**MR3252: Tropical Meteorology**

Note-Taking Questions for Lecture Series 3

1. Where (in three dimensions) are the strongest winds in a mature tropical cyclone found?
2. What is the difference between the primary and secondary circulations in a tropical cyclone?
3. Why can a tropical cyclone *not* be considered to be in gradient wind balance in the atmospheric boundary layer?
4. Where in a mature tropical cyclone is the tangential wind largest in magnitude? (Note: Not looking for “the eyewall”, rather what is the mathematical answer?)
5. Speculate as to what happens to the moist static energy in the atmospheric boundary layer in the vicinity of a primary eyewall during an eyewall replacement cycle.
6. Why is maximum tangential wind speed in a tropical cyclone often observed to decrease during an eyewall replacement cycle?
7. What happens to temperature in the core of a tropical cyclone as it undergoes extratropical transition?
8. Why are surface fluxes so important for tropical cyclone intensification and the hypothesized WISHE intensification mechanism?
9. In the idealized Carnot conceptualization of a tropical cyclone, what variables are important for determining the maximum potential intensity of a tropical cyclone?
10. At what pressure level is the strongest vorticity in an easterly wave typically found?
11. What mechanism drives the African Easterly Jet?
12. What are the differences in the barotropic and baroclinic processes that supply energy to easterly waves? How would these energy conversions differ if the horizontal structure of easterly waves was not tilted?