DR2008076

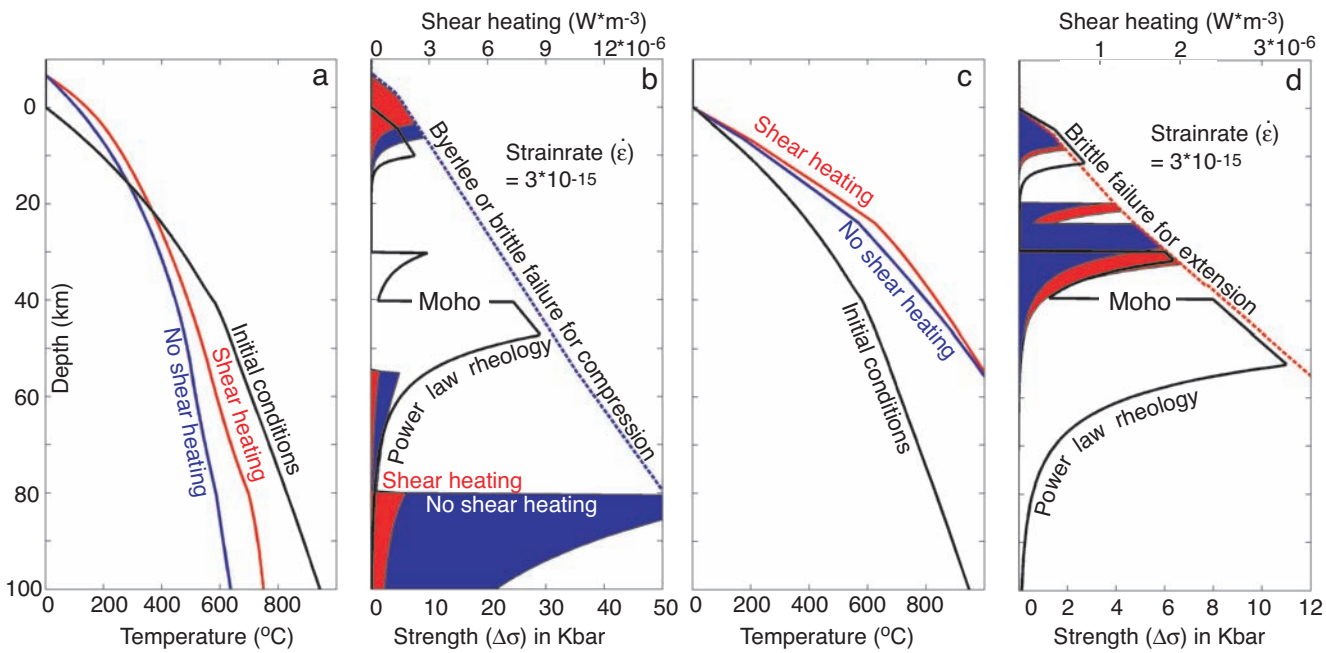
a
Depth (km)
0
20
40
60
80
100
0 200 400 600 800
Temperature (°C)
Initial conditions
Shear heating
No shear heating
b
Shear heating (W*m-3)
0 3 6 9 12*10-6
Strainrate (ε̇)
= 3*10-15
Byerlee or brittle failure for compression
Moho
Power law rheology
Shear heating
No shear heating
0 10 20 30 40 50
Strength (Δσ) in Kbar
c
Shear heating
No shear heating
Initial conditions
0 200 400 600 800
Temperature (°C)
d
Shear heating (W*m-3)
1 2 3*10-6
Strainrate (ε̇)
= 3*10-15
Brittle failure for extension
Moho
Power law rheology
0 2 4 6 8 10 12
Strength (Δσ) in Kbar

TABLE 1, DATE REPOSITORY, ROCK PARAMETERS USED HARTZ & PODLADCHIKOV

Parameter	*Unit*	*Wet quartz*	*granulite*	*Dry dunite*
Activation energy (E)	($J\ mol^{-1}$)	172600	445000	532000
Pre-exponent constant (A)	($MPa^{-n} * s^{-1}$)	0.2231	14000	25000
Power law exponent (n)		1.9	4.2	3.5
Density (r)	($Kg*m^{-3}$)	2600	2900	3300
Heat capacity (c_p)	($W*m^{-1*}K^{-1}$)	1000	1000	1000
Radiogenic heat production (Q)	($W*m^{-3}$)	1E-06	1E-07	1E-07
Thermal conduction coeficient	(W/m/K)	3	3	4.5
Initial depth	(km)	0-30	30-40	40-175
Reference for E,A and n		Carter & Tsenn (1987)	Wilks & Carter (1990)	Chopra & Paterson (1982)