

AOS 100/101  
Spring 2019

**HOMEWORK #4**  
(Due Mon. March 25)

*Please provide concise, grammatically correct, neatly written answers to the following questions. All questions can be answered in, at most, a few sentences. Don't forget to write your name on the paper!!!*

**NAME:**

- \*1)** Explain why the relative humidity (RH) on a cold January day in Madison can be much higher than that on a hot July day even though the water vapor content is much larger on the July day.  
(10 pts)
- \*2)** The *relative humidity* (RH) in your bathroom on consecutive mornings is 10% and 40% as you wake up. You take showers of identical length and water temperature on both days and shower fog develops on *only one day*. On which day does it develop and why?  
(10 pts)
- 3)** Would your skin feel cooler upon stepping out of the pool in Miami, FL ( $T=32^{\circ}\text{C}$ ,  $T_a=25^{\circ}\text{C}$ ) or Palm Springs, CA ( $T=32^{\circ}\text{C}$ ,  $T_a=5^{\circ}\text{C}$ )? Explain your answer with reference to the relationship between the vapor content of the air and evaporation rate.  
(10 pts)

**EXTRA CREDIT :**

Explain why the thin layer of air surrounding a raindrop is always at the wetbulb temperature ( $T_w$ )?

(10 pts)