

Problem Set #2
CONVECTIVE CLOUDS AND STORMS
METR 6223
Fall 2021
Howie "Cb" Bluestein

Handed out: Tues., 21 Sept. 2021

Due: Tues., 28 Sept. 2021

1. Consider the variable p/ρ . Using similarity theory and dimensional analysis, how does the time-averaged value of p/ρ vary as a function of buoyancy flux (F) and height (z) for a plume model?
2. Estimate (the order of magnitude of) the Rayleigh number and the Reynolds number in a deep convective (turbulent!) storm. Hint: Turbulent diffusion of heat and momentum is much faster than molecular diffusion of heat and momentum. Justify your answer.