**Reading guidelines for Lecture 02: Monsoons, large-scale tropical circulations, and global general circulation**

**General concepts**

1. Our knowledge and understanding of monsoon still lack precision.
2. Hadley (1735) offers the earliest explanation of the formation of tradewinds.
3. Conservation of absolute angular momentum of the earth
4. Rossby (1947) first proposed a 3-cell meridional circulation model.
5. Climatologist’s vs. meteorologist’s viewpoint regarding the definition of tropical belt.
6. Adiabatic vs. diabatic heating
7. Processes of generating diabatic heating in the tropical atmosphere.
8. Identification of heat sources and sinks
9. What is called equatorial heat source?
10. Direct vs. indirect circulation
11. Working of Carnot’s cycle in the atmosphere.
12. Definition of conditional instability

**Specific concepts**

1. What are the equatorial circulations? How they are created?
2. Classical vs. revised Hadley circulation model
3. Monsoon circulation is emerged from the perspective of horizontal circulation structure around the seasonally migrating equatorial heat source; => Monsoon can be viewed as off-equatorial ITCZ (Chao and Chen 2001).
4. Inclined equatorial troughs imply the coexistence of monsoon, Hadley and Walker circulations.
5. Definition of tropical monsoon.
6. Interhemispheric tropical monsoons.
7. Tropical vs. extratropical monsoons.
8. Factors affecting the zonal and meridional extensions in the distribution of global monsoons.
9. Co-existence of monsoon and Hadley circulations with the desert circulation.