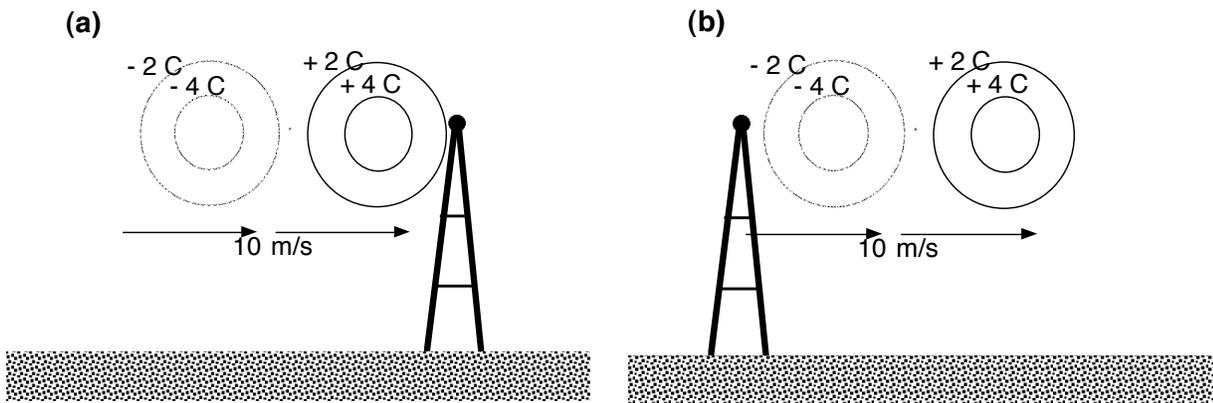**Problems - 2**

Group Problem - See Class Web Page for Guidelines

Let's return to the flow behavior seen in Problem Set 1:

   Consider the eddy advecting past the instrument tower shown below, where the advecting wind = 10 m/s. The eddy consists of the positive/negative temperature pattern. Figures (a) and (b) are snapshots taken 2 seconds apart.

(a)   **(b)**

(a) What would the pattern of turbulent vertical motion, w', have to be to get positive generation of turbulence kinetic energy?

(b) Sketch how the center of mass for the "system" of the pattern above would change in response to the w' you give above. Note – the center of mass is a concept that applies to the system as a whole (the positive and negative parcels of air), not an individual air parcel.

(c) Suppose the relatively warm air (T' > 0) is also relatively moist (q' > 0), and the relatively cool air (T' < 0) is also relatively dry (q' < 0). Given your answer in part (a), what is the direction of positive turbulent moisture flux, $(\overline{w'q'})$, up or down?