NAME: _____ **SECTION** _____

Atmospheric Sciences 101 Spring 2013
Homework #3 (Due Thursday, 25 April 2013)

1. **Humidity: For parts A & B, state what happens to the listed variables, assuming the air parcel does not reach saturation and all other variables are held constant. [4]**

A. An increase in temperature. [0.5 point each]

Saturation vapor pressure: _____

Dew point temperature: _____

Absolute humidity: _____

Relative humidity: _____

B. An increase in the total amount of water vapor in the air parcel. [0.5 point each]

Saturation vapor pressure: _____

Dew point temperature: _____

Absolute humidity: _____

Relative humidity: _____

2. **Fog Types: In each case below, name the type of fog and *briefly describe the process* that resulted in the fog. [3]**

A. On a *spring day* along the coast of southern Oregon there are steady westerly winds and fog that lasts through much of the day. [1]

B. During the *winter* in Seattle, several days of rain are followed by *clear skies, colder temperatures, calm conditions*, and a fog that occurs during the night and part of the morning. [1]

C. Early in the fall, after the first very cold night, wisps of fog are seen rising off the surface of Lake Washington. [1]

3. Diabatic/Adiabatic Processes [3]

A. Briefly describe an adiabatic process? [0.5]

Assuming an adiabatic process, and answer parts B to E.

B. What happens to the air parcel when being lifted, i.e. expands or shrinks? [0.5]

C. During the above process, does the parcel do work on the environment or does the environment do work on the parcel? [0.5]

D. What happens to the temperature of the parcel? [0.5]

E. What happens to the mixing ratio and specific humidity of the parcel? [1]