**Supplemental Material for** Currie, C.A., and Copeland, P., 2021, Numerical models of Farallon plate subduction: Creating and removing a flat slab: Geosphere, https://oi.org/10.1130/GES02393.1.

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- Figures S1 to S7

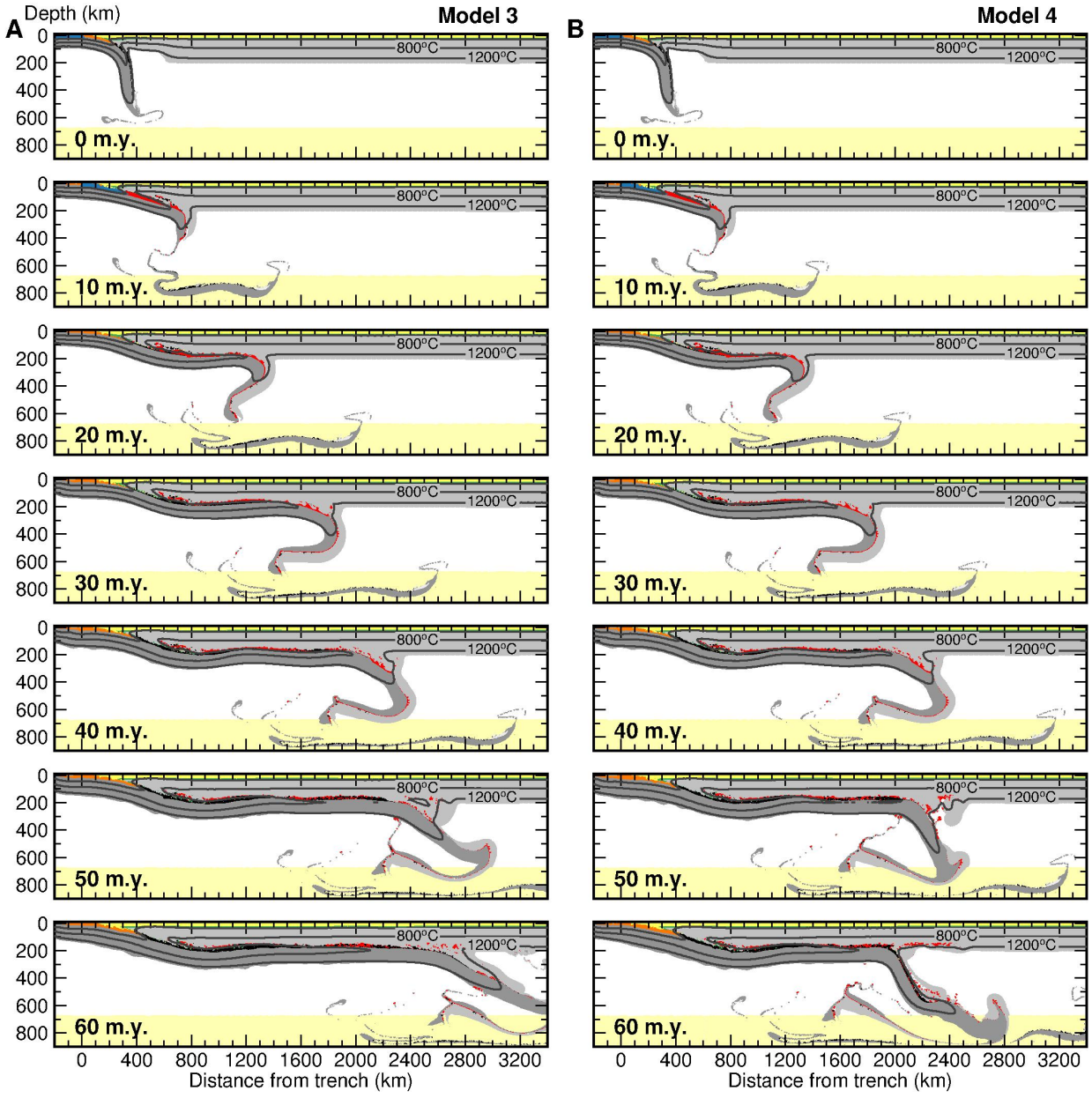


**Figure S1.** Evolution of (A) Model 3 in which the plate velocities do not change during the model run and (B) Model 4 in which the continent is stationary after 40 m.y. (convergence rate is 7 cm/yr). The oceanic plateau remains metastable in both models (red particles). Material colours as in Figure 1; black lines are isotherms every 400°C.

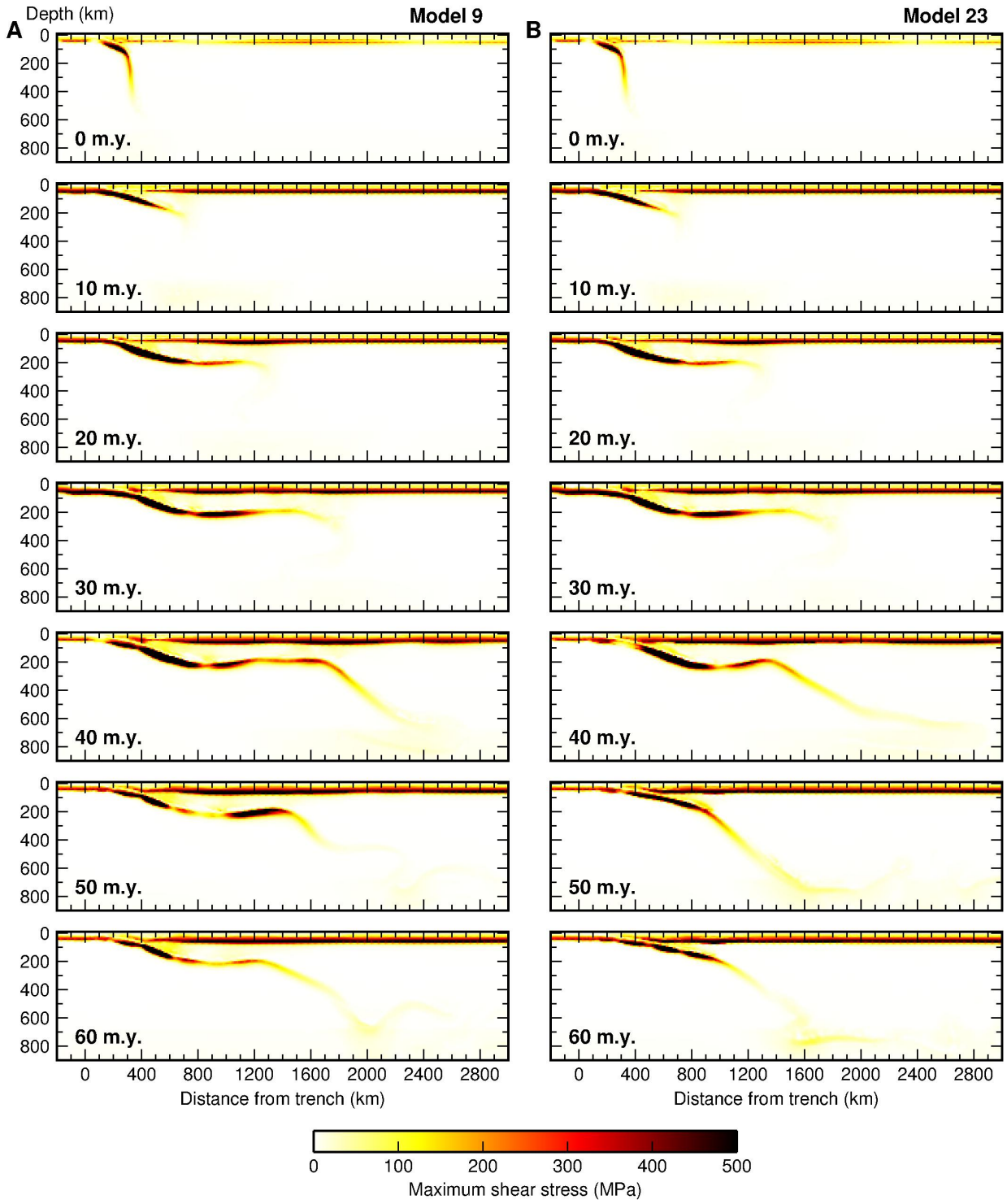


**Figure S2.** The second invariant of the deviatoric stress tensor (i.e., the maximum shear stress) during the evolution of (A) Model 9 and (B) Model 23.

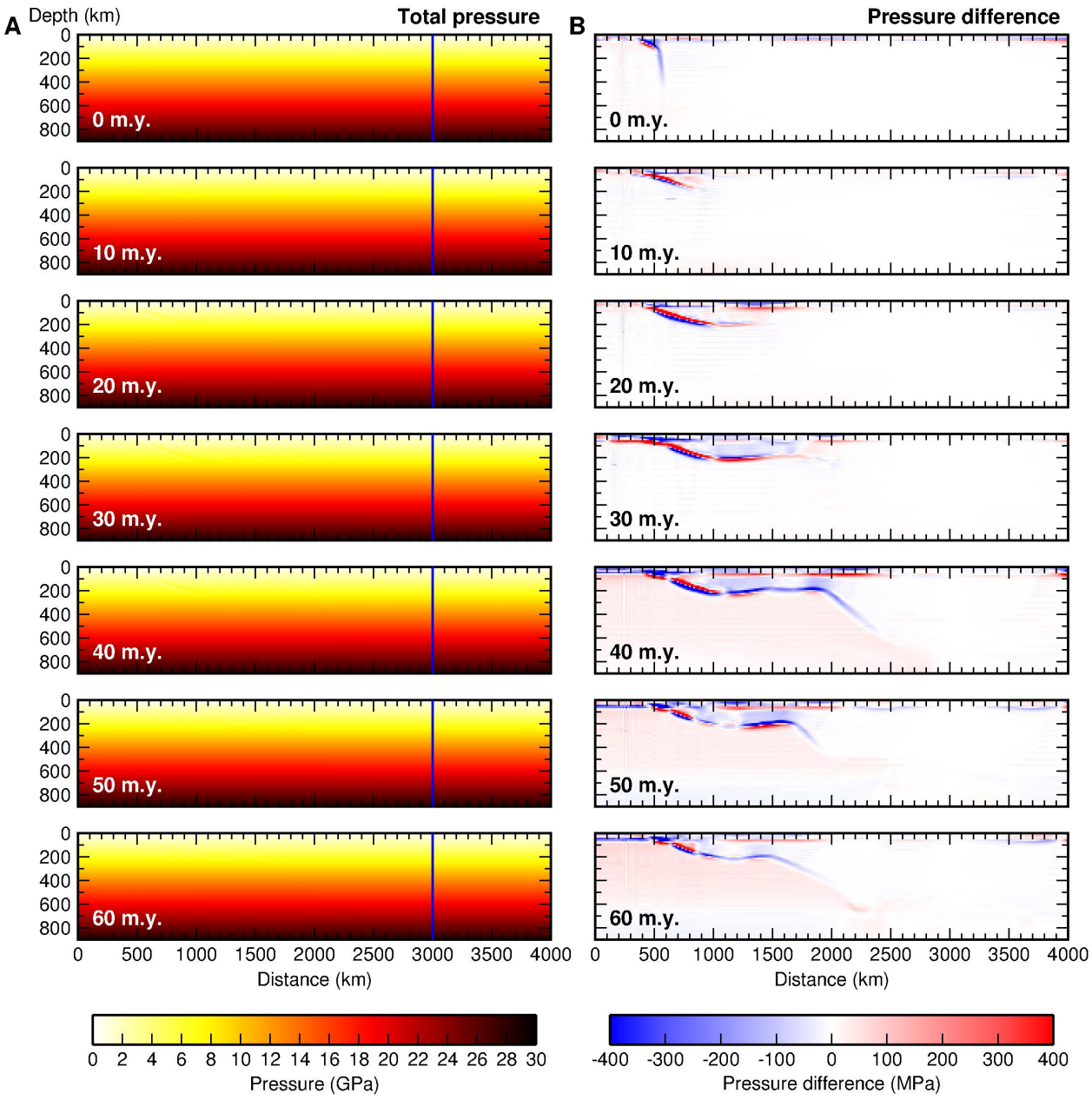


**Figure S3.** The evolution of (A) total pressure and (B) lateral pressure difference for Model 9. The pressure difference is relative to the vertical pressure profile at x=3000 km at each time (blue lines in A).

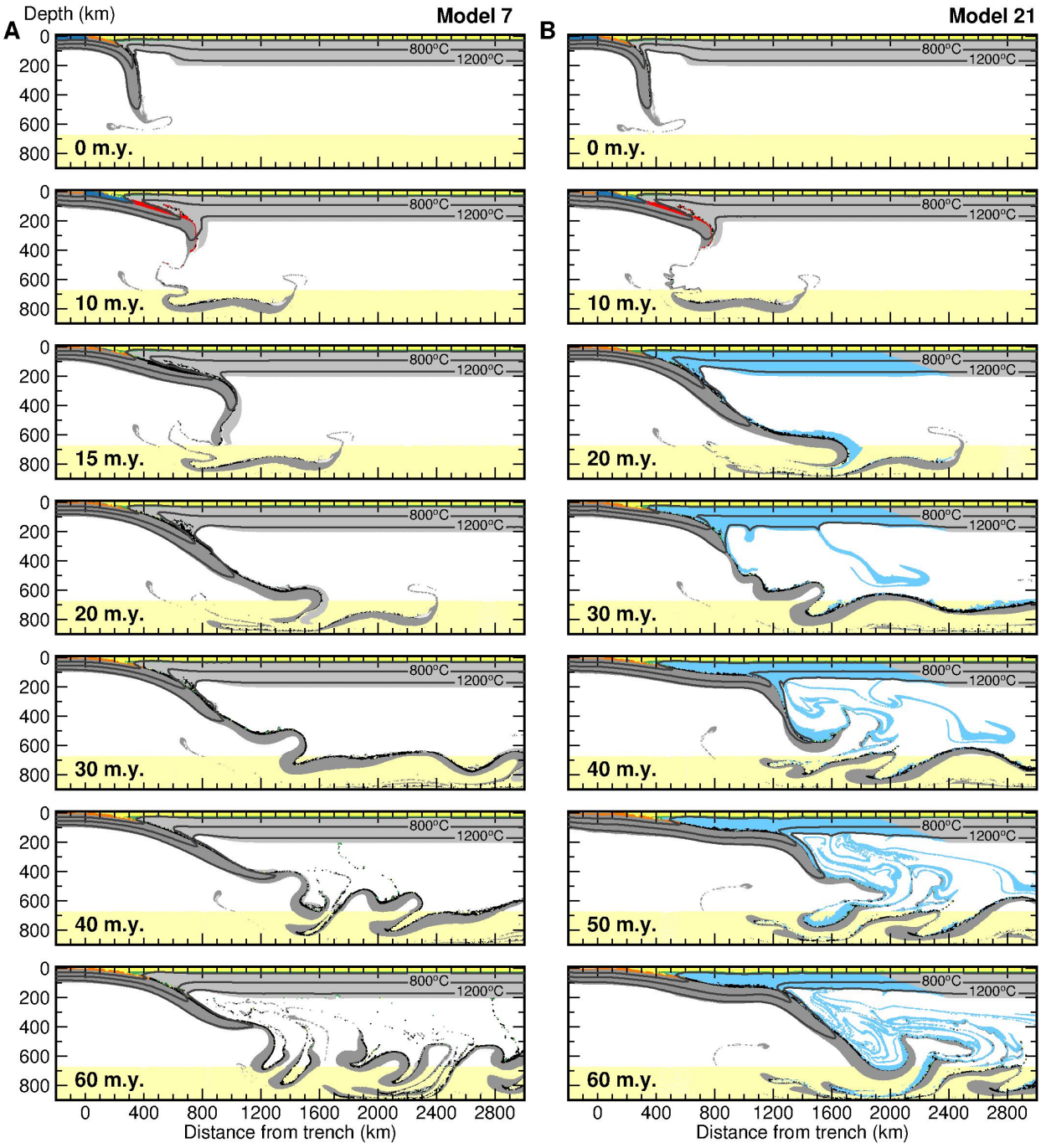


**Figure S4.** Evolution of (A) Model 7 and (B) Model 21 showing the effect of early oceanic plateau densification. In both models, the plateau crust undergoes densification by 500 kg/m$^3$ from 10 to 20 m.y. In Model 21, the CML weakens by a factor of 10 over the same timeframe (blue). In Model 7, there is no weakening. Material colours as in Figure 1; black lines are isotherms every 400°C.

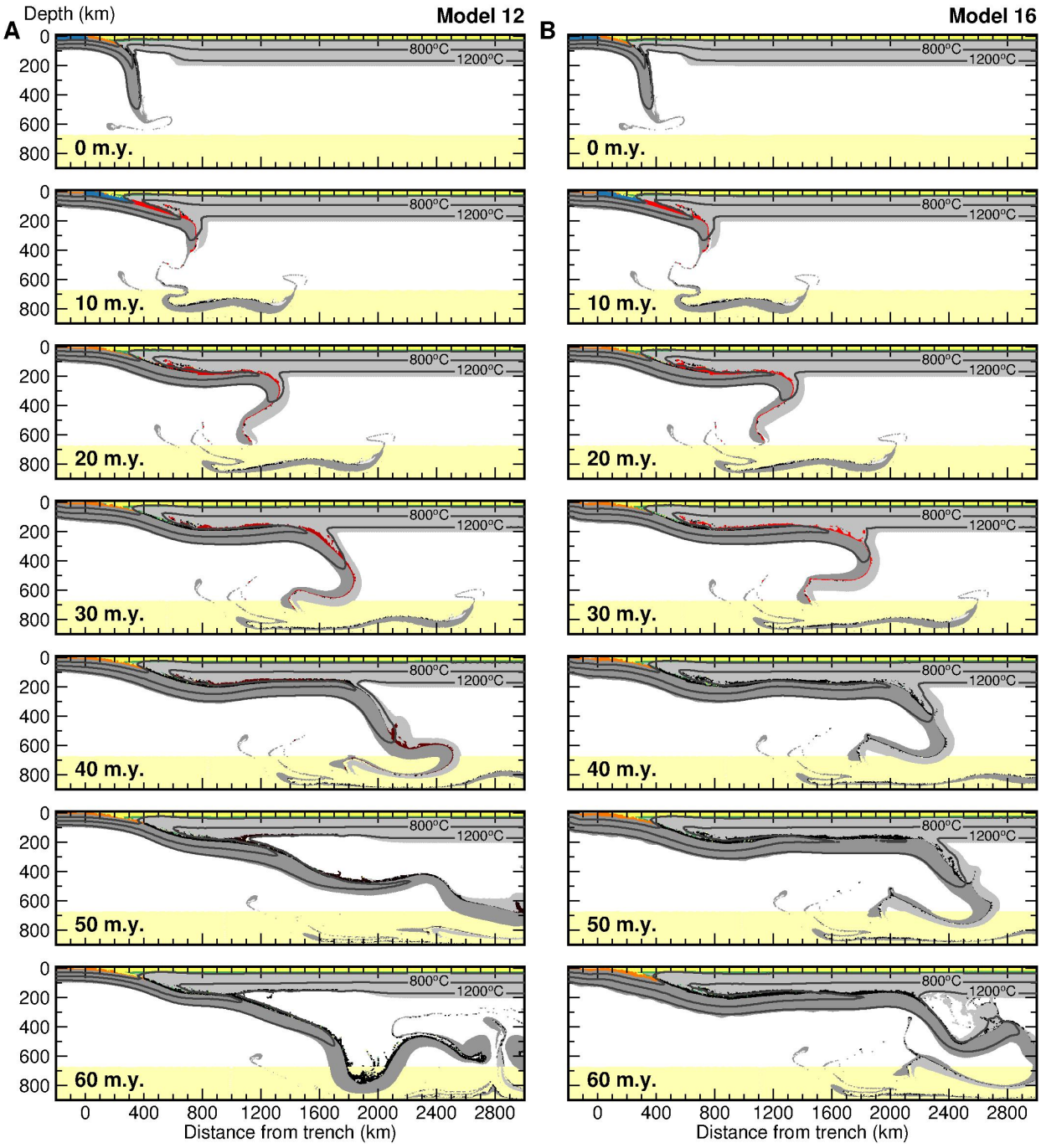


**Figure S5.** Evolution of (A) Model 12 and (B) Model 16. Model 12 tests a long duration of oceanic plateau eclogitization, where the plateau crust undergoes densification by 500 kg/m$^3$ from 15 to 55 m.y. (rate of 12.5 kg/m$^3$). Model 16 tests a lower eclogite density, where the plateau crust undergoes densification by 100 kg/m$^3$ from 30 to 40 m.y. (rate of 10 kg/m$^3$). In both cases, the CML remains strong (f=10) throughout the model run. Material colours as in Figure 1; black lines are isotherms every 400°C.

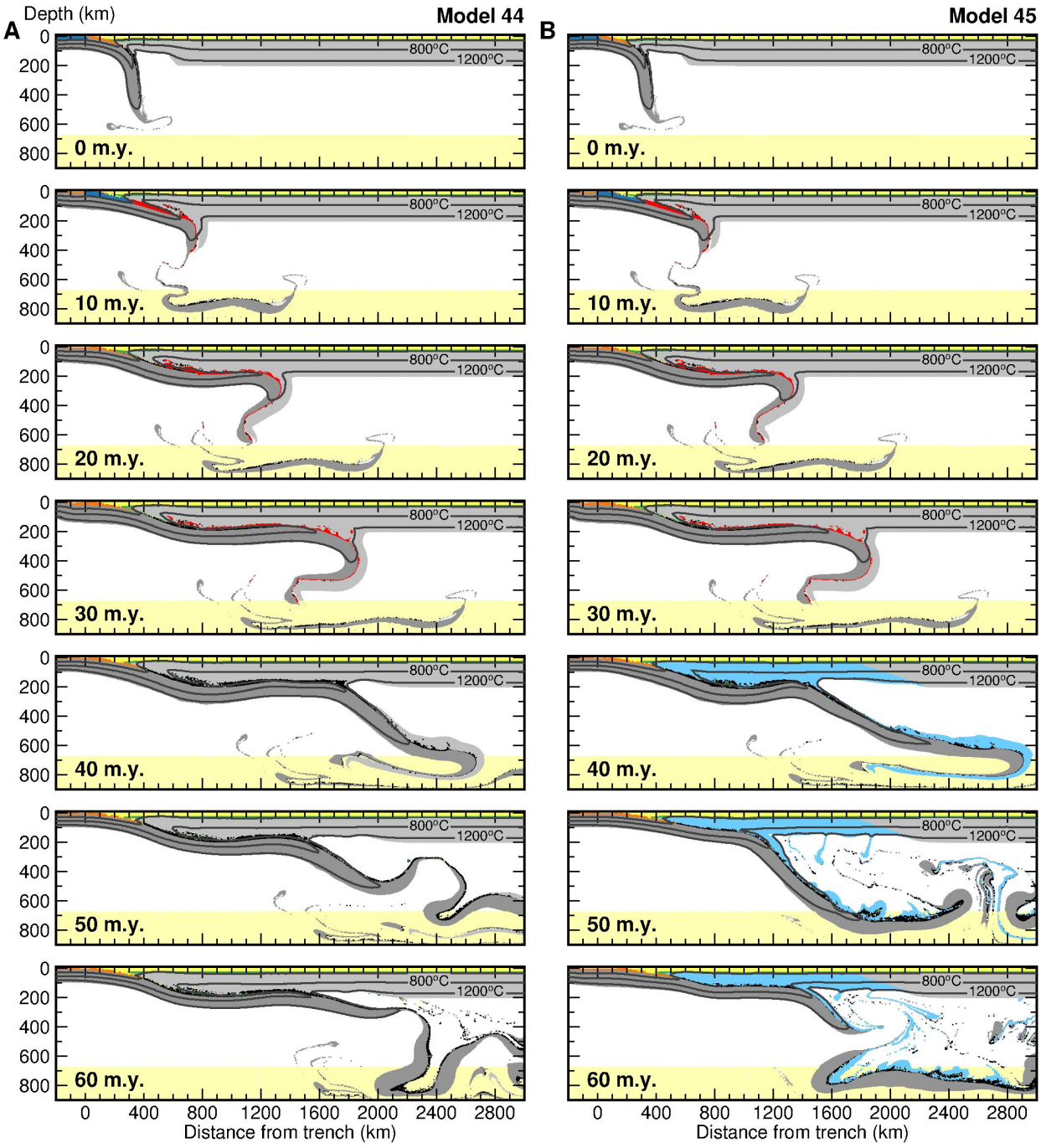


**Figure S6.** Evolution of (a) Model 44 and (b) Model 45, in which there is no change in plate velocities during the model run ($V_o$ = 6 cm/yr; $V_c$ = 4 cm/yr). In both models, the plateau crust undergoes densification by 500 kg/m$^3$ from 30 to 40 m.y. In Model 45, the CML weakens by a factor of 10 over the same timeframe (blue). In Model 44, there is no weakening. Material colours as in Figure 1; black lines are isotherms every 400°C.

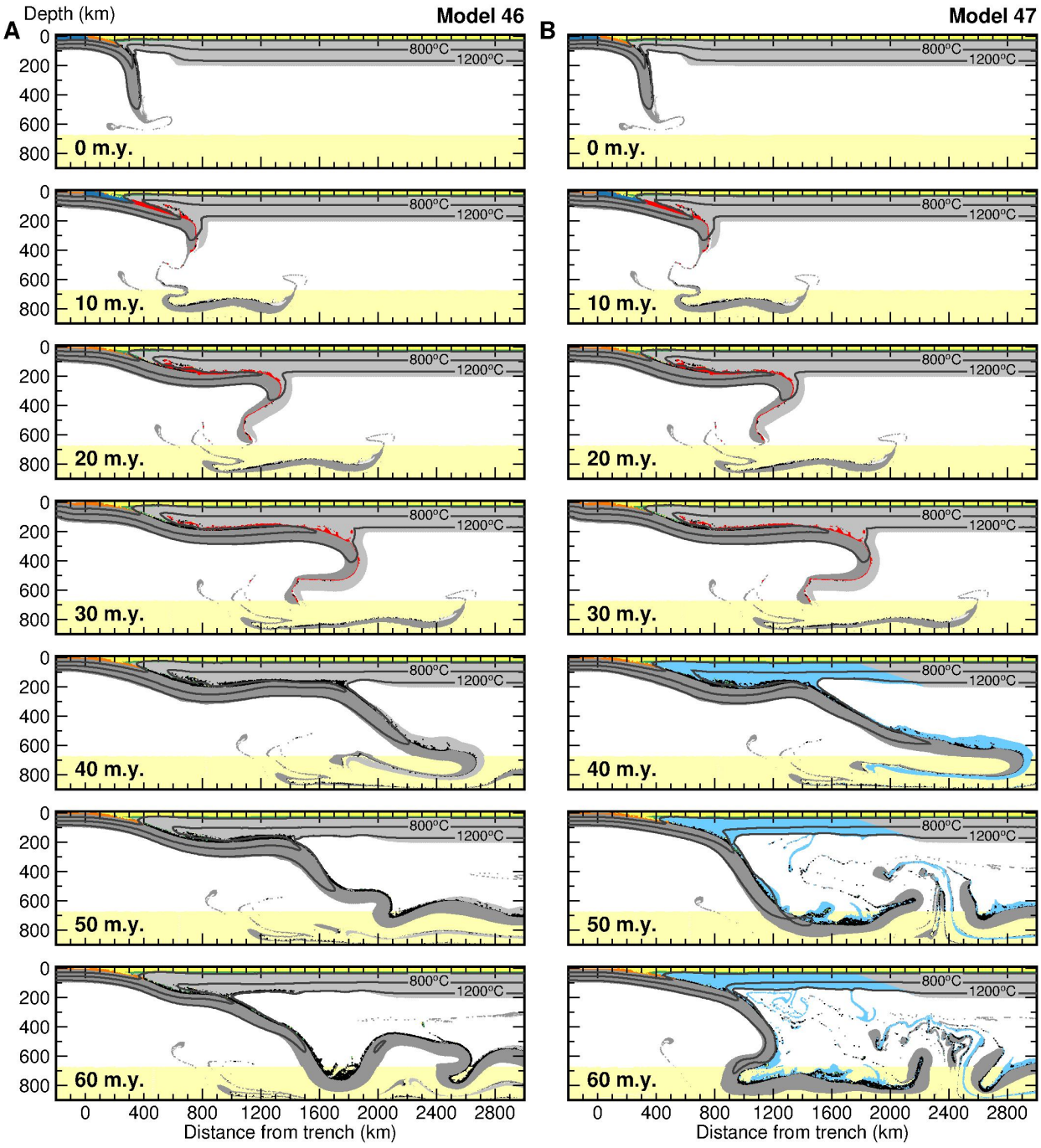


**Figure S7.** Evolution of (a) Model 46 and (b) Model 47, in which the continent is stationary after 40 Myr ($V_o$ = 7 cm/yr; $V_c$ = 0 cm/yr). In both models, the plateau crust undergoes densification by 500 kg/m$^3$ from 30 to 40 m.y. In Model 46, the CML weakens by a factor of 10 over the same timeframe (blue). In Model 47, there is no weakening. Material colours as in Figure 1; black lines are isotherms every 400°C.