A. TEMPERATURE EVOLUTION

B. PLUME CHARACTERISTICS

C. INCOMPATIBLE ELEMENT CONCENTRATIONS

FIGURE 2A. Thermal evolution of Martian core and mantle as a function of time, calculated using method described in Nimmo & Stevenson (in press). Mantle viscosity is 5x10$^5$ Pa s at 1300°C, viscosity changes by factor of ~10 per 100°C. Initial temperatures are 1677K and 1627K for core and mantle, respectively.

2B. Variation in plume melt generation rate (left hand scale) and max. upwelling velocity (right hand scale) as a function of time. Variables are calculated as described in text.

2C. Variation in average melt fraction, and concentration of incompatible element in melt and mantle, with time. Partition coefficient (D) assumed to be 0.01.