

Geophysics 150: Home set due Oct. 11, 2000

3. Use physical parameters from question 2. This question involves minor contributions to the heat flow in stable cratons.

a. The cratonic lithosphere has thickened say 40 km in the last 2 B.Y. from 180 km to 220 km. Estimate the amount of "transient-cooling" heat flow from this thickening making simple assumptions

b. Say instead that the Earth's Interior temperature cooled from 1500C to 1300C over the same time interval while the base of the lithosphere stayed at 200 km depth. Estimate simply the amount of heat flow from this effect.

c. The adiabatic gradient is about 0.3K/km in the upper mantle. Estimate the conductive heat flow along this gradient.