|  |  |  |
| --- | --- | --- |
| **Parameter** | **Meaning** | **Value** |
| *US* | Half spreading rate | 19 mm.yr-1 (i.e. 6.025×10-10 m.s-1) |
| *M* | Magmatic fraction of plate separation | 0.6 – 0.8 |
| *s* | Sedimentation rate | 0 – 1 mm.yr-1 (i.e. 0 – 3.18×10-11 m.s-1) |
| *ρC* | Density of the crusta | 2850 kg.m-3 |
| *ρM* | Density of the mantlea | 3300 kg.m-3 |
| *ρSED* | Density of sedimentsa | 2400 kg.m-3 |
| *E* | Young’s modulus | 4.85×105 Pa |
| *λ* | Lamé’s first parameter | 3.0×1010 Pa |
| *µ* | Shear modulus | 3.0×1010 Pa |
| *CMAX* | Maximum cohesion | 25×106 Pa |
| *εCRIT* | Critical plastic strain for cohesion loss | 0.25 |
| *Φ* | Internal friction angle | 30° |
| *τHEAL* | Healing time (linear healing parameter) | 1012 s (i.e. ~31,700 yrs) |
|  | Vertical resolution | 200 m from 0 to 5 km depth  500 m below |
|  | Horizontal resolution | 240 m within 12 km on either side of the axis  300 m further away from the axis |
|  | Topography diffusivity | 10-6 m2.s-1 |

Table S1. Summary of key input parameters. In the input files provided as part of the

supplementary material, all parameters are in international system units, unless specified otherwise.

In particular, velocities are in m.s-1 and not in mm.yr-1.

aIn each input file, the parameter for each phase is not density itself but density difference with respect to water (e.g. the input parameter for mantle density is not 3300 kg.m-3 but 2300 kg.m-3).

de Sagazan, C. and Olive, J.-A., 2021, Assessing the impact of sedimentation on fault spacing at the Andaman Sea spreading center: Geology, v. 49, https://doi.org/10.1130/G48263.1