EAS 0309 Due: Wednesday, Sept 11, 2019
Total: 20 points
HOMEWORK #1: Reading Review of Wallace and Hobbs Chapter 1 and 2

(1) What is the approximate height of the tropopause in the tropics? _____ km

(2) How much greater is the ocean's mass than the atmosphere? _____ times larger.

(3) Why is the ocean's mass so much greater than the atmosphere. Is it mainly because of differences in volume or density? _____

(4) Density in the atmosphere decreases exponentially/linearly (circle one) with height. As a result, _____ percent of the atmosphere's mass is in the troposphere.

(5) What would happen to global sea level if all the sea ice melted?

It would: increase // stay the same // decrease. ***(choose one)***

(6) (2 points) If you travel from the 0° longitude to 180° longitude along the equator, then how far did you travel in km? Show work

(7) (2 points) If you travel from the 0° longitude to 180° longitude along latitude 45°N, then how far did you travel in km? Show work

(8) (6 points) Draw **(a)** the average vertical profile for temperature in the atmosphere and **(b)** the vertical profile of temperature in the ocean, from 0 down to 3000 meters, in the midlatitudes in winter. **Your sketches should include axes with units**.

(a) ATMOSPHERE (3pts) (b) OCEAN (3pts)

(9) The following equation (Eq. 2.1) describes the mass balance for water vapor, in steady-state, over the area of a column, define the terms:

$$\overline{E} - \overline{P} = \overline{Tr}$$

(10) $\overline{E} \equiv$ _____.

(11) $\overline{P} \equiv$ _____.

(12) $\overline{Tr} \equiv$ _____.

(13) (2 points) Explain what would occur to *Tr* if *P* is very large and *E* is very small.