ATOC 1050 Section 001 Spring 2011 Exam #2 Review Sheet

- 1. Chapter 7 Forces and force balances
 - a. Pressure gradient force (horizontal PGF, vertical PGF, direction of each PGF)
 - b. Coriolis force (facts about it, when/where does it matter, effects of)
 - c. Gravitational force (direction, what does it balance?)
 - d. Frictional force (effects of, where does it matter?)
 - e. Turbulence (types of, effects of, where they occur)
 - f. Hydrostatic balance (forces involved, how they balance, conditions where it occurs or not)
 - g. Geostrophic balance (what forces are involved, how they balance, conditions where it occurs or doesn't occur, resulting wind direction)
 - h. Jetstream and jetstreaks (relationship to temperature gradients and fronts, general wind direction in midlatitudes)
- 2. Chapter 8 Development of high and low pressure systems
 - a. Convergence (what types of flow are convergent, what type of surface pressure does it induce in an air column, resulting vertical motion)
 - b. Divergence (what types of flow are divergent, what type of surface pressure does it induce in an air column, resulting vertical motion)
 - c. Vertical motion in an air column (from convergence or divergence aloft/in column, associated with what type of weather conditions, with what type of surface pressure)
 - d. Flow around troughs/ridges (cyclonic or anticyclonic, results in slower or faster than geostrophic wind speeds, where is there divergence or convergence, what effect on vertical motion and surface pressure occurs and where)
 - e. Jetstreak flow (convergence or divergence in which entrance and exit regions, results on surface pressure and vertical motion)
 - f. Combined effects of curvature (trough/ridge flow) and jetstreaks
 - g. Winds in the friction layer (direction relative to each surface pressure system, result on vertical motion and surface pressure)
 - h. Effects of heating and cooling on surface pressure
- 3. Chapter 9 Airmasses and fronts
 - a. Airmasses (types, properties, naming, formation locations, associated sea level pressure)
 - b. Fronts (know all types, symbols for each, what happens in weather before/after passage of each):
 - i. Cold front, Arctic front: definition, weather associated with)
 - ii. Warm front (definition, weather associated with)
 - iii. Stationary (definition, weather associated, why stationary)
 - iv. Occluded fronts (warm vs cold, weather associated with)
 - v. Upper level fronts (definition, cause, weather associated with)
 - vi. Dry lines (where they occur, weather associated with)
- 4. Chapter 10 Extratropical Cyclones
 - a. Where they form, why they form, upper level features associated with
 - b. Fronts associated with cyclone (what is on each side of cyclone, weather along each side of cyclone and with fronts: east, south and northwest of cyclone)
 - c. Cyclone intensification (what causes intensification, effects of intensification)
 - d. Mature cyclone (warm vs cold weather, Trowal definition and effect on weather)
- e. Cyclone dissipation (signs of dissipation, upper level flow effects on dissipation)
 5. Chapter 15 Great Plains blizzards
 - a. Blizzard (definition, where form/occur, warning criteria, air masses involved)
 - b. Effects of blizzards on humans (definitions of human ailments)
 - c. Colorado cyclones (what feature leads to snow, how do mountains affect flow, where is most snowfall, vs Alberta Clippers)
 - d. Ground blizzard (definition, conditions to occur, impacts of)