

Geophysics 150: Home set due Oct. 07, 2002

6. We are now ready to compute temperature within Ceres at 4.4 Ga. Use data from questions 1 and 2. The radioactivity was then 4 times the present.

a. Do parts b and c of question 2 with the increased radioactivity.

b. The upper few kilometers of Ceres may be regolith with low thermal conductivity. Let the layer be 10 km thick and have a conductivity of $0.1 \text{ W m}^{-1} \text{ K}$. Compute the geotherm down to 40 km depth assuming the heat flow is constant with depth.

c. Compute the geotherm for part b assuming a homogeneous distribution of radioactivity in a sphere. (If you have easy access to a computer and plotter show geotherm with current radioactivity and 4.4 Ga radioactivity.)