



Figure 2.14. Magnesium concentrations as a function of depth (meters below the sea floor) in sediment porewaters from the western flank of the Juan de Fuca ridge near 48° N in the North Pacific Ocean. The Mg²⁺ concentration decreases with depth because it is removed from solution by reaction with crustal rocks at the sediment–crustal boundary. The curves are convex upward because of porewater upwelling along the upward-flowing limb of a convection cell. Velocities of the upwelling are determined by using a one-dimensional advection–diffusion model and are indicated by the numbers on the curves. Redrafted from Wheat and Mottl (2000).