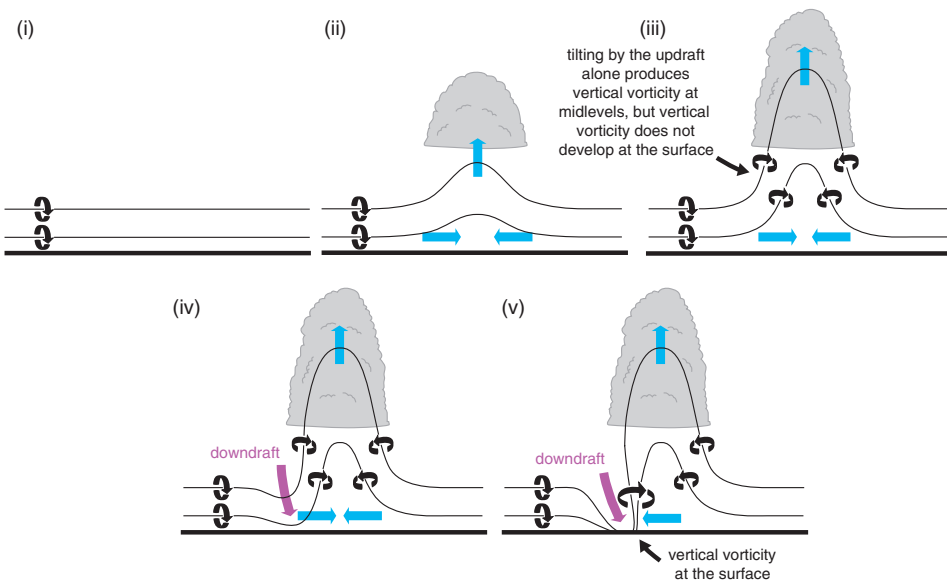
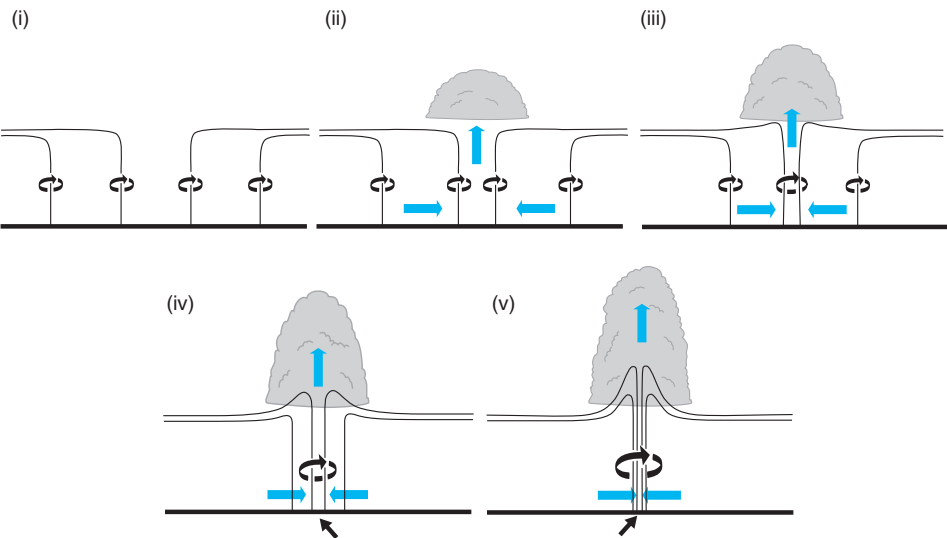


(a) vertical vorticity is initially negligible at the surface



(b) preexisting vertical vorticity at the surface



rotation increases as vortex lines are converged beneath the updraft
(here the spacing between the vortex lines is inversely proportional to the vorticity magnitude)