

**ATMO 1300 Section 001**  
**In-class Worksheet #4**  
**July 21st, 2017**  
**Chapters 5,7, and 9**

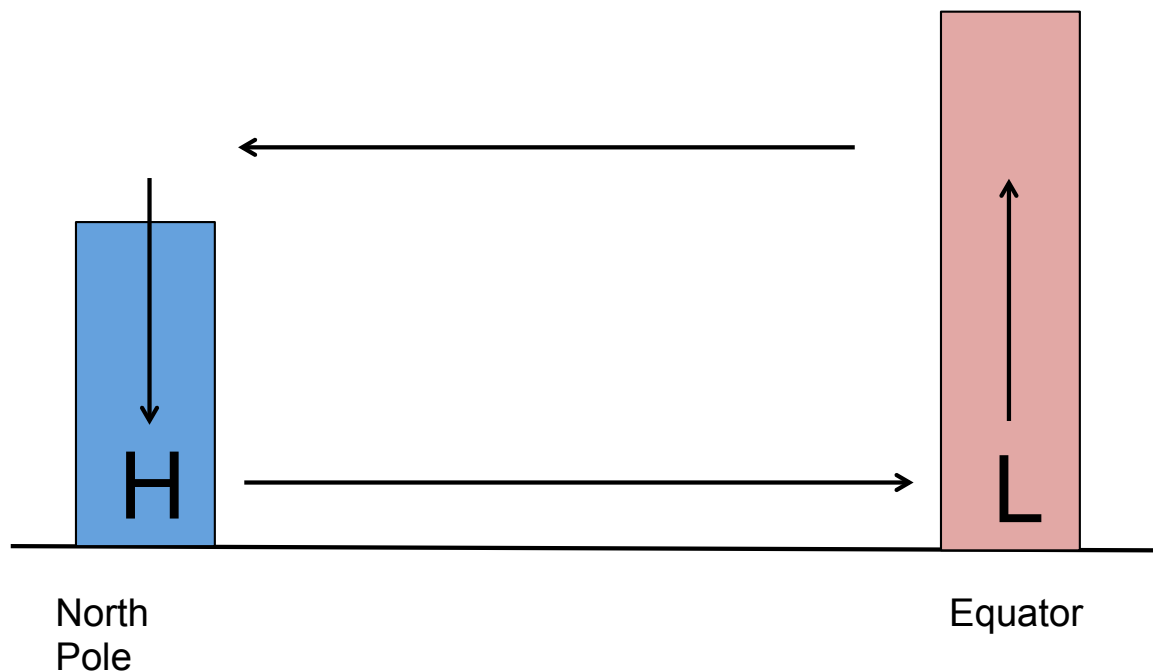
1. a) What are three main imagery that satellites produce, i.e. images we can look at as observers?

**Visible, Infrared, and Water Vapor**

b) Visible satellite imagery shows where objects in the atmosphere and below the satellite reflect visible radiation from the sun. What types of clouds will show up bright? Which cloud types will be hard to see? (hint: think about how much water vapor is in clouds)

**Bright clouds will be those that contain a lot of rain drops and water vapor. Examples might be tall thunderstorms or stratus clouds. Cloud types that are hard to see will contain few reflecting particles such as ice crystals or rain drops. Examples of these would be cirrus, cirrocumulus, or altostratus.**

2. Draw a basic Hadley Cell model with accompanying High/Low pressure and wind circulations. It may also help to label where it's warmer and where it is colder.



3. How do radars observe objects in the atmosphere?

**An indirect measurement that sends out an electromagnetic signal and receives backscattered energy from objects in the atmosphere.**

- a. Does a bigger object reflect more or less radiation back to the radar? What does this tell the radar about the object?

**The larger the object, the more backscattered energy is received by the radar. The radar determines that the more energy received, the larger the object.**

- b. What famous “effect” tells a radar the direction an object is moving, relative to the radar beam?

**Doppler effect**

- 4. What is required of a region to be considered a good air-mass source?

**Light winds, uniform surface, and time for air mass to acquire temperature and moisture characteristics of the surface below it are needed to “form” a source region.**

- a. Where is a good air-mass region around the globe? Name two and the associated air masses.

**Sub-tropical highs → maritime tropical and/or continental tropical**

**North Pacific and North Atlantic → Maritime polar**

**Northern Canada → Continental Polar**

**Arctic – Continental Arctic (A or cA)**

**West Texas, SW US, and Northern Mexico → Continental Tropical**

- b. What are some examples of poor air-mass source regions?

**Anywhere that doesn't satisfy the conditions needed. Areas where winds are strong (trade-winds), where land types are not uniform (coastal areas – land and water next to each other), and anywhere that land might restrict (mountains).**