnO	0.10	0.17	0.05	0.12
MgO	4.66	7.76	2.96	39.52
CaO	6.41	11.35	0.5	3.07
Na2O	3.07	2.83	4.87	0.3
K2O	1.81	0.14	1.81	0.02
P2O5	0.13	0.16	0.06	-
Cr2O3	0.01	0.03	-	0.32
H2O	-	-	3.07	-
CO2	-	-	0.08	-
Total	100.12	99.33	99.79	99.65

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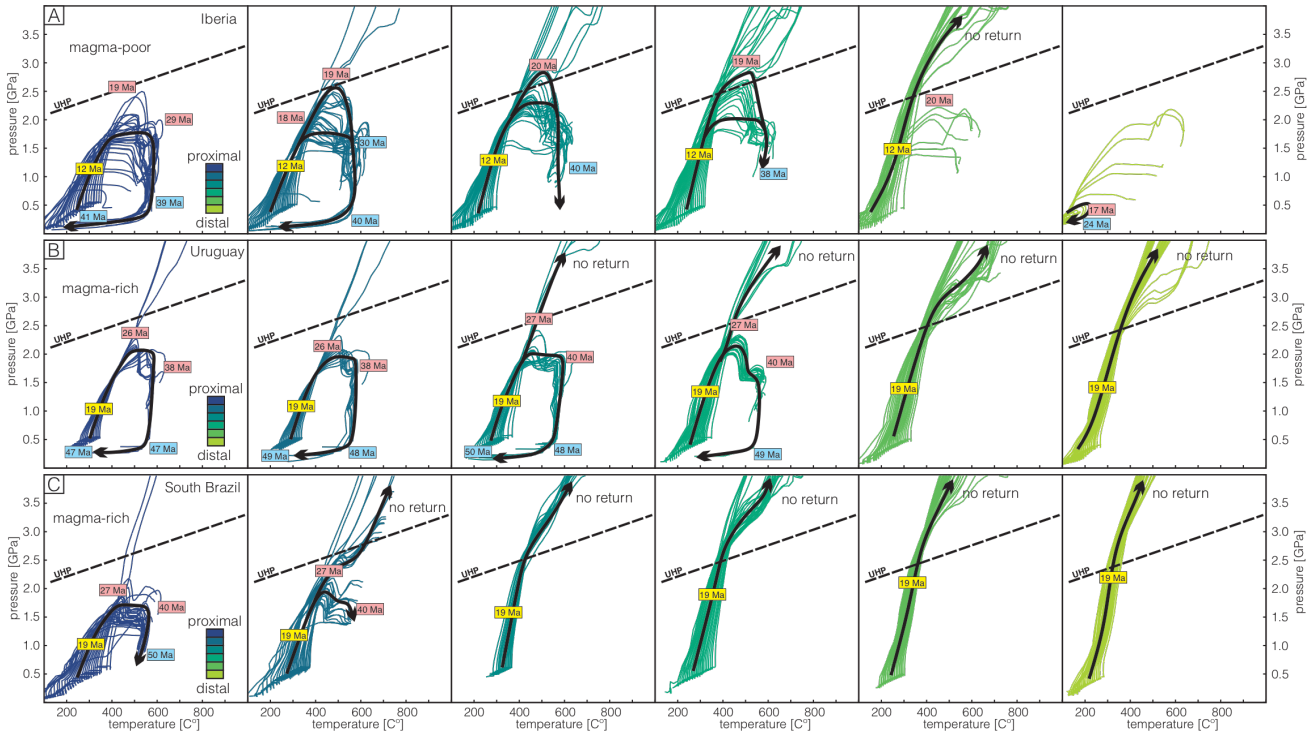

Figure S1 – Pressure-temperature-time trajectories for the different segments of the subducted continental crust for different rifted margins with a slab pull given by a pre-collisional subduction of an oceanic lithosphere with an age of 40 Ma. **A.** Iberia. **B.** Uruguay and **C.** South Brazil

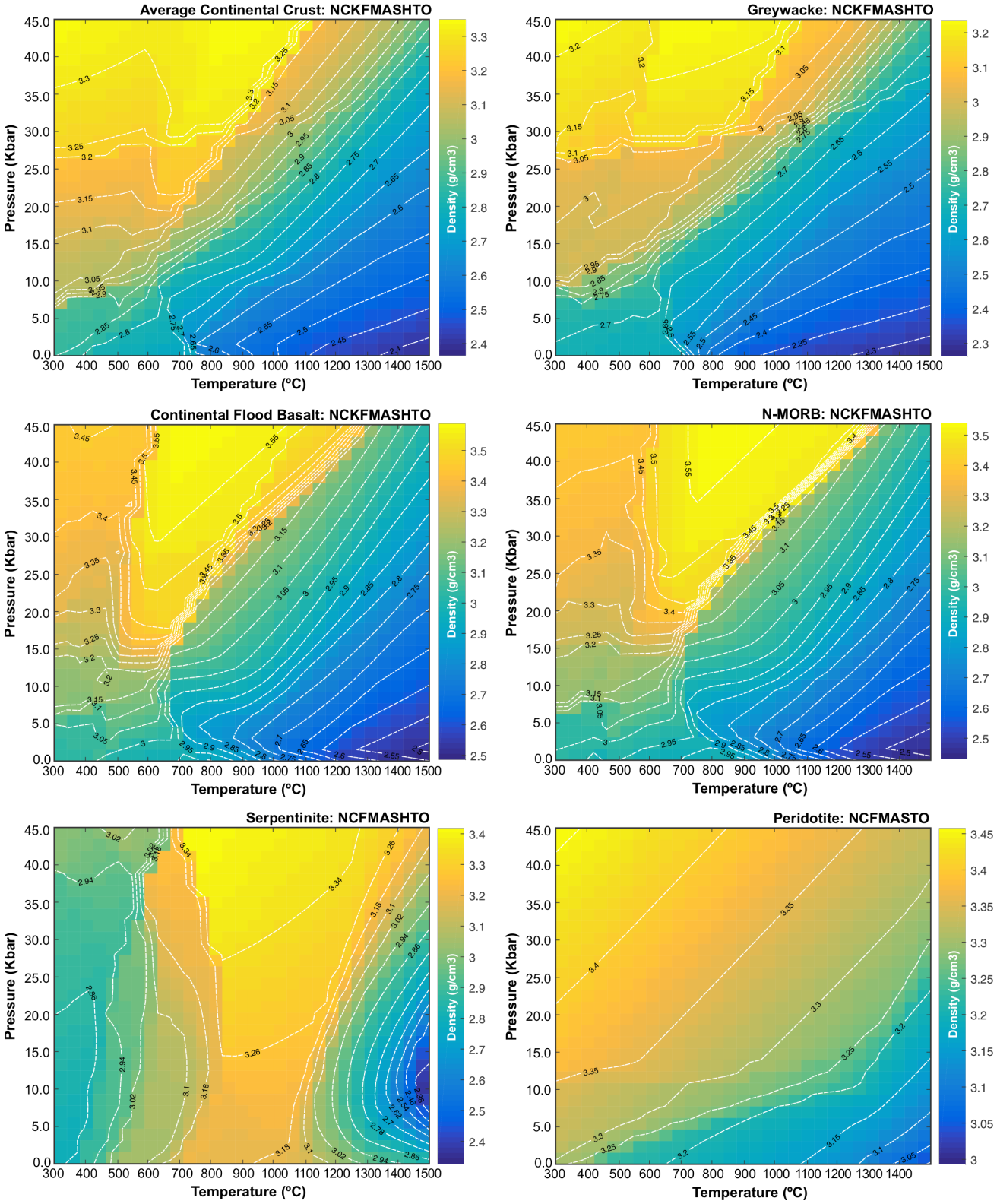

Figure S2 – Calculated density variation for different lithologies used in the thermomechanical model.

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