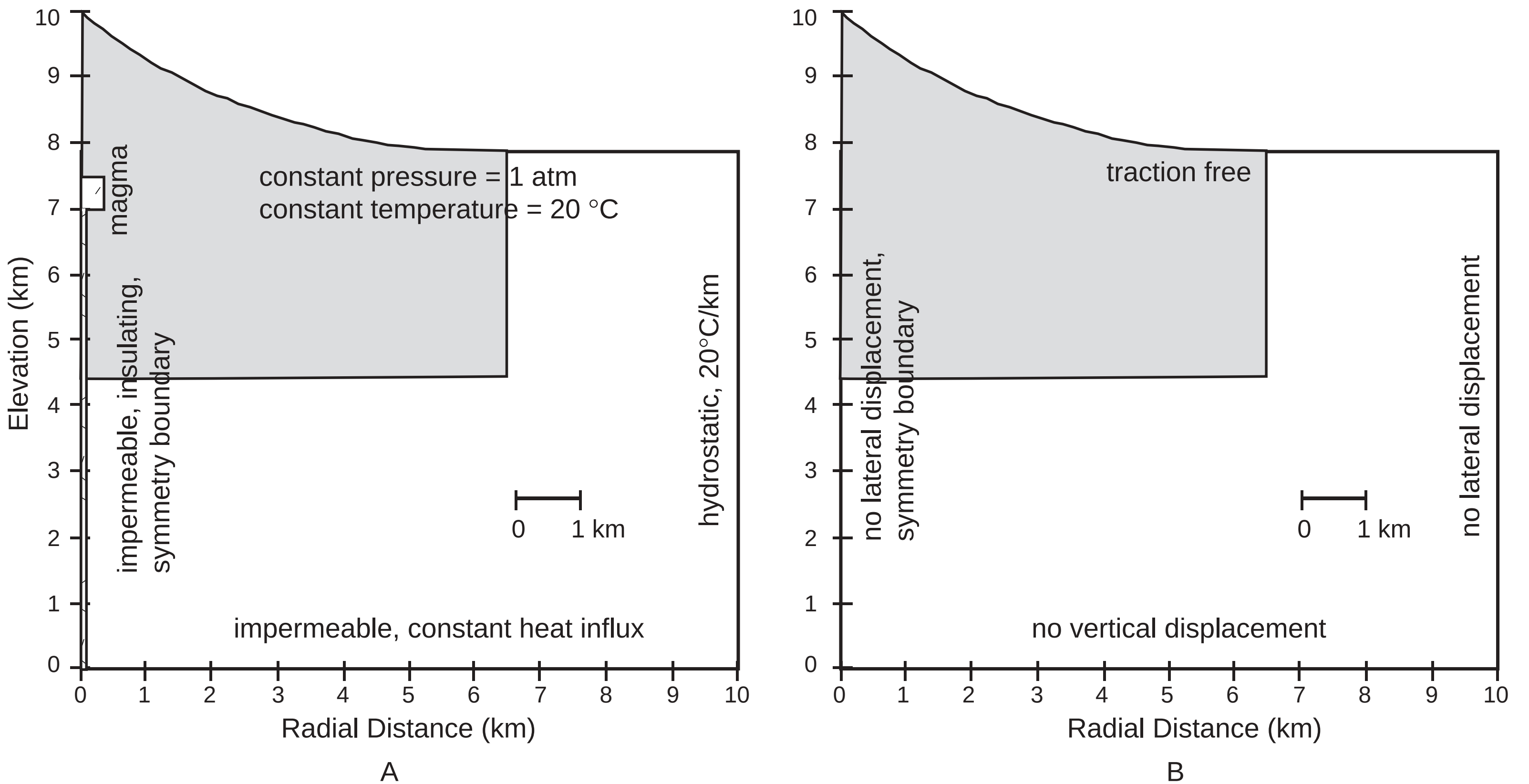

Figure DR1. Numerical model configurations, showing domain sizes, boundary and initial conditions. Numerical grid cell sizes within the solution domain vary from 1 cm next to the intrusion to 0.5 km far from the intrusion. Both configurations use 2-D axisymmetric radial coordinates to simulate a 3-D conical domain. The left lateral boundaries are symmetry boundaries. Edifice rocks are assumed to be homogeneous, isotropic, and incompressible. Gray area is the region portrayed in Figures 1 and 2. A: Configuration for HYDROTHERM model of coupled heat and fluid flow. The ground surface at any point has a specified hydraulic head equal to its elevation with a constant fluid pressure of 1 atm and temperature of 20° C. The right boundary, 10 km from the center of the edifice, maintains the initial constant pressure and temperature conditions and allows fluid and heat flow. The bottom boundary is impermeable with a constant basal heat flux of 60 mW/m^2 into the system. Initial conditions specify a 20° C/km temperature gradient and a fluid pressure distribution created by topography-driven groundwater flow. Rock heat capacity is 1000 J/(kg °K), thermal conductivity is 2 W/(m °K), and solid rock density is 2.65 kg/m^3. Magma intrusion is a 900°C cylinder with a radius of 0.4 km and a height of 0.5 km, fed by a cylinder with a radius of 50 m; its top is 2.5 km beneath the edifice peak. This body has a volume of ~0.2 km^3. B: Configuration for static, effective-stress finite-element model, using pore-fluid pressures computed from groundwater flow models. The boundary conditions are zero horizontal displacement at the lateral margins, zero vertical displacement at the bottom boundary (located 10 km below the edifice peak), and a stress-free (traction-free) boundary at the edifice surface. Displacement and stress simulations assume a linearly elastic rheology, a Poisson's ratio of 0.3, no time-dependent stress history, and no thermal stress effects.