Paul, J., and Ghosh, A., 2021, Could the Réunion plume have thinned the Indian craton?: Geology, https://doi.org/10.1130/G49492.1

Supplementary material
Could the Reunion plume have thinned down the Indian craton?

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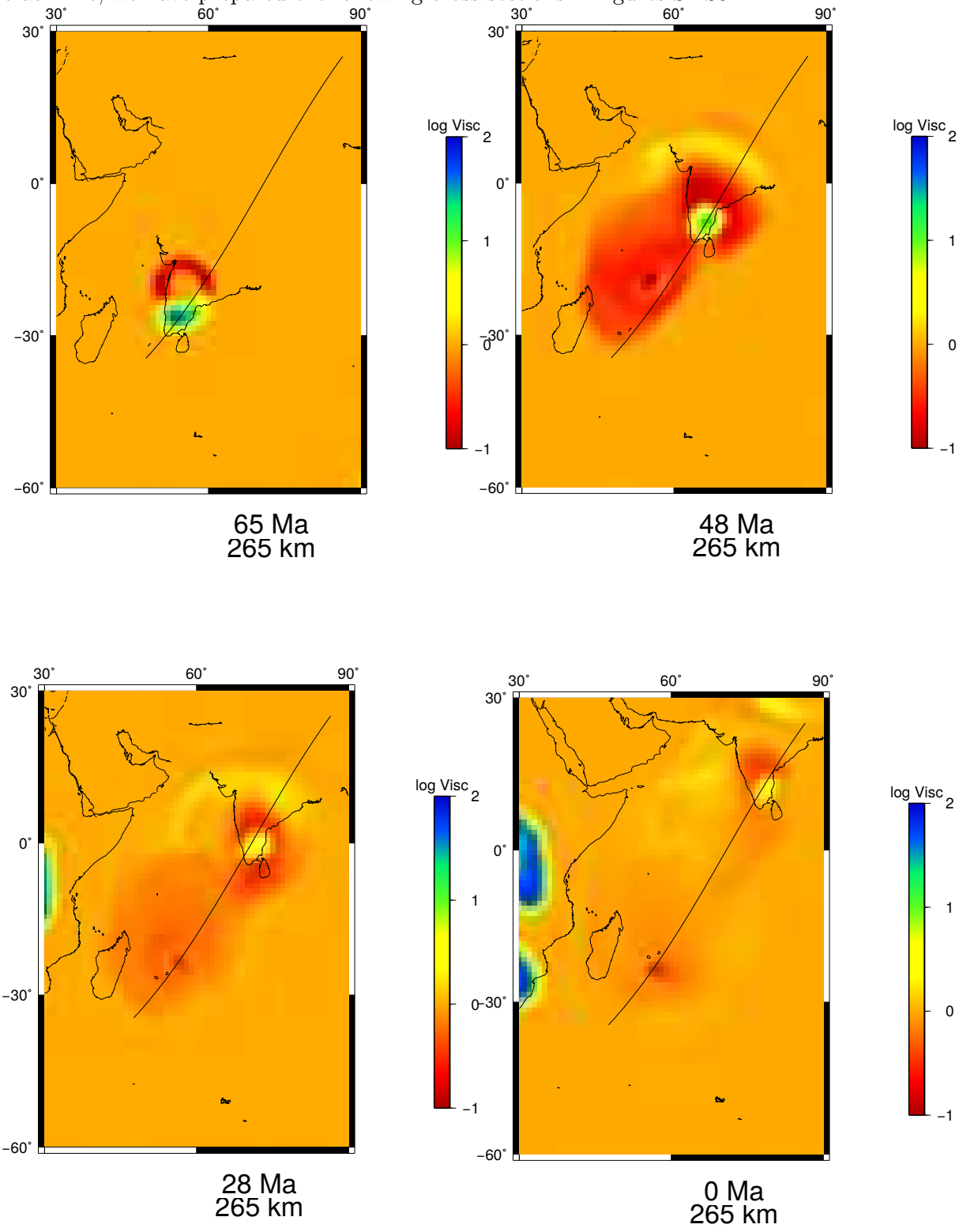
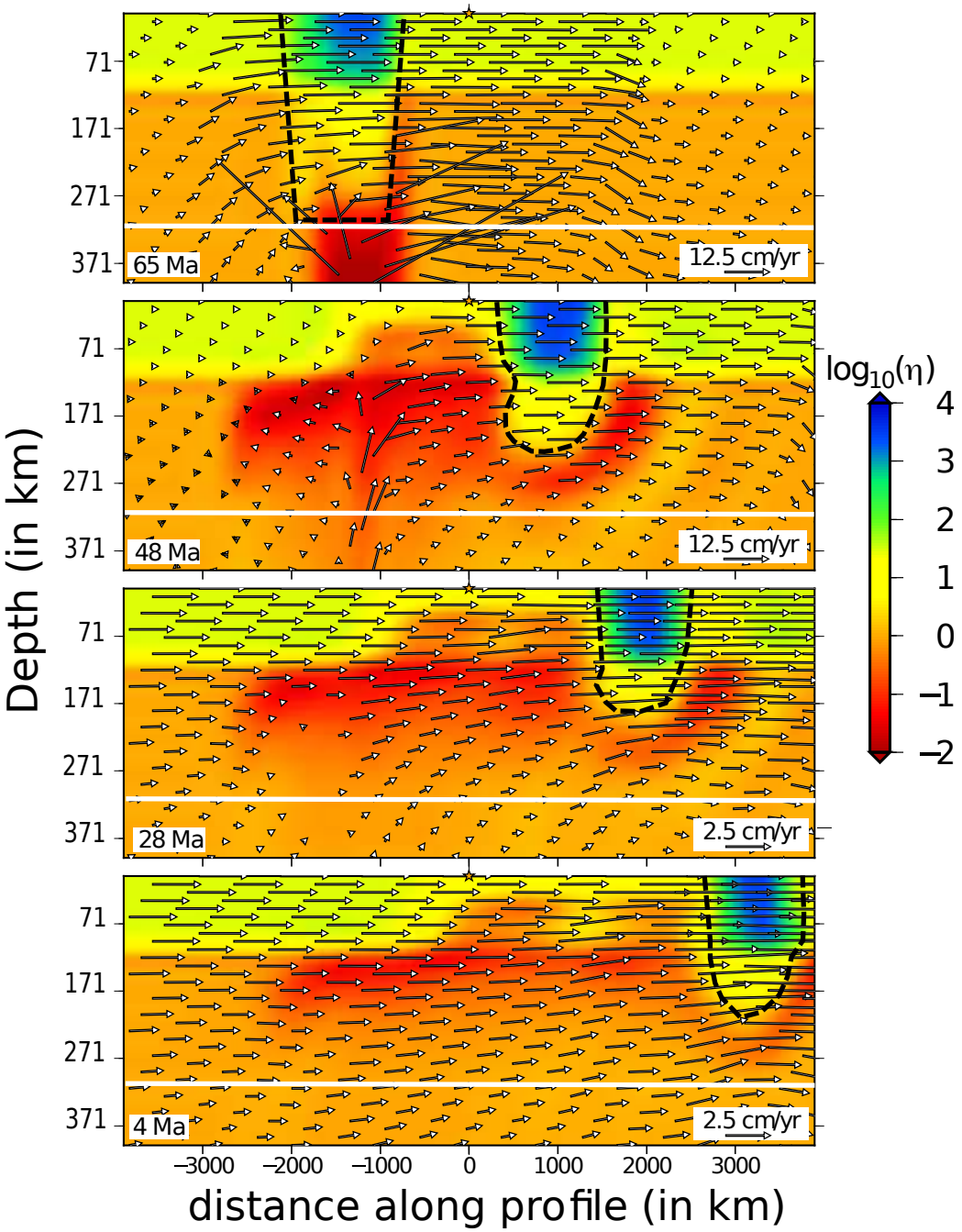
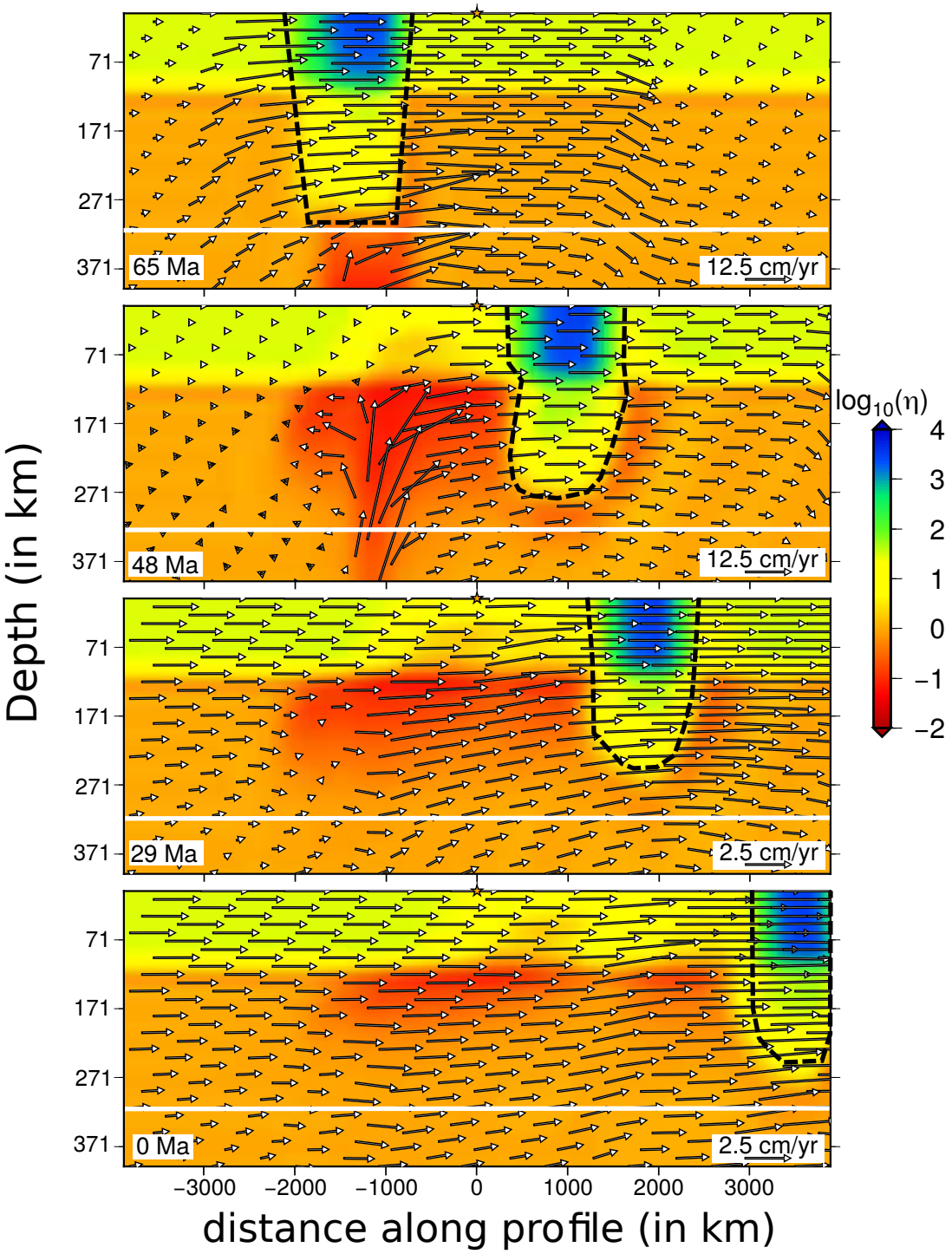
S 1: Evolution of craton root at 265 km depth from a model of viscosity combination (1,100) and E=10. Colors represent the normalized viscosity with respect to 10^{21} Pa.s. With time, highly viscous cratonic area is gradually reduced indicating complete destruction of craton at this depth. Along the black line, we have prepared the following cross-sections in figures S2-S5.



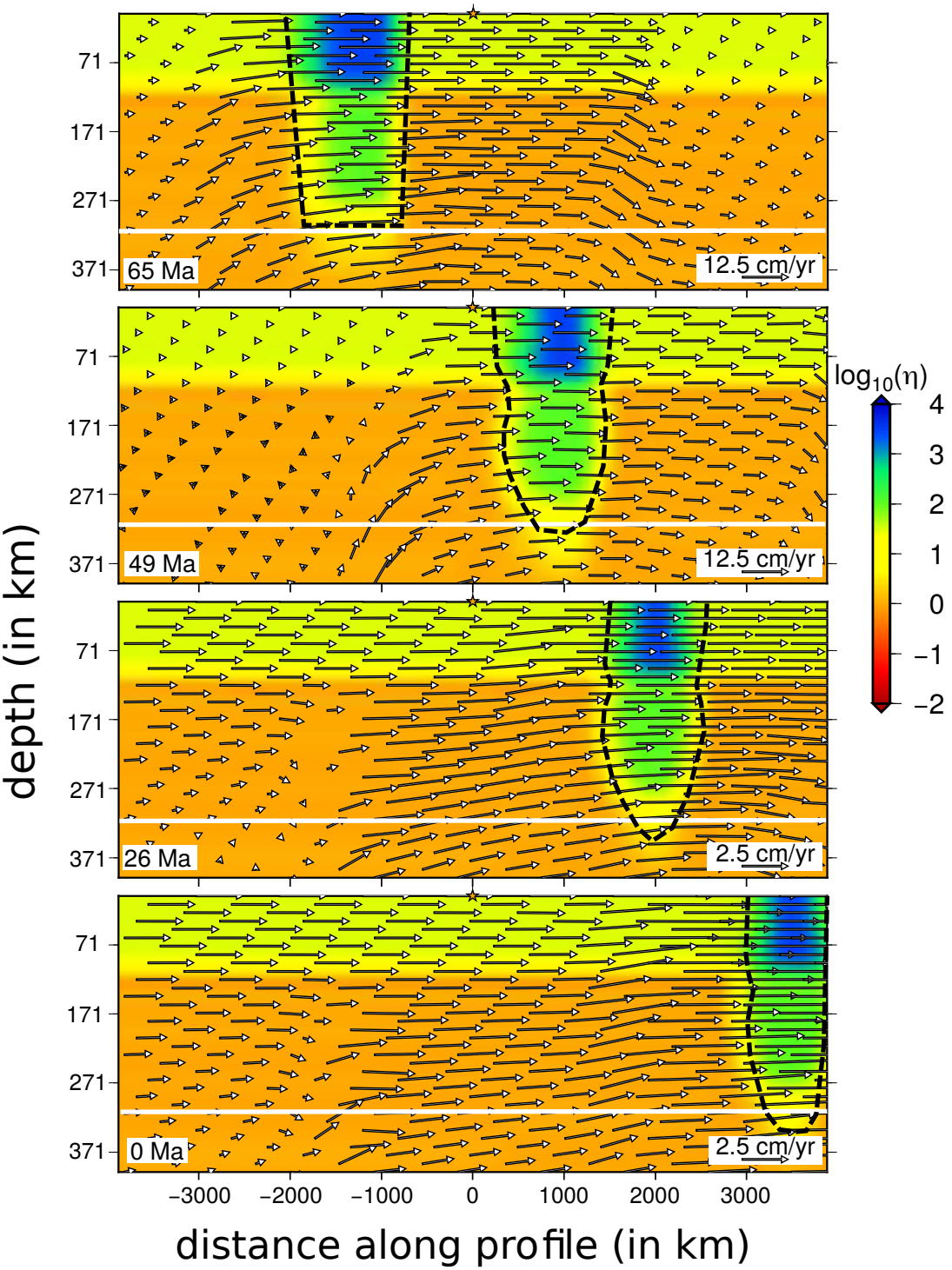
S 2: Time snaps showing the evolution of Indian craton since 65 Ma to the present day in presence of plume with strong temperature-dependent viscosity (E=10). Relative viscosity of asthenosphere and craton is (1,100). Colors represent log of viscosity variations normalized against the reference viscosity of 10^{21} Pa.s. The craton boundary is marked by a black dashed line. A horizontal while line indicates the initial thickness of craton, i.e., 300 km. The arrows indicate mantle velocity where the magnitude of velocity is represented by the arrow length. Thinning of the non-cratonic lithosphere can also be observed along with thinning of the Indian craton.



S 3: Time snaps showing the evolution of Indian craton since 65 Ma to the present day in presence of plume and with temperature-dependent viscosity (E=5). Rest of the figure description is same as in Fig. S1.



S 4: Time snaps showing the evolution of Indian craton since 65 Ma to the present day in presence of plume and without temperature-dependent viscosity (E=0). Rest of the figure description is same as in Fig. S1.



S 5: Time snaps showing the evolution of Indian craton since 65 Ma to the present day in absence of plume. Rest of the figure description is same as in Fig. S1.

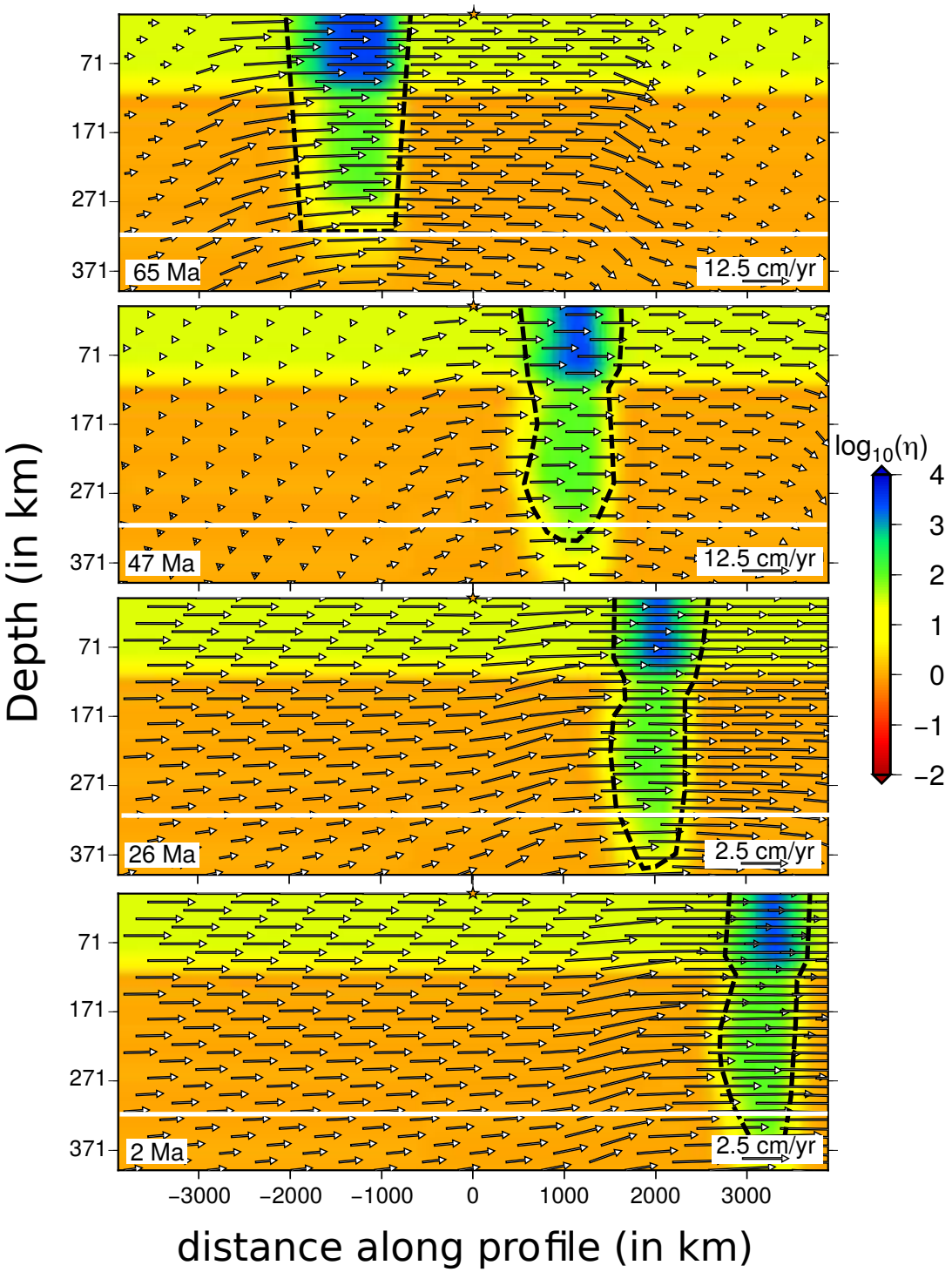


Table S1: List of model parameters

asth visc (Pa.s)	craton visc	E	Initial thickness	Root lost (km)	Root lost (%)
0.1	100	No plume	300	0	0
0.1	100	0	300	0	0
0.1	100	5	300	110	36
0.1	100	10	300	130	43
0.1	1000	No plume	300	0	0
0.1	1000	0	300	0	0
0.1	1000	5	300	0	0
0.1	1000	10	300	35	11
1	100	No plume	300	0	0
1	100	0	300	0	0
1	100	5	300	20	7
1	100	10	300	65	21
1	1000	No plume	300	0	0
1	1000	0	300	0	0
1	1000	5	300	0	0
1	1000	10	300	35	11

Supplemental animations:

Video S1: Animation showing evolution of the Indian craton for E=10 case. Relative viscosity of asthenosphere and craton is (1,100).

Video S2: Animation showing evolution of the Indian craton for E=5 case. Relative viscosity of asthenosphere and craton is (1,100).

Video S3: Animation showing evolution of the Indian craton for E=0 case. Relative viscosity of asthenosphere and craton is (1,100).

Video S4: Animation showing evolution of the Indian craton without plume. Relative viscosity of asthenosphere and craton is (1,100).