

Atmospheric Sciences 5230

Exercise #1

This exercise is about parcel buoyancy and the skew- T log p diagram.

1. Review the Met-Ed module Principles of Convection I: Buoyancy and CAPE, complete the quiz at the end, and submit your score by email.
2. The temperature and dewpoint values measured by a radiosonde are plotted on the accompanying skew T -log p diagram.
 - (a) A parcel ascends adiabatically from $p = 950$ mb, where its temperature and dewpoint are the same as those measured by the radiosonde, to 100 mb. Plot the parcel's temperature on the skew T -log p diagram.
 - (b) Indicate the parcel's LCL (lifting condensation level), LFC (level of free convection), and LNB (level of neutral buoyancy) on the skew T -log p diagram. *Label each level with its corresponding pressure.*
 - (c) Indicate the Negative Area (NA) and Positive Area (PA) on the skew T -log p diagram.
 - (d) What is the Lifted Index for this parcel? (Consult the *Sounding Station Parameters and Indices* link on the course web page.)
 - (e) What degree of instability does this value of the Lifted Index represent? (Consult the *Guide to Convective Parameters* link on the course web page.)

