These points can best be illustrated with the following M-L space plot. In column 1 of Figure 1, we display the maximum radial incursion for convecting ions which are shaded according to their radius of origin, where black indicates particles initially at $2R_E$, and white indicates particles initially greater than $7R_E$. Since the standard model averages over LT, we display the maximum radial incursion averaged over LT as well. The incursions were calculated with a total energy method [*Whipple*, 1978] using an Olson-Pfitzer [*Olson et al.*, 1979; *Jordan et al.*, 1992] quiet magnetic field, with a shielded Volland-Stern [*Volland*, 1973; *Stern*, 1973] electric field appropriate for *Kp*=2 [*Maynard and Chen*, 1975], and an ionospheric electric potential [*Richmond et al.*, 1980] mapped to the equator assuming equipotential magnetic field lines. The total energy method assumes that the energy of magnetospheric ions can be written as the sum of the kinetic and electrostatic potential energies:

$$W = K.E. + P.E. = \mu B_m + qU \qquad (5)$$

trostatic potential. Then isoenergy contours calculated usin the above magnetic and potential field models are also par ticle trajectories. The method is described in more detail i an earlier paper [*Sheldon*, 1993]. The white, funnel-shape region marks orbits which are probably open to the geomag netic tail and/or to the magnetopause. To the right of thi region at higher M, the horizontal contours indicate energet ic ions on nearly circular, anticorotating orbits. To the lef of this region are low-energy, corotating orbits. Adjacent t the Alfvén boundary between open and closed orbits, lies region of highly distorted, oval and "banana" orbits [*Chen* 1970; *Strangeway and Johnson*, 1984]. As activity increas es, and the cross-tail field strengthens, the Alfvén boundar moves earthward and thus toward higher M as well.

In the high-energy (or high M) limit, the near circularit of these orbits permits the azimuthal average over all LT o the standard model. *Riley and Wolf* [1992] calculate a reso nant diffusion coefficient at L=3, M=0.033 keV/nT, whic

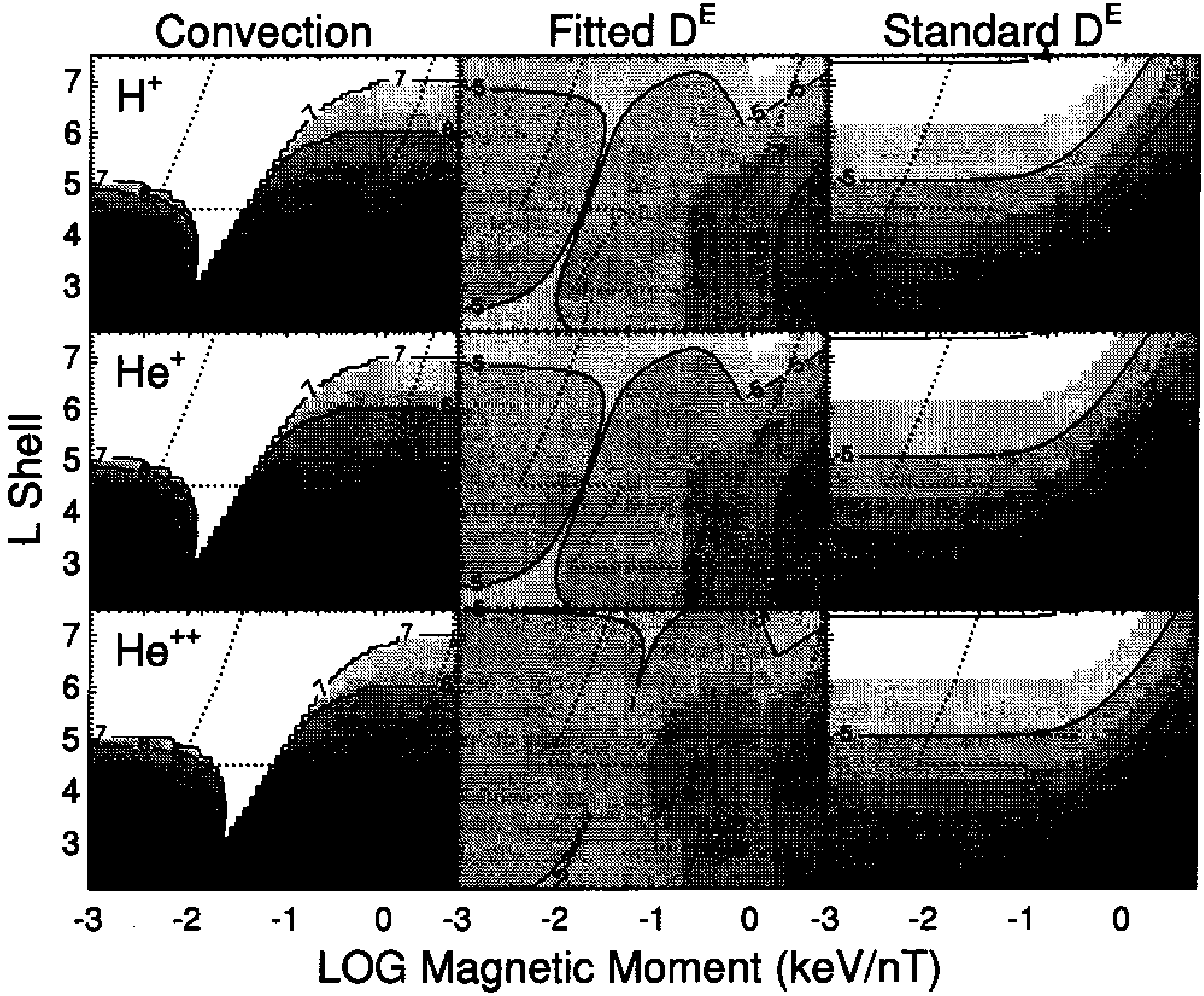

Figure 1. Grayscale contour map of model in magnetic moment versus L shell (M-L space). Column 1: Convective access of ions originating at L=2 (black) to L=7 (white). Column 2–3: Modified radial diffusion coefficient and standard radial diffusion coefficient contours respectively, from 10^{-8}(black)–10^{-2} (white). Dotted line outlines fitting region.