**Reading guidelines for Lecture 08: Australian monsoon and its relationship with ENSO**

**Part 1: synoptic climatology**

1. The South Pacific Convergent Zone (also a TCZ) is the mimic of Meiyu front in the southern hemisphere.
2. Two aspects of the atmospheric circulation over the Australian region are noteworthy (see Fig. 7.5).
3. The low-level cross-equatorial flows occur in three longitudinal segments.
4. How to identify the summer monsoon onset at Darwin and the grand onset over the Australian mainland?
5. When the summer monsoon onsets, the northwesterly flow at low level is accompanied by the easterly flow at upper level.
6. What is the thermal wind?
7. Notions should be given to describe the picture when the monsoon and Hadley circulations coexist during the Austral summer monsoon season (see Fig. 7.9 and Table 7.1). What are the implications behind these values of cross-equatorial fluxes shown in Table 7.1?
8. Why the outgoing longwave radiation (OLR) is used to represent the summer monsoonal rainfall (see Fig. 7.10)?
9. A strengthening of monsoon westerlies equatorward of a disturbance is favorable for its development into a tropical cyclone. The strengthening of monsoon westerlies usually follows the cold surge in the South China Sea.
10. In some instances, the equatorward intrusion of midlatitude westerly disturbances can trigger the monsoon onset and interact with the monsoon depressions and tropical cyclone.
11. The southeastern parts of Australia (and Africa) are vulnerable to the occurrence of *southerly and northerly bursters* (resemble the *Northeasters* occurred in the New England areas of North America we mentioned previously). When they happen, temperature at Sydney can fall from 38 to 18C in 30 min.

**Part 2: ENSO connection and monsoon rainfall predictability (read sections 1 and 2)**

1. Both empirical (i.e., statistical) and dynamical forecast schemes exhibit better skill in the pre-monsoon winter/spring season than in the summer monsoon season.
2. The occurrence of El Nino in June-to-November has direct and indirect impacts on the reduction of rainfall across the northeastern tropical portions and south-to-southeastern portions of Australia, respectively. Where is the direct impact and indirect impact from?
3. The impact of El Nino on Australian rainfall weakens dramatically from spring to summer as it peaks wherein. Meanwhile, rainfall leading to the onset of summer monsoon is more related to ENSO than is the rainfall that occurs after the onset. What would be the implication herein?
4. Notions should be given to the discussions of the relative roles of remote vs. local SST anomalies to the Australian monsoon rainfall (AMR) from pre-monsoon season (SON) to monsoon season (DJF). See Fig. 3 (and Fig. 2, too).
5. Seasonally varying air-sea interaction has been posited to explain the dramatic drop in correlation between AMR and local and remote SST in going from the pre-monsoon into monsoon season. The air-sea feedback is positive during the pre-monsoon but is negative after monsoon onset.